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DIMENSIONS OF
SOVIET ECONOMIC POWER

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LETTERS OF TRANSMITTAL

DECEMBER 5, 1962.

To the Members of the Joint Economic Committee:

Transmitted herewith for the use of the Joint Economic Committee and other Members of Congress is a compilation of study papers entitled "Dimensions of Soviet Economic Power." The study papers were prepared by a group of experts on the subject of the Soviet economy. They are available to members of the Joint Economic Committee in connection with the forthcoming hearings on "Dimensions of Soviet Economic Power."

We are grateful to the Government departments and organizations for the help that they gave the committee, and to the individuals who prepared the papers, particularly for their cooperation in completing the studies in a relatively short time. Likewise, the committee is grateful to the Research Analysis Corp., of Bethesda, Md., and the University of Pennsylvania for permitting staff members to prepare papers for this study.

It is understood, of course, that the study papers do not necessarily represent the views of the committee or any of its individual members.

WRIGHT PATMAN,
Chairman, Joint Economic Committee.

DECEMBER 4, 1962.

HON. WRIGHT PATMAN,
*Chairman, Joint Economic Committee,
U.S. Congress, Washington, D.C.*

DEAR MR. CHAIRMAN: Transmitted herewith is a compendium of study papers entitled "Dimensions of Soviet Economic Power." Each paper deals with a significant current economic development in the U.S.S.R. In its entirety, the compilation embodies a comprehensive survey of the Soviet economy.

The studies were prepared at the committee's request by a group of professional experts who have given generously of their time. The authors have attempted to present their findings in a comparative setting in order to provide perspective on current Soviet economic performance, through comparison with selected relevant economic indicators in the United States and other industrially advanced nations. It is hoped that this mode of presentation will afford a more meaningful appraisal of the economic capabilities of the U.S.S.R.

The departments and agencies of the executive branch of the Government have been most helpful in making available their specialists on the subject covered. The Research Analysis Corp., of Bethesda, Md., has been very generous in making available to this committee the services of John P. Hardt, author of the paper "Strategic Alternatives in Soviet Resource Allocation Policy," and Martin

J. Kohn, author of the paper "The Soviet Economy in 1961—Plan, Performance and Priorities." And the University of Pennsylvania has generously permitted Prof. Herbert S. Levine to prepare the paper entitled "Recent Developments in Soviet Planning."

Finally, the committee is most deeply indebted to Leon M. Herman, senior specialist in Soviet economics of the Legislative Reference Service of the Library of Congress, who conceived the format of the study and has directed its compilation.

WM. SUMMERS JOHNSON,
Executive Director, Joint Economic Committee.

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INTRODUCTION

The current performance and growing capabilities of the Soviet economy are a matter of vital significance, reaching far beyond the national boundaries of the U.S.S.R. Inevitably, Soviet internal economic developments today have a direct bearing upon the destinies of all free nations in the world, including the United States. The reason is plain. The Soviet economy operates in a social environment unique among advanced societies—an environment in which a single party, tightly controlled from the center, exercises a political monopoly in the nation and is committed to employ this monopoly of power at home to the end of promoting the cause of the Communist revolution in all other parts of the world. In the pursuit of this stated goal, the Communist leadership of the U.S.S.R. is employing all resources at its command—military, economic, diplomatic—in a concerted effort to bring its influence to bear upon the domestic stability and the international relations of the free world.

The course of world events over the past several decades has revealed quite clearly, to all concerned, that the Soviet Union is not a national state in the ordinary meaning of the term. The policies of the men who are now at the helm of that state are not dedicated to the pursuit of happiness of their own people. In the eyes of the Soviet type of leadership, in fact, domestic tranquility would indeed be a parochial, static, and unpromising objective. As Marxist politicians, they are attracted far more ardently to the glittering long-term goal of transforming the political configuration in the world. In the familiar language of official Russian proclamations, the Soviet state, is “a state with a special role in history.” So long as the present leaders remain in power, the Soviet state will devote the main thrust of its policies to the task of carrying out the “historically inevitable” transformation of human society wherever they can from a voluntary, democratically ruled community into a dictated form of social organization.

In order to sustain the pursuit of these long-term political goals, the rulers of the U.S.S.R. need a great variety of resources. Above all, however, they need economic resources. It is one of the basic tenets of Soviet doctrine that “the sphere of material production is the decisive sphere in human relations.” In keeping with this philosophy, the economy of the U.S.S.R. has been appropriated by the country’s political oligarchy and is currently used as the main battering ram in its sustained assault against the independent nations of the free world, individually and collectively.

I

For the purpose of its effective management from a single command post, the economy of the U.S.S.R. has been organized, since the beginning of Soviet rule, along the lines of a military establishment. Economic decisions, large and small alike, are made by agencies of the state, responsible only to the central authorities. Everything, from the volume of steel smelting to the manufacture of rubber paci-

fiers for babies, is ordered and controlled by a designated commission, ministry, or council, as the case may be, responsible only to the top for the production of the commodity in question. In all cases, the purpose is the same, namely the exclusion of private citizens and groups from direct access to any resources used in the production of goods and services.

Economic enterprise in the Soviet Union is considered too important a matter to be left to "unauthorized" entrepreneurs. State enterprise is total. Presumably, only the central agencies of the state can be entrusted with the secret of the exact schedule of priorities of the regime. As a practical matter, too, when only state agencies are involved in the process, the assortment of output can be more readily controlled or, if necessary, reversed by direct order from the supreme authority. Over the past 45 years, therefore, the political authorities of the country have assumed responsibility for all major decisions in the economic sphere, including the programming of the production of goods and its distribution on the basis of a complex system of directives issued from the center.

This form of organization has made it possible for the political oligarchy to retain in its hands, at all times, the key levers of control necessary to assure a flow of economic goods that will provide added strength for the state—primarily heavy industrial materials, production equipment, and military end products. Inevitably, too, the goals of production and the method of economic management have come to influence each other reciprocally over the years in the U.S.S.R. The continued insistence on a high level of output of the implements of war and maximum expansion of productive capacity in the heavy industries had made necessary the perpetuation of an economy organized on a war footing.

A prominent partisan of the political order of the U.S.S.R., the Polish economist Oskar Lange, has publicly expressed his own carefully weighed judgment of the Soviet economic system, as recently as 1957, in the following words: "I think that, essentially, it can be described as a *sui generis* war economy." His judgment was based, he explained, on the continued predominance of the following features of economic life in the U.S.S.R.: (1) The high degree of centralization of the process of decisionmaking in all phases of economic activity: planning, investment, materials allocation, and plant management; (2) the centralized disposal of resources on the basis of administratively established priorities; (3) the replacement of economic incentives by political incentives motivating the ruling elite. Broadly speaking, he characterized the economy of the U.S.S.R. as "a highly politicalized economy, both with regard to the means of planning and management, as well as the incentives it utilizes."

This characterization has probably come as no surprise to the Soviet leaders, who are well aware of the conditions under which their production system works. They know that their own overriding long-term political goals have impelled them to employ this cumbersome wartime method of economic decisionmaking. The only alternative to this method is a system of decentralized decisions, in which the current needs of the population would inevitably emerge as the prime source of influence on the pattern of production. From

their viewpoint, this would mean a calamitous surrender to the status quo. It would involve a decision to stand by and watch the whole elaborate mechanism of economic controls, built into a vast patchwork apparatus since the civil war years, slip out of the hands of the history-minded oligarchy and fall under the influence of nonpolitical groups and organizations concerned with the immediate needs of production and distribution for the welfare of the citizen.

Under the prevailing system, however, the same closed circle of party chieftains who enjoy a monopoly of political power in the U.S.S.R. also exercise a¹bsolute authority over the economic assets of the nation. In order to stimulate the growth of "hard" lines of production at a forced pace, the Soviet leaders begin by extracting an unusually high rate of savings from current consumption. This is clearly reflected in the allocation pattern developed by the regime. In 1960, for example, 31.3 percent of the gross national product of the U.S.S.R. was allocated to investment, as compared with a proportion of 17.9 percent in the United States. Once this huge investment fund is accumulated (equal to \$42 billion), it is so distributed as to channel some 40 percent of all new capital into industry. Furthermore, when it comes to allocating shares within industry, the branches devoted to capital goods production receive 88 percent of all new industrial investments, leaving only 12 percent for the branches producing consumer goods.

Much in the same vein, the regime deploys the labor force of the industrial sector with a strong bias in favor of the heavy branches of production. Seventy percent of all workers in industry are employed in the production of capital goods destined for the expansion of plant capacity rather than for the output of finished goods for the use of the mass of consumers.

For operational purposes, therefore, the Soviet economy is directed as a single nationwide enterprise, approximately as envisioned by Lenin, with the Presidium (the renamed Politbureau) of the party, serving as its board of directors. The Presidium has assumed for itself exclusive authority for programing the various individual levels of output in the economy under a series of production schedules, called plans, each schedule covering a period of 1, 5, or more years. These plans are unique, in the sense that they are neither forecasts nor recommendations as is often the case in other countries. Rather, they serve as directives, operational orders, or commands that are legally binding upon all active participants in the production process.

The same central political authority, moreover, finds that the preparation of this type of plan serves as the beginning rather than the end of its involvement in the business of economic administration. Having set up a scale of priorities in national production, by administrative procedures, the political center has to proceed to enforce its choices by taking two more essential steps: (a) dividing the total investment pie among the various claimants within the economy, by rank of its strategic importance; and (b) allocating, in physical quantities, the whole spectrum of input materials required by the economic enterprises across the country.

II

Another basic characteristic of the Soviet economy that has a bearing on the outside world is the fact that it is not responsive to the demand for goods generated by the population. Purchasing power in the hands of the public cannot, in the U.S.S.R., influence the pattern of either investment or production. In these critical areas, as elsewhere, only one will prevails, namely the will of the political high command, regardless of what the public wants. The annual investment plans, as prepared by the leadership behind closed doors, continue to stress the expansion to the hilt of facilities for the production of goods considered essential for the economic ambitions of the regime. The goods considered to be "vital" by the regime are typically the means for expanding the industrial base: machine tools, turbines, presses, forges, and rolling mills; not textiles, refrigerators, meat, or automobiles. As a result, the industrial base continues to be expanded, at the highest possible rate, despite the chronic conditions of underproduction in agriculture, housing, consumer goods, child care facilities, retail trade facilities, public services, and other essential needs of the mass of citizens.

The central fact that needs to be borne in mind is that what happened in the economy of the U.S.S.R., following the Communist seizure of power, was not simply that productive property was taken away from private individuals and groups and placed under government ownership. This was merely the formal condition of the establishment of a state-operated economy. What happened, in a fundamental sense, was that, as a direct result of total confiscation, the public itself was forcibly and permanently deprived of all influence over the assortment of goods produced by the economy. Overnight, as it were, all economic affairs of the nation were pulled behind the same curtain of secrecy that shrouded the activities of the political oligarchy in all other spheres. Thereafter, all decisions related to the range of goods to be produced were "off limits" for the public, reserved as the sole, private responsibility of the high command of the Communist Party.

At present, this high command alone determines the basic proportions along which the economic resources of the country are to be distributed, and issues directives to the administrative agencies of the government aimed at the enforcement of these proportions. The supreme leaders of the party apparatus, who also occupy all the key posts in the government structure, do not, it should be noted, consider themselves accountable to the mass of citizens for their authority. They are not in the habit of going to the nation to renew their mandate to govern. They prefer to work with the kind of mandate that cannot be recalled. Accordingly, they claim to have been brought to their position of power by the very force of the process of "history" rather than by the will of a majority of the citizens who make up the nation. And history, they allege, has endowed them with all the authority they need: not only to seize and hold power in their own country, without the consent of the governed, but also to expand the grip of communism to all other independent nations regardless of the expressed intent of the population of these countries.

Under these conditions, the ruling oligarchy has succeeded in effectively destroying the power of the public over the direction of

economic development in the U.S.S.R. Given their own scale of priorities, strictly controlled and enforced, money in the hands of the citizen does not give him a vote for a product mix of his own choosing. All that money can give him in these circumstances is the right to roam about the stores, the right to stand in line to buy the kind, the amount, and the quality of goods that the appointed planners have approved for production. In short, they have succeeded in producing a system of public ownership of the means of production in which the public is effectively excluded from the area of decisionmaking in production.

This profound bias against the public will has given rise to a conspicuous paradox in Soviet economic practice. On the one hand, the regime has firmly achieved the ability to plan its own requirements, in military strength and in widening the industrial base in particular, with a high degree of accuracy. The targets in steel or machine tool production, for example, are generally met in full in Soviet long-term plans. At the same time, however, most of the families of the nation have been left without the power to plan their own future, not only in regard to housing, furniture, consumer durables, or location of residence, but also in the procurement of their daily necessities. The question of "what will the stores have today," familiar to all people in time of war, is forever haunting the citizen of the state-dominated economy of the U.S.S.R. The same uncertainty also drives him to the stores every day. He lives in an economy that produces annually one refrigerator per 100 families. Working without a refrigerator, the housewife cannot plan her daily menu; she must depend on what she can find in the store.

The conflict inherent in the commitment of the Soviet leadership to an awe-inspiring military posture commensurate with its worldwide ambitions rather than with the size of its economy emerges into the open from time to time with painful clarity. A recent development may be cited as an illustration. In 1957, Chairman Khrushchev turned the spotlight on a brand new promise to provide a vast increase in meat production, announcing that he expected to catch up with the United States in the per capita output of meat by 1961, at the latest. The promise proved to be immensely popular. The party chieftain undoubtedly enjoyed the pleasant echo of the popular response. At the same time, however, he continued to dispose of the capital resources of the nation in the manner to which he had long become accustomed, assigning the lion's share to heavy industry and military technology. The collective farms, on the other hand, continued to be paid for their meat by the state at a price that fell far short (by 50 percent) of covering average cost of production. Naturally enough, meat production failed to increase. By mid-1962, it became quite clear that the prices paid by the consumers for meat would have to be raised.

In the upshot, the Communist Party was forced to issue a wordy proclamation to the people, on June 1, 1962, to explain the painful decision. The explanation stressed the obvious fact that it was necessary to improve incentives on the collective farms by paying them higher prices for livestock products. Then, it added, that it was also necessary to pass the burden of higher prices on to the consumer, explaining that the party cannot "transfer funds to this area at the expense of strengthening our defense capability and the

expansion of our industry." Whatever happens in this economy, in short, the proportions favored by the oligarchy in the pattern of allocation of resources are not subject to change.

III

The plain and lamentable fact is that the Soviet economy has brought little benefit or comfort to the domestic consumer. This incontrovertible fact has not, however, caused the Soviet leaders to lose faith in the efficacy of the totalitarian method of economic organization. It has not, as we know, prevented them from persisting to offer their own economic system for export. The urge to export the Soviet economic model abroad, in whole or in part, has developed, in fact, into something of an autonomous political goal of the Communist rulers. In the recent convolutions of party doctrine, the act of adopting the Soviet method of economic production by political directive has come to represent a strategic phase in the process of the "Communist transformation" of a given society.

As a matter of historical record, this particular process of transformation has already been underway for a period of 17 years in one part of the world, namely in Eastern Europe. Economic institutions in this Soviet-dominated region have been changed root and branch, beyond recognition. The economic behavior of individuals and groups has been pressed into the totalitarian mold, according to the formula prescribed by the long-term political goals of communism. At the same time, these institutional changes have made it possible for the U.S.S.R. to achieve a position of steadily widening economic domination over its six small neighbors. The position of domination, in turn, has been employed by Moscow to harness the economic energies of the dependent nations, as a supplementary force, to the chariot of Soviet political ambitions around the world.

It is indeed of the utmost importance to the free people of the world to keep in clear focus the record of "Communist transformation" achieved to date in Eastern Europe. In the sphere of commerce in particular, where the Soviet Government exerts its influence on these countries most directly, it has succeeded, as a first step, in shrinking their economic horizon to the West. It has thereby reduced the opportunities for normal commercial exchange between Eastern Europe, always a rather active trading area, and its traditional trade partners in the free world. By the use of persistent political pressure, in the name of Communist "solidarity," the Soviet overlords of this region have forcibly reversed the stream of commerce of these countries, turning it in an eastward direction, in the direction of the U.S.S.R. and Communist Asia. As a result, the East European countries are now conducting some 70 percent of their foreign commerce with trade partners whose qualifications are primarily political in character. For its own part, the U.S.S.R. has preempted a sizable portion of the trade of the six countries of East Europe, namely 35 percent. Nor, it should be added, is this process at an end yet. Official plans, devised in Moscow, call for the absorption by the U.S.S.R. of a still larger share, rising to 55 percent, of the commerce of the six dependent nations of Eastern Europe by 1965.

This heavy dependence upon the U.S.S.R. is especially notable in regard to two major features of East European trade. First, in the

supply of raw materials, the satellite states are now importing iron ore, coal, coke, petroleum, cotton, ferrous and nonferrous metals on a scale that is so vast as to give the Soviet Union a firm stranglehold over their steadily expanding heavy industry. Second, as the obverse of this process, their dependence on the Soviet market is also steadily increasing. Russia's trade partners in Eastern Europe have been induced to alter quite radically their pattern of industrial production in order to enable them to meet the ravenous appetite of the Soviet Union for industrial machinery of all kinds.

This alteration has proceeded to a point where the satellite countries have, in effect, converted their industrial plants into an appendage to the Soviet system of production. At present, 43 percent of all exports from Eastern Europe to the U.S.S.R. consist of machinery and equipment. In particular, the two most industrialized satellites, East Germany and Czechoslovakia, have been committed to produce numerous lines of machinery, admittedly in small lots and at high cost, for which they have only one market, namely the U.S.S.R. Their economic loss, on the whole, is the gain of the U.S.S.R., whose industrial plant is thereby materially strengthened and enabled to support more effectively the world policy objectives of the Communist leadership.

IV

In the light of the long-term goals of the Soviet leaders, the process of "Communist transformation" in Eastern Europe has proved so rewarding as to encourage them to look for more worlds to conquer. With the aid of their political doctrine, they have read into their success in Eastern Europe the wishful thought that this coercive transformation was brought about by the "inevitable" process of history. They have chosen to mistake the tramp of the Red Army boots for the march of history.

On that basis, as it became evident some 8 years ago, the Soviet leadership made an important decision in the foreign policy area, leading to a more active economic involvement in their relations with the less developed countries outside the Communist bloc. The nature of this decision, never announced as a forthright change in policy, was made clear in time by the subsequent course of practical acts. Broadly speaking, this decision was designed to employ economic aid, accompanied by a more active trade policy, to exploit the political instabilities, the economic shortages, and the widespread sense of frustration in evidence in these countries. The purpose was, and continues to be today, to manipulate the various elements of discontent in these newly developing countries and to mold them into an effective political weapon against the West.

As far as Communist ideology is concerned, this objective was, of course, entirely consistent with the political promise bequeathed by Lenin in the early 1920's, a promise to the effect that under Soviet leadership the discontented colonial peoples would "inevitably" engage in a series of violent "national-liberation" revolutions that would wreck the political power and disrupt the economic viability of the Western nations beyond repair. By the same token, according to Lenin's forecast, Soviet economic assistance would make it possible for the whole mass of ex-colonial people "to bypass the capitalist stage of economic development," that is, to follow their Soviet benefactors unhesitatingly into the camp of communism.

As Soviet rulers viewed the situation in the mid-fifties, the time was quite ripe for forging such an "alliance for revolution." The economic resources of the Soviet Union had developed immensely, as compared with Lenin's time. As the second largest industrial power, the U.S.S.R. could now afford to contribute a wide variety of assistance to the newly emerging nations: economic, technological, scientific, and military. The main burden of hope in this new approach to the underdeveloped countries, of course, rested on the extension of conspicuous economic aid.

The economic weapon has recommended itself to the Soviet leadership by the very fact that it is, in a sense, a weapon for all seasons. Its employment does not carry the risk that so often attends the brandishing of military weapons. The offer of economic "cooperation" has the added advantage of being constructive, visibly related to the domestic goals and aspirations of the recipient country. To the extent, too, that it represents an offer to live and work in peace with other nations, economic aid helps to soften the militant visage of communism and to obscure the long-term goals of the keepers of the Soviet revolutionary doctrine.

The free nations of the world cannot but perceive a grave danger in this particular Soviet campaign among the underdeveloped countries of the world. They cannot escape the impression that the campaign rests on a foundation of questionable premises. One of the dubious claims made by Soviet spokesmen in posturing before the developing countries is that the U.S.S.R. was itself a backward agrarian country "only" 50 years ago. The hard fact is, of course, that in 1913, Russia was the fifth largest industrial power in the world; fourth, in fact, in the production of machinery; third, in the production of textiles.

Beyond that, the Soviet Union has been careful to blend, rather subtly, its offers of development credits and technical assistance with a variety of political propaganda and diplomatic initiatives in a sustained effort to drive home to these countries a number of self-serving but corrosive propositions: (1) that the democratic form of government and the free society, as they are practiced in the West, are incapable of promoting a rapid rate of economic growth; (2) that Western influence among the developing nations must be eliminated, or reduced, because it is designed to keep them in a permanent state of backwardness; (3) that the Soviet Union and its allies are the only "true brothers" of the underdeveloped countries who can bring them industry and with it economic independence.

There is no denying the fact that Soviet economic diplomacy has served as an important new channel for extending Communist influence in the less developed countries in recent years. In a number of cases, in fact, the acceptance of an offer of economic or military aid has provided the Communist leaders with political entree into countries formerly considered out of their reach. Once the door was opened by an agreement on economic assistance, naturally enough, it was followed up by the establishment of trade missions, cultural agreements, scientific pacts, exchange delegations, student-training programs; in short, the whole panoply of penetration devices developed by the Soviet diplomatic profession over the decades.

Thus, one of the demonstration effects of the greatly expanded economic capabilities of the U.S.S.R. has come to light in the foreign aid field. In this area, it has been possible to observe how its present

sizeable industrial and technological facilities have provided the sinews that have enabled the leadership to support a substantial economic aid program outside the Communist bloc. True, in a country plagued by persistent shortages of all kinds, foreign aid may still, to this day, be a rather expensive luxury. By all appearances, however, the program on its present scale does not seem to deprive the regime of any resources essential to the fulfillment of its own strategic economic objectives.

It is obviously worth a great deal to the Soviet Government to be able to back up its current campaign of "peaceful coexistence" with a show of economic substance, in the form of loans, equipment, and technical personnel, extended to nations willing to take a chance on "coexisting" within the meaning of the term implied by Soviet foreign policy. To this extent, the present economic shipments of development aid on credit make it possible for Soviet policymakers to keep up an essentially contradictory posture with respect to the non-communist underdeveloped countries, namely a posture of supporting both the legitimate governments of these nations as well as the Communist minority working for their overthrow.

v

The growing productive capacity of the Soviet economy impinges upon the security of the free nations in still another way. The U.S.S.R. has emerged as a major producer of armaments for export. Soviet armament plants have evidently expanded their production on a scale sufficient to enable the regime to spare almost any amount of any kind of weapon to any applicant, for whatever his purpose may be. It may very well be, in fact, that this commodity category, a longstanding favorite in the production program of the party elite, is at present the only genuine surplus produced in the economy.

Since its first dramatic sale of arms to Egypt in September 1955, the Soviet Union has extended its role as an international purveyor of arms to a number of countries outside the bloc. The main known recipients are Egypt, Syria, Indonesia, Afghanistan, Cuba, Morocco. The total value of arms sale, covered by published agreements, amounted to \$1.4 billion, as of the end of 1961.

In recent years, as we know, whole armies of several foreign countries have been equipped with Soviet weapons and trained in Soviet military techniques. In Indonesia alone, according to press dispatches for November 1962, the Soviet Union has introduced generous quantities of such weapons as guided missiles (ground to air and ship to ship); armed frigates, cruisers; troop carriers; MIG-21, having a speed of 1,200 miles an hour; IL-28 turbojet bombers; and TU-16, pure jet bombers with a range of nearly 5,000 miles.

From the Soviet viewpoint, military aid seems to recommend itself as the ideal medium for gaining influence abroad. It is a form of assistance that yields a maximum return at minimum cost. To begin with, countries that are in the market for foreign arms are often seriously embroiled in some dispute, domestic or external, and are, therefore, in a state of political disarray in which the Communist minority could be expected to improve its position. Furthermore, the value of arms, whether sold for cash or on deferred payment terms, does not represent much of a drain on current Soviet expenditures. Quite

often, the military equipment sold abroad is already technically obsolete in the U.S.S.R. Therefore, the opportunities for their use at home are negligible. If, on the other hand, the equipment in question is still of the kind that is in current production, the amount supplied to the countries receiving Soviet military aid is likely to be such a small fraction of the massive domestic output that the physical loss to the Soviet army would not be serious in nature.

By any test we may apply, the Soviet economy has been expanded into a tremendous force of worldwide impact, a force that must be kept under steady surveillance and measured periodically, to the extent that such measurement is feasible. We must not make the mistake of judging the capabilities of the Soviet economy by the amount of well-being it provides to its own people in return for their hard work. It was not, after all, designed for that purpose. This economic structure was fashioned by a small band of determined men as a tool for transforming the world. We must remember, moreover, that the men who are wielding this tool are motivated by a false and dangerous dogma of the inevitability of the triumph of their variety of "progress" all over the world. They have patently and dangerously deluded themselves with the belief that people everywhere are anxiously awaiting to be "liberated" from their personal freedom, their social self-determination, and their national independence. An accurate assessment of their economic capabilities to pursue their long-term political goals is indispensable at all times as a basis for the conduct of an informed public discussion and the maintenance of a responsive national policy in this critical sphere of our affairs.

RECENT REORGANIZATION

Since the writing of the present report was completed, the all-powerful Central Committee of the Communist Party of the Soviet Union announced a series of changes in the administrative agencies concerned with the national economy. The new cluster of administrative reforms, as contained in the resolution adopted by the full [plenary] session of the Central Committee, dated November 23, 1962, call for the following major changes:

1. The aggregation of the 100 existing regional "Councils of the National Economy" into a smaller number of larger units. This process of consolidation is to be guided by the principle of the "common economic characteristics of the regions in question." At the same time, the resolution enjoins, steps are to be taken to increase the legal powers of the enlarged regional "Councils" in order to "protect them against petty tutelage" and to enable them to "display more responsibility in the making of national economic decisions and in the utilization of reserves for the increase of industrial production."

2. The transfer of the functions of the State Planning Commission (Gosplan) of the U.S.S.R., which is now responsible for the implementation of the annual plan, to a new national agency, called the Council of the National Economy. [Sovnarkhoz SSSR] Gosplan, in turn, is to be, henceforth, responsible for long-range planning, a function formerly performed by the State Economic Council (Gosekonom-soviet).

3. The reorganization of the present system of supervision over the industrial research institutes and the project-making bureaus by

placing all such organizations working in the same industrial field under a single authority. The unified authority is to be provided by State Committees of the U.S.S.R. Council of Ministers responsible for technological progress in the individual branches of industry.

4. The preparation of a new draft law, subject to the approval by the Supreme Soviet of the U.S.S.R., defining the rights of the state enterprise in industry, with a view to "increasing the legal powers of the directors [managers] of state enterprises" and, at the same time, to "developing a more active participation by the workers in the management of production."

5. By way of a general innovation, the resolution calls for the approval of the elaborate new organizational measures proposed in the report to the Central Committee delivered by party leader N. S. Khrushchev designed to achieve a "top-to-bottom reorganization of the party apparatus on the basis of the principle of production." This far-reaching reorganization of the control structure is expected to "insure a more concrete leadership of industrial and agricultural production." In practice this reform of party activity will involve the creation, on the provincial level, of two parallel party committees, one dealing with the problems of production in industry and the other with production problems in agriculture.

The new measures are explicitly designed to bring about "an improvement in the party's guidance of the national economy," a task which, in Khrushchev's words, "is becoming ever more complex as a result of the growth of the economy and the population of the country." While they are often far-reaching in the matter of party organization and administrative procedure, the proposed new measures leave intact the basic working principles of centralized planning and directed production that govern the economy of the U.S.S.R.

87th Congress }
2d Session }

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SOVIET ECONOMIC POWER

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JOINT ECONOMIC COMMITTEE
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Part I
THE POLICY FRAMEWORK



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STRATEGIC ALTERNATIVES IN SOVIET RESOURCE
ALLOCATION POLICY

BY

JOHN P. HARDT

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STRATEGIC ALTERNATIVES IN SOVIET RESOURCE ALLOCATION POLICY

INTRODUCTION ¹

This paper proposes to deal with the pending decisions that confront Soviet leaders in resource allocation policy. By its very nature, a discussion dealing with so broad and conjectural a topic will be qualitative and subjective to a large extent. Nonetheless such a discussion may be helpful by way of shedding some light on the implications of the various alternatives pursued in Soviet resource allocation policy. The present discussion assumes that to date our attention has been concerned largely with the rate of economic growth in the Soviet Union as compared with those of the West, using these rates as a relevant measure of the economic bases of power at the disposal of the opposing political blocs in the world today.² In that context, the relative power position of either bloc was considered significantly influenced by its relative rate of economic growth. There is, to be sure, no gainsaying the importance of relative rates of growth. Yet, we should not in our concern over the comparative expansion in the aggregate volume of economic resources underrate the importance of the respective national allocation policies. In this paper, our inquiry is especially directed to see how the Soviet leaders are likely to use their growing economic might in the immediate future to satisfy their rapidly growing and diversifying requirements.

This paper is also directed toward the analysis of the economic aspects of Soviet national policy. The interrelationship of national and economic policy makes their separate consideration difficult. There are those who argue that a study of the Soviet economy can be politically neutral. To be sure many economic decisions can be viewed separately from the particular political system, e.g., a steel mill is a steel mill anywhere. Still, the kinds of broad resource allocation decisions discussed herein cannot, in our view, be usefully discussed abstractly separated from the policy aims of the Soviet regime.

CHAPTER. I. GENERAL SUMMARY

Rapid economic growth resulting from political control of available resources deserves much of the credit for the rise of Soviet world power. With an economic growth rate roughly twice that of the United States, the increment of goods and services in the Soviet economy is now about equal to that in the larger, but slower growing U.S. economy. Moreover, the Soviet leaders are not limited by

¹ Acknowledgment is due many colleagues who read and commented on the manuscript in draft, including Dimitri Gallik, Marvin Hoffenberg, Lt. Col. Charles Ippolito, George Pettee, and Jane Rust. Responsibility for the contents is that of the author alone.

² A. Bergson, "The Real National Income of Soviet Russia Since 1928," Cambridge: Harvard University, 1961, pp. 289-298; G. Warren Nutter, "The Growth of Industrial Production in the Soviet Union," Princeton: Princeton University Press, 1962; J. Hardt with C. Darwin Stolzenbach and Martin J. Kohn, "The Cold War Economic Gap, an Increasing Threat to American Supremacy," New York: Frederick Praeger, 1961.

political constraints, such as the existing U.S. tax structure and Federal budgetary process, in using these resources in the ways they see fit. Unhappily, they have elected to give preference to resource claimants which have been successful in increasing the Soviet threat to our position in the world.

However, even with continued rapid growth and firm political control, the expanding Soviet resource base may not be able to meet the apparent requirements of Soviet policy for fulfilling the following aims:

- (1) To keep up in the world power struggle with the United States and its allies,
- (2) To modernize more broadly its industry, agriculture, and transportation, commensurate with progress in total production;
- (3) To house, feed, and clothe the Soviet population more adequately.

The Soviet difficulty in providing adequate resources derives, in the first instance, from the inclusion of policy aims (2) and (3), above, in their list of priority claimants. Until recently, modernizing the economy and improving consumer living standards were not serious resource claimants, compared with the priority programs related to augmentation of Soviet power. Upgrading of these claimants limits the total share available for power augmentation programs.

In addition to the proliferation of the number of claimants for scarce resources, the trend in requirements for each of the priority programs appears to be upward, increasing in some cases rather sharply. Three related reasons for burgeoning resource requirements to augment Soviet power are (1) the increased United States and West European efforts relating to the power struggle; (2) the sharply rising cost of the military-space programs, and (3) the coming due of many economic commitments for scarce materials and technicians in politically motivated foreign economic activities.

In deciding among the many pressing claimants on scarce resources, the Soviet leaders also are faced with a narrowing range of acceptable choices in resource allocation. The flexibility in past decision making permitted by the ability to shift from civilian to military production, i.e., to guns over butter, is being sharply restricted by the relative technological uniqueness of the military-space support industries. Moreover, the leadtime from decision to actual output of military weapons is becoming much longer. A drastic revision of the Soviet planning process is underway to accommodate these changing circumstances. Introduction of new economic techniques and high speed computing equipment into Soviet planning are among the notable changes underway.

The increasing importance of resource allocation in Soviet policy decisions is indicated by the following partial agenda of pending economic decisions or policies. The items on this agenda are listed in rough order of assumed priority, with the first four related to decisions on resource allocation for power augmentation, and the last two to modernization of the economy and consumer living standards.

1. The order of priorities in the weapon-space programs.
2. Resumed reduction of Soviet conventional armed forces.
3. Economic relations within the Sino-Soviet bloc.
4. Size and structure of Soviet foreign economic activity outside the bloc.

5. The tempo of economic modernization of Soviet industry, transportation, and agriculture.

6. The necessary improvement in the Soviet standard of living.

Each future meeting of the Soviet Communist Party may deal directly with one or more of the above items. The kind of decisions that are made will, in any event, be reflected in the Soviet economic plans. The way resources are allocated in each annual plan will provide an invaluable guide to Soviet strategy.³ While strict rationing of resources, even among priority programs, is not a new problem to the Soviet leaders, the combined pressure of expanding Western programs and the marked inflation in the requirements of their own programs is making the procrustean bed of available resources an increasingly uncomfortable one.

CHAPTER II. THE PROLIFERATION OF ECONOMIC CLAIMANTS

For many years, particularly under the guidance of Joseph Stalin, the Soviet industrialization process was single-mindedly directed toward a priority for heavy industrial expansion.⁴ Although this emphasis on heavy industry was to provide a widening productive basis for the Soviet industrial economy it was also highly correlated with expanding the industrial potential for meeting the military needs of the Soviet state. This expansion of the industrial base largely emphasized increasing the capacity for producing the basic commodities—steel, coal, electric power—without an improvement in the industrial technology commensurate with that of other expanding economies of the West. With the exception of certain critical areas, the emphasis was largely on increases in gross production rather than the efficiency in the use of factors of production.⁵ Notable in the slow modernization of Soviet industry was the continued use of substantial amounts of low-quality steel/nonferrous metal products, e.g., in construction. A major reason for the backwardness in energy utilization was the fact that the rail transport system, carrying over four-fifths of the Soviet goods transported, continued to rely primarily on low-quality coal, often transported very long distances.

While industrial modernization lagged, the most technologically backward sector of the Soviet economy continued to be agriculture. The Soviet revolutionary symbol of the union of the industrial workers and the peasants was the hammer and the sickle. Soviet industry has moved unevenly well away from the hammer as an appropriate symbol of industrial technology while, in spite of some progress in the agricultural state of arts, the sickle is all too applicable for Soviet agriculture. Even with tractors and other improvements and almost half the Soviet labor force engaged in agricultural pursuits productivity is still so low that the Soviet Union is still not able to plan on a stable grain harvest for supplying bread, let alone for the output of meat, eggs, and milk.

Pressures for economic modernization.—Throughout the Soviet 5-year plan period to 1958 there were many plans announced but not fulfilled for significant steps toward modernizing the Soviet economy.

³ For a discussion of the Soviet national product and components see Stanley Cohn, *Infra*.

⁴ Cf. A. Nove, "The Pace of Soviet Economic Development," *Lloyds Bank Review*, April 1956, pp. 7-8.

⁵ M. Gardner Clark, "Economics and Technology: The Case of the Soviet Steel," in N. Spulber (ed.) "Study of the Soviet Economy: Direction and Impact of Soviet Growth, Teaching, and Research in Soviet Economics" (Bloomington, Ind.: University of Indiana Press, 1961).

Characteristic of these plans, now considered with a new found seriousness are current plan goals for electrifying and dieseling Soviet railroad transportation, shifting from coal to petroleum and natural gas in the energy industries, and developing a modern chemical industry. Not until the 7-year plan, initiated in 1959, were such major changes in modernizing the economy undertaken in earnest. For the first time modernization is to have a substantial impact on the efficiency of the Soviet economy.⁶

The ton kilometers to be carried by coal fired as compared with diesel and electric equipment was to shift from 85 to 15 percent by 1965. New energy was to be largely supplied by petroleum and natural gas and the relative position of coal in the fuel balance was to substantially fall as shown in table 1 below. The establishment of a petrochemical industry and even significant production of synthetic fuel and fiber was planned. Finally in agriculture an increase in the arable land through irrigation was to be undertaken, at some considerable cost in materials and manpower.⁷ All of these major efforts in economic modernization were to require substantial resources and an increased priority to the modernization of the Soviet economy was indicated. Specifically a larger share of the investment allocation was to be directed to programs for more broadly improving the efficiency of the Soviet economy.⁸

This change in priorities was not accomplished without some debate in Soviet Communist Party circles. One form the debate took was the discussion of the relative preference of hydro over thermal power in plans for electric power expansion. This debate, led by Academician Strumilin arguing against a downgrading of hydro projects, was apparently won by the traditionalists,⁹ but the advocates of modernization held their own in such related matters as the preference of petroleum over coal products.

TABLE 1.—Comparative production of primary energy by source, U.S.S.R., 1958 and 1965 (plan), United States of America, 1947 and 1957

[Percent of total]

Source of energy	U.S.S.R. ¹		United States of America ²	
	1958	1965	1947	1957
Coal.....	56.7	39.6	45.4	27.6
Crude oil.....	25.3	35.5	27.2	30.9
Natural gas.....	5.3	15.2	18.6	28.8
Others (hydro, wood, atomic, peat, etc.).....	12.7	9.7	8.8	12.8
Total.....	100.0	100.0	100.0	100.0

¹ CIA, "Significant Developments in the Fuel Oil Power Industries of the U.S.S.R. in 1961," Washington, D.C., July 1962, p. 12 (unclassified).

² Perry D. Teitelbaum, "Energy Production and Consumption in the United States: An Analytical Study Based on 1954 Data," Washington, D.C.: U.S. Bureau of Mines and Resources for the Future, Inc., 1961, p. 62.

³ A. Nove, "The Soviet Economy, An Introduction," New York; Frederick Praeger, 1961, pp. 228-306.

⁴ A. I. Vedishchev, "Chto budet postroeno v semiletie" (What and Where Will There Be Construction in the Seven-Year Plan) Moscow: Gosplanizdat, 1960.

⁵ Cf. CIA, "A Comparison of Capital Investment in the United States and the U.S.S.R., 1950-59, February 1961 (unclassified).

⁶ J. Hardt, "Industrial Investment in the U.S.S.R.," Joint Economic Committee, "Comparisons of the United States and Soviet Economies," pt. I, Washington, D.C., 1959, pp. 132-136.

Pressures for higher living standards.—Although Soviet consumers have found their lot improving during the decade of the fifties, they are still poorly housed, fed, and clothed, even by Soviet standards.¹⁰ Much attention has been given by Premier Khrushchev to the consumer needs and the regime's plan to provide for them better. Considerable discussion in 1959–61 emanating from top Soviet policy circles even included a proposition by Mr. Khrushchev for equalizing the rates of growth of producer and consumer goods.¹¹ Premier Khrushchev also chose major food production targets in meat, eggs, and butter production that would have substantially improved the quality of the diet of the Soviet citizens if fulfilled.¹² Budget studies were initiated ostensibly to gather information on how the Soviet citizens spent their income.¹³ A commission was set up to draft a 20-year plan to map out the "road to communism" intended presumably to provide for the eventual satiation of consumer needs.¹⁴

Not only the material well-being of the Soviet citizen, but his leisure came in for attention of the regime. A promised program for the reduction of the workweek was instituted in spite of a low point in the increments of new additions to the labor force, due to the reduction in wartime births.¹⁵

Soviet concern with living standards was apparently due to the realization that incentives for increased productivity required increased material rewards. To be sure, incentives for increased production were not the only reason for concern about living standards. Many other advantages accrued to the regime if standards of living increased. Still the productive impact of the increased consumption was surely a highly persuasive argument.

Challenges to heavy industry primacy.—Perhaps with the June 1961 plenum meeting of the Communist Party (CPSU) devoted to agricultural problems, the programs for modernizing the rural economy and providing better living standards began to waver in official favor. In July 1961, an increase in the Soviet defense budget was announced by Premier Khrushchev of 3,114 million rubles, or an equivalent of approximately 8 billion U.S. dollars.¹⁶ Although the actual increase in military expenditures was doubtless substantially less, at least in 1961, the pendulum of priority had swung back in favor of production in those economic sectors intended to augment Soviet power. Moreover, the simultaneous suspension of demobilization of Soviet servicemen had immediate effects and implications for programs of economic modernization and living standards improvement.

By the time of the 22d Party Congress in October 1961, it was clear that even specific promises for a substantial improvement in the standard of living by 1980 was not to be party policy. The many promises of free goods and general abundance in the 20-year plan had one common denominator, that is, no significant shift in the resource

¹⁰ Bergson, *op. cit.*, pp. 284–288.

¹¹ Hardt et al., *op. cit.*, p. 34; A. Notkin, "Closer Approximation of Rates of Producer and Consumer Goods," *Economicheskaya Gazeta*, Nov. 13, 1961, A. Zaubermann, "New Winds in Soviet Planning" *Soviet Studies*, vol. X II, July 1960, pp. 1–13.

¹² CIA, "Current Problems of Soviet Agriculture," Washington, D.C., July 1961 (unclassified).

¹³ A. Aleshin and Ya. Kabachnik, "Some Results of Experimental Survey of Worker Family Budgets," *Bulleten' Nauchnoi Informatsii Trud: Zarobotnaia Plata*, No. 12, 1960.

¹⁴ N. Jassy, "Plan and Super Plan," *Survey*, a Journal of Soviet and East European Studies, January 1962.

¹⁵ R. Fearn, "An Evaluation of the Program for Reducing the Work Week in the U.S.S.R.," Washington, D.C.: CIA, March 1961 (unclassified).

¹⁶ *Pravda*, July 8, 1961; A. Bergson, *The New York Times*, Letter to the Editor, July 25, 1961.

allocation pattern or composition of consumers budget was to be promised, even for 20 years ahead.¹⁷

At the same time, the fact that the announced intentions of raising the priority of consumer needs in the Soviet resource allocation process were not to be fulfilled did not necessarily mean that satisfying consumer needs had not risen in the Soviet priority scheme. The resurgence of heavy industry did not mean that faced with hard choices between military-oriented programs and consumer needs, Soviet leaders would continue to opt for the instruments of power. What appears to be new in Soviet resource allocation policy, is that the production for consumer requirements is apparently no longer outside the serious planning process. Consumer goods industries are no longer to be treated as buffer sectors for meeting unplanned requirements in the top priority, power-augmentation areas. No longer are raw materials and labor supplied to be so readily available to fill needs in heavy industry as they arise. Whereas priority machine-building sectors usually came very close to fulfilling plans, cotton textile and related goals were seldom met. In the future, adherence to plan may be a policy extended to consumer goods industries.

Along with this resurgence of heavy industry, the investment plan during 1961 was rather substantially revised, indicating, among other things, a shift away from modernization plans. Expansion and modernization of chemicals, oil and gas, machine building, electric power industries, and housing, as well as most light industries were hard hit by a tightening of the capital outlays. As well summarized by Martin Kohn in the following, the shift strongly suggested a change in priorities.

The marked slowdown in the rate of increase in investment in the face of the regime's original plans to keep investment rising at virtually the same rate as in the first 2 years of the plan probably resulted from a recasting of priorities. Specifically the deceleration of investment growth lends considerable credence to Khrushchev's midyear assertion that defense spending would be raised above initial plans (though it does not indicate the actual size of the increase that some Western observers believe must have been less than 3.144 billion rubles, the amount by which Khrushchev said military outlays would exceed initially planned expenditures). It is unlikely that the Kremlin would permit so sudden a loss of momentum in investment growth unless it felt this was a sacrifice required by something as vital as military needs. The Soviets are counting very heavily on a high level of investment as the key to maintaining high rates of economic growth and modernizing the economy. A diversion of resources from investment would not be undertaken lightly.¹⁸

The question of priorities in resource allocation has never been a black or white affair. It has probably never been true, even under Stalin's aegis, that completely filling military and power-oriented program requirements were necessary before any consideration was given to investment for modernizing the economy or satisfaction of consumer needs. This overly simplified type of formulation was the possible logic in the assumption that the Soviets might produce all of the intercontinental ballistic missiles (ICBM's) they were economically capable of producing in spite of the requirements foregone elsewhere in their economy. Our overestimate of Soviet missile production capability may have led us to assume a missile gap would emerge.

However, the priority and weight given to military and related power programs have undoubtedly been continuously higher in the

¹⁷ R. Greenslade, "Forward to Communism?" *Problems of Communism*, vol. XI (January-February 1962), pp. 36-42.

¹⁸ See his paper, *The Soviet Economy in 1961: Plan, Performance, and Priorities*, in the present study.

past. The emergence of economic modernization and consumer welfare programs as serious claimants for resources not so easily to be dismissed as in the past is a significant change.

This shift in priorities is further illustrated by a recent evaluation of diplomats in New Delhi of the rationale for the Soviet failure to deliver on their current Indian aid commitment. As reported in the Swiss paper *Neue Zürcher Zeitung*, the failure to meet foreign economic commitments is yet another indication of this shift and broadening of priorities in the allocation of Soviet resources:

The economic bottlenecks (engpässe) in the Soviet Union could be explained on three grounds: the demands of the Soviet populace for higher living standards is a fact which the Kremlin is thought to have to increasingly consider; the failure of Soviet agricultural policy is a burden that grows over time and retards the overall economic development, which is already handicapped by the heavy load of the astronomically high costs of the current race for space mastery.¹⁹

Finally, a familiar Soviet technique to screen a shift in priorities is employed—new construction projects have been suspended.²⁰ To be sure, plans for investment requirements and construction plans are usually ambitious. But when there are a substantial number of new projects that are not on the published lists due to their military orientation, the supply of materials and manpower will clearly not be adequate. As a result, it may occur that too many projects were reportedly initiated and resources spread too thinly, when, in fact, projects not mentioned for security reasons may have been added without public notice at the top of the list. In a period when the announced increase in the military budget indicated a change in priorities, such an explanation of unfulfillment in nonmilitary investment projects seems tenable.

CHAPTER III. THE RISING COST OF MAJOR ECONOMIC PROGRAMS

With the pressing claims for modernization of the Soviet economy and better living standards for the Soviet consumer, new programs may be expected to compete for additional resources with the needs of programs of power augmentation. Moreover the pressure of the expanding Soviet economy is for increasing relative shares of each of the major claimants for Soviet resources. The exigent demands on Soviet resources arise not only from the emergence of multiple claimants but from the very sharply increasing cost of maintaining programs for which the regime appears committed in their effort to keep pace with the United States and its allies in the world power struggle, modernizing the economy, and improving living standards. The central problem is that for each of the multiple claimants for resources the trend in requirements is upward, in some cases rather sharply.

The power-oriented programs

The direct military expenditures, the foreign economic activities, the scientific and technological race in space and elsewhere, and the substantial effort to communicate the Soviet policy through a multiplicity of propaganda media are all parts of a cold war program for waging a continual power struggle with the United States and its allies. Even with a substantially smaller economic base the Soviet Union

¹⁹ *Neue Zürcher Zeitung*, Aug. 10, 1962.

²⁰ *Pravda*, Dec. 8, 1961.

was able to draw close to equivalence to the United States in their total resource outlays for augmenting power.²¹ This approach to budgetary equivalence was, in large part, a result of the single-minded priority to augmentation of power in the Soviet allocation of resources. The substantial increase in the requirements of the Soviet military and other power-related programs in this decade to date may be explained in part by three developments: the substantial increase in the comparable programs of the United States and its allies and their effectiveness; the accelerating resource requirements necessary to fulfill the technological promise of established programs, especially in military-space projects, to which the Soviets are themselves committed; and the requirements to maintain foreign economic programs, initiated in the past, for which termination would be politically costly.

The adjustment to the response from the West

The current U.S. administration substantially raised the defense budget. Mr. Roswell Gilpatric, Under Secretary of Defense noted this step-up and indicated the new higher level was likely to continue for some years to come as follows:

The defense budget was running under the previous administration about \$42 billion a year; now it is over \$50 billion and we see no prospect in the foreseeable future as long as the pressure remains on the free world from all the quarters that surround us, of which I have illustrated a few, that we can lower the size of the Military Establishment or the cost it entails.²²

These increases in defense outlays were intended, Mr. Gilpatric continued, to strengthen U.S. capacity for strategic, limited, and counterinsurgency types of military action. The latter two military needs were given particular attention in this budgetary increase.

Moreover, with the space and foreign economic activities budgets added to the defense budget, the total national security budget now exceeds \$60 billion, likewise with little indicated likelihood of decrease.

All the increases in the U.S. national security budget raised the requirements—the threshold—for Soviet maintenance of a degree of parity in military preparedness and related cold war programs. Some of the outlays for increased readiness coincident with the Berlin crises will not prove of an enduring nature, e.g., the cost of temporarily mobilizing reserves. But the type of budgetary increments used to increase the size and mobility of the Army and to accelerate the production of Polaris and Minuteman missiles did raise U.S. military preparedness to a higher plateau. Likewise, U.S. goals in space were set substantially higher with the specific acceptance of a national goal to land a man on the moon through the expensive Project Apollo. Finally a reoriented and expanded trade and aid program not only increased U.S. outlays in foreign economic activities but possibly improved their effectiveness.

Parallel to the U.S. increase in programs and expenditures related to the international power struggle, the West European, NATO countries reached a new and higher state of economic vitality, particularly in the Common Market area. These countries appear likely to take over more of the NATO military burden and foreign aid commitments formerly borne preponderantly by the United States.²³ This not only increases the programs and expenditures that must be considered by the Soviet bloc in their plans but potentially releases U.S.

²¹ John Hardt, Darwin Stolzenbach, and Martin Kohn, *op. cit.* pp. 7-23.

²² *U.S. Congressional Record*, Aug. 16, 1962, p. A6249.

²³ Jack Raymond, "NATO Approaches 30-Division Goal," *New York Times*, June 7, 1962.

outlays and commitments for employment in other areas of potential conflict, e.g., in Asia, Latin America, and Africa.

This higher budgetary threshold of the West poses to Soviet leaders the general problem of keeping pace with this increased resource allocation or running the risk of falling behind.

Exploitation of breakthroughs in military technology

Success in developing rocket thrust for launching heavy vehicles and ICBM's in space and the developments leading toward a missile defense system hold substantial promise for a shift to the advantage of the Soviet Union in the international power struggle, if the Soviet Union were able to outdistance the United States in these critical areas of research and development. Yet these very elements of potential success hold economic problems for the Soviet leadership in that only through massive allocations of resources can such potential technological breakthroughs be exploited.²⁴ The research and development cost for developing an intercontinental ballistic missile and possibly proving the principle of a missile defense system are relatively small compared to the requirements in very skilled manpower and special materials necessary for the mass production of these offensive and defensive types of weaponry. And production beyond the prototype stage is necessary to bring about the effects necessary for substantially changing the power balance. These are but two, albeit perhaps the major ones, of the types of technological developments in weaponry requiring substantial resources for exploitation.

The development of advanced instrumentation for space vehicle use is yet another and further development in the general direction of increasing requirements for technologically advanced and scarce resources. The twin orbital flights of Cosmonauts Nikolaev and Popovich demonstrated considerable progress in instrumentation which has potential military and scientific implications. But again, providing the resources to exploit these technological breakthroughs is a resource availability problem. The rate of expansion of the military-space support industries may run significantly behind the rate of technological and production opportunities open to the Soviets. This rate in expansion of capability is limited by scarce skilled personnel and materials.

Diminishing returns in foreign aid

Premier Khrushchev demonstrated that his predecessors had missed an opportunity for expanding Soviet influence on a worldwide basis through foreign economic trade and aid programs. In the late 1950's there were many attractive target countries: Egypt, Indonesia, India, and Guinea, to name a few. With relatively small economic outlays the Soviet leadership was able to gain substantial political benefits in the world power struggle. Had the Soviet Union been able to take advantage of these opportunities as they arose and to make the specific program commitment terminable and keep the individual country aid from increasing, the foreign economic arena would have probably held unabated charm for Soviet leaders.

However, there is increasing evidence that the Soviet foreign economic programs have lost their political glamour in the Kremlin.

²⁴ Cf. Chalmers Roberts, "Space Race Threatens Economy of the Soviets" Washington Post, May 23, 1962; New York Herald Tribune, May 8, 1962.

The recent political returns have been relatively small and the economic requirements have progressively gone up in many areas. In the UAR (Egypt), India, Guinea, and other countries, the costs appear to be noncommensurate with the returns. In fact, in the case of Guinea, the political returns may be negative. It is thus not surprising to hear voices of some Soviet leaders opposing the increasing level of foreign economic activities. The signing of agreements which was so rewarding in the propaganda field has given way to the quiet, politically unproductive delivery of often scarce Soviet equipment and the diversion of needed technicians. The credit, for example, for the expensive Aswan project apparently is to be Egyptian President Nasser's, the cost to a large extent Soviet.²⁵

Moreover, nonfulfillment of foreign economic commitments with the attendant endangering of past political gains, has become more common. The Indian plans, which depended for success on Soviet aid for electric power and petroleum equipment, are in danger of failure due to late Soviet deliveries. A hurried trip by Mr. Mikoyan to India to try to politically save the situation underlies the increasingly political problems in this area formerly marked by a generous flow of economically cheap political benefits.²⁶ The subsequent Indian request for U.S. military aid to meet the Chinese Communist border incursions has further complicated the Soviet policy of future aid to India.

Economic modernization programs.—In its economic development the Soviet economy has drawn heavily on the future resource commitments by the postponement of investments in changes necessary to improving industrial factor efficiency, e.g., raw material input to output ratios, and labor man-hour productivity. The need for conserving scarce raw materials and labor resources has just recently been introduced more consciously and explicitly into Soviet planning. It may be argued that the point was reached where a shift in raw material and labor utilization was dictated by absolute rather than comparative advantage. Expansion of industrial production in the fuel-deficit central industrial region using low quality Moscow coal as a primary energy source may have been constrained by technological possibilities for increased coal output as well as its high cost mining and transport. Moreover, factor costs of former technological relationships in real terms, e.g., kilocalories or kilograms or fuel per unit of product, had to be reduced in order to continue to increase production at the planned or customary rates. For example, looking ahead in 1958 to 1965 and 1970 Soviet planners may have found expansion of industrial production extremely costly based on the previous reliance on coal for energy rather than shifting significantly to petroleum and natural gas, extremely costly especially in the "fuel-deficit regions" of Leningrad, Moscow, and in the Urals.²⁷ Specifically the requirements for coal supply, i.e., the low grade Moscow basin coal to the city of Moscow would have required a substantial increase in the coal supply system of the railroads and production increases approaching the physical capability of the Soviet mines and railroads within reasonable transport distances. The shift in energy used planned for

²⁵ Economist (London), Aug. 4, 1962., p. 454.

²⁶ Manchester Guardian, July 7, 1962.

²⁷ John Hardt "Soviet Nuclear Power Program" in Philip Mullenbach, "Civilian Nuclear Power: Economic Issues and Policy Formation," the Twentieth Century Fund, New York: 1963, appendix B.

the 7-year plan in key industrial regions may have followed from the increased regional energy requirements.

Likewise, a new degree of labor scarcity was emerging in 1958. The Soviet labor force was not expanding as rapidly as before due to the trough in increments to the labor force caused by the reduced birthrate during World War II and the fact that the increase in total man-hours worked was held down by the reduction in the workweek felt necessary by the Soviet leadership. Thus, filling expanding labor requirements without substantial increases in the labor force was to be possible by planned improvements in labor productivity throughout Soviet industry by methods such as the introduction of materials handling equipment and replacement of manual labor by mechanical equipment. Here again the comparative advantages may not have been as relevant to the Soviet policy as the absolute scarcities of labor for filling the specific requirements of Soviet mills and factories with labor having appropriate skills. To bring about increased labor productivity more investment was needed and provided for in the 7-year plan.

Substantial increases in food and raw material production were also possible only if more resources were devoted to the agricultural sector. More arable land through irrigation, more productive land through more extensive use of fertilizer, and higher agricultural labor productivity through mechanization were all routes identified in Soviet plans to increase agricultural production requiring substantially increased investment. Likewise higher agricultural prices paid to the peasants to induce more productivity from the rural population were potentially effective incentives if more consumer goods were available for the agricultural market.²⁸ To a foreign observer it seemed in the period 1958 through 1960 that the regime at long last was taking some of the steps necessary to raise Soviet agriculture from its low-level, dead-center position. And although resources might have to be shifted from urban-industrial projects, the rising costs of improving agriculture did not seem exorbitant. Likewise, Soviet transportation would, after years of unfulfilled plans, proceed to forsake coal for diesel and electric power to power the Soviet railroads.²⁹

Modernizing Soviet industry, agriculture, and transportation thus appears to have been recognized as necessary to economize on scarce raw materials and labor resources in meeting the planned production goals. The marginal costs for the gains to accrue to the Soviet economy in the long run seemed to amply justify these programs. Still the requirements for additional resources must be substantial and continuous if modernization is to continue, and these new programs must be added to the other increasing claims on resources.

Programs for higher consumption levels.—Studies of Soviet living standards in the West indicate that the average per capita income of the Soviet citizen has been increasing during the last decade at roughly the pace of overall economic growth; i.e., about 7 percent per annum.³⁰ However, it is difficult to see from external evidence and available reports a material change in the living standard of the average Soviet urban citizen, who is in any event better off than his rural counterpart. Evidence does not appear available to this observer to clearly

²⁸ Lazar Volin, "The Agricultural Picture in U.S.S.R. and U.S.A.," Washington: U.S. Department of Agriculture, Economic Research Service, Foreign Agriculture Economics No. 27, July 1962.

²⁹ Pravda, Jan. 29, 1959; "Planovoe khoziaistvo," No. 12, 1958, p. 33.

³⁰ Bergson, *op. cit.*, pp. 284-288.

discern definite improvements in living conditions of the average Soviet citizen from the appearance of new products or new spending patterns. For example, a substantial increase in the availability of meat and an improvement in the quality of shoes and other clothing would be, but is not clearly discernible. Still, significant increases in real income may be coming largely from more of the same products already included in the Soviet family income. Increases in the supply of bread, cabbage, and cotton dresses in Soviet cities, for example, might be significant in showing measurable improvements in the consumer's income, but are less discernible as changes in the living standard.³¹

Certainly one cannot expect the pattern of the Soviet living standard to change in the same directions that have been common in the United States and is now, to a large extent, becoming common in Western European countries, e.g., an increase in the diet of meat and processed food as well as fresh fruits and vegetables; a succession of consumer durables, particularly household appliances to lessen manual labor in the home and provide home entertainment to a parallel increase in the number of privately owned individual houses with accompanying water, gas, telephone facilities, etc. Although such a Western pattern is not to be expected, some change in the Soviet pattern should, it would seem, also be discernible and identifiable if significant changes in living standards have occurred.

However, with the need for modernization of the Soviet economy to increase the efficiency of raw material and labor utilization is a companion need to provide more incentives to workers and managers alike to raise productivity and conserve scarce materials and manpower. A chance to improve one's standard of living by more productive activity requires identifiable goods and services that can be attained as a reward for improved productivity. If terror and coercion are to be completely replaced as incentives to performance, as seems to be the desire of the Soviet regime, a wider range of material benefits is probably desirable. Extra rubles that can only be spent on additional loaves of bread or otherwise relatively abundant materials are hardly adequate incentives for urban workers, managers, or peasants. If the more productive worker or manager were able to afford meat, eggs, and butter, better housing, and appliances, his drive for greater production might be rather highly stimulated. Conversely, the worker can hardly be encouraged by such campaigns as the recent one promising more meat, eggs, and butter, which has apparently ended in a substantial increase in the price of meat, as well as less meat.³²

Popular dissatisfaction with the June 1962 increases in meat and butter prices reportedly led to widespread public protest which in at least one case reportedly culminated in the death of "several hundred" demonstrators.³³ This extreme reaction of Soviet citizens to evidence that the living standard priority was not in fact to be upgraded as had been promised provides further insight on the rationale of Soviet leaders' current policy of favoring living standard improvements.

Logical and overdue as the plan to improve Soviet living standards may seem, it has one main drawback, namely, claims, in many cases,

³¹ N. Vasil'ev, "The Level of Per Capita Agricultural Production in the U.S.S.R.," *Voprosy ekonomiki* No. 7, 1961; M. Goldman, "Product Differentiation and Advertising: Some Lessons From Soviet Experience," *The Journal of Political Economy*, August 1960.

³² *Pravda*, Jan. 23, 1962.

³³ *New York Times*, Oct. 8, 1962.

are placed on already committed material and labor resources. More labor alone—say from males released from the Armed Forces—could do wonders for consumer goods production: more food could be produced in agriculture, increased consumer goods output would be possible in labor intensive light industries, more raw materials could be mined and processed, etc. Increased consumer goods, in turn, could provide the basis for higher real wages and an incentive for higher labor productivity.

The low point at which resource availability appears too costly for the regime to supply consumer-oriented as compared with defense-oriented programs is a continued reminder of the great difference in the priorities accorded the needs of Ivan Ivanovich—the average Soviet citizen—and Nikita Khrushchev—the Soviet economic planner, nonpareil. Still the community of interest shared by Ivan Ivanovich and Premier Khrushchev is in increased productivity, especially if rising real wages are involved. The need for increased productivity may thus be an effective lever to obtain the priority for increasing the resource supply necessary for raising Soviet living standards.

CHAPTER IV. THE NARROWING RANGE OF ACCEPTABLE CHOICE

Even with rapidly growing resources and strong political control of the allocation of these resources, hard choices will have to be made by the Soviet leadership before 1970. The political control of resources in the Soviet planning process does not mean that the choices are not limited. Moreover, the proliferation of priority claimants for Soviet resources and the rising cost of all priority programs raise the likelihood that there will be many things that the Soviet leaders would like to do, or even feel compelled to do, but will not find resources to support. As a result of the seeming paradox of increasing resource scarcity in a rapidly growing economy, the policy decisions which effect resource allocation in the areas of power augmentation, economic modernization, and consumer welfare will probably have a dominant position on the agenda of the top party leaders in Moscow throughout the decade ahead. But recognition alone of the problems of economic choice in the highest political councils will not provide their resolution.

Normally a growing economy provides for more variation and flexibility in new programs supportable by the expanding supply of resources. However, even with rapid growth there are a number of factors, in addition to the proliferation of economic claimants and the rising cost of Soviet programs, which tend to limit the range of choice of the Soviet leaders for the future more than in the past: technological limitations on alternative use of resources, lengthening time horizons, particularly in new military programs and administrative inflexibility in Soviet planning.

The changing character of the guns versus butter choice.—During World War II it was popular to speak of the choice in production alternatives between guns or butter. This was a shorthand way of referring to the priority of military over civilian production in using convertible capacity. In fact, most Soviet industries have been specially designed to attain maximum flexibility for converting production from one to the other of these priorities. In the Soviet machine-building industry, for example, the production of agricultural equipment, railroad rolling stock, and automotive production lines

have been particularly geared for rapid and effective shifts to military from civilian production. Throughout Soviet industry convertibility plans have reportedly been well developed, wherever possible, to provide for introducing military production procedures to replace those followed in the normal practices of civilian output.³⁴

However, now in the space age, a new industrial complex has developed for meeting the highly sophisticated requirements of military space vehicles and weaponry. Special equipment, a very highly trained professional labor force, and largely unique productive capacity, e.g., in floor space, building design, etc., are characteristic of the military space age, support industry.³⁵

Where civilian workers and capacity could be readily converted to assembling tanks and other military equipments without significant loss in productivity, the conversion of civilian production capability to help expand the military space age support industries is very limited. Even within industries such as electronics, where some civilian radio and other related production is carried on, the conversion to the highly technical and sophisticated guidance and electronic equipment required for the space age tends to limit conversion possibilities.

In discussing the problem of adjusting to disarmament agreements in the U.S. economy, Professor Benoit made comments relevant to the Soviet limitations on choice:

During the Korean war the production of items similar to, or readily converted to, civilian items (e.g., planes and tanks) still accounted for the bulk of defense expenditures. Today, however, the heart of the defense production effort is in the creation of highly specialized military equipment which bears little resemblance to any civilian production. A good share of defense production is in the hands of highly specialized defense contractors who have little or no experience with civilian production and for whom disarmament would imply, not reconversion but radical diversification into types of production with which they were inexperienced.³⁶

The relative technological uniqueness of this military support industry does not eliminate the alternative of military or civilian resource allocation but it makes the decision of guns versus butter appear much earlier in the economic processes. The decision in this area is not one of use of available productive capacity and labor force as much as of use of investment resources to create a certain type of capacity for production processes which are largely not convertible to each other. Thus once the capacity is built and labor force trained the production decisions become relatively irreversible as to the choice between military and civilian output.

The time factor in modern weapon systems.—The limitations on economic choice resulting from increasing sophistication and uniqueness of military space age industries is compounded by the long lead-times required to actually go into production for this type of equipment. A gestation time of 5 or more years from the decision to expand production of a given type of weaponry or vehicle in the space area to availability of production is not uncommon. In fact lead times of a decade are not at all unusual where significant research and development are involved. This lengthening time horizon for economic decisions, compounded by the inconvertibility of much of the required industrial capacity and labor force, makes the type of

³⁴ Based largely on discussions with former Soviet industrial engineers.

³⁵ Emile Benoit, "Of Arms and Prosperity," forthcoming in a special issue of *Daedalus*.

³⁶ Benoit, op. cit.

decision required for extremely expensive space programs highly inflexible. Therefore, it might be generally stated that the Soviets now have either decided for or against a program to land a man on the moon, or they may not stand a chance of success in this decade. To the extent that this generalization holds, it places upon the Soviet leadership a heavy requirement to correctly foresee their own future preferences and carefully weigh the alternatives foregone before their future decisions are frozen by decisions of the moment. Premier Khrushchev is using up, today, in weapons system decisions many of the options of his successor and preconditioning the resource allocation pattern that will be his successor's inheritance.

New demands on the Soviet planning mechanism.—The Soviet economic planning system seems best accommodated to the production of more of the same types of output but seems to falter a bit when faced with new production methods and new planning procedures. Where the increasing complexity of planning has appeared to be forcing a change, the political desire to retain control of planning has largely impeded the change.

A combination of factors have complicated the techniques required for planning: the advanced technology of new weapons, the proliferation of claimants for resources, and the increasing size and complexity of the economy as a whole. All the trends seem to have conspired to make the former methods of hand calculation and arbitrary pricing rather inadequate, in the view of Soviet planners. More complex econometric techniques and high speed computers have been introduced into the Soviet planning process.³⁷ Although the precise form of the revisions in the planning mechanism are still in dispute, there is some agreement that rate of change is lower than desirable.³⁸

The central problem that keeps reappearing in Soviet discussions is that of improving the planning mechanism while continuing political control of the resource allocation decisions. One fear of the party leaders might be that the planning technicians might be able to insert their preferences in place of those of the party leaders if the process does not allow for continued political appraisal at the center.

The reluctance to adopt new planning techniques for fear of losing some control may well underlie numerous discussions in Soviet publications and the slowness apparent in the adoption of many new techniques in Soviet planning.

Likewise, both the change in technology forced on Soviet planners by new military technology and modernization of the Soviet economy have apparently run into resistance from the Soviet planning bureaucracy. This resistance is understandable.³⁹ For example, modernization requires more than just a change of fuel sources from coal to natural gas. In such a change, all of the personal and political relationships of the individual enterprises are altered. A coal-supported economy can be largely local to a given geographical area and controllable by the local party secretary and the individual managers within that locality. The stocks of coal could be built up in sufficient

³⁷ See Robert W. Campbell, "Marx, Kantorovich, and Novozhilov: Stoimost' Versus Reality" *Slavic Review*, vol. XX, No. 3, October 1961, pp. 402-418; Morris Bornstein, "The Soviet Price System", *American Economic Review* vol. III, March 1962, p. 98; A. Aganbegian and N. Dimashevskala, "Using Mathematical Models and Electronic Computers in Economic Planning Calculations for Wages, Income, and Consumption," *Planovoe Khozjalstvo* No. 4, 1961.

³⁸ See especially Academician Nemchinov in *Pravda*, July 20, 1962.

³⁹ J. Berliner, "Managerial Incentives and Decisions Making: A Comparison of the United States and the Soviet Union," *Joint Economic Committee, Comparisons of the United States and Soviet Economics*, Washington, D.C., GPO, 1959, vol. I, pp. 362 ff.

supply in the autumn and winter period to insure continuous fuel supply throughout the production year. A change to natural gas, on the other hand, may require that the jurisdiction of the fuel supply cross local boundaries and even, in some cases, go beyond the jurisdiction of the Republic. Moreover, the reliability of supply may be dependent on considerations that are well beyond the control of local enterprises and responsible local party officials. Their success, as gauged by fulfilling their physical production plan, may, therefore, be at the mercy of a national (all-union) petroleum or natural gas supplier many miles distant.⁴⁰

CHAPTER V. PENDING ECONOMIC DECISIONS A PARTIAL AGENDA

A number of difficult policy decisions will have to be made and reexamined by Soviet leaders throughout the decade ahead. These decisions will be difficult even though the Soviet economy continues to grow approximately as rapidly in the future as in the past. The following is a discussion of a partial agenda. This list does not necessarily indicate the form in which the issues will be discussed at party meetings. It is, however, a list intended to convey the type of economic policy matters that must be dealt with explicitly or implicitly by Soviet leadership. The issues on this agenda are listed in rough order of priority with the first four related to decisions on resource allocation for power augmentation, and the last two to modernization of the economy and consumer living standards:

1. Order of priorities in military-space programs.
2. Resumed demobilization of Soviet armed forces.
3. Economic relations within the Sino-Soviet bloc.
4. Size and structure of Soviet foreign economic activity outside the bloc.
5. The tempo of economic modernization of Soviet industrial branches, transportation, and agriculture.
6. The necessary improvement in the Soviet standard of living.

Of course, each of the above represent not individual issues, but a family of policy decisions. But there is some central tendency in the individual decisions involved in the issues listed above. The discussion that follows, which draws on the trends discussed above, is not intended to be exhaustive, but merely to point up issues.

Order of priorities in weapon-space programs.—In the military-space programs, as noted above, the conversion to military from civilian production is, for the most part, no longer an open option and the leadtimes in this technologically advanced sector are substantially longer than was the case for weapon systems employed in the Korean war or World War II. The military-space support industries have a relatively fixed, albeit expanding, capacity for some years ahead. This type of capacity may be expanding at a rather impressive rate due in part to the priorities for space set as much as a decade ago, but there is a rather fixed ceiling due to limitations on conversion possibilities from other productive capacity and the long time required to increase the plant, equipment, and other labor force required.

In this context of limited expansion capability the increase in requirements for the output of military-space industries is nothing

⁴⁰ V. S. Nemchinov, "Application of Statistical and Mathematical Methods in Soviet Planning," paper at International Conference on Input-Output Techniques, Geneva, Switzerland, September 1961; V. S. Nemchinov, *Pravda*, July 20, 1962.

short of phenomenal. These requirements fit roughly into three categories: the offensive missilery of both the strategic and tactical variety; the missile defense capability; and the space exploration programs.

With regard to offensive missilery it is generally assumed that the Soviets have not expanded their intercontinental ballistic missile (ICBM) capability as fast as was expected. The slower rate of development may explain the absence of the predicted "missile gap" between the U.S.S.R. and the United States of America. A factor in this slower than anticipated rate of ICBM production may have been the limitation of scarce resources. Assuming the total resources available were sufficient to produce the higher rate of ICBM output, the lower level of ICBM production may mean that all other competitive programs were not sharply restricted to provide the absolute maximum in ICBM output.

Moreover, assuming the Soviets do not now have a sufficient ICBM stockpile, it is likely that the expansion of the Soviet ICBM capability will continue through much of the current decade, competing with other military-space programs for the limited resources.

Missile defense capability has probably not emerged from the research and development stage, in spite of Premier Khrushchev's claims of accomplishment.⁴¹ Still the time that missiles for defense will go into production may not be far off. President Kennedy pointed to this missile defense development as one rationale for our resuming nuclear testing.⁴² When a technological breakthrough does occur in missile defense, a substantial allocation of resources will be required for following through in production. One published estimate indicates that \$8 billion would be the price tag for constructing and effective Nike-Zeus missile system for key U.S. cities.⁴³

In the space exploration program the Soviets have found an admixture of propaganda and military gains. The twin orbit of cosmonauts Nikolaev and Popovich is both a spectacular technological feat and a potential answer to the U.S. "Spy in the Sky", intelligence satellite. There was some speculation that the Soviet space program was being curtailed in early 1962. The Soviet offers to cooperate in space were related to an apparent Soviet desire to limit the areas of competition.⁴⁴ However, the twin orbital flight raises some doubt that any downgrading of the Soviet space program actually occurred.

Each of these three priority areas must draw on the same limited military-space supporting industries.⁴⁵ The costs of each of the programs must be calculated in terms of the alternative programs. How many ICBM's is a missile defense system for Moscow worth to Soviet leaders? Or will a program to land a man on the moon justify retarding their offensive and defensive missile programs? These are presumably the type of difficult decisions that must be faced by Soviet leaders in determining the priorities in their military space program.

The pendulum of demobilization.—In July 1961, Premier Khrushchev announced the termination of demobilization of the Soviet armed

⁴¹ Narodna Armiya (Bulgarian military publication), Nov. 12, 1961.

⁴² TV address to the Nation on our test resumptions, see New York Times, Apr. 1, 1962.

⁴³ John Norris, Washington Post, Oct. 24, 1961.

⁴⁴ U.S. Senate Committee on Aeronautical and Space Sciences, "Soviet Space Programs Organization, Plans, Goals, and International Implications," Government Printing Office, May 31, 1962. pp. 71-94, 240-246.

⁴⁵ The U.S. space program is likewise facing difficult choices. Currently the Project Apollo for landing a man on the moon is said to be competing for funds with the NASA programs on the scientific exploration of space. New York Times, Nov. 5, 1962, p. 1.

forces. Now we hear from time to time Western analysts' predictions that demobilization will be resumed. To be sure, there are pressing economic reasons for resuming demobilization. The demographic impact of World War II is just now being felt most keenly in the Soviet Union. It was not clear to Western analysts how severe the Soviet war losses had been until the publication by the Soviets of their 1959 census. From this census we learned that a direct wartime loss of 25 million lives occurred. Moreover, this loss in population could be increased by at least 10 million if account were taken of the indirect losses resulting from disrupted demographic trends, especially a sharp drop in the birth rate. The particular current impact of this wartime loss is the reduction in the number of males now coming of military or working age. This scarcity of males is reflected in a higher rate of female participation in the labor force, especially in Soviet agriculture. The trough in increments to the working age population is being reached in the early Sixties but the number of males in the military age group will not regain the 1960 level by 1970, as indicated in table 2 below:

TABLE 2.—*Soviet population and components, 1950-70*¹

[In millions]

Population and components	Years			
	1950	1960	1967	1970
Total population.....	182	214	238	247
Working age.....	104	119	128	134
Of which male.....	45	55	62	66
Of which female.....	59	64	66	68
Military age.....	23	32	29	30

¹ U.S. Bureau of the Census, Foreign Manpower Research Office, unpublished estimates of population of the U.S.S.R., dated March 1961.

The competition for the small number of Soviet citizens coming of age is particularly keen among the priority claimants: the conscription roles for military service,⁴⁶ training of scientists at institutions of higher learning, and the labor drafted for skilled labor in the industrial labor force.⁴⁷

The number of men at arms was reduced from a high of 5.5 million in 1955 to a level close to 3 million by the time of the 22d party Congress in 1961. The rate of secondary school enrollment of youths was controlled in the latter 1950's in order to control the drain on scarce manpower and increase the participation of those receiving education in the labor force.

The labor force shortage is not being ameliorated by the labor productivity accomplishments of the 7-year plan, 1958-65. This plan included extremely ambitious goals for increasing labor productivity in industry, transportation, and agriculture. These targets were coupled with offsetting plans to reduce the industrial workweek. Substantial increases in productivity were to result from structural changes in the economy such as shifts in the railroad transportation

⁴⁶ The basic military conscription law is still the much amended "On Conscription," dated Sept. 1, 1939, in the Bulletin of the Supreme Soviet, No. 32.

⁴⁷ John Kantner, "The Population of the Soviet Union," Comparisons of the United States and Soviet Economics, vol. I, Joint Economic Committee, Government Printing Office, 1959, pp. 42-44.

from coal burning-steam traction to diesel and electric locomotives which have been roughly conforming to schedule.⁴⁸ However, industrial and agricultural productivity were not increased as planned in large part as a result of a shift in the investment plan which formed the underpinnings of the program for improved labor productivity through mechanization and automation.⁴⁹

However persuasive the economic advantages of resumed demobilization, the Soviet leaders must also consider the strategic disadvantages accruing from a reduction in the size of Soviet armed forces. The Soviet Union will probably attempt to maintain a balance with expanding U.S. power, especially in terms of military preparedness.⁵⁰ If the United States goes ahead in some areas in which the Soviets cannot for a time compete, they are likely to attempt to offset American superiority elsewhere, if possible. Traditionally, maintenance of large land forces had been used by the Soviet Union to offset power inferiority elsewhere. The large Soviet army acted for a time immediately after World War II as a partial counter to the American superiority in nuclear capability.

In many ways land force changes still present the most attractive of the military options to Soviet leaders open in the short run. The missile age alternatives—strategic forces and space—are important although inflexible elements in Soviet strategic posture except in the longer run. The combined requirements of Soviet striking forces, antimissile development, and space exploration programs all require, as noted above, a very substantial increase in the unique, missile-age industrial support industries.⁵¹ Only in the long run can consumer expenditures and Soviet investment for modernizing industry be diverted to the missile-age alternatives. Growing pressure to enlarge production in military space programs thus increases the competition within the military-space area for the very limited Soviet capabilities in skilled manpower and unique productive capacity. Additional capability must be trained and developed at a measurably slow rate. Priority allocations, alone, cannot provide the flexibility upward in military-space weaponry production.

However, the land-force option for increased military power still represents a general alternative of guns or butter. The cost of a large army will not be borne by programs directly related to augmenting Soviet power, but by programs for economic modernization and consumer betterment. The labor force shortages in industry and agriculture, for example, will become increasingly more acute if demobilization is not resumed. Continued large land forces may thus lead to severe quantitative impacts on Soviet consumer goods production and civilian investment. Maintenance of a high level of land forces will continue to preempt skilled labor for new classes of military trainees from the labor force for defense rather than for nondefense activities. With the increasingly pressing and explicit requirements for improving the consumers lot and for modernizing the Soviet economy, the costs of preempting this scarce labor force will be high but not necessarily unbearable. In the immediate post-war period with high priorities for reconstruction of the Soviet economy and the reestablishment of Soviet agriculture on a productive

⁴⁸ Pravda, Feb. 8, 1959.

⁴⁹ M. Kohn, *op. cit.*

⁵⁰ Institute of Strategic Studies, "The Military Balance" London November 1960.

⁵¹ *Supra*, pp. 36 ff.

basis, the Soviet Union under Stalin was willing to maintain a large Soviet army.⁵² The costs of maintaining this large land force in terms of alternatives foregone in the reconstruction of war-devastated economy were very great indeed. The lost production both in industry and agriculture was probably greater than would be implied by any comparable measurement now, based upon alternative assumptions of maintaining land forces or demobilizing them. Still, that the Soviets maintained a large army before, under different international and political circumstances, certainly does not prove that they will again sacrifice so heavily in the domestic economy for gains or needs in the international power struggle obtainable through maintaining large land forces.

Yet we cannot assume that this element of history will not repeat itself. Over the long sweep of history Russian regimes have rightly been concerned about invasion. Because of lack of natural barriers and aggressive neighbors, large mobilized land forces have been necessary but not always adequate. The shock of the most recent invasion of the Nazis, which took the enemy to the gates of Moscow, is still very fresh. This fact alone must condition Soviet leaders' thinking on land force needs.

The pressures for improving the Soviet standard of living and modernizing the economy surely exert increasing influence in Soviet economic plans. However, this pressure alone will not necessarily be decisive in influencing Soviet demobilization policy. For if the prior claim of maintaining the Soviet position in the cold war were endangered by further demobilization of land forces, secondary claims might well not hold. But again the decision will be a difficult one. With the callup of the 1943 class this year (those becoming 19 in 1962), the size of the armed forces will go down as this is the smallest of the postwar classes. Premier Khrushchev could have called up two classes or kept in the reserves scheduled for release, but he did not.⁵³ To date no clear policy developments have been forthcoming.

Soviet economic leadership in the bloc.—The emergence of the Common Market, European NATO area as a potential great power is profoundly disturbing to the Soviet Union and has forced a reappraisal of Soviet policy with its East European bloc. In presenting the case for British participation in the Common Market, the following excerpt from an article by Leonard Beaton in the Manchester Guardian illustrates a basis of Soviet concern:

In more technical terms, it is argued on both economic and military grounds that the natural size for the modern nation is between 200 and 300 million people. Certainly the United States and the Soviet Union with populations of this size show less strain in carrying our heavy obligations than the medium-sized powers of Europe. Britain's defense industry, which is that of a great power, is feeling the strain of keeping up and would like to have the support of a larger economy. For some time the Minister of Defense has been seeking a group of cooperative defense projects in Europe and a hope of escape from one defense dilemma—arms production—lies in this direction.⁵⁴

Although the emergence of a new great power in Western Europe is the dominant, longrun Soviet concern, the Common Market poses a more immediate balance-of-payments threat to the Soviet bloc. In this regard the East European countries, particularly Poland, are

⁵² M. Roof in "Bulletin of Population," vol. 15, No. 4, Washington, D.C.: Population Reference Bureau, July 1954.

⁵³ Reuters, September 1961.

⁵⁴ Manchester Guardian, Aug. 2, 1962.

most immediately concerned about being shut out of Western markets for their agricultural products.⁵⁵

While West European integration is politically and economically disturbing to the Soviet Union for specific concrete reasons, the development has also affected the Soviet image in the world. The existence of a dynamic economy on its very doorstep disturbs the Soviet claim of having a system most likely to produce rapid economic growth.

Finally, and of most disquieting importance, the leadership councils of this West European group include, with a prominent voice, the revived West German State. This rising German power conjures up the dreadful memories of the Nazi invasion, and certainly forms what basis there is for Soviet claims that the European economic community has aggressive international aims.

It is in the face of this West European revival and dynamism that serious policy issues are posed for the Soviet leaders in their dealings with their economically troubled East European satellites. First, what should be the future arms burden of the Warsaw Pact countries and how should the burden be shared? Second, to what extent should production decisions be dictated by needs of the Soviet domestic supply plan rather than development needs of the individual countries and the East European bloc as a whole? Third, what should trade relations be, including the terms of trade, between the Soviet Union and East European countries and intrabloc? The Common Market impact suggests the likelihood of a more liberal Soviet attitude on each of these questions.

Sino-Soviet relations are quite a different problem. By the summary withdrawal of technicians and termination of aid in 1960, the Soviet Union dealt a heavy blow to Chinese development plans. By 1962 economic relations between the two great Communist powers have reached a nadir. Cuba is now receiving more Soviet aid and trade than Communist China.⁵⁶ While no modern credit bridge such as that which existed between Western Europe and the economically developing United States in the latter part of the 19th Century, is likely between these two countries, some increase in economic aid seems likely, or at least possible.

The direction of change in Soviet resource allocation policy in regard to East Europe and China suggests that increased Soviet resource commitments are more likely than a further reduction. Some improvement in the Soviet economic terms with the other members of the Communist alliance seems likely. Just how the Soviet leaders would rationalize this moderation in alliance economic policy, if it were to occur, with their alternative domestic claimants remains to be seen.

The scope of foreign economic relations.—The Sino-Soviet bloc credits and grants have not been large either as drains on their domestic economy or as compared to the U.S. effort. For example, U.S. aid to 27 less developed countries which have accepted bloc assistance in the period from 1954 through 1961 has been roughly

⁵⁵ V. Kulakov and V. Kirshin, "The Military Strategy of American Imperialism—Threats to Peace and the Safety of Nations," *Kommunist*, July 1962, No. 10, pp. 109-114; V. Cheprakov, "The Common Market, a Weapon for Strengthening the Monopolistic Oppression and Aggression," *Kommunist*, May 1962, pp. 25-35; I. Lenin, "European Integration: Some Results and Prospects," *Mirovaya Ekonomika: Mezhdunarodnie Otnosheniya*, No. 4, April 1962.

⁵⁶ *Planovoe Khoziaistvo* No. 7, 1962; *Voprosi Ekonomiki* No. 7, 1962, p. 138 f.

double that of the Sino-Soviet bloc, \$9.5 as compared to \$4.4 billion.⁵⁷ This Communist aid has been highly concentrated on a number of politically attractive target countries, as shown in table 3.

Almost without exception, initially Soviet aid has been successful in reducing Western and increasing Soviet influence in the countries involved. But after the initial political success there have been results varying from apparent failure of the mission (Guinea), to dilemmas in the continuing program (India and the UAR), and continuing political gain (Cuba and Indonesia).⁵⁸

TABLE 3.—*Sino-Soviet bloc economic credits and grants extended to less-developed countries,¹ Jan. 1, 1954, to Dec. 31, 1961*

[Million U.S. dollars]		<i>Total economic credits and grants</i>
<i>Area and country</i>		
Total		4,382
Latin America		465
Argentina		104
Cuba		357
Others		4
Middle East		1,077
Iraq		216
Syrian Arab Republic		178
United Arab Republic (Egypt)		615
Others		68
Africa		601
Ethiopia		114
Ghana		182
Guinea		110
Others		195
Asia		2,123
Afghanistan		215
India		963
Indonesia		641
Others		304
Europe		116
Yugoslavia		111
Others		5

¹ Individual countries with \$100,000,000 or more in aid cited.

NOTE.—Department of State, "Sino-Soviet Bloc Economic Assistance Extended to Less Developed Countries of the Free World," Mar. 1, 1962.

⁵⁷ The figures are not comparable as only data on promised Soviet aid is available, whereas U.S. figures are for aid extended. Department of State, "Sino-Soviet Bloc Economic Assistance Extended to Less Developed Countries of the Free World," Mar. 1, 1962, p. 11.

⁵⁸ Guy J. Pauker, "The Soviet Challenge in Indonesia," *Foreign Affairs*, July 1962, pp. 612-626.

The difficult policy problems that the Soviet aid programs are beginning to face involve not the ruble value of the aid but the specific scarce materials and skilled personnel involved. In India the supplies of electric power generating and petroleum extraction equipment are not being delivered on schedule, as noted above.⁵⁹ At the Egyptian Aswan project the number of Soviet technicians has reached about 700. These particular types of equipment and skilled personnel are continually needed on Soviet domestic economic projects.⁶⁰ In the face of the heavy Aswan requirements, for example, the current Soviet hydroelectric construction plans call for the greatest annual increases in hydrogenerating capacity in Soviet history—over 2 million kilowatts a year.

The Soviet foreign aid issue has been well delineated by Leon Herman in the following:

The Soviet Union did not stumble into foreign aid in a fit of absentmindedness. Nor can its entry into the field of economic development assistance, which came relatively late, be adequately explained as an act of blind imitation of a successful technique employed by the political adversary. What is quite obvious by now is that the Soviet commitment to foreign aid, which is sizable and steadily growing in scope, is motivated by its own rather elaborate and internally consistent rationale. It was born of a deliberate and hard decision, taken over 8 years ago, apparently in the face of some internal opposition, at the highest level of political authority in the country.

It could hardly have been otherwise. Foreign aid is too expensive and exposed an operation to be lightly undertaken. In the Soviet Union, the resources needed to support economic development abroad are scarce as well as costly, especially costly in terms of opportunities foregone at home. There are still today in the U.S.S.R. large parts of the country, and important areas of the economy, that continue to live on short rations of precisely the kind of development capital, physical and human, that is required to sustain foreign economic assistance projects. Such scarce resources, it is quite clear, can be released for export only on the basis of a careful weighing of the alternative advantages to be gained from their use either at home or abroad.⁶¹

There still seem to be enough gains accruing to Soviet aid programs for its partisans among the Soviet leaders—A. Mikoyan *et al.*—to hold their own. But in the future, specific commitments of scarce materials and technicians may come under increasing scrutiny.

The tempo of economic modernization.—Each of the above policy areas on resources for power augmentation programs have influenced the decisions on modernizing the Soviet economy. While objective Western analysis might suggest that the modernization goals of the 7-year plan were modest, the rate of improving the efficiency of the Soviet economy has been even slower than planned, largely because of the constraints placed on resource availability by the power-oriented programs. Such modernization measures as the creation of a modern chemical industry, the shift from coal to petroleum in energy utilization, and the steps needed to improve yields in Soviet agriculture are all falling short of plans and expectations. Premier Khrushchev places the responsibility at the door of the increased military threat of the West. In fact he particularly stresses the relationship of agricultural problems and stepped-up defense needs.⁶² This may be

⁵⁹ *Supra*, p. 21.

⁶⁰ *Economist*, Aug. 4, 1962, p. 454.

⁶¹ L. Herman, "The Politics of Soviet Foreign Aid," AID Digest, Washington, D.C., August 1962.

⁶² *Pravda*, June 1, 1962.

due partly to his own political problem. Namely, a majority of his provincial party secretaries are in agricultural districts. Success of these local party secretaries is closely related to agricultural production and only indirectly connected with the international power struggle.

The shortages in the supply of raw materials and labor may be the critical constraints on the growth of Soviet national production in the years ahead. Modernization tends to relieve these constraints and allow for more rapid growth. Moreover, in the calculation of Soviet economic growth there is a tendency to inflate the increase in the output of goods and services by not properly allowing for the quality of output for serving economic needs. The quality measures are not only related to the production of relatively shoddy material in certain consumer goods areas but reflect quality or efficiency of inputs in material and labor resources in industrial Soviet production. In projecting future growth of the U.S. economy, certain critical indicators of the demand for additional output are studied as a basis of forecasts. For the Soviet projection, certain supply indicators of the relative backwardness or modernization of critical economic constraints might be appropriate for estimating likely future levels of output. The following are among the economic indicators of backwardness which modernization of the Soviet economy will effect:

1. Efficiency in energy production and utilization: Soviet fuel production, still largely based on low quality coal and peat, is not representative either in terms of B.t.u. or fuel equivalent of comparable production in the West.⁶³ Also the total energy supply does not provide fuel inputs of comparable thermo-efficiency to Western counterparts. Compare for example the power provided by a fuel equivalent of coal and diesel fuel in powering a locomotive. Likewise examine the economic efficiency of coal and natural gas in electric power generation.

2. Industrial labor productivity: Soviet industrial labor productivity is not only low by Western standards but varies more from the most to least productive branch. Most recent studies indicate an average industrial productivity per man-hour about one-third that of comparable U.S. measurements.⁶⁴ The structural change, e.g. from coal mining to petroleum and natural gas, will substantially improve the Soviet productivity, but much more modernization is possible and necessary before U.S. technological levels are attained.⁶⁵

3. Production of nongrain agricultural products: Soviet agricultural production, preponderantly grain for consumption by the populace in the form of bread, is not comparable to production of corn to be ultimately consumed as pork or beef.

By using the above indicators of economic modernization we might conclude that the significant progress expected in the 7-year plan is not being made. A basic shift in energy production and consumption from coal to petroleum and natural gas on the railroads and in electric power stations is improving the efficiency of energy utilization, but not as rapidly as planned. Improvement in labor productivity per man-hour and certainly per man-week (in view of the shortening work week) has not been increasing as planned. Moreover, the retardation in Soviet economic growth in 1961 may be largely attributed to this labor constraint. Finally agricultural yield in nongrain production, e.g. meat, milk, and eggs production, has either stayed relatively constant or fallen. The production of meat of 8.75 and 8.9 million tons in 1959 and 1961, respectively should be compared with

⁶³ Supra, table 1.

⁶⁴ See paper by Gertrude Schroeder in the present study; Nicolas Spulber, "The Soviet Economy Structure, Principles, and Problems," New York: W. W. Norton & Co., 1962.

⁶⁵ David Granick, "On Patterns of Technological Choice in Soviet Industry," *American Economic Review*, May 1962, pp. 149-157.

a 16 million ton target for 1965. Little wonder that meat prices were raised with such a shortfall in meat production.⁶⁶

The reason for the particularly dismal showing in Soviet agriculture may be placed, in large part, on a shift in investment policy. It may have been that the investment funds on a continuing basis necessary to bring about significant improvements in agriculture were not fully appreciated by Premier Khrushchev in 1958-59 when it appeared that more resources were to be directed to that much neglected sector. In any event, the resources necessary were not made available to the Soviet countryside; in fact the share of total Soviet capital investment allocated to agriculture has been falling.⁶⁷

At the same time, there is one continuing advantage in backwardness—the tried and tested techniques of the more advanced economies may be adopted and related to the unique Soviet conditions without the same investment in research and development that was required for the initial developments. The utilization of borrowed Western technology, whether it be in animal husbandry, oil pipeline operation, or a chemical industry development, becomes more expensive to adapt the closer the Soviet level of technology comes to that of the West. Continued use of tested techniques and importation of technologically advanced equipment for reproduction in Soviet plants is less costly than working abreast with the world level of technology and investing in the necessary experimental and development work required to successfully introduce new models in new technical areas. The more the Soviets overcome their backwardness and modernize, the more expensive the research and development process becomes. As their priorities may continue to favor certain leading sectors, their gains from the West may be sharply reduced only in certain preferred sectors.

Still the West continues to provide the Soviet Union with a sort of *svi generis* foreign aid in the critical trade in industrial products of scarce supply and advanced design.⁶⁸ Without such imports as oil pipeline assemblies, chemical equipment, and diesel locomotives, necessary equipment probably would not be available to Soviet industry in the desired plan period, even with a substantial shift in industrial funding. So modernization must include the cost of potential technological independence. Moreover, selective trade restrictions on Western trade with the Soviet Union might materially raise the costs of such modernization programs which rely heavily on Western imports. This sort of coordinated Western action might further complicate the difficult policy problems on the tempo of modernization in Soviet industry, transportation, and agriculture, and provide a constraint on some foreign adventures.

The Claims of Domestic Living Standards.—The economic needs of expanding Soviet power must also increasingly be balanced against the pressing needs of the Soviet consumers. There is considerable evidence that Premier Khrushchev and the other top party leaders seriously intend to make substantial improvements in the Soviet living standards. In fact, improvements have been made during the last decade. Whether the future programs are allowed to conflict

⁶⁶ *Pravda*, Jan. 23, 1962 and Central Statistical Agency, *Narodnoe Khoziaistvo SSSR V 1960 Godu* (National Economy of the U.S.S.R. in 1960) Moscow: Gosplan, 1961, p. 378.

⁶⁷ Central Statistical Agency, *Selskoe Khoziaistvo, SSSR* (Agricultural Economy, U.S.S.R.), Moscow, 1960, p. 537.

⁶⁸ Joint Economic Committee, "Foreign Economic Policy in the 1960's," Washington: GPO, 1962.

with power augmentation is, of course, quite another matter. While improvement in the supply of food and clothing would probably be made with the least serious shift in resource allocation, the necessary improvements in Soviet agriculture do not appear to be occurring, as noted above.⁶⁹ Moreover, if such improvements in the production of food and fiber were forthcoming, improved trading channels for handling the increased supplies of food and clothing would be necessary. These expanding distribution facilities would probably require greatly increased expenditures.⁷⁰

The Soviet consumer exerts little political leverage on the Soviet leadership in the way we are accustomed to expect in the West. At the same time, there are other elements which tend to encourage programs for improving standards of living. In the long run, an incentive system based on rising living standards may even come to be accepted as the more efficient way of operating the Soviet economy. The U.S.S.R. also can increase its influence in the world through the example of an economy providing substantial improvements in its standard of living, thus, in effect, making living standards a part of the power augmentation effort. To receive priority, these gains from rising living standards must be valued highly. However, substantial improvements in Soviet living standards require sacrifices elsewhere in power augmentation and economic efficiency programs.⁷¹ Moreover, there is some reservation of just how much the leadership wants consumer goods supply that imperil political control. Food is fine, but personal autos might give the populace too much mobility. Still the recent resort to violence over meat and butter prices may be influential in changing the course of Soviet economic policy. It may be recalled that the revolt of peasant recruits at the Kronstadt Naval Station in 1921 is credited as the impetus for the new economic policy (NEP) period in 1921.

Economic Analysis as a Guide to Soviet Strategy.—Each year the Soviet leaders approve an annual plan for the economy. These approved plans, to a large extent, contain their decisions on the strategic choices in alternative resource allocation open to them.⁷² The decisions in the areas indicated in the agenda discussed above may be clarified by the proceedings of Soviet Party meetings, the speeches of Premier Khrushchev, and other utterances of the top leadership. However, perhaps more revealing indication of the decisions made will come from an analysis of the actual economic plans and performance of the Soviet economy. In the annual economic plans, more than in the longer 5-year plans, the actual priorities and decisions on the options open to the Soviet leadership may be clarified. In many cases, due to the effectiveness of the Soviet secrecy arrangements, only part of the picture will be revealed. However, major decisions such as these are difficult to conceal entirely and the general lines of development will probably become clear in time. What is to be produced and how the funds for investment are allocated will largely determine the alternative in allocation policy open to the Soviet

⁶⁹ *Supra*, pp. 52 f.

⁷⁰ L. Herman, "Costs That Aren't Shown on the Soviet Balance Sheet," *The Reporter*, Mar. 2, 1961, pp. 32-35; J. Hardt, "The Impact of the Disarmament Process in the U.S.S.R.," *Daedalus*, forthcoming.

⁷¹ Actually the 20-year program (1960-80) is quite unimpressive in what is promised the consumer—free bread and free rent do not necessitate changes in the Soviet resource allocation pattern. Rush V. Green-slade, "Forward to Communism?," *Problems of Communism*, XI, (January-February, 1962), pp. 36-42.

⁷² S. Strumilin, "On the Problem of Optional Proportions," *Planovoe Khoziazstvo* No. 6, 1962, pp. 3-17.

leaders. These in turn will provide an economic blueprint for their strategic or policy thinking.

Soviet economists like to note the attainment of a new stage or epoch in the economic competition with the West.⁷³ What they have in mind is that they may now look forward to overtaking and surpassing the leading capitalistic country in some meaningful way. Actually the two major contending powers—the United States and the Soviet Union—do appear to be in a new phase of their competition. The Soviets may now be forced to settle down to a long hard pull in keeping up with the United States in the many phases of the international struggle. The West, for its part, has not disintegrated—the European Economic Community, the Common Market, is distressingly vital and the United States has stepped up its military, space, and foreign economic activities. Easy progress on the Soviet roads to success has been greatly complicated. The simple Stalinist days of concentration of resources for a sharply limited group of priority consumers has given way to the complex task of satisfying multiple claimants with rapidly expanding requirements. The Soviets may find it increasingly hard to develop plans to keep up simultaneously with the West in the international power struggle while modernizing their economy and raising their living standards. When the West chooses to compete with the Soviet bloc, the field becomes wide almost by definition. Running at a stepped up pace along a wide front is a new experience for the Kremlin and may require an accommodation that they are not geared to make.

⁷³ Y. Ioffe, Y. Kormnov, and Y. Pokataev, "The New Stage of World Economic Competition of the Two World Systems", *Planovoe Khoziaistvo* No. 8, August 1962, pp. 89-96.

THE CLAIM OF THE
SOVIET MILITARY ESTABLISHMENT

BY

J. G. GODAIRE

THE CLAIM OF THE SOVIET MILITARY ESTABLISHMENT

The claim of the Soviet military establishment on the economic resources of the U.S.S.R. is readily ascertainable only within rather broad limits from open sources of information. Not only is the Western scholar in this position, but so too are the vast majority of the Soviet citizenry, the intelligentsia, and the bureaucracy. Such circumstances exist for reasons which are not wholly independent—a heritage of pathologic secretiveness, a neofeudalistic regime, and doctrinaire techniques for accounting and economic analysis.

THE STATE BUDGET

Each year the Soviet Government promulgates what is essentially a consolidated cash budget covering the planned expenditures for all the national, regional, and local governments of the U.S.S.R. These expenditures are grouped under five general headings: "National Economy," "Social-Cultural Measures," "Defense," "Administration," and a substantial unspecified remainder, "Other". In table 1, the latest published Soviet information on actual expenditures (for 1961) has been set out to indicate the magnitudes involved. As the table demonstrates, almost 45 percent of total expenditures is accounted for under the heading National Economy. The reason is quite simple. The Soviet Government owns, outright, virtually all of Soviet industry and a large proportion of Soviet agriculture. In general, some two-thirds of the funds expended under this heading represents the year's infusion of new state capital for Soviet industry and agriculture. Thus, in the U.S.S.R., expenditures "for the national economy" include the equivalent of the year's aggregate long-term loans and new capital stock issues of private firms in a Western country.

TABLE 1.—*Soviet state budget, 1961*

	Billion current rubles	Percent
National economy.....	32.6	43
Social-cultural measures.....	27.2	36
Defense.....	11.6	15
Administration.....	1.1	1
Other.....	3.8	5
Total.....	76.3	100

Source: U.S.S.R., Central Statistical Administration. *Narodnoye khozyaystvo, SSSR v 1961 godu* (The National Economy of the U.S.S.R. in 1961), Moscow, 1962, p. 761.

Expenditures under the heading Social-Cultural Measures account for an additional 35 percent of Soviet budgetary expenditures, as shown in table 1. Here, too, the scope of activity covered is very much broader than the equivalent entries in the budgets of Western governments. Again, the Soviet state budget consolidates all the equivalent activities undertaken by state and local governments—

education, research, public health, welfare, and pensions. Further, the state budget includes funds for the equivalent of much private activity in the West. The equivalent of private schools and hospitals, private insurance companies, private research foundations, and an independent press or radio and television industry do not exist in the U.S.S.R., and all these activities are provided for, to some degree by the social-cultural outlays of the budget.

DEFENSE EXPENDITURES

The bulk of the remainder of Soviet budgetary expenditures is made under the heading Defense, as shown in table 1. The relationship of this amount to total budget expenditures (15 percent) is a favorite means that the U.S.S.R. uses for showing how peace-loving the government is. For example, the 1960 Soviet statistical yearbook¹ presents the following statements of expenditures for defense as a percentage of total expenditures:

1940-----	32.6	|	1958-----	14.6	|	1960-----	12.7
1955-----	19.9	|	1959-----	13.3	|		

The facts are that in the 1940-55 interval this percentage got as low as 18 in 1947-48 and crept up to 23 in 1952-53. Since the revision of the Soviet defense budget, announced in mid-1961, the trend has shifted. The 1961 defense expenditures were 15 percent and the 1962 plan calls for 17 percent of total expenditures to be devoted to defense.

Obviously, these low percentages may be useful in international propaganda, but it is quite clear that the swollen scope of the total Soviet budget, relative to its typical Western counterpart, renders the comparison completely meaningless. However, such lack of meaning is minor when compared with the very real probability that the scope of the activities financed by the Soviet defense appropriation is considerably smaller than that covered by Western defense appropriations.²

The scope of the Soviet expenditure account Defense is a moot point. Certainly, those definitions which are offered in Soviet technical literature do nothing to resolve the question. For example, the defense category is stated in a Soviet textbook to include "the monetary and material allowances for armed force personnel, payment for supplies and repair of combat equipment, maintenance of military institutions and schools, military construction, and *other expenditures included* in the estimate of the Ministry of Defense of the U.S.S.R." [emphasis supplied].³ As the italic above are intended to emphasize, this sort of definition tends to say that defense is defense and thus to raise suspicions. In the Russian, the formulation of "supplies and repair of combat equipment" is equivocal with respect to whether or not procurement of major equipment is covered. "Military construction" is a term which is more likely to bespeak earthworks than facilities such as airfields, training camps, battacks, depots, and missile sites.

¹ U.S.S.R., Central Statistical Administration. *Narodnoye khozyaystvo SSSR v 1960 godu* (The National Economy of the U.S.S.R. in 1960), Moscow, 1961, p. 845.

² Outright falsification on the part of the U.S.S.R. is not implied here, although that possibility exists. The point of view taken here is that in its pronouncements on defense budgets the Soviet Government, in general, gives information which is not basically untrue. The problem is that it is usually impossible to be sure in what sense a statement is true because of very great deficiencies in the relevant definitions of terms and of the scope of categories.

³ Dymshits, I. A., et al. *Finansy i kredit SSSR* (Finance and Credit in the U.S.S.R.), Moscow, 1956, p. 223.

Moreover, the budget, as a whole, reinforces these suspicions. The constituent details of the defense "line" have not been published. The reported allocation for scientific research, largely under "Social-Cultural Measures," has had large annual increases, with the 1962 planned level standing at 400 percent of the 1953 level. There are institutional reasons for believing that this allocation encompasses a considerable amount of research and development for complex military equipment such as aircraft and missiles and for nuclear energy and space activities. The published details for the constituent activities under the heading "National Economy" consistently fail to explain the total allocation, and the unexplained portion has at least tripled since 1950, whereas the total budget has only doubled during that time. Finally, the general expenditures residual category, "Other," at 5 to 10 percent of the total, has continued to exist over the period without any really adequate explanation for its purpose.

Table 2 has been prepared to illustrate the problem. This table represents a collection of actual or implied statements made by the U.S.S.R. covering the period from 1950 to date, with some interpolations to fill in certain gaps. In several of the years, more detailed data which would permit some refining were reported, but in the interest of obtaining a series with at least superficial consistency over the time period, these few details were not taken into account in preparing the table.

TABLE 2.—Selected Soviet published information of possible defense significance, 1950-62

[Billion current rubles ¹]

Year	Published defense expenditures	Science ²	National economy residual ³	General expenditure residual ⁴ ⁵
1950	8.3	0.9	3.0	5.0
1951	9.3	⁶ (0.9)	⁷ 4.8	4.2
1952	10.9	(1.0)	⁸ 5.1	4.4
1953	10.5	1.1	(5.2)	4.0
1954	⁹ 10.0	(1.3)	(5.3)	4.5
1955	10.7	(1.5)	5.3	4.7
1956	9.7	1.7	4.7	5.6
1957	9.1	(2.1)	6.2	6.3
1958	9.4	2.4	8.9	5.0
1959	9.4	2.8	11.3	5.9
1960	9.3	3.3	11.3	6.2
1961	11.6	3.8	⁷ 10.8	6.3
1962	⁸ 13.4	⁶ 4.4	⁸ 10.1	4.7

¹ Converted where necessary to new rubles at the rate of 1 new ruble for 10 old rubles.

² Includes funds of enterprises. In this series, interpolations were made between the data given in the official Soviet economic handbook series rather than use earlier data from other sources. This was deemed necessary in the interest of obtaining a series which is comparable over time in view of the fact that apparently the scope of this account was changed by the Soviets.

³ Includes allocations for trade and the municipal economy.

⁴ Includes the contingency funds of the Council of Ministers and the loan service.

⁵ Planned; the other numerical data refer to reported actual expenditures.

⁶ The parentheses indicate that the data within them represent interpolations.

⁷ The published information for this heading for 1961 implied residual actual expenditures of 13.6 billion rubles, from which 2.8 billion rubles (the 1960 actual figure) was subtracted to remove the allocation for transportation and communications in order to derive an entry which is reasonably comparable with the other entries in the column.

Generally, reported actual expenditures are presented if they were to be found. Otherwise, reported planned expenditures or interpolations were used. One exception to this rule is to be found in the general expenditure residual "Other." For that heading, planned expenditures were presented exclusively, because no complete set of implied announcements referring to detailed actual expenditures could

be found, and the manipulation of a significant portion of this residual (the contingency fund of the Council of Ministers) makes planned expenditures and actual expenditures inconsistent by definition.

The column covering published defense expenditures indicates the single defense "line" allocation referred to and commented on above. The column covering science includes not only the budgetary allocations but also the allocations from enterprise funds. According to published Soviet material, in 1960 this allocation would seem to cover the financing of some 3,500 research institutes and scientific and experimental stations, employing some 200,000 scientists. Activities supported by this allocation appear to cover a large portion of all research and development, civilian and military (and space), for the entire country. This allocation, however, would not cover all the activities encompassed by the U.S. concept of research, development, test, and evaluation (R.D.T. & E.). Substantial end-product development, test, and evaluation of national significance (considerable amounts of which are undoubtedly military and space) seem to be covered elsewhere in the budget.

The national economy residual and the general expenditures residual are also of interest. Because of the possibility that substantial activities of defense (and space) significance may be financed from these portions of the budget, these two residuals have, accordingly, been entered in table 2. These two residuals, as derived, cover some items not of military significance. The national economy residual includes allocations for financing trade, agricultural procurement, and municipal services. Similarly, the general expenditure residual, as compiled, includes the service of the national debt⁵ and the planned contingency fund of the Council of Ministers. Most of these contingency funds eventually show up as actual expenditures for financing activities under the heading, "National Economy". However, these residuals are not without interest as possibly financing activities of military (and space) significance. It is conceivable that these residuals may cover some or all of the following:

The development, test, and evaluation of military and space hardware and systems;

The procurement of some, if not most, major military and space equipment;

Strategic stockpiles of other military materiel, such as petroleum products, food, and so forth;

The construction of military base facilities;

The support of militarized security forces;

Some intelligence activities; and

Some civil defense activities.

EVALUATION

Table 2 has deliberately not been summed. Its purpose is to show the fact and general location of the considerable uncertainties which, at 20 to 30 billion rubles per year, account for about 40 percent of annual Soviet budgetary expenditures fairly consistently.

⁵ It should be noted that Mr. Khrushchev seems to be inclined to regard the U.S. debt service as a defense item.

To achieve what is probably a better appreciation of the range of uncertainty, the data in table 2 can be adjusted in gross terms to remove the most plausible overstatements. The results of such an adjustment are summed with the published defense allocations and shown graphically for 1950-62 as the "Possible Total Defense and Space Allocation" in the accompanying charts, figures 1 and 2. In the charts, these sums are also compared with the published defense allocation to indicate the range of uncertainty with which, in a sense, the Soviet Government confronts the world and the Soviet people.

FIGURE 1.—*Soviet Allowances to Defense and Space.*

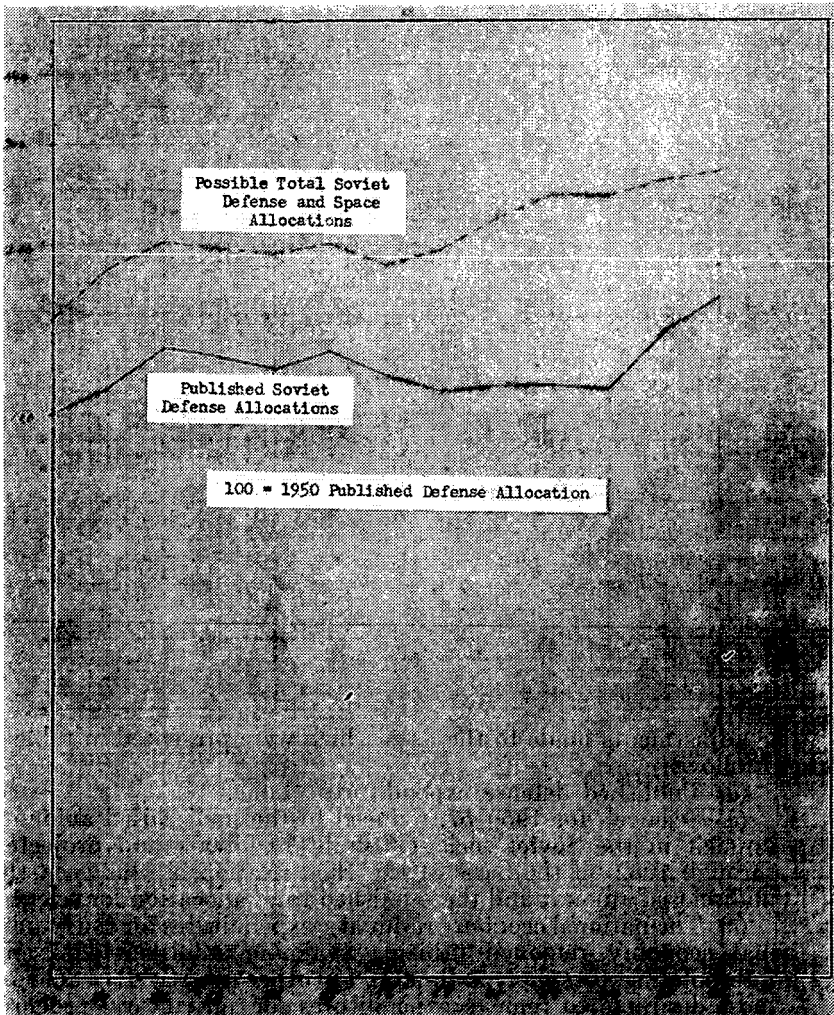
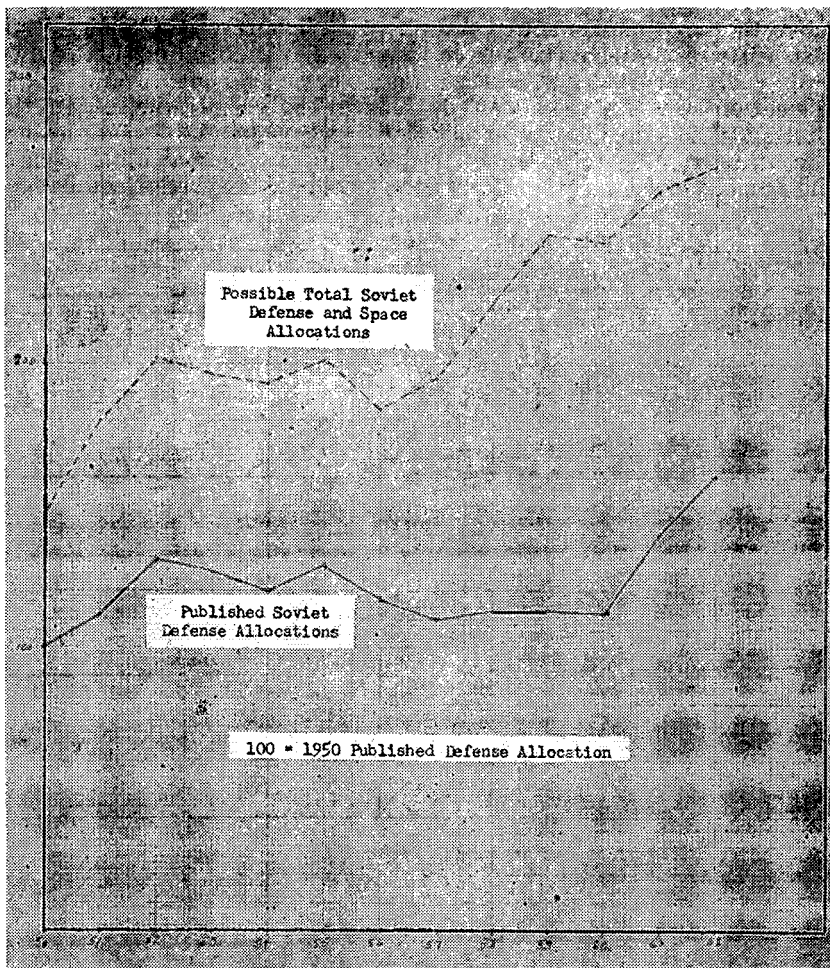


FIGURE 2.—*Soviet Allowances to Defense and Space.*

The adjustments made to the data which were presented in table 2 are as follows:

(a) Published defense expenditures—none.

(b) Science—for 1950–57, reduced to the undisclosed amounts implicit in the Soviet social-cultural⁶ handbook and projected through 1962 on the basis of the 1956 relationship between the undisclosed amount and the published total allocation for science.

(c) The national economy residual—expenditures for the municipal economy removed utilizing available published data and interpolating to supply estimates for other years. It would be most desirable to remove expenditures for agricultural procurement and trade as well. However, combination of the devaluation of the Soviet foreign trade ruble, the lack of information on

⁶ U.S.S.R., Ministerstvo Finansov. *Raskhody na sotsial'no-kul'turnyye meropriyatiya po gosudarstvennomu byudzhetu SSSR* (Expenditures for Social-Cultural Measures in the State Budget of the U.S.S.R.), Moscow, 1958.

expenditures for agricultural procurement, and possible accounting shifts between the two accounts makes it difficult to remove the influence of these accounts from the residual. As the result the amplitude of the movement of the "possible" series may well be overstated in the latter part of the 1950's and understated in the final years.

(d) The general budgetary residual—discounted by 75 percent in an attempt to remove in a gross way the planned contingency funds of the Council of Ministers (which appear as actual expenditures under other headings) and other miscellaneous items.

The purpose of figure 1 (which utilizes the arithmetic scale) is to show in *absolute* terms that over the period 1950–62 the amount of what one might term Soviet budgetary obfuscation has changed from time to time and has tended to increase until, perhaps, 1960, 1961, and 1962.

On the other hand, the purpose of figure 2 (which utilizes the logarithmic, or ratio scale) is to show in *relative* terms the behavior of the series over time and with respect to each other. What this presentation shows is that the two series, the possible total and the published total, tended to move about the same way during the period 1950–56, but that after 1956 the trends were quite different with published defense allocation quite flat during the period, 1956–60 and with the possible total the flatter during 1960–62. The figure also shows that the proportion of what was referred to above as Soviet budgetary obfuscation tended to increase through the period 1950–60 but that this tendency seems to have been reversed in 1961–62 when, as a result of Soviet accounting shifts, some of the expenditures previously carried under other headings in the budget were probably shifted to Defense.

In summary, the Soviet data suggest defense (and space) expenditures varying between 8 billion and 11 billion rubles in 1950 and 13 billion and 21 billion rubles in 1962. These values are only general orders of magnitude which probably bracket the truth. The data should be interpreted as suggesting nothing about year-to-year changes and very little about trend other than that Soviet expenditures on defense (including space) are perhaps half again as great today compared with the early 1950's. That Soviet defense expenditures fell off somewhat in the middle of the decade and have since risen is probable but cannot be considered to be established definitively herein when the inherent data difficulties involved in this analysis are considered.

THE CLAIM IN THE AGGREGATE

In Western concept, the appropriate measure of the claim of an end-use (consumption, investment, defense, etc.) on an economy in the aggregate is best measured in terms of a percentage of gross national product (GNP) at factor costs. In Soviet terms the closest appropriate equivalent measure is Soviet national income (SNI), which measure differs from the Western concept of national income. The conceptual differences as well as the Soviet attitude toward Western concepts are perhaps best illustrated by the following quotation:

U.S. statistics include in the production of the national income not only the material production but also the production of services, thereby artificially raising the volume of national income. * * * For purposes of comparison with the

U.S.S.R., the United States national income was recomputed by the methods used in Soviet statistics; i.e., without the income of the nonproductive branches.⁷

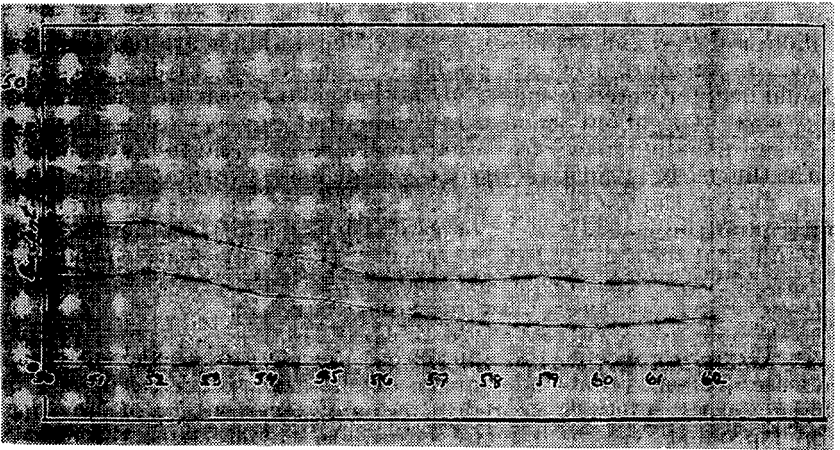
In short, Soviet national income (SNI) is considerably less broad in scope than seemingly equivalent Western concepts.⁸

If one compares the defense series developed above with Soviet national income, one conceivably is approximating the relative claim on economic resources as viewed by the Soviets despite the fact that to some extent this claim may be overstated in terms that would be deemed more appropriate in the West. Such a comparison is shown in figure 3 which indicates that in Soviet terms defense absorbed 15 to 25 percent of SNI in the early 1950's and have been absorbing 8 to 15 percent of SNI since 1956. Where within these ranges the actual claim lies and how the actual percentages change from year to year are not intended to be suggested by the figure. The most the figure can portray is that the defense claim in the Soviet Union is and has been a substantial one and that in all probability the claim was, in a statistical sense, relatively more burdensome during the early fifties than it has been since 1956.⁹

CLAIMS ON SPECIFIC RESOURCES

Given the difficulties involved in attempting to measure with any precision the claim of the Soviet military establishment on resources in aggregate terms, the measurement of claims on specific resources is even more difficult. It is the purpose of this section to establish a general appreciation of these claims historically—principally in terms of military manpower, and defense and space systems procurement.

FIGURE 3.—*Soviet Defense Claims Related to National Income (Soviet Concept)*



⁷ U.S.S.R., Central Statistical Administration, "Narodnoye khozyaystvo SSSR v 1960 godu" (The National Economy of the U.S.S.R. in 1960), Moscow, 1961, p. 901.

⁸ Ostensibly, in general terms, GNP less value added in the nonproductive (service) sector, less indirect taxes, subsidies, and capital consumption equals SNI. The interested reader will find a useful introduction to the conceptual and statistical problems involved in estimating Soviet national income both in terms of Soviet and Western concepts in Kaser, Michael C., "Estimating the Soviet National Income," the Economic Journal, volume LXVII, March 1957, pages 83-104. Since Kaser's article was published, the Soviet official handbooks have included the Soviet official estimates in absolute terms which permits one to approximate the values represented by the index numbers published for earlier years.

⁹ For a comparison of Soviet defense and Soviet GNP estimated in accordance with the Western concept see the Cohn article in this series. There, the author finds the 1960 defense claim on GNP to be of the order of 10 percent.

MANPOWER

Within recent years a variety of Soviet announcements permit the derivation of a crude measure of what the levels of active military manpower in the Soviet forces probably have been since 1950. The data and the derived series are presented in table 3, where it can be seen that the U.S.S.R. probably had (in man-year terms) over 4½ million men under arms in 1950, had increased this level to 5¾ million (or more?) during 1952-54, and had cut down to 3¼ million to 3½ million men by 1959-62. This series seems generally plausible in view of the probable influence of the Korean war during the early 1950's and the fact that the U.S.S.R. faced a sharply shrinking availability of conscripts by reason of the drastic reduction in the birth rate during 1942-45.

In table 3 the cost of this manpower is also computed, utilizing Mr. Khrushchev's remark that a reduction of 1.2 million men would result in a saving of 16 billion to 17 billion (old) rubles, implying an average cost of about 1,375 (new) rubles per man. It is assumed that the reference was to the personnel-related costs of these men, including pay, food, clothing, and other services. It is also further assumed that this cost factor is applicable over the period—that is to say that such

TABLE 3.—Soviet military manpower and its costs 1950-62

Year	Soviet published series (million men at beginning of year)	Derived series ¹		Cost ² (billion new rubles)
		Million men at beginning of year	Million man-years	
1948.....	2.87	2.9	-----	-----
1949.....	(3)	3.6	-----	-----
1950.....	(3)	4.3	4.7	6.5
1951.....	(2)	5.0	5.4	7.4
1952.....	(3)	5.8	5.8	8.0
1953.....	(3)	5.8	5.8	8.0
1954.....	(3)	5.8	5.8	8.0
1955.....	5.76	5.8	5.4	7.4
1956.....	5.12	5.1	4.8	6.6
1957.....	(3)	4.5	4.2	5.8
1958.....	3.92	3.9	3.8	5.2
1959.....	3.62	3.6	3.6	5.0
1960.....	3.62	3.6	3.3	4.5
1961.....	(3)	3.0	3.3	4.5
1962.....	(4)	3.0	3.3	4.5

Sources: The data in the column headed "Soviet published series" represents an amalgamation from Mr. Khrushchev's statement of Jan. 14, 1960, and the series of previous announcements of reductions in the Soviet armed forces.

¹ In deriving the series for manpower levels at the beginning of the year, the published Soviet levels were used if available. For 1952 the level of 5.8 million men (the 1955 level) was assigned. Mr. Khrushchev stated that this level had been achieved "by 1955." Because he was shying away so obviously from the period 1950-54, it seems equally obvious that the Soviet forces were at quite high levels of manpower strength for some considerable time before 1955, and the beginning of 1952 was arbitrarily selected as equal in level to the beginning of 1955 to reflect this situation in a general way. The levels for the beginning of the various intervening years were obtained by interpolation. For the levels taken for 1961 and 1962, see footnote 2 below.

To obtain the derived series in terms of man-years the midpoints between the series in terms of the levels at the beginning of the year were taken as representative of the average man-years for each particular year. For the level taken for 1961 and 1962, see footnote 2 below.

² Computed on the basis of 16,500,000,000 (old) rubles (midpoint of Mr. Khrushchev's 16,000,000,000 to 17,000,000,000 "saving") for 1,200,000 men converted at the rate of 1 new ruble for 10 old rubles—resultant: 1,375 rubles per man.

³ Not available.

⁴ Originally, according to the announcement of Jan. 14, 1960, the U.S.S.R. planned to reduce its forces to 2,400,000 men by the end of 1961. This reduction, however, was halted, not later than mid-1961, and at least part of a class of conscripts was retained in service while a new class was inducted in the fall of 1961. In the derived series the level of 3,000,000 men was assigned arbitrarily for the beginning of 1961 and 3-plus million for 1962. In man-year terms the 1960 level (3,300,000) was contained arbitrarily for 1961 and 1962. No inference of a January 1963 military manpower projection on the part of the author should be drawn.

declining prices as were experienced were more or less made up for by increasing standards (more highly remunerated technicians, improved rations and quarters, and enhanced ancillary services and perquisites) and by some price increases.

DEFENSE AND SPACE SYSTEMS PROCUREMENT

Defense and space systems procurement here is defined to cover all defense and space expenditures not directly related to military personnel. As thus defined, the term covers not only traditional machinery and metal products but also such items as electronic equipment, construction and construction materials, petroleum products, research and development, propellants and explosives, and nuclear weapons. Although this concept of procurement seems superficially to lack analytical definiteness and clarity, it actually reflects a reality which has emerged during the past decade in military economics. No longer is it possible to think of the mix of defense procurement as munitions oriented primarily in the direction of large tonnages of steel, copper, aluminum, and other basic materials. Rather, the defense (and now the space) procurement mix tends more and more to reflect the increasing embodiment of technical manpower and sophisticated materials and components which themselves in turn embody a great deal of such manpower. Also, to a growing extent, the composition of this manpower is increasingly being weighted more heavily with the skilled and the professional. The emphasis has partly shifted away from bigger and heavier equipment to better, smaller (even miniature), but especially more precise, more reliable, and more efficient equipment. This phenomenon is particularly evident in the field of missiles and space but may also be found in high performance aircraft, in airborne equipment, and in equipment for special forces.

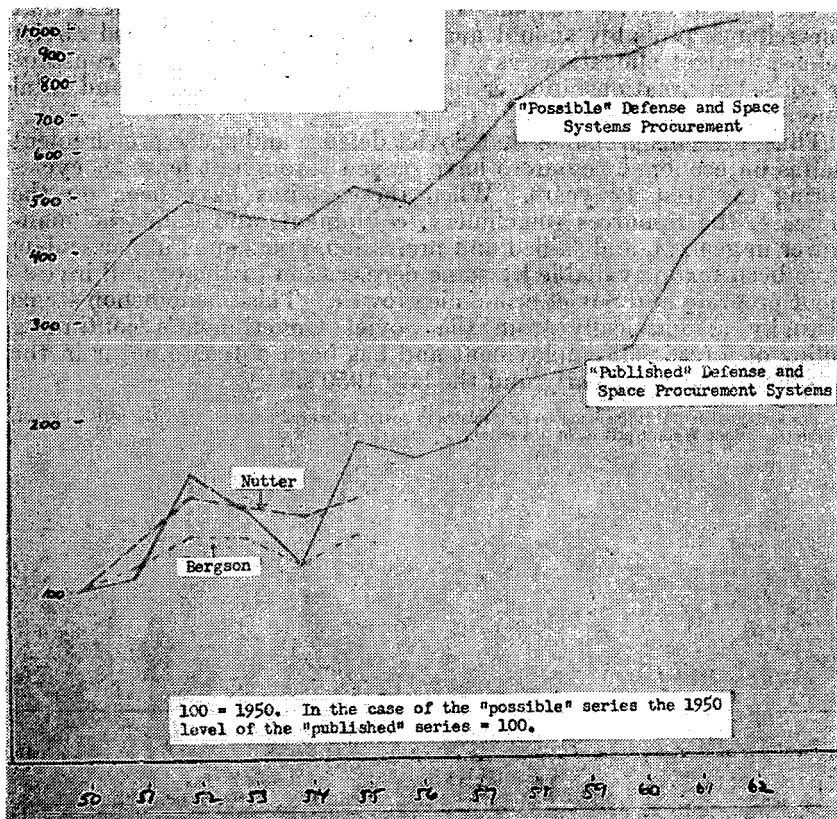
Thus, by subtracting the probable level of Soviet expenditures for military personnel derived as indicated in table 3 from the data underlying the indexes presented in figures 1 and 2, the patterns of Soviet procurement of defense and space systems (as defined above) can be derived. The indexes of the results of such procedure are shown in figure 4. The "published" defense and space systems procurement series is that derived from the published defense allocations; the "possible" defense and space systems procurement series is derived from the possible total allocation described earlier in this paper.

The purpose of figure 4 (ratio or logarithmic scale) is to show in relative terms the behavior of the series over time and with respect to each other and the rather substantial range of uncertainty engendered by Soviet pronouncements. What these series tend to show is that a considerable increase in the level of systems procurement occurred in the early 1950's, probably in connection with the Korean war. From then until 1956-57 the movement of the series was essentially sideways,¹⁰ perhaps owing to changing objectives coincident with the shiftings of the balance of power within the Soviet hierarchy following the death of Stalin. Beginning about 1957-58, the series suggest that there was another increase in the level of Soviet defense and space systems procurement which, in spite of the manpower cuts, undoubt-

¹⁰ The sharp dip in the "published" series in 1954 probably should be discounted to some considerable extent because the basic datum at that time is a plan announcement. The U.S.S.R. has carefully avoided giving out much information about that year, thus suggesting a considerable (upward) divergence of the actual performance from the plan.

edly was the inevitable consequence of decisions to proceed with sputniks, luniks, missiles, and other modern weapons.¹¹ Considerable doubt, however, must be entertained with respect to the timing or with respect to the extent of such increase in view of the real possibility that significant accounting shifts were also occurring at the same time.

FIGURE 4.—Soviet Defense and Space Systems Procurement.



In their scholarly works, Professors Bergson¹² and Nutter¹³ have dealt, for the period 1950–55, with essentially the same subject matter as is under consideration in this report. On methodological grounds, their findings¹⁴ as to trend are to be compared with what

¹¹ The data underlying these series and the implications of data on the Soviet 7-year (1959–65) and 20-year plans are of such quality that it would be foolhardiness to attempt to project future Soviet defense and space systems procurement therefrom.

¹² Bergson, Abram, "The Real National Income of Soviet Russia Since 1928," Cambridge, 1961, p. 364.

¹³ Nutter, Warren G., "The Growth of Industrial Production in the Soviet Union," Princeton, 1962, p. 319.

¹⁴ The specific reference at this juncture is to the Bergson and Nutter series in current rubles. Attempts to develop and apply a price index to the procurement series were eschewed on the grounds of practical if not conceptual impossibility. This author is aware of no way of developing a satisfactory price index for a rapidly shifting mix with new products introduced in rapid succession and with these "new" products rapidly becoming obsolescent and being phased out. On balance, it seems best to use current rubles arguing that the largest input, labor, is roughly at constant cost over considerable ranges of time because increased wages and increased productivity tend to cancel out most of the possible movement.

has been termed the "published" series in figure 4. Such a comparison reveals no fundamental disagreement as to the gross shape of events over the time period covered. The seeming discrepancies between the three series are probably more apparent than real and are due to variant assumptions as to definitions, levels of military manpower, and the like. It is worth while to note, however, that consideration of the possible application of other unexplained funds in the Soviet budget suggests sufficient uncertainty about the levels and trends of Soviet weapons and space systems procurement that sole reliance probably should not be placed on the published Soviet defense budget allocations as a benchmark. Nor should a constant or consistent relationship over time between the published and total defense budgets be assumed.

Thus, it seems probable that Soviet defense and space procurement claims on economic resources have passed through at least 1½ cycles during the past 12 years. When these claims have been on the increase, the resources (machinery, equipment, and industrial manpower in general, and skilled and professional personnel in particular) have been made available by some deceleration in the overall investment program and Soviet economic growth. This phenomenon stems virtually axiomatically from the Soviet Government's continuing policy of forced full employment and has been noted to occur in the episodes of both the early and the late 1950's.¹⁵

¹⁵ For a discussion of this phenomenon as it relates to Soviet industrial production for the period 1950-61, see the Greenstade-Wallace article, in this series.

RECENT DEVELOPMENTS IN SOVIET PLANNING

BY

HERBERT S. LEVINE

RECENT DEVELOPMENTS IN SOVIET PLANNING

INTRODUCTION

In May of 1957 the structure of industrial administration in the Soviet Union underwent a major reorganization. The administrative and planning bureaucracy, which at that time was organized along lines of branches of production, was overhauled and reorganized along lines of geographic regions. The main economic reasons given for the reform centered around the type of behavioral characteristics which the executives in the industrial ministries had developed. They were excessively concerned with the interests of their own ministries, in the process ignoring the overall interests of the national economy. In the context of the Soviet economy and Soviet economic planning, this led to the growth of barriers isolating the ministries from each other and thus to significant deficiencies in the use of economic resources. The new system, it was hoped, would eradicate these deficiencies.

Since the time of the reorganization, many changes have been introduced into the organization of industrial administration and planning. The purpose of this paper is to describe some of these changes. To some extent this paper serves to update the discussion of Soviet planning contained in the paper I contributed to the 1959 Joint Economic Committee study of the Soviet economy.¹ The concentration is again on short-term planning, the construction of the annual state plan for the development of the national economy; but we do not go into planning methodology in quite so much detail and while we do again emphasize the planning of materials allocations, our scope is somewhat broader.

We begin by describing some of the major changes made since 1957 in planning organizations and procedures. We then say a few words about the effects of these changes. And we conclude with a discussion of the relevance of current discussions in Soviet economic circles to our subject.

SOME MAJOR CHANGES SINCE 1957

The supreme authority in the institutional hierarchy of Soviet planning is the Communist Party as represented in its Presidium. The party Presidium, however, normally limits its role to the setting of major policy. The chief executive body is the Council of Ministers of the U.S.S.R., which has as one of its functional committees the State Planning Committee (Gosplan). In the actual process of plan construction, Gosplan plays the primary operational role; the direct participation of the Council of Ministers as such taking the form of the transmission of general policy objectives and the review and confirmation of the plan (at both an intermediate and final stage of its construction).

This was true before the reorganization and was not changed by it. But the line of command below the Gosplan level was changed.

Levine 59.

Before the reorganization it ran from Gosplan to the ministries, to the main administrations of the ministries, to the basic enterprises grouped by branch of production under the jurisdiction of individual ministries. This was changed by the reorganization to run from Gosplan to the councils of ministers of the 15 union Republics and the gosplans of these Republics, to the 100-odd councils of the national economy (sovnarkhozes), which administer almost all the enterprises within a given economic region, and finally to these enterprises.

Along with these changes in the lines of command, the structures of existing organizations were altered in relation to their new functions and new structures were created for the new organizations in relation to their functions. Moreover, the period since the reorganization has been replete with organizational changes as the Soviet regime attempts to adjust and improve its new planning machinery.

GOSPLAN

At the time of the reorganization, the functions of long-term and short-term planning were performed by two separate organizations—Gosplan (long term) and Gosekonomkomissiiia (short term). Under the reorganization, Gosekonomkomissiiia was abolished and Gosplan was made responsible for both long- and short-term planning. But, as has happened many times before,² this situation did not last for very long. In April 1960, a relatively new organization, Gosekonomsovet (State Scientific-Economic Council) was given the responsibility of long-term planning—20-year plans and 5–7-year plans—and Gosplan was restricted to matters concerned with the construction of the annual plans.³

Gosplan, however, plays a larger role than before within the sphere of short-term planning as a result of the reorganization. It now has many of the functions previously performed by the former ministries. In addition to the plans of the individual ministries, it now is also responsible, through its industrial branch departments, for the correct development of the separate branches of industry, i.e., it is responsible for the construction of branch output, investment, location, and technological plans. In view of these increased duties, Gosplan's industrial departments have grown substantially in importance. This increased importance was highlighted by Khrushchev in his *Theses* on the reorganization: “* * * the heads of the main departments of the State Planning Commission should be of the caliber of the present ministers.”⁴ The Council of Ministers has followed this principle in appointing the heads of these departments. Of 15 known department heads, 11 were formerly either ministers or deputy ministers.⁵ Furthermore, of the 12 members of Gosplan who, as of December 1959, were members of the Council of Ministers, 4 are known to have been department heads (and 2 others might have been).⁶

A major addition to the Gosplan staff was made with the transfer to it of the former ministerial glavsbyts (main administrations of

² For a short account of the postwar history of Gosplan, see Levine 59, p. 153.

³ See *Spravochnik III*, pp. 262–266. The State Scientific-Economic Council was formed in February 1959, initially to coordinate the work of various economic research organizations. It is not clear what functions it actually performed between then and April 1960 (see CIA 61, pp. 8, 13–14).

In addition to its responsibility for the construction of long-term plans, Gosekonomsovet is responsible for the development of planning methodology and tools of economic analysis. To aid in this, the Economic Research Institute of Gosplan has been transferred to it.

⁴ Khrushchev 57, p. 10.

⁵ From an unpublished study by Jerry Hough at the Russian Research Center, Harvard University, 1960.

⁶ Committee 60, p. 34.

sales). This was done at the time of the reorganization to preserve the existing economic ties and to secure the uninterrupted supply of materials to the economy during the early, transitional years. In line with these objectives, it appears that the functions the glavsbyts were to perform while part of Gosplan were identical to those they performed when they were departments of the industrial ministries:

The glavsbyts retained the right to give instructions (*ukazaniia*) to producing enterprises, local sales offices and bases, and other organizations on the procedure and sequence of shipping products, to make changes in the assortment of funded products and in the delivery plans of (centrally) planned products, to receive from the enterprises and local sales offices accounts on the fulfillment of the delivery plans of products to consumers.⁷

The mention here of the "right to give instructions" raises the important question of the extent of administrative powers given to Gosplan under the reorganization. It is usually argued that Gosplan was not given administrative powers over the economy and in this respect is different from and weaker than the former industrial ministries. To a certain extent this is correct. However, the former ministerial glavsbyts, when transferred to Gosplan, did retain their administrative powers directly over their subordinate enterprises (and this also is true of the sales administrations which succeeded them). The role they played in the final stage of plan construction—the issuing of detailed output assignments to the producing enterprises and the setting of enterprises' producer-consumer ties—has been preserved. To this extent Gosplan does possess some administrative powers.

In April 1958, at about the same time that the classifications of centrally distributed industrial materials were changed,⁸ the Gosplan glavsbyts were reorganized into 10 main administrations for inter-republican deliveries under Gosplan, each of which concerned itself with a broad product sector.⁹ Their functions were limited to planning the inter-republican deliveries of products, the exact list of which was to be determined by Gosplan,¹⁰ and to supervising the fulfillment of these deliveries by the sales organs of the union Republics. While they were given the right to issue orders (as were also the republican gosplans and sovnarkhozes) for the shipment of products, within the bounds of the production and sales plans (which were to be set in the "established manner") they were strictly forbidden from giving instructions directly to enterprises for changes in production plans. Furthermore, their network of local sales offices were given to the republican councils of ministers and the latter were to decide which of these should be under the jurisdiction of the republican gosplans and which should be given to the sovnarkhozes.

The intent of the April 1958 decree evidently was to decrease the power of Gosplan's former ministerial glavsbyts. But this decree was followed in a fairly short time by one which restored much of the lost

⁷ Gal'perin 57-1, p. 45.

⁸ See Levine 59, pp. 155-56. Under the new classification system, Gosplan will plan the distribution of and issue *fondy* for the acquisition of those products which are the most important for the national economy, those which are in the most serious short supply and those which are produced and used in several Republics.

⁹ The 10 main administrations for inter-republican deliveries cover the following sectors: metals, electro-technical products and implements, machinery, lumber and construction materials, coal, petroleum products, heavy machinery, defense and radio-technical products, raw materials for light industry, raw materials for the food processing industry (Spravochnik II, pp. 289-290).

¹⁰ Subsequently their number was raised to 13 with the addition of main administrations for chemicals, automotive and tractor products, and consumers' goods. (Fasoliak 61, p. 16; Koldomasov 61, pp. 14-15, speaks of 14 such main administrations.)

In addition, two further organizations have been added: Soivzglavkomplekt and Soivzglavkhimkomplekt, which are involved in planning the complete supply of materials and equipment to factories that are being constructed or reconstructed—the first being concerned with factories in leading branches in general, and the second with factories in the chemical industry (Koldomasov 61, p. 15).

power to the main administrations for interrepublican deliveries. In a decree issued in January 1959, it was stated that "the distribution of orders for the manufacture of products * * * is accomplished in a centralized way" by the main administrations of interrepublican deliveries "together with" the republican gosplans. Moreover, the decree takes pains to make it clear that the instructions of the main administrations of interrepublican deliveries of Gosplan U.S.S.R. are "obligatory for the supply and sales organs of the union Republics."¹⁰ Current writings on the subject describe the functions and powers of the main administrations of interrepublican deliveries again as being almost identical (*mutatis mutandis*) to those of the former ministerial sales administrations. In fact one recent source has added to their powers "the right to give orders to the republican supply and sales organs on the timing of their shipments of products to users."¹¹

STATE COMMITTEES

In addition to Gosplan's branch departments and main administrations for interrepublican deliveries, another group of central organizations which perform some of the functions formerly performed by the ministries is the group of state committees attached to the Council of Ministers. These state committees—about a dozen in number—are organized along branch of industry lines and are concerned with the long-term planning of their respective branches, the development of advanced technology, economic research, and the like. They do not appear to have any operational powers.¹²

REPUBLICAN GOSPLANS

While Gosplan was being altered, the gosplans of the union Republics were being thoroughly revamped. The new organization of industrial management along geographic lines required them to perform planning and coordinating functions they had not performed before, functions similar to those performed by Gosplan U.S.S.R. As a result, each republican gosplan has taken on the appearance of a miniature (and in the case of some—the R.S.F.S.R. Gosplan, for example—not so miniature) Gosplan U.S.S.R. The republican gosplans now have summary and industrial departments (coverage varies from Republic to Republic) and main administrations for supply and sales (*glavsnabsbyts*) organized by product groups. These *glavsnabsbyts* are to perform all the work connected with the construction of the supply plans for the *sovnarkhozes* located within the Republic, are to issue orders (*nariady*) for the production and distribution of those products produced and consumed within the given Republic, and are responsible for the construction and supervision of delivery plans of products which in the new classification system come under the aegis of the individual Republics.¹³

As with Gosplan U.S.S.R., the question of the "operational powers" enjoyed by the republican gosplans is somewhat blurred by the power given to the *glavsnabsbyts* to issue orders to subordinate enterprises for the production and distribution of specific products. However,

¹⁰ *Spravochnik II*, pp. 374-376.

¹¹ *Koldomasov 61*, p. 15.

¹² See *Zakon. Akty I*, pp. 65-87; *Spravochnik III*, p. 264; *Nove 62*, pp. 1, 15.

¹³ See *Koldomasov 59*, pp. 58-59; *Koldomasov 61*, p. 16.

this seems to be the sole operational power possessed by the republican gosplans:

The republican gosplans do not possess powers to issue orders and interfere in the administration of the economic regions. The gosplans must draft proposals and submit them for consideration to the councils of ministers of the Republics.¹⁴

ALL-REPUBLIC SOVNARKHOZES

Soon after the introduction of the sovnarkhoz system, complaints began to be heard about the administrative burden being placed upon the councils of ministers in the large, multi-sovnarkhoz Republics. Since they were the only republican bodies with the authority to give legal directives to the sovnarkhozes they were being overloaded with the settling of day-to-day problems arising from intersovnarkhoz relations. This situation was especially acute in the Russian Republic where there were 67 sovnarkhozes. Moreover, the republican gosplans were to some extent getting involved in operational work concerned with the relations among the individual sovnarkhozes of the Republic and this detracted from their planning work. Proposals were made that some independent organizations be set up to take care of these administrative problems. In June and July of 1960, all-Republic sovnarkhozes were established in the Russian Republic, the Ukraine, and Kazakhstan.¹⁵ The all-Republic sovnarkhozes were made directly subordinate to their respective republican councils of ministers, the local sovnarkhozes were made subordinate to both their republican council of ministers and their all-Republic sovnarkhoz, and the all-Republic sovnarkhozes were given the administrative power to suspend ordinances and regulations issued by the sovnarkhozes subordinate to them.¹⁶ At first it appeared that the all-Republic sovnarkhozes would be concerned solely with operational matters. The decree of the Party Central Committee and the Council of Ministers of the U.S.S.R., which recommended that they be established, stated that they should "concentrate their attention on ensuring the fulfillment of the national economic plans of the Republic and the coordination of the economic activity of the sovnarkhozes." But the decree went on to say, "The range of questions which should be decided by the [all-Republic] sovnarkhozes will be determined by the council of ministers of the union Republic."¹⁷ It seems that the councils of ministers decided to expand the scope of activity of the all-Republic sovnarkhozes beyond that of just operational matters and into the field of planning. This was clearly so in the Russian Republic, for in an article published in October 1960 it was stated:

The formation of the All-Russian Sovnarkhoz undoubtedly will lead to changes in the work of the RSFSR Gosplan on the construction of annual plans. It will permit the decrease of the number of plan indicators confirmed by the RSFSR Council of Ministers due to the transfer of part of these indicators to review and confirmation by the All-Russian and local sovnarkhozes. * * * Insofar as the function of materials supply will be carried out by the All-Russian Sovnarkhoz it is expedient to include targets for the production of only the most important

¹⁴ Frolov 53, p. 58.

¹⁵ Sovetskaia Rossiia, June 19, 1960; Kazakhstanskaia Pravda, June 24, 1960; Rabochaia Gazeta, July 7, 1960. Also, Uzbekistan abolished its four individual sovnarkhozes and established in their place one sovnarkhoz for the entire Republic (Pravda Vostoka, July 2, 1960).

¹⁶ Spravochnik III, pp. 316-317. It is interesting that as the situation now stands, only the republican council of ministers has the legal right to revoke ordinances and regulations of sovnarkhozes, while the all-Republic sovnarkhoz and the Council of Ministers of the U.S.S.R. can only suspend them (ibid.).

¹⁷ Zakon. Akty I, pp. 34-35, 59.

items, without detailed breakdowns by types and sorts, in the national economic plans confirmed by the RSFSR Council of Ministers. All further detailing of the plan should be done by the respective organs of supply and sale of the All-Russian Sovnarkhoz.¹⁸

Another source, published in 1961, lists a number of functions to be performed by the all-Republic sovnarkhozes in the planning and operation of the materials supply system. And it adds that to aid in their performance of these tasks, the all-Republic sovnarkhozes were given the main administrations of supply and sales (glavsnabsbyts) of individual products which were formerly attached to the republican gosplans. At the same time, the source lists a number of departments of consolidated balances and distribution plans as still being in the organizational structure of the republican gosplans.¹⁹ Consequently, it may be surmised, that the all-Republic sovnarkhozes work primarily on the supply problems of the individual industrial branches within each Republic, while the republican gosplans handle the problem of coordinating the different branches. However, even if this is accepted procedure, it does not answer all the questions of definition and distinction of duties among the republican councils of ministers, republican gosplans, and all-Republic sovnarkhozes which can and did arise as a result of the unusually vague instructions given by the government when the all-Republic sovnarkhozes were established. But more about such matters below.

TERRITORIAL COORDINATING AND PLANNING COUNCILS

It was clear at the time of the reorganization that almost all of the 105 economic-administrative regions were not of sufficient size or coverage to be economically rational. Although there may have been some immediate administrative advantages (and even more so, political advantages) in the form the economic regions took, they were too small for most economic purposes. The need then was to establish some system whereby the activities and plans of the sovnarkhozes lying within larger, economically more meaningful regions could be coordinated.

For many years regional planning had been conducted in a vague sort of way on the basis of 13 large or basic regions.²⁰ In July of 1960 a plan was put forth which established 16 basic regions and called for the setting up of councils to plan and coordinate the work of the sovnarkhozes within these regions (or at least within 14 of them).²¹ For a while it looked as if this plan would be put into immediate operation. In the planning forms to be used for the construction of the 1961 plan (distributed in September 1960) there was a section entitled "Basic Indicators by Economic Regions," and attached to the forms was an appendix on the new set of 16 large economic regions.²² Furthermore, when the structural frame of the All-Russian (RSFSR) Sovnarkhoz was announced in October 1960, it included 10 regional sections which presumably corresponded to the regions in the new scheme.²³ But talk of the scheme languished until May 1961 when it was announced that the new plan, in a slightly modified form, was

¹⁸ Maevskii 60, p. 37.

¹⁹ Fasoliak 61, pp. 15-17.

²⁰ Tokarev 61, pp. 32-33.

²¹ CIA 61, p. 15.

²² Kotov 60, p. 25.

²³ CIA 61, p. 13.

being put into operation. In the modified version, 17 large economic regions were established, with Byelorussia and Moldavia being separated from the rest and remaining as individual economic administrative regions. There are 10 regions in the RSFSR, each containing from 5 to 12 sovnarkhozes; 3 in the Ukraine, each containing from 3 to 6 sovnarkhozes; one in Kazakhstan, containing 9 sovnarkhozes; 1 covering the 3 sovnarkhozes in the 3 Baltic Republics; 1 covering the 3 sovnarkhozes in the 3 Transcaucasian Republics; and the last one covering the 4 sovnarkhozes in the 4 central Asian Republics. Each of the regions is to have a coordinating and planning council, except for the Kazakhstan region, where the Kazakhstan Gosplan is responsible for the planning and coordinating work.²⁴

The first sessions of the coordinating and planning councils in all 10 of the large economic regions of the RSFSR were held from November 1961 to January 1962.²⁵ As with many first sessions, these appear to have been large, general meetings which serve as an introduction to the real work which (hopefully) is to come. The major concern at the sessions was the overall development of the economy of each region, but in particular, "the introduction of specialization and cooperation of production and improvements in interbranch and interregional ties."²⁶ Full-time vice chairmen were appointed (and confirmed by republican party organs) for all 10 coordinating and planning councils, and a total membership of 740 for the regional councils in the RSFSR was approved, to include secretaries of province and territory party committees, regional government officials, chairmen of sovnarkhozes and planning commissions, directors, chief engineers, and designers of major enterprises and institutes, and scientists and other specialists.

THE SOVNARKHOZES

The sovnarkhoz is the organizational body which directly administers the enterprises, lying within a given economic region, in all economic matters including short-term planning.²⁷ The sovnarkhoz itself is a council consisting of a chairman, deputy chairman, and other members. It is served by a staff composed of a set of functional departments and a set of branch administrations. Among the functional departments normally there is a planning department and one concerned with materials supply and sales. However, each branch administration also has its own supply department. Although practice varies, it appears that usually the supply departments of the branch administrations are the ones directly involved in the construction of the annual plans, while the functional departments of supply and sales of the sovnarkhozes are responsible for overall supervisory and coordination work.²⁸

In a number of sovnarkhozes the supply and sales administration took over and consolidated the local supply offices, and then after the decree of April 1958 also some of the local sales offices. These supply

²⁴ *Ekonomicheskaja Gazeta*, May 28, 1961; CD/SP, XIII: 41, pp. 16-17; CIA-61, pp. 15-16.

²⁵ This paragraph is based upon the article by P. Lomako in *Pravda*, Feb. 23, 1962, as it appears in CD/SP, XIV:8, pp. 23-24.

²⁶ *Ibid.*

²⁷ Not all enterprises come under the jurisdiction of the sovnarkhozes—some are under the remaining ministries and some are under local governmental bodies. A 1961 source states that the sovnarkhozes account for three quarters of total industrial output, but this includes either all or at least the predom. part of each major industrial product (*Koldomasov* 61, p. 13).

²⁸ See Shein 57, p. 10; Dzhabarov 59. For an example of a case where the functional department of supply and sales of the sovnarkhoz (Zaporozhskii) itself performs the planning functions, see Petushkov 60.

and sales offices were operated as sales stores from which all the enterprises within the economic region could buy.²⁹

Under the original regulations the sovnarkhoz was given the right to redistribute materials, fuels, machinery and equipment, from one enterprise under its jurisdiction to another, when it deemed necessary, regardless of the branch affiliations of these enterprises.³⁰ In one of the most important changes in the powers of the sovnarkhoz to be made since the reorganization, this right was revoked in January 1959.³¹

PLAN CONSTRUCTION PROCEDURE

The process of annual plan construction has undergone repeated alterations since the reorganization, and it is not too clear what the actual situation is today. Indeed, two 1961 books on supply planning, submitted to the press less than a month apart, give somewhat conflicting descriptions of the prescribed sequence of plan construction.³² There is much concern about this. A member of the Ukrainian Gosplan recently attacked "the annual establishment of a special procedure and chronology for plan construction."³³ And the chairman of a sovnarkhoz complained that a firm schedule for plan construction has not been worked out yet, and he added: "One gets the impression that we are in an 'interregnum.'"³⁴

With this background in mind, let us try to construct at least an ideal picture of the current procedure of plan construction.³⁵

At the time of the reorganization, one of the important changes introduced was the initiation of annual plan construction at the enterprise itself on the basis of yearly subdivisions of the long-term (5- or 7-year) plan then in effect. This was soon modified and control figures sent down from above were reintroduced. At first they were restricted to supply limits on about 150 major product groups sent by Gosplan to the republican gosplans. But now it appears that the construction of control figures has taken on such importance that the planning process is divided into two levels.

On the first level, Gosplan in conjunction with the republican gosplans, on the basis of the long-term plan then in existence and the performance of the economy since the beginning of the plan, constructs material balances for 150-300 of the most important product groups. Using these balances, Gosplan then constructs preliminary output targets and supply limits addressed to the union Republics and all-union organizations (the remaining ministries and the state committees). The balances, targets, and limits are reviewed and confirmed by the Council of Ministers of the U.S.S.R. and output and supply control figures are then sent to the Republics and all-union organizations (approximately May 15-June 15 of the planning year). The Republics then allocate these control figures to the subordinate sovnarkhozes and the sovnarkhozes to the subordinate enterprises. This ends level one.

²⁹ See, e.g., Frolov 58, p. 49; Kalinin 58, p. 46.

³⁰ Direktivy IV, pp. 791, 796.

³¹ Spravochnik II, p. 376.

³² Koldomasov 61, pp. 29-38 and Fasoliak 61, pp. 35-41.

³³ Khilink 62, p. 45.

³⁴ CD/SP, XIV:14, p. 5.

³⁵ The major sources for our description of the planning chronology are: Kolodomasov 59, p. 60; Evenko 59 pp. 68-70; Kolodomasov 61, pp. 29-38; Fasoliak 61, pp. 35-41; and my personal interviews at the Economics Research Institute of Gosplan U.S.S.R. and the Moscow City Sovnarkhoz (Chairman and several members of the Supply and Sales Administration) in May and June 1959.

Level two begins with the stage wherein the plan makes its way up from enterprise to sovnarkhoz, to all-Republic sovnarkhoz (where applicable), to republican gosplan, and then to Gosplan U.S.S.R. (this is to be accomplished by August 1).

Gosplan U.S.S.R., as before, coordinates output plans and input requests and constructs an annual output plan and an annual materials supply plan in which it allocates *fondy* for about 800–1,000 materials,³⁶ to the individual Republics and all-union organizations. The Council of Ministers confirms the distribution plans for only the most important products; the rest are confirmed by Gosplan itself. The state plan is to be confirmed and the *fondy* sent out between September 1 and 15.

The republican gosplans then distribute their allotted *fondy* among their sovnarkhozes, and the sovnarkhozes among their subordinate enterprises. The enterprises construct lists of detailed input requirements within the limits of the *fondy* allotted them. The specified requisitions go up the line from sovnarkhoz to republican gosplan, which sends them to the main administrations for interrepublican deliveries of Gosplan U.S.S.R. This must be done not later than November 15. The main administrations of interrepublican deliveries "with the participation" of the republican gosplans then work out detailed output and delivery assignments for individual producing enterprises and establish enterprise-to-enterprise supply ties. These are embodied in a "plan for interrepublican deliveries and deliveries for all-union needs." This plan must be ready by December 1 and orders for the delivery of products sent out so that they are received by producing enterprises not later than December 15. These orders are then to serve as the basis for the conclusion of supply contracts signed by producing and consuming enterprises.³⁷

It is interesting to compare the times allowed for the various steps in the post- and pre-reorganization chronologies. Gosplan U.S.S.R. again has about a month and a half to work out a balanced plan. But now a total time of 3 months instead of the former 2 months is allowed for the distribution of *fondy* to the enterprises, the construction, consolidation, and presentation to the main administrations for interrepublican deliveries of specified, detailed requisitions and the assignment of output and delivery plans to the enterprises. One possible explanation for this is that it is more difficult for the republican gosplans to distribute its *fondy* than it was for the branch ministries, because of the multibranch nature of the economy of a Republic. Another possible explanation is that it is a recognition of the fact that not enough time was allowed in the preorganization

³⁶ This point has led to much confusion. The literature often states that on the order of 12,000–14,000 items are distributed by Gosplan. First of all, this includes all the items distributed by the main administrations for interrepublican deliveries, formerly distributed by the sales administrations of the ministries, and which are not included in the annual state plan for the development of the national economy. The number of products the industrial and coordinating departments of Gosplan work on is not clearly stated in the literature. However, Karpov 58, p. 19 gives a figure of 1,000 and I was told by members of Gosplan's Economic Research Institute in the spring of 1959 that for the 1960 plan Gosplan was responsible for coordinating the output and distribution of 800 items (this was the same year that Koldomasov 61, p. 24, states that 12,800 items were centrally distributed). Secondly, another source, Ivanov 61, p. 78, states that Gosplan was supposed to construct supply plans for 1961 again for about 12,800 items, but actually only did it for 6,000 items. This looks suspiciously like the 1,000-odd "funded" items and 5,000-odd "centrally planned" items from the years circa 1955–58.

³⁷ The emphasis now is on the need for direct contracts and contract negotiation between enterprises. This was stressed in Khrushchev's theses (Khrushchev 57, p. 11) and has been stressed by all writers since. However, there have been numerous complaints that the use of direct contracts is not sufficiently developed (see, e.g., Kulov 59, p. 27). One source states that the predominant form of contract is still the indirect or "general" contract, usually concluded between offices of the supply and sales administrations of the republican gosplan or of the sovnarkhozes (Khalifina 59, pp. 73, 75; see also Baranov 59, p. 41).

system for the difficult and time-consuming work involved in the final stage of plan construction.

Before leaving this question of the process of plan construction, a few words should be said about recent proposals to improve the continuity planning. At the time of the reorganization, and increasingly so since, there has been talk about the artificial break in the continuity of planning which was caused by the ways in which calendar periods were used in planning. The following is typical:

Comrade N. S. Khrushchev has indicated many times that a serious defect in planning is to be found in the situation whereby in going from one year to another and from 5-year period to 5-year period, we begin planning from scratch, as it were, whereas the processes of production and construction are continuous.³⁸

In 1957, Khrushchev called for the establishment of a planning procedure whereby the basic features of the plan for the following year would already be known in the current year and the basic features of the future 5-year plan, or at least of the early years, would be known in the current 5-year plan.³⁹ This was taken up in a decree issued in December 1960. The decree instructed Gosekonomsovet, Gosplan, and the republican councils of ministers to present in a month's time suggestions for improving planning procedures, with the aim that—in drawing up annual plans, there should simultaneously be drawn up the principal targets of economic development for the last year of the current 5-year period so as to have a continuously operating 5-year plan.⁴⁰

This issue of *Planovoe Khoziaistvo* contains 48 pages on the conference, including 2 papers; 14 pages of summaries of discussions; and 10 pages of the formal recommendations of the conference.

In March 1961 a conference on planning methodology was held under the auspices of Gosplan. The conference recommended the following system of plans to achieve continuity in planning:⁴¹

1. General long-range plans of 15-20 years with subdivisions by 5-year periods;
2. Long-term 5-year plans with annual subdivisions;
3. Continuously operating 5-year plans;
4. Annual plans with control figures for the following year.

The last recommendation is to be accomplished in the following manner:⁴²

On the basis of the 5-year plan, annual plans covering the entire range of indicators will be constructed each year at all levels of planning. Simultaneously, control figures covering volume of output of basic products, capital investment, and the introduction of new productive capacities will be established for the following year. The annual plans and control figures will be confirmed and brought down to the level of the enterprises in the established manner.

The construction of these control figures makes it possible to alter the chronology of plan construction, once again starting the process at the enterprise level:⁴³

The enterprises on the basis of the control figures and new possibilities which have developed will present their projects of the annual plans and control figures to the sovnrarkhozes and local planning organs, which will consolidate them and bring them to the attention of the republican gosplans.

³⁸ *Planovoe Khoziaistvo*, 1961:5, p. 39. This phrase: "from scratch, as it were" (*Kak by zanovo*) is repeated practically every time the subject is mentioned—to the point where it appears it is almost official Moscowese.

³⁹ *Ibid.*, p. 40.

⁴⁰ *Spravochnik*, III, pp. 324-325. This means that when drawing up the plan for 1963, the principal targets for 1967 should also be drawn up.

⁴¹ *Planovoe Khoziaistvo*, 1961:5, p. 40.

⁴² *Ibid.*

⁴³ *Ibid.*

There is evidence that the recommendations of the conference have not as yet been carried out.⁴⁴ It is to be expected that the discussions will continue. Many points remain unsettled. The difficulties of constructing, every year, meaningful continuously operating 5-year plans are manifest. Furthermore, the relationship between the continuously operating 5-year plans and the "normal" 5-year plan is not clear.

PROBLEMS

This is not the place to attempt an exhaustive analysis of the effects of the reorganization and the numerous changes since then on Soviet planning. But perhaps a few words can be said especially in regard to the planning of material supplies.

A number of the improvements hoped for have, in varying degrees, been achieved. Yet the achievement of these improvements has not been uniform in all economic regions. In many instances, some regions have achieved improvements, while others have either not improved or have even retrogressed.

One of the improvements mentioned most frequently is the closer connections the enterprises now have with their immediate superiors. Formerly, these superiors (in the branch *glavk*) were usually located in Moscow, but they are now in the given economic region, and thus the myriad decisions which have to be made at this level during the construction of the plan can be made much more easily and quickly than before.

There have been reports of more rational supply lines being established, both in the matter of assigning closer suppliers to consuming enterprises and in the matter of reducing the number of different suppliers serving a single consumer. On balance there seems to have been an improvement in specialization and cooperation in the supply of parts and semifabricates. But also claims are heard that there is not enough specialization, that prereorganization irrational cooperative ties are maintained, or, on the other hand, that there is too much specialization.

Certain improvements have been achieved in the maneuvering of materials within an economic region. In a number of *sovnarkhozes*, the former local supply bases have been consolidated and transformed into local stores specializing in a given type of material and serving the needs of all the enterprises in the region. This has resulted in more efficient selling and warehousing operation (economies of scale) and better use of transportation facilities. However, there are also complaints that the development of consolidated local supply stores is not moving ahead rapidly enough and as a result enterprises are still inflating their orders in order to get direct (transit) deliveries.

Perhaps 5 years is too short a time in which to expect the eradication of many of the major weaknesses of short-term planning. Nevertheless, it is noteworthy how many of these shortcomings continue in the postreorganization period. Complaints about unrealistic, excessively tight plans are still heard; the annual plan is still completed after the beginning of the planned year; and charges of excessive centralization, bureaucratic duplication, and departmentalism are still made. Let us look further into these last three.

⁴⁴ See *Khluik* 62, pp. 46-47.

1. *Excessive centralization.*—Despite the fact that the eradication of the excessive centralization of planning was one of the primary aims of the reorganization, it appears that some of the most essential features of this excessive centralization have not only remained but in some ways have even been intensified. All of the central supply planning work is now concentrated in the U.S.S.R. Gosplan. It is not only responsible for the construction of the state plan and state supply plan but also, through its main administrations for interrepublican deliveries, for the assignment of detailed production and delivery orders directly to the producing enterprises. Due to the consolidation of all this work within its domain, Gosplan now issues, or at least is supposed to issue, specific delivery orders covering 12,000 to 14,000 different designations of products.

Gosplan's main administrations for interrepublican deliveries, as we have said, possess the same powers to issue obligatory orders as those which were possessed by the former ministerial *glavsbyty*. Moreover it seems that their title is a misnomer, for they give orders directly to enterprises when both producing and consuming enterprise are within the same Republic and even when they are under the same *sovnarkhoz*. In addition to possessing the same powers as the former ministerial *glavsbyty*, they operate in the same overly centralized manner. A recent Soviet source charges that "All questions connected with the delivery of metal are decided not at the enterprise and Republic sales organs but at the Union Main Sales Administration for Metals."⁴⁵ Another states that—

The union main sales administrations and in particular the Union Main Sales Administration for Heavy Machinery [think they have] the exclusive right to give assignments to factories. They send their orders directly to the producing enterprise. In view of this, the directors of enterprises began more and more frequently to turn to the union main sales administrations for decisions on current problems of production and delivery of equipment. * * * It developed that the orders of the union main sales administrations have become some sort of fetish which has fettered the initiative and operational possibilities of the republican organs.⁴⁶

As a result of this excessive centralization and also because of the cumbersomeness and confusion of the present administrative organization of supply planning (which we will describe in a moment) there are still such manifestations of bad planning as the lack of coordination between an enterprise's supply plan and its output plan, and the lack of coordination between its delivery assignments and its output assignments. Furthermore, these discrepancies are again intensified by numerous changes in the plans made during the year.⁴⁷ And there are still complaints about irrationally long transportation hauls.⁴⁸ A clear manifestation of this excess centralization and confused administration is the return of the *tolkach* (the "expediter"). In fact, it seems that not only is he back, but he is back in perhaps greater numbers than before.⁴⁹

2. *Bureaucratic duplication.*—The reorganization was supposed to simplify the organization of planning. But the daily press is filled with articles attacking the postreorganization attenuated, multi-

⁴⁵ See Popov 60.

⁴⁶ Goltvianskii 60.

⁴⁷ See, e.g., Prolov 58, p. 56; Kalinin 58, pp. 43-44; Planovoe Khoziaistvo, 1961: 5, p. 46; and Gal'perin 61, pp. 70-71.

⁴⁸ Lokshin 60, p. 22.

⁴⁹ "When the *sovnarkhozes* were formed, the 'scavengers' disappeared, but they came to life again, this time in the corridors of Gosplan" (Agranovskii 60).

leveled, cumbersome planning bureaucracy. One illustration of this is the case of a machine-building enterprise which formerly received detailed production and delivery assignments from a single *glavsbyt* (that of its own ministry); now it receives orders from five different sales administrations of the U.S.S.R. Gosplan.⁵⁰

A very serious organizational problem is that of the duplication of functions between different organs and the confusion which results from this. For example, it is still not completely clear what the differentiation in function is supposed to be between the main administration of interrepublican deliveries of Gosplan U.S.S.R. and the main supply and sales administrations of the republican gosplans. At first it was thought that the latter would do most of the planning work for both supply and sales, but then it became clear that the more centralized Gosplan U.S.S.R. administrations were better equipped to distribute directly the products of national economic importance.⁵¹ And now with the erection of all-Republic *sovnarkhozes*, the confusion has grown even worse (this is particularly true in the RSFSR).⁵²

Finally, there is duplication of functions at the *sovnarkhoz* level itself. Earlier we showed that the *sovnarkhoz* has a set of supply departments, each one of which is attached to a corresponding branch administration of the *sovnarkhoz*. In addition there is a functional administration of the *sovnarkhoz* responsible for supply and sales. It is not clear whether the branch supply departments are to administer the supply of firms within each branch or whether the *sovnarkhoz* supply administration is to organize the supply of all the firms within the *sovnarkhoz*. In the beginning it was usual for the branch departments to organize the work, but there is now a lively debate in progress over who should prevail. Some argue that the overall *sovnarkhoz* supply administration should handle the supply of the entire *sovnarkhoz* and they point to some *sovnarkhozes* who have recently abolished the branch supply departments and have, as a result, improved their supply planning and operation.⁵³ Others argue that this should not be done because the economic region is a multibranch unit and each branch has its own peculiarities.⁵⁴

This raises the general problem which lies at the bottom of much of the confusion, namely, the conflict between the idea of branch line command and territorial line of command. In the administrative organization of supply planning this conflict manifests itself in the choice between organizing supply planning along branch lines; that is, having a single department plan the supply of all the different inputs which are used by the enterprises producing a given type of output product; or organizing supply along a territorial principle; that is, treating the entire industry of the region as one "enterprise" and having the supply administration broken down by input product, each subdepartment in charge of the supply of a given input product to all the units of the territorial "enterprise."

The choice for the planning hierarchy is not an either-or proposition, but the question of what is the best combination of the two. At the top planning level it is necessary that some planning body be responsible for the development of a given branch. The original aim of the

⁵⁰ Nikolaev 58. A number of examples are cited in Nove 62, pp. 2-7.

⁵¹ See Lokshin 60, p. 16; and CD/SP, XIII:14, p. 20.

⁵² See e.g. CD/SP, XIV:14, p. 5; CD/SP, XIV:31, pp. 21-22; and Nove 62, pp. 8-9.

⁵³ See Petushkov 60; and CD/SP, XIV:14, p. 4.

⁵⁴ See Perevolochanskii 60.

reorganization was to have Gosplan U.S.S.R. do this at the top level, but to have the actual administration of the enterprise run on the territorial principle. In line with this idea, as we have already shown, the branch departments of Gosplan U.S.S.R. were strengthened and Gosplan was given the former ministerial *glavbytsy*. Yet it is evident that many Soviet economists were worried about "the danger of weakening the centralized direction and administration of individual branches of industry."⁵⁵ It is also clear that this was one of the points of contention at the February 1957 Plenum of the Central Committee of the party which discussed the reorganization prior to the issuance of Khrushchev's *Theses* in March of that year. Those who wanted stronger branch line command called either for the setting up of special branch committees, with operational powers, attached to the Council of Ministers or for the granting of operational powers to Gosplan.⁵⁶ Both of these were refused. But as time has passed, branch line command has been strengthened. This is especially evident in the section of the decree of January 1959 which restricted the right of the *sovnarkhoz* to transfer materials across branch lines. Under the ministerial system, there was a central body (the ministry) responsible for the production of a given product, say steel. If one steel plant proved incapable of fully utilizing materials allocated to it, then the ministry would try to shift these "excess" materials to another steel plant so that the output plan of steel would be fulfilled and thus the balances in the national economic plan maintained. Under the *sovnarkhoz* system as originally set up, the *sovnarkhoz* could shift the materials to a firm producing something other than steel, thus endangering overall economic balances. When in January 1959 this right was revoked and the *sovnarkhoz* forbidden to switch materials from one branch to another, central branch direction of the economy was greatly strengthened.

Evidences of branch line direction in supply planning can also still be seen in the operation of the main supply and sales administrations of the republican *gosplans* and in the dominance of the branch supply departments in most of the *sovnarkhozes*. Nevertheless, it seems to be the feeling of most experts that both the *sovnarkhozes* and the republican *gosplans* should be organized on territorial lines, and only Gosplan U.S.S.R. should be engaged in branch line planning.⁵⁷ If this is to be done, one problem is the construction of effective indicators for determining the output product mix of the republican and *sovnarkhoz* "enterprise," so that the priorities to guide input flows into different branches can be determined.

Undoubtedly we will see a continuing struggle between the branch line responsibilities of Gosplan U.S.S.R. and the territorial responsibilities of the Republics and *sovnarkhozes*. If both sides acquire some sort of parity of power, the resulting system of checks and balances might not be ineffective.

3. *Departmentalism*.—It is clear that what underlies the previous discussion is the problem of "departmentalism"—the pursuance by planners of their own "narrow" interests. This manifests itself in the postreorganization period in both old and new forms. As far as the old form is concerned, there is much evidence that the main administrations of interrepublican deliveries of Gosplan have the same

⁵⁵ Omarovskii 57, p. 73.

⁵⁶ *Ibid.* and Khrushchev 57, p. 9.

⁵⁷ Kulev 59, p. 24; Novikov 58; and Snegov 59.

one-sided set of objectives that they had when they were the ministerial *glavbyts*, i.e., they are concerned mainly with the production problems of the producers rather than with the interests of the consumers. This leads to the same sort of problems as before: irrational arrays of suppliers for a given consuming enterprise, frequent changes of suppliers even from quarter to quarter within the year, unnecessarily long transport hauls, impeding of technological progress, etc. Moreover, under the new conditions, the effect of this one-sided concern may be even greater than before, because now the consuming enterprise does not have a clear high-level defender of its interests to counter-balance the dominant market power of the sellers.⁵⁸

The new form of departmentalism is the now much discussed "localism." The problem of localism was clearly recognized from the beginning and was discussed at some length in Khrushchev's *Theses*. Since it is in the nature of the Soviet system for there to be a positive correlation between problems discussed in high circles and subsequent "discoveries" of their manifestations in practice, it would be prudent not to exaggerate the prevalence of localist tendencies. However, to deny its existence would also be a mistake.

The protective "family circle" now includes the enterprise and its *sovnarkhoz* and often also its republican *gosplan*.⁵⁹ Enterprises use many different methods in their efforts to improve the performance of their own economic region. For example, there was the case cited where an enterprise adapted its product mix to the specific needs of its own economic region and was thus able to fulfill its output plan, but to the detriment of consumers in other regions.⁶⁰ There was another case cited where an enterprise illegally distributed most of its output of funded goods (presumably locally) rather than turn it over to the central sales administration for distribution to the economy at large.⁶¹ One frequent complaint is the attempt by the *sovnarkhoz* to make its economic region more self-sufficient by setting up un-economical enterprises to produce materials needed within the region. The most common complaint is that enterprises try to fulfill intra-*sovnarkhoz* delivery plans before fulfilling their inter-*sovnarkhoz* delivery plans.⁶²

There have been a number of attempts to counteract localist tendencies and to improve inter-*sovnarkhoz* coordination and control. First, there was the decree of April 24, 1958, which declared the failure to fulfill inter-*sovnarkhoz* deliveries to be a flagrant violation of state discipline and made directors and other officials of enterprises and *sovnarkhozes* personally responsible for such violations and liable

⁵⁸ "One of the most difficult questions in the field of supply is now the consuming enterprise's lack of its own central organ to defend its interests. Formerly, the enterprise when its supply was interrupted, would most frequently turn to the *glavsnab* of its ministry or to the local office of the *glavsnab* located in the region of the supplier. Now, the enterprise has no such representatives either in the center or in the regions of the suppliers. Undoubtedly this is one of the reasons why we still see such things as the journeyings of all sorts of "tolkach", the shipment of products by airplane and in great haste, the sending of trucks hundreds of kilometers for goods, etc." (Lokshin 60, p. 19.)

⁵⁹ One source complains about the *sovnarkhozes* "intentionally" allowing the use of excessive norms in the construction of *zaiavki* (Safarian 59). Another accuses both *sovnarkhozes* and republican *gosplans* of changing the plans of enterprises, at the end of the planned period, so as to have as many enterprises as possible within their areas "fulfill" their plans (Vasin 58; Sovetskaiia Kirgizia, Jan. 14, 1959, p. 3; Plankhoz 59, p. 8).

⁶⁰ Bakinskii Rabochii, Nov. 17, 1959, p. 2.

⁶¹ Zaria Vostok, Jan. 20, 1960, p. 3.

⁶² See, e.g., Gal'perin 53, p. 47; Lokshin 60, pp. 22-23; and CD-SP, XIII; 36, p. 29. However, there is some evidence that this manifestation of localism is being somewhat overplayed. Data, presented in Plankhoz 59, pp. 9-11, show that in the first half of 1959, at least, the overall plans for cooperative deliveries of castings, forgings, and stampings were overfulfilled, and inter-*sovnarkhoz* deliveries were overfulfilled to a greater extent than intra-*sovnarkhoz* deliveries. There were, of course, some *sovnarkhozes* which failed to fulfill these plans.

to fines and in cases of repeated violation, criminal prosecution.⁶³ Secondly, there was the establishing of the all-Republic sovnarkhozes. And thirdly, there was the new scheme of large economic regions and their coordinating and planning councils.

CONCLUSIONS

One conclusion from this brief survey which is hard to avoid is that Soviet planners are likely to maintain and even intensify their program of modifying and changing various aspects of their planning system. A glance at the present state of research and discussion (and may I say ferment) in Soviet economic and planning circles will readily confirm this belief. Many of the topics currently being discussed are pertinent to the matters covered in this paper. The debate over "success criteria" pertains to the search for safety and the desire for low plans. The veritable flood of activity in the development of mathematical methods (particularly input-output and linear programming) pertains to Gosplan's ability to construct balanced and efficient plans. The development of computer techniques of data processing are relevant and useful in both the further centralization and decentralization of the planning system as is the recent growth of amalgamated "firms" in various industries. And of course the continuing discussions of price policy are essential to any plans for decentralization of decisionmaking.

The keynote today in Soviet economic circles is experimentation. We should have every expectation that changes in Soviet planning methods will continue apace. And it would be prudent to expect some of them to result in improvements in the planning system.

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Part II
THE MEASURE OF PRODUCTION



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THE GROSS NATIONAL PRODUCT IN THE SOVIET
UNION: COMPARATIVE GROWTH RATES

BY

STANLEY H. COHN

THE GROSS NATIONAL PRODUCT IN THE SOVIET UNION: COMPARATIVE GROWTH RATES

INTRODUCTION

The purpose of this paper is to compare selectively the economic growth of the U.S.S.R. and six leading market-oriented economies—the United States, France, Western Germany, Italy, the United Kingdom, and Japan—during the decade 1950–60. Apart from the trend in overall national products comparisons will also be made of changes in the structure and distribution of GNP. In addition, the influences which changes in the labor force and its distribution, as well as trends in productivity of labor and of capital have exerted on each economy's overall growth, will be examined. A cautious projection of future growth rates will also be ventured.

In contrast to previous bilateral comparisons of Soviet growth with that of the United States, this study will also have occasion to examine the experiences of the rapidly expanding economies of the European Common Market and Japan and of the slower advancing United Kingdom. The purpose of the expansion of coverage is to lend greater perspective to the Soviet record by comparing it with market-oriented economies which also have managed to maintain extended rapid growth and whose levels of development are scattered along a spectrum in which the two extremes are occupied by the U.S.S.R. and the United States.

The most comprehensive indicator of an economy's economic performance is that of gross national product. Embracing in its concept the net output of all goods and services, GNP provides a very broad view of the functioning of an economy. If more specific questions than overall economic performance are to be answered, the national product concept is still applicable, because such data are aggregated from detailed statistics on transactions throughout the economy. A less comprehensively aggregated collation of these basic statistics can provide information on the structure of the economy. For example, the distribution of available resources among the major end-use components of product, such as consumption, investment, and defense can tell us much about living standards, economic growth, and national power objectives. Similarly, the distribution of GNP according to the sectors in which it originates such as industry, agriculture, commerce, construction, and services sheds considerable light on the country's state of development and its order of national economic priorities. When a dynamic dimension is introduced into the behavior of GNP and its principal use and origin components, a historical statistical analysis of national economic policy trends is provided. Finally, these end-use and sector-of-origin breakdowns, together with other data, make possible international comparisons of relative size and estimates of growth trends.

In addition to the data underlying the national product estimates themselves, certain other economic variables can be used to explain

comparative national growth trends. Output may be considered as the sum total of the inputs entering into the productive process. The two most important of these are labor and capital. By measuring changes in the size and composition of the labor force and in the volume of investment, further explanation is provided as to the basis for the growth of national product. Another approach with the same body of data involves the relative roles played in growth by changes in employment and in productivity (output per worker).

The national product comparisons in this paper concentrate on the period 1950 to 1960. If the preferred frame of reference be that of the postwar world, 1950 serves as a convenient watershed for dividing the years of reconstruction and reconversion from those in which genuine secular growth elements have been primary. In some of the comparisons a further benchmark has been set at 1955 to isolate delayed effects of recovery factors and to aid in detecting perceptible decelerations in the pace of expansion. The selection of 1950 as a base also has the virtue of focusing upon the year in which the intensive phase of the cold war commenced. The pattern that defense activities has assumed since 1950 serves as a better model for future extrapolations than would those of an earlier period. In a similar fashion the systematic economic policies directed toward growth, which have been assumed by most of the Western economies covered in the study, are a phenomenon of the post-1950 period and should serve as a guide to projections of future growth trends.

The orientation of the paper to the years since 1950 is not intended to question the validity of longer term growth comparisons. Our postwar experience has been of insufficient duration to indicate whether the growth surges of this era in most of the economies under review represent a more or less permanent acceleration of a slower secular growth rate or are merely recoupments of the long years of stagnation between, and the destructive consequences of, two world wars. Some comparisons of longer term growth trends are available in other studies. Brief allusion will be made in this paper to longer term trends, but the emphasis will dwell upon the years since 1950.

STRUCTURE OF NATIONAL PRODUCT

Before presenting statistical comparisons, some words of caution regarding the conceptual limitations of the technique employed are in order. For the Western economies the national accounts have been derived from official calculations and have been adjusted by OECD (Organization for Economic Cooperation and Development) economists to fit a common conceptual framework devised by that organization.¹

Differences in political and economic organization among the various countries render comparability difficult in certain categories, but the OECD adjustments should minimize remaining noncomparabilities. The Japanese national accounts employ a similar methodology. When the Soviet comparisons are introduced, additional complications arise. The Soviet Government has not published basic national accounts estimates in the form or detail useful for international comparisons: consequently Soviet accounts must be laboriously and in-

¹ Organization for European Economic Cooperation, "A Standardized System of National Accounts," Paris, 1958.

geniously synthesized from scattered official estimates on income flows.² The wide gulf existing between Soviet and Western institutions and policy objectives limits comparability in certain instances despite efforts to achieve similarity in the classification of the accounts. In order to minimize these differences the estimates of Soviet national aggregates appearing in this paper have been constructed as nearly as possible according to the aforementioned OECD methodology.

One methodological adjustment has been introduced in order to attain further comparability of measurement between Soviet and Western economic systems. As one proceeds through a spectrum from the United States at one extreme through the other Western economies to the U.S.S.R. at the other extreme, the role of indirect taxes and subsidies in the respective economies is of increasing importance. In comparing economic structures the avowed aim is to compare real resource allocations and to accomplish this purpose the market prices in which the accounts are calculated are adjusted to a factor cost basis by removal of indirect taxes and subsidies.³ The national accounts of the OECD countries and Japan, which are cited below, have been adjusted accordingly. The Soviet accounts have been constructed on a factor cost basis.

National product by end use

Table 1 shows the distribution of gross national product for the seven major industrialized economies in 1960 in terms of the principal end-use or purpose categories: personal consumption, Government civil consumption, defense, capital investment, inventory investment, and the foreign balance.

The personal consumption category covers only private outlays for goods and services, consumer services financed collectively being classified under Government civilian consumption. This division slightly understates the proportion of Soviet GNP devoted to personal consumer ends, since virtually all expenditures for health and education are state financed in the U.S.S.R., whereas in the Western economies a considerable share are paid for by households.

The Government civilian consumption category includes all non-military, noninvestment purchases of final product by the state. In addition to the aforementioned expenditures for health and education it also includes police, judicial and other administrative public outlays.

The capital investment grouping comprises gross domestic investment, both private and public, in construction and equipment, foreign investment being included in the foreign balance. It includes investment in defense production facilities, but excludes direct military construction and military equipment purchases. The inventory investment category covers changes in raw materials stocks, work in process, and finished goods stocks of productive enterprises.

The defense category is intended to include pay, subsistence, and other current expenditures of the armed forces, as well as military construction and equipment expenditures, military research and development expenditures, and nuclear energy outlays. The figures

² Two leading examples of such efforts are Abram Bergson, "The Real National Income of Soviet Russia Since 1928," Cambridge, Harvard University Press, 1961, and Morris Bornstein and others, "Soviet National Accounts for 1955," Center for Russian Studies, University of Michigan, 1961.

³ For a definitive discussion of the factor cost adjustment, see Bergson, *op. cit.*, chs. 3 and 8.

for the Western countries include, while those for the U.S.S.R. probably exclude, foreign military assistance and the cost of maintaining forces abroad.

The foreign balance category for the Western economies reflects the net balance of trade, services, and capital flows. For lack of sufficient data no estimate has been made for the U.S.S.R.

TABLE 1.—*Gross national product by end use for 7 major economies in 1960 (percentage of total in factor cost)*

Country	Private consumption	Government consumption	Defense	Gross capital investment	Inventory investment	Foreign balance	Total
France.....	58.3	10.7	6.6	20.7	2.3	1.3	100
Germany (FR).....	50.4	11.9	3.9	28.0	2.6	3.2	100
Italy.....	58.7	13.7	-----	25.2	1.8	.4	100
United Kingdom.....	61.3	11.8	7.1	18.3	2.7	-1.2	100
Japan.....	48.9	9.6	-----	35.4	5.5	.6	100
U.S.S.R.....	47.1	10.1	10.2	31.3	1.3	(¹)	100
United States.....	60.4	9.8	10.1	17.9	.9	.9	100

¹ Unknown.

Sources: OECD countries (France, West Germany, Italy, United Kingdom, United States)—OEEC; "General Statistics." July, September 1961. Japan—Bank of Japan, "Economic Statistics of Japan, 1961." U.S.S.R.—Base year (1955) end-use weights are moved to 1960 by selected end-use time series. The 1955 weights are obtained from Morris Bornstein and others, "Soviet National Accounts for 1955," Center for Russian Studies, University of Michigan, 1961, pp. 71-72. Those entries for which the text does not provide estimates in adjusted rubles or factor cost have been computed from information provided in its table 3. Derivation of the end-use time series is described below.

DERIVATION OF END-USE TIME SERIES

Personal consumption: See chapter on consumption in this compendium.

Government consumption: The portion representing education and health outlays is taken from the estimates contained in the consumption chapter. The portion representing government administrative outlays is moved by the employment in administration as estimated in "Tsentral'noe Staticheskoe Upravlenie, "Narodnoe Khoziaistvo SSSR v 1960 God" (Central Statistical Administration, National Economy of the U.S.S.R. in 1960), Moscow, 1961, pp. 636-637 and same compendium for 1958, pp. 658-659.

Defense: In the defense chapter of this compendium 2 alternative defense time series are provided. Since the lower estimate is indicated to be an understatement and the higher estimate an overstatement of actual trends, the arithmetic average of the 2 trends has been selected as a best estimate.

Investment: Capital investment trends are taken without adjustment from the indexes in 1955 prices of state and cooperative (p. 44), collective farm (p. 164), and private housing construction (pp. 188-189) in Ts.S.U., "Kapital'noe Stroitel'stvo SSSR," (Capital Investment in the U.S.S.R.), Moscow, 1961. Inventory investment is assumed to have changed as a constant function of net industrial output and trade turnover. The 1955 distribution of inventory stocks is obtained from "Narodnoe Khoziaistvo, 1960," p. 92. The time series for net industrial output and trade turnover are described in the footnotes to table 3 below.

The distinctive features of Soviet resource allocation, and therefore of the official scale of priorities, are the large share of resources devoted to growth, the substantial defense commitment, and the relatively minor emphasis on consumption, both in its private and communal manifestations (table 1). In terms of the proportion of total product allocated to growth the U.S.S.R. stands a close second to Japan and, as for its relative defense burden, it ranks equally with the United States and considerably above the other five major economies. This parity of relative defense burdens cannot be translated into absolute comparisons without application of appropriate ruble-dollar conversion ratios (see p. 76 below). In 1960 the Soviet consumer received a smaller share of available resources than did his counterpart in the other leading economies.

It would appear that the U.S.S.R. unlike other rapidly growing nations, has been striving both to maintain rapid expansion and sustain a considerable defense establishment. Germany, France, Italy, and Japan have been more fortunate in being able to channel their nonconsumption efforts more heavily into growth, or have been able

to match the Soviet ratio of investment with a larger share of the national product available to the consumer.

National product by sector of origin

Table 2 shows the distribution of gross national product by originating sectors for the seven leading economies in various representative years of the 1950-60 period. The sector breakdown is roughly in terms of the division between primary (agriculture), secondary (mining and manufacturing), and tertiary production (services). Economic development is sometimes defined as the progressive shift of economic activity through this sectoral spectrum.

In comparison with the other major economies the Soviet Union is still heavily agricultural in spite of the high priorities granted to industrialization for nearly 35 years. While industry in the U.S.S.R. generates a somewhat smaller share of national product than in the other six major powers, the proportion emanating from services is strikingly less, both as a proportion of GNP and of nongricultural product. This latter phenomenon, of course, reflects the low priority consumer welfare occupies in Soviet economic policy. Furthermore, the structural shift since 1950 has reduced the share of agriculture considerably less than in countries such as Italy and Japan, which also originate a considerable share of their national income in farming.⁴ The persistence of agriculture's large role in total economic activity illustrates the drag the sector imposes on Soviet growth.

TABLE 2.—Gross national product by sector of origin for major economies (percentage of total at current factor cost)¹

Country	Year	Agriculture	Industry and construction	Transport, trade services	Total
France.....	1956	12.5	44.2	43.0	100
Germany (Federal Republic).....	1950	11.4	47.0	41.6	100
	1959	8.0	50.8	41.2	100
Italy.....	1950	28.3	37.3	34.4	100
	1960	17.1	43.1	39.8	100
United Kingdom.....	1950	5.7	45.4	48.9	100
	1959	4.2	47.2	48.6	100
Japan ²	1950	29.0	31.7	42.2	100
	1960	15.4	37.0	47.5	100
U.S.S.R. ³	1955	30.7	41.4	27.8	100
	1950	7.2	39.5	53.2	100
United States.....	1960	4.0	38.2	57.8	100

¹ OECD countries from OEEC, "General Statistics, July and September 1961."

² National income in market prices. Bank of Japan, op. cit., pp. 305-306.

³ Morris Bornstein and others, "Soviet National Accounts for 1955." Center for Russian Studies, University of Michigan, 1961, p. 84. The breakdown represents national income by sector of origin with the percentage classified as "undistributed" being distributed proportionately among other sectors.

GROWTH OF NATIONAL PRODUCT

In addition to requiring uniform methods of constructing national accounts, an international comparison of trends in growth of GNP also requires the use of a consistent method for estimating GNP in constant prices over the period being measured. Standard methods have been followed by the OECD in preparing GNP trend estimates

⁴ A available statistics do not permit a temporal comparison of distribution of Soviet GNP in current prices. A measure in constant 1955 prices indicates a reduction in the agricultural proportion from about 35 percent in 1950 to about 26 percent in 1960. However, if the movement of relative prices is taken into account, the degree of the shift is much less, since agricultural prices have moved sharply upward, while industrial prices have declined. The structural shifts in the other six economies are measured in current prices, which reflect the diverse movements of relative prices.

for its member countries and the procedure used by Japanese statisticians is generally similar. As noted earlier, Western economists have been obliged to construct their own sets of Soviet national accounts from scattered official data and have succeeded in calculating current price estimates for a number of years. Much less work had been done on synthesizing constant price estimates until the pioneer volume of Professor Bergson was published.⁵ Since his "monumental effort terminates with 1955, it is necessary to resort to an improvisation beyond that date.

The substitute method employed is to estimate the movement of GNP as the aggregate of the movement of physical indexes of its component origin sectors (see table 3). This methodology must be regarded as a rough approximation because of difficulties in establishing proper sector weights, the use of gross rather than net output indexes, and the nature of the estimates necessary to obtain the physical indicators used. Although Bergson has computed an index for the 1950-55 period, the estimate used in this study is based on the sector of origin index approach for the entire period in order to retain consistency of method throughout the entire 10 years of measurement.⁶

Both during the entire decade of the 1950's and during its latter half the U.S.S.R. was expanding its output at over double the rate of the United States, somewhat faster than Italy's, but about the same as that of Western Germany, and less than that of Japan.

If individual years are examined more closely, the recent deceleration in the U.S.S.R. growth rate becomes more apparent. Through 1958 the Soviet economy managed to maintain the better-than-7-percent annual advancement which had prevailed since 1950.⁷ Since 1958 there has been no secular increase in Soviet farm output. The stagnation of a sector generating nearly a third of national income has meant a sharp drop in the overall growth rate to well under 5 percent, considerably below that of Germany, Italy, and Japan, and about equal to that of France in these years.

⁵ Abram Bergson, *op. cit.*

⁶ Bergson (p. 290) constructs an estimate of the average annual growth of GNP for 1950-55 using the improvised sector-of-origin physical index approach. His result, 7.3 percent per year, is almost identical with my calculation of 7.2 percent, but less than the 7.6 percent he obtains by deflation of current ruble end-use values in 1950 prices (p. 217).

⁷ For estimates of 1955-58 growth rates computed by same procedure used to obtain table 3 estimates see Bergson, *op. cit.*, p. 290, and Morris Bornstein, "National Income and Product," in Joint Economic Committee, Congress of the United States, "Comparisons of the United States and Soviet Economies," Washington, 1959, p. 391.

TABLE 3.—Average annual rates of growth of GNP for 7 major economies

Country	1950-55	1955-60	1960-60
France.....	4.5	4.2	4.3
Germany, Federal Republic.....	9.0	6.0	7.5
Italy.....	6.0	5.9	5.9
United Kingdom.....	2.6	2.7	2.6
Japan.....	7.1	9.4	8.8
U.S.S.R.....	7.0	6.5	6.8
United States.....	4.3	2.3	3.3

SOURCES

OECD: OEEC, General Statistics, July and September 1961. Japan: Bank of Japan, "Economic Statistics of Japan," 1961. U.S.S.R.: The 1955 base year weights are the distribution of national income by sector of origin at adjusted prices (factor cost) in Morris Bornstein and Others, "Soviet National Accounts for 1955," Center for Russian Studies, University of Michigan, 1961, p. 84. Physical sector indexes are explained in the following derivation discussion.

DERIVATION OF SECTOR INDEXES

Industry index: See chapter on industrial development in this compendium.

Agriculture index: See chapter on agricultural development in this compendium.

Construction index: Indexes in 1955 prices of state and cooperative (p. 44), collective farm (p. 164), and private housing construction (pp. 183-189) in Tsentral'noe Staticheskoe Upravlenie, "Kapital'noe Stroitel'stvo SSSR" (Central Statistical Administration, Capital Investment in the U.S.S.R.), Moscow, 1961.

Transportation index: Ernest Williams, "Freight Transportation in the Soviet Union," Princeton, 1962, p. 14. William's index of total tons per kilometers of freight traffic is used to represent all transportation traffic. Since the dominant rail proportion remains almost unchanged through the period, the tons per kilometer rail index is assumed to reflect changes in the value of traffic in this sector. The relationship of net to gross output is also assumed to remain constant.

Trade index: Value added in trade is assumed to be represented by the indexes of wages and profits in unchanged prices. The 1955 base wage figure is derived from Ts.S.U., Sovetskaya Torgovlia (Soviet Trade), Moscow, 1956, pp. 114, 122, 123. It is moved by an index of employment in trade obtained from Ts.S.U., "Narodnoe Khozjaistvo SSSR v 1960 God" (National Economy of the U.S.S.R. in 1960), Moscow, 1961, p. 636. The profit figures are obtained from *ibid.*, p. 843, and the 1959 edition of the same compendium, p. 799.

Services index: The services index is a weighted aggregate of the 4 principal service activities—defense, education, health, and government administration. Their weights are obtained from Bornstein and Others, *op. cit.*, pp. 50, 51. Administration includes nonmilitarized security forces and Communist Party employees in addition to personnel listed specifically under administration. Defense: Indexes from estimates of Armed Forces strength in Bergson, *op. cit.*, pp. 364, 366, and Nancy Nimitz, "Soviet National Income and Product, 1956-58," Rand Corp. (RM-3112), Santa Monica, 1962, p. 50. Health, education, and administrative: Indexes moved by employment estimates from Narodnoe Khozjaistvo, 1960, pp. 636-637, and same compendium for 1958, pp. 658-659.

COMPARATIVE SIZE OF NATIONAL PRODUCT

The comparison of national products in terms of a common currency poses the problems of selecting international price deflators which reflect the relative purchasing powers of the respective currencies concerned. Foreign exchange rates are unsuitable for such comparisons. While they reflect the relative purchasing powers of goods and services exchanged in international trade, they may be quite unrepresentative of national product as a whole. Much closer approximation to true internal purchasing power conversion rates have been computed in detailed studies prepared for the year 1955.⁴ Differential price movements since 1955 as between the dollar and other currencies have probably changed the true 1960 conversion parities. Nevertheless for lack of more recent measures the comparison of levels of national product in table 4 have been computed in terms of 1955 internal purchasing power parities, as well as by official exchange rates.

⁴ For discussion of procedure entailed in constructing ruble-dollar ratios see Morris Bornstein, "A Comparison of Soviet and United States National Product," Joint Economic Committee, Comparisons of the United States and Soviet Economies, Washington, 1959, pp. 384-389.

For calculation of conversion ratios between the United States and European OECD economies see Milton Gilbert and Irving Kravis, "An International Comparison of National Products and the Purchasing Power of Currencies," Paris, 1954, pp. 14-17; and Milton Gilbert and Associates, "Comparative National Products and Price Levels," Paris, 1953, pp. 29-33.

TABLE 4.—Comparative levels of GNP in 1960¹

[In billions of current dollars]

Country	Exchangerate conversion ²	Internal purchasing power conversion ³
France.....	58.0	84.8
Germany, Federal Republic.....	66.1	92.2
Italy.....	32.1	43.8
United Kingdom.....	70.8	85.4
Japan.....	38.9	(⁴)
U.S.S.R.....	193.6	235.5
United States.....	504.4	504.4

¹ OECD country estimates in native currencies from OEEC General Statistics, July and September 1961. Japan from Bank of Japan, Economic Statistics of Japan, 1961. For U.S.S.R., see footnote to table 1. The geometric mean of Bornstein's ratios is used in comparison.

² Rates from International Monetary Fund, International Financial Statistics, July 1962, pp. 10-11.

³ Conversion ratios are geometric means of United States and European quantity weights from Milton Gilbert and Associates, op. cit., p. 30, and the geometric mean of Soviet and United States quantity weights from Bornstein.

⁴ Not available.

However inaccurate the 1955 parities may have been rendered by subsequent relative price movements, they still can be used as rough orders of magnitude.

The unchallenged No. 2 position of the U.S.S.R. as an economic power is clearly evident from the table. While approximately 46 percent of the size of the U.S. economy, it is more than double the size of any third power. Another prominent magnitude that emerges from the comparison is the approximate parity between the size of the three principal Common Market economies (France, Germany, and Italy) combined and that of the U.S.S.R. and the definite predominance this West European aggregation would have with the addition of the United Kingdom. If the comparison be shifted from GNP as a whole to its end-use or origin components, it becomes necessary to employ the internal purchasing power parities applicable to the magnitudes being measured. In the case of the Soviet and United States comparison, the dollar-ruble price ratios for uses of product vary widely around the overall ratio. As Bornstein computed in his accounts for 1955,⁹ the U.S.S.R. was relatively efficient in the production of defense goods and services and of capital goods, while inefficient in consumer goods output. Thus, the purchasing power of the ruble in terms of dollars averaged 8.6 to the dollar, but for consumer goods and services it was worth only about 11 to the dollar, while its value was 5 for investment goods and services, and 4.5 for defense goods and services.¹⁰ When these varying ruble-dollar conversion ratios are applied to Soviet end-use magnitudes and their dollar values compared with U.S. equivalents, the results show that while Soviet GNP was well under half that of the United States, defense expenditures were on a parity with the United States, investment outlays were somewhat larger, and consumption less than a third as great. The seeming paradox of the U.S.S.R. economy, half as large as the U.S. economy with about the same proportion of its resources devoted to defense, spending the dollar equivalent of the U.S. defense effort is explained by the disparate internal purchasing power of the ruble relative to the dollar. The ruble in 1955 had nearly twice the dollar

⁹ See Joint Economic Committee, Morris Bornstein op. cit., pp. 388-389, for discussion and calculation of pertinent conversion ratios.

¹⁰ Ibid., pp. 385-388.

purchasing power for defense goods and services as it did for GNP as a whole. The same disparities would exist in 1960 with a wider gap for investment.¹¹

Similar disparities in lesser degree between the ratios of U.S. national product to that of other market economies and the ratios of the end-use components of GNP occur. As in the Soviet case, they stem from disparate relative price patterns.¹²

MANPOWER AND PRODUCTIVITY AS FACTORS IN GROWTH

One approach to understanding the growth of an economy is to determine the contribution made by increases in the size and productivity of the labor force, the basic ingredient in all economic activity. Statistically productivity is that portion of growth which explains any increase in output proportionately greater than labor input in man-years. This concept, of course, has come to occupy a prominent role in wage negotiation in addition to its wide usage in empirical research.

No attempt is made in this paper to measure growth in total productivity as functions of changes in labor and capital inputs respectively, i.e., the partial productivity functions. Instead the study is limited to calculating international comparisons in the relationships between changes in labor and capital inputs and productivity as a whole.

In our analysis of the comparative growth of the national products of the U.S.S.R. and the six leading market economies, the productivity concept can be used to determine the degree to which relative expansion has been the result of increased employment or of the efforts, largely in capital investment, which have brought about rising labor productivity. No adjustment is made for changes in the number of hours worked, because of insufficient data.

TABLE 5.—Roles of increases in employment and labor productivity in comparative growth of GNP, 1950-60

[Average annual rates of growth]

Country	GNP	Employment	Productivity ¹	Productivity as share of total ²
France.....	4.3	0.4	3.9	90
Germany (Federal Republic).....	7.5	2.2	5.2	73
Italy.....	5.9	1.6	4.3	78
United Kingdom.....	2.6	0.6	2.0	77
Japan ³	8.8	1.9	6.7	80
U.S.S.R.....	6.8	1.9	4.7	74
United States.....	3.3	1.2	2.1	66

¹ Computed from index of GNP divided by index of employment. Productivity per man-year.

² Productivity increase as percentage of combined productivity and employment increase.

³ 1953-60.

SOURCES

OECD: GNP—See sources to table 1. Employment—OECD Manpower Statistics, 1950-60, Paris, 1961.

Japan: GNP—See sources to table 1. Employment—Bank of Japan, op. cit. pp. 297-98.

U.S.S.R.: GNP—See sources to table 1. Employment—Estimates for 1960 are obtained from an advance copy of the demographic statistics contained in the section on population and labor force in this study prepared by the Foreign Demographic Analysis Division, Bureau of the Census, Department of Commerce.

¹¹ See discussion of investment as factor in growth below for statement on problem of Soviet investment goods pricing. Effect of suggested adjustment would be to reduce dollar purchasing power of ruble in investment, and to raise ruble value of Soviet investment in lesser proportion, hence to reduced dollar value of investment. The effect of this adjustment on measure of relative Soviet and U.S. investment efforts is indeterminate.

¹² Milton Gilbert and Associates, op. cit., ch. III.

It would appear that the U.S.S.R. had the growth benefits of a high rate of increase in its labor force during the decade of the 1950's, with only Germany exceeding and Japan equaling it among the major economies. As for productivity accomplishments, the Soviet economy has been above average, but somewhat below that of Germany and considerably less than that of Japan. In terms of relative contribution of increases in productivity, as compared with higher employment, in explaining growth of national product, the U.S.S.R. occupied a below average position. At one extreme stood France with a very small addition to its labor force and at the other the United States, which showed both a large increase in unemployment and the lowest, along with the United Kingdom, growth in labor productivity.

The growth in the Soviet labor force is unique in one important respect. Whereas the other leading industrial powers were benefiting from considerable transfers from agricultural to urban occupations, the Soviet Union was compelled to increase agricultural employment through the middle of the decade, and thereafter release only relatively small numbers in order to provide the increased food and fiber crops requisite for improvement in dietary and dress standards.

Structural manpower shifts have been of no small importance in augmenting the urban labor force in other major economies (table 6). Nearly a quarter of German, a third of Italian, and nearly half of French additions to the nonagricultural labor force were recruited from the farms in the decade under review while only a twelfth of such additions were so provided in the U.S.S.R. The price to the Soviet economy of low productivity advance in agriculture has been a costly one in terms of retained manpower and continues to remain so. In 1960 about 43 percent of the labor force of the U.S.S.R. was still on the farm,¹³ compared with only 26 percent in France, 14 percent in Germany, 31 percent in Italy,¹⁴ 29 percent in Japan,¹⁵ and 7 percent in the United States.¹⁶

¹³ See paper by M. Weitzman, Foreign Demographic Analysis Division, U.S. Bureau of Census.

¹⁴ OECD, "Manpower Statistics," 1950-60, pp. 19, 23, 27.

¹⁵ Bank of Japan, *op. cit.*, pp. 297-98.

¹⁶ U.S. Department of Commerce, "Survey of Current Business," July 1961, p. 27.

TABLE 6.—Changes in sizes and composition of national labor forces, 1950–60

[Thousands of persons]

Country	Nonagri- cultural employ- ment ¹	Agri- cultural employ- ment	Total em- ployment	Total labor force	Unem- ployment and other ²	Agri- cultural employ- ment con- tribution ³
France.....	1,846	-900	946	720	-226	48.7
Germany (Federal Republic).....	6,224	-1,395	4,829	3,585	-1,244	22.4
Italy.....	3,050	-1,030	2,020	2,455	444	33.8
United Kingdom.....	1,665	-200	1,465	1,484	29	12.1
Japan.....	11,600	-2,100	9,500	9,600	10	18.1
U.S.S.R. ⁴	17,939	-1,535	16,404	(⁵)	(⁵)	8.6
United States.....	9,286	-1,771	8,377	8,377	862	19.1

¹ Includes Armed Forces.

² Unofficial unemployed and statistical discrepancy.

³ Decrease in agricultural employment as percentage of rise in nonagricultural employment.

⁴ 1950–59.

⁵ Unemployment as a category is not recognized in official Soviet manpower statistics. Persons unemployed during part of a year would be classified as employed in the sector in which they worked; those not employed at all, but seeking work, would not be included within the definition of the labor force.

Sources: OECD: OECD, Manpower Statistics, 1950–60; Japan: Bank of Japan, op. cit., pp. 297, 298; U.S.S.R.: Civilian employment—See sources to table 5; Armed Forces: Bergson, op. cit., p. 364 and Nimitz: op. cit., p. 50.

INVESTMENT AS A FACTOR IN ECONOMIC GROWTH

We have seen that the increase in productivity per man-year has been responsible during the 1950–60 period for a much larger share of the growth in GNP than has the rise in the size of the labor force in all seven economies. The influences exerted by organizational and managerial factors, the widespread shifts from agriculture to urban occupations, and the rising level of education in this accomplishment should not be discounted, but the key to the explanation of productivity advances can be found in the role exerted by capital investment.

If the average annual growth of GNP per man-year is compared with that of the proportion of GNP devoted to nonresidential investment for each of the seven economies over the 1950–60 period, a close fit emerges, as noted in chart 1.¹⁷ The position of the U.S.S.R. in this respect is not dissimilar to that of the other major economies, as both chart 1 and table 7 indicate.

¹⁷ It would be preferable to exclude Government investment on schools, hospitals, highways, public buildings, etc., from the comparison, but available data did not permit this separation.

CHART I.—Growth in GNP per Man Year and Non Residential Investment Ratios, 1950–60

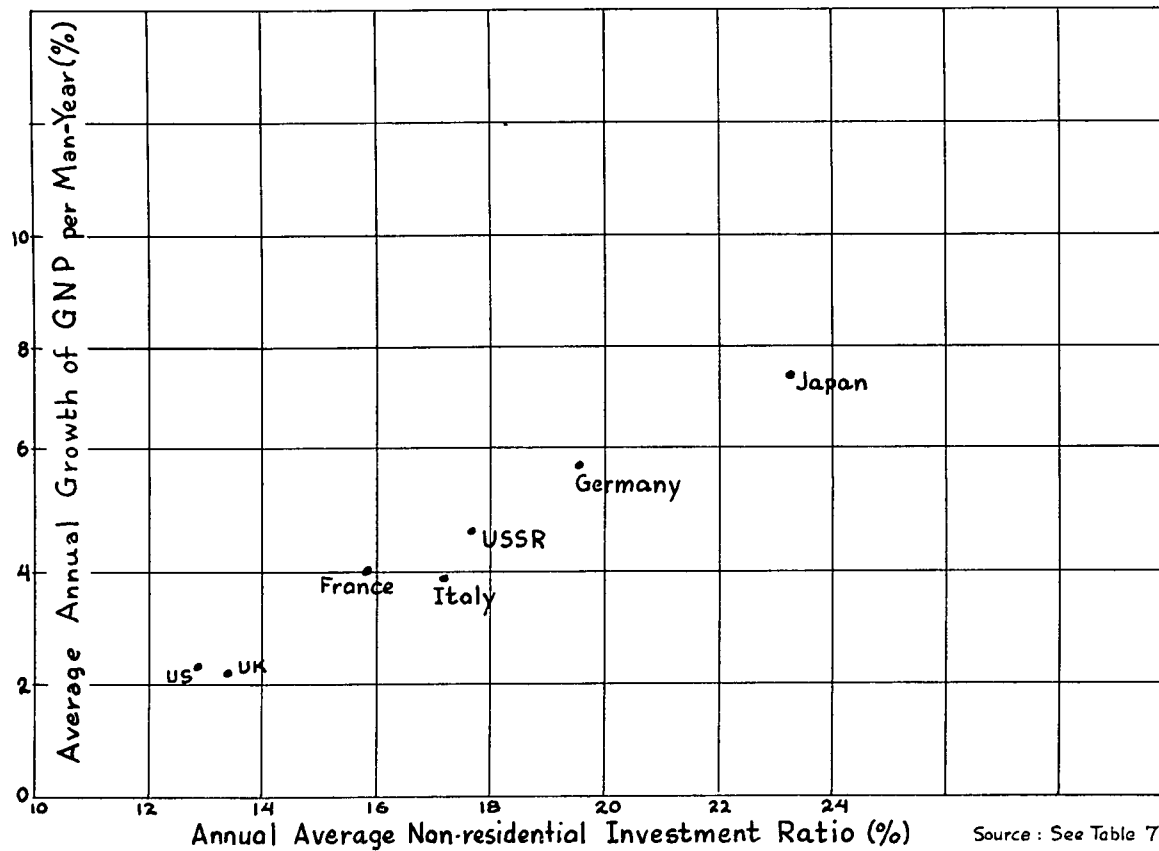


TABLE 7.—*Relation between growth in GNP per man-year and nonresidential investment ratios for 7 economies, 1950-60*

Country	Average annual rate of growth of GNP per man-year	Nonresidential investment as proportion of GNP
France.....	4.0	15.9
Germany (Federal Republic).....	5.9	10.6
Italy.....	3.9	17.2
United Kingdom.....	2.2	13.4
Japan ¹	7.5	23.3
U.S.S.R. ²	4.7	17.7(19.2)
United States.....	2.3	12.9

¹ 1953-60.

² 1955 proportion. Estimate shown in parentheses is average of 1950, 1955, and 1960 proportions in constant 1955 prices. Use of constant prices tends to overstate shifts in proportions because of disregard of compensating price movements. The great disparity of the 1955-60 index for investment, 177.8, relative to that for GNP, 135.6, tends to bias the average in an upward direction. The 1950-55 index disparity is much less—65.5 compared with 70.7. An average proportion for the decade which takes relative price changes into account would be somewhat higher than 17.7, but below 19.2.

Sources: OECD countries: OEEC, General Statistics, July and September 1961; Manpower Statistics, 1950-60. Informal estimates of OECD staff; Japan: Bank of Japan, op. cit., pp. 297-298, 311, 312; U.S.S.R.: See table 1 for derivation of GNP index and table 9 for investment; see table 5 for derivation of productivity estimates.

The relationship between the average GNP growth attaining by the U.S.S.R. and the proportion of its resources allocated to nonresidential investment as compared with other six countries may seem illusory if its peculiar pricing system is considered. In the Soviet economy turnover (sales) taxes with average effective rates of over 40 percent¹⁸ are assessed on consumer goods, while the prices of capital goods, particularly machinery, are priced below the levels they would attain if they were sold to the highest bidders instead of being distributed by official allocations. Furthermore, the absence of a charge for capital in Soviet cost accounting serves to underprice capital-intensive producer goods. Therefore, the prices of investment goods are low relative to their costs and the proportion of GNP spent for investment understates the actual share of resources devoted to this purpose. If equilibrium pricing were employed, the proportion of Soviet GNP necessary to support the indicated growth rate would be higher and the investment cost of growth greater than that shown in the original computation.

This proposition can be demonstrated by comparing the purchasing power relative to the dollar in 1955 of French francs, German marks, Italian lira, British pounds, and Soviet rubles for GNP as whole and for investment goods and services in particular. The relative states of development of these economies is not so dissimilar as to expect major relative price differences. In the four Western European economies the purchasing power of their currencies for investment ranged from 89 to 95 percent of that for GNP as a whole,¹⁹ while the Soviet ruble was worth over 1½ times as much in the purchase of investment goods.²⁰ A converse relationship in lesser degree existed for consumer goods and services.

¹⁸ Bornstein and others, op. cit., p. 77 ff.¹⁹ Milton Gilbert & Associates, op. cit., pp. 40, 56, 86, 87.²⁰ Morris Bornstein, Joint Economic Committee, 1959, op. cit., pp. 385-386.

This pricing distortion is even more pronounced in considering the machinery and equipment portion of investment. Whereas (see table 8) the machinery and equipment portion of investment has considerably exceeded the nonresidential construction portion in the West European economies, and been of approximately even in the United States, it has been significantly smaller in the Soviet economy. Again the explanation may lie in diverse pricing procedures, that is, the usually low ruble machinery prices. The purchasing power of Western European currencies in 1955 for machinery and equipment was between two-thirds and three-quarters that for GNP as a whole;²¹ while for Soviet rubles it was 1.85 times larger.²²

TABLE 8.—*Elements of investment as proportions of GNP in 7 major economies, 1950-60 (average annual percentage of GNP)*

Country	Residential construction	Other construction	Machinery and equipment	Total capital investment
France.....	4.8	6.2	9.6	20.6
Germany (Federal Republic).....	5.8	6.4	13.2	25.4
Italy.....	5.6	7.1	10.1	22.9
United Kingdom.....	3.3	4.7	8.7	16.8
Japan.....	2.4	23.2		25.6
U.S.S.R. 1.....	4.0	10.2	7.5	23.9
United States.....	4.8	6.6	6.3	17.7

¹ 1955 proportions. In constant prices which do not reflect compensating price movements, average of 1950, 1955, and 1960 proportions are residential construction 4.5, other construction —11.2, machinery and equipment —8.0, total capital investment —26.4.

Sources: OECD countries and Japan: See table 1 sources; U.S.S.R.: See table 1 for investment total and table 9 for investment breakdown.

Direction of investment

If the volume of investment and proportion of the economy's resources devoted to investment are not essentially higher in the U.S.S.R., before taking price factors into account, than in other economies with similar growth rates, the pattern of investment is distinctive. As indicated in the sectoral distribution of investment in table 9, an unusually large share of investment resources have been channeled by the U.S.S.R. into agriculture and manufacturing and unusually small shares into utilities, transportation, and until recently, into housing. The light emphasis on the latter three sectors manifests the low priority of the consumer in Soviet economic priorities.²³ The heavy Soviet emphasis on manufacturing investment, of course, illustrates the key official priority, and that on agriculture is graphic evidence of the cost of this troublesome sector to the Soviet economy, and the price which now must be paid for cumulative neglect and even disinvestment in earlier years.

²¹ Milton Gilbert & Associates, *op. cit.*, pp. 40, 56, 87.

²² Morris Bornstein, Joint Economic Committee, 1959, *op. cit.*, p. 386.

²³ In other major economies utility investment is intended largely to serve consumer power demands and transportation investment is mainly directed into highway building to carry private passenger vehicles.

TABLE 9.—Sectoral distribution of capital investment in 5 major economies

[Percent of total]

Country	Year	Agriculture	Mining manufacturing	Utilities	Transportation communications	Housing	Other ¹	Total
Germany (Federal Republic)	1953	7.8	30.1	7.4	15.4	23.9	15.4	100
	1959	8.3	27.6	5.4	16.1	23.1	19.5	100
Italy	1953	13.8	26.1	6.7	15.9	20.7	16.8	100
	1959	11.9	22.7	6.4	15.0	28.6	15.4	100
United Kingdom	1953	4.0	27.3	11.2	11.0	26.8	19.5	100
	1959	4.0	27.3	11.7	13.7	17.8	25.3	100
Union of Soviet Socialist Republics	1953	15.9	37.8	3.4	12.0	18.2	12.6	100
	1959	14.1	35.0	4.1	8.5	22.6	15.8	100
United States	1953	6.3	22.0	7.8	7.8	25.8	30.3	100
	1959	4.7	16.2	7.1	7.0	30.0	35.0	100

¹ Includes trade, health, education, military construction and services.

Sources: OECD: OEEC, "General Statistics," March 1961. USSR: Tsentral'noe Staticheskoe Upravlenie, "Kapital'noe Stroitel'stov v SSSR," Moscow, 1961, pp. 57, 64, 68, 154, 155, 188, 189.

Incremental capital-output ratios

Another way of estimating the role of investment in economic growth is to measure the yield of investment in terms of output accruing from it. Output, of course, is the product of the interaction of a number of economic variables, the major ones being labor, capital, and organization. We have already attempted to measure the effectiveness of manpower inputs in the foregoing productivity estimates. In a similar fashion we can estimate the productivity of capital, assuming it to be the only variable affecting output. The device for accomplishing this is the incremental capital-output ratio (ICOR), the addition to national product resulting from an additional unit of capital, that is, investment.²⁴ In the comparison shown in table 10 the ratio measures cumulative capital investment from 1950-60 divided by the increase in the gross national product per employee in factor cost over this 10-year period.

Increments to output are measured in terms of gains per employee rather than total output in order to remove the effects of increases in employment from the calculation. By excluding the influence of the most important other variable in the production function, the effects on output of increases in capital can be more closely approximated.

At first glance it would appear that the U.S.S.R. has been somewhat more efficient than other leading industrial powers, except Japan, in terms of the output gains from its investment efforts. This conclusion must, however, be qualified once again by the earlier remarks concerning the underpricing of Soviet capital goods. If Soviet investment terms of their resource costs, cumulative investment outlays would be valued in terms of their resource costs, cumulative investment outlays would have been higher than shown in the above comparison, while the adjustment in the valuation of output would have been proportionately less. Therefore, the ICOR for the U.S.S.R. would be higher than the figure in table 10 by an indeterminate amount. Such a result is inconsistent with the high concentration of Soviet investment in the high investment yield area of manufacturing and low concentration in transportation and housing with their slow re-

²⁴ Strictly speaking the increment to capital should be net, exclusive of capital retirements. In the absence of such data the measures above are gross in the sense that retirements are not deducted from the additions to capital stock.

turns (see table 9). Part of the explanation for the relatively low productivity of investment lies in its inefficient application in agriculture, and part in the much higher proportion of Soviet investment in industry being made in the more capital intensive raw material sectors rather than end-product production. The market economies rely more heavily on foreign sources of raw material supply. While investment in foreign sources of raw materials supply would not be reflected in gross domestic capital investment figures, it would be reflected in the foreign balance.

TABLE 10.—*Incremental capital output ratios, 1950-60*¹

Country:	<i>I</i> cor
France.....	6.2
Germany (Federal Republic).....	6.3
Italy.....	6.6
United Kingdom.....	9.4
Japan ²	5.1
United Soviet Socialist Republics.....	5.6
United States.....	10.4

¹ Cumulative capital investment in constant prices divided by increase in output per employee.

² 1953-60.

Sources: Investment: See footnotes to table 8. Employment: See table 6. Gross national product: See footnotes to table 1.

CHARACTERISTICS OF RAPID ECONOMIC GROWTH AND DISTINGUISHING FEATURES OF SOVIET GROWTH

Without attempting to explain the policies which have enabled five of the seven major economies to achieve their results in the decade following 1950, it is possible from the foregoing presentation to draw tentative conclusions regarding the behavior of the rapidly growing economies and that of the U.S.S.R. in particular. As noted above, there is a close correspondence between proportions of GNP allocated to investment and rates of expansion of national product. Matching high rates of investment have been rapid increases in labor forces, except in France. The composition of the respective labor forces have been improved qualitatively by large-scale transfers from farm to urban occupations. Both the high rates of investment and the structural changes in the labor force have led to rapid increases in labor productivity. The economies with the most rapid growth have also experienced the greatest increases in the productivity of investment, as measured by incremental capital output ratios.

The Soviet Union has differed in several important respects from the performance of other rapidly growing major economies. While sharing the heavy common emphasis on investment, the U.S.S.R. has assumed a relatively heavier defense burden than all other countries in the comparison, except the United States. The drain which military research, development, and production has imposed on Soviet scientific, engineering, and managerial resources may be a major factor in explaining why the productivity of Soviet investment has been lower (higher incremental capital-output ratio), after adjustment for pricing distortions, than in other economies with similar rates of growth. Correspondingly, the U.S.S.R. has devoted less of its resources to enhancing the welfare of the consumer, as evidenced by the much smaller role played by the tertiary sectors which largely cater to the consumer.

A persistent feature of Soviet performance has been its chronic agricultural problem. The U.S.S.R. has been less successful in the postwar period than other rapidly growing economies in reducing the role of agriculture. It has benefited less in its ability to use agriculture as a manpower reservoir for industry and other urban sectors. At the same time it has channeled a significantly larger portion of its investment resources inefficiently into agriculture with deleterious effects on overall investment productivity. In part the Soviet agricultural dilemma is a price paid for autarchy; the other major economies, except for the United States, rely to a considerably greater extent on foreign sources of supply for food and fibers. Lastly, along with Japan, the U.S.S.R. has enjoyed a longer period of sustained rapid growth, but this may be a function of its lesser degree of development.

LONGER TERM GROWTH RATES

The study has concentrated on the 1950 decade with the implicit assumption that the national growth trends of this period can be meaningfully compared without reference to longer term trends. While it would be presumptuous to reject the perspective of history, it might be argued that the profound institutional changes that have characterized the market-oriented economies since the war explain discontinuities in longrun growth trends. In particular, the commitment of virtually all governments to policies of maintenance of high levels of employment and of some to concerted economic expansion through formal planning represent sharp breaks from past traditions. On the other hand it can be plausibly argued that the postwar growth surges in the continental European countries and in Japan reflect recoupments of technological gaps which had widened between them and the United States during the great depression and the Second World War. This claim of a deferred narrowing of the technological gap is also relevant to the Soviet experience. The balance of these arguments would seem to indicate that the perspective of history cannot be disregarded, but that its weight in appraising the experience of the 1950's is indeterminate.

If the statistical evidence on comparative long term growth rates is examined, some definite, but far from conclusive patterns emerge.²⁵ Among the market economies, except for Italy, the countries which showed the fastest growth rates from 1950 to 1960 also expanded most rapidly in the previous prosperous period between 1922 and 1929 with about the same rank order. Over the longer span of history, covering the period from the last quarter of the 19th century forward, Japan's performance has been the most rapid and most consistently upward. Using 1928 as a base, both Japan and the U.S.S.R. have maintained the largest and steadiest rates of increase. What distinguishes these two economies from the other five is their lower state of development throughout the period. This implies the superior growth-inducing advantage available to these two nations from larger scale possibilities of manpower transfers from low productivity agriculture and handicrafts to more productive sectors. The other economies had to rely mainly upon productivity increases within urban sectors. This wide differential in technological advance-

²⁵ Information of long term growth rates of market economies is sourced to D. C. Paige, "Economic Growth: The Last Hundred Years," National Institute Economic Review, July 1961, pp. 24-50. Estimates of Soviet growth rates are obtained from Bergson, op. cit., p. 217.

ment between the modern and traditional sectors in the two economies was occasioned in Japan by the decision to concentrate investment in manufacturing in order to compete in foreign markets and in the U.S.S.R. in order to achieve growth and enhance national power as rapidly as possible.

The use of very long term growth rates as benchmarks for evaluating the growth trends of the fifties founders on both conceptual and statistical grounds. The years since 1914 have been characterized by major disturbances of world wars and the great depression. The years prior to 1914 were less disrupted, but the measurement problem looms large, both in an index number and a data availability sense. Furthermore, the structures of all the major economies bear little resemblance to those prevailing a half to a full century ago. With these qualifications in mind, we can conclude that in all the market economies under review the growth trends of the past decade have been substantially above average annual growth since 1913 and between 1913 and the respective initial years of the time series. This generalization is also true of the Soviet Union for the post-1913 period. Lack of data preclude estimates prior to 1913 for the U.S.S.R.

PROJECTIONS OF FUTURE GROWTH

Economic projections must necessarily be qualified by assumptions as to the future courses of particular policies and trends in key variables. The hazards of prediction are amplified for so heterogeneous and inclusive a magnitude as national product. Fortunately for the prognosticator the possible margins of error have been reduced by the increasing propensity of governments to consider economic growth as the central focus of economic policies. The determination of the Soviet regime in this respect is obvious, but in the economies of the West, too, national guidelines of growth are becoming widespread. They have taken the forms of explicit plans in France and Japan and official policy declarations in the United Kingdom and the United States. While neither West Germany nor Italy engage in explicit planning, they consciously employ specific fiscal and monetary measures to encourage economic expansion. Italy appears ready to embark on a program of national planning. In addition to these national guidelines there is the 50 percent growth target which has been adopted by the Organization for Economic Cooperation and Development as a whole for the 1960-70 period.

In venturing growth trends for the individual economies, it would not be unrealistic to accept plan targets as reasonable estimates, since the French and Japanese plans represent coordinated policy aims which have been successfully implemented in the past decade and reflect firm commitments to repeat such performances in future years. The policy declarations of the British and United States Governments do not have the systematized implementing features inherent in national plans, but in the United States case are accepted as estimates of feasible potential and in the British are modified downward to take account of belated implementation. In the absence of any firm

national targets, growth projections for West Germany and Italy are based on expected employment and productivity trends. Since Soviet national accounting concepts do not resemble those used in the West, official plans do not furnish suitable guidelines. Therefore, it is necessary to substitute the procedure of estimation of Soviet employment and productivity trends in projecting U.S.S.R. growth.

TABLE 11.—*Projected growth of GNP for 7 leading economies, 1960-70 (average annual rates in percent)*

Country:	Rate (percent)
France.....	5.0-5.5
Germany (FR).....	4.5-5.0
Italy.....	5.0-5.5
United Kingdom.....	3.5-4.0
Japan.....	7.0-7.5
U.S.S.R.....	6.0-6.5
United States.....	4.0-4.5

Basis of country GNP projections

France.—The French fourth plan calls for a GNP growth rate of 5½ percent per annum through 1965.²⁶ The plan is no mere statement of intentions, but the focus of a systematized course of action closely supported by the state's extensive fiscal and monetary powers. In the past, plan goals have generally been overfilled. The determination of the Government to implement this target, together with an improved employment situation arising from the postwar rise in the birth rate, make the official goal a feasible one. The likelihood that some decelerations in the growth rate may occur in the latter part of the decade explains the use of a range in which the plan increase is the upper limit.

Germany.—Germany's growth during the next 10 years will decelerate primarily because of sharply reduced increments to the labor force. Thanks to the steady flow of refugees from the East, the industry labor force was expanding at better than 2 percent annually from 1950 to 1960. With this source greatly reduced, the economy must rely on the entry of school graduates for augmentations of its labor supply. Without significant offsets from higher rates of productivity advancement, not likely in light of the economy's recent record in this respect (4.3 percent average for 1955-60), Germany's annual GNP growth rate would not exceed 5 percent, and well may be somewhat lower.

Italy.—Italy's growth during the decade of the sixties will be slightly less than the 5.9 percent attained over the past decade and the past 5 years. This decline will be mainly a function of the country's success in reducing its chronic unemployment pool in the south. With possibilities of augmentation of the labor force reduced by half (about 1 percent per year), offset in part by an improved rate of technological advancement in this, the least advanced of the major Western European economies, the Italian growth rate should lie in the 5- to 5.5-percent range.

United Kingdom.—The United Kingdom has only recently established a formal planning organization (the National Economic Devel-

²⁶ Assemblée Nationale, "Projet de Loi portant approbation du Plan de développement économique et social," Tome I, Paris, 1961, p. 2.

opment Council) and started to pursue a systematic growth policy. The Council has proposed a 4-percent growth rate for the 1961-66 period, with the rate attaining 4.5 percent toward the end of the period and presumably at least as high in subsequent years. With actual implementation of a concerted policy sometime ahead, it will be assumed that the 4-percent target will represent an upper limit for British growth over the current decade.

Japan.—Japan's official plan calls for a doubling of national product between 1960 and 1970.²⁷ The past record of the most dynamic of the major economies in overfulfilling its historic national product targets, together with its demographic and productivity performance prospects, bodes favorably for accomplishment of its ambitious objective.

United States.—In its 1962 report to the President, the Council of Economic Advisers claimed that an annual increase in gross national product of 4.3 percent was feasible during the 1960's.²⁸ The entry into the labor force of youths born during the high birth rate years of the war and postwar years will facilitate this aim by enabling employment to rise at nearly double the rate of the 1950's. Should it be possible to employ this more rapid flow of job entrants and eliminate present employment slack, those stimuli, together with the more rapid rise in productivity which accompanies fuller use of resources, would enable the United States to attain the growth claimed by the report.

U.S.S.R.—During the years 1950-60 the able-bodied labor force (males 16-59 years and females 16-54 years) increased at an average annual rate of 1.4 percent, while employment rose by 1.9 percent.²⁹ The disparity was even more marked in the last half of the period with increases of 0.7 and 1.3 percent, respectively. The success of the regime in raising an already high rate of labor participation was achieved, as will be found carefully explained in the section of this study dealing with population and labor force, by reductions in secondary and higher education enrollments and by partial demobilization of the armed forces. Such actions are nonrepetitive expedients which cannot be utilized to any significant degree in the present decade. Although there are numerous inducements to entice larger numbers of housewives into labor force, the potential here is small, given the very large participation of women in productive employment, as compared with other major economies.

It would, therefore, appear heroic to expect employment increases at rates much in excess of those forthcoming from the growth in the able-bodied labor force. Between 1960 and 1970 the able-bodied labor force will increase at 1.2 percent per year, and at only 0.8 percent from 1960 to 1965. Soviet employee productivity was rising at an average rate of 4.7 percent between 1950 and 1960, but had

²⁷ Japan, Economic Planning Agency, "New Long Range Economic Plan of Japan," 1961-70, Tokyo, 1961.

²⁸ "Economic Report of the President," January 1962, Washington, p. 114.

²⁹ These and subsequent manpower statistics were obtained from an advance copy of statistics appearing in chapter prepared by Foreign Demographic Analysis Division, Bureau of Census, Department of Commerce.

increased to 5.1 percent for the latter 5 years. Assuming some slight success in further increase in labor participation ratios and approximately the above range of productivity gains, Soviet gross national product could grow by 6 to 6.5 percent per year. The productivity assumption is based on an expected resumption of progress in agriculture, both in terms of expansion of output and releases of manpower to the higher productivity urban sectors.

The judgment concerning the trend in Soviet labor productivity assumes that the damping effects of reduced opportunity for foreign technological adaptation, rising replacement investment requirements, rising technological claims of military production, and further reductions in the workweek will be offset by the stimulating factors of a rapidly increasing cadre of graduating scientists and engineers, an improved political tolerance of institutional change, a rising rate of investment, and unexploited possibilities of technological adaptation in consumer goods production.

THE RECENT RECORD IN AGRICULTURAL
PRODUCTION

BY

JOSEPH W. WILLETT

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AGRICULTURE

SUMMARY

The vast industrialization program promoted by Stalin over a quarter of a century was made possible by restrictions on the agricultural sector and on the welfare of the Soviet consumer in general. This program included the restriction of investment and current inputs in agriculture, the payment of minimum prices for the compulsory delivery of farm products, the setting of maximum retail prices on farm products, the forcing of rural labor into industry, and the use of agricultural exports to pay for imports of industrial equipment. The forced depression of holding down the levels of consumption and agricultural development created a serious imbalance in the Soviet economy. Although large numbers of rural workers were forced into industry, the capital base of agriculture was so low that it remained a labor-intensive sector, and the movement of farmworkers into industry eventually slowed down. Furthermore, the continued low level of agricultural output limited the incentive of industrial workers. Thus, at the time of Stalin's death, the stagnation of agriculture loomed up as a threat to future industrial growth.

During the period 1954-58, Khrushchev sought to introduce a better balance in the economy by increasing the rate of agricultural investment relative to industrial investment, by raising government purchase prices for farm products, and by instituting a number of organizational measures. Much of the increment in agricultural investment was sunk in the new lands development—the eastward expansion of wheat cultivation. To support expansion of the livestock industry, a program for a large increase in the area planted to corn was inaugurated in 1955, and a campaign to catch up with the United States in per capita production of meat and milk was launched in 1957. These measures, augmented by better than normal weather conditions, lifted agriculture out of its stagnant position and temporarily provided a better balance between agricultural and industrial development.

In recent years, however, the rate of agricultural investment has declined relative to industrial investment, acreage expansion has become marginal, and weather conditions have returned to normal or worse than normal. With little progress in agricultural output during these years, the problem of raising the level of Soviet agriculture without impairing industrial growth has again become acute.

In January 1961, Khrushchev advocated correcting the growing imbalance between producer and consumer goods. He evidently believed that overfulfillment of industrial production goals would generate substantial resources throughout the remaining years (1961-65) of the 7-year-plan period, a large share of which could be invested in the consumer and agriculture sectors. During 1961, however, it became clear that increased space, defense, and industrial construction costs placed other demands on these funds. In June 1962, state

prices for livestock purchased from collective farms and individuals were increased an average of 35 percent in order to stimulate the lagging animal husbandry sector, which had been operating at huge losses on most farms. Significantly, the financing of this price increase was to fall not on defense or on heavy industry, but on the consumer. Aside from several concessions to improve the poor financial condition of the collective farms, there is little evidence that the priority of agriculture has been raised.

Organizational changes and a new program to change the cropping pattern have been substituted for Khrushchev's promise of a large increase in agricultural investment. Radical reorganizations in 1961 and 1962 weakened the position of the technical agricultural specialists and governmental managerial class and enhanced the position of the party bosses in agricultural administration. Unwilling or unable to depend on decentralized administration based on the recommendations of technical specialists, Khrushchev has again embarked on a program that relies on discipline and agitation by the ubiquitous party organization. This latest program calls for changing the cropping pattern by plowing up grass land and fallow land and planting corn, sugarbeets, peas, and field beans. In the short run this program could result in a sizable increase in the production of the feed crops necessary to increase livestock production, but in the long run the program is likely to be self-defeating as soil moisture and nutrients decline. Reducing the area of clean fallow in the new lands will compound the risks in that area where production of crops is already a hazardous venture.

1. RECENT TRENDS IN OUTPUT

A. VALIDITY OF STATISTICS

The student of Soviet agriculture has always been faced with serious problems in the interpretation of official data. From 1933 to at least 1953 the U.S.S.R. officially perpetrated overestimation of the production of agricultural crops by not deducting harvest losses from the estimates of crops in the fields. Following Stalin's death, however, the new Soviet leadership indicated an awareness that the misleading nature of Soviet statistics on agricultural production was only helping to mask a critical situation. Although publication of statistics on agricultural production increased somewhat after 1953, data continued to be fragmentary. Production of grain continued to be guarded as a state secret until Khrushchev's revelation of the grain situation in December 1958.

Whereas the official policy of overestimating agricultural production was apparently discontinued after 1953, statistical malpractices at the lower levels increased, especially after 1957. The dissolution of the machine tractor stations (MTS's) at the beginning of 1958 resulted in the loss of an effective statistical control mechanism. Furthermore, since 1957, Soviet administrators and farm managers have been confronted with impossible goals. Khrushchev at times has insisted personally that officials adopt unrealistic pledges and then made it clear that their careers depended on meeting these pledges. Many officials have reacted by falsifying records. Opportunists and glory seekers contributed to a wave of statistical falsification. Unscrupulous individuals, in hopes of rapid promotion in the party or government apparatus, undertook ridiculously high

pledges, some of which were subsequently fulfilled by padding the statistical reports.

There were many convenient opportunities for deception. Farm managers are often able to manipulate the statistics relative to the share of production which remains on the farm. Animal husbandry, in particular, lends itself to fabrications of data. For instance, the fact that milk fed by hand to animals (not suckled) is included in Soviet statistics on production of milk can be utilized for padding accounts with relatively complete freedom of detection if not greatly abused. Some overzealous farm managers, however, created absurd situations for themselves. The Lenin Bayogi kolkhoz in Uzbekistan claimed, for example, that during the first quarter of 1961 seven tons of milk were hand fed to young pigs—as much as was needed to fulfill the plan for production of milk. It was later revealed that the kolkhoz did not raise pigs. It is relatively easy to manipulate data on livestock feed, most of which remains on the farm. Shortcomings can be disguised by writing off livestock as having perished from disease, weather, and predatory animals.

Before the revelations of widespread falsification of statistics in recent years, the acreage and procurement data were believed to be reasonably accurate. This confidence was unwarranted. In January 1961, Khrushchev drew an admission from N. V. Podgorny, Party First Secretary of the Ukraine, that corn acreages in the Ukraine (the largest corn producing area in the U.S.S.R.) were falsely reported. In 1960, one rayon in Pavlodar oblast in Kazakhstan included 13,000 hectares of uncut grain and 10,000 hectares of unthreshed grain as "harvested area" and padded its figures on production of grain by 21,800 tons.

One common malpractice has been the delivery of feed and seed stocks of grain in order to fulfill or exceed the plan for deliveries of grain. At the January 1961 Plenum, Khrushchev revealed that 22 percent of the grain procured by the government in the RSFSR in 1959 was returned to the farms. In order to fulfill procurement plans, many farm managers purchase products such as meat, milk, or eggs on the kolkhoz market or from farm members and credit the purchases to the production of the farm.

The scandalous extent of statistical falsification was indicated by the issuance of a decree in May 1961 which invoked a prison sentence of up to 3 years for those persons guilty of making "inflated entries in state accounts or other deliberate distortions of accounts on the fulfillment of plans."

The widespread falsification of statistics in recent years probably resulted in a significant upward bias, for most of the falsification was generated by pressures to fulfill goals. Nevertheless, no downward revisions were made in the production statistics for any of the major agricultural commodities (except cotton) in the *Narodnoye Khozyaystvo SSSR v 1960 Godu*, published in August 1961. Production figures for a large number of commodities as well as for the index of gross agricultural output were even higher than those published earlier. A policy of not making downward revisions in national statistics on agricultural production was implied in the Soviet statistical journal *Vestnik Statistiki* in June 1961:

* * * The perversions of accounting data by individual workers did not influence the overall totals of statistical works, because the basic indexes of the development of the national economy of the U.S.S.R. are mutually controlled

and made precise on the basis of comparability of the different sources and of all-round economic and statistical analysis. These national economic totals do not and cannot arouse any doubts.

Many statistics on agricultural production, however, are not easily verified by central authorities. Although officials should have fairly firm statistical control over that part of agricultural production which the government procures, it was revealed that there was collusion among top officials to pad procurement accounts as well. For example, the fact that all cotton is procured by the state and that production statistics can be verified by ginning records did not prevent high-level collusion to falsify cotton statistics in Tadzhikistan.

B. INDEX OF AGRICULTURAL PRODUCTION, 1950-61

(1) *Some limitations of the index*

The following index represents an attempt to provide a comprehensive measure of the changes for 1950 through 1961 in net agricultural production in the U.S.S.R.:

1950.....	100	1956.....	139
1951.....	91	1957.....	139
1952.....	103	1958.....	157
1953.....	104	1959.....	148
1954.....	107	1960.....	154
1955.....	123	1961.....	162

The measure of agricultural production chosen is the sum of the price-weighted quantities of the major crops and animal products, including changes in inventories, of livestock with deductions for the amounts of potatoes, grain, and milk fed to livestock (to avoid double-counting) and with deductions of potatoes and grain used as seed. Because of the many serious problems involved—foremost of which is the reliability of statistics—the results must be used with caution. The index is a more reliable indicator of the changes over a period of years than of those between any 2 given years. It is a more reliable indicator of the direction of change than of the precise amount of change.

The computation of such an index involves problems of three main types: (a) incomplete coverage of the commodities, (b) possible errors in the estimates of the gross and net production of the various commodities, and (c) the choice of a system of weights for aggregating the commodities. This index covers all the major agricultural commodities produced in the U.S.S.R. except eggs, fruits, and vegetables, so that the limitation of coverage probably is not serious.

Estimates of the gross production of commodities, which in some cases differ significantly from official data, are discussed in the following sections. Errors in the estimates of the gross and net production of the commodities in some cases may be quite large,¹ but the effects of such errors on the index probably are not excessive. State purchase prices (July 1958) were used as weights with some adjustments for free market sales. Although a case may be made for alternative weights, their use probably would not affect the main configuration of the index.

¹ In addition, changes in inventory of livestock are estimated by means of changes in the number of livestock and ignore changes in weight and value.

(2) *Changes in agricultural production*

During the period 1951-54, only limited gains were registered in net agricultural production. A rapid expansion in sown acreage together with a good harvest of grain in the Ukraine in 1955 and a bumper harvest of wheat in the new lands in 1956 raised the index of production substantially. An excellent harvest for most crops coupled with gains in livestock products resulted in a large increase in production in 1958. Since 1958 the index reflects the general stagnation in Soviet agriculture. This lack of progress is in part due to the fact that 1958 was an excellent crop year, whereas the succeeding 3 years have been only average or below. In part, the lack of progress has been caused by the chronic shortcomings of the agricultural sector—inadequate material incentives to the farmers; inadequate investment, as reflected in a shortage of critical machinery, spare parts, and mineral fertilizers; and ineffective, overcentralized direction.

C. PRODUCTION OF MAJOR CROPS AND LIVESTOCK PRODUCTS

Much of the increase in production of crops that occurred during the past decade in the U.S.S.R. is attributable to an expansion in the sown acreage. This expansion was primarily confined to the period 1954-56 when the new lands were being plowed. The acreage of grain and other crops used primarily for livestock feed increased most.

As noted in the section on the validity of statistics, since December 1958 the U.S.S.R. has published figures on production of grain claimed to be in terms of "barn yield" rather than "biological yield." These claims are given below (in millions of metric tons), along with estimates for those years where the claims do not appear to be reasonable:

Year	Soviet claims	Estimates	Year	Soviet claims	Estimates
1950.....	81	-----	1956.....	128	115
1951.....	79	-----	1957.....	105	-----
1952.....	92	-----	1958.....	141	125
1953.....	83	-----	1959.....	126	100
1954.....	86	-----	1960.....	134	100
1955.....	107	-----	1961.....	137	115

Based on reports on crop conditions, weather information, and grain acreage data, the Soviet claims for production of grain for the years 1950-57 (published since December 1958) appear to be fairly reliable. For 1956 the difference between the claim and the estimate represents an adjustment for extraordinary postharvest losses in the new lands caused by an acute shortage of facilities to store and transport the bumper crop. Beginning in 1958, Soviet statistics on production of grain appear to be highly inflated.

The U.S.S.R. has been relatively unsuccessful in increasing production of potatoes. Although acreage expanded somewhat from the low level of the early 1950's, it has declined in recent years to a level only slightly higher than in 1950. Potato yields have not increased during the past decade.

Production of most technical crops in the U.S.S.R. has increased rapidly during the past decade. (See table 1.²) The amounts of

² Table 1 follows on p. 100.

sugarbeets, sunflower seeds, and fiber flax produced in recent years are about double the size of the harvests in the early 1950's. The increase in production of sugarbeets is largely the result of an expansion in acreage whereas increased yields accounted for most of the increase of sunflower seeds and fiber flax. Increases in the yield of cotton were achieved largely by shifting cotton from nonirrigated to irrigated land.

Production of meat, milk, and wool increased rapidly during the period from 1950 to 1960. (See table 2.³) Khrushchev took measures to raise the incentives of the livestock producers, and great emphasis was placed on expanding the livestock industry in connection with the corn program and the program to catch up with the United States in the per capita production of meat and milk.

TABLE 1.—*Production of crops in the U.S.S.R., 1950–61*

[In million metric tons]

Year	Potatoes	Ginned cotton ¹	Sugarbeets ²	Sunflower seed	Fiber flax
1950.....	88.6	1.18	20.8	1.80	0.255
1951.....	70.0	1.24	23.7	1.70	.194
1952.....	72.0	1.26	22.3	2.20	.212
1953.....	72.6	1.28	23.2	2.63	.162
1954.....	75.0	1.40	19.8	1.91	.218
1955.....	71.8	1.29	31.0	3.80	.381
1956.....	96.0	1.44	32.5	3.95	.521
1957.....	87.8	1.40	39.7	2.80	.440
1958.....	86.5	1.45	54.4	4.63	.438
1959.....	86.7	1.55	43.9	3.02	.364
1960.....	84.4	1.43	57.7	3.97	.425
1961.....	84.0	1.50	50.6	* 4.00	.403

¹ Ginned cotton is assumed to equal 1/4 of raw (seed) cotton procurements.² Not including sugarbeets grown for livestock feed.³ Estimated. The U.S.S.R. claims a record harvest of 4.7 million tons.TABLE 2.—*Production of livestock products in the U.S.S.R., 1950–61*

[In million metric tons]

Year	Meat ¹	Milk ¹	Wool	Year	Meat ¹	Milk ¹	Wool
1950.....	4.87	35.3	0.180	1956.....	6.60	49.1	.261
1951.....	4.67	36.2	.192	1957.....	7.37	54.7	.289
1952.....	5.17	35.7	.219	1958.....	7.70	58.7	.322
1953.....	5.82	36.5	.235	1959.....	8.92	61.7	.356
1954.....	6.28	38.2	.230	1960.....	8.68	61.7	.357
1955.....	6.32	43.0	.256	1961.....	* 8.4	62.5	.367

¹ Because of differences in definition or concept, statistics on Soviet production of meat and milk are not comparable with U.S. data for these products.² Estimated. The U.S.S.R. claims that 8.8 million tons of meat were produced in 1961.

2. MAJOR PROGRAMS TO STIMULATE GROWTH

Khrushchev has sponsored four main programs aimed at a rapid increase in agricultural production: the new lands program; the corn program; the program to catch up with the United States in production per capita of meat and milk; and the latest program, which calls for a radical change in the cropping system.

³ Table 2 above.

A. NEW LANDS PROGRAM

The new lands program was conceived and carried out with a speed unmatched in agricultural history. The original goal announced in early 1954 was to reclaim and seed not less than 13 million hectares by 1955, primarily in Kazakh S.S.R. and Siberia. In August 1954, however, when harvest prospects looked excellent, a new decree was published which raised the goal to between 28 and 30 million hectares and extended the terminal date to 1956. This new goal was reached in 1955. Since 1955 the plowing of new land has continued at a slower pace, reaching a total of 42 million hectares in 1960.

In 1955, which probably was the most costly year of the program, the new lands accounted for approximately 20 percent of the total planned allocations of budgetary expenditures for agriculture. Allocations of agricultural machinery were large and were made at the expense of the older agricultural areas. Loans of equipment from other areas were important in facilitating the harvesting and delivery of grain to concentration points.

The latitude, soils, and climate of much of the new lands area are somewhat analogous to those of the prairie provinces of Canada—Manitoba, Saskatchewan, and Alberta—one of the greatest wheat-producing regions in the world. The topography of the new lands is easily adapted to large-scale, mechanized grain farming. Much of the soil is fairly suitable for production of grain, although alkalinity is a serious problem in some areas.

More important than the marginal or submarginal character of some of the soils is the hazard of climate. There is no mountain barrier between the new lands and the central Asian deserts to the south or the Arctic region to the north. When the dry, hot winds from central Asia sweep northward, a disastrous drought may result, and Arctic winds may bring snow in August.

The average annual rainfall in the Siberian portion of the new lands is quite similar to that in the Canadian Wheat Belt, ranging from about 12 inches along the border between the Kazakh S.S.R. and Siberia to 16 inches along most of the northern edge of the new lands. Cultivation of crops is especially hazardous in much of the new land in Kazakh S.S.R., where the average annual rainfall ranges from about 12 inches to about 9 inches.

Because of the extreme fluctuations from year to year in the amount and distribution of rainfall, the size of the harvest varies sharply in the new lands, especially in Kazakh S.S.R. In 1954 and 1956, growing conditions were unusually favorable, and the yields of grain were well above average. In 1955 and 1957, however, most of the new lands suffered from drought, cutting yields to much below average. A good harvest was gathered in 1958, but yields during 1959–61 were relatively poor. Moisture supplies were inadequate in 1959 and 1961, and cool, moist weather in 1960 promoted heavy weed infesta-

tion. Estimates of production of grain in the new lands and their contribution to the total Soviet production of grain are shown below:

Year	Sown area (million hectares)	Yield (centners per hectare)	Production (million metric tons)	Proportion of total production ¹ (percent)
1954.....	4.3	10.5	4.5	5
1955.....	18.5	4.3	8.0	7
1956.....	26.0	9.6	25.0	22
1957.....	26.0	5.0	13.0	12
1958.....	26.0	8.8	23.0	18
1959.....	23.0	7.0	16.0	16
1960.....	26.0	6.9	18.0	18
1961.....	26.0	5.8	15.0	13

¹ Total production has been estimated and differs from official claims in some cases.

In the past few years, several Soviet writers have recommended increasing the area of clean fallow—with an implied reduction in grain acreage—in order to control weeds, conserve moisture, reduce wind erosion, and achieve higher and more stable grain yields in the new lands. The leadership, however, has adopted the policy of trying to maximize production of grain in the new lands in the short run. This pressure to increase production of grain threatens the future of the new lands as a stable grain base. The latest major program, which calls for radical changes in the cropping system, has already resulted in a further reduction in the area of clean fallow. This program is discussed under a separate heading.

B. CORN PROGRAM

Until 1955, corn occupied a relatively unimportant place in the agriculture of the U.S.S.R. The U.S.S.R. has no large area with conditions of soil and climate as favorable for production of corn as in the U.S. Corn Belt. In 1954, corn occupied only 4 percent of the area sown to grain.

In January 1955, Khrushchev introduced a program for expanding production of corn. He said that the livestock feed situation was serious, adding that it was on the basis of corn that the United States succeeded in achieving a high level of livestock production. He proposed to increase the area of corn from the 4.3 million hectares in 1954 to 28 million hectares in 1960, an area almost equal to the 30 million hectares planted to corn in the United States in 1957. Much of this expansion had to take place in areas where corn had never been grown and where it was impossible for commonly grown types of corn to mature as grain. Khrushchev therefore emphasized production of corn silage and green feed as well as corn for grain. The program was rapidly implemented, and by 1962 corn acreage had expanded to 37 million hectares (see the tabulation below).

Year	Million hectares of corn	Year	Million hectares of corn
1954.....	4.3	1959.....	22.4
1955.....	17.9	1960.....	28.2
1956.....	23.9	1961.....	25.7
1957.....	18.3	1962.....	37.0
1958.....	19.7		

In 1956 and 1960 large acreages of wheat were winterkilled and were reseeded to corn, which accounts for the abnormally high corn acreage in those years. The program to change the cropping pattern, initiated

this year, resulted in a large expansion in corn acreage in 1962, although some of this expansion may be accounted for by the need to reseed winterkilled grains.

Not only was the area planted to corn to be expanded, but yields were to be increased greatly under Khrushchev's program. He spoke glowingly of the success in the United States of increasing yields by use of hybrid seed. His analysis of this success, however, was superficial. He overemphasized the gains attributable to the introduction of hybrid seed, and the experience in the United States that he cited is largely irrelevant to Soviet conditions. In developing the corn program, Soviet planners have continued to emphasize the importance of hybrid seed, but there is no evidence that they have yet made widespread use of well adapted and productive hybrids.

Because of the inexperience of Soviet farmers in growing corn, the lack of locally adapted hybrids, equipment shortages, and the variable weather, the size of the corn crop (grain and silage, expressed in "grain equivalents") has fluctuated from lows of 7 to 8 million tons in 1957 and 1959 to a high of 19 million tons in 1961. In spite of these sharp fluctuations in the size of the crop, the corn program has contributed considerably to the feed supply and to recent increases in the output of livestock products.

C. "CATCH-UP" PROGRAM

For years, Soviet orators have boasted of the industrial might of the U.S.S.R. and promised to surpass the nations of the free world in industrial production on a per capita basis. Before 1957, however, no such promises were made for Soviet agricultural production, and certainly not for production of milk and meat. Indeed, in September 1953 Khrushchev had singled out the livestock sector as the most backward segment of Soviet agriculture, revealing that the numbers of dairy cows and of all cattle were even less than in 1916 and that only small increases had been achieved in the number of hogs, sheep, and goats. Increases in procurement prices during 1953-56, however, and a record grain harvest in 1956 resulted in a significant improvement in the livestock sector, and in May 1957 Khrushchev launched a program to catch up to the United States in per capita production of milk and meat. The following month he boasted that the U.S.S.R. would produce 70 million tons⁴ of milk in 1958 and 20 to 21 million tons⁴ of meat by 1960 or 1961. A summary of these goals and actual production for the years 1956-61 illustrates the complete lack of realism in Khrushchev's boast:

[In million metric tons]

Year	Milk		Meat	
	Goal	Actual	Goal	Actual
1956.....		49		6.6
1957.....		55		7.4
1958.....	70	59		7.7
1959.....		62		8.9
1960.....		62	20-21	8.7
1961.....		63		8.4

⁴ Since the U.S. statistical definitions of milk and meat differ from the Soviet definitions, the U.S.S.R. would have to produce more than the quantities quoted by Khrushchev to achieve U.S. per capita production in comparable terms.

In the same speech in which he announced his goals, Khrushchev admitted that some Soviet economists had calculated that Soviet production per capita of milk and meat could not be raised to U.S. levels until 1975, but he cast aside their advice. Two reasons may account for Khrushchev's failure to accept the views of his economists. Undoubtedly the record grain crop of 1956 had bolstered Soviet hopes. Also, Khrushchev's boasts were part of an important propaganda campaign: the promises to overtake the United States have been given wide distribution throughout the world. Khrushchev stressed that these goals disproved Western claims that the U.S.S.R. is negligent in its concern for production of consumer goods, and he said that the achievement of his goals for meat and milk would "hit the pillar of capitalism with the most powerful torpedo yet seen." He stated:

"Our actions, aimed at raising the economy and at improving the people's well-being, will exert on the minds of vacillators an influence which will be stronger than other methods. And such people will be more anxious to cooperate with us, to side with Marxist-Leninist theory and with the working class in the struggle against capitalism. It will be a great thing, comrades."

Although the Communist Party Central Committee continued to refer to the "catch-up" campaign in its official May Day slogans until 1960, the announcement of the 7-year plan goals in November 1958 amounted to an admission that there was no chance of catching the United States in per capita production of meat by 1960 or 1961. The 1965 meat production goal was set at 16 million tons in contrast to Khrushchev's target of 20 to 21 million tons by 1960-61. In 1961 the catch-up campaign was dropped as a May Day slogan and the faded campaign posters were replaced by fresh pledges to surpass the United States in per capita milk output in 1963 and in per capita meat output in 1970.

Although Khrushchev's boasts in 1957 were completely unrealistic, the increased emphasis on livestock production, combined with a bumper grain harvest in 1958, produced a significant gain in production of meat and milk during the period 1957-59. Since 1959, however, the per capita output of meat has declined and the per capita output of milk has failed to increase.

D. PLOW-UP PROGRAM

At the 22d Party Congress in October 1961, Khrushchev initiated a program that eventually will eliminate the grass rotation system of farming, reduce the area seeded to oats, and restrict the practice of clean fallowing. Following the Communist Party congress, Khrushchev toured the agricultural areas of the U.S.S.R. promoting his program, and at the March 1962 party plenum he firmly admonished those opposing it. Cultivated crops—corn, peas, field beans, and sugarbeets—will be sown on the acreages released.

Grasses currently occupy an important place in Soviet agriculture, but they are not so prevalent in the crop rotations as the current controversy over the grassland system might imply. Under Stalin this system was indiscriminately introduced in all agricultural areas of the U.S.S.R. Following Stalin's death, however, the system was discarded in those areas where it was clearly not suited, chiefly the semiarid zones. About 17 to 18 percent of Soviet sown acreage was in

perennial and annual grasses and clover in 1959. In the more humid northwest, however, they occupied about one-third of the sown area.

In the Temperate Zone, grasses and clovers serve a beneficial purpose in crop rotations by maintaining the fertility and structure of the soil while providing a cheap source of livestock feed. Labor and machinery requirements are generally much less than for cultivated crops. In the U.S.S.R. where lack of fertilizers has long handicapped agriculture, grasses and clovers have contributed significantly toward soil fertility. Furthermore, grass rotations make possible a more efficient use of labor and equipment because the harvest of hay does not coincide with that of other crops.

Clean fallowing, though not extensively practiced in the U.S.S.R. in recent years, has been acclaimed by many Soviet scientists as a partial answer to the low yields caused by weed infestation and frequent drought in the arid new lands region. Canadian experience suggests that Soviet farmers have been sowing a dangerously large proportion of cropland to grain in the new lands. In contrast to 30 to 40 percent of the cropland in clean fallow in the Canadian wheat belt, only about 10 percent of the cultivated land in the new lands area was fallowed in 1959. Failure to institute proper crop rotations in the new lands has already been reflected in decreasing yields.

Khrushchev's tour of the major agricultural areas in late 1961 was aimed at propagandizing the abolition of the grassland system of farming and overcoming the opposition that his proposal had aroused among scientists and specialists. The press campaign waged against this system took on the proportions of a major offensive, which is indicative of significant opposition. At the March 1962 party plenum on agriculture, Khrushchev stated:

The harmful effect of the grassland farming system is evident. But it cannot be said that its advocates are abandoning their positions. They are trying to uphold them stubbornly. In a letter from a group of scientists of the Lithuanian Agricultural Research Institute they assert that grass must be the foundation of the fodder base of stockbreeding. Similar reports come from other areas.

Khrushchev's position was upheld in a resolution of the plenum condemning the grassland system.

The decision to restructure the cropping system is aimed at rapidly improving production of meat and milk by increasing the feed supply. At the March plenum, Khrushchev frankly admitted:

We simply do not have enough meat. If we remain with the present disposition of sown crops, and with the present yields, we shall have no feed. There will be no meat or milk either today or tomorrow.

In 1961, 64 million hectares, or almost 30 percent of the cultivated area, was in sown grass, clean fallow, and oats. Khrushchev plans eventually to shift 41 million hectares⁵ of this area to cultivated crops—corn, peas, field beans, and sugarbeets. In 1962, about 16 million hectares were shifted to cultivated crops and 10 million additional hectares to wheat, barley, and millet, leaving about 38 million hectares in sown grass, clean fallow, and oats. The total sown area increased 11 million hectares (about 5 percent) above 1961.

In the short run the abandonment of the grass rotation system and the reduction of fallow could result in a sizable increase in production of feed crops. The decision to increase the area in cultivated crops in

⁵ The manpower and equipment requirements of the shift in cropping pattern will probably be roughly similar to those of the new lands.

the face of shortages of fertilizers and machinery involves considerable risk, however, and in the long run the program is likely to be self-defeating as soil moisture and nutrients decline. Reducing the area of clean fallow in the new lands will compound the risks in that area where production of crops is already a hazardous venture.

The change has dealt a low blow to Soviet agricultural science. Refutation by fiat of a system of agriculture, which in some degree has general acceptance throughout the world and which has been the official basis of Soviet agriculture since the late 1930's, could well have a demoralizing effect on Soviet scientists comparable to that caused by the repudiation of classical genetics and official adherence to Lysenkoism in 1948.

3. FACTORS INFLUENCING GROWTH

A. CAPITAL INPUTS IN AGRICULTURE

During the period of the new course and the new lands programs the Soviet consumer and the agriculture sector enjoyed improved positions in the scale of national priorities. The percentage of total "productive" investment that went into agriculture reached a peak in 1955. At the January 1961 party plenum, Khrushchev announced another era of high priority for these sectors. The sincerity and urgency of Khrushchev's proposal at the January plenum may be tested by comparison with the new course and new lands programs that were unquestionably in earnest.

Khrushchev's remarks at the January plenum on the subject of priority of economic goals bore a striking resemblance to Malenkov's statements when he launched the new course consumer goods program in August 1953. A careful study of the speeches reveals almost identical wording on the subject, except that Malenkov's program was urgent and definite while Khrushchev's was long-term and vague. Malenkov's new course speech soon generated a series of implemental decrees which spelled out detailed short-run targets and specific priorities. The September 1953 plenum resolution, for example, directed the construction materials ministries to give first priority to the machine tractor stations system in the shipment of materials. Although recently revised plans for rural electrification, irrigation, and allocation of equipment and fertilizer seem to reflect a long-range increase in the priority of Soviet agriculture, none of the "inputs" decrees and resolutions that have followed the January 1961 plenum has clearly pegged agriculture at a higher level in the scale of immediate priorities. For instance, in his opening speech at the March 1962 plenum, Khrushchev suggested that it would be desirable to give priority to the building of three new agricultural equipment plants. The plenum resolution, however, bypassed this suggestion, merely noting that "it is necessary to find additional capital" for agricultural equipment plants.

Quantitative indicators reflect no significant change in the priority status of agriculture during 1961. Agriculture (productive) investment increased only about 6 percent in 1961 compared with increases of 45 percent in 1954 and 38 percent in 1955, the beginning years of the new lands program. (See table 3.⁶) Allocations of trucks and

⁶ Table 3 follows on p. 107.

buses to agriculture remained below the 1954-58 level. (See table 4.7) Only 69 percent of the total tractor output was allocated to agriculture in 1961, in contrast to 74 percent for the period 1954-57.⁸ The production of agricultural machinery (excluding trucks, buses, and tractors), which rose 28 percent in 1961, still fell short of the peak 1957 level of output. The plan for new capacity for the production of critical spare parts and fertilizer for 1959-61 were fulfilled only 64 percent and 44 percent, respectively.

TABLE 3.—“Productive” capital investment in Soviet agriculture,¹ 1951-61 and 1962 plan

Year	Million new rubles ²			Index (1951=100)	Agricultural investment as a percentage of total investment ⁴
	State	Kolkhoz ³	Total		
1951.....	1,025	836	1,861	100	15.8
1952.....	971	962	1,933	104	14.6
1953.....	881	1,029	1,910	103	13.7
1954.....	1,536	1,226	2,762	148	17.0
1955.....	1,992	1,812	3,804	204	20.5
1956.....	2,118	1,906	4,024	216	18.7
1957.....	2,343	1,860	4,203	226	17.6
1958.....	2,279	2,462	4,741	255	17.3
1959.....	2,021	3,050	5,071	272	16.4
1960.....	2,471	2,721	5,192	279	15.3
1961 ⁵	3,000	2,500	5,500	296	(?)
1962 plan.....	⁶ 3,700	(?)	(?)	(?)	(?)

¹ Data exclude outlays for “establishment of herds” and for capital repair.

² In prices of July 1, 1955, adjusted to the new 1961 rate of exchange.

³ Data exclude outlays for tractors and agricultural machinery that formerly belonged to the MTS system.

⁴ Productive capital investment in agriculture expressed as a percent of the total investment in the economy (excluding private housing).

⁵ Estimated.

⁶ An increase of 25 percent compared with 1961.

⁷ Not available.

Sources: “Kapital ‘noe stroitel’stvo v SSSR,” Moscow, 1961, pp. 40, 152 and 155. “SSSR v tsifrakh v 1961 godu,” Moscow, 1962, p. 297. “Voprosy ekonomiki” No. 7, 1962, p. 50.

TABLE 4.—Allocation of trucks, tractors, and agricultural machinery to Soviet agriculture, 1953-61 and 1962 plan

Year	Trucks ¹		Tractors		Agricultural machinery ² (million new rubles)
	Thousand units	Percent of production	Thousand units	Percent of production	
1953.....	69	25	76	68	(?)
1954.....	116	38	99	73	(4)
1955.....	111	33	123	75	540
1956.....	114	31	140	77	710
1957.....	125	33	148	73	1,000
1958.....	102	26	158	72	850
1959.....	76	21	144	68	659
1960.....	66	17	157	66	763
1961.....	³ 86	⁴ 21	181	69	964
1962 plan.....	100	(?)	216	73	1,138

¹ Including buses.

² Excluding trucks, buses, and tractors production in prices of July 1, 1955, adjusted to the new 1961 rate of exchange. Figures for 1956-58 are estimates based on production in physical units.

³ Estimates based on 6-month period.

⁴ Not available.

Sources: “Ekonomika sel'skogo khozyaystva,” No. 1, 1962, pp. 4-6. FBIS Daily Report (U.S.S.R. and East Europe), Mar. 15, 1962. “Traktory i sel'khoz mashiny,” No. 1, 1962, p. 1; No. 4, 1962, p. 2. “Sel'skoe khozyaystvo SSSR,” Moscow, 1960, p. 419. Narodnoe khozyaystvo SSSR v 1960 godu, Moscow, 1961, p. 291, 292, 293, 491. “SSSR v tsifrakh v 1961 godu,” Moscow, 1962, p. 124.

⁷ Table 4 above.

⁸ In March 1962, Khrushchey noted that the agricultural park on Jan. 1, 1962, included 790,000 trucks and 1,168,000 tractors compared with “requirements” of 1,650,000 trucks and 2,696,000 tractors.

State investment in agriculture, scheduled to increase 25 percent in 1962, probably will increase little more than enough to keep pace with the growth of the state sector in agriculture, which is being accomplished largely by the conversion of collective to state farms.⁹ Measures enacted during the period January 1961 to June 1962 (discussed more fully in the next section, "Prices and Wages") are expected to make available to the collectives a total additional sum of 2.35 billion rubles.¹⁰ If one-fourth of this is set aside for investment, as has been normal practice in recent years, then capital available for kolkhoz investment will be an estimated 15 to 20 percent above the 1961 level. The actual level of kolkhoz investment in 1962, however, will depend to a large extent on weather; on the amount of conversion of collectives to state farms; and on the availability of equipment, fertilizer, and other capital inputs.

Production of agricultural equipment thus far in 1962 shows improvement over 1961, but the allocation of equipment apparently will fall short of that required to meet the expanded workload in 1962.

Production of fertilizer during 1959-61 increased at a rate far short of that needed to meet the 7-year plan goal (see table 5).¹¹ The planned increase in the output of fertilizer for 1962, the midyear of the 7-year plan, is below the average annual increase implied by the original 7-year plan directives. Production figures for the first 6 months of 1962 indicate that even this modest plan probably will not be met. Annual fertilizer production plans for the years 1959-62 were small in relation to the 1965 fertilizer target, suggesting that the 1965 target was not a serious goal, although there is some indication that larger increases were planned for the later years of the 7-year plan period. In recent months there have been signs that the regime is becoming more earnest about the 1965 goal. The chemical industry is making an effort to overcome the lack of progress by introducing an incentive system for workers engaged in the production of fertilizers and by allocating a larger share of its investment funds to fertilizer plants. Although these measures may raise fertilizer output in the longer run, they probably are not sufficient to overcome this significant lag in the 7-year plan period.

Clearly Khrushchev's current consumer-agriculture program lacks the initial vitality of the new course and new lands projects. At the January 1961 Plenum, Khrushchev spoke of this program as "compensation for lost opportunities." In his closing remarks on the requirements of agriculture, delivered at the March 1962 Plenum, he hinted that still more opportunities may be lost:

It can be stated beforehand that in a few years we shall perhaps reproach ourselves for not having fully taken into account our possibilities for the development of agriculture.

The Plenum failed to give agriculture the priority which Khrushchev had asked for in his opening speech. The above quotation may be both an admission of defeat and a disclaimer of responsibility for future consequences.

⁹ In 1961 the state sector increased its sown acreage by 20 percent, primarily through conversion. Further conversions are planned in 1962.

¹⁰ Ruble values in this report are in new rubles (1961 rate of exchange).

¹¹ Table 6 follows on p. 109.

TABLE 5.—*Production of mineral fertilizer in the U.S.S.R., 1958-61 and 1962 and 1965 plans*[Million metric tons]¹

Year	Production	Actual increase above previous year
1958.....	12.4	0.6
1959.....	12.9	.5
1960.....	13.9	1.0
1961.....	15.3	1.4
1962 plan.....	17.2	1.9
1965 plan.....	* 35.0	* 3.2

¹ Gross weight.² Original 7-year plan. Recent information suggests that the plan has been raised to 37.7 million tons.³ A average increase during 1959-65.

Sources: "SSSR v Tsifrah v 1961 godu," Moscow, 1962, pp. 97, 122. "Sel 'skaya zhizn'," Mar. 10, 1962.

In summary, when Khrushchev initiated his consumer-agriculture program in January 1961, he evidently believed that industrial over-fulfillment would continue to generate substantial funds throughout the remaining years (1961-65) of the 7-year plan, a large share of which could be invested in the consumer and agriculture sectors. During 1961, and perhaps earlier, it became increasingly clear that there were other demands on these funds from increased space, defense, and industrial construction costs. Although Khrushchev continued to press for his consumer-agriculture program in his opening speech to the March 1962 Plenum, his closing speech cautioned agricultural leaders and workers not to expect the immediate transfer of funds to agriculture to the detriment of industry and defense. On June 1, 1962, an apologetic appeal to the population spelled this out more clearly. Livestock prices were to be increased, but the financing of the price increases would fall not on defense, not on heavy industry, but on the consumer by means of higher retail prices. This latest measure represents a setback to Khrushchev, who had promised in January 1961 that industrial funds would be transferred to the agriculture and consumer sectors and who, as early as 1958 and as recently as March 1962, had promised the consumer that retail prices for agricultural products would not be raised.

B. PRICES AND WAGES

Money incentives were prominent among the measures taken to improve the agricultural situation following the death of Stalin. Procurement prices, which had been intolerably low for most agricultural products, were raised; tax concessions were made; and obligatory deliveries from private plots were decreased and then abolished. However, additional stimuli necessary to overcome the inertia in the agricultural economy have been lacking in recent years.

A decree published in March 1956 recommended that collective farms make monthly cash "advances" to the farm members in partial payment¹² for the work done by them on the socialized sector of the farm during the month. Also, a sustained effort was made following the December 1958 Party Plenum to get the collective farms to

¹² The final settlement or accounting by the farm with its members was still to be made at the end of the year.

abandon the workday (*trudoden*) system of labor payment, which included payment-in-kind, and to go over to a "guaranteed" monthly cash wage system. The implementation of these two measures was limited, probably because of the relatively poor financial status of most farms.

There is little evidence to indicate that the 1958 reform of the procurement price system took into consideration the full financial effects of the abolition of the MTS on the collective farms. Following the mediocre crop years of 1959 and 1960, the heavy financial burden that was imposed on the collective farms by the purchase of MTS machinery had become obvious. The increase in kolkhoz money income (as calculated in terms of current rubles per household) averaged only 8 percent above 1958 for those 2 years, while the expenses of the farms had greatly increased.

In 1961 and 1962 the regime took measures to improve the financial condition of the collective farms. The period over which they could pay for the machinery purchased from the MTS's was extended; prices of trucks, tractors, gasoline, spare parts, building materials, and metal products were lowered; the tax on annual income from animal husbandry was reduced by 80 percent through 1965; interest on long-term state credits was lowered; and, beginning in 1962, the state was to assume the transportation costs for the delivering of products by the collective farms to procurement points up to 25 kilometers (the state was already paying those costs incurred beyond 25 kilometers). These measures are expected to save the collective farms about 1.35 billion rubles annually.

One of the most important measures taken since 1958 to stimulate the agricultural sector, especially in animal husbandry, is the June 1, 1962, decree, which raised the procurement prices for livestock and poultry obtained from collective farms and individuals an average of 35 percent, and raised procurement prices for butter and cream by 10 and 5 percent, respectively. Preliminary estimates indicate that the new prices will increase kolkhoz money income by about 1 billion rubles.¹³ This billion rubles combined with the 1.35 billion ruble savings to be realized by collective farms from the measures taken in 1961 and early 1962 should raise collective farm income by about 15 to 20 percent above that for 1961. In 1961, added emphasis was given to rewarding workers with part of the above-plan production. Khrushchev recently held up as a model worker a Moldavian corn-grower who received 9 tons of corn as his share of above-plan production. While the exceptional earnings of some farmworkers are widely propagandized, few workers can expect similar rewards.

A new wage system intended to increase the interest of workers on state farms in the results of their work was adopted in 1961. Instead of a fixed wage for state farmworkers, the new system provides that the wages of state farmworkers will be partially dependent on the quantity and quality of production. In animal husbandry as much as 80 percent of the wage can be dependent on production, whereas in production of crops the proportion may be as little as 20 percent. Presumably the new state farm wage system will mean an overall increase in wages, for 260 million additional rubles were allocated in

¹³ This does not include additional kolkhoz income from a rise in prices for livestock products on the kolkhoz market. Although such a rise is likely, there is no good basis for estimating its magnitude. The prices paid to state farms for livestock deliveries according to the June 1, 1962, decree are to be increased to a level 10 percent below the prices paid to collective farms.

1961 for the readjustment. However, there has been no widespread publicity of the effectiveness of this new wage system, suggesting that at least to date the system has not produced the desired results.

4. CHANGES IN AGRICULTURAL ORGANIZATION

Indicative of the state of flux in Soviet agriculture since 1953 have been the many important changes in agricultural organization at the highest levels. Following the death of Stalin in early 1953, the five agricultural Ministries (Agriculture, State Farms, Agricultural Procurement, Cotton Growing, and Forestry) were merged into one Ministry of Agriculture and Procurement. In the fall of 1953 the consolidated Ministry of Agriculture and Procurement was split into the Ministries of Agriculture, State Farms, and Agricultural Procurement. In 1955, planning responsibilities were transferred from the Ministry of Agriculture to Gosplan. In 1956 the procurement function of the Ministry of Agricultural Procurement was transferred to the Ministry of Agriculture, and its other functions were taken over by a newly organized Ministry of Grain Products. In 1957 the Ministry of State Farms was abolished, and the state farms under its jurisdiction were transferred to the Ministry of Agriculture.

A. THE 1958 REORGANIZATION OF MACHINE TRACTOR STATIONS (MTS'S)

Almost from the beginning of collectivization, the MTS had controlled nearly all the machinery used on the collective farms and had used this monopoly to control the activities of the collective farms. The role of the MTS was increased still further in 1956 with the transfer of responsibility for agricultural procurement from the Ministry of Agricultural Procurement to the Ministry of Agriculture. On the local level this responsibility was assigned to the MTS, which by now had become the focal point for local party control and direction of the collective farms.

In January 1958, Khrushchev proposed the most important organizational change in Soviet agriculture since its socialization in the 1930's. He suggested stripping the MTS's of their power by relegating them to the status of repair and supply depots. In presenting his theses to the plenum of the Central Committee, Khrushchev argued that the political and economic functions of the MTS had become outmoded now that the "socialist consciousness" of the collective farmers had increased and the collective farms were large and wealthy enough, with adequately trained cadres, to take over the machinery of the MTS. He stated that the indivisible funds of collective farms were large enough to pay for the machinery from the MTS's. An article in the December 1957 issue of the MTS journal, however, had expressed the opposite view.

The MTS journal proved to be correct. The abolition of the MTS shifted a large investment load from the state to the kolkhozes. This burden was especially heavy in the mediocre crop years of 1959 and 1960, leaving many kolkhozes in poor financial condition. By the end of 1959, kolkhoz investment reserves (per unit of sown area) had fallen to 50 percent of the 1956-57 level. Although investment reserve figures for the end of 1960 are not available, investments per hectare remained large in 1960, and the financial condition of the

kolkhozes probably did not improve. In March 1958, Khrushchev stated that the leading collectives would be able to pay for MTS equipment in 1 or 2 years, average collectives in 2 or 3 years, and poor collectives in 5 years. In 1961 the state found it necessary to extend these payments 5 to 10 years more and to introduce other measures to alleviate the poor financial condition of the kolkhozes.

B. REORGANIZATIONS OF 1961 AND 1962

The administration of Soviet agriculture was radically changed by a series of decrees issued in the first quarter of 1961. The Ministry of Agriculture—already weakened by the loss of its planning responsibilities in 1955, the abolition of its MTS system in 1958, and the loss of its supply function in 1960—was divested of the administration of state and collective farms and forestry, control over state purchases of agricultural products, and responsibility for the repair of agricultural machinery. These functions were scattered among several government organizations leaving no clear delineation of primary administrative responsibility.

The 1961 reorganization weakened the position of the governmental bureaucracy or managerial class and enhanced the position of the party in agricultural administration. The March 1962 party plenum which endorsed another reorganization of agriculture, clarified responsibility and formalized the dominant position of the party in the administration of Soviet agriculture.¹⁴ Now for the first time, the republic and oblast party bosses have become a formal part of the state administrative machinery for agriculture. These bosses are responsive to the ruling party Presidium—in fact, some of the republic party bosses are members of the Presidium.

The reorganization, however, does not solve the basic problem of giving more flexibility of decision making at the farm level that is necessary for efficiency in agriculture. On the contrary, it appears that centralized decision making has been strengthened. A decree published in *Pravda* on April 19, 1962, aimed at upgrading the role of the specialists in agricultural production, may be an attempt to minimize publicly the role of the party in agriculture. There is little doubt, however, that the party, oriented toward centrally established goals, will prevail, probably even to a greater extent than in the past, over the recommendations of the specialists and the managerial class.

C. IMPORTANCE OF THE PRIVATE SECTOR

The small private garden plots are one of the last remnants of legal private enterprise in the U.S.S.R. These plots, which have always been ideologically unpalatable in the Soviet system, have been tolerated for pragmatic reasons. The intensively cultivated plots, which occupied only 3.2 percent of the total sown area in 1961, contribute a disproportionately large share of the total output of many important food items such as vegetables, potatoes, meat, milk, and eggs. (See table 6.¹⁵) The plots provide a means for individual Soviet citizens to provide themselves with many food items that would not otherwise be available, and they provide farmers, particularly collective farmers, with a considerable share of their money income.

¹⁴ Opposition to the elimination of the grass rotation system of farming may have generated the decision to provide a clear delineation of authority and an integral role for the party in agricultural administration.

¹⁵ Table 6 follows on p. 113.

TABLE 6.—Share of the private sector in the total production of selected agricultural commodities¹ 1940, 1953, and 1960

[In percent]

Year	Potatoes	Vegetables	Meat	Milk	Eggs
1940.....	(²)	(²)	72	78	94
1953.....	72	48	52	67	84
1960.....	63	46	41	47	81

¹ "Narodnoye khozyalstvo SSSR v 1960 godu" and "Sel skoye khozyaystvo SSSR."² Not available.³ Data are for 1959.

It should be noted that some of the feed consumed by the privately owned livestock is grown on socialized land. The current program to plow up the grasslands probably will reduce the availability of "socialized" pasture to privately owned livestock.

The private plots compete with the socialized sector for the labor time of the farmers, and this competition has been of considerable concern to Soviet officials. In addition, the great disparity between yields on the private plots and on the collective farms has been a source of embarrassment to a regime committed to the doctrine of the superiority of socialized agriculture. The attitude of the Soviet Government toward these small private plots, therefore, has been that as collective farming became more profitable, the private plots should decrease in importance. The official policy toward the plots has, however, vacillated greatly over the years. At times the private plots have been taxed or otherwise penalized whereas in times of "thaw" they have been relieved of some of these burdens.

During the first few years after Stalin's death the regime adopted a rather lenient attitude toward the private sector. In 1953, there was a reduction in the taxes paid by collective farmers on their private plots, and, beginning in June 1954, collective farm private plots were exempted from the compulsory delivery of grain to the state. The collective farmers responded to these concessions, and in 1954-55 their private holdings of cattle increased as a share of total cattle holdings.

In 1956, however, legislation was enacted that encouraged reductions in the size of the plots and in the number of livestock belongings to the collective farmers. In the same year a tax was levied on livestock owned by urban workers and an attempt was made to prohibit urban workers from feeding underpriced state store bread to their livestock. All compulsory deliveries from private plots were canceled as of January 1, 1958. However, the drive to reduce the number of cattle in the private sector continued. By the decision of the December 1958 plenum, state farm workers were to sell their livestock to the state farms within 2 or 3 years, and collective farmers were "encouraged" to sell their livestock to the collective farms. Under decrees issued by various republics in 1959, urban dwellers were to sell their cattle to state or collective farms.

The measures enacted since 1956 have substantially reduced the relative importance of the private sector. The share of this sector in the total sown area declined from 4 percent in 1955 to 3.2 percent in 1961. During the same period, privately owned cattle decreased from 46 to 29 percent of all cattle. Nevertheless, the private sector remains highly productive and much in evidence.

INDUSTRIAL PRODUCTION IN THE U.S.S.R.

BY

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INDUSTRIAL PRODUCTION IN THE U.S.S.R.

I. INTRODUCTION

Industry is the highest priority sector of production in the Soviet economy. Indeed, industrial production is not only a means to other ends, as it is in any other economy, but also an end in itself. The continuing rapid growth of industry is a political requirement in the Soviet Union, a requirement that is exceeded in importance only by military preparedness. The best trained and highest quality manpower as well as a large and rapidly growing share of investment have been directed annually into industry, and primarily into heavy industry whose principal end products are (1) armaments, and (2) machinery and construction materials required for more investment and more industrial capacity. Under these conditions it is not surprising that industrial capacity and production have grown rapidly in the U.S.S.R.

The purpose of this paper is twofold: (1) To present an independently constructed index of civilian (nonarmaments) industrial production for the U.S.S.R. for the period 1950 to 1961, and (2) to consider possible trends and recent developments in overall industrial production, including armaments. In an effort to make the civilian index as representative of postwar production as possible, the sample of physical products, whose production is regularly reported by the Soviet Government, has been supplemented by estimated production series for a number of new and rapidly growing products. The most important of these are electronics production, civil aircraft, and merchant ships. A number of other current lines of production, also possibly fast growing, are of necessity omitted, owing to a lack of data. On this account the calculated index may still somewhat understate actual growth of civilian industrial production. A more detailed description and evaluation of the index can be found in the appendix to the paper.

II. SOVIET INDUSTRIAL PRODUCTION FROM 1950 TO 1961

A. RECENT TRENDS IN CIVILIAN INDUSTRIAL PRODUCTION

Civilian industrial production in the U.S.S.R. has grown rapidly in the period 1950 to 1961, but the growth has slowed somewhat since 1955 and especially in 1960 and 1961. According to the calculated index the average annual growth from 1950 to 1955 was 10.1 percent, from 1955 to 1961, 8.7 percent, and for 1960 and 1961, 6.6 percent. The index and its components are shown in table 1 and chart 1.

Both industrial materials and consumers nondurable goods show fairly rapid rates of growth during the 1950's followed by a moderate slowing down in 1960 and 1961. For industrial materials the average annual growth was 10 percent from 1950 to 1959 and 6 percent from 1959 to 1961. The growth rates for consumer nondurable goods for the same periods are 8.8 and 4.6 percent. In civilian machinery production the retardation starts abruptly in 1958 and is more pronounced than in the other two components. Civilian machinery maintained an average rate of growth of 16.4 percent from 1952 to 1957, but since 1957, only 8.7 percent.

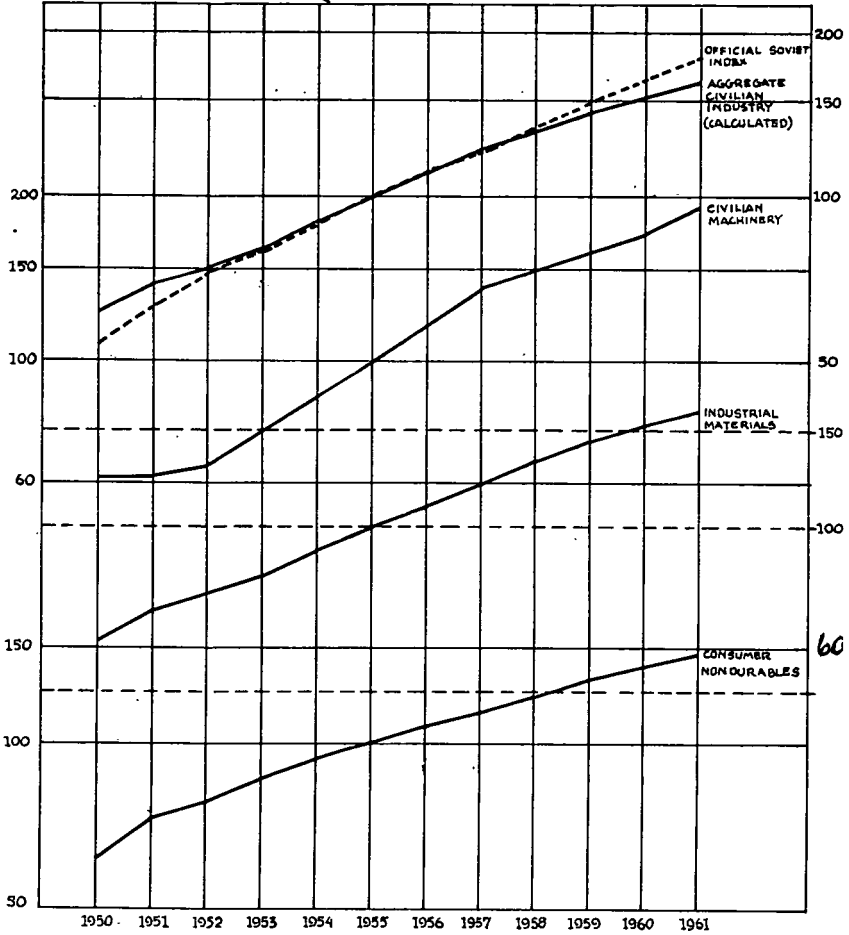
TABLE 1.—Indexes of Soviet industrial production, 1950-61

[1955=100]

	1955 value- added weights	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Calculated index:													
Industrial materials.....	52.3	61.5	69.9	75.3	80.8	90.1	100	108.9	119.9	131.9	144.8	153.7	162.6
Electric power.....	3.3	54.0	61.5	70.4	79.4	88.8	100	112.7	123.5	138.6	155.7	172.0	192.4
Coal.....	9.3	66.9	72.5	77.2	81.6	88.4	100	109.8	118.6	127.2	130.5	132.8	132.4
Petroleum products and natural gas.....	2.4	53.3	59.5	66.5	74.4	83.8	100	118.9	139.5	160.6	182.7	208.3	234.2
Ferrous metals.....	6.0	59.1	68.0	75.9	83.2	90.7	100	107.1	113.8	122.0	133.1	144.2	156.2
Nonferrous metals.....	4.8	51.5	60.2	70.7	78.8	88.1	100	106.8	112.2	117.7	125.7	136.3	148.0
Forest products.....	14.2	75.7	85.8	85.9	86.2	96.8	100	103.1	109.6	116.0	124.7	119.1	115.3
Paper products.....	.8	62.2	69.7	77.1	87.1	95.7	100	107.1	117.2	125.1	130.7	136.5	145.4
Construction materials.....	6.8	45.8	54.3	62.6	71.4	83.1	100	115.9	141.1	170.6	200.9	231.9	255.8
Chemicals.....	4.7	53.1	62.6	70.2	78.4	87.2	100	111.4	126.2	142.4	161.4	177.5	197.9
Civilian machinery.....	22.2	61.8	61.9	64.3	75.1	86.4	100	118.6	137.4	149.0	159.5	173.0	192.0
Machinery, excluding electronics.....	19.5	66.1	65.0	66.2	76.6	87.2	100	118.0	135.7	143.9	151.7	162.5	175.7
Electronics.....	2.7	31.2	40.4	50.5	65.1	80.7	100	122.9	149.5	185.3	214.7	247.7	308.3
Consumer nondurables goods.....	25.5	62.2	73.2	78.1	85.6	94.1	100	107.6	114.8	123.7	132.8	138.4	145.2
Soft goods.....	16.2	61.8	74.0	77.6	84.8	94.5	100	105.9	112.5	122.0	130.3	137.8	142.1
Processed food.....	9.3	63.0	72.0	78.9	87.0	93.2	100	110.7	118.6	126.5	137.2	139.5	150.4
Aggregate civilian industrial production.....	100.0	61.7	69.0	73.6	80.8	90.3	100	110.7	122.5	133.6	145.0	154.1	164.7
Official Soviet index of the gross value of industrial production.....		54	63	70	79	89	100	111	122	134	150	164	179

CHART 1.—Indexes of Soviet industrial production.

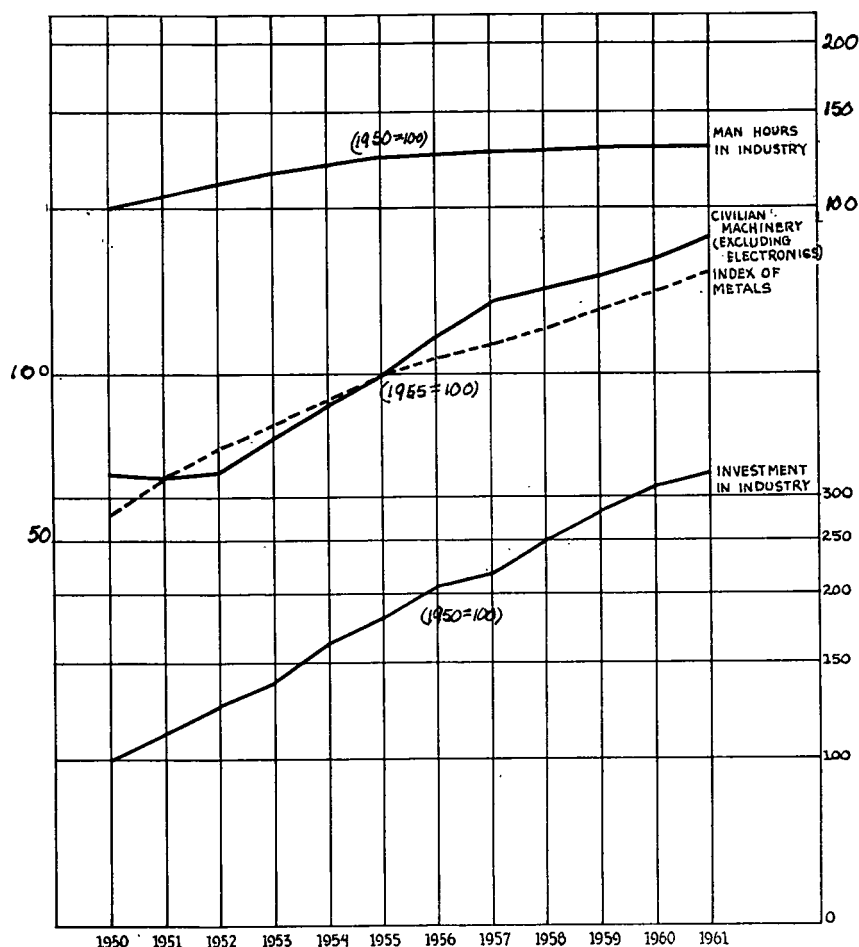
(1955 = 100)



B. OVERALL INDUSTRIAL PRODUCTION

The addition of arms production to civilian industrial production would surely modify the calculated trends. In the absence of armaments production data the degree of slowdown in overall Soviet industrial production is uncertain, but we do not believe its inclusion would eliminate the slowdown effect. Significantly, the Soviet official index, shown in table 1 and chart 1, which presumably includes armaments production, also shows a slight slowdown in 1960 and 1961.

The growth of armaments cannot be estimated with confidence, but some speculations are warranted. The general shape of the trend in armaments, and the key dates in Soviet military procurement policy, can be readily surmised. It is of special interest that the armaments production trend appears to have different turning

CHART 2.—*Factors in Soviet industrial growth.*

points from those marking the trend of civilian production. The useful statistics for this purpose are civilian machinery production, excluding electronics, and metals production. These are shown on chart 2.¹

The impact of armaments production is clearly visible, for example, during the Korean war period. While metals production rose steadily through 1950, 1951, and 1952, civilian machinery stayed constant. Civilian machinery resumed a rapid growth in 1953 which continued until 1957. Following 1957, civilian machinery grew even more slowly than metals production. By analogy with the Korean war period, the evidence since 1957 suggests an acceleration of arms production. The general shape of an arms production index can be described as follows: a rapid growth from 1950 through 1952; a flat or slowly growing trend through 1957; acceleration after 1957. We

¹ See app. C.

cannot say what quantities to substitute for the words "rapid," "slow," and "accelerate," but any of several reasonable guesses have the same modifying effect on civilian production trends—that is, to increase the growth trend from 1950 to 1952, to slow it down from 1953 to 1957, and perhaps to increase it since 1957. Hence retardation in industrial growth may have occurred after 1952 and again after 1959. An illustrative trend in overall industrial production thus might be: from 1950 to 1952, an annual average growth of 11 percent; 1952 to 1959, 9 to 9½ percent; and 1959 to 1961, 7 to 8 percent.² In this view, the period 1950–52 represented a continuation of the postwar recovery surge and the recent slowing down occurred primarily in 1960 and 1961.

C. POSSIBLE REASONS FOR THE RECENT RETARDATION IN INDUSTRIAL GROWTH

Two factors stand out as possible causes of the recent retardation: first, the reduction of the scheduled workweek from 47 to 41 hours in the period 1958–60, and the trend of labor supply generally; second, the slowing down of investment as a result of an increase of military production. The trend of man-hours worked in industry is shown on chart 2 along with investment in industry.³ The trend in industrial investment shows only a slight slowing down, mainly in 1961. It appears that the increase in arms production has come chiefly at the expense of investment in sectors other than industry. Short falls in industrial investment in 1960 may have had some retarding effect on production in 1961. Investment in 1961 would have its effect mainly in 1962.

The trend in man-hours, in contrast, shows a marked flattening out after 1957, which is, of course, closely related to the progressive introduction of the short week from 1957 through 1960. The flattening of growth of man-hours worked surely has had some retarding effect on output. Very possibly, however, this effect was postponed until 1960 and 1961 as a result of the scheduling policy in the introduction of the short workweek. In 1958 and 1959 each enterprise was instructed to introduce the short week if it could do so without increasing its labor force and without reducing output below plan. Those enterprises that did introduce the shorter week in 1958–59 presumably had at hand known laborsaving opportunities. Taking advantage of these opportunities in a given year means not having them in later years. In 1960 all industrial enterprises shifted to the short workweek, ready or not. The Soviet press testifies to the fact that many of these enterprises were forced to hire more workers. The industrial statistics in table 1 reveal at least one industry that suffered a drop in output attributable to the reduced workweek. The timber industry, operating in distant and unattractive locations, has always had trouble maintaining its labor force in spite of premium wages. The introduction of the 41-hour week simply resulted in 7½ percent drop in output of forest products from 1959 to 1961.

² For the overall index to be raised from 6.6 percent annually to 8 percent in 1960 and 1961 would require a nonelectronics armaments growth of 14 percent annually. To raise it to 9 percent, and eliminate retardation entirely would require armaments growth of 20 percent annually. The latter figure seems unreasonably high. It would surely have produced a greater effect on the rest of the economy than we observe.

³ See app. C.

A third factor which may have had some retarding effect on civilian machinery production in particular is the effort to introduce greater diversification in product lines. Introduction of new technology in industrial production processes has been a vital part of industrial growth in the Soviet Union. But final products have usually consisted of a limited number of standard models. Product differentiation and diversification have never been strong points of Soviet industry outside of high priority fields such as armaments. In this respect the emphasis of the 7-year plan on new technology along with the bonuses for its introduction may have led some enterprise managers down unfamiliar and unproductive paths. Difficulties in designing and tooling up for a wider model range have been reported in agricultural equipment production especially, and it is possible that these difficulties are in part responsible for the decline in output of agricultural equipment from 1957 to 1959.

It seems likely that competition from military demand contributed to difficulties in the introduction of new types of civilian equipment as well as in other aspects of new technology for civilian purposes. In this connection armaments should be thought of as including atomic energy activity and space programs. Space, and nuclear weapons and missiles, in this country as well as in the U.S.S.R., have introduced a quality aspect into the competition for resources that may be as important as the quantitative aspect.

It is characteristic of recent trends in weapons systems and space programs that the research, development, and testing programs have become an increasingly large part of cost. More important, the resources required for these programs are specialized and scarce—very high grade scientific, engineering, and technical manpower are required along with special alloys and chemicals, low tolerances, high performance, and in many cases handmade components. Each rocket test firing wipes out a gleaming and outrageously expensive package of hardware. The high grade resources are just those most needed for the Soviet plans for new technology (labor saving and capital saving) in both industry and agriculture.

III. A COMPARISON WITH WESTERN COUNTRIES

Table 2 compares industrial growth for the U.S.S.R., United States, Japan, Federal Republic of Germany, France, and Italy

The most startling figures in table 2 are those for postwar Japan. Its recent rate of growth not only far exceeds that of any European countries, but also that of the U.S.S.R. during its peak growing period from 1928 to 1937. In the rapid surge of the first two 5-year plans Soviet civilian industry grew 11.2 percent annually according to Nutter⁴ and 10.6 percent according to Kaplan and Moorsteen.⁵ The growth of Soviet industry in the postwar period is about the same as that of Germany and Italy, greater than that of France, and considerably greater than that of the United States.

⁴ "The Growth of Industrial Production in the Soviet Union," G. Warren Nutter, Princeton University Press, 1962, p. 163.

⁵ "Indexes of Soviet Industrial Output," Norman M. Kaplan and Richard H. Moorsteen, Rand Corp., 1960, p. 268.

TABLE 2.—Average annual growth of industrial production

[Percent]

Period	U.S.S.R.	United States	Japan ¹	Federal Republic of Germany ²	France ³	Italy ⁴
Prewar to 1961.....	5.9	4.3 4.5	5.3	4.0	4.0	5.3
1950-55.....	10.1	5.2	15.5	12.3	5.6	8.8
1955-61.....	8.7	2.1	18.2	6.6	6.9	9.0
1950-61.....	9.3	3.5	17.0	9.2	6.4	8.9

¹ "Japanese Statistical Yearbook, 1961," and "Japanese Economic Statistics, No. 46," July 1962.

² OEEC, "Industrial Statistics," 1900-59, and OECD, "General Statistics," July 1962.

³ Initial year 1937.

⁴ Initial year 1940.

⁵ Initial year 1938.

Caution is desirable in drawing conclusions from short periods of growth, particularly in countries recovering from wartime destruction. Therefore, average annual growth since prewar is shown for each of the countries. For this purpose we have linked our calculated index for the U.S.S.R. for 1950-61 to the Kaplan-Moorsteen index of civilian output ⁶ for 1937-50.

In its capability to promote industrial growth, the U.S.S.R. must indeed be given due credit. The U.S.S.R. increased its industrial capacity significantly further beyond its own prewar level than each of the other countries including Japan. Each of the free world countries except the United States, has had substantial outside aid in its recovery effort. By comparison, the U.S.S.R.'s unrequited receipts from the European satellites were smaller relative to its size than the foreign investment in the West European countries and Japan.⁷ Furthermore, West Germany, Italy, and Japan have not simultaneously borne a heavy defense burden while carrying on their postwar industrial growth. Finally, it should be noted that the United States and France had a great deal of unemployed labor and plant capacity in the prewar base years.

The U.S.S.R. growth rates in table 2 represent civilian industrial production. Before drawing final conclusions about the international comparisons in the table we must consider the possible effect of armaments production on the U.S.S.R. industrial growth rates.

There does not appear to be any better approach to military procurement than that developed by Professor Abram Bergson ⁸ in his studies of Soviet national income. For the postwar period his procedure is essentially to arrive at military procurement as a residual by subtracting personnel pay and subsistence from the announced defense budget. Uncertainties about number of men in service, their average pay, and prices paid for subsistence goods combine to make this a precarious operation. In addition, the announced defense budget is itself under suspicion as an understatement. There are reasons for

⁶ *Ibid.*

⁷ Since the end of World War II the U.S.S.R. acquired reparations and war booty estimated at \$10 billion or more. See "External Impact of Soviet Economic Power," Penelope Thumberg, beginning on page —. Total U.S. Government and direct private investment in the three Western countries and Japan from 1946-61 is as follows in billions of dollars; France, 5.86; West Germany, 4.70; Italy, 3.83; Japan, 2.87. See U.S. Agency for International Development, "U.S. Foreign Assistance, 1945-61," March 1962, and U.S. Department of Commerce, "Survey of Current Business." Since the Soviet economy during this period has been almost as big as the four other countries combined, the advantage in outside aid appears to rest with the Western countries and Japan.

⁸ "The Real National Income of Soviet Russia Since 1928," Abram Bergson, Harvard University Press, 1961, p. 362 f.

believing that activities such as military research, development, and testing, and perhaps even some part of armaments procurement are financed from other parts of the budget. These kinds of activities have certainly been growing rapidly since 1950 as defense weapons policy has shifted more and more to nuclear weapons and missile systems.⁹ While these considerations increase the uncertainty, it suggests that Bergson's method leads to a conservative estimate of the growth of armaments.

Bergson explicitly estimates procurement for 1940 to 1955, and the estimate can be extended back to 1937 to obtain an index of 415 for the period 1937 to 1955.¹⁰ This overall growth is already greater than the estimated civilian production index of 395 percent for the entire period 1937 to 1961.¹¹

These calculations strongly suggest that the growth of armaments production from 1937 to 1961 exceeded the growth of civilian industrial production and that the latter is a minimum measure of Soviet industrial growth.¹² Our data suggest, furthermore, that if the process of postwar industrial recovery in Western Europe and Japan has been heartening, that of the U.S.S.R. has also been impressive.

Industrial growth per se, however, is not a measure of industrial efficiency or of efficiency in promoting growth, much less of the effectiveness of an economic system. Where efficiency is the issue, industrial performance must be related to cost—cost in terms of the

⁹ In this matter we follow the argument in "The Claim of the Soviet Military Establishment on Economic Resources," by John G. Godaïre.

¹⁰ Bergson's estimate of total procurement for 1937 is divided between munitions and other procurement by the 1940 ratio of the two. See Bergson, *op. cit.* (8, above) p. 366.

¹¹ The Kaplan-Moorsteen index of 148 for 1937 to 1950 times the Greenslade-Wallace index of 267 for 1950-61.

¹² A much smaller estimate of Soviet armaments production growth from 1937 to 1955 has been calculated by Prof. G. Warren Nutter. See Nutter, *op. cit.*, p. 322. This estimate appears to be a serious understatement. In the first place, we can be reasonably sure that the stock of armaments has grown faster than number of men in the armed forces over this period. The trend toward increasing firepower and equipment per man seems incontestable. The annual flow of armaments production would also increase faster than number of men, as long as there is no unusual contraction in the terminal period.

The number of men in the Soviet armed forces since 1937 was approximately as follows in millions:

1937.....	1.5-1.7
1950.....	4.0
1951.....	4.9
1952.....	5.8
1953.....	5.8
1954.....	5.8
1955.....	5.5

See Bergson, *op. cit.*, p. 366.

An index of military manpower from 1937 to 1955 is considerably slower than Bergson's carefully calculated munitions index. The manpower index, Bergson's munition index, and Nutter's military products index are as follows:

	1937	1950	1955
Manpower.....	100	235-267	324-367
Bergson, munitions.....	100	266	415
Nutter, military products.....	100	103	288

Nutter's estimate, implying that armaments production per man fell drastically from 1937 to 1950 and an even lower index for 1955 has been calculated by Shimkin on the basis of an estimated residual of rolled steel products available for military end items. This procedure rests not on direct data on consumption of rolled steel products into a few main types. Even if equipment end uses but on a Soviet classification of rolled steel products into a few main types. Even if steel consumption in armaments could be precisely estimated, it would surely understate the trend of final military products since increased consumption of other metals, mainly aluminum, and the increasing complexity of weapons systems would not be taken into account. See D. B. Shimkin, M. Feshbach, and F. Manning, "Estimate of Soviet Industrial Production, 1928-1956," FMRO, U.S. Department of Commerce, Bureau of the Census (November 7, 1957).

opportunities foregone in other parts of aspects of the economy and in terms of the cost of inputs into industry. We are already familiar with the cost to Russian consumers of the tremendous emphasis of the Communist regime on industrial investment and growth. Careful comparative studies of relative efficiency of industrial performance among several countries at various levels of technology have yet to be made. In this paper, we are concerned with industrial growth from the point of view of its strategic implications for the United States over the long run.¹³

IV. COMPARISON WITH OTHER INDEXES OF SOVIET INDUSTRIAL PRODUCTION

Precisely what has been the postwar growth of Soviet industrial production is still a controversial matter in spite of substantial efforts by Western economists. The index of gross value of industrial production published by the U.S.S.R. itself is not accepted by Western students as an accurate measure of industrial growth. The specific faults of the Soviet gross value index—large and probably varying doublecounting, excessive pricing of new products, inclusion of non-productive activity such as capital repair—have been exhaustively analyzed by many Western writers and need not be rehearsed here.¹⁴ But perhaps the most important consideration is the inflated reporting arising from the tremendous political pressure and financial incentives operating at all levels of the industrial hierarchy to make the gross value index for each plant, each region, each industry, and the economy as a whole rise in excess of plan.

Two comprehensive indexes of Soviet industrial growth have been constructed recently; one by Norman Kaplan and Richard Moorsteen to a terminal year of 1958, the other by G. Warren Nutter to 1955. For the prewar period these exhaustive and careful studies give results which are substantially in agreement for civilian industrial production and there is small likelihood that they could be much improved on with present data. For the postwar period, however, there are considerable doubts about the representativeness of the sample of products used in the two indexes.

The postwar period both in the United States and the U.S.S.R. has been one of rapid introduction of new products and of rapid development of new industries. In the successive revisions of the FRB index new industries and products have been intensively covered. In the list of commodities for which the Soviet Government releases production data, new products are usually among the missing. The omissions are principally but not entirely in the coverage of machinery and equipment production. Kaplan and Moorsteen commented on their postwar index as follows:¹⁵

With the beginning of the 1950's, however, the level of technical sophistication in Soviet machinebuilding rose rapidly. The number of models proliferated

¹³ As a matter of general interest we can calculate absolute increases of industry in the United States and U.S.S.R. This calculation must consider the divergence in Western estimates of the relative size of U.S. and U.S.S.R. industry in any base year. Two main estimates have been published. The estimate of Nutter is that U.S.S.R. industry equals 22 percent of United States in 1955 (4, above) see Nutter, *op. cit.*, p. 238. Mr. Allen Dulles' estimate implies that U.S.S.R. industry was one-third of the United States in 1955. If Dulles is correct, the Soviet absolute increase from 1955 to 1961 was 22 (United States in 1955 equals 100) and the increase in U.S. industry over the same period was 13. If Nutter is correct, the Soviet increase was 13½ against the U.S. increase of 13. Hearings before the Joint Economic Committee, Congress of the United States, Nov. 13, 1959, statement of Allen W. Dulles, p. 1.

¹⁴ See Francis Seton in "Soviet Studies," October 1960, pp. 128-130.

¹⁵ Kaplan-Moorsteen, *op. cit.* (5, above), p. 54.

and changed frequently. Thus, the machinery index is believed significantly to understate the actual increase in output from 1950 on.

The principal difference between the calculated index in this paper and other Western constructed indexes of Soviet industrial output is the inclusion in the former of estimates for new industries and products, especially electronics output, civil aircraft, and merchant ships. Military purchases of merchant ships and transport aircraft are excluded (for lack of data), but the production series for all other industries are comprehensive and include production destined for military as well as civilian use. Important examples of dual use are trucks, automobiles, tractors, and electronics. Since armaments production as such is omitted, however, the calculated index is referred to as an index of civilian industrial production.

TABLE 3.—Three indexes of Soviet civilian industrial production for 1955

[1950=100]

	Greenslade-Wallace	Nutter	Kaplan-Moorsteen
I. Industrial materials	162.7	154	160.1
Ferrous ¹	169.2	170	167.9
Nonferrous ²	194.0	187	-----
Fuel and electricity.....	161.6	158	-----
Electricity.....	185.2	-----	186.6
Fuels.....	156.0	-----	167.2
Chemicals (including paper).....	183.8	144	-----
Chemicals ³	188.4	-----	165.3
Paper.....	160.7	-----	-----
Construction materials (including wood).....	151.5	150	-----
Construction materials.....	218.5	-----	190.4
Forest products.....	132.0	-----	-----
Lumber, wood, and paper ⁴	133.4	-----	139.1
II. Civilian machinery (excluding consumer durables)	147.7	-----	-----
Machinery (excluding electronics, aircraft, and ships).....	134.0	125	136.2
Transport equipment ⁵	106.7	106	118.2
Agricultural machinery ⁶	133.3	128	122.6
Miscellaneous machinery ⁷	162.4	154	169.3
Added sectors:.....	-----	-----	-----
Electronics (excluding radios and TV's) ⁸	295.4	-----	-----
Civilian aircraft.....	326.9	-----	-----
Civilian shipbuilding.....	192.6	-----	-----
III. Consumer goods	172.1	161	170.3
Food and allied products.....	158.8	154	156.7
Nonfoods.....	179.1	-----	178.9
Textile and allied products.....	161.7	154	-----
Consumer durables (including radio and TV) ⁹	344.8	283	-----
IV. Total civilian industrial production	162.1	146	158.1

¹ Rolled steel products only in the Greenslade-Wallace index. Both Nutter and Kaplan-Moorsteen include iron ore, pig iron, steel ingots and castings, and rolled products.

² Aluminum is included in the Greenslade-Wallace index but not in the Nutter index.

³ Plastics and synthetic fibers in the Greenslade-Wallace index but not in the other 2 indexes. Nutter's sample of chemicals is considerably smaller than in the other 2 indexes.

⁴ For the Greenslade-Wallace index, lumber, wood, and paper, which are part of the preceding category, are shown again in order to match the different classification of the Kaplan-Moorsteen index.

⁵ In all indexes includes automotive and railroad equipment.

⁶ In all indexes includes tractors and agricultural equipment.

⁷ Metallurgical, chemical, and petroleum refining equipment are omitted from the Nutter index. The disaggregation of the Kaplan-Moorsteen machinery index is taken from "Prices and Production of Machinery in the Soviet Union, 1928-58," Richard Moorsteen, Harvard University Press, Cambridge, 1962, pp. 312-313, 382-391.

⁸ Excludes civilian radios and television sets in all indexes. Both Nutter and Kaplan-Moorsteen include a few electronic items in miscellaneous machinery—chiefly telephones and switchboards.

⁹ Nutter omits television sets, a very important and fast-growing product in the consumer durables category.

As in other Western indexes major sectors of industry are aggregated by weights that are intended to approximate value added.

A comparison of our index with the Nutter and Kaplan-Moorsteen indexes for the period 1950-55 is presented in table 3. The most important differences in coverage between the three indexes are noted in the footnotes to table 3. The rate of growth of our index exceeds the rates for both the Nutter and Kaplan-Moorsteen indexes for the period 1950-55. The comparison in table 3 makes clear that the largest part of the difference between our index and the other two is accounted for by added coverage of ours. In particular the widest divergence is in the machinery sector, and this divergence stems primarily from the addition of electronics, civil aircraft, and shipbuilding to our index.¹⁶ The divergence of our index from Nutter's stems also in part from a significant difference in weights for the major sectors. Nutter's weight for machinery is 29.1 percent whereas our weight for machinery excluding electronics is 19.5 percent. Nutter does not reduce the machinery weight to exclude arms production and applies this large weight to his very slow-moving machinery index.

In spite of the broader coverage the present index grows only a little faster than the Kaplan-Moorsteen index in the 1950-55 period. Industrial materials and consumer's goods account for about 80 percent of the weight in both indexes, while the principal divergence of component indexes for 1950-55 is the machinery sector. Thus one would not expect the overall civilian indexes to diverge seriously. From 1955 to 1958 the two indexes diverge a little further. For 1958 the Kaplan-Moorsteen index is 128 percent of 1955 for an average annual growth of 8.6 percent; our index is 133.6 or 10.1 percent annually. The Kaplan-Moorsteen index is weighted by 1950 prices, the Greenslade-Wallace index by 1955 prices. One would expect early year prices to result in somewhat faster growth than later year prices, for an identical sample, because of the general tendency of relatively large price declines to be associated with fast-growing items. However, the broader coverage of faster growing items in the Greenslade-Wallace index more than offsets the influence of this price factor.

Finally, we take note of the overall industrial index including armaments computed by Nutter. This index is compounded from Nutter's civilian index which is 145 percent in 1955 compared to 1950 and a military products index of 282. The overall index is 158 or 9.6 percent per year. This may be very close to the mark as an overall index of Soviet industrial production in this period. We believe, however, that Nutter's index seriously understates the growth of civilian industrial production and overstates the growth of armaments production, and hence presents a misleading picture of the structure of industrial growth in this period.¹⁷

¹⁶ A comparison of the calculated civilian machinery index with the index of the equipment portion of investment announced by the Soviet Government is given in app. B.

¹⁷ See footnote 12.

V. FUTURE PROSPECTS FOR INDUSTRIAL GROWTH IN THE U.S.S.R.

The uncertainty about the rate of overall industrial production for the past few years, makes forecasting all the more hazardous. Certain generalized conclusions, however, are suggested by the observable changes in trends over the past decade.

The loss in industrial growth attributable to the reduced workweek is presumably nonrecurring. The Soviet Government has promised an additional reduction of 1 hour on Saturdays in 1962, and a gradual transition to a 35-hour workweek beginning in 1964. Whether the 1-hour reduction has actually been carried out is not yet known. However, any further substantial reduction of the workweek would be a resounding victory of ideology over commonsense. Assuming that there is no further reduction in hours, we can anticipate a resumption of growth of man-hours worked in industry, and on this account some reacceleration of growth as compared to 1960 and 1961. Bottleneck problems arising from excess inventory accumulation or specific commodity underfulfillments may have contributed to the slowdown in 1961. These are susceptible to vigorous ad hoc administrative corrective action, and on this account, too, industrial growth in 1962 may be increased over the 1961 rate.

A reacceleration of growth over the longer run appears to be closely dependent on allocation decisions yet to be made. From 1952 to 1959, an average annual growth rate of 9 to 9½ percent was made possible by a progressive diversion of resources from military growth to civilian uses and especially to industrial investment. The number of men in the armed forces was substantially reduced and armaments production grew more slowly than civilian machinery output. Since 1957 this diversion has probably ceased and may have been reversed. Diversions to the military since 1957 must have been particularly severe in those resources required for the application and development of new technology. This is especially important in the light of recent indications that Soviet industry, as it is now constituted, is not very adept at introducing new products, diversifications, and quality improvements.

If the Soviet leadership chooses to continue its development and production of new weapons systems and space projects at about the same rate as in the last 2 or 3 years, it will have to settle for a more moderate rate of growth in industrial production than in the midfifties. Conversely, a choice in favor of industrial growth will require a restraining of the growth in military and space expenditures. If, in addition, the leadership should feel compelled to recognize the unfulfilled demands of consumer sectors such as agriculture and housing, military and space demands will have to be still more severely restrained.

APPENDIXES

APPENDIX A

DESCRIPTION OF THE INDEXES

I. SOURCES OF DATA AND COVERAGE OF SAMPLE

The basic sources of data are physical outputs and prices of commodities given in a succession of Soviet statistical handbooks.¹⁸ Limited space precludes a discussion of these data here. A description of these statistics can be found either in Kaplan and Moorsteen or in Nutter.

For the index calculated in this paper these basic statistics have been extended or disaggregated on the basis of a variety of information in Soviet economic and technical literature. The following outline summarizes the major additions or modifications to the announced physical production sample, which are included in the present calculated index and in most cases were not included in either the Nutter or Kaplan-Moorsteen indexes.¹⁹

(a) Synthetic fibers and plastic resins: Production data for the former have been regularly reported, but for the latter have just recently been released by the Soviets.²⁰

(b) Nonferrous metals, especially aluminum: Estimates were based on scattered references to percentage gains for individual metals in the Soviet literature. The series of aluminum production figures has been derived from official announcements of percentage increases in output. Soviet publications yielded a tonnage figure for 1937 to which percentage increases for the years 1950 and 1954-58 can be linked. Estimates for the years 1951-53 were interpolated. Indexes for the years after 1958 are assumed to be in line with the 1965 planned goal.

(c) Disaggregation of machinery categories into models or types: Information in various technical journals has facilitated a few more detailed breakdowns: of tractors into individual models; of diesel and electric locomotives into models. Cars and trucks could not be separated into individual models, although information in technical literature suggests that disaggregation raises the index especially in the case of trucks.

(d) Chemical equipment: An announced series in tons to 1954 is linked to an announced series in constant ruble values thereafter.

(e) Civil aircraft: Almost no production data are available but information concerning the inventory of various kinds of aircraft in Aeroflot at various times has been found. This is supported and supplemented by flight timetables from which inventories can also be

¹⁸ Especially "Industry," 1957; "National Economy," 1956, 1958, 1959, 1960; and "U.S.S.R. in Figures," 1961.

¹⁹ A detailed report on the indexes in this paper is being prepared for publication elsewhere.

²⁰ Plastics in metric tons was announced by Khrushchev in his 22d party congress speech in October 1961.

deduced from estimated utilization rates. Production series are then estimated from the inventories. The estimates of annual production that result must be quite inaccurate. However, the estimated average rate of production in the second half of the 1950-61 period compared to that in the first half, a sevenfold increase, should be of the right order of magnitude.²¹

(f) Merchant ships: No comprehensive production information is released, but ships are visible at sea. Not only is an accurate count feasible, but close estimates of size of weight and date of appearance are relatively simple to derive and are compiled by several of the navies and merchant marines of the world regarding each other's shipping. This information on Soviet merchant fleet has been collected by the U.S. Maritime Commission.²² The production estimates here are deduced from this inventory information. Because of some uncertainty in individual periods of construction, annual figures may be imprecise but production trends over several years are quite accurate.

(g) Electronics: There can be little question that this industry producing components that are vital to many postwar weapons systems, especially to missile systems and space programs, has been growing rapidly in the Soviet Union from a small base immediately after the war. The Soviets claimed a more than threefold increase in gross value of output from 1950 to 1955. The estimates of value of output of electronics used here are based on announced Soviet number and value of electron tubes and semiconductors, which in the United States has been a fairly constant percent of final output.²³ The value of Soviet final output is derived from the U.S. ratio of value of shipments of final output to value of tubes and semiconductors.

Adding imprecise series to an index does not necessarily improve it. With this in mind each new series has been examined for reasonableness in the light of related economic activities. Thus, the rapid growth in production of chemical equipment is consistent with the rapid growth in the production of chemicals. More importantly, in the cases of production of civil aircraft and electronics which significantly raise the entire index, the estimating procedures or incompleteness of data tend strongly toward conservative estimates. In aircraft several recent models of helicopters are omitted for lack of data. Helicopters, including the world's largest helicopter, have appeared in considerable numbers in the U.S.S.R. in the last few years and inclusion of these would surely increase the growth of the aircraft series. In 1960 and 1961 the estimated production of passenger aircraft (other than helicopters) declines sharply. New models of aircraft have been heralded in the Soviet literature already but have not been reported as yet in the Aeroflot inventory. Since it is likely that these models already are in production, their omission understates production in 1960 and 1961 by an unknown amount.

In the case of electronics the use of a U.S. relationship of value of tubes to value of final output probably understates the Soviet value of final product. In the United States civilian radios and TV's, involving

²¹ We know that Aeroflot, prior to 1955, used two-engine piston aircraft almost exclusively, and that following 1956 it was in large part reequipped with jet and turboprop aircraft, and that passenger kilometers increased sixfold from 1955 to 1961 and freight ton kilometers, threefold.

²² U.S. Department of Commerce, Maritime Administration, *Merchant Fleets of the World*, published twice a year, June 30, and December 31.

²³ "Electronics Industries Yearbook, 1962," Electronics Industries Association, Washington, D.C., 1962, pp. 2 and 64.

small tubes, are a much larger part of the total of electronics production than in the U.S.S.R., where military demand for increasingly complex components has been the dominant and the most rapidly growing portion. In combining electronics production with other elements in the machine-building sector, the faster growing electronics has been given only its own value-added weight, assumed to be one-half of value of output. Thus, it is implicitly assumed that all machinery products missing from the sample grow at the same rate as non-electronics machinery which grows at a slower rate than electronics.

No armaments production data as such are included. Military purchases of merchant ships and transport aircraft are excluded (for lack of data), but the production series for all other industries are comprehensive and include production destined for military as well as civilian use. Important examples of dual use are trucks, automobiles, tractors, and electronics.

II. WEIGHTS

The index is intended to approximate a value-added weighted index such as that of the FRB index. Information for constructing value-added weights is available only for major sectors of industry (those shown in table 1²⁴). Commodities within major sectors are weighted by prices, retail prices (adjusted to exclude distribution charges) in the case of foods and consumer nondurables and factory wholesale prices for all other commodities. The approximate value-added weights for major sectors are calculated from wage data and estimated depreciation in each sector. Both prices and value-added weights are for the year 1955.

In the absence of value-added weights for individual commodities, an effort has been made to include different products at the highest stage of fabrication and to omit intermediate and lower stages. Thus, rolled steel products are included but steel ingots and pig iron are not. In the machinery sector the items in the sample are almost all final products. Intermediate components such as ball bearings or small electric motors are omitted.

Since armaments are excluded from the index, the value-added weight for machinery²⁵ has been reduced to reflect only civilian products, including electronics. Armaments are estimated to be approximately half of the final value of machinery output and their value added is assumed to be the same proportion of machinery value added. A further adjustment is needed to reflect the fact that most of electronics output is probably for military uses, for example, radar sets and missile guidance systems. We assume that half of electronics value of output, or 0.54 billion rubles, is value added in 1955, and, of this, one-third is civilian and two-thirds military.²⁶ The value added for civilian machinery, 4.03 billion rubles, is reduced by 0.18 billion rubles to obtain value added for output of nonelectronics civilian machinery, 3.85 billion rubles. Of the total nonarmaments industrial value-added weight, civilian machinery, excluding electronics, accounts for 19.5 percent and electronics for 2.7 percent.

²⁴ See p. 120.

²⁵ Value added for machinery consists of the wage bill and amortization in the Soviet category "machine building and metalworking."

²⁶ All ruble values in this report have been adjusted to new (1961) ruble levels by dividing by 10.

III. DEFICIENCIES OF THE INDEX

The major deficiencies of the index are summarized below:

(a) As indicated above, the sample represents lines of production at one stage only. Hence, as compared to the FRB index, it reflects changes in complexity and quality poorly. The much greater level of aggregation in the Soviet index than in the FRB index also results in a poorer reflection of quality changes. Our success in disaggregation of products was quite limited. The calculated series still probably understate Soviet industrial growth to the extent that there has been increasing quality and complexity within aggregate series.

(b) The following product classes are not covered or are poorly covered:

(1) Many chemicals end products.

(2) Nonelectronic instruments, metal-forming equipment, food-processing equipment, and many minor types of equipment.

(c) The very large category of fabricated metal products other than machinery is unrepresented. This category includes, among other things, structural shapes, fencing, nails, screws, nuts and bolts, hand tools, and metal drums, cans, and other containers. This category accounts for 5 percent of value added in the U.S. index and may be large in the Soviet Union also. The official index for metalworking grows only a little faster than that for all industry.²⁷ If we can trust the Soviet gross value indexes this far, the omission should not seriously bias the index.

(d) Spare parts of all kinds are missing. The Soviets have published a series on the ruble value of spare parts for tractor, agricultural machinery, and automotive equipment. This series rises from 0.10 billion rubles in 1950 to more than 0.5 billion in 1957, to 0.93 billion in 1959. The series rises considerably faster than all industry or even machine building and is a substantial fraction of the value of the latter. However, we do not know enough about the coverage and construction of this series to have much confidence in it. It may represent only production in specialized factories. On the other hand, there is reason to believe that spare parts production has risen rapidly and that its omission from the index results in some understatement.

(e) Finally, the 1961 production data included in the index are preliminary. Hence, a number of our series are extrapolated on the basis of indirect indicators or previous trends.

We cannot, of course, be sure what the effect of these omissions would be. However, consideration of the omitted products suggests that the calculated index is at least as likely to be understated as overstated on this account.

Armaments, which are specifically excluded, are undoubtedly of sufficient importance to alter, significantly, the trend of the index. Another missing element is production of hardware for the space program. This activity has graduated from the rare and exotic class into big business, and is perhaps the most rapidly growing activity in Soviet industry since 1955.

²⁷ Official index for metalworking for 1955 was 209 (1950=100), and for industry, 185.

APPENDIX B

COMPARISON OF CALCULATED MACHINERY OUTPUT WITH SOVIET-ANNOUNCED INVESTMENT IN EQUIPMENT

Since the main divergences and uncertainties of the calculated index center in the machinery field, we would like to find some test of reliability of the machinery series. The announced Soviet index of gross value of production of machine building and metalworking grows even faster than the calculated machinery index, to 490 percent of 1950 in 1961, compared with 311 percent for the calculated index. We cannot, however, distinguish between divergences that arise from difference in coverage (the Soviet index includes armaments as well as other things missing from the calculated index) and those that arise from statistical malpractice in the Soviet index.

The limited coverage of the calculated machinery index is more comparable to the equipment portion of the Soviet investment index. This Soviet index is compared, in table 4, to the producer-durables portion of the calculated index; that is, the machinery index of table 1 minus consumer durables, and both with and without electronics.

TABLE 4.—*Equipment portion of official Soviet investment index compared to calculated civilian machinery index, with and without electronics, 1950-61*

[In billions of 1955 rubles]

Year	Equipment portion of official Soviet investment ¹		Calculated civilian machinery ²		
	Value	Index	Without electronics		With electronics index
			Value	Index	
1950.....	3.26	100.0	1.78	100.0	100.0
1951.....	3.32	101.8	1.70	95.5	97.5
1952.....	3.49	107.1	1.70	95.5	99.9
1953.....	3.65	112.0	1.96	110.1	115.9
1954.....	4.46	136.8	2.18	122.5	129.2
1955.....	5.46	167.5	2.47	138.8	147.3
1956.....	6.75	207.0	2.93	164.6	176.2
1957.....	7.44	228.2	3.40	191.0	206.5
1958.....	8.60	263.8	3.57	200.6	222.2
1959.....	9.31	285.6	3.74	210.1	236.8
1960.....	9.98	306.1	4.02	225.8	257.4
1961.....	10.75	329.7	4.37	245.5	287.6

¹ State plan and decentralized investment in equipment from Kapital'noye stroitel'stvo v S.S.S.R. Capital construction in the U.S.S.R., Moscow, 1961, combined with an estimate of kolkhoz purchase of equipment.

² Excluding consumer durables.

Since electronics includes items for military use, the series including it has too broad a coverage. On the other hand, the calculated series is a sample, while the Soviet index is comprehensive. On account of its coverage of unique items and new products, one would expect it to rise a little faster than the sample series. But in addition it is possible that the Soviet index is overstated on account of pricing of new products and uncertain reporting. Finally, the investment index should show a time lag behind the production index. Allowing for these uncertainties we conclude the Soviet and calculated index provide some confirmation for each other.

APPENDIX C

TABLE 5.—Data for chart 2, factors in Soviet industrial growth ¹

	Index of man- hours in industry ² (1950=100)	Index of capi- tal invest- ment in industry ³ (1950=100)	Index of comb- ined metals production ⁴ (1955=100)
1950.....	100	100	55.7
1951.....		112	64.5
1952.....		125	73.6
1953.....	116	137	81.2
1954.....		162	89.5
1955.....	124	181	100.0
1956.....	124	207	107.0
1957.....	127	218	113.1
1958.....	128	247	120.1
1959.....	130	284	129.8
1960.....	128	314	140.7
1961.....	128	327	152.6

¹ Civilian machinery excluding electronics in chart 2, from table 1 of this report.

² Schroeder, Gertrude, "Soviet Industrial Productivity," October 1962. Paper contributed to the Joint Economic Committee.

³ "Kapital 'noye stroitel' stvo v S.S.S.R." (Capital Construction in the U.S.S.R.) Moscow 1961, national economy, 1961, p. 545

Derived from data in table 1 of this report.

SOVIET INDUSTRIAL LABOR PRODUCTIVITY

BY

GERTRUDE SCHROEDER

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SOVIET INDUSTRIAL LABOR PRODUCTIVITY

Papers on labor productivity written by Soviet economists quite commonly begin with a quotation from Lenin. It may not be inappropriate, therefore, to begin this paper with such a quotation, if only for the purpose of showing the key place that this concept occupies in Marxist economic thought and in Soviet economic planning:

The productivity of labor is, in the last analysis, of the greatest importance, of the utmost importance to the victory of the new social structure.¹

An important tenet of Soviet economic thought is the alleged "necessity" for the Socialist system to generate a high rate of increase in labor productivity, especially in industry, and to keep this rate always in excess of the rate of increase in wages. Therefore, in the U.S.S.R. the fulfillment of plans for increased labor productivity is an important success indicator in the system of incentives for workers and managers alike. In recent years labor productivity indicators have been given a key role in the Soviet Union's assessments of its progress in its self-imposed task of overtaking and surpassing the United States in economic achievement. Labor productivity is much discussed in the Soviet press, and labor productivity indexes are given a prominent place in statistical handbooks.

This paper will assess recent trends in industrial labor productivity in the U.S.S.R. as measured by Soviet economists and as seen by Western scholars; review the Soviet Union's current position and rate of progress vis-a-vis the United States, again as viewed by their respective scholars; and finally discuss some of the factors that condition this relative position and also the relative rates of increase in labor productivity in the two countries. We leave to others the complex task of measuring relative capital productivities and of combining the measures for labor and capital into an index of total resource productivity, the results of which might well present a picture of trends and relative efficiencies in the use of resources in the two countries quite different from that shown by labor productivity measurements alone.

I. RECENT TRENDS IN LABOR PRODUCTIVITY FOR INDUSTRY AS A WHOLE

A. SOVIET MEASUREMENTS

The U.S.S.R. currently publishes two indexes² of industrial labor productivity in its official statistical handbooks—an index of output per person working (*rabotayushchiy*) and an index of output per wage

¹ V. I. Lenin, "Collected Works," vol. 29, p. 394.

² Actually, the U.S.S.R. publishes still another index which is used in the comparison of the rate of productivity change in the U.S.S.R. with those in the United States, England, and France. (U.S.S.R. Central Statistical Association, "Narodnoye Khozyaystvo S.S.S.R. v. Moscow, 1961," p. 171.) This index measures output per wage worker (*rabochiy*) and shows a somewhat higher rate of increase than the other published index of output per wageworker. Thus, for the period 1928-61, the former shows an index of 992 percent and the latter gives an index of 967 percent; for the period since 1950 the two indexes are almost identical. The reasons for the discrepancy between the two indexes are not apparent.

worker (*rabochiy*).³ The former was published for the first time in the official statistical handbook for 1959,⁴ following much discussion and repeated urgings of Soviet economists that the more inclusive industrial employment measure should be used as the denominator for the productivity ratio. This index—based on total industrial employment including salaried employees as well as wageworkers—shows a somewhat more rapid rate of growth than the index based only on wageworkers, whose number rose more rapidly than total employment throughout most of the period and who now comprise 83 percent of the total. There has been little change in the ratio of wageworkers to total industrial employment since 1955.

Despite a multiplicity of approved "explanations," the methodology used to construct the official Soviet productivity indexes remains something of a mystery. The statistical handbooks state merely that the indexes relate to all state and cooperative industry except collective farm industry and that they are calculated in terms of the gross value of output (*valovaya produktsiya*) in comparable prices per person employed and per wage worker.⁵ Presumably, therefore, one should be able to reconstruct these indexes approximately, using published employment data and the official index of industrial production. Appendix table A gives the methodology and the results of an attempt at such a reconstruction of the index of output per wage worker for selected years in the period 1928–61. In this reconstruction, the official industrial production index was used as the numerator of the productivity ratio; the employment denominator represents the sum of officially published data on the number of wage workers in state industry and estimates of the number of such workers in the industrial *artels*. This reconstruction provides some interesting insights into the nature of the official Soviet productivity indexes.⁶

As shown in appendix table A, output per wage worker during 1928–61 was 967 percent of the level of 1928 according to the official Soviet productivity index and was 720 percent according to the reconstructed index. Thus, the official productivity index appears to overstate the increase in labor productivity over this period by more than one-third, even when the U.S.S.R.'s own official industrial production index—believed by Western economists to greatly overstate the rise in output—is used in the calculation.⁷ Almost all of this discrepancy between the calculated productivity index and the

³ *Ibid.*, n. 161.

⁴ U.S.S.R., Central Statistical Administration, "Narodnoye khozyaystvo S.S.S.R. v 1959 godu," Moscow, 1960, p. 85.

⁵ *Ibid.*, p. 833.

⁶ It is desirable to point out a few considerations that bear on the reliability of these conclusions with respect to the nature of the Soviet productivity indexes: (1) although the numerator of the reconstructed productivity index includes the industrial output from the collective farms and the denominator of the ratio does not, this inconsistency could not appreciably affect the results, since the share of such output in the total is minuscule (probably much less than one percent); (2) although employment in the industrial *artels* had to be estimated from a variety of Soviet sources and is therefore subject to some margin of error, employment in the *artels* is small relative to the total and the probable margin of error is not great enough, it is believed, to alter the general conclusions; (3) the USSR also apparently omits from the employment denominator of the productivity index employment in certain small subsidiary industrial enterprises of non-industrial establishments (*melkiye podsobiye predpriyatiya*). Heroic efforts have been made to estimate the size and trend of this omitted employment, relying on assumptions about the nature of the Soviet labor productivity index and on a variety of complex methodologies. (Murray S. Weitzman and Andrew Elias, "The Magnitude and Distribution of Civilian Employment in the U.S.S.R., 1928–59," U.S. Bureau of the Census, Foreign Manpower Research Office, International Population Reports Series P-95, No. 58, April 1961.) Soviet economists have told the author that these estimates overstate such employment. On the other hand, a Soviet official has stated that in the RSFSR more than a million persons are not included in the "sphere of labor productivity accounting." ("Economiceskaya Gazeta," Nov. 27, 1961, p. 31.)

⁷ An industrial production index constructed by linking the Kaplan-Moorsteen index to the Greenslade Wallace index gives an increase for 1928–61 only about one-fourth of that shown by the Soviet index.

official index occurs during 1928-37.⁸ Over the subsequent 24 years the two indexes differ by less than 4 percent. The published official indexes for the periods 1928-32 and 1933-37 are identical with the percentage gains in productivity announced for the first and second 5-year plans, respectively. Despite the fact that the indexes relating to these two periods pertain to different universes—the first relating only to those large-scale establishments that were included in the first 5-year plan, and the second relating to a somewhat greater part of large-scale industry—the indexes apparently have been linked to each other and to the index for later years, without adjustment for comparability. The fact that the published official productivity index and the reconstructed index agree so closely for the period since 1937, however, shows, at least, that the official index is now generally consistent with other published statistics on industrial output and employment. This consistency of the two indexes also suggests the probability that the official index of output per wage worker is calculated as the quotient of the official industrial production index (inclusive or exclusive of the value of collective farm industrial output) and an employment index based on published count of wage workers in state industry plus their counterparts in the industrial artels. The small difference between the official index and the index constructed on this basis could readily be due either to rounding and small errors of estimation in computing employment in the industrial artels and/or to the exclusion of the value of kolkhoz industrial output from the numerator of the official productivity index. The Soviet productivity index is shown in table 1 for the period 1950-61, along with alternative indexes based on the researches of Western scholars. According to the official Soviet index, output per person employed increased 7.1 percent annually during 1950-61.

B. ALTERNATIVE MEASUREMENTS

With a unanimity rare among economists, Western scholars have long maintained that the official Soviet index of industrial production greatly overstates the growth in industrial output in the U.S.S.R., particularly for the years before 1950, relative to the growth of output in countries using Western-type measures of output and price-weighting procedures. The reasons for this belief are well known and need not be discussed anew here.⁹ Having rejected the Soviet index on theoretical grounds, Western economists have felt compelled, despite the Herculean labors involved, to construct alternative indexes that purport to measure industrial growth more or less as it is measured in Western countries. Five of these indexes are given in appendix table B, and the labor productivity indexes based on them are shown in table 1. The production indexes cited are those calculated by Nutter, Shimkin-Leedy, Kaplan-Moorsteen, Seton, and most recently by Greenslade and Wallace. In general, these indexes (except for Seton's index) have been constructed by compiling varying numbers of physical output series and combining them with value-added weights

⁸ Other authors have arrived at somewhat similar conclusions with respect to the inflation of the official Soviet productivity index during this period. (Walter Galenson, "Labor Productivity in Soviet and American Industry," New York, 1955. Barney R. Schwalberg, "Industrial Employment in the U.S.S.R., 1933, 1937, 1950, and 1955," U.S. Bureau of the Census, Foreign Manpower Research Office, International Population Reports, Series P-95, No. 55, January 1960.)

⁹ The principal bases for the doubts of Western economists with respect to the Soviet index of industrial production are summarized by Francis Seton in "Soviet Studies," October 1960, pp. 128-30.

of some kind. Seton has constructed an index for the U.S.S.R. based on the growth in three basic items—fuels, steel, and electric power—and on the high correlation between the growth in these series and the growth in aggregate industrial output found to exist in Western industrialized countries. All of these Western indexes show rates of increase in Soviet industrial output considerably below that given by the official Soviet index.

Thus, for the period 1951–58, the average annual increase in the gross value of industrial production ranges between 7.6 and 10.2 percent according to Western indexes, compared to 12 percent according to the Soviet index. Some of this difference may reflect differences in the coverage of the respective indexes. The indexes of Nutter, Kaplan-Moorsteen, and Greenslade-Wallace, for example, relate only to the output of civilian goods.

TABLE 1.—*Indexes of output per employee in Soviet industry, selected years, 1950–6*
[1950=100]

Year	Indexes of output per employee ¹					
	Official	Greenslade-Wallace	Seton	Kaplan-Moorsteen	Shimkin-Leedy	Nutter
1950.....	100	100	100	100	100	100
1953.....	126	113	119	112	119	103
1955.....	149	131	135	127	132	117
1956.....	159	140	143	134	138	123
1957.....	170	151	149	142	142	131
1958.....	180	160	157	149	146	132
1959.....	194	168	-----	-----	-----	-----
1960.....	204	171	-----	-----	-----	-----
1961.....	213	175	-----	-----	-----	-----

¹ Except for the official Soviet index, all indexes are derived from computed indexes of industrial production and computed total industrial employment. For derivation and sourcing see appendix table B.

Indexes of labor productivity in Soviet industry have been constructed by dividing each of the Western indexes of Soviet industrial production by an index of total average annual industrial employment (both wage and salary workers) obtained as described in appendix table B. Table 1 compares these productivity indexes thus calculated with the official Soviet index of output per person employed.

During 1951–58, output per person employed in Soviet industry rose by 7.6 percent annually according to the Soviet index and by 3.5 to 6.1 percent annually according to the five alternative indexes. Three of the indexes show higher rates of increase for the years 1951–55 than for the years 1956–58; the other three indexes show just the opposite. For the period 1951–61 the official Soviet index shows an average annual increase in labor productivity of 7.1 percent; the productivity index based on the Greenslade-Wallace production index shows an average annual increase of 5.2 percent. Both indexes indicate somewhat higher rates of productivity growth during 1951–55 than during 1956–61.

The indexes presented in table 1 measure productivity in terms of output per person employed. For some purposes it is more appropriate to measure productivity changes in terms of output per man-hour. During 1956–61 the Soviet Union gradually reduced the length of the scheduled workweek in industry by about one-sixth—from about 48 hours in 1955 to about 40 hours in 1961. As a consequence,

labor productivity measured in man-hours rose much more rapidly than productivity measured in terms of number of persons. (See table 4 below.) Thus, using the official Soviet index of industrial production, output per man-hour increased 9.7 percent annually during 1956-61, compared to an increase of 6.1 percent annually in output per employee. When the Greenslade-Wallace index of industrial production is used, the corresponding figures are 8.1 and 5.

II. RECENT TRENDS IN LABOR PRODUCTIVITY BY INDUSTRIAL BRANCH

A. SOVIET MEASUREMENTS

In its official annual statistical handbooks, the U.S.S.R. publishes labor productivity indexes for 11 major branches of industry.¹⁰ As published in the latest handbook for 1960, the indexes for ferrous metallurgy, machine building, chemicals and rubber-asbestos, construction materials, woodworking, paper, light industry and the food industry are computed in terms of gross value of output (in constant prices) per person employed. The indexes for coal, petroleum extraction and timber are calculated in terms of physical units per wage-worker. The eight indexes based on rubles represent at least three-fourths of the gross value of total industrial output and would, of course, reflect in varying degrees the biases that afflict the aggregate index.

There is considerable question as to the coverage and meaning of the published indexes of labor productivity by branch of industry. In the absence of explanations to the contrary in footnotes or elsewhere, one would assume that the index for each branch represents the total output (in constant rubles or in physical units) of the branch divided by the employment in that branch (either all persons employed or all wage workers). It may be, however, that these indexes reflect productivity changes in only a part of the enterprises in each branch—probably the larger and more modern ones where productivity could be expected to rise most rapidly.

Two kinds of evidence lend support to such an interpretation. First, in the three branches for which a check can be made, the changes in employment during 1955-59 shown by indexes derived from the published indexes of value of output and value of output per wageworker (*rabochiye*) do not agree with published data on the number of wage workers.¹¹ Thus, the index calculated for light industry shows an increase in employment of 10 percent during 1955-59, compared with a reported increase of 20 percent; corresponding figures for the food industry are 11 percent and 14 percent, and for construction materials, they are 35 percent and 40 percent.

The reasons for these discrepancies are not apparent. A second indication concerns the coverage of the productivity data published for the logging industry (*lesozagotovka*). According to data in the latest statistical handbook, output per worker in the logging industry increased 22 percent during 1951-55; an identical percentage increase was reported in previous statistical handbooks as representing output per worker in enterprises of the Ministry of the Timber Industry, which before its abolition as a result of the 1957 industrial reorgani-

¹⁰ U.S.S.R., Central Statistical Administration, "Narodnoye khozyaystvo S.S.S.R. v 1960 godu," Moscow, 1961, pp. 231-33.

¹¹ *Ibid.*, p. 217, and "Narodnoye khozyaystvo S.S.S.R. v 1959 godu," pp. 147, 153-54.

zation produced only slightly more than half of the total output of wood.¹² The question thus arises as to whether the productivity data now published for logging reflect productivity changes only in logging enterprises subordinate to the sovnarkhozes or whether the productivity data for enterprises of the abolished Ministry of the Timber Industry have simply been linked to productivity data for all logging enterprises without adjustment to a common universe.

The official Soviet indexes for 11 branches of industry—as published in the statistical handbooks or directly derivable from Soviet data—are shown in table 2 for the period 1950–60. These indexes show wide variations in productivity growth in the various branches during this period. The most rapid growth occurred in petroleum extraction, nonferrous metals and construction materials, where productivity nearly tripled. Growth was slowest in coal mining and light industry, which registered gains of 44 and 74 percent, respectively. In general, the increases in labor productivity were somewhat greater during the first half of the decade than in the second half.

B. ALTERNATIVE MEASUREMENTS

Table 2 also presents an alternative set of indexes of labor productivity by branch of industry based on the most recent of the industrial production indexes published by Western scholars; namely, the indexes constructed by Greenslade and Wallace.* These indexes are based on the Soviet scheme of industrial classification; the index for machinery and metalworking, however, represents only civilian output. The employment indexes used as denominators of the productivity ratios represent, in most cases, total wage and salary workers and were derived as explained in appendix table C.

As would be expected, these alternative productivity indexes show slower rates of growth than the Soviet productivity indexes. Excluding the coal industry, for which the two indexes are almost identical, the increases in productivity during 1951–60 range from 55 percent in light industry to 167 percent in nonferrous metals according to the alternative indexes, and from 74 percent in light industry to 201 percent in petroleum extraction according to the Soviet indexes. Because of some uncertainties about the employment measures already discussed, it is possible, however, that both sets of indexes overstate somewhat the increase in productivity in many of the branches.

*These production indexes and a description of the methodology used to construct them are given in: Rush V. Greenslade and Phyllis A. Wallace, "Industrial Production in the USSR," beginning on p. —

¹² Ministerstvo lesnoy promyshlennosti S.S.S.R., "Lesnaya promyshlennost' S.S.S.R." Moscow, 1957 pp. 26-7, 56-7.

TABLE 2.—Indexes of output per employee in selected branches of industry in the U.S.S.R., selected years, 1950-60

[1950=100]

Branch of industry	1950		1955		1958		1959		1960	
	A ¹	B ²	A ¹	B ²	A ¹	B ²	A ¹	B ²	A ¹	B ²
Coal.....	100	100	126	126	134	134	136	137	144	145
Petroleum extraction.....	100	100	159	147	240	208	270	233	301	257
Petroleum and products.....	100	100	185	185	256	236	274	249	299	267
Nonferrous metals.....	100	100	146	140	168	156	177	163	187	169
Ferrous metals.....	100	100	134	121	170	143	188	154	208	156
Timber and woodworking.....	100	100	150	140	189	176	200	184	209	191
Paper and products.....	100	100	169	144	214	179	224	191	234	195
Chemicals and rubber.....	100	100	169	157	228	217	251	235	273	252
Construction materials.....	100	100	140	127	159	145	167	151	174	155
Light industry.....	100	100	144	143	168	166	182	177	188	181
Food industry.....	100	100	150	150	190	180	210	210	223	223
All machinery and metalworking.....	100	100	180	180	239	239	263	263	283	283
Machine building.....	100	100	110	110	142	142	145	145	145	147
Civilian machinery and metalworking.....	100	100	110	110	142	142	145	145	145	147

¹ Soviet indexes represent gross value of output (valovaya produktsiya) per person employed, except for coal and petroleum, where they represent, respectively, tons of coal and tons of crude petroleum extracted per wageworker. Data are from "Narodnoye khozyaystvo SSSR v 1960 godu," pp. 231-233. The indexes for timber and woodworking and all machinery and metalworking were derived from Soviet series on gross value of output and the employment indexes shown in appendix table C.

² Productivity indexes based on Greenslade-Wallace production indexes (for sourcing see appendix table B, footnote b) and from the employment indexes (for sourcing see appendix table C).

III. U.S.S.R. VERSUS UNITED STATES¹⁴

International comparisons of industrial products and productivities are fraught with enormous difficulties, involving problems both of concept and of methodology. These difficulties are especially great when comparisons are being made between market and nonmarket economies such as the United States and the U.S.S.R. Despite the onerous task and the necessarily imprecise nature of the results in the case of economic comparisons between these two countries, however, it is important that Western economists continue to try to surmount the difficulties and to make the best possible comparisons, particularly with respect to industrial production and productivity. The U.S.S.R. has challenged the United States in an economic competition in which the main stress is laid on industrial development. During the past several years, Soviet economists have been busily engaged in turning out comparisons of levels and trends in industrial production and productivity in order to assess the current relative position of the Soviet Union in this competition and to forecast when the stated goal of overtaking and surpassing the United States will be achieved.¹⁵ Because these comparisons are widely circulated and used extensively to enhance the prestige for propaganda purposes of the U.S.S.R., Western scholars need to evaluate them critically and to submit alternative comparisons when warranted.

There is an extensive literature dealing both with the conceptual and methodological problems of international comparisons in general and with the particular problems involved in such comparisons between the United States and the U.S.S.R. Therefore, it will suffice

¹⁴ A part of the material in this section is taken from a paper presented by the author at the International Conference on Labor Productivity, held under the auspices of the International Economic Association at Lake Como, Italy, Aug. 30-Sept. 9, 1961.

¹⁵ See, for example, "S.S.S.R.-SShA: tsifry i fakty," Moscow, 1961; "SShA proigryvayut ekonomicheskoye sorevnovaniye," Moscow, 1961; and V. A. Zhamin (ed.), "Ekonomicheskoye sorevnovaniye sotsializma s kapitalizmom," Moscow, 1962.

here merely to review briefly those problems that pertain most particularly to comparisons of trends and absolute levels of industrial labor productivity in the United States and the U.S.S.R. The basic task of such a comparison is to obtain measures of physical output per unit of labor for equivalent products in the two countries and to aggregate the results with value-added weights. With respect to the numerator of the productivity ratio, there are the familiar problems associated with the adequacy of the sample of products, the adjustments required to allow for measurable differences in product quality and mix, and the nature of the weights needed to sum the individual products. With respect to the denominator of the productivity ratio, the main problems are to secure consistency between the product and employment data and to insure that proper allowances are made for differences between the two countries in the concepts and measures used to compile employment statistics. For the use of Soviet data, all of these difficulties are compounded by the simple fact that the U.S.S.R. publishes only a small fraction of the detailed data on production and employment published in the United States and that the Soviet statistics, scanty as they are, are published with a bare minimum of explanation (or none at all) of their meaning and method of compilation. Some of these problems will be described more fully in the discussions of the productivity comparisons made by Soviet economists in the past few years and the alternative comparisons developed by Western economists.

A. RECENT TRENDS IN INDUSTRY AS A WHOLE

In the past several years the U.S.S.R. has regularly published in its statistical handbooks comparisons of current trends in industrial labor productivity in the U.S.S.R. and the United States. In these comparisons, Soviet economists are using the officially published productivity index (gross value of output per wage worker) for the U.S.S.R.; for the United States, they presumably are using the Federal Reserve Board's recently revised index of industrial production and an employment index based on Bureau of Labor Statistics data. Both the production and the employment indexes raise serious questions with respect to comparability between the two countries. The Soviet production index measures gross value of output in industry, defined to include various activities not considered "industrial" in the United States, and employs price weighting procedures very different from those used in the United States. The U.S. index measures changes in net output (value added) in manufacturing, mining, and electric and gas utilities. Differences in the definitions of "industry" and of "wage workers" in the two countries affect the comparability of the employment indexes.¹⁶

Table 3 presents two comparisons of productivity trends in industry as a whole in the United States and the U.S.S.R. during 1950-61 as measured in terms of output per person employed. For the United States the productivity index is calculated from the Federal Reserve Board's index of industrial production and an employment index representing total employment in manufacturing, mining, and electric and gas utilities as estimated by the Bureau of Labor Statistics. Two

¹⁶ For a detailed discussion of these differences, see: Murray S. Weitzman, "Comparison of U.S. and U.S.S.R. Employment in Industry," U.S. Bureau of the Census, Foreign Demographic Analysis Division, (forthcoming in 1962).

productivity indexes are shown for the U.S.S.R., one being the official Soviet index and the other being an index based on the Greenslade-Wallace index of industrial production. In evaluating these two indexes for the U.S.S.R., it should be remembered that military production is included in the former and excluded from the latter; whether this difference appreciably affects the trend we do not know. According to the data in table 3, output per employee in the United States increased at an average annual rate of 3 percent during 1951-61, compared with rates of 7.1 and 5.2 in the U.S.S.R. shown respectively by the two indexes just described. All indexes give somewhat slower rates of increase for the years 1956-61 than for the earlier period.

TABLE 3.—*Indexes of production, employment and output per employee United States and U.S.S.R., selected years, 1950-61*

Year	United States ¹			U.S.S.R. ²				
	Production	Employment	Output per employee	Production		Employment	Output per employee	
				Official	Greenslade-Wallace		Official	Greenslade-Wallace
1950.....	100	100	100	100	100	100	100	100
1953.....	122	114	107	145	131	116	125	113
1955.....	129	109	118	185	162	124	149	131
1956.....	133	112	119	204	179	128	159	140
1957.....	134	111	120	225	199	132	170	151
1958.....	125	104	120	248	217	136	180	160
1959.....	141	108	130	276	235	140	194	168
1960.....	145	108	134	303	250	146	204	171
1961.....	146	105	139	331	287	153	213	175

¹ The productivity index is computed from the index of industrial production published by the Federal Reserve Board in the Federal Reserve Bulletin and employment data published by the Bureau of Labor Statistics in its "Employment and earnings" series.

² For derivation and sourcing of the indexes of production and employment see appendix table B.

Because of the large reduction of the scheduled workweek in the U.S.S.R. and little change in the workweek in the United States, the Soviet edge over the United States in productivity growth during 1951-61 is even greater when productivity is measured in terms of output per man-hour rather than per man-year. This differential growth is greatest in the period 1956-61, when the reduction in the workweek took place in the Soviet Union. Indexes of output per man-hour for the two countries are shown in table 4. In the U.S.S.R. man-hour productivity increased at an average annual rate of 9 percent during 1951-61 according to the Soviet official index and 6.9 percent according to the index based on the Wallace-Greenslade production index. The corresponding rate for the United States was 3.1 percent.¹⁷ During 1956-61, rates of 9.7 percent and 8.1 percent are shown by the two indexes for the U.S.S.R. The corresponding rates for 1951-55 are 8.3 and 5.5. The rate in the United States was 3.1 percent.

¹⁷ The index of output per man-hour for the United States represents the quotient of the Federal Reserve Board's industrial production index and a man-hours index constructed from data on employment and man-hours in manufacturing, mining, and electric and gas utilities published by the Bureau of Labor Statistics. The index of output per man-hour shown in table 4 differs somewhat from the index of output per man-hour published by the Bureau in "Indexes of Output per Man-Hour for the Private Economy, 1947-61," June 1962.

TABLE 4.—*Indexes of production, man-hours, and output per man-hour, United States and U.S.S.R., selected years, 1950-61*

[1950=100]

Year	United States ¹			U.S.S.R.				
	Production	Man-hours	Output per man-hour	Production ²		Man-hours ³	Output per man-hour	
				Official	Greenslade-Wallace		Official	Greenslade-Wallace
1950.....	100	100	100	100	100	100	100	100
1953.....	122	113	108	145	131	116	125	113
1955.....	129	109	118	185	162	124	149	131
1956.....	133	111	120	204	179	124	165	144
1957.....	134	109	123	225	199	127	177	157
1958.....	125	101	124	248	217	128	194	170
1959.....	141	107	132	276	235	130	212	181
1960.....	145	106	137	303	250	128	237	195
1961.....	146	103	142	331	267	128	259	209

¹ The index of production per man-hour is derived from the index of industrial production published by the Federal Reserve Board in the Federal Reserve Bulletin and a combined index of man-hours derived from data published by the Bureau of Labor Statistics in its "employment and earnings" series. The combined index of man-hours includes manufacturing, mining, and electric and gas utilities.

² For derivation and sourcing of the indexes of production see appendix table B.

³ Computed from the employment index in appendix table B and an index of the average length of the scheduled workweek for adult wage workers derived from information in: "Narodnoye khozyaystvo S.S.S.R. v 1958 godu," p. 665; "Narodnoye khozyaystvo S.S.S.R. v 1959 godu," p. 596; "Narodnoye khozyaystvo S.S.S.R. v 1960 godu," p. 645; "S.S.S.R. v tsifrah v 1961 godu," p. 314.

TABLE 5.—Indexes of output per employee in selected branches of industry, United States and U.S.S.R., selected years, 1950-60

[1950=100]

Branch of industry	1950			1955			1958			1959			1960		
	United States ¹	U.S.S.R.		United States ¹	U.S.S.R.		United States ¹	U.S.S.R.		United States ¹	U.S.S.R.		United States ¹	U.S.S.R.	
		A ²	B ³		A ²	B ³		A ²	B ³		A ²	B ³		A ²	B ³
Coal.....	100	100	100	154	126	126	152	134	134	166	136	137	181	144	145
Crude petroleum.....	100	100	100	104	159	159	104	240	240	109	270	270	114	301	301
Petroleum and products.....	100	100	100	110	147	147	114	208	208	121	233	233	128	257	257
Ferrous metals.....	100	100	100	113	146	140	96	168	156	107	177	163	104	187	169
Timber and woodworking.....	100	100	100	122	134	121	128	170	143	135	188	154	132	208	156
Paper and products.....	100	100	100	110	150	140	113	189	176	120	200	184	119	209	191
Chemicals and rubber.....	100	100	100	121	169	144	129	214	179	145	224	191	148	234	195
Construction materials.....	100	100	100	110	169	157	113	228	217	122	251	235	123	273	252
Light industry.....	100	100	100	115	140	127	126	159	145	141	167	151	142	174	155
Food industry.....	100	100	100	109	144	143	120	168	166	124	182	177	127	188	181
Machinery and metalworking.....	100	100	100	120	150	110	116	190	142	128	210	145	133	223	147

¹ Productivity indexes computed from indexes of industrial production published by the Federal Reserve Board in "Industrial Production—1959 Revision," supplement, July 1960, and indexes of employment derived from data published by the Bureau of Labor Statistics in its "Employment and Earnings" series. The indexes have been selected (or combined) so as to be as comparable as possible with the industrial classification system used by the U.S.S.R. See Andrew Elias, "Soviet Practice in the Classification of Economic Activity," U.S. Bureau of the Census, International Population Reports, Series, P-95, No. 57, March 1961.

² Soviet indexes. For derivation and sourcing and definitional limitations, see table 2.

³ Productivity indexes are based on Greenslade-Wallace production indexes (for sourcing see appendix table B, footnote 2) and from the employment indexes derived as described in appendix table C.

⁴ The production index on which the productivity index is based, is for civilian machinery and metalworking only. The employment index, however, represents the total number of wage workers in all machinery and metalworking.

B. RECENT TRENDS BY INDUSTRIAL BRANCH

Table 5 presents indexes of labor productivity by branch of industry in the United States and the U.S.S.R., 1950-60. The indexes for the United States refer to output per employee derived from indexes of production computed by the Federal Reserve Board and employment data compiled by the Bureau of Labor Statistics. Although these two sets of data may not be strictly comparable in some cases, this lack of correspondence would not significantly affect the trends depicted.^{17a}

As in the case of indexes for industry as a whole, two sets of indexes are shown for the U.S.S.R.—one the Soviet official indexes and the other based on the Greenslade-Wallace production indexes and employment indexes derived by the author from Soviet data, as explained in appendix table C. The indexes shown for the U.S.S.R. also refer to output per person employed, except in coal, petroleum refining, and machinery and metalworking, where they refer to output per wage-worker. Data on total employment are not available for these three branches; it is probable that total employment increased somewhat less rapidly than the number of wageworkers during this period. As with the data shown in table 2, above, certain ambiguities in the employment data suggest that the indexes for the U.S.S.R. given in table 5 may overstate somewhat the rates of productivity growth.

Even with all these qualifications pertaining to the data, however, it is clear that labor productivity in all branches except coal has increased much more rapidly in the U.S.S.R. during 1950-60 than in the United States. In the United States the average annual rates of increase range from less than 1 percent for ferrous metals to 6.1 percent for coal. In the U.S.S.R., according to Soviet measurements, the average annual rates of increase range from 3.7 percent for coal to 11.7 percent for crude petroleum; according to the alternative indexes the average annual rates of increase range from 3.8 percent for coal to 10 percent for construction materials. These data also suggest that the variability among industries with respect to productivity change is somewhat greater in the U.S.S.R. than in the United States.

C. ABSOLUTE LEVELS FOR INDUSTRY AS A WHOLE AND BY INDUSTRIAL BRANCH

The latest Soviet statistical handbook ("Narodnoye khozyaystvo S.S.S.R. v 1961 godu") presents the official Soviet assessment of its present position vis-a-vis the United States with respect to the level of industrial labor productivity. Soviet economists conclude that the level of labor productivity in the U.S.S.R. in 1961 was 40 to 50 percent of that of the United States.¹⁸ This calculation, evidently prepared by the Central Statistical Administration, is the basis for current Soviet forecasts of when the U.S.S.R. will overtake and surpass the United States in industrial labor productivity, an oft-repeated goal, the achievement of which allegedly will prove to the world the superiority of the Socialist system. In a recent article,

^{17a} In constructing these productivity indexes for the United States, the individual branches of industry were defined so as to make them as comparable as possible to the industrial classification system used by the U.S.S.R. For this and other reasons the rates of productivity change shown by these constructed indexes may differ from the rates shown by the productivity studies of the Bureau of Labor Statistics. See Bureau of Labor Statistics, "Indexes of Output per Man-Hour for Selected Industries, 1939 and 1947-60," December 1961.

¹⁸ U.S.S.R., Central Statistical Administration, "Narodnoye khozyaystvo S.S.S.R. v 1961 godu," Moscow, 1962, p. 139.

V. I. Starovsky, head of the Central Statistical Administration, has described briefly how the official comparison of the relative level of productivity was obtained.¹⁹ The relative levels of industrial output in the two countries—both net output and gross output—were calculated and converted to common currencies with ruble-dollar ratios calculated on the basis of the Soviet product mix as well as the U.S. mix. These calculations showed the value of “net” output in the U.S.S.R. in 1959 to be 61 percent of the United States when measured in rubles, and 60 percent when measured in dollars and the value of gross output to be 60 percent in both currencies. With respect to the comparison of labor productivity, he states:

Proceeding from these data (industrial production in the U.S.S.R. more than half and production workers about 30 percent more than in the United States) we conclude that the productivity of industrial workers in the U.S.S.R. in 1959 was 40 to 50 percent of industrial labor productivity in the United States.

With the meager explanation of the methodology used to derive these official comparisons and without the underlying data, it is impossible to reconstruct them independently. Specifically, we do not know the size and nature of the sample, the kinds of weights used to combine individual products, or the price data used to obtain currency-conversion ratios. On the surface, however, the results of the calculation of relative output levels seem most strange. The conclusion that the relative levels of both gross and net output are almost identical regardless of which country's prices are used implies that the structure of prices in the two countries is the same—a condition contrary to fact as demonstrated by the findings of various ruble-dollar ratio studies made by western economists.²⁰

Furthermore, the finding that Soviet output, relative to the United States, is slightly higher when both outputs are valued in rubles is diametrically opposite to the results of international comparisons made by other economists. In these comparisons, a given country's level of output invariably was found to be lower relative to that of a second country when the products were valued in the given country's prices.²¹ Whatever the methodology that was used to calculate these official Soviet comparisons of relative productivities, however, it is parenthetically interesting to note that they have forced Soviet economists to revise their previous estimates of the relative levels of pre-war labor productivity in the two countries. Before the war, Soviet economists estimated Soviet labor productivity in 1937 to be 40.5 percent of the United States.²² A ratio of about 25 percent for 1937 can be derived from their current estimate of the level of Soviet productivity relative to the United States in 1960 and from the indexes they are using to show productivity trends in the two countries.

Several western estimates of productivity levels in the United States and the U.S.S.R. have been made recently. According to a study by U.S. Government economists, presented in testimony before the Joint Economic Committee of the U.S. Congress in 1959, the level of industrial production in the U.S.S.R. in 1958 was about two-

¹⁹ *Voprosy ekonomiki*, No. 4, 1960, pp. 103-117.

²⁰ A. S. Becker, “Prices of Producers’ Durables in the United States and the U.S.S.R. in 1955,” *Rand*, RM. 2432, August 1959. Norman H. Kaplan and Eleanor S. Weinstein, “A Comparison of Soviet and American Retail Prices,” *Rand*, p. 901, October 1956. Norman H. Kaplan and William L. White, “Comparison of 1950 Wholesale Prices in Soviet and American Industry,” *Rand*, RM. 1443, May 1955.

²¹ See, for example: Deborah Paige and Gottfried Bombach, “A Comparison of National Product and Productivity of the United Kingdom and the United States,” OEEC, Paris, 1959.

²² *Planovoye khozyaystvo*, No. 3, 1939, p. 153.

fifths of the U.S. level, and the level of labor productivity was about one-third.²³ Presumably, these measurements represent the geometric means of separate estimates calculated in rubles and in dollars. G. Warren Nutter has recently published the finding that the level of labor productivity (value added per person engaged) in 1955 in the U.S.S.R. relative to the United States was 22 percent, when measured in dollars, and 18.5 percent, when measured in rubles.²⁴

In addition to comparisons of relative productivity levels in industry as a whole, both Soviet and Western scholars have also investigated relative productivity levels in the individual branches of industry in the two countries. Two recent, fairly detailed studies made by Soviet economists found that Soviet labor productivity in 1958 was 53.7 (or 60.5) percent of the United States in 1956 in machine tools²⁵ and that for the machinery and metalworking industry as a whole, the Soviet level in 1958 was 33 to 37 percent of the U.S. level in that year.²⁶ Another Soviet study asserts, without elaboration, that Soviet labor productivity was 50 to 67 percent in machine building, metallurgy, food, and light industries, and less than 40 percent in mining, logging, and the chemicals industries.²⁷ The most comprehensive of these recent Soviet studies of relative productivities by branch of industry is one by A. Kats, first published in 1959²⁸ and later revised.²⁹ His study, which covers 27 branches, reportedly representing some two-fifths of total production workers and their payrolls in the U.S.S.R., found that physical output per production worker in the U.S.S.R. in 1957 relative to the United States in 1956 ranged from 15.6 percent in the production of synthetic rubber to 143.5 percent in the manufacture of bread and bakery products, and averaged 42 to 47 percent, depending on the weights used. Kats' sample omits the machine building industry except one branch, nonferrous metallurgy, electric power, and most of the chemicals industries. On the other hand, it includes branches for which productivity comparisons in physical units would seem most questionable, for example, metal-cutting machine tools, bread and bakery products, and confectionery products. Very few of Kats' figures can be reproduced independently, either for the United States or the U.S.S.R. For logging and lumber, the Soviet figures apparently reflect productivity only in those enterprises subordinate to the ministry of the timber industry. In the case of the textile industries, he measured relative outputs in linear meters, thus failing to allow for the fact that U.S. fabrics are considerably wider than Soviet fabrics.

Various Western scholars have also made recent comparisons of relative levels of labor productivity in individual branches of industry in the United States and the U.S.S.R. Three studies published by the Foreign Demographic Analysis Division, U.S. Bureau of the Census, attempt to measure comparative productivities in the logging, automobile, and mineral fuels industries. According to these studies, Soviet labor productivity in various recent years, relative to the United States, was: physical output per production worker in log-

²³ U.S. Congress, Hearings Before the Joint Economic Committee, "Comparisons of the United States' and Soviet Economies," (86th Cong., 1st sess.), Washington, 1960, p. 4.

²⁴ G. Warren Nutter, "The Growth of Industrial Production in the Soviet Union," Princeton University Press, 1962, p. 238.

²⁵ Vestnik statistiki, No. 6, 1960, pp. 25-32.

²⁶ Planovoye khozyaystvo, No. 8, 1960, pp. 81-91.

²⁷ Sotsialisticheskiy trud, No. 4, 1959, p. 15.

²⁸ Ibid., No. 1, 1959, pp. 42-55.

²⁹ V. A. Zhamin, op. cit., No. 13 above, pp. 193-216.

ging—18 percent³⁰; dollar value of gross output per production worker in the automobile industry—38 percent³¹; physical output per production worker in coal and lignite extraction—19 percent; coke—34 percent; oil and gas extraction—19 percent; and oil and gas refining—36 percent.³² A British economist found Soviet productivity in the automobile industry to have been about 35 percent of the United States in 1950.³³

Table 6 presents a summary of some estimates of physical output per production worker in the United States and U.S.S.R. recently made by the author of this paper,³⁴ and compares them with the ratios obtained by the Soviet economist, A. Kats, whose study was described above. The author's comparisons cover 25 branches of industry which employ 22 percent of the total number of production workers in the United States, and 34 percent of the total in the U.S.S.R. This sample includes all products properly measurable in physical units for which reasonably comparable production and employment data could be found for both countries. Where possible, adjustments were made to allow for economic differences in product quality between the two countries, for example, coal and petroleum outputs were measured in standard fuel equivalents. Soviet employment data were adjusted to the extent possible to make them conform to the U.S. definition of "production worker."

According to the author's calculations, Soviet productivity in 1956 ranged from 12 percent of the United States for synthetic rubber to 74 percent for rubber footwear. The unweighted average is 32 percent; the weighted averages are 28 percent with Soviet employment weights and 31 percent with U.S. employment weights. Because of the omission from the sample of machinery and other important industries, it is probable that these ratios understate somewhat the relative position of the U.S.S.R., vis-a-vis the United States, in industry as a whole. These ratios are considerably below those obtained by Kats. In some cases the reasons for these differences are apparent; in other cases they are not.

³⁰ U.S. Bureau of the Census. "The Soviet Logging Industry: Its Resources, Employment, Production, and Productivity," *International Population Reports, Series P-95, No. 54, September 1959*, p. 93.

³¹ Barney K. Schwalberg, "Manpower Utilization in the Soviet Automobile Industry," U.S. Bureau of the Census, *International Population Reports, Series P-95, No. 53, June 1959*, p. 109.

³² Dmitri B. Shlimkin, "The Soviet Mineral Fuels Industries, 1928-1958: A Statistical Survey," U.S. Bureau of the Census, *International Population Reports, Series P-90, No. 19* (forthcoming, 1962).

³³ Aubrey Silberston, "Problems Involved in International Comparisons of Productivity in the Automobile Industry." Paper presented at the International Conference on Labor Productivity held under the auspices of the International Economic Association at Lake Como, Italy, Aug. 30 to Sept. 9, 1961.

³⁴ Gertrude Schroeder, "Some Measurement Problems in Comparing U.S. and U.S.S.R. Industrial Labor Productivity." Paper presented at the International Conference on Labor Productivity held under the auspices of the International Economic Association at Lake Como, Italy, Aug. 30 to Sept. 9, 1961.

TABLE 6.—*2 comparisons of physical output¹ per production worker in selected industries, United States and U.S.S.R., 1956-57*

[U.S. level=100]

Products	U.S. study ² (United States, 1956; U.S.S.R., 1956)	U.S.S.R. study ³ (United States, 1956; U.S.S.R., 1957)
Coal.....	4 15	4 28. 2
Coke.....	34	42. 4
Crude petroleum and natural gas.....	4 20	-----
Petroleum refining.....	36	42. 1
Iron ore.....	34	37. 3
Pig iron, steel, and rolled products.....	43	53. 0
Metal-cutting machine tools.....	-----	69. 5
Logging.....	25	30. 7
Lumber.....	-----	73. 8
Paper and paperboard.....	35	39. 6
Cotton fabrics.....	4 23	7 38. 5
Silk and synthetic fabrics.....	4 27	7 41. 5
Woolen fabrics.....	4 41	7 42. 3
Footwear (excluding rubber).....	39	44. 0
Rubber footwear.....	74	78. 9
Artificial fiber.....	17	19. 8
Synthetic rubber.....	12	15. 6
Construction brick.....	27	46. 2
Cement.....	4 34	4 32. 9
Lime and gypsum.....	4 24	4 22. 0
Electric power.....	19	-----
Meat.....	39	46. 5
Dairy products.....	30	53. 1
Vegetable oil.....	-----	27. 5
Margarine.....	17	17. 1
Flour.....	50	60. 8
Sugar.....	39	-----
Beer.....	35	37. 8
Macaroni.....	-----	55. 3
Bread and bakery products.....	-----	143. 5
Confectionery products.....	-----	46. 6

¹ Unless otherwise indicated, all comparisons are on a comparable unit of measure.² Detailed sources and methodology are given in: Gertrude Schroeder, "Some Measurement Problems in Comparing United States and U.S.S.R. Industrial Labor Productivity," a paper given at the International Conference on Labor Productivity held under the auspices of the International Economic Association at Lake Como, Italy, Aug. 30-Sept. 9, 1961.³ V. A. Zhamin (ed.), "Ekonomicheskoye Sorevnovaniye Sotsializma s Kapitalizmom," Moscow, 1962, pp. 200-201.⁴ Measured in metric tons of standard fuel.⁵ Measured in metric tons.⁶ Measured in square meters.⁷ Measured in linear meters.⁸ Measured in metric tons of construction lime.

IV. FACTORS CONTRIBUTING TO RECENT PRODUCTIVITY CHANGE IN THE U.S.S.R.

The decade of the 1950's has been one of impressive industrial development in the Soviet Union, irrespective of whose indexes are used to measure this progress. Prompted by ideology and necessity, the U.S.S.R. has sought to achieve its planned industrial growth with ever smaller increments of manpower per increment in output. Interestingly enough, however, the pressures to achieve manpower savings and the seemingly most strenuous efforts to do so were greater during the second half of the decade, whereas, as we have seen, the achievements as measured by productivity per person employed were greater during the first half of the decade. The labor savings in terms of labor inputs measured in man-hours, however, have been much larger during the second half of the decade.

Always optimistic about the prospects and possibilities for productivity growth, the U.S.S.R. planned an increase of 50 percent in

output per worker during the fifth 5-year plan (1951–55), but achieved an increase of 44 percent (by Soviet measures). The abortive sixth 5-year plan (1956–60) scheduled an increase of “more than 50 percent;” an increase of only 36 percent was achieved during that period. The 7-year plan (1959–65) set a productivity goal of 45 to 50 percent. The annual plan was overfulfilled in 1959, but underfulfilled in 1960 and 1961, when increases of 5 percent and 4 percent were reported.³⁵ During the first half of 1962 productivity was reported to be 6 percent above that for the first half of 1961.³⁶ Even if this rate prevails for all of 1962, the U.S.S.R. will have to obtain increases of slightly more than 6 percent annually to meet the target set for 1965.

Although planners in the U.S.S.R. constantly invoke the inexhaustible possibilities for increases in output per worker latent in the “hidden reserves” alleged to be ever present throughout the industrial sector, they have in fact played safe by backing their productivity plans with a massive capital investment program. Industry, being the primary claimant on resources in the U.S.S.R., has over this period received around 40–45 percent of total Soviet capital investment, and annual investments in industry have tripled over this period.³⁷ The machinery and equipment component of industrial investment—especially conducive to the growth of labor productivity—seems to have increased a little more rapidly than total industrial investment. In addition to this mammoth investment in physical capital allocated to industry, the U.S.S.R. has also invested large sums in education and has thereby secured a considerable improvement in the quality of its labor force, notably in urban types of employment. During the decade the U.S.S.R. graduated students from high schools, secondary technical schools and colleges in unprecedented numbers—some 10 million from the 10-year high schools, more than 4 million from the specialized secondary schools (*tekhnikum*s), and some 2.5 million from the colleges (*VUZ*'s).

Encouraged by the priority accorded the industrial sector in the allocation of resources, including labor, and lured by the higher wages prevailing in industry relative to most other branches of the economy, a major proportion of these graduates ultimately took jobs in industry. This influx of graduates, coupled with the continuation of long-established programs for raising employees' skills through training on the job and in the so-called labor reserve schools, has resulted in a considerable rise in the skill level of the industrial labor force.

In addition to the investment priorities in machines and manpower accorded the industrial sector during this decade, the U.S.S.R. has also sought improvements in productivity through a thoroughgoing reorganization of industrial management and a major overhaul of the system of incentives for both workers and managers. The shakeup in industrial management began in 1957 with the abolition of most of the centralized economic ministries and their replacement with the regional *sovmarkhozy*. Numerous alterations have been made since then in order to “solve” one problem or another created by the new structure. Whether or not all of this tinkering with organizational arrangements has contributed to a more productive use of resources remains an open question. Although Soviet economists and man-

³⁵ U.S.S.R., Central Statistical Administration, “Narodnoye khozyaystvo SSSR v 1960 godu,” Moscow 1961, p. 161.

³⁶ *Izvestiya*, July 21, 1962.

³⁷ *Fortune*, October 1961, p. 108.

agers continue to answer this question in the affirmative, industrial organization and planning are currently in a state of flux, and more "efficiency-inducing" changes seem likely.³⁸

A similarly unclear answer vis-a-vis the impact on productivity must also be given with respect to the reform of the system of economic incentives in industry. With the establishment of the State Committee for Labor and Wages in 1955, the U.S.S.R. began a complete overhaul of the wage and salary system in industry. Carried out industry by industry and completed in 1960, this reform had as one of its major objectives the linking of workers' earnings more directly and closely to output. To this end, base wages were increased substantially, work norms were tightened, collective piece-rate systems were widely introduced, and the multitudinous bonus arrangements were simplified and geared more directly to output, either group or individual. This complete shakeup of the wage and salary structure seems to have proceeded with apparent smoothness, if not speed, a result that may be ascribed to the fact that Soviet planners saw fit to allow the level of industrial wages (real wages as well as money wages) to rise slowly—2 to 3 percent each year—throughout the period of the reform.

What impact these changes have had on productivity is difficult to say, an important reason being that hours of work were reduced by one-sixth during the time (mainly in 1956–60) that the wage reform was being effected. The fact that the rate of growth in productivity per worker declined sharply in 1960 and 1961 does not mean necessarily that the reform of the wage system was ineffective. Now that industrial enterprises have had adequate time to adjust to the radical change in working hours, their productivity performance in the next few years should provide more basis for judging the efficacy of the far-reaching changes in the wage and salary system.

The same conclusions also must be drawn with respect to another radical reform directed toward improved efficiency but introduced only in late 1959 and early 1960—namely, the revision in the system of bonuses for industrial managers so as to tie the bonuses directly to fulfillment and overfulfillment of the enterprise cost plan rather than to fulfillment of the output plan, as before. Under the new system, receipt of bonuses is made dependent also on simultaneous fulfillment of other productivity-related plans, such as those for labor productivity and for introducing new technology.

As pointed out earlier, during 1956–61, and especially in 1959 and 1960, the U.S.S.R. has achieved much higher rates of increase in output per man-hour than in output per man-year. This situation has resulted from the sizable curtailment in working hours carried out during this period. In 1955 the standard workweek in industry consisted of six 8-hour days. In March 1956, hours of work on Saturday were reduced to 6, and a program was begun to transfer all workers to a 7-hour workday by the end of 1960 (or a 6-hour day in the case of underground workers in mining). The reduction proceeded industry by industry, but much of it took place in 1960, toward the end of the year.

Although the growth of productivity per man-year dropped sharply in 1960 and 1961, when industry was absorbing the bulk of the radical

³⁸ For a good discussion of the current ferment over industrial organization and planning in the U.S.S.R., see Alec Nove, "The Industrial Planning System: Reforms in Prospect," *Soviet Studies*, July 1962, pp. 1-15.

change in hours of work, the rates of increase were still quite respectable—5 and 4 percent, respectively.

How did the U.S.S.R. manage to achieve the large gains in output per man-hour over and above the gains in output per man-year just discussed? An important part of the answer surely lies in the way in which the Soviet Government has combined the "carrot" and the "stick" to accomplish in a very short period the twin objectives of providing a large benefit to workers in the form of increased leisure and of maintaining continued high rates of production and man-year productivity. Industrial managers were ordered to reduce working hours, but to do so while continuing to fulfill the state plans for increases in both output and output per worker. In this endeavor, the managers could expect the cooperation of the workers in their search for easy ways to exploit the "hidden reserves" for productivity gains, because the benefit to the worker was so large and so tangible—the same pay for a sixth less work.

Clearly, the "hidden reserves"—long alleged by Soviet planners and Western observers alike to be widespread in Soviet industry—did in fact exist. The mopping up of a massive amount of waste in Soviet industry in this way suggests, however, that future gains in man-hour productivity will have to come primarily from added machinery and equipment. In the face of this probability, the Soviet planners may well reconsider their announced plans for another large reduction in working hours originally scheduled for 1962 (a reduction of 1 hour) and 1964–68 (establishment of a general 35-hour workweek). In recent months the Soviet press has been either vague or silent on the subject of further reduction in hours of work.

V. FACTORS CONTRIBUTING TO PRODUCTIVITY DIFFERENCES BETWEEN THE UNITED STATES AND THE U.S.S.R.

What major factors explain (a) why the level of output per employed person in industry in the U.S.S.R. at the present time stands at one-third of the U.S. level and (b) why labor productivity has been increasing so much more rapidly in the U.S.S.R. than in the United States during the past decade? These are complex questions that would require book-length answers. Only a cursory treatment of the issues is feasible here. With respect to the difference in productivity levels, the most obvious explanation surely lies in substantial differences in the stocks of capital per worker in the two countries. In view of the difficult problems involved in estimating capital stocks per worker in the two countries and expressing them in common currencies, it is considered sufficient for the purposes at hand to use a simple substitute measure—electric energy consumption per worker—a measure that has been found to be a reasonably good index of differences in capital stocks per worker in other countries.³⁹ Although there are data problems in trying to estimate electric power consumption in industry on a comparable basis for the two countries, it can be estimated with reasonable accuracy that electric power consumption per person employed in industry in the U.S.S.R. in 1959 was about 41 percent of the similar measure in the United States. A Soviet economist has estimated this ratio to have been 33–37

³⁹ A. G. Frank, "Industrial Capital Stocks and Energy Consumption," *The Economic Journal*, March 1959, pp. 170–174.

percent, taking the U.S.S.R. in 1958, and the United States in 1957.⁴⁰

Further evidence of the differences in capital equipment available to the workers in the two countries is given by data—oft lamented by Soviet economists—on the relative proportions of basic and auxiliary workers. According to a recent Soviet study, 45.4 percent of Soviet production workers were engaged in auxiliary operations (repair, transport, quality control, etc.) in 1958 compared with 32.3 percent in the United States.⁴¹ In the U.S.S.R., the proportion of these auxiliary workers engaged in internal plant transport and warehousing operations (21.5 percent) was nearly twice as high as in the United States. In addition to this, the Soviets themselves have classified half of the total number of wageworkers in industry in 1958 as “manual workers.”⁴²

Assuming that this measure approximates the real differences in capital per worker in the two countries, the remainder of the difference in productivity levels has to be explained in terms of differences in the quality of the labor force and differences in industrial organization and management. Measured in terms of educational attainment of the labor force, there are again great differences between the two countries. From data in the 1959 Soviet population census it can be estimated that the median years of schooling of the industrial labor force was only about 7 years; the corresponding attainment of the U.S. industrial labor force is around 12 years. This is an enormous educational gap; it means, in effect, that the average Soviet worker has only an elementary school education, whereas the average U.S. industrial worker has completed high school. Another factor bearing on the relative skill levels of the labor forces in the two countries and which may have some effect on relative productivities is the much larger proportion of women employed in industry in the U.S.S.R. In 1960 women made up 45 percent of total industrial employment in the U.S.S.R., compared with about 25 percent in the United States.

If precise computations could be made, it might be found that these substantial differences in the stocks of physical and human capital account for all of the difference in levels in productivity. Additional explanations probably also are to be found, however, in the comparative efficiencies of the different methods of industrial organization and management in the two countries. Chronic breakdowns in the distribution of industrial supplies, coupled with the comparatively small amount of subcontracting characteristic of Soviet industry, are not conducive to high output per worker. The effect of the lack of specialization is to tie up excessive numbers of workers in the repair work and the production of spare parts. A Soviet economist has calculated, in this connection, that some 2.2 million workers, or 13 percent of the total wageworkers, are employed in the repair and servicing of plant and equipment in the U.S.S.R., a proportion nearly twice as high as that in the United States.⁴³ The perennial efforts of Soviet planners to solve supply problems and to promote specialization in industry have not apparently met with notable success.

⁴⁰ S. A. Kheyman, “*Ekonomicheskiye problemy organizatsii promyshlennogo proizvodstva*,” Moscow, 1961, p. 51.

⁴¹ S. A. Kheyman, “*Organizatsiya proizvodstva i proizvoditel' nost' truda*,” Moscow, 1961, p. 74.

⁴² N. N. Shishkin (ed.), “*Trudovye resursy SSSR*,” Moscow, 1961, p. 58.

⁴³ S. A. Kheyman, “*Organizatsiya proizvodstva i proizvoditel' nost' truda*,” Moscow, 1961, p. 74.

The most important factors contributing to the higher rates of productivity growth in the U.S.S.R. than in the United States during the past decade probably are to be found likewise in the differences in the rates of increase in physical capital and in the level of human skills. During 1950-60, the annual volume of new industrial investment increased only slightly in the United States, while in the U.S.S.R., annual industrial investment tripled.⁴⁴ At present, the U.S.S.R. invests annually nearly half again as much in industry as does the United States.

With respect to the relative rates of improvement in human skills in the two countries, quantitative data to measure these rates are lacking. Suffice it to say, however, that during the past decade the U.S.S.R. has made tremendous efforts to raise the educational level of its populace and to train its industrial labor force in specific mechanical skills. It seems likely that nearly all of the increase in average educational attainment of the Soviet labor force (about 2 years) achieved during 1939-59 took place during the 1950's, when there was a great effort to provide a universal and compulsory seventh grade education for all youth and when high school and college graduates were being turned out in unprecedented numbers. In the United States, there has been relatively less change in average educational attainment of the labor force over the past decade.

Given these differences in the rates of development of physical and human capital—differences that obviously bring their influence to bear upon the relative levels already attained at the beginning of the period—it is not at all surprising that the U.S.S.R. has been able to achieve higher rates of increase in productivity measured in terms of output per worker.

APPENDIX TABLE A.—*Comparison of calculated and official indexes of output per wage worker in Soviet industry, selected years, 1928-61*

[1928=100]

Year	Output per wage worker		Official production index ³	Calculated employment index ⁴
	Calculated index ¹	Official index ²		
1928.....	100	100	100	100
1933.....	118	141	213	181
1937.....	185	258	445	240
1940.....	242	343	645	266
1950.....	341	470	1, 118	328
1955.....	496	679	2, 067	417
1956.....	534	726	2, 286	428
1957.....	576	774	2, 515	437
1958.....	612	820	2, 774	453
1959.....	656	877	3, 091	471
1960.....	689	925	3, 388	492
1961.....	720	967	3, 702	514

¹ Official production index divided by calculated employment index.

² "Narodnoye khozyaystvo SSSR v 1960 godu," p. 161; "SSSR v tsifrakh v 1961 godu," p. 75.

³ "Narodnoye khozyaystvo SSSR v 1960 godu," p. 219; "SSSR v tsifrakh v 1961 godu," p. 119.

⁴ Computed from the sum of official figures for wage workers (rabochiye) in state industry (published in Soviet statistical handbooks) and unpublished estimates of the number of workers in the industrial artels made by the Foreign Demographic Analysis Division, U.S. Bureau of the Census.

⁴⁴ Fortune, October 1961, p. 108.

APPENDIX TABLE B.—*Indexes of production and employment in Soviet industry, selected years, 1950-61*

[1950=100]

Year	Indexes of production						Total industrial employment index ⁷
	Official ¹	Greenslade-Wallace ²	Seton ³	Kaplan-Moorsteen ⁴	Shimkin-Leedy ⁵	Nutter ⁶	
1950.....	100	100	100	100	100	100	100
1953.....	145	131	138	130	138	119	110
1955.....	185	162	167	153	164	145	124
1956.....	204	179	183	172	177	157	128
1957.....	225	199	197	188	188	173	132
1958.....	248	217	213	202	199	180	136
1959.....	276	235	-----	-----	-----	-----	140
1960.....	303	250	-----	-----	-----	-----	146
1961.....	331	267	-----	-----	-----	-----	153

¹ "SSSR v tsfrakh v 1961 godu," p. 92.² Rush V. Greenslade and Phyllis A. Wallace, "Industrial Production in the U.S.S.R."³ Francis Seton, "Soviet Progress in Western Perspective," Soviet Studies, October 1960, p. 137.⁴ Norman M. Kaplan and Richard H. Moorsteen, "Indexes of Soviet Industrial Output," Rand, RM-2495, May 15, 1960, p. 235.⁵ Unpublished revision and extension of index published in Automotive Industries, Jan. 1, 1958, p. 51.⁶ G. Warren Nutter, "The Growth of Industrial Production in the Soviet Union," Princeton University Press, 1962, p. 196.⁷ Index computed from the sum of (a) industrial-production personnel in Soviet industry, published in "Narodnoye khozyaystvo SSSR v 1958 godu," p. 659 and "Narodnoye khozyaystvo SSSR v 1960 godu," p. 636; and (b) the author's estimates of the number of members in industrial arts, based on a variety of Soviet sources.APPENDIX TABLE C.—*Indexes of employment in major branches of industry in the U.S.S.R., selected years, 1950-60*

[1950=100]

Branch of industry ¹	1950	1955	1958	1959	1960
Coal.....	100	119	142	142	137
Petroleum and products.....	100	128	145	147	152
Nonferrous metals.....	100	105	97	98	99
Ferrous metals.....	100	121	132	138	144
Timber and woodworking.....	100	109	107	107	101
Paper and products.....	100	115	114	114	115
Chemicals and rubber.....	100	131	150	159	171
Construction materials.....	100	139	172	187	201
Light industry.....	100	127	136	140	² 144
Food industry.....	100	111	121	123	122
Machinery and metalworking.....	100	147	170	178	² 191

¹ The employment indexes for ferrous metals, paper and products, chemicals and rubber, construction materials, light industry, and food industry were derived from indexes of gross value of output and indexes of gross value of output per person employed given in "Narodnoye khozyaystvo SSSR v 1960 godu," pp. 226, 231-233. The index for nonferrous metals (1950-55) was obtained from production and productivity series given in V. I. Pervushin et al., "Ekonomika tsvetnoy metallurgii," Moscow, 1960, pp. 60 and 335, and extended to 1960 with announced increases in production and productivity reported in various Soviet sources. The indexes for coal, petroleum and products, and machinery and metalworking were computed from data on number of production workers in 1955-60 given in "Narodnoye khozyaystvo SSSR v 1960 godu," p. 217, and estimates for 1950 based on various Soviet sources. The index for timber and woodworking was estimated by first deriving separate employment indexes for timber and for woodworking based on several series of production and productivity data derived from Soviet statistical handbooks and then combining the 2 indexes with employment weights (workers) in 1958 given in S. A. Kheyman, "Organizatsiya Proizvodstva i proizvoditel'nost' truda," Moscow, 1961, p. 59.

² Adjusted to exclude members of industrial cooperatives.

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MACHINE TOOL PRODUCTION IN THE
UNITED STATES AND U.S.S.R.

BY

ANTHONY J. DAUKAS

MACHINE TOOL PRODUCTION IN THE UNITED STATES AND U.S.S.R.

I. INTRODUCTION

In April 1961, Mikhail Suslov, in a speech at the Indian Communist Party Congress, asserted that the U.S.S.R. was producing more machine tools¹ than the United States.² This was apparently the first time that the U.S.S.R. had publicly recognized what had been evident for some years—that the U.S.S.R. was far outproducing the United States in metalcutting machine tools. Until Suslov's statement Soviet newspapers and trade journals had hammered at the theme that the U.S.S.R. must overtake the United States in production of machine tools, even though, as early as April 1959, Allen Dulles had told a meeting of the Edison Electrical Institute that Soviet production of machine tools was four times that of the United States.³

The U.S.S.R. has been outstripping the United States in volume of production of metalcutting machine tools since about 1954. Soviet production of metalcutting machine tools in 1961 was officially reported to have been 164,000 units.⁴ By comparison, the United States produced 40,363 units⁵ of an average value of \$1,000 or over, the category that is believed to be roughly comparable to the Soviet production figures. In the production of metalforming machine tools, the U.S.S.R. is believed to have surpassed the United States in volume of production for the first time in 1961, when Soviet industry produced 30,500 metalforming machine tools compared with an estimated production of 28,900 in the United States.⁶

II. PATTERNS OF GROWTH

Production of machine tools in the U.S.S.R. showed a steady and substantial growth during the past decade. Production of metalcutting machine tools more than doubled from 1950 to 1960, increasing at an average annual rate of 8 percent. In terms of value the rate of growth was much more than 8 percent, for the product mix of 1960 was considerably more complex than that of 1950. The rate of growth of certain categories of machine tools, generally the more technologically advanced, was much more rapid than that of machine tools as a whole, as shown in table 1 on page 166. While the production

¹ In this study, machine tools are classified as metalcutting or metalforming. Metalcutting machine tools are defined as power-driven machines not supported in the hands of an operator when in use, designed to remove metal in the form of chips, turnings, and borings, and include honing machines, lapping machines, grinders, and electro-erosion and ultrasonic machines. Metalforming machine tools are defined as machines, either power-driven or manually operated, but not supported in the hands of an operator when in use, designed to press, forge, emboss, hammer, extrude, blank, spin, shear, or bend metal into shape. Formerly the term "machine tool" usually referred to metalcutting machine tools, and the term "metalworking machinery" both to metalcutting and metalforming. Currently, the term "machine tool" generally includes both metalcutting and metalforming machinery.

² Pravda, Apr. 11, 1962.

³ New York Times, Apr. 9, 1959, p. 8.

⁴ Pravda, Jan. 23, 1962.

⁵ Because of a lack of information on production, data for the United States are for shipments.

⁶ Department of Commerce, Bureau of the Census, and BDSA, Current Industrial Reports, Metalworking Machinery Summary for 1961, July 5, 1962, pp. 4 and 7-9. Pravda, Jan. 23, 1962.

of lathes, for example, increased at only 4 percent annually, production of automatic and semiautomatic lathes increased at a rate of 17 percent.

Production of metal-forming machine tools, traditionally the lagging sector of the Soviet machine tool industry, increased at an even faster rate than did metal-cutting machine tools. Production of metal-forming machine tools more than tripled from 1950 to 1960, increasing at an average annual rate of 13 percent.

During this period the Soviet machine tool industry was operating at full capacity and was expanding in order to meet the rapidly increasing needs of the machine-building and metalworking industry, which by 1950 had regained the prewar level of production and was on the threshold of an ambitious program of expansion that was to result in an increase in gross output during the 1950's of about 15 percent annually. As a result of the priority accorded to it, the machine tool industry increased its gross output during 1951-55 at a faster rate than that of any other branch of machine building and metalworking.⁷

In the United States, production of metal-cutting machine tools fluctuated widely during 1951 to 1960, increasing sharply during the Korean war, maintaining a steady level from 1954 to 1957, and dropping after 1958 to about the pre-World War II level. Fewer metal-cutting machine tools were produced in 1960 than in 1950, but value of output increased about two-thirds during this period, reflecting a doubling in the average cost per machine tool. At the end of the decade the U.S.S.R. was producing 3.6 times as many metal-cutting machine tools as the United States, with an estimated value 3.9 times that of the United States.

TABLE 1.—U.S.S.R.: Production of metal-cutting machine tools, by category,⁸ 1950 and 1958-60

Category	Units				Average annual rate of growth, 1951-60 (percent)
	1950	1958	1959	1960	
Total.....	70,597	138,290	147,574	155,566	8.2
Lathes.....	24,140	34,105	36,795	36,968	4.4
Turret lathes.....	1,402	2,986	3,474	3,583	9.8
Automatic and semiautomatic lathes.....	863	3,280	3,512	4,274	17.3
Milling machines.....	3,857	13,295	14,378	16,138	15.4
Gearmaking machines.....	1,658	2,427	3,001	3,313	7.2
Boring machines.....	227	864	1,052	1,314	19.2
Planers.....	218	480	328	433	7.1
Shapers.....	2,561	3,430	2,896	2,533	-1.1
Slotters.....	104	677	497	733	21.6
Broaching machines.....	179	515	587	600	12.9
Grinding machines (cylindrical, external, internal, and surface grinders).....	3,574	6,709	7,062	7,439	7.6
Tool and cutter grinders.....	1,575	5,249	3,831	4,343	10.7
Vertical drilling machines.....	9,859	30,367	32,228	31,769	12.4
Radial drilling machines.....	870	3,010	3,518	4,121	16.8
Special, specialized, and unit types.....	8,623	17,412	19,298	22,138	9.9
Other (such as sharpening, bolt-threading, and nut-tapping tools).....	10,857	15,484	15,117	15,867	3.9

⁷ U.S.S.R., Central Statistical Administration, Promyshlennost S.S.S.R., Statisticheskii Sbornik, Moscow, Gosstatizdat, 1957, p. 203.

⁸ *Ibid.*, p. 209.

U.S.S.R., Central Statistical Administration, Narodnoye khozyaystvo S.S.S.R. v 1960 godu. Moscow, Gosstatizdat, 1961, p. 287.

In the United States during this period the already mature metal fabricating industries possessed an adequate inventory of machine tools in terms of numbers. Growing at a much slower rate than their younger and smaller Soviet counterparts, the U.S. metal fabricating industries also needed fewer machine tools for expansion. The problem of technical obsolescence of U.S. machine tools was a pressing one, but inability to secure fast tax writeoffs of new machine tools may have hampered the replacement of the machine tool inventory that many industry officials felt should have taken place.

Continued growth of Soviet production of metal-cutting machine tools is expected for the remainder of the 1960's. Production for the last 3 years of the 7-year plan (1959-65) should continue to increase at about 5 to 6 percent a year as it has for the past 3 years (1959-61). This rate would be sufficient to insure fulfillment of the 7-year plan goal for the production of 190,000 to 200,000 metal-cutting machine tools in 1965.⁹ A statement by an "observer" in *Ekonomicheskaya Gazeta* of May 17, 1961, that 270,000 metal-cutting machine tools would be produced in 1965, later repeated by several other spokesmen for the industry, suggests that the 7-year plan goal may have been revised sharply upward. To meet the higher figure, the industry would have to achieve an average annual increase of slightly over 13 percent for the remaining years of the plan. It is unlikely that such an acceleration of output can be achieved by 1965. Neither the modest goal for 1962 of 170,000 nor the fulfillment of the 6-month plan for 1962 indicates that the 270,000 unit figure for 1965 is a firm goal.¹⁰

Peering far into the future, some Soviet industry spokesmen have claimed that by 1980 the U.S.S.R. will be producing 600,000 metal-cutting machine tools annually. This figure probably is a rough projection of the production required to support the planned increase in the output of the metal fabricating industries, and undoubtedly assumes the continued use of predominantly conventional metal-working processes. It fails to take into account the replacement of conventional metal cutting by metal forming, new processes for removal and shaping of metal, and the greatly increasing use of plastics in place of metal.

No authoritative voice in the United States has dared hazard a guess on the shape of the U.S. machine tool industry by the end of the current decade, much less on the situation in 1970. Indeed the prospects for the next 2 or 3 years are anything but clear. Chances are that production of metal-cutting machine tools will increase in the next few years in terms of value if not in numbers. Numbers become less significant when one considers that the new machine tools being produced have a far greater capacity for metal removal than the tools they replace. Furthermore, in the United States, as in the U.S.S.R., new methods of removal of metal currently being developed may replace conventional methods to a significant degree.

⁹ Vneocherednoy XXI s'ezd kommunisticheskoy partii Sovetskogo Soyuz, stenograficheskiy otchet, vol. 2, Moscow, Gospolitizdat, 1959, p. 483.

¹⁰ Planovoye khozyaystvo, December 1961, p. 7. Pravda, July 21, 1962.

III. PROBLEMS OF COMPARISON OF UNITED STATES AND SOVIET PRODUCTION OF MACHINE TOOLS

Comparison of production of machine tools in the United States and the U.S.S.R. is difficult because of the lack of adequate detail on the product mix of each country. Soviet statistics on the quantity of production are fairly detailed but contain two large omnibus categories. In addition, the value of output has not been reported. Assessment of the U.S. position is complicated by the existence of two sets of figures for the production of machine tools, those of the Bureau of the Census and those of the National Machine Tool Builders Association (NMTBA). The vast difference between the two is apparent from statistics on production of metal-cutting machine tools in the United States in 1961, which totaled 124,054 units according to the Bureau of the Census and 28,600 units according to the NMTBA.¹¹

In terms of value of output the two organizations were much closer. Value of output of metal-cutting machine tools in 1961 according to the Bureau of the Census was \$531 million, according to NMTBA \$507 million. A comparison of the statistics on output by these two organizations during the last 3 years is shown in table 2.

TABLE 2.—United States: Production of metal-cutting machine tools, 1959–61

Year	Units		Value (million U.S. dollars)	
	Census	NMTBA	Census	NMTBA
1959.....	143,380	33,900	469	413
1960.....	133,511	34,000	539	508
1961.....	124,054	28,600	531	507

The magnitude of the difference between the number of units reported by NMTBA and by Census is puzzling. NMTBA allegedly expands its figures on production to include an estimate for the production of nonmembers of NMTBA. The Bureau of the Census specifically excludes "low-priced types of small size and light construction * * * designed primarily for the home workshop, laboratory, or service shop." If both organizations use the same definition of machine tools, the figures should be similar. The greater similarity of the value figures suggests that a substantial proportion of the units reported by Census consist of machine tools of low value. This hypothesis is verified by the Bureau of the Census statistics which reveal that of the 124,054 metal-cutting machine tools shipped in 1961, 83,691, or 67 percent, were of an average value under \$1,000. The average value of these 83,691 machine tools was \$217. This

¹¹ Metalworking Machinery Summary for 1961, op. cit. (6 above). National Machine Tool Builders' Association, Feb. 20, 1962.

relationship for selected categories of metal-cutting machine tools is shown in the following tabulation:

Product class code	Category	Total number shipped	Number shipped with an average value under \$1,000	Average value of those shipped with an average value of under \$1,000 (US \$)
3541	All metal-cutting machine tools.....	124,054	83,691	217
35412	Drilling machines.....	22,778	20,202	188
35414	Grinding and polishing machines.....	47,873	37,705	123
35415	Lathes.....	16,114	6,567	508
35417	All other metal-cutting machine tools (except those designed primarily for home workshops, laboratories, garages, etc.).....	21,389	15,790	297

The Bureau of the Census classifies these low value machine tools as light industrial types. The very low average value and the large quantities suggest, however, that there is a considerable number of the home workshop and service shop variety in these statistics.

Whether or not this is the case, Bureau of Census statistics on total numbers produced cannot be used satisfactorily for purposes of comparison with the U.S.S.R. Analysis of Soviet catalogs and other literature on machine tools indicates that the Soviet product mix includes few models of the type that would cost under \$1,000 in the United States, except for a bench drill, of which about 6,000 are produced annually in the U.S.S.R., and perhaps 1,500 of the 37,000 lathes produced in the U.S.S.R. in 1960.

To achieve rough comparability of United States and Soviet production in quantitative terms, the Bureau of the Census category of metal-cutting machine tools of an average value of \$1,000 or over appears to be the best representative of U.S. production of machine tools. Thus in 1961 the United States produced about 40,000 metal-cutting machine tools. If announced Soviet production is reduced by 8,000 units to adjust for the lathes and bench drills that would cost less than \$1,000 in the United States, Soviet production in 1961 would be 156,000, or 3.9 times that of the United States.

Comparison of United States and Soviet production of metal-cutting machine tools by category shows a commanding Soviet lead for all categories for which a comparison can be made, except for boring machines. Some important categories such as lathes, milling machines, grinders, and vertical drilling machines cannot be compared because of the presence in the U.S. figures of large numbers of machine tools of low value. This comparison of categories is shown in table 3. Although important industrially, the machine tools listed in table 3 constitute only a small percentage of the total production of metal-cutting machine tools in either country.

TABLE 3.—United States and U.S.S.R.: Comparison of production of selected categories of metal-cutting machine tools, 1960¹

Category	Units		Ratio of U.S.S.R. to United States
	United States	U.S.S.R.	
Slotters.....	51	733	14.4 to 1.
Planers.....	41	433	10.6 to 1.
Radial drilling machines.....	489	4,121	8.4 to 1.
Shapers.....	492	2,533	5.1 to 1.
Broaching machines.....	176	600	3.4 to 1.
Gearmaking machines.....	1,243	3,313	2.7 to 1.
Turret lathes.....	1,599	3,583	2.2 to 1.
Automatic and semiautomatic lathes.....	2,275	4,274	1.9 to 1.
Boring machines.....	1,523	1,314	0.9 to 1.

¹ Department of Commerce, Bureau of the Census, and BDSA, Current Industrial Reports, Metalworking Machinery Summary for 1960, July 7, 1961. U.S.S.R., Central Statistical Administration, Narodnoye khozyaystvo S.S.S.R. v 1960 godu, Statisticheskii yezhegodnik, Moscow, Gosstatizdat, 1961, p. 287.

In order to obtain a comparison more meaningful than that of numbers produced, a comparison of production by value has been estimated. The Bureau of the Census provides a value figure for U.S. production, but the Soviet Central Statistical Administration does not provide such a figure for the U.S.S.R. It was necessary, therefore, to obtain an average value for each category of metal-cutting machine tool produced in the U.S.S.R. and to multiply the average value by the number of units produced in that category. The year 1960 was selected because it is the last year for which the U.S.S.R. reported production by category. An article by Prokopovich provided average costs (sebestoimost') in 1956 of most categories of machine tools. Values of the remaining categories were estimated on the basis of an analysis of the types of machine tools contained in these categories. The result is an estimate, shown in table 4, page 17, of production of metalcutting machine tools in the U.S.S.R. in 1960 valued at 3.6 billion rubles.¹² A comparison of the prices and technical characteristics of selected Soviet and United States models, which was made several years ago, indicated a ruble-dollar ratio of 1.7 rubles to US\$1 for metalcutting machine tools. The use of this ruble-dollar ratio results in a Soviet production for 1960 of US\$2,106 million compared with U.S. shipments in that year, as reported by the Bureau of Census, of \$539 million. Thus the value of production in the U.S.S.R. in 1960 was 3.9 times that of the United States.

A rough estimate of the ruble value of Soviet production of metal-cutting machine tools can be obtained by another method. A Soviet source states that output of the machine tool industry in 1958 was 1.31 percent of the gross output of machine building and metalworking.¹³ Another Soviet source states that metalcutting machine tools comprise 80 percent of the output of the machine tool industry.¹⁴ Khrushchev reported at the XXII Party Congress that the output of machine building and metalworking in 1960 was 340 billion rubles. Thus:

$$340 \times 1.31 \times 0.8 = 3.6 \text{ billion rubles}$$

¹² Ruble values in this report are given in old rubles (rubles in use before the Soviet currency reform on Jan. 1, 1961).

¹³ Stanki i Instrument, No. 11, 1958, p. 4.

¹⁴ Vestnik statistiki, No. 6, 1960, p. 30.

TABLE 4.—U.S.S.R. estimated value of production of metal-cutting machine tools, 1960

Category	Production (units)	Thousand rubles	
		Average value per unit ¹	Total value
Lathes.....	36,968	12.5	462,100
Turret lathes.....	3,583	12.5	44,788
Automatic and semiautomatic lathes.....	4,274	32.0	136,768
Milling machines.....	16,138	18.1	292,098
Gearmaking machines.....	3,313	36.0	119,268
Boring.....	1,314	83.2	109,325
Planers.....	2,433	* 80.0	34,640
Shapers.....	2,533	14.5	36,728
Slotters.....	733	15.9	11,655
Broaching machines.....	600	30.2	18,120
Grinding machines.....	7,439	21.7	161,426
Tool and cutter grinders.....	4,343	* 7.5	32,572
Vertical drilling machines.....	31,769	5.9	187,437
Radial drilling machines.....	4,121	27.9	114,976
Special, specialized and unit types.....	22,138	* 75.0	1,660,350
Other (such as sharpening, bolt-threading, and nut-tapping tools).....	15,867	* 10.0	158,670
Total.....			3,580,921

¹ Unless otherwise indicated, from A. Ye. Prokopovich, "Methods of Determining the Effectiveness of Modernization of the Existing Inventory of Metalcutting Machine Tools" in *Ekonomicheskaya effektivnost' kapital'nykh vlozheniy i novoy tekhniki*, Moscow, Sotsekgiz, 1959, p. 329.

* Estimated.

The striking coincidence of the two estimates should not conceal the defects in the respective methodologies. Concerning the first estimate, it should be noted that average costs were used rather than wholesale prices on which the ruble-dollar ratio was based. Average wholesale prices would have been several percent higher. Another defect was the failure of Prokopovich to provide average values for two categories that together comprised 24 percent of the machine tools produced in 1960, and for which average values were estimated. Another problem is the probability that average values given by Prokopovich would have been somewhat higher in 1960 because of the upgrading of the Soviet product mix after 1956, the year for which the average values were applicable. These defects in the aggregate probably resulted in an understatement of the Soviet position. The second estimate also has drawbacks, for it is possible that the share of the machine tool industry in the total output of machine building and metalworking changed slightly between 1958 and 1960.

A final opportunity for error occurs in the ruble-dollar ratio used. An unweighted arithmetic average of 1.7 to 1 U.S. dollar is believed to be more valid for the sample studied than the unweighted median average of 1.2 to 1. The ratio selected was based on 1955 U.S. and U.S.S.R. prices. Although the U.S.S.R. still used 1955 prices in 1960, except for models introduced since 1955, it is believed that U.S. prices for machine tools increased during this period. A ruble-dollar ratio calculated from 1960 prices, therefore, probably would be more favorable to the U.S.S.R.

Comparison of United States and Soviet production of metal-forming machine tools presents difficulties as perplexing as those encountered in comparisons of metal-cutting machine tools but differing slightly in nature. Soviet statistics on metal-forming machine tools do not give the breakdown into categories that is given in the statistics

on metal-cutting machine tools. In the United States NMTBA gives no figures for production in terms of units, so that the only unit figures available are given by the Bureau of the Census. As is the case with metal-cutting machine tools, the census figures contain a substantial number of types for which there are few comparable models in the Soviet product mix.

In order to achieve rough comparability of United States and Soviet statistics on metal-forming machine tools, it is therefore necessary to adjust again the U.S. Bureau of the Census figures. To use the figures for tools of an average value of \$1,000 or over, as was done with metal-cutting machine tools, probably would understate the U.S. position, for there are believed to be a number of simple models in the Soviet product mix that would cost under \$1,000 in the United States. A better method of adjustment would be to eliminate specific categories which are not believed to be included in the Soviet statistics—manual presses, manual punching and shearing machines, riveting machines, metal container-making machines, diecasting machines, machines for weaving and other wire fabricating, wire-drawing machines and draw benches, spinning lathes,¹⁵ marking machines, and knurling machines. Elimination of these categories would reduce the 1961 shipments by 16,739 units.

There is some doubt as to whether or not the 10,026 "other bending and forming machines" of an average value under \$1,000 in the census listing would find counterparts in the Soviet product mix. For lack of detailed information on this category, however, it was decided not to eliminate it.

After adjustment of the census statistics, a figure is obtained for production in the United States in 1961 of metal-forming machine tools of 28,828 units. Soviet production of these machines in 1961 was reported at 30,500.

The value of the 28,828 units used to represent U.S. production in 1961 was \$191 million. The NMTBA reported shipments of only \$149 million in 1961.

Quantitative comparisons of United States and Soviet production of machine tools, even by value, do not reflect the productive capacity of the machine tools built in the two countries. Comparisons of technical characteristics indicate that U.S. machine tools generally are more complex, more highly automated, and more productive than similar Soviet models.

IV. PRODUCT MIX

The product mix of metal-cutting machine tools has become increasingly sophisticated in the U.S.S.R. in recent years. The number of type sizes in production increased from 384 in 1950 to 788 in 1955 and to approximately 1,000 in 1960.¹⁶ The 7-year plan calls for production of 1,500 type-sizes in 1965, but there was an indication in 1961 that the planned number had been reduced from 1,500 to 1,200 probably as a result of greater emphasis on standardization and the dropping from production of an increased number of obsolete models.¹⁷

The upgrading of the Soviet product mix also is evidenced by changes in the volume of production of various categories of machine

¹⁵ Spinning lathes were excluded only because they could not be extracted from the group in which they were lumped.

¹⁶ *Stanki i Instrument*, No. 11, 1958, p. 3.

¹⁷ *Ekonomicheskaya Gazeta*, May 17, 1961.

tools. The share of lathes has decreased in the past decade from 34 to 24 percent of the total production, and the share of automatic and semiautomatic lathes has increased from 1 to 3 percent and "precision" machine tools from 3 to 7 percent. Changes in the composition of the Soviet product mix are reflected in table 1, page 166, which shows production for 1950, and for 1958-60, by category, as reported by the Central Statistical Administration of the U.S.S.R.

During the 1950's the Soviet machine tool industry emphasized the production of heavy machine tools—lathes for parts 10 feet in diameter and 90 feet long, gear hobbers for gears up to 20 feet in diameter, and vertical boring mills with capacities for parts 80 inches in diameter. Since about 1959 the industry has placed more emphasis on increasing the proportion of small size and precision machines, such as toolroom lathes with less than 12-inch swing, high-speed drills of less than one-half-inch diameter capacity, and fine-pitch precision hobbers.

Since 1958 the U.S.S.R. has built many prototypes of numerically controlled machine tools, including lathes, milling machines, drilling machines, horizontal and vertical boring mills, and jig borers that perform the functions of automatic positioning, tool changing, and two- and three-dimensional duplicating. Open-loop and closed-loop control circuits that are actuated by punched cards, punched tape, or magnetic tape are used in these machines. The U.S.S.R. has not built so many numerically controlled machine tools as has the United States. Instead, the U.S.S.R. has developed a variety of modular numerical control units for use on machine tools. These units currently are being tested under actual production conditions. In addition, the U.S.S.R. also has developed a number of machine tools with plugboard-type program controls that are not numerically controlled. The programs are preset by mechanical, hydraulic, and electromagnetic means. It appears that the U.S.S.R. is delaying mass production of both types, numerical and plugboard, until it is decided which is more appropriate for each category.

In the area of electrical discharge methods of metal removal, the U.S.S.R. has advanced rapidly, having built 95 units in 1958 and 200 in 1959; 400 were planned for 1960.¹⁸

There also has been considerable emphasis on production of automatic lines for the Soviet machine building and metalworking industries and of standardized components and unit heads for incorporation into these lines. In the last few years, several new plants have been built and at least three plants have been converted to produce this type of equipment. Soviet production of these lines has been as follows:¹⁹

1959.....	160
1960.....	153
1961 (estimated).....	160
1962 (plan).....	219

The size of these lines also is increasing. In 1959 the most complicated transfer line on which information is available contained only 30 units, whereas 85 power units were used in a single line in 1960, a large number even in the United States. The majority of newly built transfer lines in the U.S.S.R. are allocated to the motor vehicle industry and most of the remainder to the bearings, agricultural machinery, and tractor industries.

¹⁸ Stanki i instrument, No. 7, July 1960, pp. 1-2.

¹⁹ Mekhanizatsiya i avtomatizatsiya proizvodstva, No. 9, September 1961, pp. 2-3.

During the entire period of the 7-year plan, 1,722 automatic lines are to be built. The majority of these will be transfer lines. Others will be lines composed of general-purpose machines integrated with heat treating and inspection equipment when necessary. Transport devices are used in such lines to convey the part through all engineering operations, starting with a rough blank and ending with the finished machined product.

In the area of metal-forming machine tools the Soviet product mix is not adequate for the needs of the various industries. The U.S.S.R. has built more than 400 type-sizes, but many are prototypes and not yet in production. Among the prototypes built in 1960 are high-speed hydraulic presses, rotary swagers, high-speed cold headers, and multi-station mechanical presses, all types that are principally used for production of consumer goods. These prototypes resemble Western models and are believed to be of higher quality than the earlier Soviet models.

Most of the metal-forming machine tools built in the U.S.S.R. are general-purpose presses (mostly mechanical), hammers, shears, and bending machines. More sophisticated types, such as those for spin-forming and stretch-wrap-forming are built, but most of these are just emerging from the prototype stage.

There has been considerable emphasis, however, on building very large metal-forming machine tools. The U.S.S.R. has built an 8,000-ton mechanical press, a 30,000-ton forging press, a 70,000-ton forging press, a 20,000-ton extrusion press, a 100-ton-meter counterblow hammer, and 6-inch horizontal forging machines.

The quality of Soviet machine tools, both metal-cutting and metal-forming, when compared with Western models, runs the gamut in technology and craftsmanship from obsolete to highly advanced types and from poor to very good in workmanship. Materials are good and designs are functionally adequate. Almost all Soviet models, however, are underpowered compared with United States machine tools of similar size. Soviet industry officials have been realistic in appraising the quality of their own machine tools. Results of a comparison of Soviet and foreign machine tools conducted by the Experimental Scientific Research Institute of Metal-cutting Machine Tools (ENIMS) and published in 1960 showed that of 270 widely used models of general purpose Soviet metal-cutting machine tools, 20 surpassed, 210 were the same, and 40 were below the level of comparable foreign models.²⁰

V. ORGANIZATION OF PRODUCTION

The Soviet machine tool industry consists of about 170 plants, of which 60 are specialized producers. Fifty of the specialized producers produce metal-cutting machine tools and 10 produce metal-forming machine tools. In the United States in 1958 there were 505 establishments having 10 or more employees engaged in the production of machine tools, 315 producing metal-cutting machine tools and 190 producing metal-forming machine tools.

As a comparison of the relative size of the industries in the two countries, these statistics are misleading. In the United States a relatively few firms dominate production of most of the major categories of machine tools. Three firms are preeminent in the field of

²⁰ Vestnik statistiki, No. 6, 1960, p. 26.

garmaking machinery; three firms make most of the milling machines, and two firms produce most of the internal grinders. Lathes are an exception, for there are a number of firms competing in this field. In the U.S.S.R. a somewhat similar specialization occurs. Almost all of the gear machinery is made in three plants. Most of the milling machines are manufactured at Gor'kiy and Dmitrov. Almost all radial drills are produced at a plant in Odessa. In 1960, 80 percent of the machine tools produced were manufactured in plants which specialized in machine tools.²¹ Although comparable figures are not available for the United States, a high degree of specialization is suggested by the fact that in 1958, 89 percent of the shipments of metal-cutting machine tools by value were from the machine tool industry, and that metal-cutting machine tools represented 85 percent of the total products shipped by this industry.

The specialization of the Soviet machine tool industry, combined with a high degree of standardization of machine tool components and a limited number of models, permits a high rate of production of the more popular models. This is accomplished by the use of conveyor lines for machining parts and for assembling finished machines. The ultimate in these techniques is used at the Krasnyy Proletariy plant in Moscow, the largest Soviet producer of machine tools. This plant produces about 12,000 lathes a year, using conveyor line methods for machining bases, beds, headstocks, and gears, and also a moving conveyor for assembly.

The Odessa Radial Drill Plant, using similar methods, has been producing more than 2,000 radial drilling machines annually since 1956. Other Soviet producers of engine lathes, milling machines, and upright drilling machines use similar methods but not so extensively as the two plants mentioned above. Soviet officials claim that about 40 percent of Soviet metal-cutting machine tools are produced by means of these mass production methods.²²

Seymour Melman, associate professor of industrial engineering at Columbia University, who visited machine tool plants in the U.S.S.R. and Western Europe in 1959 as a consultant for the European Productivity Agency, OEEC, found that the manufacture of certain 16-inch, swing-engine lathes in the U.S.S.R. using mass production methods required 200 man-hours. In Western Europe the production of a similar machine tool required 600-800 man-hours per machine.²³

Methods of mass production are not used in the machine tool industry of Western Europe and are used only in a few plants in the United States. The main recommendation of Professor Melman in his report to the EPA was that such methods should be introduced rapidly into the machine tool industry of Western Europe. However, the circumstances which favor such an organization of production in the U.S.S.R. are not present in the machine tool industries of Western Europe, as was pointed out by a report issued by the British Board of Trade.²⁴ Nor are they favorable in the machine tool industry of the United States. In the market economies of the United States and Western Europe, the demand for a single model is not sufficient

²¹ Planovoye khozyaystvo, No. 9, 1960, p. 14.

²² Many Soviet machine tool plants, including all of the builders of metal-forming machinery, employ small batch production methods.

²³ New York Times, Oct. 26, 1959, p. 3.

²⁴ Great Britain, Board of Trade, The Machine Tool Industry, A Report by the Subcommittee of the Machine Tool Advisory Council appointed to consider Professor Melman's Report to the European Productivity Agency, London, H M Stationery Office, 1960, pp. 7-9.

to justify mass production methods of manufacture. Machine tools are tailored to the customer's requirement to a much greater degree than in the U.S.S.R. The trend is increasing in the United States and Western Europe toward the production of larger, more complex, and more highly specialized machine tools, which are not compatible with the standard and general purpose designs that would have to be produced under conditions of mass production.

Soviet pride in the mass production methods used in the machine tool industry is matched by official displeasure with the high degree of vertical integration of the industry in the U.S.S.R. Captive foundries in 1960 satisfied 85 percent of the industry's requirements for castings, and almost all of the plants produced their own stampings and forgings.²⁵ In the United States in 1958 only 2.9 percent of the metal-cutting machine tool plants had their own foundries, 0.2 percent had forging shops, and 2.7 percent carried out stamping, blanking, and forming operations. All specialized machine tool plants in the U.S.S.R. have tool and die shops. In the United States in 1958 only 12 percent of the machine tool plants had such shops.

To increase the efficiency of machine tool production, the U.S.S.R. plans to establish more centralized foundries and forges. By 1965 centralized foundries are to produce 65 percent of the castings required by the machine tool industry instead of the 15 percent produced by centralized foundries at the beginning of the 7-year plan. Centralized forges are to produce from 32 to 35 percent of the required stampings and forgings by 1965.

The great amount of vertical integration in the Soviet industry would normally indicate a less efficient industry than that of the United States. A paucity of data on the Soviet machine tool industry prevents an adequate comparison between the two countries. A valiant attempt to do so was made in the U.S.S.R. by Kuznetsov and Sergeyeva resulting in a conclusion that productivity of labor in the Soviet machine tool industry in 1958 was 53.7 percent that of the United States in 1956.²⁶ Although these two ladies made numerous adjustments to achieve comparability, the comparisons are of doubtful validity. The authors proceed from the premise that U.S. machine tool plants are basically machining and assembly enterprises, an impression conveyed by the statistical reports of the Bureau of the Census. Although this is true for most of the smaller plants, many of the largest producers perform both casting and forming operations. In addition, the authors overextend the U.S. statistics in concluding that "castings, forgings, gears, spindles, turret heads, and other components are purchased from firms outside the industry." Actually most of the larger U.S. machine tool firms produce their own gears, spindles, and turret heads. By comparing the machining and assembly operations of the two countries, the Soviet writers overstate the efficiency of the Soviet machine tool industry, because in foundry and forging operations, which are eliminated from the comparison, Soviet productivity is lower than in machining and assembly operations. Another basic defect in the Kuznetsova-Sergeeva comparison is the difference in the product mix that has been discussed elsewhere in this paper. The authors made a good start in this regard by eliminating bench lathes and polishing machines from the U.S. production,

²⁵ *Planovoye khozyaystvo*, No. 9, 1960, p. 15.

²⁶ *Vestnik statistiki*, No. 6, 1960, p. 31.

but they also should have eliminated a number of other types of low value. Had they done so, the results would have been more favorable to the Soviet industry.

Although the data probably do not permit an accurate comparison of labor productivity in the machine tool industries of the United States and the U.S.S.R., qualified observers generally agree with Soviet economists that productivity in the U.S. industry is higher than in the Soviet counterpart.

VI. INVENTORIES

In inventory of machine tools the United States and the U.S.S.R. are closer than in production. In 1958 the inventory of metal-cutting machine tools was 2.2 million units in the United States and 1.9 million units in the U.S.S.R.²⁷ The U.S.S.R. early in 1962 reported an inventory of 2.3 million units. Although the precise size of the U.S. inventory is unknown, it probably is about the same. The U.S. inventory of metal-forming machine tools probably is larger than that of the U.S.S.R. The most recent comparable figures for 1958 showed the United States with an inventory of 683,000 units, and the U.S.S.R. with about 450,000 units.

The Soviet inventory of machine tools is younger on the average than that of the United States. A Soviet newspaper claimed in January 1962 that 50 percent of the Soviet metal-cutting machine tools were less than 10 years old.²⁸ In the United States only 38 percent of the metal-cutting machine tools are less than 10 years old.

The Soviet claim for the age of its inventory implicitly overstates the modernity of that inventory. Up through the middle 1950's the U.S.S.R. was producing a large proportion of obsolescent machine tools, and these tools make up the bulk of the present Soviet inventory. Until recently, only a very small number of machine tools were scrapped each year, probably less than 2 percent of the inventory. At present a large proportion of the Soviet machine tool inventory needs replacement because of physical depreciation and because of the previous technological backwardness of the Soviet machine tool models. Spokesmen for the U.S. machine tool industry have urged strongly that U.S. machine tools be replaced at a more rapid rate, an objective that recent changes in the tax laws are designed to accomplish.

That the United States with a production of 89 million tons of crude steel to process in 1961 should be able to get along with an inventory of metal-cutting machine tools of about the same size as the U.S.S.R. which produced only 71 million tons of crude steel in 1961, suggests that the U.S. inventory is more productive than that of the U.S.S.R., or is utilized more efficiently. Soviet officials are considerably concerned over the low rate of utilization of their machine tools, and several recent articles in the Soviet press have dealt with this matter. A year ago at the XXII Party Congress it was reported that a sampling by the Central Committee showed that one-sixth of the machinery inventory was idle during the first shift and one-third during the second shift. Downtime within shifts for some types of machinery (presumably referring mostly to metalworking

²⁷ *American Machinist*, vol. 102, No. 24, Nov. 17, 1958, p. INV-2. *Planovoye khozyaystvo*, No. 8, 1960, p. 88.

²⁸ *Agitator*, January 1962, p. 15.

machinery) reached 18 percent of total worktime.²⁹ Another factor of concern to Soviet officials is the high percentage of machine tools used for repair. Forty-two percent of the machine tool inventory is located outside of machine building, much of it in repair enterprises.³⁰

VII. FOREIGN TRADE

The U.S.S.R. is a net importer of machine tools, having imported during 1957-61 machine tools valued at \$433 million and exported machine tools valued at \$269 million. The United States is a net exporter of machine tools, having imported during the same period machine tools valued at \$165 million and exported machine tools valued at \$793 million.

Soviet imports of machine tools, as shown in table 5, have increased considerably from \$61 million in 1957 to \$111 million in 1961. Soviet exports of machine tools, as shown in table 6, however, have not moved consistently upward. Soviet exports of machine tools rose from \$52 million in 1957 to \$73 million in 1959. In 1961, however, these deliveries had fallen to about \$43 million, about 18 percent less than exports in 1957.³¹ U.S. exports of metalcutting machine tools increased 56 percent during the period, and imports increased by 18 percent.³²

TABLE 5.—U.S.S.R.: Imports of machine tools, 1957-61

[Thousands of U.S. dollars]

Year	Metalcutting	Metalforming
1957.....	32,161	28,749
1958.....	43,169	34,925
1959.....	46,089	35,936
1960.....	62,899	38,174
1961.....	69,356	41,575
Total.....	253,674	179,359
Total metalcutting and metalforming.....	433,033	

TABLE 6.—U.S.S.R.: Exports of machine tools,¹ 1957-61

[Thousands of U.S. dollars]

Year	Metalcutting	Metalforming
1957.....	40,245	11,973
1958.....	29,068	6,550
1959.....	59,568	13,703
1960.....	50,077	15,182
1961.....	33,354	9,433
Total.....	212,312	58,841
Total metalcutting and metalforming.....	269,153	

¹ Annual totals include estimates of the value of machine tools exported as part of complete plants.

U.S. foreign trade in machine tools is a larger percentage of U.S. domestic production than is the case for the U.S.S.R. U.S. exports of metal-cutting machines during 1957-61 were equivalent to 18 percent of domestic production, while similar Soviet exports were

²⁹ Sotsialisticheskiy Trud, No. 12, 1961, p. 8.

³⁰ Stanki i instrument, No. 10, 1961, pp. 1-2.

³¹ Soviet foreign trade handbooks, 1955-61. Vneshnyaya torgovlya, No. 9, 1959, p. 9, and No. 6, 1961, p. 4.

³² Department of Commerce, Bureau of the Census and BDSA, Current Industrial Reports, Metalworking Machinery Summaries for 1957-61.

only 4 percent of Soviet production. U.S. imports of metal-cutting machines during 1957-61 were equivalent to about 5 percent of domestic production while similar Soviet imports were 4 percent of domestic production.

The bulk of Soviet imports of machine tools have come from the European satellites, principally East Germany, Czechoslovakia, and Hungary. During 1960-61, Western European countries, particularly West Germany and Switzerland, became increasingly important as suppliers to the U.S.S.R. Imports of metal-cutting machine tools have consisted of all types, but precision and single-purpose types predominate. Imports of general-purpose types usually consist of "elephant" sizes. During the last 2 years, the U.S.S.R. has attempted unsuccessfully to buy from the U.S. transfer lines for the Soviet automotive industry and internal grinders for the antifriction bearings industry. Internal grinders have been purchased by the U.S.S.R. from Italy and installed in an automatic line at one of the Soviet bearings plants.

Most Soviet exports of machine tools have gone to other bloc countries, particularly Communist China. The drop in value of Soviet exports of machine tools from 1959-61 is due in part to the drop in Soviet deliveries to Communist China. Exports to the underdeveloped countries of the free world have increased in recent years. Cuba, the U.A.R. (Egypt), and India were the principal consumers in 1961. Soviet exports to the industrial West have increased slightly. The precise pattern of Soviet exports of machine tools cannot be determined, because Soviet trade handbooks bury a large part of machine tool exports in a general category labeled "equipment and materials for complete plants." Soviet sources other than trade handbooks have given the quantities of machine tools exported as part of complete plants for selected years. These deliveries are generally several times those of exports specifically identified as machine tools. For example, in 1960 the U.S.S.R. exported about 2,100 units of metal-cutting machines, specifically identified as machine tools, while 5,000 units were exported as part of "complete plants."

VIII. RESEARCH

The U.S.S.R. for many years has devoted substantial resources to research on machine tools. Soviet research in this field continues unabated in numerous central scientific research institutes, special design bureaus, and the design bureaus of the more important machine tool plants. The Experimental Scientific Research Institute for Machine Tools (ENIIMS), located in Moscow, is the central institute for the industry, with many laboratories for basic research on metal-cutting machine tools. ENIIMS develops and produces prototypes, which are then assigned to other plants for quantity production. This institute has final acceptance authority for all new developments and prototypes of metal-cutting machine tools originating in other institutes, plants, and design bureaus.

Basic research on metal-forming machine tools and processes is carried out at the Central Scientific Research Institute of Technology and Machine Building (TaNIITMASH) in Moscow. This institute also performs basic research on other equipment and on materials for machine building plants. The emphasis is in the metal-forming

field has been on hydraulics, especially as related to the design of heavy presses. Development of mechanical presses and forging machinery is conducted at the Experimental Scientific Research Institute for Forge and Press Machine Building (ENIKMASH) in Moscow.

The 70,000-ton forging press and the 20,000-ton extrusion press built by the U.S.S.R. probably were designed by TsNIITMASH, which also has developed a new concept of building large forging presses of more than 30,000 tons, using a large cylinder of prestressed concrete to contain the moving components. The U.S.S.R. claims that this concept will eliminate the need for building any more large forging presses of conventional all-metal construction. In the United States the only presses of more than 30,000 tons that were ever built were two each of 35,000 and 50,000 tons. These presses, of all-metal construction, were built for the Air Force in the mid-1950's. Prewar Germany was the only other country ever to build a forging press as large as 30,000 tons, and this press also was of all-metal construction.

Another function of the central research institute is to develop standards for modernizing the older machine tools or converting them to automatic cycle. In 1961 most of the research institutes of the machine-tool industry were working on various projects concerning programming controls of machine tools and electrosark and ultrasonic machining.

The U.S.S.R. is engaged in extensive research on various phases of high energy rate forming (HERF)³³ and has had considerable success in laboratory applications of this technique. There is no evidence, however, of successful application of HERF to production processes in the U.S.S.R.

Considerable research on machine tools also takes place in Western Europe and the United States. In some West European countries this research is partially centralized—in Germany, for example, in the Technische Hochschule in Aachen, and in Great Britain in the Production Engineering Research Association. In the United States, however, research on machine tools is neither centralized nor coordinated. Applied research is, of course, carried out by the various machine tool manufacturers. Basic research is done at certain universities and at some private research organizations, the projects of which are financed by individual machine tool firms. Some basic research on metal cutting is done by manufacturers of cutting tools and tool steels. The research of manufacturers and of private research organizations financed by manufacturers is proprietary and not made available throughout the industry.

Much of the basic research in the United States on new methods of shaping and removing metal is performed outside the machine tool industry. Most of the early research on high energy rate forming was done in the aircraft industry, either directly or indirectly from funds provided by Government defense contracts. Some of the pioneer work on electrical discharge methods of metalworking was done by a steel producer. Electronic firms have invested heavily in research on controls for numerically controlled machine tools.

The rapid pace of technological development in metalworking processes means that research is likely to continue at an increasing rate in both the United States and the U.S.S.R.

³³ The practical application of explosives, gases, electrical energy, or magnetic fields to shape metals by bending, forming, drawing, and extruding.

THE ADMINISTRATION AND DISTRIBUTION
OF SOVIET INDUSTRY

BY

PAUL K. COOK

THE ADMINISTRATION AND DISTRIBUTION OF SOVIET INDUSTRY

I. INTRODUCTION

The administration of the vast Soviet industrial complex, larger than any other in the world but our own, is as variegated and full of contradictions as Marxist-Leninist ideology. To the specialist, as well as to the dispassionate amateur, it seems a real miracle that the state-owned and state-operated industry of the Soviet Union has progressed to the extent it has. The simple fact that it has progressed is apparent to all. The suspicion remains, however, that the rich natural and talented human resources of the Soviet Union would have progressed even more—and at a significantly lower cost—had they been allowed to develop free from the bureaucratic bedevillments imposed by the Communist Party.

The geographic distribution of Soviet industry is conditioned, by and large, by the same general factors that operate in the United States, such as location of natural resources, concentration of population, and climate. But it is also strongly influenced by a unique factor: the all-encompassing “plan.” Soviet industry is a planned industry, planned even to the hazardous point of projecting technological breakthroughs 5, 7, and even 20 years hence. The centralization of decisionmaking is complete, providing for a greater degree of direction and control over the Soviet economy than is normally attempted in other societies. Under the system in effect, priorities can be assigned and decisions implemented, goods can be produced in adequate quantity, and certain goods in the desired quality, much as in our own history during periods of total mobilization. At every stage of the complex process of production in a modern industrial economy, the influence of the center is brought to bear through the power of the center to exercise *control*. This paper proposes to describe the system of industrial control in effect in the Soviet Union, provide some indication of its strengths and weaknesses, and to present data on the geographic distribution of industry, in which prime attention is paid to the producer-goods sector.

II. ADMINISTRATION

An understanding of the administration of Soviet industry must begin with an examination of the role of the Communist Party, for according to Khrushchev, “The party is responsible for everything. Whether it is army work, chekist [police] work, economic work, Soviet [government] work—all is subordinate to the party leadership.”¹ Only after the role of the party is understood, can one turn to a description of the agencies that direct and operate the Soviet industrial complex, such as the State Planning Committee (Gosplan),

¹ Quoted in John Armstrong, “The Soviet Bureaucratic Elite” (New York, 1959), p. 144.

the Council of Ministers, the Regional Councils of National Economy (Sovnarkhozy), and the local industrial control agencies.

A. *The Communist Party*

The Communist Party of the Soviet Union is in one respect similar to most political parties the world over—once in a position of power, its primary aim is to stay in power. In order to meet its self-imposed responsibilities, the party has developed a highly intricate control mechanism which reaches its tentacles into every nook and cranny of the Soviet state. The party as such manages directly only a minute fraction of the state complex, reserving to itself the role of supervision of the government, economic, military, and social agencies which actually operate the Soviet state complex. And a major share of the party's attention is devoted to industry, the key element in the basic structure of modern economic power, according to the Marxian schema.

Through the 10 million strong party membership, the party high command seeks to consolidate and maintain its dominion over the key sectors of Soviet society. The leadership monopolizes all significant decisions in the economy making; it also exercises absolute control over the recruitment, training, and placement of trusted Communists in all important posts in industrial management. But this is not enough for the endemically suspicious elite; it has fashioned an intricate but powerful weapon—the full-time party apparatus—to insure the imposition of its will upon the entire party membership and through it, upon Soviet society as a whole.

The 350,000 members of the party apparatus² constitute the mechanism through which loyalty to the oligarchy is enforced, opposition suppressed, new cadres developed, and the party line executed. While day-to-day operational responsibilities are vested in the non-party hierarchy of managers and administrators, the party leadership holds its functionaries responsible for the fulfillment of the center's policies and plans in all areas and organizations to which they are assigned. Every nonparty hierarchy is both inter-penetrated and supervised by the corresponding level of the party hierarchy. As a matter of accepted practice, each level of the party apparatus is expected to keep in touch with all activities under its jurisdiction, to be alert to any failure in performance, to report continually to its own superiors on the state of plan fulfillment, and to take such measures, in collaboration with local administrators, as will insure the realization of the goals and tasks which the party high command has decreed.³

The pattern of organization of the party apparatus reflects and parallels the governmental and economic structure of the Soviet Union. At the apex of the party pyramid stands the *Presidium of the Central Committee* of the Communist Party, headed by First Secretary Khrushchev. It represents the culminating point at which party, government, and economic interests meet, and from which efforts to control or shape events are initiated. Its members, most of whom are, by now, engineers or technicians by training, hold all commanding positions in the party, state, and economic bureaucracies. It is from this body that all authority and responsibility flow throughout Soviet

² Authors estimate based on a wide variety of Soviet sources. Responsible officials are believed to total approximately 200,000.

³ Merle Fainsod, "How Russia Is Ruled" (Cambridge, 1953), p. 181

society and, to a greater or lesser extent, throughout the Communist camp of nations.

Perhaps the second most important but the least understood party agency is the *secretariat of the Central Committee*. Its statutory functions are limited to the direction of current work, chiefly as concerns verification of the fulfillment of party decisions, and the selection of cadres. Yet it is the agency upon which, first Stalin and later Khrushchev, based their power, built their own machines, packed the Central Committee, overwhelmed their opponents, and attained supreme personal power.

It is the secretariat which performs the duties assigned by the party statutes to the Central Committee. Acting in the name of the Central Committee, it directs the work of subordinate party agencies throughout the country and manages the manpower and resources of the party. The secretariat provides the essential staff support to the overcommitted members of the party high command. It drafts the decrees and resolutions promulgated by the Central Committee or even by the U.S.S.R. Council of Ministers. If not the originator, the secretariat checks on the drafts proposed by other echelons of the party/state hierarchy for compliance with extant regulations and on the adequacy of the proposed course of action. On occasions, such as the current 20-year plan, some analysts have suggested that it rewrites drafts to fit the preconceived notions held by the party presidium to the extent of invalidating the entire document.⁴

Possibly the single most powerful weapon in the arsenal of the secretariat is its extra-legal right to appoint, confirm, and remove personnel in nonparty institutions and establishments.⁵ Called *nomenklatura* (nomenclature) positions in Soviet terminology, they are analogous to patronage positions in the United States in the heyday of the political machines before the advent of any kind of civil service system. Reinforcing the analogy is the fact that the Communists proclaim to all and sundry that political considerations outweigh professional qualifications in making *nomenklatura* appointments. Every administrative position in Soviet industry from the post of chief engineer of a small shoe repair plant to the director of the Magnitogorsk metallurgical combine is on the party *nomenklatura*.

The power to select or clear personnel for managerial positions also carries with it the power to remove personnel from these positions. There are numerous cases reported in the Soviet press where the party announced that such and such an official had been released from his job; and only later did the appropriate nonparty agency ratify the party decision.

The secretariat consists of two groups: the secretaries and the departments of the Central Committee. Currently there are nine secretaries who function under the general direction of First Secretary Khrushchev, with Kozlov as his unofficial deputy. The secretaries act through the 30-odd departments (including the departments of the Bureau for R.S.F.S.R. Party Affairs which is headed by the ubiquitous Khrushchev, with Kirilenko as his deputy) in supervising the activities of party organs, individual sectors of the economy, branches of government, and fields of public activity. Directly con-

⁴ Naum Jasny, "Plan and Superplan," Survey, A Journal of Soviet and East European Studies, No. 38, October 1961, p. 43.

⁵ For an example of this phenomenon, see Sidney S. Harcave, "Structure and Functioning of Lower Party Organization in the Soviet Union" (ARDC/HRR I Technical Research Rept. No. 23, January 1964, p. 28).

cerned with industry are the all-union departments for heavy industry, light and food industry, and machine building, and the R.S.F.S.R. Department of Industry and Transport.⁶ Other departments of the central secretariat, such as those for construction, transport and communications, and trade, finance, and planning organs, assist the industrial departments in their operations. A—if not the—key role in the secretariat is played by the two departments of party organs (one for the R.S.F.S.R., the other for the 14 republics) which control appointments to the production-branch departments.

The central secretariat is the locus of the most important political infighting in the Soviet Union. It is here that conflicts over policies are fought out, resolution of differences obtained, and firm—if temporary—courses of action adopted. Changes in the officials appointed to the various departments often signify changes in policies and reflect the political fortunes of individuals in the party presidium.

The institutional framework of decision making at the national level is repeated at lower echelons. Local policymaking organs are called bureaus, rather than presidiums; and secretariats are found at all but the lowest level. At all levels, it is the first secretary (unlike Khrushchev, he is a full-time party official) who is the Kremlin's satrap. His role in local affairs can be likened to the chairman of the board of a monopolistic corporation who owns at least 51 percent of the voting stock. The bureau membership is composed of his assistant secretaries and the heads of the major government and economic agencies and of security organs. The local secretariats are less complex than the national, and the departments vary according to the major economic activities in the area.

At the bottom of the party pyramid are found the 76,000 full- and part-time secretaries of the primary party organizations (formerly called cells) which are formed in industrial, construction, transport, and communications enterprises and organizations.⁷ These secretaries are important personages for they have access to all plant data and are required to report on plant performance to the appropriate echelon of the party apparatus. Since they, as well as their party superiors, are held responsible for all aspects of plant performance, they often succumb to the temptation to interfere in operations, occasionally for the good, but just as often to the detriment of efficiency, for they generally lack the necessary professional expertise. The joint responsibility of the party secretary and plant manager for performance also can lead to difficulties, particularly when things are not going well in the plant. At times they form a mutual protection society and falsify production figures and attribute fictitious reasons for accidents and breakdowns.⁸ As a result, the tenure of secretaries at this level is relatively brief, for the party continually rotates officials to forestall the development of these ties.

On the positive side, one cannot ignore the influence of the almost 3 million party rank and file who comprise 10 percent of the Soviet industrial and construction labor force.⁹ For party regulations stipulate that they—

⁶ U.S. Department of State Biographic Directory No. 272, Directory of Soviet Officials (Washington, 1960) I, pp. 2-6.

⁷ *Partijnaya zhizn*, No. 1, 1962, p. 53.

⁸ *Pravda*, Apr. 8, 1959. See also Joseph Berliner, "The Soviet Industrial Enterprise" (Cambridge, 1954), pp. 713-734.

⁹ *Partijnaya zhizn*, No. 1, 1962, p. 50, and Tsentralnoye Statisticheskoye Upravleniye pri Sovete Ministrov S.S.S.R., "Narodnoye Khozyaystvo S.S.S.R. v 1960 godu: Statisticheskiy sbornik" (Moskva 1961), p. 636.

must intensify the party's influence in every way, carry out its policies among nonparty members, strengthen party and state discipline, combat bureaucracy, and check on the fulfillment of party and Soviet directives.¹⁰

The existence of a party apparatus paralleling the government and economic structure provides the Kremlin with an independent check on the operations of Soviet industry. In many cases, particularly at the upper echelons, economic decisionmaking is preempted by the party. Party interference in the operations of the industrial complex can and does lead to irrational results. At the same time, however, it is a most important control mechanism for insuring the fulfillment of party directives in priority sectors of the economy. While the "crash" program approach of the party apparatus has obtained substantial successes in weapons production and other branches of heavy industry, it has left the consumer sector, not to mention agriculture, in a rather sorry state. But the important fact remains that the party plays an active role in the administration of Soviet industry and the existence of the party apparatus provides the regime with its most important control over the industrial complex.

B. State administration of industry

Economic activity in the U.S.S.R. is almost entirely controlled by agencies subordinate to the Soviet Government. This has been the situation in large-scale industry since 1917-18, in small-scale industry and retail trade since the late 1920's, and in agriculture since the early 1930's. At present, some 97 percent of the Soviet industrial product is administered directly by the state; the remainder is produced by co-operatives, but it, too, is subject to state control.¹¹ Over the years the state's institutional control apparatus for the Soviet industrial complex has undergone a number of changes; every few years there occurs a major bureaucratic reshuffling of responsibilities. The current structure was adopted in 1957 on the initiative of Khrushchev over the strenuous opposition of Molotov, Malenkov, et al. Within the Soviet context, the new administrative setup is notable for its decentralization of decision making; by our standards, the state administration of industry remains highly centralized.

Operational control of industry is exercised by the Soviet Government at three levels: at the U.S.S.R. level by such agencies as ministries and state committees; at the Union Republic level particularly by the regional councils of the national economy (sovnarkhozy); and at the local level, by the oblast (province), rayon (county), and city government. (See p. 209.) Despite its complexity, the organizational schema presented in the figure is misleading, for the actual state of operations is characterized by overlapping jurisdictions, extensive interference in local affairs by higher organs, the existence of a multitude of staff agencies who exercise control over subdivisions of enterprises, and the compounded evils of bureaucratism. Officials in the upper echelons show a marked reluctance to allow peripheral agencies to act on their own, even in matters that can only be of local interest. Economic decisionmaking, particularly at the less than national level, is characterized by the avoidance of taking risks. Lower echelons have the habit of obeying, often with inane attention to detail, the standing policies of their organizations without daring

¹⁰ Translated in Leo Grulioiv, ed., "Current Soviet Policies" (New York, 1953) I, p. 33.

¹¹ *Narodnoye Khozyaystvo S.S.S.R. v 1960*, p. 213.

to show much initiative.¹² The reluctance of state economic officials to make decisions is reinforced by the fact that they are, almost without exception, members of the party and, as such, subject to party as well as state discipline. Constitutional and statutory law to the contrary, Soviet bureaucrats are always aware that they must work within the framework of the current party "line."

1. *U.S.S.R. agencies.*—U.S.S.R. subordinated agencies concerned with industrial administration include the Presidium of the Council of Ministers, the Council of Ministers itself, five staff agencies—the State Planning Committee, the State Scientific and Economic Council, the State Bank, the Construction Bank, and the State Control Commission—and the industrial ministries and state committees. In addition to supervising the entire Soviet industrial establishment, U.S.S.R. agencies—the industrial ministries and state committees—directly control 6 percent of the Soviet gross industrial product.

The *Presidium of the U.S.S.R. Council of Ministers* is formally subordinate to the Council of Ministers and through it to the U.S.S.R. Supreme Soviet. In reality, it is the highest Government agency in the Soviet Union. Headed by Khrushchev and his deputies, Kosygin and Mikoyan, who are also members of the Presidium of the U.S.S.R. Party, this relatively small group serves both as the link between the highest levels of the party and Government and as the cabinet of the Council of Ministers. In practice, there appears to be little distinction between the party and Government presidia, except that the latter appears to concern itself more with the execution of policy than with policy formulation.

The *U.S.S.R. Council of Ministers*, formally subordinate to the U.S.S.R. Supreme Soviet, is the most active legislative body in the Government. It is comprised of the members of its presidium, ministers of all-union and union-republic economic ministries, heads of industrial state committees and special agencies, such as the State Planning Committee and the Committee for State Security (KGB), and, ex-officio, the chairmen of the councils of ministers of the union republics. Virtually its entire membership are also members of the Party Central Committee. Its acts are binding on all state economic agencies throughout the Soviet Union. It directly supervises the industrial activities subordinate to U.S.S.R. agencies, rail transport and foreign trade, and some activities formally subordinate to the union-republic councils of ministers, such as the military establishment and foreign affairs. It coordinates the operations of the industrial plant directed by its subordinate union-republic councils of ministers and their *sovnarkhozy* and by local governmental organs. Through its budgetary and planning powers it gives direction to the industrial plant; and it supervises the supply and distribution of all nationally significant commodities. Finally, it maintains an extensive control and verification apparatus to insure compliance with its directives.

The most important industrial staff agency is the *State Planning Committee (Gosplan)*. Gosplan prepares the national, integrated, short-term economic plan on the basis of the national interest—as

¹² The Soviet press gives numerous examples of these attitudes. For example, one source states that "... officials at the slightest excuse or with no excuse at all, send great quantities of directives and instructions to all points, each one longer and more complicated than the last. They also send out unneeded representatives, they are overcautious—they exercise petty tutelage over their underlings, do not trust them, and act in their stead * * * [and local officials] have one line of reasoning in all cases: When the order comes act, but don't jump into the fire before the big boys do. Don't jump even if the matter at hand demands it. Don't stick your neck out and don't break the chain of command." *Izvestia*, Sept. 11, 1958.

defined by leading party and governmental bodies—and on the basis of the economic plans drawn up by other U.S.S.R. economic agencies and by the subordinate republic Gosplans. When approved by the U.S.S.R. Council of Ministers, these plans become law and violators are subject to both civil and criminal sanctions. Its plans are supposed to insure proper and rational distribution of the Soviet Union's productive forces, regional economic specialization, and provide for the integrated development of economic areas. It has recently shifted to planning control figures for production and investments 5 years in advance with specific goals set up 2 years in advance, subject only to annual refinements.¹³ Its plans include not only physical input-output goals, but also qualitative goals, including those for the introduction of new technology, cost reduction, profits, etc. Gosplan controls interrepublic deliveries of some 1,200 different kinds of materials and equipment, including all products manufactured and consumed in several republics, as well as the most important kinds of raw materials and semi and finished goods, such as various categories of ferrous rolled stock, several grades of lubricants, and the most important chemicals. It is also responsible for deliveries to the Soviet stockpile and to other U.S.S.R. agencies. Far from the least important function assigned to Gosplan is the responsibility to establish prices. Finally, it supervises the plan fulfillment of union-republic gosplan and sovnarkhoz distribution organs.

Gosplan's sister agency, the *State Scientific and Economic Council (Gosekonomsovet)* is the long-term planning agency. In addition to its national plans, including the 5-to-7-year plans for material balances, it is directly concerned with regional planning on the basis of specialized industrial complexes. Recently it established subordinate councils in the major centers of each of the 17 large economic regions.

Gosekonomsovet regions and their headquarters are as follows (see map, p. 210):

Russian S.F.S.R.

Northwest—Leningrad
 Central—Moskva
 Volgo-Vytka-Gorkiy
 Central Black Earth—Voronezh
 Volga—Kuybyshev
 North Caucasus—Rostov
 Urals—Sverdlovsk
 West Siberia—Novosibirsk
 East Siberia—Irkutsk
 Far East—Khabarovsk

Ukrainskaya S.S.R.

Donetsko-Dneper-Kharkov
 Southwest—Kiyev
 South—Odéssa
 Western—Riga
 Transcaucasian—Tbilisi
 Central Asian—Tashkent
 Kazakhstan—Alma-Ata

NOTE.—Byelorussia and Moldavia are outside the Gosekonomsovet system

Membership in these councils includes the leading party, Government, and economic officials in the region, plus a small permanent staff. Although the councils act as consultative bodies at the present time, they constitute the nucleus of an operational body and, perhaps, foreshadow a new administrative structure for Soviet industry. Gosekonomsovet reports on economic specialization, cooperation, and particularly on capital investment, all of which are important for they will determine the future course of national and regional industrial development.

The importance of two all-union banks, the *State Bank (Gosbank)* and the *Construction Bank (Stroibank)*, in industrial administration cannot be overlooked. Gosbank controls the disbursement of funds

¹³ *Kommunist*, No. 4, March 1961, p. 21; *Pravda*, Dec. 27, 1960

allocated to industry, provides short-term loans, and audits the accounts of enterprises. Soviet organizations do not have control over their working funds and must apply to Gosbank for moneys to cover to cover their operating expenses. Stroibank controls the disbursement of funds allocated for long-term capital investment and, in general, is responsible for financial control over the construction industry.

And finally, the *State Control Commission (Goskontrol)* checks on the observance of Government decisions by industry, and on its plan fulfillment, management, financing, accounting, and utilization of technology. In addition to its GAO function, Goskontrol is empowered to eliminate on the spot such malpractices as report falsification, inflation of administrative staffs, and autarkic tendencies. On its own, it can suspend industrial and other officials for offenses which fall within its extensive purview.

The U.S.S.R. *industrial ministries and state committees* exercise direct control over subordinate plants throughout the Soviet Union. The U.S.S.R. Ministry of Medium Machine Building is the Soviet equivalent of our Atomic Energy Commission; the U.S.S.R. Ministry of Transport Construction controls the building of transport facilities; and the U.S.S.R. Ministry of Construction Electric Power Stations does just that. At last count there were 11 U.S.S.R. state committees concerned with industry. In alphabetical order they were: Automation and machine building; aviation technology; chemical industry; defense technology; electronics; ferrous and nonferrous metallurgy; fishing industry; fuel industry; lumber, cellulose-paper, and wood processing industry and forest economy; radio electronics; and ship-building industry. Scattered Soviet press reports indicate that they operate on the basis of regional trusts or similar units, either on a composite or specialized basis.

As mentioned earlier, these agencies produce 6 percent of the Soviet gross industrial product, the most important 6 percent for it includes fissionable materials, missiles, other armaments, as well as other defense related products. They also produce 21 percent of the precast reinforced concrete, 7 percent of the petroleum equipment, 6 percent of the chemical equipment, 2 percent of the excavators, 1 percent of the metal-cutting machine tools, 0.5 percent of the steel, and 0.3 percent of the metallurgical equipment produced in the Soviet Union.¹⁴ U.S.S.R. agencies employ 5 percent of the industrial labor force and 16 percent of all specialists, and control 23 percent of all capital investment.¹⁵ They also conduct research and development and are responsible for the introduction of advanced technology by industrial enterprises throughout the Soviet Union in their respective fields. These agencies have access to the best human talent, highest quality of materials, and abundant funds available. For they administer the priority sector of the economy, the sector westerners never see.

2. *Union republic agencies.*—The organization of industrial administration under the 15 union republic councils of ministers is similar to that found at the national level, except for the regional councils of the national economy (sovnarkhozy). The republics have a variety

¹⁴ Narodnoye Khozyaystvo SSSR v 1960, p. 215, for all goods except petroleum and chemical equipment which were taken from Narodnoye Khozyaystvo RSFSR v 1960, p. 116, assuming the RSFSR figure is representative for the country as a whole.

¹⁵ Narodnoye Khozyaystvo RSFSR v 1960, p. 397, for industrial labor force (see above for 14); other categories, Narodnoye Khozyaystvo SSSR v 1960, pp. 658, 593.

of industrial ministries, principally in the building materials field, which produce about 8 percent of the industrial product, and staff agencies, such as Gosplan and Goskontrol, which have responsibilities similar to their national counterparts. Each of these agencies, under the Soviet principle of dual subordination, is responsible both to the republic council of ministers and to the corresponding agency at the national level.

The 103 *sovnarkhozy* are the principal industrial administration agencies in the Soviet Union. They direct all industrial and construction enterprises of greater than local significance, but not including those under the jurisdiction of U.S.S.R. agencies. *Sovnarkhoz* enterprises produce 74 percent of the Soviet industrial product and employ 73 percent of the 23 million strong industrial labor force. They produce 100 percent of Soviet iron ore, coke, cement, etc., and more than 95 percent of steel, rolled ferrous metals, petroleum, mineral fertilizers, textiles, etc. *Sovnarkhozy*, in coordination with Gosplan and Gosekonomsovet, develop and implement current and long-range production plans, promote industrial specialization, arrange deliveries of raw materials and products, and determine the financial and economic activities of subordinate institutions and organizations.

Direct supervision and control of the activities of *sovnarkhozy* is vested in the union republic councils of ministers and in the U.S.S.R. Council of Ministers. The republic Gosplans, working through their respective councils of ministers, exert considerable influence on the *sovnarkhozy* through the controls described above. Although *sovnarkhozy* are located in oblast-level capitals, the oblast-level governments exercise no control over their activities, but they do have the right to be informed about them.

Of the 100 primary *sovnarkhozy*, 67 are in the RSFSR, 14 in the Ukraine, 7 in Kazakhstan, and 1 each in the other republics. Only one encompasses a single city (Moskva); 76 are composed of single oblast-level units; 11 of more than 1 oblast-level unit; and 12 of entire republics. The three "super" *sovnarkhozy* are found in the RSFSR, Ukraine, and Kazakhstan where they supervise the activities of subordinate *sovnarkhozy* located in their republics.

The *sovnarkhoz* administrative staff employs about 200,000 persons.¹⁶ Although the organizational schema differ from one *sovnarkhoz* to another, in general, each consists of a chairman, deputy chairman, and members. The chairman of the *sovnarkhoz* is always a member of the bureau of the oblast party committee in which the *sovnarkhoz* is established, and the ranking government official is usually a member of the *sovnarkhoz*. Below the central apparatus of the *sovnarkhoz* are ranged a series of functional (planning, personnel, material-technical supply, etc.) and industrial branch directorates. The industrial branch directorates vary considerably area by area. They direct the operations of trusts, combines, and individual enterprises. The largest and most important enterprises in a given area, such as the Cherepovets Metallurgical Combine, are usually directly subordinated to the *sovnarkhoz*. In the smaller *sovnarkhozy*, there are no branch directorates, and the *sovnarkhoz* itself directs the trusts and individual enterprises. In general, however, the administrative chain of command for *sovnarkhoz* enterprises runs from the U.S.S.R. Gosplan via

¹⁶ John A. Armstrong, "The Politics of Totalitarianism: The Communist Party of the Soviet Union from 1934 to the Present" (New York, 1961), p. 314.

the U.S.S.R. Council of Ministers to the republic council of ministers and is gosplan, to the sovnarkhoz, branch directorate, trust, and eventually winds up at the enterprise.

3. *Local agencies.*—Industrial activities of purely local importance are directed by agencies subordinate to the oblast, rayon, and city governments, the most important of which are the oblast departments of local industry and the various producer and consumer cooperatives. Virtually all of their materials are obtained and their production consumed locally. It consists, for the most part, of consumers' goods and food products which require only simple processing. Locally administered industry produces some 13 percent of the gross, including 63 percent of macaroni products, 37 percent of knit underwear, and 16 percent of firewood.

4. *Enterprise administration.*—The administration of a Soviet industrial enterprise, be it a small plant, a huge combine, or one of the new "firms,"¹⁷ is basically similar. The ranking officials are the manager, his line deputy, called the chief engineer, and his various staff assistants, including the chief bookkeeper and the head of the material-technical supply section. In larger enterprises, the manager's assistants include the heads of the various shops, production sections, etc. Not to be forgotten, however, is the enterprise party secretary.

Enterprise management works on the basis of the principle of *yedynonachaliye* in which the manager is wholly responsible for all activities under his command, as opposed to the principle of *kollegialnost*, where a number of individuals participate in the decisionmaking process. In practice, however, there is not too much difference between these managerial principles because of a third principle, that of "dual subordination." Even under complete *yedynonachiyeye*, the manager's assistants report not only to him but also to the head of the comparable specialized department on the next higher level, be it trust, sovnarkhoz, or state committee, for they, too, are wholly responsible for all activities under their command.

The assignment of full responsibilities to a relatively large number of individuals within an enterprise, needless to say, complicates the life of the manager. Each of his immediate assistants, by reporting to their counterparts at the trust level, is in a position to supply the manager's immediate superior with conflicting information on plant performance and prospects. In addition, the party, security organs, and the trade unions have their own representatives within his plant from whom they receive reports and send instructions—all of which can drastically affect his performance. Finally, all of his financial transactions are subjected to continuing scrutiny by Gosbank and they, along with all his records, are systematically audited by Goskontrol. And the reports of these agencies are not only communicated within their own respective organizations but are also sent to his line superiors.

It is a tribute to the Soviet managerial class that they are able to function within such a system. To be sure, real power within a given

¹⁷ The "firm" consists of a number of smallish enterprises located in a particular town which either produce the same product or component parts or supply materials to the end product plant. The major plant is called the "leading enterprise" and its administration functions as the overall administration for these related enterprises. The "firm" management replaces the abolished trust and reports directly to the sovnarkhoz. This managerial concept, interestingly enough, was developed by the Poles and, according to one informant, the Soviets directed the Czechs to try it out, and only afterward adopted it themselves on an experimental basis in the consumer sector.

enterprise may not lie with the manager, but with the party secretary, or one of the manager's assistants, depending in part on force of personality. It would appear that "who you know," rather than "what you know," is even more important in Soviet industry than some claim is true in American society. Nevertheless, it is almost the unanimous opinion of westerners who have had occasion to meet members of Soviet industrial management in recent years that they are well qualified, tough, and efficient men who would succeed as managers anywhere.

C. Problems and prospects

The problems facing the Kremlin in the realm of industrial administration are largely of its own making. Foremost among them is the problem of party interference in industrial decisionmaking, particularly the ideological constraints against adoption of a market economy and the resultant inability to obtain realistic cost factors. Ranking close in importance is the regime's innate suspicion of the individual, even if he is a member of its own industrial administration, which has resulted in the proliferation of bureaucratic controls affecting every aspect of industrial activity. The resultant stifling of initiative is, perhaps, the greatest human problem in industry, as well as all other sectors of Soviet society. The power the regime possesses to push through crash programs it deems in the national interest, no matter what the cost, however, should always be borne in mind.

The extent of the party's direct interference is illustrated by an example from Zaporozhskaya Oblast in the Ukraine.¹⁸ When difficulties arose, the bureau of the Oblast Party Committee decided to send secretaries of the committee and "the chairman of the sovnarkhoz and his deputy, the heads of the industrial branch directorates, and responsible workers" to the scene. Once there, they jointly adopted measures to eliminate the shortcomings, but the "bureau of the Oblast Party Committee took over supervision of the implementation of the measures."

The inhibiting effect of bureaucratism, of overlapping jurisdictions, is clearly seen in the planning process. Not only does U.S.S.R. Gosplan engage in planning, but so do the 15 union republic gosplans, the 3 "super" sovnarkhozes, and the 100 primary sovnarkhozes—often dealing with the same products and the same plants. Although the "super" sovnarkhozes were established 2 years ago, their functions have not yet been legally delineated. As a result, they have engaged in almost continuous bureaucratic warfare with the republic gosplans over the administration of intersovnarkhoz material-technical supply.

The regime recognizes the stifling effect of bureaucratism on the operation of its industrial plant. It constantly inveighs against it, calling for an ever greater display of initiative from below. People being people, managers have responded by fulfilling and even over fulfilling planned deliveries to "their own" plants, frequently at the expense of not meeting the needs of plants outside their areas. Others have attempted to overcome the chronic difficulties in the Soviet supply system by creation of uneconomic capacities in their own region to assure themselves of requisite materials. These manifestations of "localism" and "autarkic tendencies" have been severely condemned.

¹⁸Quoted in Armstrong, "The Politics of Totalitarianism," p. 313.

And the regime has responded in a typically bureaucratic fashion by creating new agencies and controls to combat these evils.

The Soviet regime has by no means exhausted the possibilities for organizing its industrial administration. There is little likelihood that it will soon choke to death upon a mass of paperwork, or that its administration will become so cumbersome as to be unviable. However, even they recognize that their administration of the industrial complex is seriously in need of improvement. Purposeful change, as opposed to bureaucratic change for change's sake, will continue. The problem is whether the party will allow the economic rationale to be expressed in changes which will lead to lasting benefits to industry and to the Soviet people as a whole.

Although recent trends in industrial organization appear to indicate an intensification of central control over a deconcentrated administration, they do not necessarily mean that the progress made in the past few years in delegating operational responsibility to local governments has ended. Even if decentralization is continued, however, it is well to bear in mind that according to Khrushchev's XXII Party Congress speech:

The transfer of many important state functions to public organizations, the gradual transformation of the force of conviction and education into the basic method of running the life of Soviet society, does not mean and cannot mean the weakening of control over the strict observance of the norms of Soviet law and discipline in labor and life.¹⁹

It is clear that the regime has been seriously attempting to encourage initiative from below. It is equally clear, however, that when control and initiative conflict, control will prevail.

III. GEOGRAPHIC DISTRIBUTION OF INDUSTRY

A general evaluation of Soviet industrial production is presented elsewhere. This section deals with the geographic distribution of the industrial plant, with what is produced and where, not how it is administered nor with its significance vis-a-vis the United States.

The brief textual commentary will be limited largely to a description of the locational pattern of particular branches of industry.²⁰ The extensive tabular presentation is organized on the basis of the newly established 17 gosekonomsovet regions (see above) and on the 15 union republics. These tables include data in actual units of measure, such as tons of steel, and in percent of the national total (see table 1).

¹⁹ Pravda, Oct. 19, 1961.

²⁰ For more extensive analyses in English of the economic geography of the Soviet Union, see Theodore Shabad, "Geography of the U.S.S.R.: A Regional Survey" (New York, 1951), 584 pp.; and J. P. Cole and F. C. German, "A Geography of the U.S.S.R.: The Background to a Planned Economy" (London, 1961), 290 pp.

TABLE 1.—U.S.S.R.: 17 economic regions; 15 Republics; regional councils of the national economy: 103, including 3 "super" sovnrarkhozes

Territory in square miles (1961)-----	8, 650, 000
Population (1961)-----	216, 151, 000
Industry general (1960):	
Labor force-----	22, 291, 000
Capital investment, in billions-----	\$15. 9
Value of output, in billions-----	\$172. 0
Total capital investment, in billions (1960)-----	\$34. 2
Principal industrial centers: Moskva (6,208,000), Leningrad (2,997,000), Kiyev (1,174,000), Gorkiy (1,003,000), Kharkov (976,000), Tashkent (971,000), Novosibirsk (963,000), Kuybyshev (863,000), Sverdlovsk (832,000), Donetsk (749,000), Dnepropetrovsk (707,000).	
Industrial products (1960):	
Ferrous metallurgy:	
Iron, in 1,000 metric tons-----	46, 757
Steel, in 1,000 metric tons-----	65, 298
Fuels and electric power:	
Coal, in 1,000 metric tons-----	513, 194
Petroleum, in 1,000 metric tons-----	147, 859
Natural and manufactured gas, in million cubic meters---	47, 214
Electric power production, in million kilowatt-hours-----	292, 274
Machine building and metal working:	
Metal-cutting tools-----	155, 566
Forge and pressing machines-----	29, 900
Chemical equipment in 1,000-----	\$250, 700
Construction materials:	
Cement, in 1,000 metric tons-----	45, 520
Bricks, in million pieces-----	41, 167
Commercial lumber, in 1,000 cubic meters-----	261, 372
Consumer goods:	
Cotton fabrics, in million square meters-----	6, 388
Wool fabrics, in 1,000 square meters-----	341, 826
Leather shoes, in 1,000 pairs-----	419, 274
Food products:	
Meat products, in 1,000 metric tons-----	4, 406
Fish products, in 1,000 metric tons-----	3, 541
Canned goods, in million cans-----	4, 862
Milk, in 1,000 metric tons-----	6, 172

Only the most significant categories on which there was regional distribution data were included. While the availability of data has increased markedly since the "statistical renaissance" beginning in 1956, the question of the accuracy of the data remains moot. The author shares the opinion of Naum Jasny, who draws a distinction between general indexes of economic development, which have "nothing in common with reality," and other sets of figures, such as transport statistics, which appear to have no serious defects.²¹ The Soviets generally publish selected data which show aspects of the economy or region in a favorable light, or omit what they consider to be data on strategic categories, such as nonferrous metals, or because the data would reflect unfavorably. Only the figures on the value of gross industrial production are estimates and, while not entirely accurate, are believed to give a reasonable picture of the overall distribution of Soviet industry.

A. Territory and population

The total area of the Soviet Union is some 8.65 million square miles, making it the largest single political unit in the world. From its northernmost reaches on the edge of the Arctic Ocean, south to the

²¹ Naum Jasny, *International Affairs*, January 1959, No. 1, pp. 53-60.

Afghan border, it stretches nearly 3,000 miles; and from the extreme western point in former East Prussia to the Bering Strait is almost 7,000 miles. It occupies the eastern half of Europe, the northern third of Asia with Siberia, the western section of central Asia, and part of the Middle East in the Caucasus. With a total population of more than 216 million (1961),²² it ranks third in the world. The vast majority of the Soviet people live in the European section on rolling Russian lowland where the humid continental climate with short summers prevails. Other areas of population concentration are along the Trans-Siberian Railroad and in the fertile Fergana Valley and other oases in central Asia.

Both the population and territory are unevenly distributed among the economic regions and union republics. The R.S.F.S.R. stands alone with more than 76 percent of the territory and 56 percent of the total population, or 120.6 million, of which 66.2 million are urban. As a result, Soviet planners have divided it into 10 of the 17 *gosekonomsovet* regions. Of these, East Siberia, the Far East, and the Urals are the largest, with East Siberia being larger than all the other union republics taken together. The regions to the east of the Urals, however, are sparsely populated: with 50 percent of the territory of the Soviet Union, they contain only 10 percent of the population. Soviet attempts to populate the area, through the use of forced labor under Stalin or through considerable financial inducements under Khrushchev, have proved largely unsuccessful. Following the amnesties proclaimed after Stalin's death, the population actually declined despite strenuous efforts of the new regime to foster migration. Tens of thousands of peoples did move to the east, but soon left because of the harsh working and living conditions. During the first 6 months of this year, for example, the Soviets admit that some 47,000 workers put down their tools and left because of unsatisfactory conditions from one oblast in the area alone.²³ The instability of the labor force has seriously inhibited growth of industrial production in these labor and capital intensive regions.

The more densely settled regions to the west, particularly the areas around Moskva (the Center) and Leningrad (the Northwest), Gorkiy (the Volgo-Vyatka), and Kuybyshev (the Volga), are far more important. With only 12 percent of the area of the Soviet Union, they contain some 58 million people, including 34 million urban dwellers. Not to be ignored, however, is the Urals economic region located astride the Continental Divide. With important Permskaya Oblast and oil-rich Bashkiria on the western slopes and heavily industrialized Sverdlovskaya and Chelyabinskaya Oblasts on the eastern it contains 9 percent of the total population of the Soviet Union, of which 11 million live in urban settlements.

Among the other union republics, Kazakhstan ranks first in territory, but second in terms of population. The Ukraine with a population of 43 million has five times as many people as Kazakhstan but only one-fourth the area. Because of its importance, the Ukraine, like the R.S.F.S.R., is subdivided into regions. Of the three regions, the southwest (Kiyev) is the largest and most populous, but the

²² For the source of these data and others presented in this section, see the methodological note at the end of the regional tables.

²³ Nov. 11, 1962, "Sovetskaya Rossiya" report described in Nov. 12, 1962, Washington Post. For a more detailed report see "Voprosy Ekonomiki," No. 6, 1962, which states, *inter alia*, that about half of those who migrate to Siberian cities leave them within 3 years.

Donetsko-Dneper (the Donbass) with 68 percent of its 17 million population in urban areas, is the most important industrially.

The relatively large central Asian region, consisting of the republics of Kirgizia, Tadzhikistan, Turkmenia, and Uzbekistan, contains a total population of 14.6 million. Its general industrial importance, however, is indicated by the fact that only 36 percent of its population is urban.

The Transcaucasian region (Armenia, Azerbaydzhan, and Georgia) has an area only one-seventh that of central Asia, but has an urban population only 10 percent smaller. Its contribution to Soviet industry equals that of the much larger central Asian region. The highly productive Baltic republics (Estonia, Latvia, and Lithuania—the western economic region) and Belorussia, whose combined area is less than 2 percent of the national total, have a population of 14.4 million, of which 5.8 million are urban. Their industrial product almost equals that of central Asia and Transcaucasia combined.

B. The distribution of gross industrial production

The distribution of Soviet gross industrial production and two basic inputs, labor and capital, are presented in table 2.

TABLE 2.—*Distribution of total capital investment and industrial labor force, capital investment, and output, 1960*

[In percent]

Economic region	Total capital investment	Industrial		
		Labor force	Capital investment	Output
R.S.F.S.R.	64.38	67.01	65.36	63.28
Northwest	7.28	8.57	(1)	8.75
Center	13.34	19.25	(1)	19.62
Volgo-Vyatka	2.70	4.57	(1)	3.46
Central Black Earth	2.70	2.56	(1)	1.76
Volga	2.69	6.27	(1)	5.46
North Caucasus	4.98	4.32	(1)	4.37
Urals	10.33	11.58	(1)	10.35
West Siberia	6.13	5.14	(1)	4.26
East Siberia	6.19	3.29	(1)	2.71
Far East	3.81	2.36	(1)	2.18
Ukraine	16.02	18.07	17.56	21.38
Donetsko-Dneper	8.88	10.86	(1)	11.74
Southwest	4.80	5.41	(1)	7.74
South	2.34	1.80	(1)	1.90
West	2.36	2.88	2.05	2.97
Transcaucasus	3.41	3.83	3.58	3.25
Central Asia	4.32	2.75	3.82	3.34
Kazakhstan	6.91	2.53	5.41	2.62
Belorussia	2.09	2.45	1.68	2.38
Moldavia .....	.60	.55	.54	.78

¹ Not available.

As can be readily seen, the Center, Donets-Dneper, Urals, and Northwest economic regions are the largest, accounting for more than 50 percent of the total industrial product. Moldavia, the Central Black Earth, and the South, on the other hand, are the smallest; their combined production totals only 4.4 percent.

The policy of intensive industrial development ushered in with the 5-year plans in the twenties, made a tremendous impact on the industrial geography of the U.S.S.R. Prior to the shift in locational pattern, almost all of Soviet industry was concentrated in the four major regions listed above. The new characteristic location pattern

evolved from two major principles: (1) Industry was to be established near the source of raw materials; and (2) each union republic or economic region was to achieve a high degree of self-sufficiency. If possible, industry was to be developed near the consumers and specialization was to be encouraged.²⁴ Simultaneously with the modernization of the old industrial plant, new industrial regions were developed in the eastern section of the country; e.g., the Urals-Kunetz complex, Magnitogorsk. During World War II, with the German occupation of most of the older industrial regions, the production in these newer regions burgeoned and accounted for more than half the national output.

Following the war, the older regions rapidly regained the position they held prior to the outbreak of hostilities. The territorial distribution of gross industrial production since the late forties has been remarkably stable. Soviet propaganda to the contrary, production in the "east," defined by them to include the Urals, West and East Siberia, the Far East, Kazakhstan, and central Asia, has not been growing at a faster rate than the country as a whole. In fact, over the past few years the "east" share of the national product has slightly declined, except for East Siberia, which has increased its share but only measured in tenths of 1 percent. The Center was and is the major industrial area. In recent years its rate of growth, too, has fallen somewhat behind the national average; and, as a result, its relative contribution to the national economy has declined. What the Center has lost, however, has been gained by the Ukraine.

During the discussions which preceded and followed the reform of industrial management in 1957, one of the many topics covered was the locational pattern of industrial development. The public debate between hydro and thermal power advocates appears part and parcel of a larger discussion over the geographic distribution of capital investment which determines the future locational pattern of industry. Initially, the modernists seemed to prevail and emphasis was placed on hydroelectric projects in the "east" and concomitant industrial development. Soon however, the traditionalists won the day with the argument that immediate return on investment was critical, and that it was more economic to enlarge existing plant in the "west," than to develop new plant in the labor and capital intensive industries of the "east."²⁵

Data on industrial labor and capital productivity lend considerable justification to the position of the traditionalists. The area east of the Urals is expensive both in terms of labor and capital, as compared to such other areas, such as the Ukraine or Latvia. The average worker in East Siberia, for example, produces almost 18 percent less than the U.S.S.R. average; and the return on East Siberian total capital investment is some 57 percent below the national average. The worker in the Ukraine, on the other hand, produces 18 percent more than the average industrial worker. And the return on industrial capital investment in Latvia is almost 86 percent above the average; on total capital investment, it is 49 percent higher than the national average.

The economic rationale behind the shift of petroleum production from Azerbaydzhan to the so-called Second Baku in the Volga eco-

²⁴ See Shabad, "Geography of the U.S.S.R.," pp. 68-72; and Cole, "A Geography of the U.S.S.R.," pp. 19-37.

²⁵ Compare the emphasis given to new versus enlarged capacity in the proceedings of the XXI Party Congress held in January 1959 and the June 1959 Central Committee plenum.

conomic region, aside from the important question of resources, is also evident from the data. Azerbaydzhan's industry is both labor and intensive; the average worker produces almost 40 percent less than the national average, and the return on capital investment is 34 percent below average. In the more diversified Volga region, the average industrial worker produces only 13 percent less than the average, and the return on total capital investment is more than 102 percent higher than the nationwide figure.

The Northwest, Center, Donetsko-Dneper, Southwest, Estonia, Latvia, Georgia, Kirgizia, and Moldavia all have above-average returns on both labor and capital. The Volgo-Vyatka, Central Black Earth, Volga, Urals, West and East Siberia, the Far East, the South, Lithuania, Azerbaydzhan, and Byelorussia have below-average output per industrial worker. For some of the areas this is due in part to the availability of natural resources; in others, to location; and for some, inefficient utilization of manpower. Azerbaydzhan, Tadzhikistan, Turkmenia, Uzbekistan, and Kazakhstan returns on industrial capital investment are below the national average. The return on industrial capital investment in booming Kazakhstan is 52 percent less than the nationwide average, and is the lowest of all the union republics. The output per industrial worker in Kazakhstan, as well as Tadzhikistan, Turkmenia, and Uzbekistan, however, is above the national average.

The establishment of the sovnarkhozy and, particularly, the goskonomsovet, with their emphasis on specialization, marks a shift away from the concept of self-sufficiency so prevalent in the pre-Khrushchevian era. It is now recognized that regional specialization is more economic than heterogeneity. Insofar as resources permit, there is a marked emphasis to locate new industries close to the market. Where this has proven impossible, Soviet planners are attempting to move people to the source of raw materials, but with varying degrees of success (see above).

In general, there is a good correlation between the distribution of urban population and the distribution of gross industrial production. A list of principal industrial centers with a 1961 population of more than 100,000 is included in each of the regional and republic tables. Relatively few of the newer urban areas, excluding Magnitogorsk (328,000) and Komsomolskna-Amure (189,000) established in the thirties, and Angarsk (154,000), Berezniki (117,000), and Temirtau (113,000) developed in the postwar period, can be classed as major industrial centers. The older cities, such as Moskva (6,208,000), Leningrad (2,997,000), Kiyev (1,174,000), and Gorkiy (1,003,000), still dominate the list.

In the current 7-year plan, the Kremlin has continued to establish higher rates of industrial growth for the newly developing regions than for the old. Even if they are attained, and there is little reason to doubt, they will have little effect on the distribution of gross industrial production, for a 1 percent growth in an area such as the Ukraine equals a 10-percent growth in East Siberia. For the foreseeable future, the center of industrial gravity will remain virtually unchanged.

C. Distribution of industrial products

The locational pattern of Soviet industry reflects, among other things, the distribution of natural resources, historical development,

and Communist economic policy. Since each of these varies considerably, the distribution of the major branches of industry and of particular products is extremely uneven. The commentary will be largely descriptive, highlighting the data contained in the extensive regional tables and, where possible, locating the centers producing most important commodities. Since the Soviets do not publish data on the national production of nonferrous metals, most chemicals, and so forth, or on the distribution of some of the most important categories of machine building, the discussion of these branches and products will be impressionistic, not statistical.

1. *Fuels and Electric Power.*—Coal, petroleum, and natural and manufactured gas account for the bulk of Soviet fuel production. Expressed in coal equivalent, in 1960, coal accounted for 53.9 percent, petroleum 30.5 percent, and gas 7.9 percent.²⁶ The importance of petroleum and gas in the Soviet fuel balance has almost doubled over the last decade, largely at the expense of coal, and can be expected to increase even more during the sixties.

There are four nationally significant *coal* fields: The Donbass, Kuzbass, Karaganda, and Pechora. Their combined production accounts for more than 95 percent of all coking coal and most of the high-grade coal in the Soviet Union.²⁷ The remaining coalfields are almost entirely regional or local in importance, consisting mainly of lignite deposits. The Soviet coal industry employs over 1 million workers and has 9 percent of the industrial capital.²⁸

Measured in terms of tonnage, the Donbass deposits, 90 percent of which are located in the Donetsko-Dnieper region and 10 percent in the North Caucasus (Rostovskaya Oblast), are the single most important, producing 36 percent of the national total, including almost 60 percent of the coking coal. Despite its high production costs, the richness of its deposits and its location in close proximity to consumer industries have made it the historical center of the Soviet coal industry. The Kuzbass (West Siberian economic region) is the second ranking coal field, accounting for 16 percent of all coal production and 25 percent of coking coal. Virtually undeveloped until the thirties, production boomed during World War II when the Donbass was occupied by the Germans. The field is characterized by the number and thickness of its seams, some of which exceed 30 meters. Production costs are much lower than in the Donbass, but its location in Siberia increases consumption costs considerably. As a result, most Kuzbass coal is consumed by the industries of Western Siberia. The Karaganda field, located in central Kazakhstan, produces some 6 percent of total coal output, of which 25 percent is coking coal. The low production costs occasioned by extensive open-cast mining, plus its relatively close proximity to the Urals, makes it a major supplier of the metallurgical plants of that region. The very high production cost Pechora basin is located above the Arctic Circle in the northeast section of the northwestern economic region. It was opened for large-scale production during World War II to supply the Leningrad area. Transportation costs to the major industrial centers of the northwest are relatively low. It produces some 3.5 percent of total and coking coal. Forced labor was widely utilized in the opening up of all fields in the Soviet period.

²⁶ "Narodnoye Khozyaystvo SSSR v 1960," p. 253.

²⁷ *Ibid.*, p. 259.

²⁸ *Ibid.*, p. 217, 87.

Soviet *petroleum* production has been increasing rapidly and in 1960 totaled 148 million tons, of which 80 percent was extracted in the RSFSR. The petroleum industry employs 145,000 workers and has 6.6 percent of industrial capital.²⁹ The Baku oil fields, located in the Azerbaydzhanskaya SSR (Transcaucasus economic region) which had been the major source of Soviet production until 1955, now produce only 12 percent of the total. Approximately 75 percent of the national production is obtained from the "Second Baku" located in the Volga and Ural economic regions where production costs are 3 to 4 times lower than in the Caucasus. Tatarskaya ASSR and Kuybyshevskaya oblast in the Volga region produce about 45 percent of the total; and Bashkirskaya ASSR in the Urals, about 30 percent.³⁰ The remaining 5 percent of the RSFSR production is located at Groznyy and Maykop (North Caucasus), and small fields are worked around Ukhta (Northwest) and Sakhalin (Far East). The other major producers are found in the Central Asian region, principally at Krasnovodsk in Turkmenia and at Emba in Kazakhstan—both across the Caspian from Baku, and in the vicinity of Lvov in the Southwest economic region. Fragmentary data on the distribution of refineries suggests that most are located in the major producing areas, but a number are also found at the end of the growing number of pipelines in consumer areas. Production currently exceeds refining capacity, thereby providing the Soviets with a crude oil export potential of some magnitude.

Natural and manufactured gas production is closely associated with petroleum deposits, but in differing proportions. The major producer of natural gas is found in the vicinity of Dashva, near Lvov in the Southwest, which accounts for 30 percent of the national output, in the North Caucasus fields which produce 29 percent, and in the Volga economic region with 16 percent. Baku output of 12 percent remains important. Major new fields have recently been discovered in the Bukhara region of Uzbekistan and production may be expected to expand considerably in the near future there, as well as in the Urals.

The distribution of *electric power production* approximates the distribution of the industrial product and urban population. The Soviets do not publish data on the regional consumption of electric power, otherwise the correlation would be much closer. The largest single producer is the Urals with 19 percent, the three Ukrainian economic regions with 18 percent, and the Center with 10. Since the Center is connected to the new massive hydroelectric stations on the Volga, its consumption is considerably higher than the production figure indicates. Hydroelectric capacity amounts to 22 percent of the total, but production only 17 percent. Despite the considerable publicity given to hydroelectric power development, coal remains the major fuel source. The current 7-year plan emphasizes construction of thermal plants using cheap natural gas, oil, and coal. Hydroelectric development will continue, principally in the "east," but Soviet desire for more rapid return on capital investment will tend to inhibit their construction. Almost 12 percent of Soviet industrial capital is invested in electric power.

2. *Metallurgical Industry*.—The mining and processing of ferrous and nonferrous ores into metals is one of the major industries in the

²⁹ Ibid.

³⁰ J. P. Cole and F. G. German, "A Geography of the U.S.S.R.", p. 119.

Soviet Union, employing almost 900,000 workers and 10 percent of industrial capital assets in ferrous metallurgy alone.³¹ Statistical data on nonferrous metallurgy is notably absent from Soviet publications.

The distribution of the iron and steel industry is partly based on historical development and partly on Soviet policy. Historically, the Tula area to the south of Moskva (Center) was the first to be developed. Later on, the Urals and the Ukrainian mines were opened. At present, the Ukraine accounts for 52 percent of Soviet *iron ore production*, most of which is from the Krivoy Rog deposits in Zaporozhskaya Oblast (Donetsko-Dneper economic region). The Sverdlovskaya and Chelyabinskaya Oblasts contribute to the Urals ranking second with 34 percent, and Kemerovskaya Oblast helps make west Siberia third with 7 percent.

Steel production is more widespread, partly as a result of the Soviet policy of the Stalin period promoting regional self-sufficiency. Here, too, the Ukraine ranks as the most important with 40 percent, mainly from the major integrated steelworks at Donetsk (formerly Stalino), Makeyevka, Yenakiyev, Dnepropetrovsk, Dneprodzerzhinsk, and Krivoy Rog—all in the Donetsko-Dneper economic region. The Urals, with major integrated works at Nizhniy Tagil and Magnitogorsk, ranks second with 34 percent. The major integrated plant at Novokuznetsk (formerly Stalinsk) in Kemerovskaya Oblast contributes to west Siberia's position as the third largest steel producer with 8 percent. The Center, with specialized plants at Moskva and Elektrostal, is the fourth ranking with 5 percent. Smaller or specialized steel plants are located throughout the Urals and Donbass, as well as along the Volga.

The cost of iron and steel production varies considerably. Some of the variation is due to the quality of iron ore; some is the result of political and/or strategic location of the plants. The policy of self-sufficiency is largely responsible for the erection of the works at Komsomolsk-na-Amure in the Far East which is dependent partly or entirely on scrap. Other examples of "uneconomic" location of plants include Cherepovets in the northwest, far removed from both coking coal and iron ore, where the cost of pig iron in 1956 was three times as expensive as Magnitogorsk, and Rustavi in Georgia (Transcaucasus) where the cost was more than twice as expensive. The location of major plants in machine building and metal working centers, such as Leningrad, Novosibirsk, and Volgograd (formerly Stalingrad), however, is economically rational.

The discovery of new ore deposits in Kazakhstan and technological developments which make exploitation profitable in the Kursk deposits (Central Black Earth) foreshadow rapid increases in production in these areas. The Soviets have also been devoting considerable attention to developing a third metallurgical base in northeast Kazakhstan, southwest Siberia, and in east Siberia.

Data on the regional distribution of *nonferrous metallurgy* indicate that Kazakhstan, the Urals, and east Siberia are the major producers.³² Kazakhstan appears to lead in the production of copper (Dzhezkagan and Balkash), lead (Leninogorsk), zinc (Ust-Kamenogorsk), and silver and has large reserves of these ores and of aluminum. The Urals leads in the production of aluminum (Krasnoturinsk and

³¹ See above, fr. 28.

³² Cole and German, "A Geography of the U.S.S.R.," pp. 129-131.

Kamensk-Uralskiy) and in the processing of ores or concentrates received from other regions, such as copper (Krasnouralsk and Revda). Siberia is the largest producer of gold, tin, nickel and cobalt (Norilsk), of industrial diamonds (Yakutia), and is a large producer of aluminum (Novokuznetsk). Of lesser importance are the aluminum and nickel deposits in Murmanskaya Oblast (northwest), the copper, lead, zinc, and aluminum ores in the North Caucasus and Transcaucasia, and the contributions of West Siberia, the Far East and central Asian economic regions. With the exception of the major aluminum processing plant at Zaporozhye (Donetsko-Dneper region), little if any significant exploitation of nonferrous metal deposits or processing of ores, other than those already indicated, occurs in the European part of the U.S.S.R.

3. *Chemical industry.*—The main sectors of the Soviet chemical industry are mineral fertilizers of various kinds, acids, soda, and synthetics. The chemical industry has 4.9 percent of Soviet industrial capital.³³ Unfortunately, the Soviets publish distribution data only for mineral fertilizers as a whole, and for soda.³⁴ Although statistical data on other products are unavailable, it is possible from textual materials to derive an impression of their distributional pattern.

The production of Soviet chemical industry is market oriented and is, therefore, located adjacent to larger industrial complexes or to major agricultural regions. Of the total production of mineral fertilizers, 52 percent is located in the R.S.F.S.R. The Urals, mainly Permskaya Oblast, accounted for 25 percent, and the center, especially Moskovskaya Oblast, for 17 percent. The Ukraine produced 28 percent of all mineral fertilizers, including 18 percent in the Donetsko-Dneper region. Uzbekistan with 8 percent and the west (Estonia and Latvia) with its 5 percent, rank third and fourth, respectively. Fertilizer production in the Urals is based on the potash and coal deposits in Permskaya Oblast and major production centers are Berezniki (nitrogen) and Solikamsk (potash). The apatite ores from Murmanskaya Oblast supply the superphosphate plants in the European part of the R.S.F.S.R. and the Ukraine, including the plants at Leningrad (Northwest), Riga (West), Konstantinovka (Donetsko-Dneper), Odessa, Vinnitsa, and Sumy (Southwest), and Voskressensk (Center). The Central Asian superphosphate plants at Aktyubinsk, Kokand, Samarkand, and Dzhabul work on raw material from Karatau and on metallurgical byproducts. Calcium and caustic soda production is concentrated in the Urals on the basis of Solikamsk-Berezniki deposits and accounts for 41 percent of the national output. The Ukraine, mainly the Donetsko-Dneper region, produces 52 percent of the national output.

Major sulfuric acid centers are located at Konstantinovka (Donetsko-Dneper), Odessa (South), Leningrad (Northwest) Berezniki (Urals), and Voskressensk and Novomoskovsk, formerly Stalinogorsk (Center). Artificial fibers and the alkaline dye industries are concentrated in the Center, particularly in the Moskva environs and Ivanovskaya Oblast. Synthetic rubber production is also important in the Center; synthetic tires are produced in Yerevan, capital of Armenia, Yaroslavl (Center), and Voronezh (Central Black Earth). Plastics production is found in the cities near Moskva, Leningrad, and in the

³³ Narodnoye Khozyaystvo v S.S.S.R. v 1960, p. 87.

³⁴ *Ibid.*, p. 280; Promyshlennost S.S.S.R., pp. 193-195.

Urals. The as yet underdeveloped petrochemical industry is located mainly in the Urals.

Expansion of the chemical industry is a priority target in the current plan. Difficulties in meeting plan commitments have occurred for, among other reasons, it is capital intensive and requires an investment of considerable technological skills. Expansion can be expected to take place, however, largely in the existing centers and in West Siberia.

4. *Machine building and metalworking industry.*—With 5.7 million workers and 20.3 percent of invested capital, the machine building and metalworking industries constitute the single most important branch of industry in the Soviet Union.³⁵ The locational pattern of these industries is varied: heavy machine building tends to be concentrated in the main mining and metallurgical areas; machine tools, and particularly precision equipment, in the older industrial areas where skilled labor is plentiful; transport machine building is widespread, depending on the type of transport involved; agricultural equipment, mainly in the agricultural areas, and partly in the metalworking areas; and energy producing machines are produced in a limited number of centers located primarily in the older economic areas.

Perhaps indicative of the distribution of heavy machine building is the territorial dispersion of the production of forge and pressing machines. The R. S. F. S. R. produces some 70 percent of total, including 16 percent in the Urals, 11 percent in the Center and North Caucasus, and 9 to 10 percent in the Northwest and Central Black Earth. Heavy equipment is produced at Sverdlovsk and Orsk (Urals) for much of the industrial expansion in the Urals and Kazakhstan. The Donetsko-Dneper region, particularly at Novokramatorsk, Gorlovka, and Kharkov produces metallurgical and mining equipment in large quantities. Leningrad (Northwest) and Krasnoyarsk and Irkutsk (East Siberia) are also manufacturers of heavy machines. Coal-mining machinery production is concentrated in coal-extraction regions, as is the case with lumbering and petroleum extraction and processing equipment. Textile machinery is produced almost entirely in the Center, the major textile complex.

Machine-tool production is fairly widespread in scope, but relatively few regions can be classed as major producers. Foremost among these is the Center (Moskva and its environs) with more than 20 percent of the national total of metal-cutting tools. Kharkov (Donetsko-Dneper) and Kiyev (southwest) are major contributors to the Ukrainian total of 13 percent. Chelyabinsk and a host of other Ural industrial centers produce some 12 percent. Minsk the major source of Belorussia's 11 percent; Rostov of the North Caucasus's 9 percent; and Kaunas of Lithuania's 6 percent. Leningrad, Gorkiy (Volgo-Vyatka), Kuybyshev (Volga), and Novosibirsk (East Siberia) are also important individual producers.

The distribution of transport machine building varies according to type. The shipbuilding industry is located primarily in the coastal regions with the largest centers at Leningrad and Murmansk (Northwest), Nikolayevsk (South), and Komsomolsk (Far East). Some important naval construction is carried on along the Volga River: at Sormovo (Volgo-Vyatka), Rybinsk (Center), and Krasnoarmeysk (Volga). Locomotives are produced almost entirely in the Center, Donetsko-Dneper, and North Caucasus. Diesels are manufactured

³⁵ See above, footnote 28.

at Kolomna and Bryansk (Center) and at Kharkov and Lugansk (Donetsko-Dneper). Electric locomotives are produced mainly at Novocheerkassk (North Caucasus) and Moskva. Manufacture of rolling stock is widespread. Automotive production is concentrated mainly in the Center (Moskva and Yaroslavl), the Volga-Vyatka (Gorkiy), and in Belorussia (Minsk). Other plants have been established since the war in several areas, but their share in national output remains small. Aircraft production data is nonexistent. However, in view of the known wartime evacuation, it would appear that the Volga (Kuybyshev) and Urals are at least as important as the older complexes in the Center, Northwest, and Transcaucasia.³⁶

All three Ukrainian economic regions are producers of agricultural machinery. The most important centers are Kharkov (tractors), Zaporozhye, Kirovograd, Kherson, Odessa, and Berdyansk. Rostovna-Donu in the North Caucasus is a major producer of combines, mowers, hayers, rakes, and plows. Volgograd in the Volga region and Chelyabinsk in the Urals are major centers of tractor production; and Pavlodar, in Kazakhstan, of combines. Other important agricultural machine-building centers include Lyubertsy and Kamensk (Center), Perm (Urals), Rubtsovsk (West Siberia), Tselinograd (Kazakhstan), and Tashkent and Chirchik (Uzbekistan).

Moskva and Leningrad are the manufacturing centers for electric motors and generating equipment. Other principal producers of power machinery include Riga, Kharkov, Kuybyshev, and Sverdlovsk.

Since few of the projects listed for completion in the 7-year plan fall within the machine-building and metalworking industrial categories, the planned doubling of national production will probably occur at existing plants. Western observers have commented that there is considerable room for increased productivity and that automation could materially assist Soviet activities in these fields.

5. *Construction materials industry.*—The Soviet construction materials industry, including lumbering, employs about 1.5 million workers and has about 10 percent of invested capital.³⁷ Given the extensive construction program, the importance of this branch is self-evident. Lumber is still widely used, although the use of bricks and concrete, especially reinforced concrete panels, is increasing rapidly.

This being a nonsensitive sector of the economy, the Soviets have published data on the regional distribution of a wide variety of lumber products, and on the production of cement and wall structural materials. The R.S.F.S.R. with its vast forests is preeminent in the production of *commercial lumber*. Its 92 percent of national production is distributed as follows: Northwest, principally Arkhangelskaya Oblast and Karelskaya A.S.S.R., 27 percent; Urals, particularly Tyumenskaya Oblast, 20 percent; East Siberia, 14 percent; and the Volgo-Vyatka, mainly Kirovskaya Oblast, 10 percent. Lumber extraction is a major industry elsewhere in Siberia, but its contribution is smaller than in the European north; outside the R.S.F.S.R., the only significant areas are in the Carpathian Mountains in the Ukrainian southwestern economic region and in Byelorussia.

The R.S.F.S.R. is also the major producer of *cement* with 65 percent of the national total. Since cement production tends to be distributed according to urban population, the major producers by economic

³⁶ Cole, "A Geography of the U.S.S.R.," p. 135.

³⁷ See above, footnote. 28.

region are the Urals (14 percent), Donetsko-Dneper (13 percent), Center (12 percent), and the Volga (9 percent). The production of wall materials, expressed in terms of standard bricks, is even more closely related to population. The Center is the largest single producer with 14 percent, including a substantial share of reinforced concrete wall panels. The Donetsko-Dneper with 9 percent, the Southwest with 8 percent, and the Urals with 7 percent, are the other major producers.

The lack of significant deposits of construction stone west of the Urals, except in the Karelskaya A.S.S.R. (Northwest), does much to explain the inadequacy of the Soviet road network.

6. *Consumer goods industry.*—Soviet consumer goods or “light” industry is also a nonpriority sector, despite the fact that it employs some 3.4 million workers and has 4.5 percent of the invested capital.³⁸ As a result, the Soviets publish a great deal of quantitative information on the regional production of such categories of consumer goods as textiles. Qualitative information, even on textiles, is wholly absent and must be obtained either through personnel observation or through reading of isolated cases of critical commentary in the Soviet press. Neither are consumption data published on any categories of consumer goods; and regional production of consumer durables is also notably absent.

The textile industry is one of the most highly concentrated of all branches of Soviet industry with the Center producing 77 percent of the principal fabric, cotton, 57 percent of all wool fabrics, and 70 percent of linen cloth. The textile industry is neither raw material oriented, for example, cotton is produced almost entirely in Central Asia several thousand miles distant, nor is it market oriented, for the Center contains only some 12 percent of the population. The concentration is almost wholly a result of historical development in Ivanovskaya and Moskovskaya Oblasts, which generations ago did represent a greater concentration of population, electric power, and skilled labor. Other significant producers of textiles include Central Asia, particularly Uzbekistan (5 percent of cotton fabric), the Volga (8 percent of wool fabric), and the Northwest, mainly Leningrad city (5 percent of wool fabric).

The production of leather shoes in the Soviet Union is not so highly concentrated. The R.S.F.S.R. is still the major producer with 58 percent of the national total. The distribution by economic regions shows the Center with 16 percent, the Northwest with 10, and the Ukrainian Southwest and the Urals with 9 apiece. Rubber footwear is more highly concentrated than leather. About half the total comes from Leningrad, and approximately 25 percent from the Center. West Siberia is the only other sizable producer.

Despite the significant rise in consumer durable output in recent years, the quantity and quality leaves the Soviet citizens largely unsated. As mentioned above, regional production data, much less consumption figures, are not published by the Soviets.

7. *Food products industry.*—In order to feed its large population, the Soviets employ 1.8 million workers in the food processing industry and have allocated to this branch of the economy 9.1 percent of invested capital.³⁹ Despite these significant inputs, the food pro-

³⁸ Ibid.

³⁹ Ibid.

cessing industry is not noted for either its quality (Soviet butchers have been unfavorably compared to apprentice carpenters in this country), nor for its productivity. The much heralded campaign inaugurated by Khrushchev to catch up and surpass the United States in the per capita production of meat and dairy products has not been achieved nor is it likely to be achieved in the foreseeable future. Among the many problems it faced was the irrational Soviet pricing system which—despite the prestige campaign—continued to penalize farmers for meat production by setting procurement prices only two-thirds of the production cost per hundredweight.

The meatpacking industry is located primarily in the R.S.F.S.R. (55 percent), the Ukraine (21 percent), and in Kazakhstan (6 percent). Production should increase in the latter as it becomes more evident that the area is better suited to grazing, for example, than to wheat farming. The distribution of meatpacking by economic region is fairly widespread with the center at 10 percent slightly the largest producer. It is closely followed by the Dneper-Donetsk and the North Caucasus with 9 percent and the Urals at 8 percent. The largest single plants are at Moskva, Leningrad, Semipalatinsk (Kazakhstan), Engels (Volga), and Baku. Beef is still the largest category, but pork production is growing rapidly and now accounts for more than one-third of total output.

The 3.5 million metric ton fish products constitute important item in the Soviet diet. Fish processing is highly concentrated in the littoral economic regions. The northwestern oblasts of Murmansk and Arkhangelsk provide about 30 percent of the total fish catch; the Far Eastern Kamchatskaya Oblast and Primorskiy Kray supply about 24 percent; and the western republics of Latvia, Lithuania, and Estonia about 10 percent. The Caspian Sea, famous for its caviar production, share of the national catch has been falling almost as rapidly as the level of the sea itself; the Volga economic region oblast of Astrakhan now provides about 15 percent of the total.⁴⁰ The importance of ocean fishing fleets has risen just as rapidly and they now provide about two-thirds of the catch.

The Southwest Ukraine, North Caucasus, Volga, and Central Black earth regions are both the principal grain-growing areas and flour-milling centers. Sugarbeet processing is located primarily in the Ukraine (about 60 percent) with the Southwest the major economic region, followed by the upper reaches of the Donetsko-Dnieper. The Central Black Earth, Byelorussia, and the western republics are also major producers. The Ukrainian Southwest, Central Asia, and the North Caucasus are the major vegetable oil processing areas.⁴¹

The Soviet canning industry is widely distributed among the economic regions. The north Caucasus is the largest single producer with 17 percent, the Ukrainian south (11 percent) and Southwest (9 percent), and little Moldavia (8 percent). Aside from the production of wines, Moldavian industry is geared largely to the canning of fruits. Its per capita production is almost six times the national average.

⁴⁰ Cole, "A Geography of the U.S.S.R.," p. 147. The percentages are for 1956 fish catch.

⁴¹ *Ibid.*, pp. 147-148.

D. Distribution of industry by economic regions and union republics

The following tables present statistical data on the territory and population, general industrial data, total capital investment, and on the production of selected industrial products by each of the 17 economic regions and 15 union republics. The tables are ordered on the basis of Soviet listings: RSFSR; economic regions of the RSFSR; the Ukraine; economic regions of the Ukraine; the west; union republics of the West; the Transcaucasus; union republics of the Transcaucasus; central Asia; union republics of Central Asia; Kazakhstan; Byelorussia; and Moldavia.

(For tables showing geographic distribution by republic see *Statistical Appendix (Industry)*).

ADDENDUM

In his recent address before the Central Committee of the Party, delivered on November 19, 1962, Khrushchev outlined several sweeping proposals for reorganizing the administration of the industrial and agricultural activity in the U.S.S.R. These proposals, which came some days after the completion of the above report, represent a familiar type of response on the part of the high command of the Soviet bureaucracy to its self-generated problems—reorganization. It may be assumed, therefore, that the beneficial effects induced by the streamlining of the industrial management in 1957 have run their course and the time has come around for another major bureaucratic reshuffling of executives and responsibilities.

The essence of Khrushchev's proposals, as far as industry is concerned, is a substantial tightening of the system of direct supervision and control by the Party apparatus over the Soviet economy. The Party apparatus is now placed in the direct line of control over the industrial complex. The expected net effect is to recentralize the process of decisionmaking, accompanied by a vague instruction to the local authorities to encourage the "development of democracy in the management of enterprises." At the present writing, specific lines of control over the production units are unclear, inasmuch as the proposals call for an expansion of both the Party and Government bureaucracies.

On all levels, according to the new proposals, the Party and Government apparatus are to be split into two parts, one dealing with industry and the other elements of the urban economy; the other with agriculture. The split will be most sharply defined at the republic and oblast levels where two separate sets of agencies will coexist. There will be relatively little change at the national level: the Presidium of the Party and its counterpart in the Council of Ministers will continue to make all significant, and many of what we consider insignificant, decisions. A new agency, the USSR Council of the National Economy (*Sovmarkhoz U.S.S.R.*), has been established. The U.S.S.R. Gosplan and Gosekonomsovet are to be abolished per se, but a new Central Planning Committee is being established to coordinate the national economic plans on the basis of a series of primary plans formulated initially by the various republic agencies.

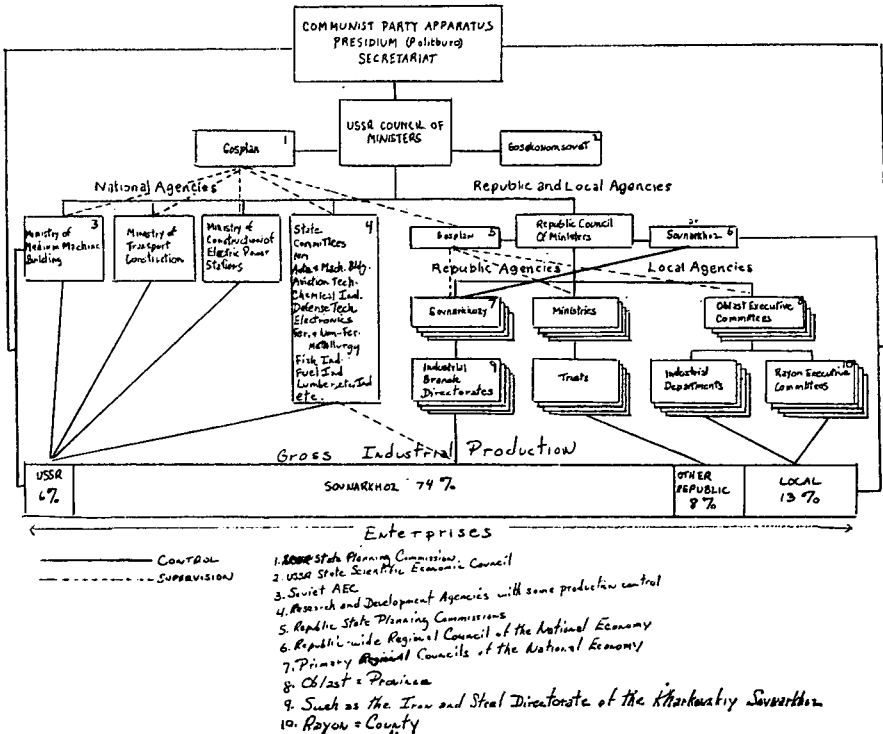
In addition, the number of primary *sovmarkhozy* is to be reduced, from over a hundred to less than 50. Also called for are new admin-

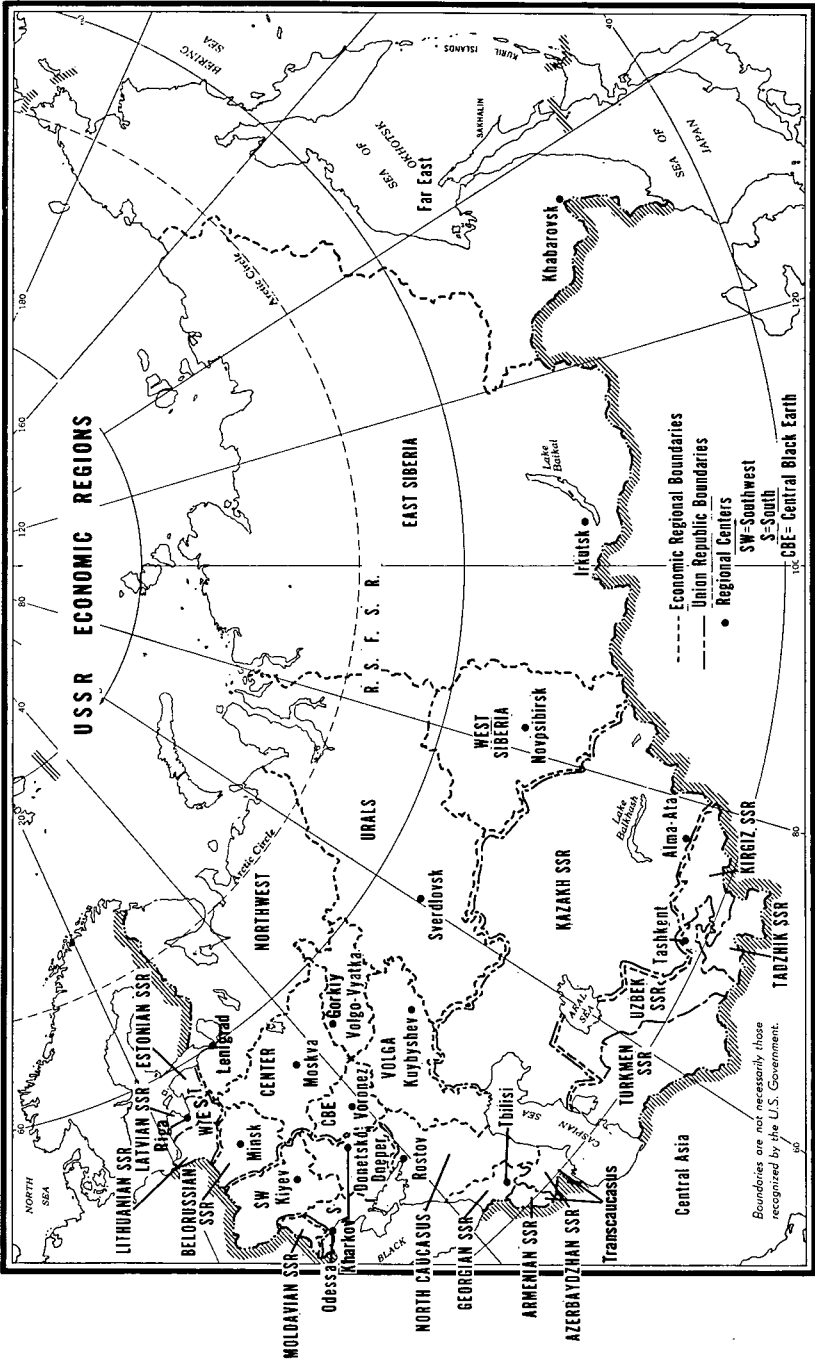
istrative organizations for control over the larger regions, such as the four Central Asian republics.

Finally, the new proposals call for the reintroduction of a joint Party-Government control agency to check on implementation of directives flowing from the center. In practice, this means the merger of the Party Control Commission and the State Control Commission. Such a merger represents, in the opinion of some observers, a potential threat to personnel at all echelons of the administrative apparatus, because it was precisely such a body that evolved into an effective purge mechanism under Stalin.

At this time, quite understandably, no accurate appraisal of the meaning and effect of the new organizational structure can be made. What does appear to be quite clear is that the general principles of administrative control over industry by the political authorities at the center remain unchanged. Only the instrumentalities of control have been affected. It is equally self-evident that the new administrative proposals do not go far enough to meet the critical need for a more efficient exploitation of the strained resources of the Soviet economy on the basis of a better knowledge of local conditions. They constitute yet another attempt to discover some magic administrative formula for the effective exploitation of the country's economic potential through a bureaucratic reshuffling of responsibilities and an augmented control mechanism.

Organization of USSR Industrial Administration





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THE SOVIET ECONOMY IN 1961
PLAN, PERFORMANCE, AND PRIORITIES

BY

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THE SOVIET ECONOMY IN 1961

PLAN, PERFORMANCE, AND PRIORITIES

GENERAL SUMMARY

This paper compares the performance of the Soviet economy in 1961, as reflected in official Soviet statistics, with the goals for that year laid down before the year began. One purpose of the paper is to demonstrate one of the methods of analysis employed by those who must follow developments in the Soviet economy and interpret their meaning. Open, readily accessible Soviet sources are used throughout. Soviet statistics, though often ambiguous and misleading, are not thought to be outright falsifications in most cases. Thus the use of Soviet statistics is held justified.

The value in comparing plan and performance, as is done in this paper, lies not merely in seeing how well or how poorly the Soviet economy fared in terms of previously stated goals, but also in gaining insights into Soviet economic priorities and changes in those priorities. Official statements by Soviet authorities on economic policy and performance are useful, but their validity must be checked against the statistics.

The paper is not intended merely as an illustration of analytical technique. Economic developments in the U.S.S.R. in 1961 were important and worth exploring in their own right. The party line on economic policy was constantly shifting, vague, contradictory, and confusing. The need to examine statistical evidence is thus particularly strong for 1961.

The following generalizations about 1961 can be made on the strength of the statistical information the Soviets have released:

Industrial production continued to advance in impressive fashion, but performance in agriculture was disappointing. The regime indicated that it would pursue a vigorous campaign to boost agricultural output and there is, in fact, some evidence of an upgrading in agriculture's priority. But the elevation of priority was not very marked, as is attested by the rather low rate of increase in total agricultural investment.

Homebuilding for the second straight year lagged far behind the goals set for it, a strong indication that satisfaction of consumer needs and desires continues to occupy its customary low rung on the Soviet priorities ladder. Soviet authorities acknowledge the severity of the housing shortage and insist that residential construction remains a priority sector. The statistics, however, strongly imply that housing has lost priority status.

The fact that production of consumers' goods continued to increase at a much lower rate than production of producers' goods likewise attests to the secondary position of the consumer in Kremlin thinking.

There was evidence, however, that, as between increasing productive capacity and promoting growth on the one hand, and building up

military power on the other, the Soviets gave greater emphasis to the latter in 1961. The targets for planned state investment were not fulfilled in 1961 and the rate of increase in total state investment slowed markedly. Large investment shortfalls took place not only in sectors of direct interest to the consumer but in key heavy industries also. The regime probably would not have allowed this to happen unless it felt diversion of resources from the investment sector was necessitated by military needs. Khrushchev declared in mid-1961 that Soviet defense spending would be sharply increased above initial plans. The investment statistics indicate that some increase did, in fact, take place.

INTRODUCTION

The Soviet economy is at all times and on all levels operating according to a plan of some sort. The plans may be for periods as short as a few days for units as small as a shop in a factory—or as long as for 20 years for the national economy as a whole. (How realistic a plan stretching 20 years into the future is will not be discussed here, but specific output goals for 1980 have already been announced.) In the present paper we will closely examine the annual plan for the U.S.S.R. in 1961, comparing the performance of the economy as reflected in the results published since the end of the year with the goals for 1961, comparing the performance of the economy as reflected in the results published since the end of the year with the goals for 1961 published at the end of 1960. All of the economic data analyzed comes from readily available Soviet sources—the central press (*Pravda* and *Izvestia*) and standard statistical handbooks.¹ The purpose of this exercise is twofold: First, to illustrate the type of analysis engaged in by those who must follow current developments in the Soviet economy; second, to interpret the meaning of those developments, which in 1961 were of particular importance and interest and thus worth exploring for their own sake.

We will discuss only briefly at this point why we consider official published Soviet statistics sufficiently reliable to justify an analysis of the sort we will undertake. The question of the validity of such statistics has been looked into many times and we will not cover this ground again. Western students of the Soviet economy generally agree that published Soviet physical output statistics are only rarely outright falsifications. For the most part such figures accurately represent or attempt to accurately represent, *some* reality. The trick is to know *what* reality. When Soviet statistics are misleading

¹ The main sources for goals were the reports to the Supreme Soviet of the U.S.S.R. (Parliament) in December 1960 by the Chief of Gosplan (State Planning Commission) on output targets and by the Finance Minister on the 1961 state budget. Such reports are standard, though in December 1958—on the eve of the first year of the 7-year plan (1959-65)—only a budget report was presented. (In this paper we will not undertake an analysis of the budget, though financial data—particularly with regard to investment—will be utilized.) The published reports do not reveal the entire plan or give a detailed breakdown of projected budget expenditures. In the case of the output plan, only a handful of targets for some of the more important items for various sectors of the economy—industry, agriculture, transportation, etc.—are disclosed.

The principal source for results was the plan fulfillment report of the Central Statistical Administration attached to the Council of Ministers of the U.S.S.R. published in January 1962. Such reports are customarily released before the end of January.

The plan and budget reports appeared in *Pravda*, Dec. 21, 1960, and the fulfillment report in *Pravda*, Jan. 23, 1962. These sources are cited hereafter only in listing sources for tables.

A later source, the annual handbook, "The U.S.S.R. in Figures for 1961," was also drawn on yearly. It is cited every time it is used. The major source of annual economic statistics, the statistical yearbook, "The U.S.S.R. National Economy," had not become available when this paper was written.

it is not usually because they are fabrications but because of ambiguities about what they refer to.²

Actually, deliberate falsification is probably most prevalent not in the statistics the U.S.S.R. central authorities make public, but in the reports made to these authorities by subordinate levels of the economy. The careers of managers of producing enterprises depend largely on the fulfillment of goals set for them by their superiors. The pressure to distort and falsify accounts of their enterprises performance is thus often irresistible. However, the fact that the central authorities do constantly report failures to meet goals—discrepancies between goals and performance is the heart of this paper—indicates that limits exist to the amount of fabrication possible. Furthermore, one can cite a number of specific forces which prevent managerial falsification from getting totally out of hand.³

It should be clearly understood that Soviet statistics in the form of abstract magnitudes—though useful for certain purposes—are not generally considered “valid.” Specifically, we have in mind Soviet production indexes which show changes in aggregates such as industrial output. There is no question but that such indexes are so built as to insure the registering of high Soviet growth rates. For example, all published independent Western estimates of Soviet industrial growth yield lower growth rates than those in the official Soviet index. But the discrepancies do not stem from the falsification of raw data; all of these indexes are derived from official Soviet output statistics. The variations can be traced to such points as what data were included, how they were weighted, etc. Indexes can be rated according to relevance and soundness of construction, but they cannot be labeled “true” or “false.”

THE SHIFTING PARTY LINE IN 1961

What can be gained from comparing results with goals? Sketchy and incomplete as the data may be, such a comparison gives some indication of how well or how poorly the Soviet economy fared in 1961 in terms of the goals the planners set for it. Furthermore, it yields insight into Soviet economic priorities. In many instances, for example, underfulfillment is a good indication of what goals were considered expendable when it became apparent that not all goals could be met and thus identifies those sectors or areas of economic activity that are of relatively minor importance in the Kremlin's plans. Moreover, deviations of final results from initial goals can give clues to possible changes in priorities over the time period being considered.

The purpose in seeking to ascertain economic priorities is to determine or deduce the policies that underlie the priorities—to determine the direction in which Soviet planners intend to steer the economy and the goals they wish the economy to serve. Specifically, it is hoped that some idea can be gained of the relative weights, and of changes in the weights, Soviet planners assign to programs to provide immediate benefits to the consumer, foster economic growth, and bolster military strength.

² For example, see Grossman, Gregory, “Soviet Statistics of Physical Output of Industrial Commodities,” a study by the National Bureau of Economic Research, Princeton, N.J.: Princeton University Press, 1960, pp. 108-111. These pages give a very revealing description of how the Soviets over a 10-year period showed shoe production in the most favorable, or the least favorable, light by the careful selection of the data it made public and by evidently deliberate ambiguity as to the definition and content of various footwear-output categories.

³ *Ibid.*, see ch. 5, particularly pp. 85-99.

The need to explore statistical evidence is particularly strong in attempting to determine priorities and policies in 1961. This is true because of the unstable, often vague character of the party line over the year. Most official pronouncements on economic matters during the first half of 1961 conveyed the impression that the Soviet leadership had at last decided it could give the Soviet consumer a place in the sun. The January party central committee meeting had been largely devoted to a merciless dissection of shortcomings in agriculture. At the meeting and in the months that followed concessions and incentives to spur agriculture output were announced, and assurances were given that investment in agriculture and in industries serving agriculture was to be increased beyond initial plans.⁴ In May one writer even went so far as to label agriculture "the most decisive branch of the economy."⁵

Khrushchev took the lead during these months in championing the cause of the consumer. He stressed that a surge in increasing consumers' goods output could and should take place here and now. Soviet industry and defense capabilities had become so powerful, the line ran, that vast amounts of resources could now be invested in consumer sectors without jeopardizing economic development or national security.

The highwater mark of the verbal tide promising economic changes of great benefit to the consumer seems to have been reached in May when Khrushchev told a British trade delegation that henceforth light and heavy industry would grow at equal rates. This was a striking departure from Soviet doctrine, which had long held that economic growth and national security depended on "the priority growth of heavy industry." Khrushchev held that a mighty heavy industry had now been built and that the necessity for its speedier growth had disappeared.⁶

Significantly, Khrushchev's statement on the equality of growth rates was never released inside the U.S.S.R.; and Khrushchev himself was singing a very different, far more martial tune less than 2 months later. On July 8, responding to U.S. plans to increase defense spending, he announced that the U.S.S.R. would increase *its* defense spending by 3.144 billion rubles, a 34-percent increase over the original 9.260 billion rubles budgeted for the military.⁷ At the official rate of exchange of 1 ruble to \$1.11 this is equal to roughly \$3.5 billion. However, price ratios for defense goods are thought to be far more favorable to the Soviets, and the increase in dollar terms was on the order of \$8 billion.

Further suspicions that proponents of a strongly consumer-oriented economic policy had retreated were aroused by the draft party program published at the end of July. The program, which set forth in hazy fashion the guidelines for establishing by 1960 what is called "the material technical base of communism," avoided the question of relative growth rates of heavy and light industry, but did imply that heavy industry would retain its primacy. Moreover, though promising that an era of abundance was near at hand, it phrased its promises in language more moderate and cautious than Khrushchev had used

⁴ Pravda, Jan. 20, 1961, and "Finansii SSSR," No. 2, 1961, pp. 6-7.

⁵ Pravda, May 23, 1961.

⁶ New York Times, May 21, 1961.

⁷ Pravda, July 9, 1961.

earlier in the year in pressing for more generous allocation of resources to consumer sectors.⁸

Confirmation that the party line had resumed a conservative direction was provided at the 22d Party Congress in October 1961. Though the party program was approved by the Congress with few changes and thus remained as ambiguous as ever,⁹ Khrushchev discolled that the 20-year plan called for producers' goods to grow at a faster rate than consumers' goods.¹⁰ (Heavy and light industries are not identical with producers' goods and consumers' goods, respectively, but the correspondence is close. The Soviets appear to use the terms interchangeably much of the time.) The reaffirmation of heavy industry's primacy (which Khrushchev himself had called into question a few months before) was tempered, however, by the statement that heavy industry output allocated to sectors directly serving the consumer would grow more rapidly than heavy industry production ticketed for plants manufacturing producers' goods. Thus the resolution of the evident controversy over what stand the party should take on the critical issue of growth rates of heavy and light industry bore all the earmarks of a compromise between liberal and conservative factions.

Clearly the perplexing changes in the 1961 party line on priorities raise a host of questions: e.g., Did the U.S.S.R. really increase defense spending above original plans? Did the regime significantly increase the resources devoted to agriculture, or did it back away from its early promises to intensify its agricultural effort? The best way to gain clues that will make it possible to formulate answers is to look at the statistics.

AGRICULTURE

The Soviet leadership in 1961 offered the Soviet people visions of a glorious economic future, promising that the "material-technical base of communism" would be completed by 1980 and an era of abundance entered long before that. The economic present, however, was on the disappointing side in 1961. The main reason, ironically, was the failure of agriculture to reach the targets set for it. Given the fundamental importance of farm output to the standard of living, the disclosures of painful shortcomings in agriculture give the regime's assurances that unprecedented prosperity lies not very far around the corner a distinctly hollow ring. Agriculture is the sector to be examined first.

The grain harvest in 1961 totaled 137.3 million tons,¹¹ a 2.2-percent increase over 1960, but substantially below the 1961 goal of 154 million tons called for by the 7-year plan.¹² (The 1961 goal was disclosed by Khrushchev in March 1962 and apparently is the goal set for 1961 when the 7-year plan, covering 1959-65, was formulated in 1958. No grain goal was announced in the annual plan targets released at the end of 1960, though Gosplan Chief Novikov (since replaced) did declare then that the regime's goal was to surpass the record 1958 grain harvest of 141.2 million tons in 1961.)

The most spectacular failures within agriculture occurred in livestock products. This is brought out in table 1.

⁸ *Izvestia*, July 30, 1961.

⁹ *Pravda*, Nov. 2, 1961.

¹⁰ *Izvestia*, Oct. 19, 1961.

¹¹ "Tons" throughout this paper means "metric tons." One metric ton equals about 2,200 pounds.

¹² *Izvestia*, Mar. 6, 1962.

TABLE 1.—*Production of livestock products*

Product	1960	1961	Change	
			Actual	Original goal
Milk, thousands of tons.....	61, 718	62, 518	1. 3	13
Eggs, millions of units.....	27, 463	28, 963	5. 5	13
Meat, thousands of tons, dead weight.....	8, 635	8, 800	1. 3	18

Sources: *Izvestia*, Mar. 6, 1962. *Pravda*, Dec. 21, 1960. "Narodnoe Khozyaystvo SSSR v 1960 Godu," pp. 464, 467, 468.

Not only in terms of 1961 goals but also in the light of the 7-year plan targets, 1961 was one of frustration for Soviet agriculture. The 7-year plan goals require Soviet grain harvests to increase at a rate of 2.2 percent a year over the record 1958 harvest in order to meet the lower limit of the 1965 goal.¹³ Yet 1961 was the third straight year in which the grain harvest failed to reach the 1958 total, much less draw near the 1965 target.

As for livestock products, meat production was increasing at rates far below those required to meet the 1965 goal of 16 million tons. Milk output, too, has been growing since 1958 at rates far below those required to meet the 1965 target of 100 to 105 million tons. Eggs, on the other hand, have been increasing since 1958 at an average annual rate above that required to meet the 1965 target of 37 billion eggs, despite the failure to meet the 1961 goal of a 13-percent increase over 1960.

Raw cotton output must be counted as another disappointment. It rose almost 5 percent in 1961 but this was below the 1959 total of 4.64 million tons and less than 4 percent above the 1958 harvest. Swift and steady rises will be necessary if the 1965 goal of 5.7 to 6.1 million tons is to be attained. The sugarbeet harvest was another debacle. It totalled 50.6 million tons,¹⁴ down 12 percent from 1960 instead of up 17 percent as called for by the plan.

It is difficult to draw conclusions about agriculture's position in the priority scheme from the shortfalls in agricultural output. Agriculture depends far more on the vagaries of nature than does industry. Failure to meet an agricultural goal does not necessarily indicate that priorities have been changed, nor is it necessarily even a reflection of priorities at all. That is, a short fall in agriculture does not mean that, in the face of the certainty that not all goals can be met, it has been decided to jettison, or lower the agricultural goal to insure the meeting of other obligations. Underfulfillment in agriculture may simply indicate that expectations about weather or soil fertility or some such natural factor were too sanguine. Regardless of the priority, high, low, or medium, assigned to the given agricultural commodity, there is, in the short run, little one can do to rectify incorrect forecasts or assumptions about natural conditions. Thus one must look elsewhere than farm production figures to gage agriculture's priority.

The regime adopted measures last year indicating a stepped up program to invigorate agriculture. The Government-party decree that was issued at the conclusion of the party central committee

¹³ The 7-Year Plan approved by the 21st Party Congress can be found, among other places, in *Izvestia*, Feb. 8, 1959.

¹⁴ "SSSR v Tsifrah v 1961 godu," p. 179.

meeting in January 1961 called for increased production of goods and materials required by agriculture, and likewise ordered undertaking of irrigation work on a greatly expanded scale.

Prices of many goods Soviet farmers buy were lowered. Moreover, a number of financial concessions were made to the farmers. Taxes on income from sales of livestock products were reduced, credits to collective farmers were to be made more easily available, and the period for debt repayment to the State Bank by collective farmers was lengthened. The official Soviet estimate was that these various measures would result in savings to the farmer of almost 1 billion rubles.¹⁵

Some of the 1961 industrial production statistics likewise imply a higher priority status for agriculture. For example, almost a billion rubles of agricultural machinery was produced, allegedly a 28-percent increase over 1960. (The claimed increase cannot be verified because no 1960 figure is available.) The goal for 1961 had been a 24-percent rise.

Other statistics, however, do not support claims of a sharp rise in agriculture's priority. Considering the emphasis on higher yields per unit of land as the key to greater farm output, developments in mineral fertilizer production are a good barometer of that priority. Output of that critical commodity increased 10 percent in 1961 but the total volume of output of 15.3 million tons nevertheless reflects disappointing progress. The 7-year plan calls for nearly a threefold increase in fertilizer production by 1965,¹⁶ as compared with 1958 when output totaled 12.4 million tons.¹⁷ If a crash program in fertilizer production is underway, the statistics don't show it.

Another sensitive indicator is the amount of agricultural investment. In 1961 such investment rose about 6 percent, to 6.6 billion rubles from 6.2 billion rubles in 1960. State investment increased to 3.7 billion in 1961 from 3.1 billion in 1960—a rise of almost 20 percent. This was the fastest rate of increase in state investment in any sector or industry in 1961. Investment by collective farms, on the other hand, fell for the second consecutive year. The 1961 figure was 2.9 billion rubles compared to 3.1 billion in 1960 and 3.5 billion in 1959.¹⁸ (Collective farms are not juridically part of the state sector of the economy and thus state agricultural and collective farm investment are treated separately in Soviet statistical reporting.)

How to treat these figures is a difficult matter. A case can be made that it is the state investment figures which are significant in illuminating agricultural priorities, with changes in collective farm investment largely irrelevant or likely to be misleading. One argument is that since collective farm investment—most of which is made from the collectives' own funds—is a function of collective farm income and since the latter varies with production of agricultural commodities, such investment reveals little about the importance the Kremlin attaches to agriculture at a given time.

Furthermore, the possibility exists that a drop in collective farm investment may reflect an effort by the regime to woo the collective farmers by allowing the farms to use a larger share of income for

¹⁵ See footnote 4 *supra*.

¹⁶ "Narodnoe khoziaistvo SSSR v 1960 godu, p. 210.

¹⁷ *Ibid.*, p. 278.

¹⁸ "SSSR v Tsitrah v 1961 godu," p. 297.

meeting current obligations and needs. Finally, the fact that the number of collective farms has been steadily declining, with many being converted to state farms,¹⁹ is correctly cited as an important reason for the drop in collective farm investment.

But a stronger case can be made for not restricting attention solely to state investment in making priority soundings. For one thing, if conversion of collectives to state farms artificially shrinks collective farm investment, it just as artificially swells the total for state investment. That is, part of the increase in state farm investment is a purely accounting phenomenon, with investment by converted farms being considered state, not collective farm investment, as was the case prior to conversion.

The contention that investment varies with collective farm income is not borne out by the figures of the last few years, for collective farm income has held very stable while investment has steadily fallen.²⁰

The argument that the regime may be allowing collective farm investment to drop in the absence of a corresponding decline in income in order to ease the burdens of the collectives has much cogency. But it still does not justify the conclusion that the magnitude of collective farm investment can be ignored in assessing priorities. A sharp rise in agricultural priority would almost certainly be accompanied, or signaled, by a substantial increase in the total amount of capital invested in all of agriculture. If the regime wants to channel a markedly expanded volume of resources into agriculture, it can do so. It does not have to choose between making life easier on the collective farms and greatly increasing agricultural investment. It can do both.

It thus seems logical to take total investment into account. Doing this makes it appear that the regime was unwilling to significantly increase the scale of resource allocation to agriculture in 1961. The 6-percent increase in total agricultural investment is roughly the same as the surprisingly low increase in total state investment in 1961. (See discussion of state investment below.) It is true that total agricultural investment increased at a higher rate in 1961 than in 1960, when it rose only 3 percent. But such upgrading of priority as this may indicate is very slight.²¹

¹⁹ *Ibid.*, pp. 200f.

²⁰ *Ibid.*, pp. 200f.

²¹ Unfortunately, it is not possible to compare actual agricultural investment totals with plan figures. For the sets of figures available refer to entirely different categories of investment. The 1961 plan listed a goal of 2.3 billion rubles of state investment in agriculture. However, this figure almost certainly refers to planned investment in productive facilities only, while the statistics on actual state investment for 1961 thus far published include planned and unplanned investment in both productive and so-called nonproductive facilities. Nonproductive facilities include residential housing and communal buildings such as theaters, schools, etc. The difference between planned and unplanned investment is explained below in the section on state capital investment.

The 1961 plan also listed 4.6 billion rubles as the goal for collective farm investment. It is obvious that this figure originated in a much broader definition of collective farm investment than is used in reporting the amounts actually spent. For it is inconceivable that the regime was contemplating an increase of nearly 50 percent in collective farm investment in 1961. The 4.6 billion ruble quantity probably included projected expenditures on such items as capital repairs and, in livestock, on "formation of the basic herd." Published statistics for actual annual collective farm investment exclude these outlays.

INDUSTRY

In general, Soviet industry continued to grow quickly and impressively in 1961. Total gross industrial production grew, according to the official statistics, 9.2 percent.²² However, rapid as growth in industrial output continues to be, the 1961 percentage increment was the lowest in the entire postwar period, and 1961 was the second straight year in which the rate of growth had decreased.²³ The increase was, to be sure, higher than that called for by the plan (8.8 percent). But in every year since the start of the 7-year plan the goal for industrial output has been overfulfilled, and it seems likely that the Soviets have been deliberately and consistently understating the goal for increase in industrial production.

One factor though prompts one to handle 1961's reported industrial output increment with particular care. Because of dismay over dishonest statistical reporting, the regime authorized prison sentences for willful distortion and padding of reports on production figures to higher bodies.²⁴ Thus the comparatively low increase in 1961 may conceivably have stemmed largely from more accurate reporting by factory managers and the like who were on notice that cozening one's superiors could be rewarded with incarceration.

Industrial production in the U.S.S.R. is divided into two broad categories—production of producers' goods (group A) and production of consumers' goods (group B). It is noteworthy that the goal for A was overfulfilled in 1961 but that for group B was not fulfilled. Group A had been slated to increase 9.5 percent but actually rose 10 percent. Group B's target and fulfillment rates were 6.9 and 6.6 percent, respectively. It is also significant that the gap between the two categories remained virtually unchanged. In 1960 producers' and consumers' goods output increased by 11 and 7 percent.²⁵ The year 1961, it should be noted, was marked by promises that in the future the gap between the growth rates of A and B would narrow, though A would retain its supremacy.

When one looks at specific sectors and commodities within industry, the picture is again impressive. But there were some surprising shortfalls, too. Table 2 gives actual production of, and original goals for, selected items.

²² In terming Soviet industrial growth impressive, we are making allowances for the exaggeration of the official Soviet index. Judging by the findings of most Western indexes of Soviet industrial production, the 1961 growth rate of the official index should probably be reduced by about 2 percentage points to provide a figure most Western economists would consider reasonable. However, even a 7-percent rate of growth deserves to be called impressive.

It should be noted also that we are less interested here in finding the best possible estimate of how fast the Soviet economy "actually" has been growing than in comparing plan and performance, changes in rate of change, and relationships in the rates of change in the two major components into which the Soviets divide industrial production. The official index can legitimately be used for these purposes.

²³ "Narodnoe Khoziaistvo SSSR v. No. 1960 godu," p. 223.

²⁴ Pravda, May 25, 1961.

²⁵ Pravda, Jan. 26, 1961.

TABLE 2.—*Production of selected commodities, 1961*

Item	1961 goal	Actual 1961 production
Pig iron (millions of tons).....	51.2	50.9
Steel (millions of tons).....	71.3	70.7
Rolled steel (millions of tons).....	55.3	55.2
Oil (millions of tons).....	164.0	166.0
Natural gas (billions of m ³).....	60.7	60.9
Electric energy (billions of kilowatt-hours).....	327.0	327.0
Cement (millions of tons).....	51.0	50.9

Source: Pravda, Jan. 23, 1962. Pravda, Dec. 21, 1960.

As may be seen from table 2, the pig iron, steel, and rolled-steel goals were not fulfilled, something that can be classified as a surprise in view of the importance attached to the ferrous metallurgy sector as one of the bellweathers of heavy industry. However, the under-fulfillment was slight and may be an indication of changes in the role of the plan rather than reflection of some things having gone wrong. Khrushchev himself declared in 1961 that emphasis on producing as much as possible of commodities such as steel, regardless of how such production meshed with overall plans, made no sense.²⁶ Criticizing those who failed to see this, Khrushchev made a strong plea for balanced development. The narrow margin between goal and fulfillment for the above-listed items may conceivably indicate that plans in key sectors are being viewed more as plans and less as minima to be exceeded by the largest amount possible.

It should be pointed out, too, that, unlike agriculture, industry seems well on the way to meeting its 7-year plan commitments for key commodities. In fact, Khrushchev announced at the 22d Party Congress in October 1961 that a number of 1965 goals had been raised. Table 3 lists the changes.

TABLE 3.—*Changes in 7-year plan goals announced in October 1961*

Commodity	Original 1965 goal	New 1965 goal
Pig iron (millions of tons).....	65-70	72-74
Steel (millions of tons).....	86-91	95-97
Rolled steel (millions of tons).....	65-70	73-74
Oil (millions of tons).....	230-240	(1)
Electric energy (billions of kilowatt-hours).....	500-520	(2)
Machine building and metalworking (billions of rubles).....	49	56-57

¹ More than 240.

² More than 520.

Source: Pravda, Oct. 18, 1961.

The raising of the goals for these basic commodities and for the vital machine-building and metalworking sector seemingly contradicts the view that more attention to harmonious development is supplanting the obsession with maximum output of certain virtually sacrosanct producers' goods. However, the goals may not have been raised as much as some of the planners desired. In announcing the upward revisions of the steel goal at the Congress, Khrushchev made the following comment:

²⁶ *Kommunist*, No. 1, 1961, p. 11.

Certain people proposed increasing the casting of steel up to 100 million tons a year. But we restrained them, saying we must develop, in a balanced manner, all branches of the economy, must remember, along with the production of metal, residential construction, children's institutions, the manufacture of shoes, clothing, and other things.²⁷

Undoubtedly the above statement is in part a grandstand play by a leader eager to impress the public with his concern for their welfare. At any rate, one is entitled to be somewhat skeptical of Khrushchev's ability as, or desire to be, a restrainer, 97 million tons being mighty close to the 100 million tons he says he considers unjustifiably large. Furthermore, the statement suffers from a certain lack of logic, since production of steel is not necessarily in conflict with the other objectives indicated; steel is certainly needed for the building of homes and schools and for the plant and equipment used in producing shoes and clothing. However, whatever its shortcomings as a model of cogency and logic, it does reflect the growing concern with balanced development and consistency in plans mentioned above.

PRODUCTIVITY

Often when an attempt is made to analyze or interpret underfulfillment of goals, it proves difficult to determine whether the problem is one of malfunction or of changed priorities. One instance of underfulfillment in the plan in 1961, however, seems a clear-cut case of disappointed expectations. This was the failure to meet the productivity goals which are not apt to be changed no matter what revisions are made in priorities. The 1961 plan called for man-year productivity to rise 6 percent in industry and 7.4 percent in construction. The results were 4 and 3.5 percent, respectively. The figures are low compared with those of previous years, but this can in part be explained by the fact that last year was the first full year the entire State labor force was on a reduced workweek.²⁸ (Most workers now work 41 hours a week. The standard prereform workweek was 46 hours.) However, the rather large disparity between goal and performance probably reflects to a large degree the excessive faith the planners are placing in technological change to effect swift and large changes in per worker output. The lag in productivity gives quantitative corroboration to the regime's frequent complaints about the foot dragging constantly manifested by producers in installing new machinery and other fruits of advanced technology on which productivity improvement is said to depend. And possibly, too, even when managers are receptive to innovation, new technology is not proving the quick-acting miracle potion that will make productivity soar with the first dose.

²⁷ Pravda, Oct. 18, 1961.

²⁸ The 1961 plan fulfillment report did, in fact, claim very large per hour productivity increases, though underfulfillment took place there too. Per hour industrial productivity supposedly rose 11 percent, just below the 12 percent called for, while per hour productivity in construction allegedly went up 12 percent, substantially off the 16.6 percent target set for it. *However, these figures are all highly suspect.* The midyear plan fulfillment report for 1962²⁴ reports that industrial productivity rose 6 percent in the first half of 1962 compared to the first half of 1961. What's more, this increase is claimed to have been sufficient to meet the plan goal. Now since the length of the workweek has not changed since the end of 1960, rates of increase in productivity should be identical whether measured per man-year or per man-hour. It is thus most difficult to understand how a man-hour productivity increase of 6 percent in 1962 can represent fulfillment when one of 11 percent in 1961 was below target. The increase in construction productivity for the first half of 1962 over the corresponding period in 1961 was given as 5 percent, with no indication of whether this satisfied the goal. However, a drop in man-hour productivity from 12 to 5 percent is scarcely credible.

HOUSING

In sectors directly affecting the consumer, the most glaring short-fall—apart from those already mentioned in agriculture—occurred in residential construction. For the second consecutive year total floor space put into use in urban areas fell over 15 percent below the goal. The goal for 1960 was 101 million m²,²⁹ the amount of floor space actually put into operation was only 82.8 million m².²⁶ (One m² equals a little less than 11 square feet.) The goal for 1961 was again high—96 million m². Performance again conspicuously failed to measure up to the target, floor space commissioned totaling 80.2 million m².³⁰

Because of the leveling off in the volume of housing construction, coupled with rapid growth in the size of the urban population, per capita housing space has advanced at a snail's pace in the last few years. This is brought out in table 4.

TABLE 4.—Per capita housing space in Soviet urban areas

Year	Urban population ¹ (millions)	Millions of m ²		Per capita ¹ housing space ² m ²
		Urban residential construction	Urban ¹ housing fund	
1958.....	100.0	71.2	832	8.32
1959.....	103.7	80.7	896	8.64
1960.....	108.3	82.8	958	8.85
1961.....	111.8	80.2	1,014	9.07

¹ End of year.

² The figures refer to the Soviet measure of housing space called "total space," which includes all floor-space in a dwelling. The Soviets have another measure called "living space," which equals total space minus auxiliary space; that is, minus corridors, kitchens, bathrooms, etc.²⁸ Living space generally amounts to about 70 percent of total space. The Soviet sanitary norm for living space is a minimum of 9 m² per person. It is clear that the current average does not meet the minimum standard.

Sources: "Narodnoe Khozyaystvo SSSR v 1960 Godu," pp. 9, 611, 613. "SSSR v Tsifrakh v 1961 Godu," pp. 29, 379, 382.

Thus, per capita housing has increased by less than 1 m² over a 3-year period (and is still about only a fourth of the estimated figure for the United States).³¹ This is rather astonishing in view of the priority status accorded to housing, at least verbally, since 1957. Furthermore, the Soviets have been most candid in admitting that the housing shortage is severe and creates serious problems. In his speech at the opening of the Party Congress in October, Khrushchev, after first hailing the large amount of housing built recently, acknowledged that "nevertheless, we do not have enough housing; the housing problem remains acute." He then informed the Congress that the urban population has been growing faster than was anticipated and in 1965 will exceed earlier projections by 15 million people.³²

He then spoke of plans to accelerate residential construction and announced that 400 million m² of housing were to be built in Soviet

²⁸ Izvestia, Aug. 2, 1957.

²⁹ "SSSR v Tsifrakh v 1961 godu," p. 379.

³¹ "Kapitalnoe Stroitelstvo USSR," p. 191.

³² Pravda, Oct. 18, 1961.

cities in the last 4 years of the 7-year plan (1962-65).³³ However, what Khrushchev refers to as acceleration will in fact only lift homebuilding in the 7-year plan (1959-65) to a level slightly below the original 7-year plan goal of 650-670 million m² (80.7 plus 82.8 plus 80.2 plus 400 equals 643.7). Thus Khrushchev for all his talk is not revising his housing goals to keep pace with the swift increase in the urban population.

Furthermore, if 1960 and 1961 are any guide to the future, it is highly questionable that Soviet builders will put anywhere near 400 million m² into operation in the next 4 years. Even the *initial* 7-year plan urban area housing goal is unlikely to be attained.

The explanation for the lag in homebuilding lies chiefly in changed priorities—changes, incidentally, which occurred before 1961. In 1960, though state capital investment increased substantially—12.4 percent—state investment in housing rose only 5 percent³⁴ and the physical construction goal for state housing of 60 million m² of floor space put into operation was missed by over 4 million m².³⁵ In 1961, no specific goal for state-built housing was given—only the target for total state and private housing having been made public. But state investment in housing appears to have increased negligibly, if at all, as the physical volume of state housing commissioned rose a scant 1 million m², or less than 2 percent, to 56.8 million m²³⁶—still under the 1960 60 million m² target.

Even more convincing evidence of housing's demotion on the priority ladder comes from information on private homebuilding, where construction lags have been more pronounced than in the state sector. In mid-1957 the regime announced that it was undertaking an accelerated program of residential construction designed to end the housing shortage in 10 to 12 years. Specific goals were given through 1960, and these made clear that private homebuilding was to play a very important role in the building campaign. The overall 1960 goal for housing was 101 million m², of which 41 million were to be privately built.³⁷ Yet in 1960 only 27 million m² of privately built housing went into operation. In 1961 private homebuilding slipped to 23.4 million m².³⁸

The most probable reason why private homebuilding fell so far below the initial goal in 1960 and continued to slide in 1961 is that the regime is seeking to discourage it. When the crash program for housing was disclosed in 1957, the regime promised it would be generous in providing prospective homebuilders with credits. In 1960, however, open Soviet sources indicated that the policy had been completely reversed and that credits to private homebuilders had been outlawed altogether.³⁹ It now seems doubtful that loans for housing were ever entirely cut off and, furthermore, the U.S.S.R. finance minister, in his

³³ In his second marathon speech at the Congress the following day, Khrushchev said housing space put into operation in 1961-65 would average 135 million m² a year. *Pravda*, Oct. 19, 1961. How is this to be reconciled with his statement that 400 million m²—or an average of 100 million m² a year—would be completed in the last 4 years of the plan? It is likely that in the latter speech he was referring to rural as well as urban housing. It is true that the Soviets generally treat urban and rural housing separately and, moreover, express the volume of rural housing solely in terms of numbers of dwellings, never figures for total floorspace. But it is not credible that urban housing construction will average 135 million m² during the remainder of the 7-year plan.

³⁴ "Narodnoe Khoziaistvo SSSR v 1960 godu," p. 595.

³⁵ "SSSR v Tsifrah v 1961 godu," p. 379.

³⁶ *Ibid.*, p. 379.

³⁷ See *supra*, footnote 29.

³⁸ "SSSR v Tsifrah v 1961 godu," p. 379.

³⁹ *Izvestia*, Oct. 16, 1960.

report in December 1961 on the budget for 1962, said 270 million rubles worth of credit would be extended to private homebuilders in 1962.⁴⁰ However, the increase in personal loans outstanding, the great bulk of which are doubtless for housing, dropped sharply in 1960. (Figures beyond 1960 are not available at the time of writing.) They totaled 440.2 billion rubles at the end of 1958, rose to 492 billion at the end of 1959, but increased only slightly to 510.6 billion at the end of 1960.⁴¹ It thus seems likely that loans were harder to come by from 1959 on.

Further evidence that the regime had abandoned its goal of 41 million m² of private homebuilding in 1960 is provided by figures on the amount of building materials the state made available in 1959 and 1960 for sale to the public. Private homebuilding in 1960 was to increase more than 50 percent over 1959. Yet the maximum increase for a building material was only 16 percent. See table 5 below. (Again figures beyond 1960 are not available.)

TABLE 5.—*Building materials directed to state and cooperative trade for sale to the public and to collective farms*

Item	1959	1960	Percent of change
Commercial lumber, thousands of m. ³	7,097	7,516	6
Sawn materials, thousands of m. ³	4,073	4,299	6
Prefabricated homes, millions of m. ² of living space.....	3	3	0
Plywood, thousands of m. ³	36	36	0
Cement, thousands of tons.....	3,540	3,986	13
Slate, millions of tons of conventional slabs.....	1,276	1,478	16
Soft roofing, millions of m. ²	259	271	13
Window glass, millions of m. ²	63	65	3
Roofing sheet steel, thousands of tons.....	13	13	0
Assorted steel, thousands of tons.....	119	103	(1)
Wire nails, thousands of tons.....	171	168	(1)

¹ Decrease.

Source: Narodnoe Khozyaystvo S.S.S.R. v. 1960 Godu, p. 687.

Table 5 must be treated with some caution. For one thing, the figures include sales to collective farms as well as to individual members of the general public. Furthermore, the correlation is far from perfect, since sales of building materials in most cases rose somewhat, although private homebuilding remained virtually unchanged. Nevertheless, the figures do indicate lowered priority for housing. And lower priority was evidently housing's lot again in 1961.

The lengthy discussion of housing, a discussion extending back before 1961, was intended to demonstrate how Soviet leaders' actions can diverge from their pronouncements and promises. The official line is still that an all-out effort is being made to end the housing shortage. But statistical evidence indicates that the regime has reduced its homebuilding campaign to more modest dimensions than were originally envisaged. As to where the resources originally ticketed for housing have been channeled, one can only speculate. It is very possible that housing was cut back early in the 7-year plan

⁴⁰ Izvestia, Dec. 7, 1961. A partial ban on credits for private homebuilding has been restored. In 1962 the regime issued an odd ruling, prohibiting allocation of land or making of loans for construction of private homes in the capital cities of the 15 Soviet republics but leaving to the discretion of the republic authorities whether to apply the ban in other urban areas. However, the republics were simultaneously instructed not to interfere with existing plans for private home construction outside the capitals.

The new restrictions were part of a decree whose purpose was to encourage construction of multi-unit cooperative dwellings as a substitute for single family private homes. Land and credit are to be made available to groups formed to build cooperative houses. Decree summarized in Pravda, Aug. 7, 1962. Cooperative homebuilding now accounts for a negligible fraction of the total. Home construction by cooperative enterprises and organizations (exclusive of collective farms), incidentally, is included in the figures for state housing in Soviet statistical reports.

⁴¹ "Narodnoe Khoziaistvo SSSR v 1960 godu," p. 595.

because the regime felt it needed more building materials for investment in the so-called productive sectors than it had originally thought necessary. More recently, the stepped-up defense program may have contributed to downgrading housing's priority.

OTHER CONSUMER-RELATED AREAS

Underfulfillment occurred in 1961 in other areas of direct concern to the consumer. The planned volume of state and cooperative retail trade turnover was not achieved. The targeted increase was 5.8 percent, the actual increase only 4 percent. The lag in retail trade was due in part to agriculture's woes, the plan fulfillment report bluntly stating, "The population's demand for a number of food items was not fully satisfied." However, shortfalls occurred among goods other than food, too. For example, sales of refrigerators and washing machines were both scheduled to increase 50 percent, but both actually increased only 30 percent.

STATE CAPITAL INVESTMENT

State investment, as a whole, is a particularly rich area of information on priorities, since decisions on investment, the prime determinant of the economy's capacities, are crucial in determining the direction in which the economy is to be guided. Planned state capital investment in 1961 fell short of the original goal by over a billion rubles, or 4.5 percent, totaling 27.7 billion rubles⁴² instead of the targeted 29 billion rubles. Planned state investment is that made from centrally allocated funds.

Total state investment amounted to 32.5 billion rubles. The latter figure includes "unplanned" investment, that is, investment not specifically called for in the plan for the economy as a whole and made by enterprises from their own resources—profits and "other non-centralized funds." "Unplanned" investment is something of a misnomer, since, if not a formal plan, there does seem regularly to be a goal for total as well as centrally financed investment. The goal for total investment is not published before the plan period begins but the plan-fulfillment report customarily declares the percentage by which the goal for total state investment was fulfilled or underfulfilled. In 1961, total state investment was reported to have fallen 5 percent short of expectations, implying an initial annual target of 34.2 billion rubles. (The plan fulfillment report did state, though, that state investment had exceeded the goal for 1961 initially laid down in the 7-year plan.)

There are two striking features of the data on aggregate investment in 1961. The first is the fact that the goal for planned, centrally financed investment was not reached. It was the first time during the 7-year plan that this target had not been met.

Failure to meet the alleged goal for total state investment seems less significant. Underfulfillment consistently occurs here, shortfalls during the first 3 years of the 7-year plan having ranged from 3 percent to 5 percent.⁴³ Furthermore, whether the total state investment target deserves to be treated as a genuine goal is dubious. One's suspicions are aroused, for example, by the incompatibility of 3 consecutive years of underfulfillment with the regime's claim, noted above, that the original 7-year plan goal for investment in 1961 was

⁴² "SSSR v Tsifrah 1961 Godu," p. 292.

⁴³ For 1959 and 1960 plan fulfillment reports, see Pravda, Jan. 22, 1960, and Pravda, Jan. 26, 1961.

overfulfilled. However, what does seem significant—and this is the second point—is the marked slowdown in the rate of increase in both planned and total investment which took place in 1961. This is brought out in table 6.

TABLE 6.—*State investment in 1951–61*

(Billions of rubles)

	1959		1960		1961	
	Amount	Increase over 1958 percent	Amount	Increase over 1959 percent	Amount	Increase over 1960 percent
Planned state investment.....	22.7	10.7	25.7	13.2	27.7	7.8
Total state investment.....	27.4	11.8	30.8	12.4	32.5	5.5

Source: SSSR v Tsifrah v 1961 Godu, p. 292.

The sharp deceleration in investment growth probably resulted from a recasting of priorities. Specifically, it lends considerable credence to Khrushchev's midyear assertion that defense spending would be raised above initial plans⁴⁴ (though it does not indicate the actual size of the increase that some Western observers believe must have less than the 3.144 billion rubles, the amount by which Khrushchev said military outlays would exceed initially planned expenditures).⁴⁵ It is unlikely that the Kremlin would permit so sudden a loss of momentum in investment growth unless it felt this was a sacrifice required by something as vital as military needs. The Soviets are counting very heavily on a high level of investment as the key to maintaining high rates of economic growth and modernizing the economy. A diversion of resources from investment would not be taken lightly.

There were arresting developments *within* the investment sector, too, most notably the apparent drastic underfulfillment of investment plans in key industries. We say *apparent* underfulfillment because investment goals refer to projected changes in planned, centralized investment while results are reported for investment as a whole—planned plus decentralized outlays. Moreover, one would expect total investment to increase at a lower rate than planned state investment since the share of unplanned investment in total investment has been steadily declining in recent years. Thus one cannot be certain that a lower percentage increase in actual investment for a given industry than was called for in planned investment represents underfulfillment. (Plan and plan fulfillment reports almost invariably list changes in investment for individual industries strictly in terms of rates of change.) However, absolute amounts for total investment through the year 1960 for separate industries are now available.⁴⁶

⁴⁴ See *supra*, footnote 7.⁴⁵ See p. 1 article: Article by Chalmers Roberts in Washington Post and Times-Herald, May 23, 1962.⁴⁶ Kapitalnoe Stroitel'stvo v SSSR, pp. 66f. A notable exception to the above generalizations occurred in the presentation of the 1961 plan. In standard fashion, the finance minister listed a planned percentage increase for investment in the chemicals industry—42 percent. But then Gosplan chief Novikov elsewhere gave an absolute figure for investment in chemicals of 1.278 billion rubles, stating that this would be three times the amount invested in 1958. Since total investment in this industry in 1958 was 413 million rubles, almost exactly a third of 1.278, it seems certain Novikov was referring to a plan for total investment, not to one for centralized investment alone. Furthermore, total investment in chemicals in 1960 having amounted to 852 million rubles, the planned increase for total investment was exactly 50 percent—or 8 percentage points *more* than the projected increase for centrally financed investment.

The discrepancies were so large in 1961 and for the most part so much larger than in preceding years as to make inescapable the conclusion that industrial investment was sharply cut back. Table 7 illustrates this.

TABLE 7.—*Rates of change for investment in individual industries*¹

[Change over preceding year, percent]

Industry	1959		1960		1961	
	Planned	Actual	Planned	Actual	Planned	Actual
Chemicals.....	71	59	30.0	33	42	13
Metallurgy ²	32	22	20.0	12	31	8
Oil and gas.....	23	14	15.0	10	16	8
Light industry ³	(4)	34	13.6	15	54	18
Machine building.....	33	39	30.0	23	40	14
Power stations and thermal networks.....	(4)	4	(4)	4	25	7

¹ Planned figures are centrally financed investment. Actual figures are for total investment—centrally allocated expenditures plus those from noncentralized funds.

² The 1959 and 1961 plan figures are for ferrous metals only.

³ The 1959 and 1960 figures are for both the light and food industries.

⁴ Not available.

Source: Pravda, Jan. 23, 1962; Jan. 26, 1961; Dec. 21, 1960; Jan. 22, 1960; Oct. 23, 1958; and Dec. 23, 1958.

The apparent scaling down of investment plans in light industry, like the previously discussed evident retrenchment in homebuilding, betokens a reallocation of investment resources at the expense of consumer interests. But the huge disparities between planned and actual investment in the other industries listed in table 7 imply curtailment of expansion programs in industries vital to the growth and modernization of the economy as a whole as well. The comprehensive nature of the cutbacks gives added weight to the evidence that economic plans were revamped in 1961 to step up current production for immediate defense needs at expense of other goals.

Further evidence of revisions in the 1961 plan, as 1961 progressed, channeling resources into the military sphere, is furnished by data on production of investment goods, specifically machinery production. Production in the machine-building and metalworking sector in 1961 exceeded the goals the planners had laid down. Concurrently, output in two important divisions of this branch—oil equipment and chemical equipment—is known to have fallen far short of the totals it was scheduled to reach. See table 8.

TABLE 8.—*Growth of production in machine-building and metalworking sector and of oil equipment and chemical equipment divisions*

	Percentage increases, 1961 over 1960	
	Planned	Actual
Machine building and metal working.....	14	16.0
Oil equipment.....	32	15.1
Chemical equipment.....	27	6.5

Sources: Pravda, Jan. 23, 1962; Pravda, Dec. 21, 1960.

It should be noted that the goals for production of oil equipment and chemical equipment were not met in 1959 or 1960, either, though the extent of the shortfall is not known since the Soviets never listed specific goals. However, the large margin between goal and actuality in 1961, plus the fact that the rate of increase for both items, particularly for chemicals, was much lower in 1961 than in 1960 while that for machine building as a whole remained virtually the same,⁴⁷ implies reformulation of plans and once again points to the likelihood that military production was stepped up at the expense of other areas. Munitions output is generally thought to be included in the machine-building and metalworking branch.

It is worth noting that the very large gulf between plan and performance in the case of investment in key industries and the production of oil equipment and chemical equipment strongly reinforces the conclusion that plans were deliberately changed. Whatever its faults, the Soviet economy does not function so inefficiently (outside of agriculture) that gaps between goals and results of such magnitude can be plausibly attributed to bungling or other unintentional causes. Furthermore, the fact that investment and capital goods plans were changed in midstream in 1961, probably to benefit the military, lends support to the view that the sharp rise in defense spending had not been part of the original plan—the 1961 budget had in fact promised a slight reduction in such outlays—but rather represented a response improvised to match the moves the United States initiated last spring to bolster its military might.

CONCLUSIONS

The year 1961 was not a particularly bright one for Soviet consumers viewed from the standpoint of what they might have expected from the plan for the year. Agricultural production and homebuilding lagged behind goals and retail trade as a whole fell short of the mark. The consumer might take some consolation from the fact that agriculture's priority was apparently elevated slightly—but only slightly. On the other hand, in industry group A industrial production (producers' goods) continued to increase much faster than group B (consumers' goods). The group B goal was not even fulfilled; the group A goal was.

However, despite fulfillment of the production goal for producers' goods, there was evidence that economic growth and development were somewhat deemphasized. The bases for this supposition are the apparent marked underfulfillment of investment targets in key industries, and the surprisingly large short falls in production of some investment goods. The most probable explanation for these developments is that long-term industrial development and growth plans were pared down, at least temporarily, in the interests of devoting more resources to immediate defense needs and goals.

⁴⁷ Pravda, Jan. 26, 1961.



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EDUCATION AND THE DEVELOPMENT OF HUMAN
RESOURCES: SOVIET AND AMERICAN EFFORT

BY

NICHOLAS DEWITT

EDUCATION AND THE DEVELOPMENT OF HUMAN RESOURCES; SOVIET AND AMERICAN EFFORT ¹

Throughout the world today, fundamental changes are taking place in the assessment of conditions under which social and economic progress is achieved. The traditional approach to the problem of economic growth assigned well-nigh an exclusive role to the accumulation of material wealth as a precondition to industrial development. This emphasis is giving way to new trends in economic thinking.

It is being acknowledged now that in advanced societies, as well as in underdeveloped countries, long-term social and economic progress is conditioned not so much by the mere availability of physical capital as by investment in human capital. There is a worldwide awareness that the strategy of economic development must be firmly rooted to the strategy of the development of human resources. The real bottleneck in achieving targets for rapid economic expansion is viewed to be the quality of human resources, which is determined largely by education.

Recognizing that education is the main tool in the development of human resources required to augment the strategic capability of a nation, Soviet planners have for the last four decades been busily engaged in a buildup of skilled and high-level professional manpower, particularly the training of specialists in science and technology. From the very inception of their plans for rapid economic expansion in the late 1920's, they have emphasized that it was education, the training of cadres of specialized personnel, which would decide the outcome of the Soviet industrialization drive. For this reason, Soviet educational planning has been to a large degree future oriented, so as to create an abundant stock of technological manpower to suit the growing needs of the expanding economy.

AIMS OF EDUCATION

The purposes of education in any country are shaped by the nature of the particular society, by its cultural heritage, and its political, economic, and social institutions, and—to a greater or lesser extent—by the “world outlook” upon which the society is based. In emphasizing the Communist commitment to education, it must be recognized that Soviet society is a planned society and that, as such, the Government of the U.S.S.R. operates a centrally planned economy requiring, in turn, a certain optimal combination of human skills. Ever since Lenin declared that education should be a weapon for moving society

¹ This paper was prepared by Dr. DeWitt in his capacity as consultant to the National Science Foundation, Scientific Personnel and Education Studies Section. The cooperation of Mr. Thomas J. Mills, section head, and his associates, Messrs. Robert W. Cain and Joseph P. Kozlowski, is gratefully acknowledged. Most of the data presented in this paper originate from: N. DeWitt, “Education and Professional Employment in the U.S.S.R.,” National Science Foundation, 1961. They have been supplemented and updated for the United States on the basis of unpublished tabulations of the National Science Foundation and the U.S. Office of Education; and for the U.S.S.R. on the basis of the Soviet official statistical releases: Tsentral'noe Statisticheskoe Upravlenie, “Vvsshee Obrazovani v S.S.S.R.” (Higher Education in the U.S.S.R.), Moscow, 1961, and Tsentral'noe Statisticheskoe Upravlenie, “S.S.S.R. v Tsifrah v 1961 godu” (U.S.S.R. in Figures in 1961), Moscow, 1962.

forward on the road to communism, the Soviet leaders have used the educational system to serve the state and to help attain its goals.

In the U.S.S.R. the educational system is designed to serve, not the individual, but the collectivist state which, by identifying itself with the common good, subordinates the individual—his rights, privileges, choices, and his entire physical and mental training—to its own needs. It is only within the confines of choice determined by the state that the individual may develop his personal abilities. This substitution of the concept of service to the state for the concept of individual benefit constitutes the fundamental distinguishing characteristic of Soviet educational philosophy and practice.

The essential function of Soviet educational planning is to set up a scale of preference for various types of specialized manpower, based on the overall economic plan, and to assure that the proper proportion of qualified student material is channeled into each type and level of training. In pursuing this, the Soviet Union integrates educational and manpower policies much more closely with economic and political objectives than other modern industrial nations whose policies are based on pluralistic values. This integration of education into overall economic planning has caused a pronounced shift toward *functional* education, with usefulness for the performance of productive tasks becoming the dominant criterion of the type, extent, and quality of education an individual should receive. In this sense, Soviet education has been primarily an investment in the development of human capital.

Western nations, and particularly the United States, have traditionally followed a much broader approach in education. In the United States, the aims and philosophy of education have been that education is good only if it is primarily for the sake of the individual: its mission is to teach the individual how to think and to act, how to develop and perform a skill of his own choosing and for his own benefit, within the bounds and restraints set by the democratic system and its laws. It is the individual who determines what kind of education he will seek, not the state which imposes its own choice on him. The educational system in the United States is thus designed to provide not only for the development of the human capital demanded by the economy, but to a very great extent for consumption—diversified cultural and social activities without any specific production activity orientation.

As a result of the differences in the basic educational objectives in the two nations, the U.S. system emerges as more diversified, accommodating a larger proportion of youth, than the still highly selective and more specialized educational system of the U.S.S.R. But while educational opportunities on all levels above elementary schooling are today twice as abundant in the United States as in the Soviet Union, the U.S.S.R. has forged substantially ahead of the United States in the rates of producing technical specialists.

COMPARATIVE STRUCTURE OF EDUCATIONAL SYSTEMS

The U.S.S.R.'s educational system is presently in a process of change as a result of the school reform which began in 1958. The accompanying chart represents a comparative diagram of the Soviet educational structure before and after the current reform program with a parallel diagram of major U.S. educational institutions. For

reasons of simplified comparison, the chart purposely does not show the great diversity of American educational institutions in the same detail as is provided in the diagrams of the Soviet school structure. The prereform Soviet structure as shown represents the school system as it evolved in the early and middle 1930's, incorporating further minor changes that were introduced during and following World War II. The postreform structure shows the Soviet school system as it will be when the modifications provided for by the 1958 educational reform law and the implemental union-republic education acts of 1959 have been fully put into effect, scheduled by 1963.

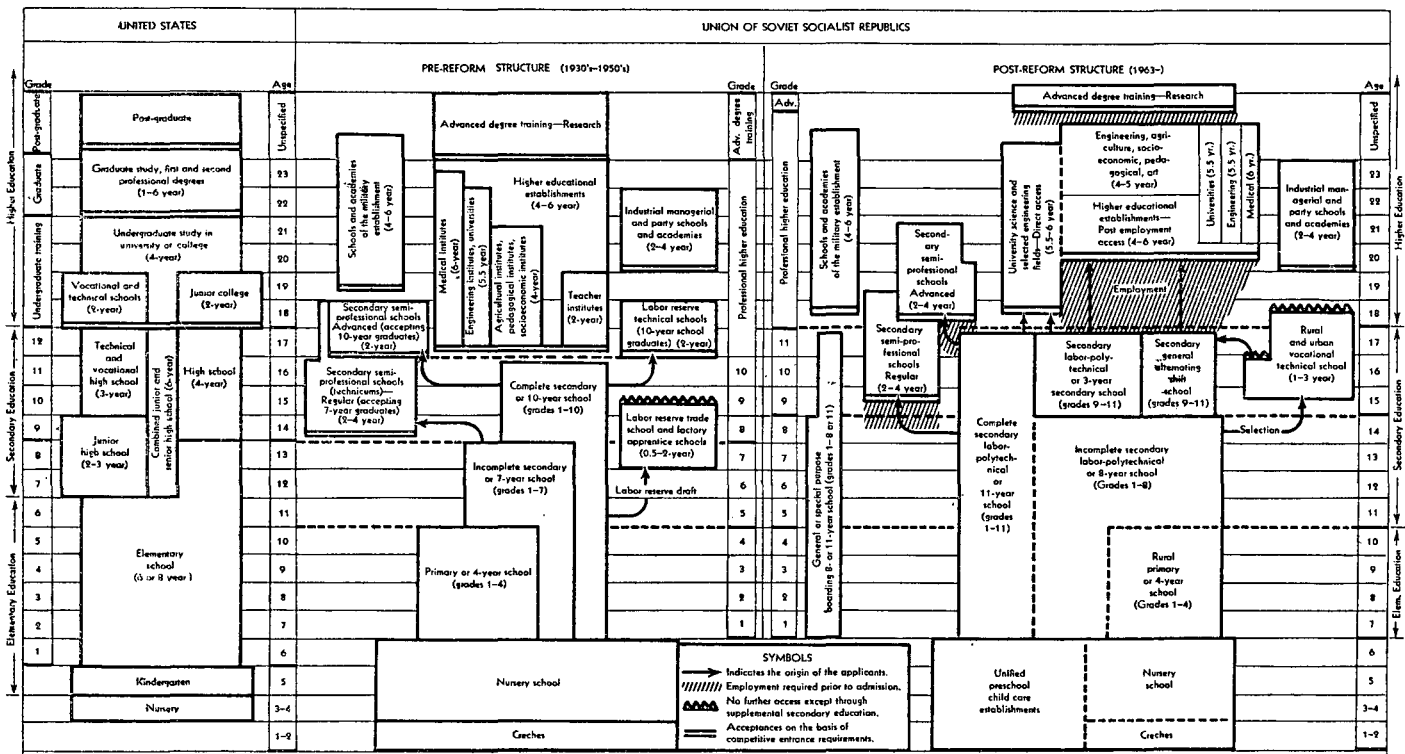
How does the Soviet educational process compare with that in the United States on an age basis? In the United States children start elementary school at age 6 and complete senior high school at age 18. College usually takes 4 years, the student thus graduating at age 22. This may be followed by postgraduate study for a higher degree, usually taking from 1 to 4 or more years, depending on the level of the degree and other circumstances. The first advanced degree (master's) is generally considered essential for professional standing, while the second (doctor's) is usually a prerequisite for advanced teaching and research.

In the U.S.S.R., under the prereform educational system, students progressed through regular elementary, secondary, and higher education generally as follows. Pupils entered elementary school at age 7 and, if normally promoted through all grades, completed regular 10-year school at age 17. Less fortunate or less competent pupils were diverted from regular school in the intermediate grades (5-7) and channeled into skilled labor training schools, leading to employment at age 14 to 16. As an alternative to regular upper secondary schooling, students could enter secondary specialized or semiprofessional training, leading to employment at age 16 to 19. The transfer of a student from regular school to a skilled labor training establishment, or the suspension of his regular education for any other reason, did not entirely eliminate his chances of acquiring further secondary education, which could be obtained by making use of alternative educational facilities (schools for peasant and working youth).

Certified completion of secondary education was a prerequisite for all types of higher education. If a student went straight through regular 10-year schooling, he might enter a higher educational establishment at age 17 or even younger and complete it at age 21 to 23. Sometimes immediately upon graduation from a higher educational establishment, but more frequently after a few years of professional experience, a person might enter an advanced training-research program lasting anywhere from 3 years on, possibly receiving an advanced degree. There were also numerous facilities offering extension-correspondence and special training programs officially considered equivalent to regular higher education; through these facilities a student could, with much delay, acquire education up to a desired level.

The educational reforms now underway will result in substantial changes in the secondary schools and higher education levels. The general education 7- and 10-year schools will eventually be succeeded by the 8- and 11-year schools. Great emphasis is placed on specialized vocational training at the secondary school level. Correspondence and extension courses enroll a large proportion of the specialized secondary and higher education students.

CHART I.—Pre- and Post-Reform Structure of the Soviet Educational System, Compared with the United States



As a result of the educational reforms, Soviet students will progress through the various levels of schooling generally as follows. School attendance will still begin at age 7 and will continue through 8-year general labor school, with the student finishing at age 15 if successful in all grades. For the majority of students, 8-year school will be terminal; however, some will be admitted to 3-year secondary general labor school (with 2 days' employment per week). Those who enter full-time employment still can obtain secondary education by enrolling in alternating-shift secondary schools (with concurrent full-time employment). Those attending the former can expect to obtain certificates of completed secondary education at about age 18; the latter, at some later age. Some students will attend 11-year schools of the complete type (single units having all grades), likewise obtaining secondary graduation certificates at 18. A significant proportion of eighth grade graduates, however, will attend none of these upper-secondary schools; rather they will be siphoned off into rural or urban vocational-technical schools, resulting in their employment as skilled labor at age 16 to 18.

As an alternative to regular 3-year secondary schools, some 8-year school graduates may be admitted to secondary semiprofessional training establishments, but priority will be given to those who since graduation have been gainfully employed for several years. Such semiprofessional training will lead to employment at age 17 to 20 (or even later in the case of those with prior active employment). Those channeled into vocational-technical schools will be able to regain access to regular higher education by completing their secondary general education through attendance in alternating-shift secondary schools.

Completion of secondary (11-year) education, or its alternative, semiprofessional training, will be, as in the past, a prerequisite for admission to all types of higher education. The latter, also as in the past, will select students on the basis of special screening and entrance examinations, which will be mandatory for all applicants (including honors graduates of secondary schools). Except for some priority fields, such as mathematics, sciences and engineering, where a certain number of students will be admitted to higher education immediately following the completion of secondary school, the majority of entrants in other nonstrategic fields will be accepted only after they have engaged in gainful employment for at least 2 years following the completion of secondary schooling. Those admitted directly (at age 18) will graduate at age 24 since all of the priority fields just mentioned have 5½- to 6-year programs. Those entering higher education after an interval of employment will usually be 20 years old or older at entry. The majority of males, however, will have to do military service; and hence may graduate at age 24 to 26, depending upon the length of training in their particular field of specialization. Those entering evening or extension-correspondence programs of higher education will, of course, remain continuously in one of those types of programs, but even full daytime students will be required to alternate periods of regular daytime instruction with periods of evening or extension-correspondence study concurrent with full-time employment.

Recipients of higher education diplomas may enter advanced-degree training-research usually only after a 2-year period of practical pro-

fessional experience. Initially, such programs will be predominantly of the extension-correspondence type, with subsequent transfer to full-time regular training. In addition to all this, there will be a greatly expanded variety of "alternative equivalents" in the form of extension-correspondence education.

To sum up, in terms of the overall length of the educational process, the American system covers about the same number of years (16-17) as the Soviet, under either the pre-1958 (15) or the new postreform (16-17) structure. The student spends about the same amount of time in elementary and secondary school in both countries. In the U.S.S.R. he starts elementary school at age 7 and completes secondary school after 10 (now 11) years of 6 days a week attendance. The typical pattern in the United States is entry into elementary school at age 6, and 12 years until completion of high school with 5 days a week attendance. Length of the school year is approximately the same. In terms of the correlation of age to school level, there was also a close parallel between the American and the prereform Soviet systems, but the postreform Soviet structure will give the American system an age advantage of 2 or more years at educational levels beyond the secondary.

AGGREGATE ENROLLMENTS AND PERFORMANCE OF EDUCATIONAL SYSTEMS

The general performance of the educational systems in the Soviet Union and in the United States can be examined in quantitative terms only in its relationship to respective groups of population. Table 1 summarizes 1959 data on enrollments in the U.S.S.R. and the U.S. educational systems in relationship to respective age groups.

Elementary education and junior secondary education are nearly universal in the U.S.S.R. It is on the secondary and higher education levels that the major differences between the Soviet and American educational efforts are evident. In the United States about 90 percent of the secondary-school-age population are actually enrolled in schools. In the U.S.S.R. only about one-half of the respective levels are found in educational establishments. If we were to consider only the regular upper secondary grades (8-10) of Soviet schools, about one-third of the age group were in attendance. While in the United States about one-fourth of the college-age population is enrolled in institutions of higher learning, the corresponding proportion in the Soviet Union is only 6 percent. In the Soviet case, however, if part-time education enrollments are considered, the rates of attendance would obviously increase.

There is another way of looking at the performance of educational systems. Since enrollments vary from year to year and the age groups of those attending school also change, the evaluation of the performance of educational systems cannot be viewed in a static way but must be looked upon only as an approximation of the existing trends. Such a comparison, based on 100 units corresponding to the number of pupils entering first grade of elementary school, is made in table 2. Student progress is then traced on a per-100 base through successive levels of schooling.

TABLE 1.—*Enrollments in relation to school-age population in the U.S.S.R. and the United States, 1959*

United States				Soviet Union			
Level of education (grades and age)	Population (millions)	Enrollment (millions)	Percent in educational establishments	Percent in educational establishments	Enrollment (millions)	Population (millions)	Level of education (grades and age)
Elementary (grades 1-8, age 6-13).....	33.6	33.5	100	90	23.6	26.3	Elementary-junior secondary (grades 1-7, age 8-14).
Secondary (grades 9-12 and equivalent trade schools, ages 14-17).	11.2	9.2	82	55	5.4	9.8	Full-time senior secondary and equivalents (grades 8-10 of general education schools, 3,400,000; vocational and trade labor reserve, 900,000; and full-time semiprofessional schools, 1,100,000; ages 15-17).
				76	7.5	9.8	Including part-time secondary and equivalent (those above and schools for working and peasant youth, grades 8-10, 1,300,000; evening and extension-correspondence semiprofessional schools, 800,000; hypothetical age same as above).
Higher education, full-time and first professional (ages 18-22).	9.2	2.2	24	6	1.1	19.6	Full-time higher education (higher educational establishments, 1,146,000; ages 18-22).
Including part-time undergraduate and first professional (hypothetical age same as above).	9.2	2.9	31	12	2.2	19.6	Including part-time higher education (those above plus evening and extension-correspondence higher education, 1,121,000; hypothetical age same as above).

TABLE 2.—Quantitative index of performance of educational systems in the United States and the U.S.S.R. in the 1950's

	United States	U.S.S.R.
Base ¹ (entering elementary school).....	100	100
Complete elementary schooling.....	99	98
Enter high (upper secondary) schools.....	85	55
Graduate from (complete) general secondary education.....	57	30
Enter institutions of higher education.....	23	10
Graduate from higher education.....	12	7

¹ Hypothetical base refers to the 6- or 7-year-olds in the late 1940's: in the United States, about 2,900,000 in number; in the U.S.S.R., about 4,300,000.

These data indicate radical differences in the orientation of the educational effort in the two countries. The U.S.S.R. has been operating a much more selective educational system on all levels beyond the elementary, with far fewer students in the respective age groups gaining access to education on the secondary and higher levels. In the United States, about 57 percent of the pertinent age group graduate from high school, while in the U.S.S.R. only one-third of the pertinent age group graduate from secondary school. In the United States about 12 percent of the pertinent age group obtain college or university degrees, while in the U.S.S.R. about 7 percent of the pertinent age group complete higher professional education.

COMPARATIVE LEVELS OF EDUCATIONAL ATTAINMENT

The result of the educational effort of a country can be measured in various ways. One of these measures is the educational attainment of the population (and the labor force as its component). The educational attainment of a nation can be expressed in physical units—number of school completed by a given number of people. The 1959 Soviet census data are very revealing once they are arranged in the proper manner and subjected to analysis and comparison with similar information for the United States, as indicated in table 3.

TABLE 3.—Comparison of educational attainment levels of population in the U.S.S.R. and the United States, 1959

Soviet Union (January 1959)			United States (March 1959)		
	Thou- sands	Percent	Percent	Thou- sands	
Population aged 15 and older.....	148,186	100.0	100.0	122,819	Population aged 14 and older.
Educational attainment:					Educational attainment:
None, elementary, 4 years or less, and unspecified.....	76,978	51.7	{ 3.5 4.9	4,217 6,051	None and unspecified. 1 to 4 years of school.
5 to partial 7.....	12,570	8.4	11.8	14,486	5 to 7 years.
Completed 7 to partial 10.....	35,386	23.9	38.5	47,216	8 to 11 years.
Completed 10-year education	9,936	-----	-----	-----	-----
Completed semiprofessional or equivalent.....	7,870	-----	-----	-----	-----
Subtotal, completed second- ary education.....	17,856	12.0	26.4	32,442	Completed secondary (12 years).
Partial higher education.....	1,738	1.5	8.1	10,084	Partial higher education (1-3 years of college).
Completed higher education.....	3,778	2.5	6.8	8,323	Completed higher educa- tion (4 or more years of college).

Partly because of the relative youth of the Soviet Union's mass education efforts, and to a great extent because of deliberately more selective educational policies, in 1959 over one-half of the Soviet adult population had had less than 4 years of schooling. In the United States in the same year more than half of the adult population had had up to 11 years of schooling. The estimated median number of years of schooling completed by the adult population in the Soviet Union was about 3.8, and the estimated mean was 4.7 years. In the same year in the United States the median number of years of schooling completed by the adult population was 10.9, and the mean was 10.3. The U.S.S.R. curve was heavily skewed toward the lower levels of educational attainment, while the U.S. distribution of population by level of educational attainment, by contrast, closely approached a normal distribution curve.

In historical perspective, then, and in terms of the median number of years of schooling completed, the U.S.S.R. achieved in 1959 what the United States achieved at the turn of the century. In 1959 the Soviet Union had only two-thirds as many persons with partial and completed secondary education as had the United States, and only 45 percent as many with completed higher education. In terms of the number of persons with partial or completed secondary education, the Soviet Union in 1959 stood where the United States stood in 1930. And in terms of the population of higher education graduates, the Soviet Union in 1959 was in a position reached by the United States in 1940. The lag of the U.S.S.R. behind the United States in terms of the levels of educational attainment does not deny the Soviet Union's rapid progress in the course of the last few decades; indeed, the *rates* of growth of the educated component of the population to the U.S.S.R. were considerably higher than in the United States. Nevertheless, the level of educational attainment of the Soviet population is presently still significantly lower compared to the United States.

The rapid drive toward literacy and the expansion of elementary and junior secondary education, which took place in the two decades prior to the revolution, continued at an accelerated rate during the Soviet period. Table 4 presents data on the rising levels of educational attainment of the population and the gainfully employed labor force in the Russian Empire and in the U.S.S.R. during this century.

Over the last few decades illiteracy has been virtually eliminated. The number of persons with elementary and junior-secondary education (6 years or less) multiplied 4.5-fold. The stock of persons with an educational attainment level of 7 or more years has grown quite rapidly over the last six decades. Since the turn of the century, there has been a 23-fold increase in the proportion of persons with education beyond the seventh grade, and a similar increase in the proportion of higher education graduates among the adult population. The most rapid rates of growth were experienced from 1926 to 1939 during the initial phase of forced industrialization when educational services were greatly expanded.

During the decade of the 1940's there was some retardation in the growth rates of educated manpower in relation to the population, though, surprisingly, the impact of the Second World War was not so severe as might be expected. The rate of growth of educated manpower in relation to the population was also somewhat smaller

TABLE 4.—Educational attainment levels of total population and persons employed in gainful occupations aged 15 and over, in Russia and the U.S.S.R., 1897, 1926, 1939, 1950, and 1959

[In thousands]

Levels of educational attainment of population aged 15 and over	January 1959 census		Year end 1950 estimate		January 1939 census				December 1926 census		February 1897 census	
	Population	In gainful occupations	Population	In gainful occupations	Postwar boundaries		Prewar boundaries		Population	In gainful occupations	Empire boundaries	
					Population	In gainful occupations	Population	In gainful occupations			Population	In gainful occupations
1. Higher education, total.....	5, 516	4, 452	3, 241	2, 430	1, 838	1, 347	1, 601	1, 240	602	293	139	56
2. Completed higher education.....	3, 778	3, 047	2, 200	1, 650	1, 177	863	1, 094	802	452	220	93	37
3. Partial higher education.....	1, 738	1, 405	1, 041	780	661	484	597	438	150	73	46	19
4. Secondary education, total.....	51, 355	38, 471	28, 246	21, 185	14, 028	9, 357	12, 677	8, 452	5, 004	2, 151	1, 245	502
5. Complete secondary specialized (technicum).....	7, 870	6, 353	5, 272	3, 954	3, 599	2, 400	3, 252	2, 164	1, 250	537	172	69
6. Complete secondary general (10-year).....	9, 936	7, 355	5, 012	3, 759	3, 393	2, 264	3, 067	2, 045	1, 250	537	358	144
7. Partial secondary general (7- to 10-year).....	33, 549	24, 763	17, 962	13, 472	7, 036	4, 693	6, 358	4, 243	2, 504	1, 077	715	289
8. Education beyond partial secondary (7-year), total.....	56, 871	42, 923	31, 487	23, 615	15, 866	10, 704	14, 368	9, 692	5, 606	2, 444	1, 384	558
POPULATION WITH LOWER LEVEL OF EDUCATIONAL ATTAINMENT												
9. Total population.....	208, 827		182, 000		190, 678		170, 557		145, 028		125, 681	
10. Population aged 15 and older.....	147, 586	99, 130	125, 000	83, 750	123, 564	89, 213	109, 099	78, 797	89, 344	37, 758	82, 406	33, 202
11. Illiterates.....	4, 183		6, 250		24, 466	12, 233	21, 602	10, 800	44, 583	18, 814	62, 628	25, 239
12. Literate population with 6 or less years of education.....	86, 532	56, 207	87, 253	60, 135	83, 232	66, 276	73, 129	58, 305	39, 695	16, 500	18, 394	7, 405

in the 1950's than during the period 1926-39. Finally, it is to be noted that, since 1939, the rate of growth of professionals with completed higher education in relation to the population has been smaller than the rate of growth of the ratio of persons with 7 or more years of education to the population. Secondary schooling was expanding more rapidly than other components of the educational system. This rapid expansion of secondary schooling is responsible in part for the current educational reforms—adjustment of the academic curriculum to the needs of *diversified* and vocationally oriented training.

CURRENT REVISIONS OF SOVIET SCHOOL PROGRAMS

The U.S.S.R. follows the practice—a common one in many countries—of having a standard curriculum in its general education primary-secondary schools; this is to say that all students, as they progress through school, generally take the same subjects. There are some variations between urban and rural schools, for purposes of allowing participation in agricultural or industrial work, and small variations between Russian-language and native-language schools. In the main, unlike the U.S. system where determination of curriculum is on a State or local basis, and students have latitude in choice of subjects, students in the U.S.S.R. all receive about the same amount of instruction in basic subjects.

The functional emphasis in Soviet primary and secondary education is a relatively recent development. Until the mid-1950's, primary and secondary schooling was intended primarily to lay the groundwork for higher education, weeding out the less competent and providing those of demonstrated ability with a foundation of general academic knowledge (particularly in the sciences). Since then, however, first through a process of piecemeal adjustment and then by radical institutional reform, primary and secondary schools have become institutions for turning out students who, in addition to having academic preparation, are trained in labor skills and ready for employment.

Soviet pedagogical theorists distinguish five basic components of primary and secondary "general education." These elements incorporate the theoretical aims of Soviet general education and are supposedly embodied in educational practice:

(1) *Physical education*, aimed at developing health and physical strength through curricular instruction and/or extracurricular participation in sports.

(2) *Esthetic education*, aimed at developing appreciation of "artistic realism" among all students and/or mastery of a "performing arts skill" by those who are particularly gifted.

(3) *Mental education*, aimed at the mastery of all subjects of instruction; the development of a conscious scientific and materialistic outlook; mastery of the dialectical method; and orderly and systematic study and thought habits.

(4) *Polytechnical education*, aimed at developing a specific manual skill; detailed familiarity with methods and techniques of production of a given type; and a general knowledge of production techniques and the organization of socialist industry.

(5) *Moral education*, aimed at creating a "conscious Communist morality," the elements of which are: conscious discipline;

TABLE 5.—*Summary comparison of postwar curricular changes in Soviet 10- and 11-year primary and secondary schools*

[Total number of instruction hours devoted to subject and distribution in percent]

	10-year school, 1947		10-year school, 1952		10-year school, 1955		10-year school, 1957		11-year school, 1959-63	
	Instruction hours	Percent	Instruction hours	Percent	Instruction hours	Percent	Instruction hours	Percent	Instruction hours	Percent
Group I: General (languages, literature, humanities and social sciences).....	5,067	63.0	5,214	53.9	4,653	47.2	4,692	44.2	4,884	38.0
1, 2. Russian language, Russian literature and other literature.....	3,003	31.4	3,053	31.5	2,788	28.3	2,856	26.9	2,926	22.8
3. Foreign language.....	743	7.8	726	7.5	660	6.7	680	6.5	726	5.6
4. History.....	710	7.4	709	7.3	660	6.7	663	6.2	728	5.7
5. Constitution of U.S.S.R.....	66	.7	66	.7	33	.3	—	—	70	.5
6. Geography.....	545	5.7	528	5.5	479	4.9	493	4.0	434	3.4
7. Psychology.....	—	—	66	.7	33	.3	—	—	—	—
8. Logic.....	—	—	66	.7	—	—	—	—	—	—
Group II: Scientific (mathematics and sciences).....	3,431	35.9	3,399	35.2	3,300	33.5	3,332	31.4	3,727	29.1
9, 10. Mathematics (arithmetic, algebra, geometry, trigonometry), total.....	2,112	22.2	2,112	21.9	1,980	20.1	2,023	19.2	2,139	16.7
11. General science (nature studies, introductory and biology).....	462	4.8	446	4.7	396	4.1	408	3.8	511	4.0
12. Chemistry.....	346	3.6	329	3.4	347	3.5	340	3.2	407	3.2
13. Physics.....	478	5.0	479	4.9	544	5.5	527	4.9	631	4.9
14. Astronomy.....	33	.3	33	.3	33	.3	34	.3	30	.3
Group III: Applied (activity, skill and vocational arts).....	1,056	11.1	1,056	10.9	1,904	19.3	2,593	24.4	4,217	32.9
15. Physical education (including military training for boys).....	594	6.3	594	6.1	660	6.8	782	7.5	800	6.2
16. Drawing.....	165	1.7	197	2.0	198	2.0	204	1.9	330	2.6
17. Drafting.....	165	1.7	132	1.4	132	1.3	136	1.3	71	.6
18. Singing.....	132	1.4	132	1.4	198	2.0	204	1.9	287	2.2
19. Manual labor and school workshops.....	—	—	—	—	330	3.3	408	3.8	2,073	16.2
20. Obligatory excursions to production enterprises.....	—	—	—	—	188	1.9	191	1.7	—	—
21. Practical experience in industrial or agricultural enterprises.....	—	—	—	—	198	2.0	—	—	430	3.3
22. Fall and spring field work and industrial work after school.....	—	—	—	—	—	—	102	1.0	—	—
23. Fundamentals of production (course).....	—	—	—	—	—	—	374	3.6	(?)	—

24. Practical work (summer employment) after the end of the school year.....							192	1.7		
Total.....	9,554	100.0	9,669	100.0	9,857	100.0	10,617	100.0		
Optional vocational electives.....	None		None		None		170		1.226	1.8
Grand total.....	9,554		9,669		9,857		10,787		12,828	100.0

¹ Optional vocational subjects in 1959-63 curriculum are counted in group III and are a part of the regular curricular structure.

² For 1959-63 curriculum, combined allocation of hours for various skill activities is included under "manual labor and school workshops."

Sources: Data for 1947, 1952, and 1955 refer to all types of schools; data for 1957 refer to urban schools only. There are differences between urban and rural schools in the hours required for the fall and spring fieldwork which account for the differences in group III and total. Years refer to academic years, i.e., 1947-48, etc. Data for the 1959-63 curriculum refer to 11-year complete secondary labor-polytechnical schools.

Soviet patriotism and proletarian internationalism; dedication to the goals of the community, the state, and the Communist Party; dedication to socialist labor; and acceptance of approved common rules of conduct and etiquette.

Because the Communists themselves declare that their educational system is, first and foremost, oriented toward the development of the ideal personality—"the new Soviet man"—many Western observers have emphasized "*moral education*" of the Communist type as being the most important. This does play an important role in the educational process, to be sure; but it does not necessarily shape the content of education. Until the mid-1950's the content of Soviet education reflected a dominant emphasis on academic education; since then, the dominant influence has been *polytechnical education*, with specific vocational preparation in the upper grades. Physical education and, in particular, esthetic education have had relatively small roles.

Table 5 presents data on the curricular changes in Soviet primary-secondary schools during the postwar period. Two trends become obvious upon examining these data. One is the steady increase in the total number of instruction hours, from 9,554 in 1947 to 12,828 in the 1959-63 curriculum. The extra hours result from increasing the weekly instruction load, lengthening the school year, and, in the 1959-63 curriculum, adding an extra grade to the former 10-year program.

The second trend which may be observed is the change in the proportion of time devoted to the three main areas of the curriculum: (1) general academic; (2) scientific; and (3) applied subjects. The 1947 curriculum, which was largely prevalent in Soviet schools also during the 1930's and early 1940's, greatly resembles the 1952 curriculum. In the 1952 curriculum the number of hours devoted to general academic (5,214) and scientific (3,399) subjects represented 53.9 and 35.2 percent, respectively, of the total number of hours; but in the 1955 and 1957 curriculums, the number of hours devoted to these subjects declined, and their proportion in relation to the total was also reduced, with a sharp rise in the proportion of time devoted to applied subjects (from 10.9 percent in 1952 to 19.3 percent in 1955, and 24.4 percent in 1957). Thus, purely academic areas were being deemphasized in order to allow more time for vocational skill subjects.

In the 1959-63 curriculum, while the absolute number of instruction hours devoted to general academic subjects increased (from 4,692 in 1957 to 4,884 in the new curriculum) and hours devoted to scientific subjects also increased (from 3,332 to 3,727), the *proportion* of time devoted to these subjects dropped even further, while the proportion of time devoted to applied subjects increased again from 19.3 percent in 1955 to 32.9 percent in 1959-63.

In the new (1959-63) curriculum the bulk of the additional 2,041 hours of instruction is to be allocated to activity, general polytechnical and special vocational subjects, workshop, and industrial practice. The sciences and mathematics will gain about 400 instruction hours, while humanities will gain about 200 hours. Newly introduced polytechnical subjects will be largely science or technology oriented, given as applied courses, but closely linked, nevertheless, with regular science and mathematics instruction. This comparison indicates an even greater emphasis in the future on scientific and technical subjects. The net effect of the additional school year will

be to increase instruction hours in these fields, but the expansion in the scientific and vocational (largely technical) will be about one-third.

In the new 11-year school the Soviet student must take a standard set of academic subjects, with language and literature and mathematics being taught in all grades. History and geography begin in grades 4 and 5, respectively, and continue through grade 11. Science courses are introduced gradually beginning in grade 4 and continue through grade 11. Activity subjects—physical education and music—are required in all grades. Manual training is required in both the elementary grades and in grades 5 to 8. As in the past, there are no electives as far as academic, activity or manual training subjects are concerned. The only option the student may exercise is in grades 8 to 11, when he may select one of a number of alternatives in the fundamentals of production and specific trade skill training.

COMPARISONS OF SOVIET AND AMERICAN INSTRUCTION PROGRAMS

In comparing primary-secondary school programs in the United States with those in the U.S.S.R., the difficulty is that on the American side we have to deal with a heterogeneous and highly diversified instruction effort and, on the Soviet side with a rather homogeneous and standard curriculum. Unlike the situation in many other nations, no "national curriculum" exists in the United States. The responsibility for curricular planning and development rests primarily with the local educational authorities and in some subject areas with State educational agencies.

Curricular formulation in the United States is affected or influenced by local or national opinion, but there is no one individual or agency responsible for overall, national standards. Hence, any generalized statement is apt to be misleading—the exceptions may be as numerous as the typical instances. The range of curriculums in the U.S. elementary and secondary system is very great, depending upon local conditions and attitudes. For example, a large-sized American high school may offer up to 80 different courses, 20 of which may be taken in academic subjects by a student enrolled in a strong college preparatory program. This would be comparable to the standard number of subjects taken by a Soviet student in the three upper grades of secondary school, though in the Soviet case the course load is usually heavier. However, if we compare minimal requirements for the academic courses which must be taken by an American high-school student in programs other than college preparatory, they will be substantially fewer in number and shorter in time input than in the standard Soviet secondary-school program. The standard curriculum of the U.S.S.R. assumes that all students of a particular type of school will be provided instruction in the same subject matter. The comprehensive high school in the United States offers numerous curriculums to meet varying student interests, including academic, vocational, commercial, etc. As one result, only the academic curriculum of U.S. high schools approaches the Soviet program on the secondary school level.

Let us consider instruction in science and mathematics as an example. In the Soviet Union (pre-1959 curriculums), science as a separate subject of instruction appeared at the grade 4 level, and at the grade 5 level departmentalized science instruction with specialized teachers began. Physics fundamentals were initiated at grades 6 and 7; and

further developed in grades 8 to 10. Chemistry started at grade 7, and biology at grades 5 and 6. Arithmetic commenced in the primary grades, and developed into algebra and geometry (grades 6 to 10) and trigonometry (grades 9 to 10).

Exposure to scientific and quantitative concepts in the U.S. educational system begins as early as the first grade. Many elementary schools have—or are developing—curriculums which are including instruction in various aspects of science, and most school curriculums are designed to give the child an awareness and appreciation of science. Arithmetic is given to nearly all elementary students from the first grade on, and in some schools the brighter pupils are studying algebra and geometry by the seventh and eighth grades.

In the United States, science instruction does not start as a separately organized subject before grade 7. Typically, only a single year of a given science subject—biology, physics, chemistry—will be given through grade 12. In mathematics, instruction is usually available through algebra, solid geometry, and trigonometry. In U.S. secondary schools the offerings in science and mathematics are more formalized, in terms of subjects to be studied, than is true for elementary schools. The standard courses in science are general science, biology, chemistry, and physics; in a number of schools some instruction is given in astronomy, geology, and other fields. In mathematics, the usual courses offered are beginning algebra, plane geometry, intermediate algebra, solid geometry, and trigonometry. The tabulation below presents the ratios of the number of students enrolled in a particular science or mathematics course to the total enrollments in the grade at which the course is typically taken.

Courses in U.S. high school	Typical grade level	Percent of pupils enrolled of total in grade
General science.....	9	67.0
Biology.....	10	75.5
Chemistry.....	11	34.6
Physics.....	12	24.3
General mathematics.....	9	43.1
Elementary algebra.....	9	67.0
Plane geometry.....	10	41.6
Intermediate algebra.....	11	32.2
Plane trigonometry.....	12	9.2
Solid geometry.....	12	7.6

It will be seen from the foregoing data that only two science courses and one mathematics course represent the typical training of American high school graduates. Only about one-third of the students take chemistry and one-quarter physics. In mathematics, about one-third are found in intermediate algebra, but less than 10 percent study trigonometry or solid geometry. About three or four high school units (a "unit" represents the study of a given subject, or "course," 5 days per week for a full school year of approximately 35 weeks) in science and three or four in mathematics are recommended as prerequisites for collegiate training in science and engineering. In general, the stress on science and mathematics is considerably greater in Soviet than in American schools. Specialized instruction in science begins earlier in the U.S.S.R. and continues for a larger proportion of

students. An "average" Russian 10-year school graduate will have had a much greater amount of instruction in chemistry, physics, biology, and mathematics than a mythical and harder to define "average" American high school graduate.

THE SIGNIFICANCE OF THE SOVIET SCHOOL REFORMS

The meaning of the educational reform in the U.S.S.R., because of its complexity, is at least a controversial one. The timing of the reform and some of its features suggest that it is a measure designed to speed up additions to the Soviet labor force of young people with skill qualifications who are needed to alleviate the shortages caused by demographic trends. This is the short-run aim of the reform.

The sharp drop in the birth rate caused by the wartime losses affected the school-age population throughout the 1950's and its effects are now carrying over into the working-age population and will continue throughout the 1960's. Briefly, these demographic forces may be summarized on the basis of the recently announced census figures as follows:

TABLE 6.—Comparison of Soviet school-age populations in 1939 and 1959

Grade level and age group	January 1939 estimates in postwar boundaries	Census of January 1959	Relation of 1959 to 1939 figure (approximate)
	<i>Thousands</i>	<i>Thousands</i>	<i>Percent</i>
Preschool (ages 0 to 7).....	34,784	38,088	+10
Elementary (ages 8 to 11).....	20,042	14,984	-25
Junior secondary (ages 12 to 14).....	17,019	8,565	-50
Senior, secondary (ages 15 to 17).....	11,241	10,193	-9
All levels (ages 8 to 17).....	48,302	33,742	-30

Source: Pravda, Feb. 4, 1960.

In 1939 the population of 8- to 14-year-olds was 37 million. In 1959, however, this age group was reduced to 23,500,000, a decline of 13,500,000. The present deficit of school-age population will perpetuate into the labor force in the early 1960's so that the labor force of working-age population (15 to 59) will *not* increase appreciably during the current 7-year plan. The situation will ease only toward the end of the 1960's.

On the other hand, the chief aim of the reform is the long-run refinement of the quality of Soviet labor. Obviously, this long-range objective calls for improvement of formal training along such lines as to enhance the skill preparation of the labor force. This latter objective is reflected not only in primary and secondary education, but also in semiprofessional and professional training programs. The expressed intention of the educational reform is therefore not merely to permit accelerated additions to the labor force, but especially to provide training which will *effectively improve qualitative labor skills*. Such qualitative improvement is especially needed by the economy to complement the buildup of technical capital, and in this sense most of the changes introduced by the educational reform may be said to aim at a strengthening of the technological buildup by redressing the balance of the different kinds of manpower trained.

With these objectives in mind, the cardinal problem remains as to how to achieve labor-oriented schooling for the masses without sacrificing altogether the essential academic preparation of the relatively small number of persons required by the socioeconomic plan to be trained for advanced professional tasks. The solution (discussed above) consists in superimposing on the standard general education curriculum a localized system of supplemental labor training shaped in accordance with local economic needs and the availability of skilled training outlets. In essence, these measures open up the path for introducing in the U.S.S.R. diversified and comprehensive secondary schooling as exists in many other countries of the world.

SECONDARY SEMI-PROFESSIONAL EDUCATION IN THE U.S.S.R.

In training new skilled labor and improving the quality of the labor force, the Soviet Union depends on an elaborate system of schools and courses which are operated separately from the system of general schools. In the American setting there are comprehensive high schools which offer different options in the instruction program (college preparatory, general, commercial, vocational, etc.), though each of the options may have a core of common subjects. There are also special-purpose high schools such as technical, agricultural, etc. In the U.S.S.R. such diversified high-school education within general secondary schools does not exist.

There are two components in the Soviet educational system which must be clearly distinguished. First, the general education schools, which until the mid 1950's were primarily concerned with the preparation of students for higher education, offered an academic curriculum. The second component consisted of a system of schools specifically aimed at training semiskilled and skilled manpower and, on the secondary level, semiprofessionals. This dual division of functions reflects the philosophy of Soviet education which prevailed for a period of almost three decades and which stipulated that specialized education could be offered more efficiently in a *separate* system of school facilities. Semiprofessional schools have been providing for the last three decades the necessary diversity in training which the standard curriculum, one-track, academic secondary schools did not.

In recent years there have been in the U.S.S.R. about 3,760 semiprofessional schools, with an enrollment of about 1,800,000 students aged 14 to 30. Until 1950 semiprofessional schools were as a rule 4-year secondary schools, accepting persons with completed 7-year education who could pass the competitive entrance examinations. They were thus in effect the vocational-technical school counterpart of the upper grades (8-10) of the Soviet 10-year school. Starting in the early 1950's new programs began to be set up within the existing semiprofessional schools, and then entire schools changed over to 1½- to 2½-year programs offering training to graduates of the Soviet 10-year school.

The aim of instruction in the semiprofessional schools is to train the students in skills and knowledge that will qualify them for employment on the intermediate levels of professional competence. Curriculums for semiprofessional schools stipulate that the average

number of hours of instruction per week is to be about 40, with the range from 35 to 46. These instruction loads, unmatched either in America or West Europe, were commonplace in the past; today the burden is in fact even heavier, since full-time employment combined with part-time (evening) study is now compulsory in the second to fourth years of training. During these periods students, while employed for 40 to 46 hours per week, must spend an additional 16 hours per week in evening classes. In the past the academic year usually lasted 30 to 32 weeks and the total number of required instruction hours averaged between 1,200 and 1,300 per year. The new programs, some with 42 and even 46 instruction weeks per calendar year, will have 1,376 or more instruction hours. In engineering technicums, where required class attendance is usually higher, the load will in some cases exceed 1,500 instruction hours. In the past the 4-year curriculums were based on 5,000 to 6,000 instruction hours, including applied training. In advanced 2-year programs the number of hours was reduced by 1,500 to 2,000 and the general academic subjects were excluded. The distribution of instruction time among the different subject groups in 4-year programs ranged as follows:

	<i>Percent</i>
General academic subjects.....	25-30
General technical subjects.....	20-25
Specialized technical subjects.....	20-25
Applied training.....	25-30

Recent evidence indicates that many of the Soviet technicum or specialized secondary education graduates actually are comparable to our broad spectrum of vocational and technical high school graduates, technical institutes graduates, and some types of graduates from our junior or community colleges. In the contents of theoretical subjects, many of the Soviet technicum programs are definitely not inferior to similar programs offered in this country. The overall Soviet program requirement, however, including applied training, cannot be meaningfully compared with any counterpart in the United States because of the strong functional emphasis in Soviet training. Better American technical institutes, such as the Wentworth Institute in Boston, or the technical programs offered by some junior colleges, are much more diversified in content than Soviet technicums. The American schools combine under the same auspices several types of technician training programs which in the U.S.S.R. would be offered separately in individual technicums.

In quantitative terms, the United States system of formal semi-professional technician training (in technical institutes alone) remains small as compared with the Soviet effort in this field. However, if the aggregate number of persons trained in vocational-technical high schools, technical institutes, and vocational divisions of junior colleges is considered, the dimension of the United States effort would be significant, if not comparable in size, vis-a-vis Soviet semiprofessional training.

A summary of the total number of Soviet semiprofessional graduates and their distribution by field is presented in the following table.

TABLE 7.—*Graduates of Soviet semiprofessional schools, 1928-60*

	Graduates, 1928-60 (thousands)	Distribution in percent
Engineering-industrial technicians, total.....	2,676.8	35
Agricultural.....	1,134.0	15
Socioeconomic.....	578.3	7
Educational-cultural.....	1,718.8	23
Health medical.....	1,459.6	20
Total.....	7,567.5	100
Regular.....	6,947.3	92
Extension correspondence.....	620.2	8

The data reveal that throughout the 1928-60 period the main effort of the Soviet semiprofessional schools has been concentrated on the training of industrial technicians (35 percent of all graduates). This category was followed by semiprofessionals in the educational-cultural field (23 percent) and the health-medical fields (20 percent). In the United States there is no statistical reporting of graduates comparable to those from Soviet semiprofessional schools, and therefore it is not possible to make comparisons of the flow of semiprofessional graduates in the U.S.S.R. and the United States.

HIGHER EDUCATION PROGRAMS

Post-secondary school training in both countries is carried out in a system of institutions of higher education. In many respects Soviet higher education is different from that in American and most West European countries. All higher education in the Soviet Union is public, and all higher education programs are designed to develop individual talent for specialized professional employment. All institutions of higher learning in the U.S.S.R. are operated by the Central Government, which determines all such questions as what institutions to maintain, the programs of instruction to offer, the number of students to enroll, the staffs to keep, the facilities to operate, and many other questions of educational policy and practice. Individual institutions have some autonomy in deciding minor operational matters, but all major questions of educational policy are resolved by the all-union government. This centralized administration is the backbone of Soviet higher education, which is thus integrated into the overall centralized planning of the economic and social development of the country.

In the United States there are nearly 1,400 college-level institutions which grant a bachelor's degree (usually after a 4-year course). These institutions are either private or public, the latter operated for the most part by individual States. Each institution has its own curriculums, but, in conformity with a system of voluntary accreditation, certifies a student for the award of a bachelor's degree. These degree-granting institutions—which include large complex universities, liberal arts and teachers colleges, and various professional schools—are supplemented by about 500 community or junior colleges and technical institutes which provide either 2-year terminal training or the first 2 years of degree credit curriculums. The basic college training in the United States generally culminates in the award of a bachelor's degree—usually a bachelor of arts or bachelor of science degree. De-

degrees are awarded by several types of institutions of higher education—universities, liberal arts colleges, teachers colleges, technological schools, theological and religious schools, and so forth. Bachelor degrees are usually awarded upon completion of a 4-year academic course. However, some professional schools and others require 5 or more years of study.

The basic higher education level training in the U.S.S.R. is provided through attendance at higher educational institutions of several types. Included in the higher education institutions are medical institutes with 6-year training; engineering institutes and universities with 5 to 5½-year courses; agricultural, pedagogical, and socioeconomic institutes with 4 or 5 years of training; and teacher training institutes with 2 years (now replaced by 4- and 5-year pedagogical institutes). In 1960 the Soviet Union had 739 higher educational establishments. All Soviet higher educational establishments are *professionally* oriented establishments; the Soviet Union does not have any general education or liberal arts colleges or nonprofessionally oriented undergraduate programs of instruction such as are commonly found in American colleges and universities. Soviet institutions of higher learning combine under one roof American undergraduate college education and the professional school training of American universities. Soviet students trained in these various types of universities or institutes follow standardized curriculums and receive diplomas (but not degrees) upon completion.

In the Soviet Union, as elsewhere, students are educated in diverse fields of study. The Soviet philosophy of higher education is firmly rooted in the conviction that man is destined to perform a specific task in society. Those who advance into higher education, therefore, must become specialists so that they may make maximum use of their capabilities. What distinguishes Soviet higher education as a distinct development in the concept of functional education is the *degree* of specialization derived from formal training. Largely because of this specialization, Soviet professional schools are run as independent units—institutes—which are physically separated from one another. Thus the bonds which exist between different faculties of American or West European universities are broken in the Soviet case, and each Soviet “institute” is a separate administrative unit with its own faculty facilities, and students.

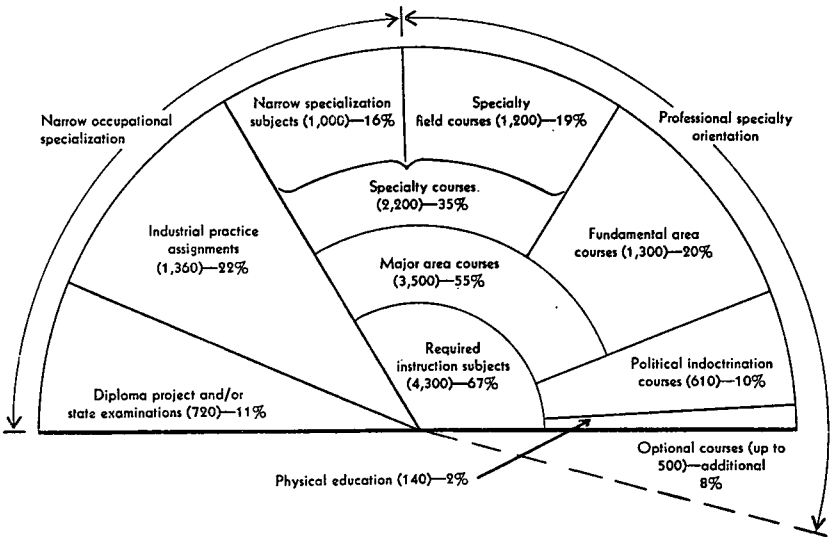
The student's field of study in higher education is designated by the term “specialty” (*spetsial'nost'*). All students acquire a specialty as a result of higher education study. This applies to any field of knowledge, be it science, engineering, literature, the fine arts, ballet, school teaching, or medicine. The Soviet student chooses his specialty at the time he enters higher education, then embarks on a well-defined program which he must complete in order to qualify as a “specialist” in the narrow occupational meaning of the term. “Specialization” in the U.S.S.R., therefore has considerably narrower meaning than in American professional education; it entails training in an individual, narrowly defined field of professional knowledge, which will equip the student to perform a given occupational job. Professional specialization in the Soviet Union is much more pronounced than anywhere else in the world.

Despite the great diversity of specialties and the variety of programs, it is possible to single out some common features of all programs

and construct a schematic picture of the general pattern of training programs in Soviet higher education. Chart II has been designed to summarize the overall pattern of these programs.

Any such construction is merely hypothetical, for the time devoted to the various areas may be slightly different in individual programs. Counting all types of activities, Soviet higher education programs require, during 5 to 6 years of study, an estimated total of 6,300 hours (not counting the student's outside preparation and study). Chart II shows schematically the different phases in the orientation of instruction programs: classroom instruction in required subjects, industrial practice, the diploma project, and optional courses. About two-thirds of all time input is devoted to required subjects of instruction specifically indicated in each curriculum. Included in these required subjects in all curriculums are physical education and political indoctrination. The rest of the time is devoted to major area courses. These in turn may be subdivided into fundamental subjects and specialty subjects, the latter again into broad and narrow specialization areas. If we consider the total requirement, about one-half of the student's time (including that for the practice assignment and the diploma project) is devoted to the professional specialty (about 39 percent) and the mandatory political indoctrination and physical education courses (about 12 percent).

CHART II.—Hypothetical structure of instruction programs in Soviet higher education.



NOTES.—The hypothetical structure of instruction programs was made under the assumption that during practice assignments, students are required to work a 40-hour week and while the diploma project is being prepared or students are preparing for state examinations, they study also an average of 40 hours per week. The assumed grand total load is 6,330 hours for an average 5½-year program. Optional courses are not included in the distribution.

The hypothetical number of hours indicated on the chart is valid as a crude approximation only, and in actual curriculums the time inputs allocated to different phases may deviate by as much as 10 percent. In the allocation of time, the deviation is considerably smaller, with a variation of several percent from the hypothetical distribution.

In sum, the general pattern of Soviet higher education programs is that about 88 percent of the student's time must be spent on professional specialty training, about 39 percent of this devoted to fundamental and broad specialty courses, the remaining 49 percent to narrow occupational specialization.

The question naturally arises how such a pattern of higher education compares with that in the United States. An attempt to answer such a question usually leads to difficulty. In fact, there is no single answer; it depends entirely upon specialty field, even though it may be said without hesitation that the time inputs required in Soviet higher education are invariably greater than in the United States. In many scientific and engineering fields, as far as basic courses are concerned, Soviet higher education transmits about the same amount of, and at times more, knowledge as United States or West European institutions of higher learning. In the humanities and the social sciences, on the other hand, "objective knowledge" is transmitted only when it is coupled with a doctrinaire interpretation of Communist dogma. In all cases, however, in every discipline—the natural sciences, engineering, the humanities, social sciences or arts—the Soviet higher education curriculums are characterized by specialization, with the result that the student's education is made functional, applied, and pragmatic.

DEVELOPMENT OF PROFESSIONAL MANPOWER

The decisive role of high-level manpower in advancing industrial development is universally recognized. This high-level manpower is trained to a large extent in institutions of higher learning. The aggregate trend in the production of higher education graduates in the U.S.S.R. and the United States can be judged from the growth of the graduating classes.

At present total Soviet enrollment in higher education, including part-time programs, is two-thirds the enrollment of resident students in U.S. colleges and universities, and only one-third if Soviet part-time enrollment is not included. In the U.S.S.R. only 12 percent of the total higher education age population are actually enrolled in any kind of higher education program, and only 6 percent in regular full-time programs, as compared to 25 percent of the college-age population attending institutions on a full-time basis in the United States.

When the sizes of annual graduating classes in the two countries are compared, however, the numerical gap becomes substantially reduced. One of the chief reasons for this is the substantially higher "success" rate of Soviet higher education students. The following

data show the narrowing of the U.S. margin of superiority in graduations:

	Russian Empire and U.S.S.R.— Graduates from professional higher educational establishments	United States— Bachelor and 1st professional degrees from colleges and universities		Russian Empire and U.S.S.R.— Graduates from professional higher educational establishments	United States— Bachelor and 1st professional degrees from colleges and universities
1900.....	5,000	27,400	1953.....	220,200	304,900
1910.....	12,200	37,200	1954.....	234,800	292,900
1920.....	43,900	122,600	1955.....	245,800	287,400
1940.....	126,100	186,900	1956.....	259,900	311,300
1946.....	76,000	136,200	1957.....	266,500	340,300
1950.....	176,900	433,700	1958.....	290,800	365,700
1951.....	201,400	394,400	1959.....	338,000	385,200
1952.....	219,200	331,900	1960.....	342,100	394,900

In 1960 the total number of Soviet professional graduates was 18 percent less than the number of U.S. bachelor and first professional degrees in 1960.

Soviet professional higher education transmits at least the same amount of substantive knowledge as do institutions of higher learning in the United States or Western Europe. But at the same time the Soviet system of education, and particularly professional higher education, is not concerned with nonspecialized education, with broad general humanistic or liberal arts education which is not specifically aimed at teaching the performance of occupational functions. In essence, Soviet professional education is aimed at the development of competent specialists rather than generalists. This orientation is reflected in the composition of graduates from institutions of higher learning in the two countries.

Table 8 compares the size and structure by field of graduating classes in the U.S.S.R. and the United States in 1960. The data reveal a radical difference in the composition of the respective graduating classes from Soviet professional higher educational establishments and the degree awards (bachelor and first professional) from U.S. colleges and universities. It should be noted parenthetically that any comparison of this sort is only partially satisfactory. There are many difficulties which cannot be solved because of certain differences in the grouping of graduates, as well as qualitative differences (especially the fact that in the U.S.S.R. about 30 percent of the annual graduates come from extension-correspondence programs), which are hard to define in the case of either country. Nevertheless, a comparison can be made which will be valid as an approximation.

TABLE S.—Structure of higher education graduating classes in the U.S.S.R. and the United States, 1960

U.S.S.R.			United States		
"Diploma" graduations by field of study			Bachelor's and 1st professional degrees by field of study		
Field	Thousands	Percent	Percent	Thousands	Field
Grand total.....	342.1	100.0	100.0	394.9	Grand total.
I. Engineering, all fields.....	111.1	32.2	10.2	40.4	I. Engineering, all fields (37.8) and ROTC programs (2.6).
II. Agricultural, including agronomy and animal husbandry, forestry and veterinary medicine.	34.7	10.2	1.8	7.1	II. Agriculture (4.9), including agronomy and animal husbandry, forestry (1.4), and veterinary medicine (0.8).
III. Socioeconomic (economics, management, and jurisprudence).	24.7	7.1	17.3	68.3	III. Business and commerce (51.5), economics (7.5), and law (9.3).
IV. Educational-cultural, total.....	141.6	41.7	64.7	255.4	IV. Educational-cultural, all fields, and among these:
(1) Of which university programs, total.....	38.1	11.1	11.0	43.2	(1) Science majors: mathematical (11.4), physical (16.1), and biological (15.7).
(a) Mathematical, physical, and biological sciences.	(22.0)	(6.4)			
(2) Teacher training establishments.....	94.0	27.4	22.8	90.2	(2) Education (teacher training establishments and education majors only).
Mathematics and science teachers only.....	(40.0)	(11.7)			
(3) Other cultural service fields.....	7.0	2.5	27.1	107.0	(3) Humanities, languages, and social sciences: English and journalism (22.5), foreign language and literature (5.5), geography (1), social sciences (except economics) (44.3), psychology (8.1), philosophy (3.5), religion (9), home economics (4.4), library science (1.9), other miscellaneous (6.8).
(4) Fine arts.....	2.5	.7	3.8	15.0	(4) Fine arts (13.2) and architecture (1.8).
V. Health fields, total.....	30.0	8.8	6.0	23.7	V. Health fields, total.
(a) Physicians only.....	(27.0)	(7.9)	(1.8)	(7.1)	(a) M.D.'s only.
Engineering, science, and applied science professions (excluding science teachers) sum of I, II, IV (1) (a), V(a).	194.8	56.7	24.8	97.8	Engineering, science and applied science professions (excluding teachers—science majors) (sum of I, II, IV (1), V(a)).

In the Soviet Union about 57 percent of the total 1960 graduating class was composed of engineering, other natural and physical science, and applied science majors. If science majors in Soviet pedagogical institutes (40,000, or 11.7 percent of total graduates) are added, the percentage is even larger. In the United States, on the other hand, only about 25 percent of total 1960 graduates were in the engineering and other natural and physical science fields. The Soviet "engineering" classification contains some categories (totaling about 10 percent) which in American practice would not be so classified. This does not, however, appreciably affect the validity of the comparison. Engineering graduates alone constituted only 10 percent of the total United States graduating class, as against 32 percent in the Soviet Union. All agriculture majors made up about 10 percent of the total Soviet graduates, while in the United States they represented less than 2 percent. Medical-health graduates in the Soviet Union, consisting primarily of physicians, accounted for about 9 percent of total graduations, as against 6 percent in the United States. The Soviet medical category, moreover, excludes medical technicians and nurses (trained in semiprofessional schools), who are included in, and represent a sizable proportion of, United States medical field graduates; and Soviet graduates in this field include a much smaller proportion of pharmacists and other such specialists than is the case in the United States. If medical doctors alone are considered, the U.S.S.R. had a 4-to-1 advantage: physicians accounted for 8 percent of all Soviet graduates, compared to less than 2 percent in the United States.

In number of graduates in the physical and biological sciences, the United States had a substantial lead over the U.S.S.R. (43,200 to 22,000). In the United States, however, these graduates included perhaps 5,000 to 10,000 who were trained as prospective science teachers, whereas this category was entirely excluded from the Soviet figure since science teachers in the U.S.S.R. (numbering about 40,000) are trained separately in pedagogical institutes. In all fields of the humanities and social sciences, the United States had a substantial lead over the U.S.S.R. In the socioeconomic field, the number and proportion of business and law majors in the U.S. graduating class were also $2\frac{1}{2}$ times as large as the U.S.S.R.'s socioeconomic branch graduates.

In sum, except in the physical and biological sciences and mathematics, the Soviet Union, with a smaller total graduating class, produced more professionals in various engineering, applied professional and scientific fields than the United States. The Soviet Union graduated three times as many engineers, five times as many agricultural specialists, and about four times as many physicians as the United States did. At the same time, of course, the Soviet Union had a much smaller number of "other field" graduates—i.e., in the humanities, the social sciences, and the liberal arts—which accounted for 27 percent of all U.S. graduates, an elevenfold lead over the U.S.S.R. in these areas.

These comparisons emphasize dramatically the trend which has prevailed through the 1950's. While the Soviet Union trails behind the United States—and will continue to trail in the foreseeable future—in aggregate annual numbers of higher education graduates, its carefully planned emphasis upon scientific-technical training has already achieved an unquestioned numerical advantage in these strategic fields. The U.S.S.R. now maintains an annual flow of scientific and

technical professional manpower from its higher educational institutions two to three times larger than that in the United States. In the aggregate, a 2-to-1 numerical lead by the Soviets prevailed in the 1950's and will continue during the decade of the 1960's, with estimated annual outputs of about 230,000 professionals in engineering and scientific fields, as compared with projected figures for the United States of 110,000 to 120,000 graduates in these fields annually.

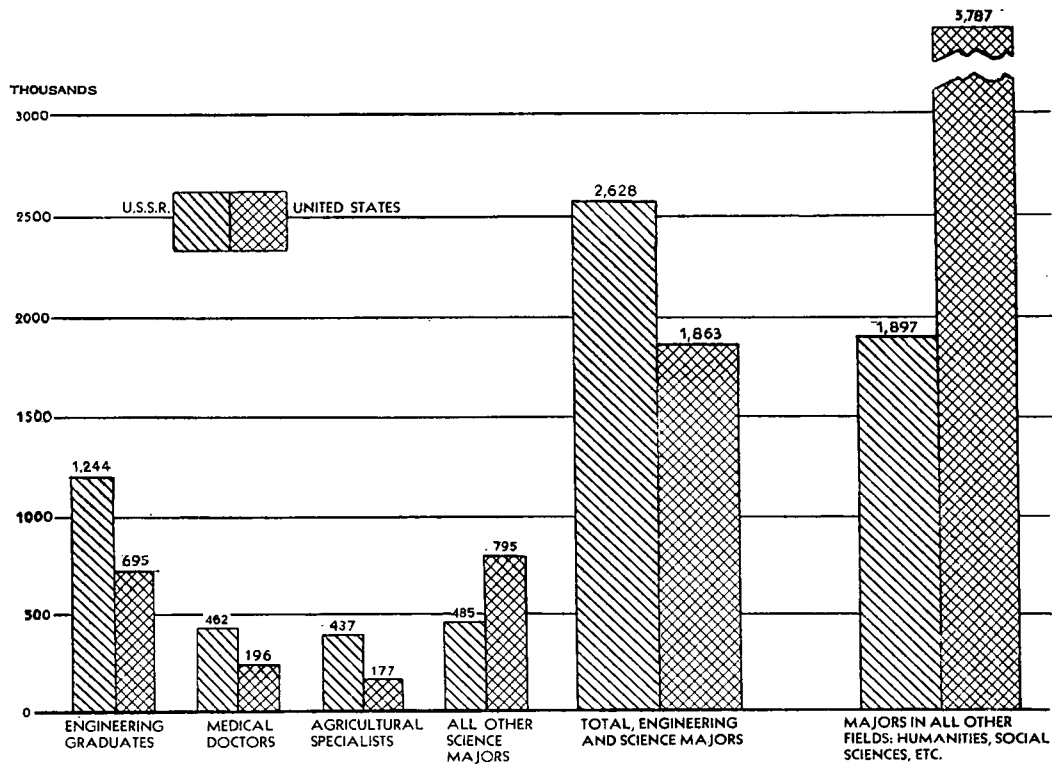
Historical trends in the production of higher education graduates in the U.S.S.R. and the United States are summarized in table 9 and depicted graphically in chart III. At the professional level, the Soviet Union produced during 35 years, 1926-60, 4,525,000 graduates from higher educational institutions, or about 40 percent less than were trained in colleges and universities in the United States during the same period (total, 7,650,000). In spite of this, the Soviet Union graduated 1.8 times as many engineers as did the United States. There were 2.4 times as many agricultural field graduates in the Soviet Union as in the United States. While in all health fields put together the number of Soviet and American graduates was about the same, in medicine alone, 2.4 times as many "physicians" were graduated in the U.S.S.R. than medical doctors in the United States.¹ The United States trained about 310,000 more persons in the aggregate number of graduates with science majors than were trained in Soviet university and pedagogical institute programs.

TABLE 9.—Professional graduates with completed higher education in the U.S.S.R. and college graduates in the United States, 1926-60

Field	U.S.S.R.	United States	Comparison and notes
Engineering.....	1,244,000	695,000	U.S.S.R. trained 1.8-fold as many as United States. Soviet reporting is inflated, in comparison with U.S. figure, by about 15 percent by inclusion of some other science fields (about 10 percent) and graduates in economics (about 5 percent) normally reported elsewhere in U.S. practice.
Medical doctors.....	462,000	196,000	U.S.S.R. trained 2.4-fold as many as United States. Physicians only (medical doctor equivalent) were included in U.S.S.R.'s figure.
Agricultural specialists.....	437,000	177,000	U.S.S.R. trained 2.2-fold as many as United States.
Science majors, total....	485,000	795,000	United States trained 1.6-fold as many as U.S.S.R. The category includes chemistry, physical sciences, and mathematics, earth sciences (geology, etc.), and biology. In the U.S.S.R. some of the majors in these fields are also found among engineering specialties above.
Among these from—			
Universities.....	203,000	-----	
Pedagogical institutes.....	282,000	-----	
Total, engineering, applied and theoretical science fields.	2,628,000	1,863,000	U.S.S.R. trained 1.4-fold as many as United States.
All other fields: Humanities, social sciences, teacher training in nonscientific fields, arts, etc.	1,897,000	5,787,000	United States trained 3-fold as many as U.S.S.R. There was greater diversity of training in the United States, with heavy emphasis on business and commerce, social sciences, and jurisprudence.
Grand total.....	4,525,000	7,650,000	United States trained 1.7-fold as many as U.S.S.R.

¹ Note that Soviet physicians receive 6 years of professional training, while in the United States most M.D.'s receive, in addition to 4-year premedical college training, 4 years of professional medical education, followed by 1 to 2 years of internship and residence practice. It is generally recognized that U.S. education for M.D.'s is more extensive, particularly in the clinical training phase, than Soviet training programs for physicians.

CHART III.—Comparison of graduates from Soviet higher educational establishments, and from U.S. colleges and universities, 1926–60, by field



While the Soviet training of specialists in engineering, medical, and agricultural occupations proceeded rapidly, the number of higher education graduates trained in other fields was relatively small. In all other fields, U.S. colleges and universities trained almost three times as many as did Soviet higher educational establishments. In the social science fields the Soviet Union trained only about one-tenth as many persons as were trained in these fields in the United States. In the humanities, liberal arts, and other miscellaneous fields, Soviet higher education trained but a small fraction of the number of persons trained in these fields in American colleges and universities.

The differences in emphasis of the Soviet and American efforts are revealed strikingly when the distribution of graduates is compared as follows:

Graduates by field	Percent of total graduates	
	U.S.S.R.	United States
Theoretical and applied science fields:		
Engineering.....	27	9
Medicine.....	11	3
Agriculture.....	9	2
Natural and physical sciences.....	10	10
Total of all theoretical and applied science fields.....	57	24
All other fields: Humanities, liberal arts, social sciences, business administration, jurisprudence, etc.....	43	76
Total of all fields.....	100	100

Due to its emphasis on scientific and technical fields, then, the Soviet Union had a substantial advantage over the United States, in both relative and absolute terms, in engineering, medicine, and agriculture.

The comparisons made above clearly indicate that while the United States made a greater effort to provide higher education for a larger number of people in various nonspecialized fields, and thus to promote the aims of general higher education, the Soviet Union proceeded with the buildup of specialized professional manpower resources primarily in scientific and applied fields, and largely at the expense of general education. While American higher education provided more opportunity for general higher education, it lagged by a factor of 1 to 1.4 behind the Soviet effort in training engineers, scientists, and applied science specialists. This Soviet scientific and technical manpower buildup has become the principal source of Communist strength, in spite of the denial to the Soviet people of educational opportunity in other fields of human knowledge—the humanities, the social sciences and other areas of general and liberal higher education.

STOCK AND DEPLOYMENT OF PROFESSIONAL MANPOWER

As of January 1961, the U.S.S.R. had a total stock of about 4.5 million higher education graduates, some 80 percent of whom were gainfully employed in the national economy. This total stock of professionals was about one-half the aggregate number of U.S. college graduates with bachelor and higher degrees. About 73 percent of the 8.5 million higher education graduates in the United States were

gainfully employed in the national economy. The Soviet stock was composed of 48 percent female (as compared with about 40 percent for the United States). Moreover, most of the Soviet female professionals (87 percent) were gainfully employed in the national economy, versus 56 percent of U.S. women college graduates. The Soviets thus had an advantage, not only in the proportion of women professionals, but also in the degree of their utilization in the economy. The Soviet stock of professionals was also substantially younger: 48 percent of them in the 20-to-34 age group, as compared with about one-third in this age group in the United States.

While the United States had a substantial 2-to-1 advantage over the U.S.S.R. in terms of total stock, the pattern of employment of this stock was radically different in the two countries. Table 10 presents data on employment trends of Soviet professional graduates by branches of the national economy for selected years since 1941, and the composition of professional employees by former field of training in 1960. Among the historical trends to be particularly noted is the expansion of professional employment in the research and development establishments of the Soviet Union. In the decade of the 1950's, the expansion of professional employment in agriculture and trade, two bottleneck areas of the Soviet economy, should be especially noted. Despite this, the 20-year trend indicates that the two dominant branches of professional employment in the U.S.S.R. have remained industry and education.

TABLE 10.—*Employment of Soviet professionals by branch of the national economy 1940–60, and distribution of professionals by former field of specialized training, 1960*

[In thousands]

	Jan. 1, 1941	July 1, 1950	July 1, 1955	Dec. 1, 1960	Distribution by former field of training as of Dec. 1, 1960					
					Engi- neering	Agri- culture	Medi- cine	Educa- tion	Eco- nomics	Other
Total in national economy.....	909.0	1,442.8	2,184.0	3,545.2	1,115.5	241.8	400.6	1,378.1	197.7	211.5
I. Industry and related total.....	277.9	371.1	566.0	1,202.7	900.0	47.5	18.2	117.7	88.2	31.1
1. Industrial enterprises (manufacturing, mining and utilities).....	152.5	172.6	256.8	494.4	377.0	16.0	2.1	33.9	48.3	17.1
2. Construction enterprises.....	16.9	25.0	39.5	93.1	79.6	1.1	.2	2.2	8.0	2.0
3. Transportation and communication.....	17.3	32.0	43.2	73.1	56.8	1.6	.9	3.4	8.1	2.3
4. Research, development and testing.....	91.2	141.5	226.5	542.1	386.6	28.8	15.0	78.2	23.8	9.7
(a) Research and development organizations.....	50.1	84.2	112.5	272.5	147.6	25.8	15	66.2	11.3	6.6
(b) Project and design organizations.....	37.3	49.3	96.7	232.1	206.3	2.7	0	8.8	11.4	2.9
(c) Geological and surveying organizations.....	3.8	8.0	17.3	37.5	32.7	.3	0	3.2	1.1	.2
II. Agricultural enterprises, total.....	12.2	22.0	88.4	98.0	18.1	72.9	0	2.3	3.4	1.3
III. Trade, procurement and distribution.....	7.0	18.5	28.5	79.7	6.7	5.9	0.6	4.4	30.0	32.1
1. Trade, public catering, and materiel-technical supply organi- zations.....	1.6	11.5	18.7	62.0	6.0	5.6	.5	3.9	14.4	31.6
2. Banking and insurance establishments.....	5.4	7.0	9.8	17.7	.7	.3	.1	.5	15.6	.5
IV. Government administration; cooperative, trade union, and other social organization management.....	129.4	157.3	196.2	300.3	85.9	35.6	6.7	56.1	60.4	55.6
V. Education and cultural services, total.....	343.9	572.2	927.3	1,349.4	79.1	27.6	25.5	1,162.5	10.8	43.9
1. Higher education and specialized manpower training estab- lishments (semiprofessional and labor reserve).....	114.5	163.5	215.3	278.3	74.6	21.2	24.3	120.9	9.9	27.4
2. General education (primary-secondary schools) and socio- cultural facilities.....	229.4	408.7	712.0	1,071.1	4.5	6.4	1.2	1,041.6	.9	16.5
VI. Public health institutions.....	114.8	202.1	267.1	361.7	.9	1.3	346.6	6.8	.3	5.8
VII. Other, unspecified.....	23.8	99.6	110.5	153.4	24.8	51.0	3.0	28.3	4.6	41.7

The pattern of employment of Soviet professional graduates by field of former training indicates the high concentration of such graduates in employment sectors coinciding with the fields for which they were trained. Indeed, the majority of Soviet graduates trained in engineering are concentrated in industry, research, and related fields. Likewise, the majority of graduates trained in education fields are employed in the public education sector. The majority of physicians are engaged in public health establishments. This pattern of employment suggests that not only initial placement policies (which assign graduates for a 3-year employment period in a place designated by the planning organs) but general employment policies of the Soviet regime concerning specialized professional manpower have been relatively effective in retaining professionals in those branches of activities for which they were specifically trained.

The radical differences in the pattern of employment of Soviet and American higher education graduates may be further evidenced by the following data:

Branch of economy	Percent of graduates employed	
	U.S.S.R.	United States
Manufacturing, construction, transportation, and communication— including research and development.....	27	28
Agriculture.....	4	3
Trade and distribution.....	1	21
Government administration.....	14	13
Education.....	43	22
Public health.....	11	13

These data indicate that over one-fifth of U.S. college graduates worked in trade and distribution, reflecting its consumption-oriented activities, while in the U.S.S.R. only 1 percent was thus employed. The proportion of higher education graduates employed in education was twice as high in the Soviet Union (43 percent) as in the United States (22 percent), reflecting another basic feature of the Soviet effort—emphasis on education as a crucial feedback mechanism for the buildup of its specialized manpower potential. In sum, then, this pattern of the deployment of Soviet professional manpower is a reflection of the radically different patterns of the orientation of human activities in the two economies, with the Soviet strategy still being aimed primarily at industrial expansion and the development of the human resources required for its attainment.

Another dimension in the deployment pattern of specialists is the performance of functions. Although the above data on the employment of Soviet professionals indicate that the majority of specialists are employed in those industry sectors of the economy for which they were trained. The general problem of actual on-the-job utilization remains an unexplored one. Similarly, for the United States, the question of actual utilization of college graduates, in relation to their former fields of training and performance of professional functions, still calls for serious study. In general, it is apparent that in the U.S.S.R., in the absence of generalists, Soviet technical specialists have many functions in various industrial administrations, management, and government. About one-half of all Soviet engineers are engaged either in managerial positions in industry directly, or in the

management of research and development, or in government administration. About one-third of Soviet physicians employed in the health sector of the economy actually combine their practice with managerial functions. Almost two-thirds of all agricultural specialists are employed in management. Such use of technical specialists in managerial positions, which in the United States are often filled by liberal arts and business administration graduates, tends to decrease the numerical imbalance in the stock of technical graduates between the United States and the U.S.S.R.

RETROSPECT

The development of Soviet education and specialized manpower resources should be viewed mainly in the context of total Communist advances—political, economic, social, and cultural. There is a much closer integration of educational and manpower policies with economic and political objectives in the Soviet totalitarian society than in other modern industrial nations whose policies are based on pluralistic values. Soviet education derives its strength and, by the same token, its weaknesses, from the fact that it is centrally planned and directed by the state.

In the Soviet Union a high premium is placed upon technical and specialized, rather than general, excellence. Science and technology are particularly recognized as the foundation of national strength, and consequently they receive emphasis on all levels of the educational effort. Secondary schooling provides the base for early (and mandatory) exposure to the sciences and technology, from which select individuals are chosen for professional education. The quality of Soviet professional training in scientific, engineering, and applied fields today is, on substantive grounds, comparable to that offered in the West. This is not true, however, of all fields—especially where political intervention is heavily felt or where exclusively applied objectives prevail.

With the numerical expansion of the stock of higher education graduates, the question of the adequacy of their specialized training becomes increasingly important. In recent years the exceedingly narrow specialization of Soviet professionals has been curtailed somewhat, though it still remains more pronounced than in the West. With the advent of the new phase of Soviet industrial expansion—accelerated technological change and the accelerated development of automation in which the narrow specialties of engineer and industrial technician training may prove quite insufficient and inadequate for the more sophisticated needs of the Soviet industrial economy—perhaps a broader professional education of Soviet specialists may become a necessity.

Many qualitative reservations, however, become less significant in view of the quantitative gains made by Soviet professional education over the last three decades. The planners have succeeded in increasing spectacularly the rate of producing specialists. Higher education is still accessible to a substantially smaller proportion of the Soviet population than is the case in the United States. Instead of making higher educational opportunity widely available, the Soviet regime has concentrated its efforts on the development of the specialized manpower needed to further its longrun economic and military goals.

As a result, in recent years the number of higher education graduates in the sciences and various applied fields—engineering, agriculture, and medicine—has exceeded substantially (by a factor of 2 or 3 to 1) the rate of training such specialists in the United States.

At the recent 22d Party Congress, Mr. Khrushchev reiterated the Communist regime's longstanding commitment to the expansion of Soviet education, forecasting a higher education enrollment of 8 million by 1980, as compared with the current 2.6 million students in Soviet institutions of higher learning. The United States had an enrollment of 4 million in higher education in the fall of 1961; by 1980, it will probably reach 8.5 million. If these targets are achieved by 1980, the Soviet Union will probably catch up with the United States in total enrollments in higher education. Whether or not these targets are actually achieved, however, the strong Soviet effort in developing human resources and in training professional specialists, particularly in science and engineering, will undoubtedly continue, posing a serious challenge in the longrun struggle between democracy and totalitarianism.

HIGHER EDUCATION IN THE U.S.S.R.

BY

SEYMOUR M. ROSEN

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HIGHER EDUCATION IN THE U.S.S.R.

I. PLANNING AND SUPERVISION

The scope, as well as the content, of the activities of the 739 Soviet higher educational institutions, their 146,900 staff members, and 2,395,500 students¹ are subject to planning and control by the central Communist Party and Soviet Government. As demonstrated in the educational reform of 1958, the Communist Party in Moscow initiates major changes for the educational system throughout the country and issues policy statements jointly with the Council of Ministers, of the U.S.S.R., the central government executive body. The U.S.S.R. Supreme Soviet, the central Soviet legislative body, then issues the educational laws based on joint decisions of the party and the Government. Thereafter, the Supreme Soviets of the 15 constituent republics follow with laws for the educational apparatus in each republic, closely modeled upon the law issued by the central legislative body. On the whole, the wording of the local laws is identical with that of the central government law, with minor variation to suit local conditions.

Central planning and operational control are implemented through a Communist Party and government executive hierarchy which form a chain of command from Moscow to each higher educational institution.

The party chain extends downward from the Central Committee's Section for Science, Higher Educational Institutions and Schools, through equivalent sections of the party apparatus in the 15 republics, to party offices located within each higher school.

The Government hierarchy extends from the Ministry of Higher and Specialized Secondary Education, U.S.S.R. Council of Ministers, through the 15 republic ministries and committees concerned with higher education, and laterally through the government ministries actually supervising the higher schools (which may not always be the higher education ministries).

The annual budget of each higher educational institution is decided by the central government within the framework of total State expenditures for the whole Soviet economy. Appropriation requests are submitted by the individual higher school through local government channels, and appropriations are considered within the framework of the budget for the constituent republic's Council of Ministers.

According to a statement by one Soviet university president, Rektor Sadykov of the Central Asian University in Tashkent, made in October 1961, Soviet universities are lavishly financed by the State, receiving all the funds they request as needed to execute their

¹ These statistics are reported in official Soviet sources for the school year 1960-61 and do not include Peoples' Friendship University named for Patrice Lumumba, established in 1960 especially for the training of foreign students from Asia, Africa, and Latin America. A recently released publication of the Russian S.F.S.R. Ministry of Education, Public Education in the Soviet Union, Moscow, 1962, cites data for the 1961-62 school year; 731 higher schools in the U.S.S.R., with an enrollment of 2,640,000 students. This paper utilizes the more detailed data for the 1960-61 school year (see app. A).

programs. The higher schools receive additional funds by fulfilling orders for applied research for local industrial establishments and ministries. As much as half of the budget of each higher institution is devoted to research.

The published Soviet budget for higher education covering the past 2 years, combined in official reporting with secondary specialized education expenditures, is shown below, in the context of total annual budget expenditures:

*U.S.S.R. state budget expenditures*¹

[In billions of rubles]

	1961 (announced December 1960)	1962 (announced December 1961)
Total, state budget expenditures.....	77.5	80.3
Education, training of cadres, science and culture.....	11.3	12.4
General education.....	3.5	² 4.3
Preschool institutions (nurseries, kindergartens).....	1.2	1.4
Boarding and extended day schools.....	.6	.6
Higher education institutions and technical schools.....	³ 2.2	³ 1.8
Scientific research and science.....	3.8	4.3

¹ The Soviet state budget for 1962 was announced in the Soviet press in December 1961; although the breakdown of the planned educational expenditures is not complete, available data are presented above, along with the data for 1961.

² A residual figure, which may include vocational as well as general education.

³ The 1961 figure of 2,200,000,000 includes vocational schools. The 1,800,000,000 figure for 1962 is not announced as including vocational schools. U.S.S.R. Minister of Finance, V. F. Garbuzov, stated (Izvestia, Dec. 7, 1961) that expenditures for higher educational institutions and technical schools for 1962 will be 7.9 percent higher than in 1961.

Greater details on Soviet expenditures in the sphere of higher education, shown within the framework of total state budgets, may be isolated by examining earlier Soviet statistics (see 3a, below):²

[Millions of rubles]

	1955	1958	1959	1960
Total Soviet state budget expenditures.....	54,000	64,300	70,400	73,100
Percent.....	(100)	(100)	(100)	(100)
Total social-cultural expenditures.....	14,717	21,418	23,118	24,937
Percent.....	(27.3)	(33.3)	(32.8)	(34.1)
Total enlightenment ¹	6,894	8,603	9,412	10,323
Percent.....	(12.8)	(13.4)	(13.4)	(14.1)
(1) General education; education of children and youth; and general adult education.....	3,354	3,979	4,435	5,002
(a) Kindergartens.....	361	525	600	697
(b) Children's homes and boarding schools for deaf and blind children.....	286	306	315	305
(c) General education schools of all types.....	2,520	2,779	2,998	3,262
(2) Cultural-educational work.....	253	318	328	333
(3) Training cadres.....	2,326	2,352	2,389	2,420
(a) Higher educational institutions.....	1,021	1,141	1,152	1,167
(b) Technicums and schools for training of cadres of secondary qualification.....	592	541	523	527
(c) Trade and railroad schools.....	166	187	220	262
(d) Factory schools.....	90	68	33	24
(e) Technical schools.....	40	69	73	83
(f) Other—factory, trade, and technical schools, schools for mechanization of agriculture.....	305	230	277	236
(4) Science.....	825	1,606	2,004	2,339
(5) Press.....	62	88	88	74
(6) Art and radio.....	74	129	122	105

¹ The Russian word "prosveshchenie" is translated here as "enlightenment." Soviet sources translate it as "education," leading to a conceptual error and overstatement of their total education budget.

² "Narodnoe Khoziaistvo v 1960 Godu" (National Economy in 1960), statistical yearbook published by Central Statistical Administration attached to U.S.S.R. Council of Ministers, Moscow, 1961, pp. 846-847.

In 1960, general education and higher and technical training of specialists (all items listed under secs. 1 and 3 of "Total Enlightenment," above) consumed 10.2 percent of the Soviet state budget expenditures.³ Higher education was 1.6 percent of the total expenditures. Presumably, research in higher schools is included in section 3, subsection (a), the budget for higher educational institutions, while research in scientific institutes is included in section 4, the budget for science. A certain percentage of the latter, involving graduate training, should be included as an educational expenditure.

It should be noted that the annual expenditure for "Enlightenment" covers not only regular educational facilities, but construction and operation of youth centers, club houses, recreation rooms, summer camps, public libraries and reading rooms, art exhibits, theaters and cinemas, radio stations, newspapers, and others. The annual expenditure for these cultural and communications activities should not be included in the Soviet "education" total in comparisons with aggregate U.S. educational expenditures. If these activities are included in the Soviet education total, then comparable items should be included in totaling U.S. educational expenditures.³

Expenditures for education in the United States and specifically for higher education are indicated in the following three tables, derived from 1962 publications of the U.S. Office of Education. Table A is from "Biennial Survey of Education in the United States, Statistical Summary of Education: 1957-58," page 10; table B is from "Progress of Public Education in the United States of America, 1961-62," page 56; and table C is from "Economics of Higher Education," page 306.

³ In this connection, the recent DeWitt study cites the various items which might be added to Soviet expenditures:

"The budgetary allocation of funds for education is necessarily lower than the total amount spent on education in the Soviet Union. It does not include additional funds from other sources, such as contributions from collective farms, trade unions, and funds of industrial enterprises, or payments collected from individuals as fees for nursery schools, boarding schools, tuition fees (during the 1940-55 period), and personal contributions from parents toward students' room and board. If these additional sources of funds are added, the total educational expenditures would be substantially higher than indicated by the national budget."

Education costs as a percentage of the total state budget are not to be confused with education costs as a percentage of the gross national product (GNP), which are lower. An estimate of the latter was published in January 1962 by the Organization for Economic Cooperation and Development (OECD), in "Policy Conference on Economic Growth and Investment in Education, II. Targets for Education in Europe in 1970." The OECD publication, written by Ingvar Svennilson in association with Friedrich Edding and Lionel Elvin, estimates that Soviet current expenditures on education for the base year (1958) were 3.2 percent of the GNP. It projects a low of 4.2 percent and a high of 5 percent in 1970.

Nicholas DeWitt, in the 1961 National Science Foundation (NSF) study, "Education and Professional Employment in the U.S.S.R.," p. 63, from which the quotation above is given, concludes that "all indications are that at the present time the U.S.S.R. spends substantially more than 5 percent of its GNP on education." The NSF publication further notes that "one Western estimate places this figure as high as 8 percent. See U.S. Department of State, 'U.S. Versus Soviet Spending for Major GNP Categories,' Intelligence Information Brief, No. 87, Feb. 24, 1959, p. 3 (unclassified)." It is evident that different frames of reference have been used in these varying estimates and that the higher estimates of Soviet expenditures are based on inclusion of the additional items cited above.

TABLE A.—Expenditures for education, including capital outlay, by level of instruction, and by type of control: United States (48 States and the District of Columbia), 1957-58

[In thousands of dollars]

Level of instruction, by type of school 1	Total 2	Publicly controlled 3	Privately controlled 4
All levels (elementary, secondary, higher) ¹	21, 119, 565	16, 748, 129	4, 371, 436
Current expenditures (including interest).....	16, 916, 836	13, 299, 954	3, 616, 882
Capital outlay or plant expansion.....	4, 202, 729	3, 448, 175	754, 553
Elementary and secondary schools ²	15, 648, 053	13, 569, 163	* 2, 078, 890
Current expenditures (including interest).....	12, 358, 323	10, 716, 416	* 1, 641, 907
Capital outlay.....	3, 289, 730	2, 852, 747	* 436, 983
Kindergarten through grade 8 ⁴	10, 803, 619	9, 241, 957	1, 561, 662
Grades 9-12 and postgraduate ⁴	4, 844, 434	4, 327, 206	517, 228
Miscellaneous elementary and secondary schools:			
Federal schools for Indians.....	55, 886	55, 886	-----
Federal schools on Federal installations.....	9, 043	9, 043	-----
Higher education (including subcollegiate departments) ⁴	5, 406, 583	3, 114, 038	2, 292, 546
Current expenditures.....	4, 509, 666	2, 534, 690	1, 974, 975
Educational and general.....	3, 604, 414	2, 077, 565	1, 526, 849
Auxiliary enterprises.....	775, 316	411, 786	363, 530
Student aid expenditures.....	129, 935	45, 339	84, 595
Expenditures from plant funds ⁶	896, 918	579, 348	317, 570

¹ Excludes expenditures for residential schools for exceptional children and for schools of nursing not affiliated with colleges and universities.

² Excludes expenditures for Federal schools for Indians, Federal schools on Federal installations, and residential schools for exceptional children. Expenditures for Federal schools are shown separately below.

³ Estimated on basis of expenditure per pupil in public elementary and secondary schools.

⁴ Distribution between grade groups (kindergarten to grade 8 and grades 9 to 12 and postgraduate) estimated on basis of average teacher's salary and pupil-teacher ratio at the elementary and secondary levels. Expenditure per pupil in grades 9 to 12 and postgraduate was calculated as 1.529 times expenditure per pupil in kindergarten to grade 8.

⁵ Excludes schools of nursing not affiliated with colleges and universities.

⁶ Excludes \$134,327,000 expended directly from current funds (\$87,091,000 by publicly controlled and \$47,236,000 by privately controlled institutions).

NOTE.—Detail will not necessarily add to totals because of rounding.

Sources: U.S. Department of Health, Education, and Welfare, Office of Education, Biennial Survey of Education in the United States, 1956-58, "ch. 2: Statistics of State School Systems, 1957-58"; and "ch. 4, Sec. II: Statistics of Higher Education: Receipts, Expenditures, and Property, 1957-58"; Administration of Public Laws 874 and 815, June 30, 1953; U.S. Department of the Interior, Bureau of Indian Affairs; and unpublished data available in the Office of Education.

TABLE B.—Gross national product related to total expenditures¹ for education: United States, 1929–30 to 1960–61

Calendar year	Gross national product (in millions)	School year	Expenditures for education	
			Total (in millions)	As a percent of gross national product
1929.....	\$104,436	1929–30	\$3,234	3.10
1931.....	76,271	1931–32	2,966	3.89
1933.....	55,964	1933–34	2,295	4.10
1935.....	72,502	1935–36	2,651	3.65
1937.....	90,780	1937–38	3,014	3.32
1939.....	91,095	1939–40	3,200	3.51
1941.....	125,822	1941–42	3,204	2.55
1943.....	192,513	1943–44	3,522	1.83
1945.....	213,558	1945–46	4,168	1.95
1947.....	234,289	1947–48	6,574	2.81
1949.....	258,054	1949–50	8,796	3.41
1951.....	328,975	1951–52	11,312	3.42
1953.....	365,385	1953–54	13,950	3.82
1955.....	397,469	1955–56	16,812	4.23
1957.....	442,769	1957–58	21,120	4.77
1959.....	482,783	1959–60	‡ 24,617	5.10
1960.....	‡ 504,448	1960–61	‡ 27,300	5.41

¹ Includes expenditures of public and nonpublic schools at all levels of education (elementary, secondary, and higher education).

² Estimate for 50 States and the District of Columbia.

NOTE.—Unless otherwise indicated, data are for 48 States and the District of Columbia.

Source: U.S. Department of Health, Education, and Welfare, Office of Education, Biennial Survey of Education in the United States; U.S. Department of Commerce, Office of Business Economics, Survey of Current Business, July 1958 and July 1961.

TABLE C.—Expenditures of institutions of higher education: total, for educational and general purposes and for organized research, selected years, 1930–60

Year	Expenditures in millions			Organized research as percent of—	
	Total ¹	Educational and general	Organized research	Total	Educational and general
1930.....	\$508.5	\$379.1	\$18.1	3.5	4.8
1940.....	678.6	525.5	28.1	4.1	5.4
1950.....	2,290.0	1,717.9	227.3	10.1	13.2
1952.....	2,486.2	1,933.6	320.4	12.9	16.4
1954.....	2,902.5	2,288.4	374.9	12.9	16.4
1956.....	3,524.7	2,788.8	506.1	14.3	18.1
1958.....	4,543.6	3,634.1	733.9	16.1	20.2
1960 (estimate).....	‡ 5,700.0	‡ 4,500.0	‡ 1,100.0	19.3	24.4
1961 (estimate).....	.....	.....	‡ 1,400.0	.....	.....
Ratio 1960 to 1930.....	11:1	12:1	60:1	5:1	5:1

¹ In addition to educational and general expenditures, includes student aid expenditures, other current expenditures, and expenditures for auxiliary enterprises.

² Author's estimate, taking into account the increase in expenditures for organized research and the growth curve for total expenditures between 1952 and 1958.

³ Author's estimate, computed from data on Federal support of research in universities (National Science Foundation, "Federal Funds for Science X")—1960 actual \$782.3 million, 1961 estimate \$964.3 million—by assuming that the Federal share continues to approximate 70 percent of the total.

Source: Data for 1930–58 for the aggregate United States from U.S. Department of Health, Education, and Welfare, Office of Education, "Biennial Survey of Education." Data for 1960, author's estimates.

The logistics of training and distribution of specialists in the higher schools is the responsibility of the State Planning Committee (Gosplan) of the U.S.S.R., a constituent body of the Council of Ministers, and, on the lower end, of the republic State Planning Committees subordinate to it. Gosplan is concerned with planning the graduation of specialists in adequate numbers to meet the current and prospective

needs related to Soviet economic development. The admissions pattern in various specialties in higher education, or the student quota system, is controlled by these State determined plans. In accordance with the overall national plans and the plans for each republic, each of the higher schools is directed as to the number of students to be admitted for training in each field.

Students in Soviet higher schools, viewed in this context, are treated as sui generis production units, or as means of production, need to complement the newly planned industrial plants and capital equipment. The considerable effort of the Soviet State to train specialists may be viewed as another facet of the concentration on the building the productive base of society in conformity with the basic tenets of the official Marxist ideology.

An official of the Russian S.F.S.R. State Planning Committee has recently described these aspects of the system's operation. Excerpts from his lengthy description follow: ⁴

The plan of training and the plan of distribution of specialists are an organic part of the national economic plan * * *. The first task of the plan of training is to guarantee a continuous process of training of specialists with higher and secondary specialized education in line with the requirements of the national economy and culture * * *.

In line with the decisions of the plenum [central committee in full session] of the Communist Party of the Soviet Union's Central Committee, the U.S.S.R. Gosplan, Gosplans of the union republics, the regional Councils of National Economy, together with ministries and offices having higher and secondary specialized educational institutions, have done substantial work to make more precise the projected requirements for specialists in branches of new technology and have implemented measures for broadening their training.

The second task of the plan of training specialists is guaranteeing an increase in the quality of training. * * * The third task is broadening the training of specialists without interrupting production [part-time education] in every way possible.

In working out the annual and long-range plans, it is necessary to make provision for such output of specialists that for every specialist with higher qualifications in the national economy there are two to four and more specialists with secondary qualifications (depending on the specific condition within the individual branches of the national economy: * * *

The indexes of plans for the training and distribution of specialists are unified and obligatory for all regional councils of the national economy, ministries, and offices. The basic indexes of these plans are confirmed in the national economic plans, in connection with which U.S.S.R. Gosplan annually transmits tabular forms to the union-republic Councils of Ministers, ministries and offices, and instructions for their completion.

The plans of training and distribution of specialists are as directed; that is, every plan gives the quota for councils of national economy, ministries, and offices having educational institutions of students admitted and of specialists graduated in accordance with the planning period. In the plan of distribution of specialists, it is specifically indicated to which councils of national economy, ministry and offices, graduates are directed. * * *

Since 1954, U.S.S.R. Gosplan has worked out projections of annual plans for training specialists by groups of specialties for every ministry, office, and union republic. The annual plans for training specialists by individual specialties for all ministries, offices, and union republics, have been confirmed by the U.S.S.R. Ministry of Higher Education, with approval of U.S.S.R. Gosplan, and interested ministries, offices, and union-republic Councils of Ministers.

Since 1955, plans for training of specialists in educational institutions of republic ministries and offices have been confirmed by union-republic Councils of Ministers.

⁴ L. A. Komarov, "Planirovanie podgotovki i raspredelenia spetsialistov v S.S.S.R." (Planning of Training and Distribution of Specialists in the U.S.S.R.), Moscow, 1961. Komarov is Deputy Director of the Division of Education, Culture, and Planning of Training and Distribution of Young Specialists, Gosplan R.S.F.S.R.

At the present time, a further extension of the rights of the union republics in training of specialists has occurred. The U.S.S.R. Council of Ministers confirms the general size of admissions and graduations from higher and secondary specialized educational institutions.

Plans of admission and graduation from higher educational institutions of union republics are confirmed by the republic Councils of Ministers with U.S.S.R. Gosplan approval for groups of specialties. For individual specialties, admission and graduation plans for these [republic] educational institutions are confirmed by republic ministries and offices with union republic Gosplan approval.

Samples of the tabular forms prepared by the State Planning Committee are shown below. The forms for specialists with secondary specialized education are similar to those for higher education specialists.⁵

FORM 1.—Student admissions to and graduations from higher educational institutions (number of persons)

Indexes	Admissions			Graduations		
	1961 plan	1961 expectation of fulfillment	1962 draft plan	1961 plan	1961 expectation of fulfillment	1962 draft plan
Daytime higher educational institutions.....						
Total.....						
Enumeration of specialties within each group of specialties.....						
Evening higher educational institutions.....						
Total.....						
Enumeration of specialties within each group of specialties.....						
Correspondence higher educational institutions.....						
Total.....						
Enumeration of specialties within each group of specialties.....						

FORM 2.—Model scheme of computing additional requirement for specialists

Specialty No.	Titles of groups of specialties and individual specialties	Number of positions subject to filling by specialists	General availability of specialists	Including number of specialists engaged in local work	Availability of practical workers	Additional requirement for specialists			
						Total	Including		
							Assured increase of positions	Vacancies requiring compensation	Practical workers for partial replacement
	Total.....								
0301	Including: 3. Power engineering— Electric power stations, networks, and systems.....								
	5. Machine building and instrument making.....								
0510	Hoisting and transportation machinery and equipment.....								

⁵ Ibid, pp. 76-81.

FORM 3.—*Computation of fulfillment of requirements for specialists*

Specialty No.	Titles of groups of specialties and individual specialties	Graduations from evening educational institutions	Graduations from correspondence educational institutions	Advance of technicians graduating from higher educational institutions without interrupting production, to positions as engineers	Transfer of technicians and engineers engaged in local work	Graduations from daytime educational institutions	Other new specialists
	Total.....						
	Including:						
0301	3. Power engineering..... Electric power stations, networks, and systems.....						
						
0510	5. Machine building and instrument making..... Hoisting, transportation machinery and equipment.....						

FORM 4.—*Plan of assignment of specialists graduating from higher educational institutions (to councils of national economy, ministries, union-republic Councils of Ministers)*

Graduating specialists	Total number of specialists assigned	Specialists from higher educational institutions			
		R. S. F. S. R. Ministry of Higher and Secondary Specialized Education	R. S. F. S. R. Ministry of Agriculture	R. S. F. S. R. Ministry of Culture	Ukrainian S. S. R. Council of Ministers
Total.....					
Including:					
(a) those from educational institutions subordinate to [higher education authority] offices.....					
(b) those from educational institutions of other ministries and offices.....					
Listed by specialty.....					

To some extent the current Soviet higher educational system represents a trend toward decentralization in administration, as distinct from overall planning and control. Until 1959, the immediate higher education authority for all higher schools throughout the country (with the exception of the Ukrainian S.S.R. which had its own ministry in the field) was the U.S.S.R. Ministry of Higher Education in Moscow.

Since 1959, new higher education bodies have been established in each republic, having dual subordination to the republic Council of Ministers and the U.S.S.R. Ministry of Higher and Secondary Specialized Education. The current government authority over higher education in each of the 15 Soviet Republics follows:

Republic higher education authority

<i>Republic</i>	<i>Higher education authority</i>
Russian S.F.S.R.-----	Ministry of Higher and Secondary Specialized Education.
Armenian S.S.R.-----	Committee of Higher and Secondary Specialized Education.
Azerbaijani S.S.R.---	Committee of Higher and Secondary Specialized Education.
Belorussian S.S.R.-----	Ministry of Higher Secondary Specialized, and Vocational Education.
Estonian S.S.R.-----	State Committee of Higher and Secondary Specialized Education.
Georgian S.S.R.-----	State Committee of Higher and Secondary Specialized Education.
Kazakh S.S.R.-----	Ministry of Higher and Secondary Specialized Education.
Kirgiz S.S.R.-----	Ministry of Education.
Latvian S.S.R.-----	State Committee of Higher and Secondary Specialized Education.
Lithuanian S.S.R.-----	State Committee of Higher and Secondary Specialized Education.
Moldavian S.S.R.-----	Committee of Higher and Secondary Specialized Education.
Tadzhik S.S.R.-----	State Committee of Higher, Secondary Specialized, and Vocational-Technical Education.
Turkmen S.S.R.-----	State Committee of Higher and Secondary Specialized Education.
Ukrainian S.S.R.-----	Ministry of Higher and Secondary Specialized Education.
Uzbek S.S.R.-----	Ministry of Higher and Secondary Specialized Education.

Immediate supervision of Soviet higher schools is not limited to the established higher education ministries and committees in each republic. In fact, less than half of the higher schools of education (333) are supervised by higher education agencies. The majority (376) are under the authority of agencies of the Government directly concerned with the fields of specialized training. Thus, for example, nearly all the medical institutes are under the republic Ministries of Health; most of the institutes training specialists in agriculture are under the republic Ministries of Agriculture; transportation and communication institutes are under various related Government agencies, and higher pedagogical schools are generally under the republic Ministries of Education rather than those of Higher Education.

This pattern conforms closely with the often reiterated Soviet concept that education must be "linked with life," and it, therefore, tends to develop a system of higher schools that is responsive to short-range state economic requirements and cultural pressures, as well as to various shifts to meet new needs as defined by the operating economic agencies of the state.

Besides the designated higher education authority for each republic, there are more than a dozen other agencies involved directly in supervising Soviet higher educational institutions. A breakdown of this supervision for each type of higher education institution follows:

Supervision of higher educational institutions (VUZy) by type of institution

Type of higher education institutions	Number of VUZy	Supervision of VUZy	Number of VUZy
Universities.....	39	Republic Higher Education Authority..	39
Polytechnical, industrial, and factory-technical.	44	do.....	43
		Council of National Economy (Sovnar-khoz) of Economic Administrative Region.	1
Power, electrotechnical, radiotechnical and physicochemical.	8	Republic Higher Education Authority..	8
Machine building, ship building, aviation, polygraphic, and film engineering.	29	do.....	28
Geology, mining, petroleum, fuel, and metallurgy.	23	R. S. F. S. R. Ministry of Culture.....	1
Chemical technology.....	10	Republic Higher Education Authority..	23
Food and fish industry.....	12	do.....	10
Light industry.....	8	do.....	12
Engineering—construction, geodesy, and automobile—highway.	26	do.....	8
Hydrometeorology institutes.....	2	do.....	26
Transportation and communication.....	29	do.....	2
		U. S. S. R. Ministry of Railways.....	12
		U. S. S. R. Ministry of Communications.....	7
		U. S. S. R. Ministry of Maritime Fleet.....	4
		R. S. F. S. R. Ministry of River Fleet.....	3
		Main administration of civil air fleet, attached to U. S. S. R. Council of Ministers.	2
Agriculture and forestry.....	106	Republic Higher Education Authority...	1
		Republic Ministry of Agriculture.....	80
Economics.....	25	Republic Higher Education Authority...	26
		do.....	17
		Republic Ministry of Trade.....	4
		U. S. S. R. Central Union of Consumers' Cooperatives.	4
Law.....	4	Republic Higher Education Authority...	4
Fine arts.....	17	do.....	25
		Republic Ministry of Culture.....	22
Medicine.....	30	Republic Higher Education Authority...	2
		Republic Ministry of Health.....	78
Physical culture.....	16	Republic Union of Sports Societies and Organizations.	12
		Republic Higher Education Authority...	3
		U. S. S. R. Union of Sports Societies and Organizations.	1
Pedagogy, library historical—archives and literature.	201	Republic Ministry of Education.....	140
		Republic Higher Education Authority...	56
		Republic Ministry of Culture.....	4
		U. S. S. R. Union of Soviet Writers.....	1
Total.....	709		709

As indicated in the titles of the central ministry and the Republic ministries and committees for both higher education and secondary specialized education, the higher schools are connected in planning and control to the 3,328⁶ secondary specialized schools, which primarily produce middle-level technicians for the economy. The apparent rationale for this linkage is that both types of schools produce the pool of Soviet specialized manpower, for which coordinated planning and overall administration is necessary.

Direct supervision of the secondary specialized schools links them even more closely to the Soviet economy than does that of higher schools. Only 3 of the 87 secondary specialized schools in the city of Moscow are supervised by the Ministry of Higher and Secondary Specialized Education. Supervision of the great majority (84) is divided about equally among the city's council of national economy, medical organizations, industrial and cultural ministries, and the

⁶ The number of secondary specialized schools in the U. S. S. R. given by official Soviet sources for the 1960-61 school year, when total student enrollment in the schools was 2,060,000. Statistics for the 1961-62 school year show 3,416 secondary specialized schools, with enrollment of 2,370,000.

Moscow City Executive Committee, the latter being the local government authority. The Ministries and Committees of Higher and Secondary Specialized Education appear to have a more immediate role in operating secondary specialized schools in the non-Russian Republics, although the economic agency and local government tie-in is also substantial in those areas.

The types of secondary specialized schools in Moscow and their supervision follow:

Secondary specialized education institutions (tekhnikums, schools) in city of Moscow

Types of schools	Number of schools	Supervision	Number of schools
Industry, topography, construction.....	40	Moscow (City) Sovnarkhoz.....	22
		Moscow City Executive Committee.....	11
		R.S.F.S.R. Ministry of Higher and Specialized Secondary Education.	3
		R.S.F.S.R. Ministry of Grain Products..	1
		R.S.F.S.R. Ministry of Trade.....	1
		U.S.S.R. Ministry of Geology and Fuel..	1
		State Committee for Local Industry and Industrial Arts, R.S.F.S.R. Council of Ministers.	1
Transportation and communication.....	5	U.S.S.R. Ministry of Railways.....	2
		R.S.F.S.R. Ministry of River Fleet.....	1
		R.S.F.S.R. Ministry of Automobile Transport and Highways.	1
Economics and medicine.....	26	U.S.S.R. Ministry of Communications..	1
		R.S.F.S.R. Ministry of Health.....	20
		Moscow City Executive Committee.....	1
		R.S.F.S.R. Central Statistical Administration.	1
		R.S.F.S.R. Ministry of Trade.....	1
Pedagogy.....	3	R.S.F.S.R. Ministry of Culture.....	1
		U.S.S.R. Academy of Medical Sciences..	1
Culture and arts.....	13	Central Clinical Hospital.....	1
		Moscow City Executive Committee.....	3
		R.S.F.S.R. Ministry of Culture.....	7
		U.S.S.R. Bolshoi Theater.....	1
		State Committee for Local Industry and Industrial Arts, R.S.F.S.R. Council of Ministers.	1
Total.....	87	Moscow City Executive Committee.....	4
			87

II. PRODUCTION OF SPECIALISTS

The broad purpose of Soviet higher education is to provide specialists, appropriately trained but also well indoctrinated in Communist doctrine, to meet the objectives defined by the State's leaders in the economic, scientific, social, and cultural fields.

The vast majority of higher education students in the Soviet Union pursue narrowly specialized curricula which provide the theoretical base for their fields of specialization, and "broadened" only by the required courses in Communist ideology and a foreign language.

The Soviet system of higher education has no equivalent to a liberal arts education. Even the 40 Soviet universities, which accommodate only some 10 percent of the total Soviet student body in Soviet higher schools, are concerned with the production of specialists, trained intensively in a single field of the natural sciences, social sciences, or humanities.

About 90 percent of the Soviet higher school students are enrolled not in the universities, but in the 699 specialized institutes, which produce skilled engineering and other professionals in some narrow field

of industry, agriculture, economics, or in medicine, pedagogy, and other fields.

In general, the universities provide the theorists and scholars, while the institutes provide the professionals in their respective applied fields to meet the specific, planned needs of the Soviet economy and society.

Student admission quotas are made, students are enrolled, and graduates are assigned work, according to specialty classification. The latest official listing of Soviet higher education specialties, published in 1961, follows:⁷

Classifi- cation number of specialty	Title of higher education specialty
	Specialty Group 1. Geology and exploration for mineral resources (9 specialties):
0101	Geology and exploration for mineral resources.
0102	Geological surveying and prospecting for mineral resources (specialty offered in universities).
0103	Geology and exploration for petroleum and gas deposits.
0104	Exploration and training for exploitation of peat deposits.
0105	Geophysical methods for prospecting and exploration for mineral resources.
0106	Geochemistry (specialty offered in universities).
0107	Hydrogeology and engineering geology.
0108	Technics for exploration of mineral deposits.
0109	Geology.
	Specialty Group 2. Exploitation of mineral resources (8 specialties):
0201	Mine surveying.
0202	Exploitation of mineral resources.
0203	Exploitation of peat deposits.
0204	Enrichment of mineral resources.
0205	Exploitation of petroleum and gas deposits.
0206	Construction of mining enterprises.
0207	Planning and exploitation of gas and petroleum pipelines, gas storage tanks, and petroleum bases.
0208	Equipping of gas and petroleum pipelines, gas storage tanks, and petroleum bases.
	Specialty Group 3. Power (9 specialties):
0301	Electric power stations and systems.
0302	Electric power networks.
0303	Electrification of industrial enterprises and installations.
0304	Mining electromechanics.
0305	Thermal power installations of electric power stations.
0307	Hydropower installations.
0308	Industrial thermal power.
0309	Thermal physics.
0310	Planning and exploitation of atomic energy installations.
	Specialty Group 4. Metallurgy (8 specialties):
0401	Metallurgy of ferrous metals.
0402	Metallurgy of nonferrous metals.
0403	Metallurgical furnaces.
0404	Casting of ferrous and nonferrous metals.
0405	Physicochemical research of metallurgical processes.
0406	Physics of metals.
0407	Metallography, equipment and technology of thermal processing of metals.
0408	Pressure processing of metals.
	Specialty Group 5. Machine building and instrument making (38 specialties):
0501	Technology of machine building, metal-cutting tools and instruments.
0502	Machinery and technology of foundry production.
0503	Machinery and technology of pressure processing of metals.
0504	Equipment and technology of welding processes.
0505	Mechanical equipment of ferrous and nonferrous metallurgical plants.
0506	Mining machinery.
0507	Peat mining machinery.
0508	Machinery and equipment of petroleum and gas technology.
0509	Agricultural machinery.
0510	Hoisting and transportation machinery and equipment.
0511	Construction and road machinery and equipment.
0512	Railroad car construction and economy.
0513	Automobiles and tractors.
0514	Shipbuilding and ship repair.
0515	Polygraphic machinery.
0516	Machinery and apparatus of chemical production.
0517	Machinery and apparatus of food production.
0518	Machinery and apparatus of light and textile industries production.
0519	Machinery and mechanisms of timber industry and forestry.
0520	Boiler construction.
0521	Turbine construction.

⁷ Source: L. A. Komarov, op. cit., pp. 82-90. The table is entitled "Compendium of Specialties for Planning, Training, and Distribution of Specialists With Higher Education." The volume also includes classification and listing of specialties in secondary specialized education.

Classification number of specialty	Title of higher education specialty
	Specialty Group 5.—Continued
0522	Machinery and equipment of communications enterprises.
0523	Internal combustion engines.
0524	Ship machinery and mechanisms.
0525	Ship power installations.
0526	Locomotive construction.
0527	Dynamics and durability of machinery.
0528	Hydraulic turbines and other hydraulic machinery.
0529	Refrigeration and compressor machinery and installations.
0530	Optical instruments.
0531	Instruments of precision mechanics.
0532	Mechanical equipment of aircraft.
0533	Cinematographic equipment.
0535	Aircraft construction.
0537	Aircraft propulsion.
0553	Hydroaerodynamics.
0556	Optics and spectroscopy.
0557	Opticophysical instruments.
	Specialty Group 6. Electrical machine building and electrical instrument making (22 specialties):
0601	Electrical machinery and apparatus.
0602	Electrical transport.
0603	Electroinsulation and cable technics.
0604	Dielectrics and semiconductors.
0605	Electrovacuum machinery.
0606	Automatics and telemechanics.
0607	Automation of production processes.
0608	Mathematics and computing instruments and devices.
0609	Gyroscopic instruments and devices.
0610	Electroacoustics and ultrasonic technics.
0611	Electronic instruments.
0612	Industrial electronics.
0613	Electrothermal installations.
0614	Lighting engineering and principles.
0615	Sound engineering.
0617	Aircraft instrument manufacturing.
0619	Electrical equipment of ships.
0621	Technical exploitation of aircraft instruments and electrical equipment.
0623	Electromechanical communications equipment.
0625	Instruments and installations of radiomonitoring and telemetering devices.
0626	Electromeasuring technique.
0627	Electronic medicine equipment.
	Specialty Group 7. Radio engineering and communications (6 specialties):
0701	Radio engineering.
0702	Telegraph and telephone communications.
0703	Radio communications and broadcasting.
0704	Radio physics and electronics.
0705	Design and technology of radio equipment manufacturing.
0706	Technical exploitation of aircraft radio equipment.
	Specialty Group 8. Chemical technology (18 specialties):
0801	Technology of petroleum and gas.
0802	Chemical technology of fuel.
0803	Technology of inorganic compounds.
0804	Technology of rare and diffused elements.
0805	Technology of electrochemical production.
0806	Technology of silicates.
0807	Technology of basic and organic synthesis and synthetic rubber.
0808	Technology of dyes and intermediate products.
0809	Technology of medical and aromatic compounds.
0810	Technology of plastics.
0811	Technology of varnishes, paints, and nonmetallic coatings.
0812	Technology of rubber.
0813	Technology of cinematographic-photographic materials.
0819	Technology of electrovacuum materials.
0822	Chemical kinetics and combustion.
0823	Technology of separation and use of isotopes.
0824	Chemical technology.
0825	Solar chemistry.
	Specialty Group 9. Timber engineering and technology of wood processing cellulose, and paper (4 specialties):
0901	Timber engineering.
0902	Mechanical technology of wood processing.
0903	Chemical technology of wood processing.
0904	Technology of cellulose-paper production.
	Specialty Group 10. Technology of food products (15 specialties):
1001	Storage and technology of grain processing.
1002	Technology of bread baking, macaroni, and products.
1003	Technology of sugar products.
1004	Technology of fermentation processes.
1005	Technology of winemaking.
1006	Technology of vegetable fats.
1007	Technology of canning.

Classification number of specialty	Title of higher education specialty
	Specialty Group 10.—Continued
1008	Technology of subtropical cultivation.
1009	Technology of meat and dairy products.
1010	Technology of fish products.
1011	Technology and organization of public catering.
1012	Industrial fisheries.
1013	Ichthyology and fish breeding.
1014	Technology of food products.
1015	Technology of vitamin production.
	Specialty Group 11. Technology of consumer goods (10 specialties):
1101	Primary processing of fiber materials.
1102	Mechanical technology of fiber materials.
1103	Chemical technology of fiber materials.
1104	Technology of synthetic fibers.
1105	Technology of garment manufacturing.
1106	Technology of leather and fur.
1107	Technology of synthetic leather.
1108	Technology of leather goods.
1109	Technology of printing and publishing.
1110	Technology of garment and footwear manufacturing.
	Specialty Group 12. Construction (15 specialties):
1201	Architecture.
1202	Industrial and civil construction.
1203	Hydrotechnical construction of river installations and hydroelectric power stations.
1204	Hydrotechnical construction of maritime waterways and ports.
1206	Urban construction and municipal services.
1207	Production of concrete and reinforced concrete units and structures for prefabricated construction.
1208	Heat and gas supply and ventilation.
1209	Water supply and sewage systems.
1210	Railroad construction.
1211	Automobile roads.
1212	Bridges and tunnels.
1213	Airport construction.
1214	Hydrotechnical and hydromelioration (irrigation) construction.
1215	Sanitation engineering.
1216	Construction of roads, bridges, and airports.
	Specialty Group 13. Geodesy and cartography (4 specialties):
1301	Engineering geodesy.
1302	Astrogeodesy.
1303	Aerial photography geodesy.
1304	Cartography.
	Specialty Group 14. Hydrology and meteorology (5 specialties):
1401	Hydrology of dry land.
1402	Oceanography.
1403	Hydrography.
1404	Meteorology.
1405	Agricultural meteorology.
	Specialty Group 15. Agriculture and forestry (12 specialties):
1501	Soil Science and agrochemistry.
1502	Agronomy.
1503	Fruit and vegetable growing and viticulture.
1504	Plant protection.
1505	Sericulture.
1506	Zootechnics.
1507	Veterinary Science.
1508	Land conservation.
1509	Mechanization of agricultural production processes.
1510	Electrification of agricultural production processes.
1511	Hydromelioration.
1512	Forestry.
	Specialty Group 16. Transportation (exploitation) (10 specialties):
1601	Locomotives and locomotive transport.
1602	Electrification of railroad transport.
1603	Automatics, telematics, and communications in railroad transport.
1604	Exploitation of railroads.
1605	Municipal electrical transport.
1606	Maritime navigation.
1607	Navigation on internal waterways.
1608	Exploitation of water transport.
1609	Exploitation of automotive transport.
1610	Exploitation of airplanes and engines.
	Specialty Group 17. Economics (35 specialties):
1701	Planning of national economy.
1702	Economics of industry.
1703	Economics and planning of material-technical supply.
1704	Economics of labor.
1705	Economics and organization of mining industry.
1706	Economics and organization of petroleum and gas industries.
1707	Economics and organization of power engineering.
1708	Economics and organization of metallurgical industry.
1709	Economics and organization of machine building industry.

Classification number of specialty	Title of higher education specialty
	Specialty Group 17.—Continued
1710	Economics and organization of shipbuilding industry.
1711	Economics and organization of chemical industry.
1712	Economics and organization of polygraphic industry.
1713	Economics of cinematography.
1714	Economics and organization of consumer goods industry.
1715	Economics and organization of agriculture.
1716	Economics of agriculture (economist programs requiring 4 years of study).
1718	Economics and organization of food products industry.
1719	Economics and organization of forestry and timber industry.
1720	Economics and organization of wood processing and cellulose-paper industry.
1721	Economics and organization of construction.
1722	Economics and organization of municipal services.
1723	Economics and organization of railroad transport.
1724	Economics and organization of water transport.
1725	Economics and organization of automobile transport.
1726	Economics and organization of air transport.
1727	Economics of national economy.
1728	Economics and organization of communications.
1729	Economics of trade.
1731	International economic relations.
1732	Merchandising of industrial goods.
1733	Merchandising of food products.
1734	Finance and credit.
1736	Statistics.
1737	Accounting.
1738	Mechanization of accounting and computing.
	Specialty Group 18. Law (2 specialties):
1801	Jurisprudence.
1802	International relations.
	Specialty Group 19. Public health, and physical culture (6 specialties):
1901	Medicine.
1902	Pediatrics.
1903	Sanitation.
1904	Stomatology.
1905	Pharmacy.
1906	Physical culture and sports.
	Specialty Group 20. Specialties in universities (excluding specialties in other groups) (28 specialties):
2001	Russian language and literature.
2002	Native language and literature of peoples of U.S.S.R.
2003	Slavic languages and literature.
2004	Romano-Germanic languages and literature.
2005	Eastern languages and literature.
2006	Classical philology.
2007	Area studies on foreign countries of the East.
2008	History.
2009	Historico-archival science.
2010	Political economy.
2011	Philosophy.
2012	Psychology.
2013	Mathematics.
2014	Mechanics.
2015	Astronomy.
2016	Physics.
2017	Geophysics.
2018	Chemistry.
2019	Biology.
2020	Botany.
2021	Zoology.
2022	Plant physiology.
2023	Human and animal physiology.
2024	Anthropology.
2027	Journalism.
2028	Literary work.
2029	History of the arts.
2030	Geography.
	Specialty Group 21. Specialties in pedagogical and library institutes (21 specialties):
2101	Russian language and literature.
2102	Native language and literature.
2103	Foreign languages.
2104	Mathematics.
2105	Physics.
2106	Natural science and chemistry.
2107	Geography.
2108	History.
2109	Drafting and drawing.
2110	Pedagogy and psychology.
2111	Defectology.
2112	Cultural-educational work.
2113	Library science and bibliography.
2114	Physical education.

Classifi- cation number of specialty	Title of higher education specialty
	Specialty Group 21.—Continued
2115	Native language and literature
2116	Physics and mathematics
2117	History
2118	Natural science and geography
2119	Music and singing.
2120	General technical disciplines and labor.
2121	Pedagogy and methods of national education.
	Specialty Group 22. Arts (28 specialties):
2201	Piano (organ).
2202	Orchestral instruments.
2203	Folk instruments.
2204	Singing.
2205	Opera symphonic conducting.
2206	Choral conducting.
2207	Composition.
2208	Musicology.
2209	Dramatic theater and cinema acting.
2210	Musical comedy acting.
2211	Drama production.
2212	Musical theater production.
2213	Ballet production.
2214	Cinema production.
2215	Cinema operation.
2216	Theatrical techniques and stage setting.
2217	Theater science.
2218	Cinema science.
2219	Painting.
2220	Graphics.
2221	Sculpture.
2222	Artistic metalworking.
2223	Artistic woodworking.
2224	Artistic glass and plastics working.
2226	Artistic ceramics.
2227	Artistic fashioning of fabrics and fabric products.
2228	History and theory of graphic art.
2229	Interior decoration of buildings and production of decoration materials.

In all, there are 303 higher education specialties. Of this number, 217, or 71 percent, are in the field of industrial (including construction, transport, and communications) agricultural, and broadly economic activities. Less than 10 percent are indicated as university specialties, a figure which may in fact be somewhat higher than indicated because of the reporting methods used.

This bending of the higher education system to the purpose of producing specialists to serve the indicated requirements of the economy is reflected in other statistical series. Of the 739 Soviet higher educational institutions, 349, or 47 percent, are specialized institutes for industry, agriculture, and economics. Student enrollments in these fields number 1,387,300 (1960-61 school year), or 57 percent of the total higher education enrollment. For a breakdown by branch groups of educational institutions, see table 5.

The number of students training in engineering specialties (1,080,535 in 1960-61) is 49 percent of the total number of students enrolled in Soviet higher schools. In 1960, engineering graduates numbered 120,132, or 35 percent of the total of 342,050 graduates, and engineers were already 31.5 percent of the total number of specialists working in the Soviet economy.

The current Soviet 7-year plan, "Control Figures for the Development of the National Economy," confirmed at the 21st Communist Party Congress, calls for almost doubling (1.9 times) the number of engineering graduates during the 1959-65 period as compared with the preceding 7-year period, and the graduation of 1.5 times more agriculture specialists. Higher education graduations as a whole are

scheduled to increase 1.4 times, providing 2,300,000⁸ specialists as compared with 1,700,000 in 1952-58. The profile of the Soviet higher education, therefore, will continue to be that of a system weighted toward training specialists for industry and agriculture.

The greatest increase in the number of engineers, through 1965, according to the 7-year plan control figures, will be in chemical technology, automation, computing techniques, radio electronics, and other new technological fields.⁹

III. PART-TIME HIGHER EDUCATION

Slightly more than half of Soviet students in higher education are studying in part-time programs. In the 1960-61 school year (see table 8) 1,240,000 of the 2,395,500 higher students were in evening divisions of higher schools or studying by correspondence. The remainder (1,155,500) were in regular daytime programs. In 1961-62, 1,436,000 of the total of 2,639,000 students in higher education were studying "without interrupting their permanent jobs," or part time.¹⁰

Over 40 percent of Soviet higher students are in correspondence programs, which have been the major source of increased enrollments in Soviet higher education for the past decade. Regular daytime enrollments have remained almost stationary since the 1955-56 school year. Soviet plans are to accelerate even further part-time education as the principal means of higher educational training.

The "Program of the Communist Party of the Soviet Union, Adopted by the 22d Congress of the C.P.S.U., October 31, 1961," published in Moscow in 1961 by the Foreign Languages Publishing House, states (quoting the complete section of the program entitled "Higher and Secondary Special Education"):

In step with scientific and technical progress, higher and secondary special education, which must train highly skilled specialists with a broad theoretical and political background, will be expanded.

Shorter working hours and a considerable improvement in the standard of living of the entire population will provide everyone with an opportunity to receive a higher or secondary special education if he so desires. The number of higher and secondary specialized schools, evening and correspondence schools in particular, as well as higher schools at factories, agricultural institutes (on large state farms), studios, conservatories, etc., must be increased in all areas of the country with the support of factories and trade unions and other social organizations. The plan is to considerably increase every year the number of students at higher and secondary specialized schools; special education will be afforded to tens of millions of people.

Correspondence training is offered in the Soviet Union through special correspondence institutes, officially accredited as higher educational institutions, and by the correspondence divisions of the regular higher educational institutions.

Twelve of the seventeen Soviet correspondence institutes are in the city of Moscow with branches throughout the Russian Republic. Eleven of the seventeen schools are subordinate to republic higher education authorities, the others to government ministries concerned with related specialties. The overwhelming majority of the correspondence institutes (14 of the 17) are in the industrial, agricultural,

⁸ The total number of higher education graduations for the first 3 years of the 7-year plan is 1,005,100. The official Soviet figures are 338,000 graduations in 1959, 342,100 in 1960, and 325,000 in 1962.

⁹ "Dokumenty i materialy po perestrojke shkoly" (Documents and Materials for Reorganization of the Schools), published by R.S.F.S.R. Ministry of Education, Moscow, 1960, p. 138.

¹⁰ "Public Education in the Soviet Union," *op. cit.*

and economic fields. The remaining three are devoted to pedagogy and law.

The 17 correspondence institutes, the cities in which they are located, and the authorities to which they are subordinate, are as follows:

Correspondence institute	City	Supervision
All-Union Correspondence Polytechnical Institute.	Moscow.....	R. S. F. S. R. Ministry of Higher and Secondary Specialized Education.
Northwestern Correspondence Polytechnical Institute.	Leningrad....	Do.
Ukrainian Correspondence Polytechnical Institute.	Kharkov....	Ukrainian S. S. R. Ministry of Higher and Secondary Specialized Education.
All-Union Correspondence Power Institute.....	Moscow.....	R. S. F. S. R. Ministry of Higher and Secondary Specialized Education.
All-Union Correspondence Machine-Building Institute.	.....do.....	Do.
All-Union Correspondence Food Industry Institute.	.....do.....	Do.
All-Union Correspondence Institute for Textile and Light Industry.	.....do.....	Do.
All-Union Correspondence Institute for Engineering-Construction.	.....do.....	Do.
All-Union Correspondence Institute for Railroad Transport Engineers.	.....do.....	U. S. S. R. Ministry of Railways.
All-Union Correspondence Institute for Electrotechnical Communications.	.....do.....	U. S. S. R. Ministry of Communications.
All-Union Agricultural Institute for Correspondence Education.	Balashikha (Moscow Oblast), Leningrad....	R. S. F. S. R. Ministry of Agriculture.
All-Union Correspondence Institute for Timber Engineering.	Leningrad....	R. S. F. S. R. Ministry of Higher and Secondary Specialized Education.
All-Union Correspondence Institute for Finance and Economics.	Moscow.....	Do.
Correspondence Institute for Soviet Trade.....	.....do.....	R. S. F. S. R. Ministry of Trade.
All-Union Juridical Correspondence Institute.....	.....do.....	R. S. F. S. R. Ministry of Higher and Secondary Specialized Education.
Armenian Correspondence Pedagogical Institute.	Erevan.....	Committee for Higher and Secondary Specialized Education, Armenian S. S. R. Council of Ministers.
Moscow Correspondence Pedagogical Institute.	Moscow.....	R. S. F. S. R. Ministry of Education.

An indication of distribution of student enrollments in correspondence education by field is given in admission and graduation data,¹¹ which also suggest a substantial dropout rate:

Branch group of higher education institutions	Number of correspondence students admitted		Number of correspondence students graduated	
	1950	1955	1950	1955
Industry and construction.....	13, 854	44, 019	1, 103	3, 251
Transportation and communication.....	2, 052	9, 463	172	365
Agriculture.....	4, 693	18, 387	303	1, 086
Economics and law.....	12, 755	16, 921	3, 825	6, 534
Education.....	76, 526	84, 551	24, 488	50, 146
Health, physical culture and sports.....	1, 462	1, 985	124	539
Art and cinematography.....	274	492	8	129
Total.....	111, 617	175, 019	29, 023	62, 014

Those enrolled in correspondence and evening courses are granted periods of leave from work with pay for consultation, preparation for state examinations, and diploma work. The relevant regulations of the Council of Ministers, effective since the 1959-60 school year for

¹¹ E. V. Chutkerashvili, "Razvitiie vysshego obrazovaniia v SSSR" (Development of Higher Education in U. S. S. R.), Moscow, 1961, pp. 146, 148.

students in correspondence and evening higher educational institutions (VUZy), are the following:¹²

(1) For first- and second-year students, 20 calendar days' leave in evening VUZy (faculties, divisions), and 30 calendar days in correspondence VUZy.

(2) For third and later years, 30 calendar days' leave in evening VUZy and 40 calendar days in correspondence VUZy.

(3) Thirty calendar days' leave for preparation for state examinations.

(4) Four months' leave for preparation and defense of diploma project.

(5) For 10 months prior to beginning of completion of diploma project, 1 workday free a week at half pay.

Correspondence and evening students may receive an additional month's leave without pay in their senior years for orientation in production work related to their chosen specialty, and for preparation of materials for their diploma project.

The trend in Soviet higher education is toward a gradual merger of part-time education, full-time education, and related on-the-job training. The current educational reform, aimed at "connecting school with life," has affected higher education by incorporating substantial on-the-job training into the regular school programs, thereby lengthening the period of study.

The line between full-time and part-time education is also being obscured by the development of a new type of Soviet higher school, called the plant school for higher technical education (*Zavod-VTUZ*). These higher technical schools, the first of which were established in 1960, are located within and are a part of major Soviet industrial plants. Although not designated as part-time institutions, they are organized "on the basis of the evening divisions" of regular higher schools¹³ and the courses of study, combining regular studies with factory work and specialized training, extend from 6 months to a year beyond those of regular higher schools.

The *Zavod-VTUZ* is equipped from the factory facilities and maintained by the factory, and "the plant itself, its shop, and all its production processes will be the capital base for full-fledged training and educational and scientific and technical work."¹⁴

Specialists in the plants form at least part of the teaching staff, and its professors and instructors perform research in line with each plant's industrial production plan.

As of 1961, there were five plant schools for higher technical education, functioning in the Moscow automobile plant named for I. A. Likhachev, the Leningrad metallurgical plant, the Rostov plant for agricultural machine building, the Penza plant, and the Dneprodzerzhinsk metallurgical plant.

The first four are administered by the RSFSR Ministry of Higher and Secondary Specialized Education. The Dneprodzerzhinsk *Zavod-VTUZ* is administered by the Ukrainian higher education authority,

¹² *Ibid.*, p. 152.

¹³ *Izvestia*, Jan. 29, 1960.

¹⁴ Minister of Higher and Specialized Secondary Education V. P. Elyution, in interview by a Pravda correspondent, *Pravda*, June 23, 1960.

and is the only one identified as containing several faculties (major administrative subdivisions), for metallurgy, technology, and general technical correspondence training.

On the basis of a continued survey of Soviet professional education literature, along with the regular Soviet press, it is evident that part-time education, and particularly correspondence training, provides an education of a caliber below that of a regular daytime course of study at a school of higher education. Soviet educators and the Communist Party press¹⁵ have expressed concern over the lack of textbooks and methods literature for correspondence students, the concentration of correspondence and evening higher schools in Moscow (a particular difficulty for correspondence students), the lack of "material and technical" facilities (laboratories, libraries) as well as equipment for correspondence and evening students. The substantial dropout of students each year, the weakness of graduating students in the theory of their specialties, and the fact that experienced teachers avoid work with correspondence students pose other problems of concern. One Soviet publication states that in the libraries of educational institutions correspondence students can obtain books only after the needs of students in the full-time departments have been fully met.

These and other problems of the evening and correspondence school system are enumerated in Soviet sources, with a view toward their improvement, and it is probable that innovations such as the Zavod-VTUZ are an attempt to overcome defects in this increasingly dominant form of Soviet higher education.

¹⁵ Numerous citations are available. The Soviet sources used here are: Pravda, Sept. 19, 1960 (lead editorial); Kommunist Estonii, May 1960; Uchitelskaia gazeta, May 20, 1961, and July 14, 1961; Vestnik vysshei Shkoly, May 1961 and June 1962.

APPENDIXES

APPENDIX A. SOVIET HIGHER EDUCATION STATISTICS

The 20 tables of statistics which follow have been selected and translated from "Vysshee obrazovaniie v SSSR" (Higher Education in the U.S.S.R.), a statistical compilation prepared and published by the Central Statistical Administration, attached to the U.S.S.R. Council of Ministers, Moscow, in 1961.

In general, Soviet statistics are considered reasonably accurate within the limits of the reporting system and within their context (which frequently is not given). While it is useful to report Soviet statistics as an indication of the order of magnitude and emphases of the higher education system, direct comparison of Soviet statistics with those of other countries can lead to serious error. Various responsible Western sources refer to typical problems in the use of Soviet statistics: ¹⁶

(a) Details concerning tabulation procedures and internal organization of materials are sparse or lacking.

(b) Significant gaps appear in many statistical series, presumably because of the State Secrets Act. Enrollments in higher Communist Party schools and military schools are not listed. The breakdown of enrollments and graduations in science fields is not reported; the category "specialties in universities" obscures these data. On occasion, for categories reported in annual series, years and categories are selected which demonstrate the most substantial increases.

(c) There are the problems of data reported without given definitions, or with unreported changing definitions, or given only in percentages. Data on occasion are misinterpreted by non-Soviet analysts; totals of the category "enlightenment" which includes non-educational as well as educational subcategories, have been misread as education totals.

(d) There are aggregations of distinct categories which tend to conceal unfavorable trends or exaggerate successes. For example, the current Soviet statistical practice is to compare the total of Soviet enrollments in all forms of higher education (full time, part time, and correspondence) with the total of U.S. full- and part-time enrollments, minus students enrolled in the first 2 years of U.S. higher education.

The titles of the tables, as given in the Soviet source, are:

1. Number of specialists with higher education, working in the national economy, by specialty.
2. Number of women specialists with higher education, working in the national economy, by specialty.
3. Number of higher educational institutions and students annually.
4. Distribution of students in higher education by types of instruction.

¹⁶ Feshback, Murray, "The Soviet Statistical System: Labor Force Recordkeeping and Reporting" International Population Statistics Reports Series P-90, No. 12, Bureau of the Census, U.S. Department of Commerce, U.S. Government Printing Office, Washington, D.C., 1960, pp. 19-20.

DeWitt, Nicholas, "Education and Professional Employment in the U.S.S.R.," National Science Foundation, U.S. Government Printing Office, Washington, D.C., 1961, pp. 549-553.

5. Number of higher educational institutions and students by branch groups of educational institutions.
6. Distribution of students in higher education by groups of specialties.
7. Number of students in higher educational institutions in engineering specialties.
8. Women students in higher educational institutions.
9. Women students in higher educational institutions by types of instruction.
10. Admissions to higher educational institutions by types of instruction.
11. Admissions to higher educational institutions by branch groups of educational institutions.
12. Graduation of specialists from higher educational institutions by branch groups of educational institutions.
13. Graduation of specialists from higher educational institutions by groups of specialties.
14. Graduation of engineers from higher educational institutions by groups of specialties.
15. Number of students in U.S.S.R. universities.
16. Admission and graduation of specialists in U.S.S.R. universities.
17. Number of aspirants (graduate students) in U.S.S.R.
18. Admission to aspirantura (graduate study).
19. Graduation of aspirants (graduate students).
20. Distribution of aspirants by branches of science.

TABLE 1.—*Number of specialists with higher education, working in the national economy, by specialty*

[In thousands; figures in parenthesis are percent of total]

	1928	Jan. 1, 1941	Jan. 1, 1946	July 1, 1950	Apr. 1, 1954	July 1, 1955	Dec. 1, 1957	Dec. 1, 1959	Dec. 1, 1960
Total specialists with higher education working in the National Economy	233.0 (100)	909.0 (100)	896.9 (100)	1,442.8 (100)	2,008.5 (100)	2,184.0 (100)	2,805.5 (100)	3,235.7 (100)	3,545.2 (100)
Including—									
Engineers	47.0 (20.2)	289.9 (31.9)	277.5 (30.9)	392.4 (27.2)	530.2 (26.4)	585.9 (26.8)	816.1 (29.1)	986.6 (30.5)	1,115.5 (31.5)
Agronomists, zoo-technicians, veterinarians, and foresters	28.0 (12.0)	69.6 (7.7)	59.4 (6.6)	109.5 (7.6)	134.5 (6.7)	158.7 (7.3)	193.1 (6.9)	222.4 (6.9)	241.8 (6.8)
Economists, Economist-statisticians	13.0 (5.6)	57.0 (6.2)	48.3 (5.4)	72.8 (5.1)	96.0 (4.8)	105.2 (4.8)	145.2 (5.2)	177.6 (5.5)	197.7 (5.6)
Commodities experts		2.3 (0.3)	1.8 (0.2)	4.7 (0.3)	7.8 (0.4)	8.6 (0.4)	12.3 (0.4)	16.3 (0.5)	19.3 (0.5)
Lawyers	13.0 (5.6)	20.9 (2.3)	15.6 (1.7)	25.1 (1.7)	40.7 (2.0)	47.1 (2.2)	57.8 (2.1)	65.5 (2.0)	69.8 (2.0)
Doctors (excluding dentists)	63.2 (27.0)	141.8 (15.6)	126.2 (14.1)	232.4 (16.1)	280.4 (14.0)	299.0 (13.7)	346.0 (12.3)	378.6 (11.7)	400.6 (11.3)
Teachers, and university graduate librarians and cultural-educational workers	59.0 (25.3)	300.4 (33.1)	333.3 (37.2)	556.7 (38.6)	867.8 (43.2)	906.4 (40.5)	1,144.9 (40.8)	1,278.9 (39.5)	1,378.1 (38.9)

TABLE 2.—Number of women specialists with higher education, working in national economy, by specialty

[In thousands]

	Jan. 1, 1941	Apr. 1, 1954	Dec. 1, 1960	Women as percent of total specialists	
				Jan. 1, 1941	Dec. 1, 1960
				Total women specialists with higher education, working in national economy....	312.3	1,098.3	1,864.6	34	53
Including—					
Engineers.....	43.2	151.5	320.1	15	29
Agronomists, zootechnicians, veterinarians, and foresters.....	17.6	54.9	94.5	25	39
Economists, economist-statisticians, commodities experts.....	18.1	56.3	112.7	31	57
Lawyers.....	3.1	13.0	22.3	15	32
Doctors (excluding dentists).....	85.4	214.3	302.0	60	75
Teachers, and university graduate librarians and cultural-educational workers.....	144.5	581.0	901.3	49	65

TABLE 3.—Number of higher educational institutions and students annually

[At the beginning of the school year]

School year	Number of educational institutions	Number of students (in thousands)	School year	Number of educational institutions	Number of students (in thousands)
1914-15 (current boundaries).....	105	127.4	1947-48.....	807	963.6
1922-23.....	248	216.7	1948-49.....	823	1,032.1
1923-24.....	187	208.3	1949-50.....	864	1,132.1
1924-25.....	169	169.5	1950-51.....	880	1,247.4
1925-26.....	145	167.0	1951-52.....	887	1,356.1
1926-27.....	148	168.0	1952-53.....	827	1,441.5
1927-28.....	148	168.5	1953-54.....	818	1,562.0
1928-29.....	152	176.6	1954-55.....	798	1,730.5
1929-30.....	190	204.2	1955-56.....	765	1,867.0
1930-31.....	579	287.9	1956-57.....	767	2,001.0
1931-32.....	701	405.9	1957-58.....	763	2,099.1
1932-33.....	832	504.4	1958-59.....	766	2,178.9
1933-34.....	714	458.3	1959-60.....	753	2,267.0
1934-35.....	688	527.3	1960-61.....	739	2,395.5
1935-36.....	718	563.5	1960-61 as a percent (or multiple) of—		
1936-37.....	700	542.0	1914-15.....	(7 times)	(19 times)
1937-38.....	683	547.2	1927-28.....	(5 times)	(14 times)
1938-39.....	708	602.9	1932-33.....	89	(5 times)
1939-40.....	750	619.9	1940-41.....	90	295
1940-41.....	817	811.7	1950-51.....	84	192
1945-46.....	789	730.2	1955-56.....	97	128
1946-47.....	805	871.7	1958-59.....	96	110

TABLE 4.—*Distribution of students in higher education by types of instruction*

[At beginning of school year]

	Number of students (in thousands)	Including number studying—		
		In day divisions	In evening divisions	By correspondence
1940-41.....	811.7	558.1	26.9	226.7
1945-46.....	730.2	525.2	14.0	191.0
1946-47.....	871.7	636.2	13.3	222.2
1947-48.....	963.6	690.4	15.2	258.0
1948-49.....	1,032.1	716.0	18.4	297.7
1949-50.....	1,132.1	755.9	22.3	353.9
1950-51.....	1,247.4	817.9	27.2	402.3
1951-52.....	1,356.1	886.1	32.1	437.9
1952-53.....	1,441.5	933.6	37.9	470.0
1953-54.....	1,562.0	994.4	48.3	519.3
1954-55.....	1,730.5	1,084.1	62.4	584.0
1955-56.....	1,867.0	1,147.0	80.9	639.1
1956-57.....	2,001.0	1,177.1	100.8	723.1
1957-58.....	2,099.1	1,193.1	127.2	778.8
1958-59.....	2,178.9	1,179.6	153.3	846.0
1959-60.....	2,267.0	1,145.8	195.8	925.4
1960-61.....	2,395.5	1,166.5	244.9	995.1
1960-61 as a percent (or multiple) of—				
1940-41.....	295	207	(9 times)	439
1945-46.....	328	220	(17 times)	(5 times)
1950-51.....	192	141	(9 times)	247
1955-56.....	128	101	303	156
1958-59.....	110	98	160	118

TABLE 5.—*Number of higher educational institutions and students by branch groups of educational institutions*

[At beginning of school year]

	1914-15	1940-41	1945-46	1950-51	1955-56	1959-60	1960-61
Total educational institutions.....	105	817	789	880	765	753	739
Including, by groups of educational institutions:							
Industry and construction.....	18	{ 136	148	147	165	164	169
Transport and communications.....		{ 28	28	35	38	38	37
Agriculture.....	14	{ 91	92	94	99	100	96
Economics and law.....	15	{ 47	44	47	39	58	51
Health, physical culture, and sport.....	6	{ 78	80	89	94	98	98
Education.....	52	{ 407	349	417	285	248	241
Art and cinematography.....		{ 30	48	51	45	47	47
Total students (in thousands).....	127.4	811.7	730.2	1,247.4	1,867.0	2,267.0	2,395.5
Including, by groups of educational institutions:							
Industry and construction.....	24.9	{ 168.4	158.0	272.8	550.6	768.1	872.6
Transport and communications.....		{ 36.2	29.3	47.9	99.0	145.1	146.7
Agriculture.....	4.6	{ 52.1	49.8	104.1	198.9	261.4	246.4
Economics and law.....	11.4	{ 36.3	44.5	89.2	106.7	153.0	161.9
Health, physical culture, and sport.....	5.0	{ 109.8	115.6	111.5	158.8	184.4	188.9
Education.....	81.5	{ 398.6	321.9	607.0	741.6	737.2	759.6
Art and cinematography.....		{ 10.3	11.1	14.9	14.4	16.9	19.4

TABLE 6.—*Distribution of students in higher education by groups of specialties*

[At beginning of school year]

Groups of specialties	1950-51	1955-56	1959-60	1960-61	1960-61 as percent of—	
					1950-51	1955-56
Total.....	1, 247, 382	1, 866, 994	2, 266, 979	2, 395, 545	192	128
Including:						
Geology and prospecting for mineral resources.....	16, 251	32, 259	21, 820	21, 276	131	66
Mining of mineral resources.....	20, 860	36, 471	30, 924	30, 248	145	83
Power engineering.....	23, 840	52, 493	68, 663	74, 608	313	142
Metallurgy.....	14, 708	24, 713	29, 323	31, 500	214	127
Machine building and instrument making.....	86, 332	172, 534	270, 116	302, 684	351	175
Electromachine building and electroinstrument making.....	14, 156	36, 250	69, 988	91, 330	(6 times)	252
Radiotechnics and communication.....	15, 630	39, 795	65, 025	78, 228	(5 times)	197
Chemical technology.....	23, 906	37, 610	47, 280	56, 194	235	149
Timber engineering and technology of wood, cellulose, and paper.....	8, 659	20, 499	22, 277	22, 863	264	112
Technology of food products.....	10, 049	18, 165	27, 195	31, 349	312	173
Technology of consumer goods.....	9, 464	20, 144	26, 645	28, 821	305	143
Construction.....	37, 092	93, 202	135, 116	147, 024	396	158
Geodesy and cartography.....	2, 793	3, 507	5, 354	5, 870	210	167
Hydrology and meteorology.....	2, 848	4, 123	4, 583	5, 158	181	125
Agriculture and forestry.....	107, 682	191, 786	254, 168	236, 008	219	123
Transport (exploitation).....	23, 741	36, 628	58, 319	65, 617	276	179
Economics.....	72, 591	131, 461	198, 413	217, 674	300	166
Law.....	45, 383	38, 803	38, 820	40, 301	89	104
Health and physical culture.....	113, 300	159, 711	186, 249	189, 161	167	118
Specialties in universities.....	87, 452	126, 668	176, 962	186, 953	214	148
Specialties in pedagogical and library institutes.....	496, 283	576, 278	512, 515	512, 803	103	89
Art.....	14, 362	13, 894	17, 224	19, 875	138	143

TABLE 7.—*Number of students training in higher educational institutions in engineering specialties*

[At beginning of school year]

Groups of specialties	1950-51	1955-56	1959-60	1960-61	1960-61 as percent of	
					1950-51	1955-56
Total by engineering specialties.....	346, 424	700, 083	977, 795	1, 080, 535	312	154
Including:						
Geology and prospecting for mineral resources.....	16, 251	32, 259	21, 820	21, 276	131	66
Mining of mineral resources.....	20, 860	36, 471	30, 924	30, 248	145	83
Power engineering.....	23, 840	52, 493	68, 663	74, 608	313	142
Metallurgy.....	14, 708	24, 713	29, 323	31, 500	214	127
Machine building and instrument making.....	86, 332	172, 534	270, 116	302, 684	351	175
Electro-machine building and electro-instrument making.....	14, 156	36, 250	69, 988	91, 330	(6 times)	252
Radiotechnics and communications.....	15, 630	39, 795	65, 025	78, 228	(5 times)	197
Chemical technology.....	23, 906	37, 610	47, 280	56, 194	235	149
Timber engineering and technology of wood, cellulose, and paper.....	8, 659	20, 499	22, 277	22, 863	264	112
Technology of food products.....	10, 049	18, 165	27, 195	31, 349	312	173
Technology of consumer goods.....	9, 464	20, 144	26, 645	28, 821	305	143
Construction.....	37, 092	93, 202	135, 116	147, 024	396	158
Geodesy and cartography.....	2, 793	3, 507	5, 354	5, 870	210	167
Hydrology and meteorology.....	2, 848	4, 123	4, 583	5, 158	181	125
Specialties in the group "Agriculture and forestry":						
Organization of land exploitation.....	2, 754	5, 043	4, 950	4, 209	153	83
Agricultural mechanization.....	12, 756	36, 540	60, 991	56, 945	446	156
Agricultural electrification.....	3, 388	6, 120	7, 830	6, 704	198	110
Irrigation.....	5, 117	10, 281	7, 671	7, 009	137	68
Forestry.....	12, 080	14, 606	13, 725	12, 898	107	88
Transport (exploitation).....	23, 741	36, 628	58, 319	65, 617	276	179

TABLE 8.—*Women students in higher educational institutions (at beginning of school year)*

	1927-28	1940-41	1945-46	1950-51	1955-56	1960-61
Number of women training in higher education:						
Absolute data (in thousands).....	47	471	562	661	971	1,042
In percent of total students.....	28	58	77	53	52	43
In percent of total students in following groups of schools:						
Industry, construction, transport, and communications.....	13	40	60	30	35	30
Agriculture.....	17	46	79	39	39	27
Economics and law.....	21	64	77	57	67	49
Health, physical culture and sport.....	52	74	90	65	69	56
Education, art, and cinematography.....	49	66	84	71	71	63

TABLE 9.—*Women students in higher educational institutions, by type of instruction, at beginning of 1960-61 school year*

	Total number of students	Number of women students	Women as percent of total students
Total.....	2,395,545	1,041,645	43
Including number studying—			
In day divisions.....	1,155,554	520,758	45
In evening divisions.....	244,894	95,780	39
By correspondence.....	995,097	425,107	43

TABLE 10.—*Admissions to higher educational institutions, by types of instruction, at beginning of school year*

[In thousands]

School year	Admissions			
	Total	Including—		
		Day division	Evening division	Correspondence instruction
1940-41.....	263.4	154.9	6.6	101.9
1945-46.....	285.7	171.6	4.9	109.2
1946-47.....	327.2	201.6	4.4	121.2
1947-48.....	281.1	189.5	4.7	86.9
1948-49.....	291.8	187.2	6.4	98.2
1949-50.....	324.3	203.3	6.9	114.1
1950-51.....	349.1	228.4	9.1	111.6
1951-52.....	374.4	245.2	10.3	118.9
1952-53.....	387.3	249.0	11.8	126.5
1953-54.....	430.8	265.1	16.6	149.1
1954-55.....	469.0	276.2	22.9	169.9
1955-56.....	461.4	257.2	28.4	175.8
1956-57.....	458.7	231.2	32.6	194.9
1957-58.....	438.3	219.7	34.7	183.9
1958-59.....	455.9	215.5	42.2	198.2
1959-60.....	511.7	227.1	63.5	221.1
1960-61.....	593.1	257.9	77.0	258.2
1960-61 as a percent (or multiple) of—				
1940-41.....	225	166	(12 times)	253
1950-51.....	170	113	(8 times)	231
1955-56.....	129	110	271	147
1959-60.....	116	114	121	117

TABLE 11.—Admissions to higher educational institutions, by branch groups of educational institutions, at beginning of school year

[In thousands]

	1940-41	1945-46	1950-51	1955-56	1959-60	1960-61
Total admissions.....	263.4	285.7	349.1	461.4	511.7	593.1
Including, by groups of educational institutions—						
Industry and construction.....	45.4	52.5	74.0	144.8	185.6	225.1
Transport and communications...	8.3	9.5	12.0	29.8	32.2	34.1
Agriculture.....	11.9	17.9	28.5	51.1	57.3	62.7
Economics and law.....	13.6	20.3	25.5	28.5	40.1	43.9
Health, physical culture, and sport.....	23.0	26.7	23.7	32.3	33.2	36.8
Education.....	159.0	155.0	182.6	172.0	159.0	185.2
Art and cinematography.....	2.2	3.8	2.8	2.9	4.3	5.3
	In percent of total					
Total.....	100	100	100	100	100	100
Including, by groups of educational institutions—						
Industry and construction.....	17.2	18.4	21.2	31.4	36.3	38.0
Transport and communications...	3.2	3.3	3.4	6.4	6.3	5.7
Agriculture.....	4.5	6.3	8.2	11.1	11.2	10.6
Economy and law.....	5.2	7.1	7.3	6.2	7.8	7.4
Health, physical culture, and sport.....	8.7	9.3	6.8	7.0	6.5	6.2
Education.....	60.4	54.3	52.3	37.3	31.1	31.2
Art and cinematography.....	.8	1.3	.8	.6	.8	.9

TABLE 12.—Graduations of specialists from higher educational institutions by branch groups of educational institutions

[In thousands]

	1940	1945	1950	1955	1959	1960
Total graduations.....	126.1	54.6	176.9	245.8	338.0	342.1
Including, by groups of educational institutions—						
Industry and construction.....	24.2	8.5	30.0	56.4	92.3	95.0
Transport and communications...	5.9	1.6	6.1	9.5	16.3	16.1
Agriculture.....	10.3	2.9	12.7	24.1	34.5	34.7
Economics and law.....	5.7	2.4	11.4	15.6	25.0	24.7
Health, physical culture, and sport.....	17.4	6.6	20.0	16.9	29.5	30.0
Education.....	61.6	32.0	94.1	120.8	138.0	139.1
Art and cinematography.....	1.0	.6	2.6	2.5	2.4	2.5
	In percent of total					
Total.....	100.0	100.0	100.0	100.0	100.0	100.0
Including, by groups of educational institutions—						
Industry and construction.....	19.2	15.5	17.0	23.0	27.3	27.8
Transport and communications...	4.7	3.1	3.4	3.8	4.8	4.7
Agriculture.....	8.2	5.3	7.2	9.8	10.2	10.1
Economy and law.....	4.5	4.4	6.4	6.4	7.5	7.2
Health, physical culture, and sport.....	13.8	12.0	11.3	6.8	8.7	8.8
Education.....	48.9	58.6	53.2	49.2	40.8	40.7
Art and cinematography.....	.7	1.1	1.5	1.0	.7	.7

TABLE 13.—Graduations of specialists from higher educational institutions by groups of specialties

	1950	1955	1959	1960	1960 as percent of—	
					1950	1955
Total	176,869	245,846	337,969	342,050	193	139
Including:						
Geology and prospecting for mineral resources.....	1,721	3,976	5,351	3,898	226	98
Mining of mineral resources.....	1,353	5,290	6,230	5,246	388	99
Power engineering.....	2,380	4,957	8,441	8,425	354	170
Metallurgy.....	1,416	2,656	4,005	3,884	274	146
Machine building and instrument making.....	9,101	15,736	28,349	30,408	334	193
Electro-machine building and electro-instrument making.....	1,433	2,981	6,833	8,138	(6 times)	273
Radiotechnics and communications.....	1,427	2,950	6,074	6,299	441	214
Chemical technology.....	2,586	4,954	5,404	5,702	220	115
Timber engineering and technology of wood, cellulose and paper.....	727	1,885	3,497	3,724	(5 times)	198
Technology of food products.....	2,295	1,878	3,094	3,396	148	181
Technology of consumer goods.....	1,240	1,669	3,068	3,109	251	186
Construction.....	4,873	9,440	17,335	17,760	364	188
Geodesy and cartography.....	294	540	466	612	208	113
Hydrology and meteorology.....	379	628	657	668	176	106
Agriculture and forestry.....	12,859	24,563	33,908	34,391	267	140
Transport (exploitation).....	3,059	4,236	6,275	6,620	216	156
Economics.....	10,103	16,138	30,718	30,415	301	188
Law.....	5,648	8,126	6,263	6,016	107	74
Health, and physical culture.....	20,747	16,943	29,803	29,953	144	177
Specialties in universities.....	12,323	15,560	30,200	29,876	242	192
Specialties in pedagogical and library institutes.....	78,529	98,249	99,656	101,003	129	103
Art	2,376	2,491	2,342	2,507	106	101

TABLE 14.—Graduations of engineers from higher educational institutions by groups of specialties

	1950	1955	1959	1960	1960 as percent of—	
					1950	1955
Total by engineering specialties	37,434	74,569	117,543	120,132	321	161
Including:						
Geology and prospecting for mineral resources.....	1,721	3,976	5,351	3,898	226	98
Mining of mineral resources.....	1,353	5,290	6,230	5,246	388	99
Power engineering.....	2,380	4,957	8,441	8,425	354	170
Metallurgy.....	1,416	2,656	4,005	3,884	274	146
Machine building and instrument making.....	9,101	15,736	28,349	30,408	334	193
Electro-machine building and electro-instrument making.....	1,433	2,981	6,833	8,138	(6 times)	273
Radio-technics and communications.....	1,427	2,950	6,074	6,299	441	214
Chemical technology.....	2,586	4,954	5,404	5,702	220	115
Timber engineering and technology of wood, cellulose and paper.....	727	1,885	3,497	3,724	(5 times)	198
Technology of food products.....	2,295	1,878	3,094	3,396	148	181
Technology of consumer goods.....	1,240	1,669	3,068	3,109	251	186
Construction.....	4,873	9,440	17,335	17,760	364	188
Geodesy and cartography.....	294	540	466	612	208	113
Hydrology and meteorology.....	379	628	657	668	176	106
Specialties in the group "Agriculture and Forestry":						
Organization of land exploitation.....	202	511	893	826	409	162
Agricultural mechanization.....	1,033	5,068	6,631	6,742	(7 times)	133
Agricultural electrification.....	152	887	1,044	1,021	(7 times)	115
Irrigation.....	311	1,576	1,512	1,330	428	84
Forestry.....	1,452	2,751	2,384	2,324	160	84
Transport (exploitation).....	3,059	4,236	6,275	6,620	216	156

TABLE 15.—Number of students in U.S.S.R. universities at beginning of school year

Years	Number of universities	Number of students
1940-41.....	29	75,682
1950-51.....	33	109,737
1955-56.....	33	166,256
1959-60.....	40	223,441
1960-61.....	40	248,962

TABLE 16.—Admissions and graduations of specialists in U.S.S.R. universities

Years	Admissions of freshmen	Graduations
1940.....	23,334	7,963
1950.....	27,127	15,626
1955.....	36,690	22,866
1959.....	52,904	39,064
1960.....	65,590	38,354

TABLE 17.—Number of aspirants (graduate students) in U.S.S.R. at end of year

	1940	1950	1955	1960	1960 as percent (or multiple of)—		
					1940	1950	1955
Total aspirants.....	16,863	21,905	29,362	36,754	218	168	125
Including:							
In higher educational institutions.....	13,169	12,487	16,774	20,406	155	163	122
Training with interruption from production.....	11,506	11,199	13,212	13,463	177	120	102
Training without interruption from production.....	1,663	1,288	3,562	6,943	(4.2 times)	(5.4 times)	195
In scientific organizations.....	3,694	9,418	12,588	16,348	(4.4 times)	174	130
Training with interruption from production.....	2,919	6,944	8,145	9,515	(3.3 times)	137	117
Training without interruption from production.....	775	2,474	4,443	6,833	(8.8 times)	276	154

TABLE 18.—Admissions to Aspirantura (graduate study)

	1940	1950	1955	1960	1960 as percent (or multiple) of—		
					1940	1950	1955
Total accepted into Aspirantura.....	3,530	7,717	7,367	14,399	(4,1 times)	187	195
Including:							
In higher educational institutions.....	2,768	4,783	4,193	8,271	299	173	197
With interruption from production.....	2,223	4,253	3,225	5,374	242	126	167
Without interruption from production.....	545	530	968	2,897	(5,3 times)	(5,5 times)	299
In scientific organizations.....	762	2,934	3,174	6,128	(8 times)	209	193
With interruption from production.....	559	2,124	2,159	3,641	(6,5 times)	171	169
Without interruption from production.....	203	810	1,015	2,487	(12,3 times)	(3,1 times)	245

TABLE 19.—*Graduations of aspirants (graduate students)*

Years	Totals completing aspirantura	Including—			
		Those in higher educational institutions		Those in scientific organizations	
		With interruption from production	Without interruption from production	With interruption from production	Without interruption from production
1940.....	1,978	1,411	61	454	52
1945.....	1,366	1,092	108	129	37
1946-50.....	16,295	10,087	733	4,767	708
1951-55.....	31,475	18,128	1,371	9,887	2,089
1956.....	8,453	4,805	496	2,408	744
1957.....	8,250	4,288	653	2,523	786
1958.....	6,802	3,119	707	2,053	923
1959.....	5,603	2,585	745	1,504	769
1960.....	5,517	2,407	613	1,718	779

TABLE 20.—*Distribution of aspirants by branches of science*

[At end of year]

	1950		1960		1960 as percent (or multiple) of 1950	
	Number of aspirants	Number in higher educational institutions	Number of aspirants	Number in higher educational institutions	Number of aspirants	Number in higher educational institutions
Total.....	21,905	12,487	36,754	20,406	168	163
Including by branches of science:						
Physico-mathematics.....	972	618	3,435	2,726	(3. 5 times)	(4. 4 times)
Chemistry.....	1,319	667	2,402	1,296	182	194
Biology.....	1,247	611	1,877	732	151	120
Geology-mineralogy.....	503	233	1,313	533	261	229
Technical.....	5,809	2,854	13,936	6,720	240	235
Agriculture and veterinary.....	2,165	835	2,877	1,077	133	129
History and philosophy.....	2,607	1,745	1,726	1,184	66	68
Economics.....	1,366	1,014	2,776	1,661	203	164
Philology.....	1,980	1,457	1,471	1,067	74	73
Geography.....	328	190	402	254	123	134
Law.....	748	489	402	280	54	57
Pedagogy.....	862	568	956	691	111	122
Medicine and pharmacy.....	1,386	862	2,585	1,846	187	214
Art.....	459	290	448	314	98	108
Architecture.....	154	54	148	25	96	46

APPENDIX B. U.S. HIGHER EDUCATION STATISTICS ¹⁷

TABLE 21.—Total and first-time opening (fall) degree-credit enrollment,¹ by sex, 1956-61

[Figures rounded to nearest thousand]

Year	Total degree-credit enrollment			First-time degree-credit enrollment ²		
	Both sexes	Men	Women	Both sexes	Men	Women
	Number					
Fall 1961.....	3,891,000	2,424,000	1,467,000	1,026,000	596,000	430,000
Fall 1960.....	3,610,000	2,271,000	1,339,000	930,000	543,000	387,000
Fall 1959.....	3,402,000	2,174,000	1,228,000	827,000	491,000	336,000
Fall 1956.....	2,947,000	1,928,000	1,019,000	723,000	446,000	277,000
	Percent changes					
1960 to 1961 (1 year).....	+7.8	+6.8	+9.5	+10.4	+9.8	+11.2
1959 to 1961 (2 years).....	+14.4	+11.5	+19.4	+24.1	+21.4	+27.9
1956 to 1961 (5 years).....	+32.0	+25.7	+44.0	+41.9	+33.6	+55.3

¹ Degree-credit students are those whose programs consist wholly or principally of work normally creditable toward a bachelor's or a higher degree. Resident and extension degree-credit students, full time and part time, are included. Students taking degree-credit work at home by mail, radio, or TV, and all students in branches of U.S. institutions operated in foreign countries are excluded.

² A first-time, degree-credit student is one who is reported as a degree-credit student but who has not previously been a degree-credit student in any institution of higher education. Students were reported as "first time" in this survey if the fall of 1961 marked their first enrollment in any institution for programs of the degree-credit type.

TABLE 22.—Earned degrees conferred, by major area of study, level of degree, and sex: Aggregate United States, 1959-60

Major area of study	Bachelor's and first professional			2d-level (master's, except first professional)			Doctoral		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Total.....	394,889	225,504	139,385	74,497	50,937	23,560	9,829	8,801	1,028
Agriculture.....	4,898	4,505	93	996	934	12	411	404	7
Architecture.....	1,801	1,744	57	319	305	14	17	17	0
Biological sciences.....	15,655	11,693	3,962	2,154	1,668	486	1,205	1,086	119
Business and commerce.....	51,522	47,629	3,893	4,643	4,476	167	135	133	2
Education.....	90,179	26,178	64,001	33,512	18,126	15,386	1,590	1,281	309
Engineering.....	37,808	37,663	145	7,159	7,133	26	786	783	3
English and journalism.....	22,456	9,001	13,455	3,192	1,670	1,522	405	321	84
Fine and applied arts.....	13,166	6,141	7,025	2,892	1,763	1,129	292	238	54
Foreign languages and literature.....	5,498	2,093	3,400	1,134	593	541	229	166	63
Forestry.....	1,437	1,437	0	207	206	1	29	29	0
Geography.....	973	858	115	206	177	29	68	64	4
Health professions.....	24,557	15,170	9,387	1,872	1,075	797	107	99	8
Home economics.....	4,450	60	4,390	484	11	473	40	6	34
Law.....	9,314	9,073	241	520	496	24	24	24	0
Library science.....	1,938	467	1,471	305	70	235	19	17	2
Mathematical subjects.....	11,437	8,312	3,125	1,765	1,428	337	303	285	18
Merchant marine—deck officer curriculum.....	202	202	0	0	0	0	0	0	0
Military, naval, or air force science.....	2,369	2,366	3	0	0	0	0	0	0
Philosophy.....	3,466	3,052	414	383	335	48	137	112	25
Physical sciences.....	16,057	14,041	2,016	3,387	3,060	327	1,838	1,776	62
Psychology.....	8,111	4,785	3,326	1,406	981	425	641	644	97
Religion.....	9,002	7,563	1,439	1,331	1,124	207	276	265	11
Social sciences.....	51,802	35,801	16,001	5,998	4,765	1,233	1,237	1,117	120
Trade and industrial training.....	1,548	1,537	11	0	0	0	0	0	0
Other broad general curriculums and miscellaneous fields.....	5,243	3,828	1,415	632	491	141	40	34	6

¹⁷ Tables 21 and 22 are from Higher Education, journal of the Office of Education, U.S. Department of Health, Education, and Welfare, December 1961, pp. 12-13.

TEACHER EDUCATION IN THE SOVIET UNION—1962

BY

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AND

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TEACHER EDUCATION IN THE SOVIET UNION—1962

INTRODUCTION

Teachers at all levels of education are considered to be of great strategic importance in the continuing process of building the social and economic strength of the Soviet Union. This has been verified in recent years by American visitors to the republics of the U.S.S.R. and by frequent exhortations of officials of the Government and of the Communist Party.

During the past 4 years, special attention has been focused upon teacher education in the nationwide drive to put into effect the education reform of 1958—the law, “On Strengthening Ties Between School and Life and on Further Developing the System of Public Education in the U.S.S.R.”

This law, which was initiated by the Central Committee of the Communist Party, and enacted by the Supreme Soviet of the U.S.S.R., is generally considered to have been the most significant event in Soviet education since the early 1930's. The target date for its enforcement is 1965—a 7-year campaign. Believed to be one of the principal reasons given for the introduction of the law was the surplus of academically trained secondary graduates and the shortage of technicians and semiprofessional personnel that existed in the Soviet Union in 1958.¹

The outstanding feature of the reform is the increased emphasis given to polytechnic education. In essence, the concept of polytechnic education seeks to infuse all education with the importance of relating everything taught in the classroom to its application in life. Narrowly conceived, the idea of polytechnic education is based upon manual labor and basic vocational skills. Broadly conceived, the idea of polytechnic education seeks to insure an understanding by every Soviet citizen of the meaning of science in modern life; the application of science to production; the importance of production in achieving communism; and the inherent dignity of all forms of labor.

According to the law, not only was polytechnic education to be emphasized at each grade level, but also an additional year was to be added to the former 10-year school which consisted of 4 years of primary school, 3 years of lower secondary school, and 3 years of upper secondary school. Compulsory education now consists of 4 years of primary education (grades I through IV) and 4 years of lower secondary education (grades V through VIII). Upon graduation from grade VIII, a student may enroll in the general upper secondary

¹ Nicholas DeWitt, “Education and Professional Employment in the U.S.S.R.,” U.S. Government Printing Office, Washington, D.C., 1961, p. 13.

school (grades IX through XI), a vocational school to learn a trade, a technicum to learn to become a technician or a semiprofessional worker, or he or she may enter the labor market, with the chance of continuing education on a part-time basis.

The additional year which has been added to general secondary education really amounts to a year of polytechnic education since one-third of the time of the 3-year general upper secondary school is devoted to polytechnic training and two-thirds to academic education. Basic to the implementation of the reform is a cooperative relationship with industry, commerce, and agriculture in which students undergo periods of supervised work and training in shops, businesses, and farms as part of their regular school programs.

With the central role being given to polytechnic education in the schools, it is only natural that the polytechnic concept play an important part in Soviet teacher-education programs. Speaking at the opening session of a national conference of higher education personnel, held in Moscow beginning on July 4, 1961, V. P. Elyutin, Minister of Higher and Specialized Secondary Education of the U.S.S.R., declared:

The most important task of the teacher-training schools is to raise, in every way possible, the scientific level of teaching, to improve pedagogical and production training, and promote research. Regardless of what their future specialization will be, the future teachers absolutely must have a knowledge of agricultural biology, engineering, and technology. To equip them with such knowledge is the important mission of the teacher-training schools.²

Of importance to the future task of teacher education in the U.S.S.R. is the party program adopted in 1961:

to effect, in 1960-70, compulsory secondary and general and polytechnic 11-year education for all children of school age in both urban and rural localities, and to provide facilities so that everyone who wishes to study can obtain a higher education, either studying full time or combining work with study.³

TEACHER SUPPLY

Table 1 shows that the number of teachers in the Soviet Union has been increasing significantly in the past two decades. Based upon these data, the ratio of teachers to students in 1960-61 was 1 teacher to approximately 18 students—one of the best ratios in the world. Contributing to this low figure, however, is the inclusion as teachers of a large number of auxiliary personnel, such as helping teachers, health assistants, and so forth, who, in other countries, would not be counted as teachers; the relatively small classes in evening and continuation schools; and the large number of small one-room rural schools which still exist. The generally approved maximum student-teacher ratio in the Soviet Union for elementary schools is 1 teacher to 40 pupils; and for secondary schools, 1 to 30.

The ratio of men to women teachers remains fairly constant. The latest figures available, those for the school year 1960-61, indicate that in grades I-IV, 87 percent of the teachers are women; in grades V-VIII, 76 percent are women; and in grades IX-XI, 67 percent are women.

² V. P. Elyutin, "The Higher School at a New Stage," *Pravda*, July 5, 1961. Translation appearing in *Soviet Education*, 4: No. 3, January 1962, p. 44.

³ S. Strumlin, "Effectiveness of Education in the U.S.S.R.," *Ekonomicheskaja Gazeta* (*Economic Gazette*), April 2, 1962. Translation appearing in *Soviet Education*, 4: No. 6, April 1962, p. 4.

Although visitors to the Soviet Union tend to report that there is no shortage of teachers,⁴ *Izvestia*, on September 29, 1961, published a report on a resolution of the Communist Party of the Soviet Union and the U.S.S.R. Council of Ministers "designed to provide long-term and emergency measures to fill the urgent need for teachers in elementary, secondary, and boarding schools."⁵

TABLE 1.—*Number of general education schools of all types, number of students and teachers (at beginning of school year)*

[Figures in thousands]

	1940-41	1955-56	1958-59	1959-60	1960-61
Number of general education schools of all types.....	199	213	215	221	224
Number of students.....	35,552	30,070	31,483	33,364	36,186
Number of teachers.....	1,238	1,733	1,900	1,953	2,042
Ratio of students to teachers.....	28.7/1	17.4/1	16.6/1	17.1/1	17.7/1

¹ These ratios did not appear in the source, but were calculated from the data given.

Source: Narodnoe Khoziaistvo S.S.S.R. v 1960 godu, Statisticheskii Ezhegodnik (National Economy of U.S.S.R. in 1960, Statistical Yearbook), published by Central Statistical Administration attached to U.S.S.R. Council of Ministers, p. 752.

Shortages of teachers appear to be selective in terms of subject fields and in terms of geographical areas of the U.S.S.R. These shortages have been aggravated by the general increase in the number of all kinds of schools, by the lack of enough places in teacher training institutions, by the heavy demand for teachers of work-related subjects, and by the Spartan living conditions for teachers in many rural areas.

To meet these shortages, emergency programs have been developed to expand the facilities of institutions of teacher education; to add elementary teacher training programs to existing upper secondary schools of good standing; to continue to use the pedagogical schools (normal schools essentially at the secondary level) to prepare elementary school teachers; to encourage people who have been trained for shopwork and agriculture to enter pedagogical institutes with advanced standing; to improve living conditions for teachers in rural areas; and to encourage former teachers to return to teaching.⁶

The shortage would perhaps be even greater if it were not for the fact that many teachers in the Soviet Union teach double shifts or teach evening classes in addition to their regular full-time teaching jobs and also the fact there is no compulsory retirement age for teachers. Teachers may continue teaching as long as they are fit and able. A teacher receives a pension equal to 40 percent of his or her salary after 25 years of teaching and may continue teaching, drawing both pension and regular salary.⁷

In the Soviet Union in 1961-62 there were 40 universities, most of which have programs for training secondary school teachers; 196 pedagogical institutes enrolling 530,398 students; and 275 pedagogical schools enrolling 135,290 students.⁸ The pedagogical institutes

⁴ E. M. Williams and Norman Larby, "At School in Russia, II: Teacher Supply and Training," *The (London) Times Educational Supplement*, No. 2,384, January 27, 1960, p. 139.

⁵ Ina Schlesinger, "Crisis in Soviet Teacher Training," *School and Society*, 90: No. 2,204, February 10, 1962, p. 61.

⁶ Ina Schlesinger, *op. cit.*, p. 40.

⁷ U.S. Education Mission to the U.S.S.R., *Soviet Commitment to Education*, Bulletin 1959, No. 16, Washington, U.S. Government Printing Office, p. 16.

⁸ "Narodnoe Obrazovanie v Sovetskom Soiuze" (Public Education in the Soviet Union), Moscow, Ministry of Education R.S.F.S.R., 1962, p. 34.

constitute the primary source of secondary school teachers. About 60 percent of the university graduates in the humanities go into teaching. The majority of the university graduates in the natural sciences go into research and industrial work.

As for all Soviet institutions of higher education, a quota for new admissions is established annually for each teacher training institution. These quotas are determined by the number of available places as well as the expected future need for teachers. The Government gives each graduate a limited choice of teaching positions for which to apply.

From the discussions in current Soviet periodicals and newspapers it appears that educators in the Soviet Union are grappling with most of the problems of supply, quality, and training of personnel which are familiar to us in the United States and to other large industrial countries of the world.

THE ORGANIZATION OF TEACHER EDUCATION

The Ministry of Education in each of the 15 republics of the Soviet Union is responsible for the organization and maintenance of institutions which are engaged primarily in teacher education. These institutions are supervised for quality of staff, program, and student performance by the U.S.S.R. Ministry of Higher and Specialized Secondary Education. The objective of this dual control is to encourage local initiative and responsibility at the republic level, and to insure high quality and ideological consistency nationwide.⁹

As a result of the education reform of 1958, preference for admission to higher education is to be given to applicants who have had 2 years' work experience.¹⁰ Students up to age 35 may apply for full-time day study. There is no age or quota restriction on part-time study, however. Students may apply for full-time study only to one institution at a time. Unsuccessful candidates may try again another year at the same or another institution. Approximately 60 percent of the teachers in training are full-time students. The balance attend part-time evening training or are enrolled in correspondence study courses.¹¹

Teachers for the elementary schools (grades I-IV), the lower division of the new 8-year school, are prepared in pedagogical institutes, in pedagogical schools (4 years of education beyond grade VIII or 2 years beyond grade XI), or in emergency programs which have been attached to the upper secondary school. The effort for the past 4 years has been to establish elementary teacher education as a 4-year program of higher education in the pedagogical institutes, and thus eliminate pedagogical schools which do not possess higher education status, but the process has slowed down because of the pressing demand for teachers. The movement to upgrade elementary teacher training is similar to the transition from the normal school to teachers college and university which we have been going through in the United States during the past 30 years in establishing elementary teacher education as a function of higher education.

⁹ DeWitt, *op. cit.*, p. 40.

¹⁰ G. Z. F. Bereday, W. W. Brickman, and G. H. Read (editors), "The Changing Soviet School," Boston, the Riverside Press, 1960, p. 274.

¹¹ W. K. Medlin, C. B. Lindquist, and M. L. Schmitt, *Soviet Education Programs*, Bulletin 1960, No. 17, Washington, U.S. Government Printing Office, p. 195.

As in other countries with a European tradition in the organization of education, elementary teachers in the Soviet Union are distinctly of lower professional status than are secondary teachers. The path for promotion of an elementary school teacher is to become a secondary school teacher or an administrator or supervisor.

Teachers for secondary schools (grades V through XI) are trained in pedagogical institutes and in universities. They enter these institutions by examination after graduation from grade XI of the upper secondary school. A pedagogical institute, which is similar in many respects to a single purpose teachers college in the United States, is fully recognized in the U.S.S.R. as an institution of higher education, though not as comprehensive nor as highly regarded academically as a university. About one out of every five students who apply each year is admitted.¹²

Students in institutions of higher education who show promise as future professors are encouraged to qualify for graduate degrees, to become graduate assistants, and to commence productive research as soon as possible in their fields of specialization.

Inservice programs of teacher education are considered to be a normal aspect of each teacher's continuing professional growth on the job. Teachers' curriculum resource centers are part of every large school system. Teachers are expected to use them to improve their teaching and to participate in group projects to revise the curriculum. Inservice institutes, either established independently or as part of an institution of higher education, provide regular courses for teachers during the academic year as well as summer courses, seminars, and special conferences. Teachers are urged to attend refresher programs of various kinds; they are expected to do so at least once every 5 years. They may attend evening classes, take time off from regular daytime teaching, or enroll as full-time students in teachers' institutes. During such inservice training they receive their regular salaries.

COMMON ELEMENTS OF TEACHER EDUCATION PROGRAMS

The preceding section explained the pattern of organization of teacher education in the U.S.S.R. Before proceeding to a discussion of the various programs of study for different levels of teaching, it is desirable to point out some elements which are common to all the programs.

All students are required to take three courses in Communist ideology: History of the Communist Party of the Soviet Union, political economy, and dialectical and historical materialism. A polytechnic emphasis is also supposed to be present in all programs at every level.

The concept of "upbringing" is very important in Soviet education. Our nearest translation for this term is character education or moral or ethical education. Upbringing is a primary responsibility of the teacher, especially in the lower grades and in all work with Pioneer groups. Consequently, an understanding of upbringing is required of each teacher training student.

To the American observer, the Young Pioneer movement appears to be especially designed to insure correct attitudes and correct behavior on the part of young Communists. This is an extracurricular institution which has been described as a combination of the 4-H

¹² U.S. Education Mission to the U.S.S.R., op. cit., p. 85.

Clubs, the YWCA and YMCA, and the Boy Scouts and Girl Scouts—all within the framework of Communist ideology. The full-time workers in the Young Pioneer movement are highly qualified for their work. However, all teachers are expected to be competent to lead Pioneer groups, and to be effective in extracurricular activities, whether organized by the Pioneer organization or within the school itself.

PROGRAMS OF ELEMENTARY SCHOOL TEACHER EDUCATION

As mentioned in the section dealing with the organization of teacher education, elementary school teachers are trained in pedagogical schools or pedagogical institutes.

The standard curriculums found in most pedagogical schools for the training of elementary school teachers are the following:

Teaching in the elementary grades of the general school.

Preschool education.

Teaching drawing and sketching.

Cultural and social club work.

Library science.

Teaching labor (work-related shopwork and agriculture) in grades V through VIII of the general school.

In contrast to secondary school teachers, who teach only one or two subjects, elementary school teachers teach all the subjects of their grade level. Hence, they receive instruction in all these subjects. In addition, they participate in observation of classroom teaching and later engage in supervised practice teaching.

The 4-year curriculum for training elementary school teachers in the pedagogical institutes reflects the usual pattern of elementary teacher education—much lighter in general education and heavier in pedagogy than programs for secondary school teachers.

To be admitted to the 4-year program in a pedagogical institute, a graduate of the upper secondary school would apply to the faculty (department) of pedagogy in the institute. Since approximately 87 percent of elementary school teachers are women, very few men are found in elementary teacher training programs.

Although the program of an elementary teacher in training is heavily weighted with child study and the teaching of elementary school subjects, there has been considerable discussion in educational circles in the Soviet Union, as there has been among educators in the United States, that a 4-year college program for elementary school teachers should have more work in general education and perhaps even a solid subject-matter major. This is still at the discussion stage, but provides an interesting parallel to endeavors to strengthen the preparation of elementary school teachers in the United States.

PROGRAMS OF SECONDARY SCHOOL TEACHER EDUCATION

Secondary school teachers are prepared at pedagogical institutes and at universities. Although many graduates of universities go into secondary teaching, the universities do not generally have separate or special programs for those students who plan to teach in secondary schools upon graduation.

The teacher who graduates from a university will have had a greater emphasis on subject matter and less on pedagogy than if

he had attended a pedagogical institute. In fact, some universities do not even have a pedagogy department. The assumption seems to be that with the advantage of his concentration in subject matter, the university graduate will be able to acquire the necessary skills in teaching on the job.

Since pedagogical institutes have been established for the express purpose of preparing secondary teachers and constitute the primary source for these teachers, the remainder of this section will be devoted to the description of teacher education programs within these institutions.

Except for physical education, which requires only 4 years, all secondary teacher education day programs are of 5 years duration. The curriculums are prescribed by the Ministry of Higher and Specialized Secondary Education of the U.S.S.R. and are uniform for all pedagogical institutes in the U.S.S.R. The first curriculums for the 5-year programs were introduced in 1957 to replace the former 4-year programs, and some revisions were made in the 1959 curriculums which are presently in effect.

Generally, students in the regular day program must take a combination major. A student must choose one of the following curriculums:

Russian language, literature, and history.

Russian language, literature, and foreign languages.

Foreign languages.

Mathematics and mechanical drawing.

Mathematics and physics.

Physics and the fundamentals of production.

Biology, chemistry, and fundamentals of agriculture.

Geography and biology.

Physical education.

Engineering and pedagogics.

Agriculture and pedagogics.

Teaching of graphic arts.

The latter three of these curriculums have been introduced recently to advance the objective of polytechnic education which is stressed in the education reform of 1958. External students (correspondence study or evening school) are required to take only one specialization, and not a combination as day students are. Nevertheless, the diploma of an external student is considered of equal value to that of an internal or day student.

To enable the reader to see what a curriculum in a Soviet pedagogical institute is like, the curriculum for mathematics and physics is given in table 2 as an example. Other curriculums are similarly prescribed by the U.S.S.R. Ministry of Higher and Specialized Secondary Education in Moscow.¹³

An examination of this sample curriculum shows that, as in most European universities, the Soviet student devotes a greater portion of his time to his fields of specialization than is usual in American colleges and universities. The Soviet undergraduate is assumed to have completed his general education in secondary school. In higher education he is expected to concentrate upon his vocational objective.

¹³ For additional curriculums approved in 1959, see S. M. Rosen, "Higher Education in the U.S.S.R., Part I: Curriculums," Washington, U.S. Department of Health, Education, and Welfare, Office of Education. Scheduled for publication in 1962.

TABLE 2.—Curriculum for the Pedagogical Institute: Specialty, mathematics and physics

[Qualifications of specialist: Secondary School Teacher of Mathematics and Physics; approved July 2, 1959; length of studies, 5 years]

Subjects	Number of hours			Hours per week by school year and by semesters									
	Total	Including			1st year		2d year		3d year		4th year		5th year
		Lectures	Laboratory work	Seminars and practice sessions	1st semester, 19 weeks	2d semester, 18 weeks	3d semester, 18 weeks	4th semester, 13 weeks	5th semester, 19 weeks	6th semester, 17 weeks	7th semester, 11 weeks	8th semester, 18 weeks	9th and 10th semesters, 8/8 weeks
1. History of Communist Party of the Soviet Union.....	220	120		100	3	3	3	4					
2. Political economy.....	150	80		70				2	2	2	3		
3. Dialectical and historical materialism.....	140	70		70						2	3	4/4	
4. General psychology and growth.....	88	68		20	2	1	2						
5. Pedagogy.....	100	50		50			3						
6. History of pedagogy.....	72	54		18				4					
7. School hygiene.....	36	18		18					3				
8. Special seminar in pedagogy, methods, or psychology (elective).....	36			36							2		
9. Mathematical analysis.....	400	220		180	7	5	5	6					
10. Analytic geometry.....	170	85		85	5	4							
11. Higher algebra.....	200	112		88	5	2	4						
12. Theory of numbers.....	44	32		12						4			
13. Elementary mathematics.....	360	170	16	174	4	3	2	2	3	2	3	2	
14. Special practical training (mathematical models, surveying, calculation).....	92		92							2	2	2	
15. Methods of teaching mathematics.....	170	70		100					9	4	4	2	
16. General physics.....	620	270	200	150		9	9	10	9	3	3	2	
17. Theoretical mechanics.....	112	56		56					3	3			
18. Electroradio technics with practical training.....	140	50	90						4	2	3		
19. Practical training in school workshops with elements of technology of materials.....	180	30	150				4		3	4			
20. Methods of teaching physics.....	210	60	100	50					6	4	2	3/0	
21. Astronomy.....	72	54	18						2	2			
22. Educational movies.....	36		36						2				
23. Mechanical drawing.....	86	18	68		3	2							
24. Foreign language.....	140			140	2	2	2	2					
25. Physical education.....	140			140	2	2	2	2					
26. Special training.....	48			48	3								

SPECIALIZATION IN MATHEMATICS													
27. Projective and descriptive geometry...	110	78	32								2	5	
28. Foundations of geometry.....	64	54	10									2	6/2
29. Foundation of arithmetic.....	36	36											
30. Theory of functions of a complex and foundations real variable.....	112	112							4	4			
31. Algorithms and computing machines...	48	48										2	6/0
32. Special course and special seminar.....	132	42	90										6/6
SPECIALIZATION IN PHYSICS													
27. Methods of mathematical Physics....	56	40	16						2	2			
28. Theoretical physics.....	300	220	80						3	4		6	6/6
29. Auto-tractor practical training with fundamentals of machine technology.....	130		130									5	6/0
30. Special course and special practical training.....	132	42	90									3	6/4
Total hours for students specializing in mathematics.....	4,564	2,057	770	1,737	36	33	32	36	32	31	30	25	28/12
Total hours for students specializing in physics.....	4,680	1,989	990	1,701	36	33	32	36	32	32	30	30	28/14
Number of course projects.....	2									1		1	
Number of examinations for mathematics specialists.....		37								5	3	5	5
Number of examinations for physics specialists.....		35		2	5	4	5	3	5	3	4	4	4
Number of tests for mathematics specialists.....		46										4	2
Number of tests for physics specialists.....		47		6	6	5	6	6	5	0		4	3

THE PEDAGOGICAL INSTITUTE (MATHEMATICS AND PHYSICS)

Optional subjects

	<i>Hours</i>
1. Fundamentals of modern algebra.....	40
2. Functional analysis.....	40
3. Vector and tensor analysis.....	40
4. Selected problems of elementary mathematics.....	40
5. Methods of approximate calculation.....	40
6. Nuclear physics.....	40
7. Physics of semiconductors and dielectrics.....	40
8. Physics of electron phenomena.....	40
9. Special problems of methods of physics.....	40
10. Special course in optics.....	40
11. History of mathematics.....	40
12. History of physics.....	40
13. Fundamentals of atheism.....	30
14. Logic.....	70
15. Improving automobile or tractor driving.....	200
16. Foreign language.....	140
17. Practical training in conducting extracurricular activities.....	100
18. Improving sports skills.....	420
19. Choral singing.....	250
20. Individual instruction in playing musical instruments.....	250
21. Library training.....	60

Teaching-production practice

	Semester	Weeks
Production practice in industrial enterprises.....	3 5	4 8
Total.....		12
PEDAGOGICAL PRACTICE		
1. Pedagogical practice without interruption of studies.....	1-2-3	8 (300 hrs.)
2. Pedagogical practice in pioneer camps and pupil brigades.....	2	6
3. Pedagogical practice with interruption of studies.....	4-5	20
Total.....		34

STATE EXAMINATIONS

1. History of C.P.S.U.
2. Mathematics (according to special program)
3. Physics (according to special program)
4. Pedagogy with Special Methods, or Special Finals Work in Pedagogy or Methods (elective)

Source: S. M. Rosen, Higher Education in the U.S.S.R., Part I: Curriculums, Washington, U.S. Department of Health, Education, and Welfare, Office of Education. Scheduled for publication in 1962.

With the reemphasis on practical work experience, as part of formal schooling, the secondary school teacher in training is expected to spend approximately one-fifth of his program in experiences directly with children and youth, especially in practice teaching and in extracurricular activities. Practical work experience is considered to be of value in insuring the student's ability to apply knowledge; it is also looked upon as a means of gaining breadth in social and cultural understanding since the student has relatively few electives compared to equivalent programs in American colleges and universities.

As in applying for admission to any institution of higher education, the pedagogical institute student applies to the faculty (department) of the field in which he wishes to concentrate. Upon admission, he enrolls in that department. His program is directed by that depart-

ment, and, when he graduates, he receives his diploma in his field of specialization.

College students in the Soviet Union seldom change their fields of specialization or the institutions they attend. Change of program or institution means starting all over again from the beginning, but it is possible to make the change if a person is willing to do the work involved.

There has been considerable discussion recently whether students should be prepared to teach two or three subjects or should concentrate their preparation to teach only one. It is estimated that this will be resolved by the practicalities of the teaching situation—the type of school and the grade level at which the student plans to teach. For large schools in urban areas, single subject teachers can be used to advantage. Small schools in rural areas will continue to need teachers who can teach several subjects—a universal problem in secondary education.

The student's primary concerns are his fields of subject-matter specialization. In addition to taking advanced courses in these fields, he receives training in "professionalized subject matter" which deals with the content and methods of teaching his fields of specialization.¹⁴

Courses in pedagogy are introduced early in the student's program. During his first or second year he visits schools to become familiar with the details of a teacher's job and to comprehend what he is studying in pedagogy. Later in his program he spends a summer working in a Young Pioneers camp and also has training in leading Pioneer youth groups in extracurricular programs. During his last 2 years of college work, he spends between one-quarter and one-half of his time in practice teaching under rigorous supervision. He also gets practical work experience in agriculture and in shops as part of his training in polytechnic education. The time allocated to practice teaching has been doubled compared to what it was a couple of years ago.¹⁵

OTHER CATEGORIES OF TEACHING

Teachers for the kindergartens and other preschool programs receive their basic training in elementary teacher training programs, with the addition of specialized study of the early years of childhood, or they may be graduates of upper secondary schools who have had 2 additional years of special training.

Teachers of shopwork, agriculture, and other work-related subjects under the general heading of polytechnic education, come from extremely diverse backgrounds of training and experience. Some have come up through a trade and complete their academic requirements for teaching through part-time and extension programs of study. Some have graduated from engineering schools of higher education and have qualified as teachers by attending universities and pedagogical institutes. As in recruiting good vocational teachers in the United States, provisions have to be made to recruit people who make good teachers of work-related subjects wherever they can be found. There is now, and will probably continue to be, a chronic shortage of well-

¹⁴ For an example of how professionalized subject matter is handled in one subject, see B. R. Vogeli and C. B. Lindquist, "Professional Content in Soviet Teacher Training Curricula in Mathematics," *American Mathematical Monthly*, 69; No. 2, February 1962, pp. 156-162.

¹⁵ V. P. Elyutin, *op. cit.* p. 43.

qualified teachers for the polytechnic aspects of the elementary and secondary school curriculums.

Broadly speaking, the education and selection of future instructors and professors for institutions of higher education is similar in the Soviet Union to practices in Europe and the United States in generally involving undergraduate and graduate concentration in the subject field at universities and specialized institutes rather than at higher institutions specifically for teacher education. It appears to be generally assumed that breadth and depth of scholarship, and the experiences gained in its acquisition, assures that the beginning college or university instructor will be a satisfactory classroom teacher.

It also appears from personal observation in the Soviet Union that the young college teacher's future will depend more upon his productivity as a scholar than upon his skill as a classroom teacher. On the other hand, the polytechnic emphasis is clearly felt at the level of higher education: Soviet teachers in colleges and universities will usually have practical and intimate experience in the applied aspects of the subject fields in which they teach and will give a polytechnic or applied emphasis to their teaching.

TEACHER EDUCATION AT THE GRADUATE LEVEL

In addition to their programs for training teachers for the general schools, many pedagogical institutes in the U.S.S.R. have postgraduate programs, the primary purpose of which is to continue the education of those students whose academic achievements indicate that they are good prospects to become future teachers of teachers.

Graduate work in the pedagogical institutes may be pursued in some 27 standard fields of specialization: pedagogy, preschool pedagogy, psychology, special pedagogy, special psychology, the theory and method of physical education and sports training, history of physical culture, library science, bibliography, children's literature, cultural and social activities and club work, and methods of teaching the following subjects: Russian language, literature, the history and constitution of the U.S.S.R., mathematics, physics, chemistry, biology, geography, foreign languages, Russian literature in non-Russian schools, Russian language in non-Russian schools, native language in non-Russian schools, native literature in non-Russian schools, mechanical drawing, drawing and sketching, and singing.

Each faculty conducts its own postgraduate program, and each department in the faculty commonly has two or three postgraduate students (aspirants) attached to it. Each aspirant has an individual program planned for a 3-year period. This program may involve further advanced course work in the specialty area. The aspirant receives further practical training as a teacher by working as an assistant but is not required to take any further course work in professional education, although he may enroll in a class. A thesis is required. The thesis must be a major project and must be defended at a public hearing before a selected committee of examiners. An aspirant who successfully completes all the requirements is awarded the candidate degree.

Postgraduate work may be taken by correspondence study. In this case, however, completion of the program normally requires 4 years rather than 3.

At the Lenin State Pedagogical Institute in Moscow with a day enrollment of about 4,000 students there were during the 1958-59 academic year a total of 220 full-time aspirants distributed among the 45 departments of the institute. At the commencement exercises of June 1959, between 25 and 30 of these received their candidate degrees. An additional 25 aspirants had finished their course work but were not eligible for the degree until the completion of the thesis requirement. At the same exercises, five or six doctor's degrees were awarded. A doctor's degree is awarded only for an outstanding contribution in research. Relatively few individuals (about 1 out of 10 candidate degree holders) achieve a doctor's degree.

Postgraduate training and research for professional educators is also conducted by 15 specialized research institutes under the auspices of the U.S.S.R. Ministry of Culture, the R.S.F.S.R. Academy of Pedagogical Sciences, or the republic ministries of education in such fields as defectology, school hygiene, the history and theory of pedagogy, etc.

THE TEACHER AND THE NATIONAL INTEREST

In the Soviet Union, which appears to be dedicated to the propositions that "knowledge is power" and that "education is the way to the future, both for the nation and for the individual," the teacher necessarily becomes a prime instrument for the realization of national objectives.

Guiding research and policy planning for public education, and influencing the pedagogical faculties of teacher training institutions, is the Academy of Pedagogical Sciences of the Russian Soviet Federated Socialist Republic (75 percent of the land area and 55 percent of the population of the Soviet Union). This academy has nationwide influence and operates essentially as a national institution. It is concerned particularly with research in method, the school curriculum, the writing of textbooks, and with the basic problems of the psychology of learning and of behavior. To this end, new theories and ideas are tested out at a number of cooperating experimental schools. The academy is a dynamic force throughout the Soviet Union; it is able to effect changes in methods and revisions of the school curriculum relatively quickly.

From the day that a student is admitted to a teacher training institution, he cannot help being impressed by the importance of education as national policy and the essential function of the teacher. Once he is identified as a teacher in training, he becomes a member of the Teachers' Union. This, like most other labor unions in the U.S.S.R., will exert a strong influence on its members toward professional growth and conformity to the requirements placed on the profession. As a member of the Teachers' Union the student will be encouraged to feel that he belongs to a strong movement dedicated to the national interest.

Upon becoming a teacher, he will find himself caught up in local professional activities—curriculum committees, extension courses, lectures, etc.—in which he will feel obliged to participate. He will have available three times a week the teachers' own newspaper, *Uchitel'skaia Gazeta* (Teachers' Gazette), which is published in each of the 15 republics of the union. And he will have access to some of

the 85 periodicals dealing with instruction, science, humanities, physical culture, etc.¹⁶

Although only about 4 percent of the population of the Soviet Union are members of the Communist Party, approximately 30 percent of the teachers and professors belong to it. He may later apply for membership in the party, especially if he has ambitions for advancement as an administrator.

Since the education reform of 1958, there appears to have been an increasing focus on the importance of the teacher and the need for teacher training institutions to produce teachers who can fulfill the comprehensive and critical role now expected of them: to develop the intellectual capabilities of youth and to advance the ideological aims of the Soviet brand of communism—in short, to produce “the new Communist man.”

Khrushchev and other top Government and party officials address teachers at their major meetings, which receive front-page attention in *Izvestia* and *Pravda*. Thousands of teachers have been recognized for outstanding service and have been awarded the various orders and medals of merit. In 1961, 67,000 teachers were serving as deputies of local Soviets and 52 teachers were serving as deputies to the Supreme Soviet of the U.S.S.R.¹⁷

As efforts are made during the 1960's and 1970's to achieve compulsory education through the 11th year of schooling, we may expect continuing attention to the expansion of teacher education throughout the Soviet Union.

¹⁶ N. J. Rokitiński and F. M. Tandler, “Textbooks for Russian Schools,” Washington, U.S. Department of Health, Education, and Welfare, Office of Education, June 1960, p. 2.

¹⁷ G. S. Counts, “A Word About the Soviet Teacher,” *Comparative Education Review*, 5: No. 1, June 1961, p. 2.



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DIMENSIONS OF
SOVIET ECONOMIC POWER

STUDIES PREPARED FOR THE
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Part V
THE SHARE OF THE CITIZEN



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THE SOVIET CITY
(Planning, Housing, Public Utilities)

BY

TIMOTHY SOSNOVY

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THE SOVIET CITY

I. INTRODUCTION

The Soviet policies of forced industrialization and forced collectivization of agriculture, created both the "pull" and the "push" that brought about a movement of millions of peasants from the rural areas into the cities of the U.S.S.R. As a result, the urban population of the country increased from 26.3 million in 1926 to 111.8 million at the beginning of 1962. During the same period, the urban proportion of the population increased from 17.9 percent to 50.9 percent.¹ More than 600 new urban areas were created,² many of them becoming cities with more than 100,000 inhabitants, as for example, Karaganda, Magnitogorsk, Komsomol'sk, Stalinogorsk, Angarsk, Electrostal', and others. The growth of many of the old cities was almost as striking. The steady growth of urban population in the U.S.S.R. is presented in table I.

TABLE 1.—Changes in Soviet urban population ranges: 1926, 1939, 1959, and 1961

Range	Number of cities and urban-type settlements							
	1926, December		1939, January		1959, January		1961, January	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under 20,000.....	1,699	88.3	2,256	81.8	3,930	83.4	4,010	82.9
20,000 to 50,000.....	135	7.0	315	11.4	474	10.1	510	10.5
50,000 to 100,000.....	60	3.1	99	3.6	161	3.4	150	3.1
100,000 to 500,000.....	28	1.5	78	2.8	123	2.6	141	3.0
Over 500,000.....	3	0.1	11	0.4	25	0.5	26	0.5
Total.....	1,925	100.0	2,759	100.0	4,713	100.0	4,837	100.0

Range	Population of cities and urban-type settlements (in millions)							
	1926, December		1939, January		1959, January		1961, January	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under 20,000.....	8.7	33.1	15.2	25.1	26.2	26.0	27.3	25.2
20,000 to 50,000.....	4.0	15.2	9.6	15.9	14.7	14.5	16.0	14.8
50,000 to 100,000.....	4.1	15.6	7.1	11.8	11.4	11.3	10.4	9.6
100,000 to 500,000.....	5.4	20.5	15.7	26.0	24.4	24.3	27.8	25.7
Over 500,000.....	4.1	15.6	12.8	21.2	24.1	23.9	26.8	24.7
Total.....	26.3	100.0	60.4	100.0	100.8	100.0	108.3	100.0

Sources: Narodnoye khozyastvo SSSR v 1960 godu, Statisticheskiy ezhegodnik (National Economy of the U.S.S.R. in 1960, Statistical Yearbook), Moscow, 1960, pp. 50-51; Vestnik Statistiki (Statistical Herald), No. 8, 1960, pp. 88, 90.

¹ SSSR v tsifrakh v 1961 godu, Statisticheskiy sbornik (S.S.S.R. in the Figures for 1961, Statistical Collection), Moscow, 1962, p. 28-29.

² Voprosy ekonomiki (Problems of Economics), No. 3, 1962, p. 65.

Between 1926, the year in which the first Soviet census was taken, and 1961, the number of cities with more than 100,000 inhabitants increased from 31 to 167, while the number of cities with a population of half a million or more increased from 3 to 26. Thus, at present more than half of the urban population of the U.S.S.R. live in cities of over 100,000.

Naturally, this rapid growth of urban population poses several important questions: What is the character of the Soviet city and how does it differ from cities in other countries? To what extent does the city meet the normal needs of its inhabitants? How is the city area utilized and organized? To what extent are housing, communal, and social-cultural needs of the urban population being satisfied? What are the social aspects of the unique housing conditions in the cities? The present paper attempts to answer some of these and other questions about cities in the Soviet Union. It is clear, however, that available space precludes anything like a full analysis of the many factors involved.

II. CITY PLANNING

What is the Communist concept of the Soviet city?

Because the collectivization of agriculture and the rapid pace of industrialization, as outlined by the first 5-year plan (1928-32), necessitated the relocation of millions of new workers, who poured into the urban areas from the countryside, the question of urbanization was brought into sharp focus. The problem of rebuilding existing cities and building new ones became extremely acute.

A special plenary session of the party's Central Committee met in June 1931 to discuss the problems of urban renewal and development. The plenum pointed out the need "to transform the existing cities into culturally, technically, and economically developed centers"³ that would satisfy completely the housing and living requirements of the Soviet urban population.

The Soviet authors stress that—

Thanks to the absence of private ownership [of land] and means of production, the Soviet urban construction is developing under the favorable conditions of a planned economy. This creates unlimited possibilities to improve planning and building in populated areas in order to transform Soviet cities into the best cities in the world.⁴

The Soviets have had more than 30 years to prove this contention. How successful have they been?

There are many examples of irrational utilization of urban areas among cities which are being rebuilt. For instance, according to their own criteria, 73 percent of the area of Volgograd is either inadequately used or classified as "unfit." Comparable percentages for other cities are: Kuibyshev, 61 percent; Krivoy Rog, 63 percent; Tula, 64 percent; and Kemerovo, 71 percent. Frequently large urban areas are occupied by various agricultural enterprises.⁵

Theoretically, regional planning in the Soviet Union is of great importance in the rebuilding of old cities and in the building of new ones. It makes it possible to locate cities, workers' settlements,

³ KPSS v rezolyutsiyakh i resheniyakh s'ezdov, konferentsiy i plenumov TSK (The Communist Party of the Soviet Union in the resolutions and decisions of Congresses, Conferences, and Plenums of the Central Committee), 7th ed., Moscow, 1954, p. 126.

⁴ V. I. Svetlichnyy, *Zhilishchnoye stroitel'stvo v SSSR* (Housing in the U.S.S.R.), Moscow, 1960, p. 28.

⁵ *Stroitel'naya Gazeta* (Construction Gazette), June 8, 1960, p. 3. Excerpts from the speech of V. A. Kucherenko at the All-Union Conference on City Construction.

industrial enterprises, sovkhozes, and kolkhozes not in a haphazard manner, but according to a rational plan. Although regional planning is supposed to be carried out in 80 delineated regions, it has actually been initiated in 37 regions and successfully accomplished in only a few of them.⁶

Up to now, about 600 cities do not have approved general plans and among them are such large cities as Leningrad, Gor'ky, Sverdlovsk, Novosibirsk, Omsk, Kuyibyshev, Khar'kov, Dnepropetrovsk, Cheliabinsk, and Odessa.⁷

As far back as 1931 a plenary session of the Central Committee approved a resolution prohibiting the building of new enterprises in Moscow and Leningrad beginning with 1932.⁸ In 1939, the 18th Party Congress emphasized the need "to extend this resolution to include Kiev, Khar'kov, Rostov-na-Donu, Gor'ky, and Sverdlovsk, where the building of new enterprises is henceforth prohibited."⁹

Table 2 shows the actual growth of the population of these cities after these resolutions were enacted.

TABLE 2.—Population growth of 7 Soviet cities following approval of resolution to prohibit building of new enterprises

Cities	Population (in thousands)		Increase over 1931 and 1939		
	Year prohibition was announced		Jan. 1, 1962 estimate	Number	Percent
	1931	1939			
Moscow.....	2,800	-----	6,296	3,496	125
Leningrad.....	2,228	-----	6,262	4,034	181
Kiev.....	-----	846	1,208	362	43
Khar'kov.....	-----	833	990	157	19
Rostov-na-Donu.....	-----	510	662	152	30
Gor'ky.....	-----	644	1,025	381	59
Sverdlovsk.....	-----	426	853	427	100

Sources: L. M. Kaganovich, *za sotsialisticheskuyu rekonstruktsiyu Moskvy i gorodov SSSR* (For Socialist Reconstruction of Moscow and the Cities of the U.S.S.R.), Moscow-Leningrad, 1931, p. 69; SSSR v tsifrakh v 1961 godu, op. cit., pp. 30-31.

The prohibition of building new industrial enterprises in these cities was designed to limit their population growth to the natural increase. It is quite obvious that in at least five of the seven cities, a large proportion of the population growth was due to migration.

Original plans for the development of Soviet cities are often modified to include the construction of new, initially unforeseen, industrial enterprises. This introduces major changes, both with respect to the city's economic growth and the planned growth in its population, as may be seen from table 3.

⁶ Pravda, Oct. 25, 1959, p. 2; Arkhitectura S.S.S.R. (Architecture S.S.S.R.), No. 6, 1960, p. 12.

⁷ Zhilishchnoye Stroitel'stvo (Housing Construction), No. 3, 1960, p. 1; Pravda, June 1, 1960, p. 2; Arkhitectura S.S.S.R. (Architecture S.S.S.R.), No. 6, 1960, p. 2.

⁸ KPSS v rezolyutsiyakh i resheniyakh s'ezdov, konferentsii i plenumov TSK (The Communist Party of the Soviet Union in the Resolutions and Decisions of Congresses, Conferences, and Plenums of Central Committee), pt. III, 7th ed., Moscow, 1954, p. 123.

⁹ XVIII s'ezd Vsesoyuznoi Kommunisticheskoi Partii (b), Stenograficheskii otchet (18th Congress of the All-Union Communist Party (b), Stenographic Report), Moscow, 1939, p. 660.

TABLE 3.—Actual city population as planned for 1975 and as reported for 1962

Cities	Planned population in 1975	Actual population at the beginning of 1962
Gor'ky.....	840,000	1,025,000
Tashkent.....	800,000	1,002,000
Novosibirsk.....	850,000	985,000
Kuybyshev.....	700,000	882,000
Minsk.....	450,000	599,000

Sources: *Ekonomika Stroitel'stva* (Economics of Construction), No. 3, 1960, p. 30; SSSR v tsifrakh v 1962 godu, op. cit., pp. 30-31.

In every case, the 1962 population of these cities surpassed the number planned for 1975. The basic 20- to 25-year plan for the reconstruction of Minsk lasted only 7 years, and in 1959 was modified by increasing the projected population to 800,000.¹⁰

Similar situations occur in the construction of new cities. In 1949, when construction was started on Angorsk, the plans for the new city called for a population of 80,000. Recently, plans have been revised to eventually accommodate 200,000 inhabitants.¹¹

The construction of Novaya Kakhovka, planned for a population of 25,000, was completed in 1960. Only after the work was completed it was decided to install a number of industrial enterprises in the town in order to take full advantage of the Kakhovka hydroelectric power station. As a result, the projected population of the city was revised to 100,000.¹²

As a result of the basic miscalculations in city planning, particularly with respect to its size and number of inhabitants, important and expensive revisions have to be made by the regime. These corrections have to do not only with the more obvious expansions of public utilities (waterworks, sewerage, gas supply) and street networks, but also with the size and capacities of public and cultural establishments.

Much time is spent on general city plans. Thus, to work out and approve a general plan of a city with a population of 100,000 to 150,000 people usually takes from 2½ to 3 years. A general plan for the reconstruction of such cities as Tashkent, Gor'kiy, Novosibirsk, Krasnoyarsk, takes a number of years.¹³

Only a few examples will suffice to illustrate the inefficiency in the planning for the reconstruction of cities. In 1959, 48 organizations were working on individual projects for the city of Tomsk, only 8 of which were local organizations. Two to three projects groups from Moscow, Leningrad, Irkutsk, Kiev, Orel, and other cities were in Tomsk throughout the year. The city of Yakutsk was supplied with proposed drafts from about 50 central planning organizations.¹⁴ Even in Moscow, plans for the building or reconstruction of industrial enterprises are handled by nearly 70 large and small designing enterprises.¹⁵

¹⁰ *Ekonomika Stroitel'stva* (Economics of Construction), No. 3, 1960, p. 30.

¹¹ *Gradostroitel'stvo, Trudy VI sessii Akademii Stroitel'stva i Arkhitektury S.S.S.R. po voprosam gradostroitel'stva* (City Construction, Proceedings of the Sixth Session of the Academy of Construction and Architecture of the U.S.S.R. on question of City Construction), Moscow, 1961, p. 520.

¹² *Stroitel'stvo v S.S.S.R., 1917-57, Trudy III sessii Akademii Stroitel'stva i Arkhitektury S.S.S.R. posvyashchennyye 40 godovshchine velikoy oktyabr'skoy sotsialisticheskoy revolyutsii* (Construction in the U.S.S.R., 1917-57, Proceedings of Third Session of the Academy of Construction and Architecture of the U.S.S.R. in Commemoration of the 40th Anniversary of the Great October Socialist Revolution), Moscow, 1958, p. 212, 213; *Ekonomika Stroitel'stva* (Economics of Construction), No. 3, 1960, p. 30.

¹³ *Pravda*, June 1, 1960, p. 2.

¹⁴ *Arkhitektura SSSR* (Architecture U.S.S.R.), No. 5, 1960, p. 4; *Pravda*, June 10, 1960, p. 2.

¹⁵ *Pravda*, July 8, 1962, p. 6.

Notwithstanding the assertions of Soviet writers that "the embryo of cities with a Communist future is already in existence" and that "one can already name several such cities,"¹⁶ it is quite evident that Soviet cities of today do not approach the ideal envisaged some 30 years ago. Although there are many reasons for this, the most important is the fact that in the planning and building of cities, the Soviet Government has never considered decent living conditions for the population as an important requirement. This is the reason for the very low planning norms in the area of social cultural and communal services; norms which were established over 30 years ago in a period when consumer needs were neglected.¹⁷

III. HOUSING

"Supply of dwellings is the most important index of the prosperity of the people." (Voprosy ekonomiki (Problems of Economics), No. 6, 1962, p. 30.)

Over 80 years ago, Friedrich Engels declared that only "through the destruction of the capitalist mode of production can a solution to the problem of housing be found."¹⁸ Soon after the Bol'sheviks seized power in Russia, they acted on the basis of this precept to abolish private ownership of land, to nationalize most privately operated housing, and to establish monopoly control over housing construction. Thenceforth, reliance was placed on compulsory regulation and on the operation of a planned economy to solve the problem of housing "in the interest of the broad masses of people."

In actual practice, however, this has not occurred. Belatedly the Soviet Government has shown signs of genuine concern at the deplorable plight of Soviet housing and is making some attempt to alleviate the situation through a stepped-up program of construction and a campaign to promote more economy and efficiency in the building trade. As will be shown, however, it will take far more than the regime's present efforts to overcome a housing deficiency which has been 45 years in the making.

TABLE 4.—Capital investment in the national economy of the U.S.S.R., and in the public housing sector, 1918-62

[Million rubles in comparable prices. For 1961 and 1962 in new rubles in current prices]

Period	Total investment in national economy	Investment in housing construction	Percentage
1918-23 (without 4th quarter of 1923).....	1, 674	371	22. 2
First 5-year plan (1929-32).....	6, 716	788	11. 7
Second 5-year plan (1933-37).....	15, 170	1, 551	10. 2
3½ years of 3d 5-year plan.....	15, 101	1, 907	12. 6
From July 1, 1941, to Jan. 1, 1946.....	14, 548	1, 128	7. 8
Fourth 5-year plan (1946-50).....	34, 875	4, 409	12. 6
Fifth 5-year plan (1951-55).....	67, 187	10, 448	15. 6
1956-60.....	123, 416	22, 794	18. 5
1961 (plan).....	29. 5	5. 8	19. 7
1962 (plan).....	31. 0	5. 1	16. 4

Sources: Narodnoye hozyaistvo S.S.S.R. v 1960 godu, op. cit., pp. 594-595; O gosudarstvennom byudzhete S.S.S.R. na 1961 god i ob ispolnenii gosudarstvennogo byudzheta S.S.S.R. za 1959 god (U.S.S.R. State Budget for 1961 and the Fulfillment of the State Budget in 1959), Moscow, 1961, pp. 16, 25; Pravda, Dec. 7, 1961, pp. 4, 5.

¹⁶ Voprosy stroitel'stva kommunizma v SSSR, Materialy nauchnoy sessii otdeleniya obshchestvennykh nauk Akademii Nauk SSSR (Problems of the construction of the communism in the U.S.S.R., Materials of the scientific session of the branch of the social science of the U.S.S.R. Academy), Moskva, 1959, p. 378.

¹⁷ Gradostroitel'svo, op. cit., p. 139.

¹⁸ K. Marx and F. Engels, Sochineriya (Works), vol. XV, Moscow, 1933, p. 36.

Table 4 strikingly illustrates the fact that the ratio of expenditures for housing construction to total capital investment during either the first, second, third, or fourth 5-year plans were only one-half that of the 1918-28 period. This fact reflected the policy which directed its greatest efforts on industrial development at the expense of the everyday needs of the people.

Because the proportion of privately built houses in the Soviet Union has not been very significant, the housing conditions of urban residents depends almost entirely on the volume of housing erected by the state. And yet, state plans for housing construction have not been fulfilled in any of the first 5-year plans, as shown in table 5.

TABLE 5.—5-year plan goals for housing construction in the public sector and actual fulfillment, 1928-61, in millions of square meters of living space ¹

	Planned goals	Actual fulfillment	Percent of fulfillment
1st 5-year plan.....	42, 4	23, 5	55, 4
2d 5-year plan.....	64, 0	26, 8	41, 9
3d 5-year plan.....	24, 3	20, 7	85, 2
4th 5-year plan.....	84, 4	65, 0	77, 0
5th 5-year plan.....	68, 3	73, 4	107, 9
1956-60.....	139, 7	145, 6	104, 2
1961.....	62, 5	52, 0	83, 2

¹ 1 square meter (sq. m.)=10.75 square feet. In the Soviet Union the basic index for evaluating the housing conditions is the per capita amount of living space available. The living space (zhilaya ploshchad') of an apartment includes living room and bedrooms, and comprises 65 percent of the total floor space. Nonliving space (meshilaya ploshchad') takes in the area of kitchens, entrance halls, bathrooms, corridors, pantries, and other service areas, even if they are used for living purposes. Living space and nonliving space together form the total floor space (obshchaya ploshchad') of a dwelling.

Sources: Timothy Sosnovy, "The Housing Problem in the Soviet Union," Research Program on the U.S.S.R., New York, 1954, p. 66; BSE 2d ed., vol. 35, Moscow, 1955, p. 411; Narodnoye khozyaistvo SSR v 1960 godu, op. cit., p. 611; Voprosy ekonomiki (Problems of Economics) No. 8, 1957, p. 7; Izvestiya, Dec. 21, 1960, p. 5; Pravda, Jan. 23, 1962, p. 2.

In view of destruction of urban housing in World War II, it is particularly important to note the underfulfillment of the plan for housing construction in the fourth 5-year plan—the first after the war. Increased expenditures on housing beginning with the fifth 5-year plan resulted from the necessity to improve housing conditions which have become unbearable following the last war.

Intolerable housing conditions, particularly for the workers, resulted in a large turnover in industry, transport, and other sectors of the national economy and endangered the fulfillment of the economic plans. Furthermore, the poor housing and living conditions gave rise to deep dissatisfaction among urban residents. Although plans for housing construction in the fifth 5-year plan and in 1956-60 were overfulfilled, they did not solve the housing problem, as shown in table 6.

TABLE 6.—Urban population growth and living space per capita in the U.S.S.R., 1923-61

Years	Urban population at end of year	Urban housing at end of year		Index of per capita living space	Per capita living space as percent of health norm of 9 square meters
		Total living space (million square meters)	Per capita living space (square meters)		
1923	21.6	139.1	6.45	100.0	71.6
1926	26.3	153.8	5.85	90.7	65.0
1940	69.2	242.1	4.09	63.4	45.4
1950	71.4	333.4	4.67	72.4	51.9
1955	¹ 87.0	416.0	4.78	74.1	53.1
1957	95.1	469.9	4.94	76.6	54.1
1958	² 100.8	540.8	³ 5.36	83.1	59.6
1959	103.7	582.4	5.62	87.1	62.4
1960	108.3	622.7	5.75	89.1	63.9
1961	111.8	659.1	5.89	91.3	65.4

¹ As of April 1956.

² As of Jan. 15, 1959.

³ It is important to note the significant increase in per capita living space between 1957 and 1958. This increase came about following the publication of the results of the January 1960 housing census which presented data for 1958. The comparison of current housing statistics with the newly released figures from the census showed that the total living space was underestimated by 33.1 million square meters. The breakdown of this figure is interesting and informative, because private housing was underestimated by 48.7 million square meters, while state housing was exaggerated by 15.6 million square meters. In other words, there has been a tendency to report fulfillment and overfulfillment of state plans, while because of the so-called wild construction (dikoye stroitel'stvo) of private housing, this segment of the housing fund was unrecorded and underestimated.

Sources: T. Sosnovy, *The Soviet Housing Situation Today*, "Soviet Studies," vol. XI, No. 1, July 1959, p. 4. The author used official Soviet sources in estimating the living space and population figures for the years 1957, 1958, 1959, 1960, and 1961.

Almost throughout the entire period of the Soviet regime, investment in housing has been entirely inadequate, and housing construction lagged behind the rapidly growing urban population. As a result, there was a steady decline in the per capita living space, which was not reversed until the end of the 1940's. Even since then, however, the improvement has been very slow, with the per capita living space increasing from 4.78 square meters in 1955 to 5.89 square meters at the beginning of 1962.

Thus, 45 years after the revolution, Soviet housing remains one of the worst blights on the Communist record in the domestic economy. Throughout the past four decades the shortage and inadequacies of available housing have constituted—for the vast majority of the Soviet people—a continuing source of critical aggravation and hardship in their daily lives. Among the many factors contributing to this crisis, the obvious cause has been the Soviet regime's program of enforced industrialization: the development of heavy industry and the strengthening of the military potential of the U.S.S.R., which under Stalin and Khrushchev became the basic unwritten law of the Soviet economic system, have, until recently, led to the severe neglect of housing and other consumer needs of the population.

In fact, at the end of 1961, the housing conditions of the city population of the U.S.S.R. have been as they were at the end of 1926 when each person had 5.85 square meters of living space. At that time 53.6 percent of the city families lived in a single room and 11.7 percent of the city families lived in only a part of a room. The proportion of families having a separate kitchen was 23.5 percent; 36.5 per-

cent used kitchens in common; 22.3 percent had no kitchen at all; and 11.1 percent of the families used the kitchen for living space.¹⁹

It may be assumed that today, with only a very slight increase over 1926 in the per capita living space, many of the conditions described above still exist. Most of the people in the cities of the Soviet Union continue to live in one room of a communal apartment with a common kitchen.

Academician S. Strumilin is correct when he writes that in the U.S.S.R. "every toiler craves a separate small room and a family craves at least a small apartment."²⁰ But, under prevailing conditions, this is still an unattainable dream for a great number of people, as can be seen in table 7.

TABLE 7.—*Density of occupancy per room in urban centers in the Soviet Union in 1923, 1926, 1940, 1950, 1960, and 1961 at the end of year*

Years:	Persons per room	Years—Continued	Persons per room
1923-----	2. 60	1950-----	3. 43
1926-----	2. 71	1960-----	2. 78
1940-----	3. 91	1961-----	1 2. 72

¹ In the United States in 1960, the per capita living space was nearly 18.6 square meters (200 square feet) and average density of occupancy per room including kitchen, was nearly 0.60 persons. The author wishes to thank Mr. E. Everett Ashley (director, statistical report staff, Housing and Home Finance Agency, Washington) for permission to use Department data.

Sources: "The Housing Problem in the Soviet Union," by Timothy Sosnovy, New York, 1954, p. 276. For 1950, 1960, and 1961 our latest estimation.

Any discussion of Soviet housing inevitably raises the question of the regime's policy toward private building and ownership—a factor which had considerable influence on the curve of Soviet living space standards. That private builders are again making substantial contributions toward the alleviation of the housing problem is shown by the following statistics: in the period from 1918 to 1961, of a total 570.6 million square meters of urban living space constructed, the state, through its various agencies, was responsible for 413.1 million square meters, or 72.4 percent, while individual builders constructed 157.5 million square meters, or 27.6 percent.²¹

The "public sector" of Soviet housing comprises, at the end of 1961, 406.3 million square meters, or 61.6 percent of the housing fund (i.e., the aggregate of available housing); it is administered by the state through various agencies—mainly the economic ministers, individual industrial enterprises, and local soviets—all of which operate their own housing construction and maintenance programs with the framework of the central economic plan. The remainder of the housing fund—252.8 million square meters, or 38.4 percent—constitutes the so-called private sector and consist, in the main, of housing constructed by individual builders for their own use.²² The private sector has been kept firmly under the thumb of the Government through strict regulations over a variety of housing matters and through state control and allocation of construction materials.

The state's attitude and policies toward new construction in this sector has varied considerably through different periods, with considerable effect on the total housing situation. During the period

¹⁹ Vsesoyuznaya perepis' naseleniya 1926 goda (All-Union Population Census of 1926), vol. LIV, Moscow, 1932, pp. 82-83.

²⁰ Novyy Miv (The New World), No. 7, 1960, p. 213.

²¹ "Kapital'noye Stroitel'stvo v S.S.S.R., Statisticheskii Sbornik" (Capital Construction in the U.S.S.R., Statistical Collection), Moscow, 1961, p. 191; Pravda, Jan. 23, 1962, p. 2.

²² S.S.S.R. v tsifrakh v 1961 godu. * * * op. cit., p. 382.

of the new economic policy (1923-28) private building was openly encouraged through the extension of financial credit, materials, and advice. With this spur to their initiative, private builders were responsible for almost two-thirds of the total living space constructed in the new economic policy period.²³

With the inauguration of the 5-year plans policies, however, a severe curtailment was imposed on individual housing. This was partly due to the economic stress on heavy industrial construction; it was also clearly a political move consistent with the regime's extension of control over every sphere of domestic activity. The resulting greater dependence of the Soviet citizen on the state for living quarters (as well as for food, clothing, education, employment, and other needs) afforded a ready weapon for the enforcement of the government's policies. Since the ministers, enterprises and local soviets administering housing had the power to grant or withhold living quarters, allocation of dwelling space came to be used as a means to keep workers on the job and as an incentive to spur better work performance. In factory-run housing, security of tenure in an apartment was made dependent on continued employment; loss of job meant automatic eviction.

There is no doubt, in view of the significant contribution made by private builders during new economic policy, that the housing situation of the 1930's and 1940's could have been considerably mitigated had the Government continued to give active support to individual housing efforts. Realization of this fact, coupled with the continuing extreme crisis in housing after the war, probably motivated the regime's postwar reversion toward a policy more favorably disposed to private construction. Perhaps the most important development for private housing was the regime's decision in 1948 to grant Soviet citizens the right to buy or build, and to own as personal property, a one- or two-story house with one to five rooms with not more than 60 square meters of living space.²⁴ Sections of land were promised by the Government, at no extra charge, for the perpetual use of homebuilders. Unlimited use of the land was made inseparable from the right of ownership of the building. Thus, the builder or buyer gained ownership of the house in perpetuity, with the right to bequeath it to an heir. In the whole era of Soviet communism, this is the first time the regime has come close to reinstating private ownership of real estate.

At present a radical change has occurred in the party's former attitude toward housebuilding.²⁵ The two main elements of the edict are (a) restriction of the private building of individual single-dwelling houses in cities and suburbs and (b) a "gradual transition to the construction of well-appointed cooperative apartment blocks with the funds drawn from the populace." This "gradual" transition will obviously be accelerated by the injunction to stop the allocation of plots of land for individual housing construction in the capitals of the Union Republics and by cutting credit to private builders in these towns.

²³ Vsesoyuznaya perepis' naseleniya 17 Dekabrya 1926 goda (The All-Union Population Census of Dec. 17, 1926), short summaries, part I, Moscow, 1927, pp. 7, 10.

²⁴ Decree of the Presidium of the Supreme Soviet dated Aug. 26, 1948, entitled, "Concerning the Right of a Citizen To Buy and Construct Individual Dwellings." See Zhilishchnoye zakonodatel'stvo (Housing Legislation), Moscow, 1950, p. 494; Ekonomicheskaya zhizn' S.S.S.R. Khronika sobytiy i faktor, 1917-59 (Economic Life of the U.S.S.R., Chronicles of Events and Facts), Moscow, 1961, p. 653.

²⁵ "On Individual and Cooperative Housing Construction," decree adopted by the CPSU Central Committee and the U.S.S.R. Council of Ministers, Pravda, Aug. 7, 1962, p. 1

Moreover, the decree virtually stops individual construction in all towns and villages with the following statement: "The Council of Ministers of the Union Republics are also given the right to resolve the question of the refusal of credit to individual builders and the allocation of plots of land for individual construction in other towns and residential communities."

Under the decree, the housebuilding cooperatives are charged with (a) construction "according to standard projects and time schedules fixed for the building of houses erected at the expense of state capital investments," (b) estimating "the cost of the construction of such houses in accordance with the prices, norms, and time periods established for state construction," (c) granting of state credit up to 60 percent of construction costs over a period of 10 to 15 years with repayment in equal annual installments, (d) uninterrupted supply of building materials from the state fund at prices fixed for state housing construction, and (e) incorporation of cooperative housebuilding in the state plan for regular construction projects.

According to the decree, construction can be undertaken only when the members of a cooperative have deposited in the bank at least 40 percent of the building costs from their own funds.

The construction of apartment blocks on a cooperative basis within the time limits prescribed for state construction and with building material supplied at fixed prices from the state construction fund and the backing of the state construction organization means that the scope of the state's own housing projects will be reduced in proportion to the aid it grants to cooperatives.

No mention was made of country homes (dachas) that often are privately owned and constructed, but which are to come under the scrutiny of local authorities in accordance with recent decrees quietly introduced by several union republics.²⁶ The decrees called for investigation of the source of funds used by citizens to build or buy private homes and dachas, and local courts were empowered to seize the properties if evidence of unearned income is found.²⁷

The new measures are clearly an attempt to bring the life and behavior of the Soviet population nearer to the classical ideals of a "Communist society," at the same time restricting private ownership tendencies among the powerful bureaucracy and administration, among the top executives and the intelligentsia. The decree also represents an effort to reduce profiteering in housing and to harness private labor for the state. At the same time, these measures appeared to be part of a current campaign against the so-called antisocial activities of individual citizens. Under the pretense of this struggle with embezzlers, speculators, swindlers, and so on, the Soviet Government is, in fact, fighting political skeptics and dissenters.

The low quality of Soviet construction is its most characteristic peculiarity. Persistent complaints appear in the Soviet press, magazines, and speeches criticizing the inadequate quality of construction. "With only a few exceptions—the large hydroplants and the Moscow subway, for example, Soviet construction deserves no acclaim for

²⁶ Foreign Broadcasting Information Service, U.S.S.R. National Affairs, Aug. 7, 1962, sec. dd, pp. 4-5, and Aug. 9, 1962, sec. dd, p. 2.

²⁷ On the basis of the law "On reinforcement of the fight against persons evading social-utility work and making an antisocial parasitic mode of living," the Moscow Peoples' Court has decided to evict the pensioner X from the city of Moscow to the correctional working camp for 5 years and to confiscate his dacha situated in the suburb of Moscow. His dacha was valued at 25,000 rubles, but his annual salary was only 1,400 rubles. See Pravda, Aug. 6, 1962, p. 4.

excellence. In this regard its batting average is considerably lower than that of the United States or the countries of Western Europe."²⁸

The existing situation in the building construction can be seen in Leningrad, the most praised city for the so-called large-block housing development. The structural defects can be divided into three categories: (a) Low quality of finishing work, such as careless painting work, badly laid floors of quickly cracking wood, fast deformation of carpenter's work; (b) imperfection of new structures and of joint connections of structural members—that is, freezing of external walls, leakage of moisture through the seams of wall panels, high sound conductivity, and low stability and durability of buildings; (c) delayed construction of social-cultural establishments in new housing development areas and the generally poor appearance of buildings from an architectural point of view.²⁹

In conclusion, several words about rent in the Soviet Union. The Soviet citizen expends only approximately 5 percent of the family income for housing—an ideal weapon for political propaganda. No opportunity is missed to declare that the Soviet Union has the "lowest apartment rent in the world,"³⁰ or that "the worker in the U.S.S.R. spends 5 to 6 times less on housing and transportation than the American worker."³¹

As a matter of fact, these statements are incorrect. One square meter (10.75 square feet) of living space in 1950 cost the American worker 27.3 minutes of labor and the Soviet worker 27.4 minutes.³² Thus, the Soviet worker, whose real wages were 5.5 times lower than those of the American worker, paid an equal amount—in terms of work time—for the same unit of dwelling space. This comparison, of course, leaves untouched the whole question of the quality of their respective dwellings and the density of occupancy. Whereas there were only 0.76 person per room in the United States, there were 3.43 persons per room in the Soviet Union.

In other words, the low rent in the Soviet Union is a means of compensating the average worker for his very low salary. This is made possible by the fact that the Soviet government has paid out between 500 and 600 million new rubles to subsidize the housing economy and to make up the deficit created by low rentals. This subsidy averaged 47.6 percent of the total housing expenditures during the 1954-57 period.³³

IV. PUBLIC UTILITIES

The Soviet Government, through its central and local agencies, is the monopolistic owner of all forms of property in the cities and the sole organizer and director of all activities related in any way to satisfying the everyday material needs of urban residents. Soviet sources show a great lag in the building of cultural establishments (schools, hospitals, clubs, shops, kindergartens, restaurants, etc.) as well as communal services (waterworks, sewerage, gasworks, baths,

²⁸ Engineering News Record, Aug. 30, 1962, p. 40.

²⁹ *Ekonomika Straitel'stva* (Economics of the Construction), No. 7, 1962, p. 45.

³⁰ *Kalendar'-Spravochnik* (Calendar and Handbook), Moskva, 1952, p. 410.

³¹ Vozhenskiy, N. *Voyennaya ekonomika SSSR v period otechesvennoy vojny* (The War Economy of the U.S.S.R. during the Patriotic War), Moskva, 1948, p. 119.

³² *The Housing Problem*, op. cit., p. 180.

³³ D. L. Broner, *Sovremennyye problemy zhilishchnogo khozyaystva. Opyt ekonomiko-statisticheskogo analiza*. (Contemporary Problems in Housing Service. Experiment in Economic and Statistical Analysis), by D. L. Broner, Moskva, 1961, p. 181.

laundries, communal transport, etc.). A recent construction survey in 20 cities has shown that the expenditures on cultural construction should amount to 15 to 20 percent, while expenditures on engineering equipment and external improvements should amount to approximately 25 percent of the total expenditures for city construction. Actually, the rate of such expenditures is considerably lower in most cities.³⁴ In Volgograd, for example, in 1959 only 8.5 percent was allotted for cultural purposes, and only 9 percent of the total city expenditures for engineering equipment and external improvements.³⁵

The disproportion between the volume of housing construction and the construction of social-cultural establishments is increasing.³⁶

Soviet statements have stressed their achievements in providing communal facilities for Soviet cities, because—

at present the number of cities with running water is 10 times greater than before the revolution, and the number of cities with sewerage is 50 times greater than before 1917.³⁷

One author wrote that in the U.S.S.R. "the average urban dwelling is expected to be reasonably well equipped with utilities, sewage, running water, bath toilet, water heater, electrical connections, and so forth."³⁸

The actual conditions in Soviet cities with regard to public utilities are summarized in table 8.

Especially badly equipped with all types of sanitary-technical devices is privately owned housing. In this type of housing, "the percentage of living space equipped with gas, hot water, bathtubs, and so forth, is expressed in tenths and hundredths of 1 percent."³⁹

In 1958, one person consumed 136.5 kilowatt-hours of electricity.⁴⁰ It is a beggarly norm.⁴¹

Many cities do not have a central water supply and sewerage, and the number of people not having a central water supply has actually increased from 34.4 million in 1939 to 57.4 million in 1956. It is also estimated that during the same period the number of persons not having sewerage has increased from 40.3 to 59.7 million.

The conditions of water supply in Ulan-Ude (with population of 188,000 in 1961) is described in Pravda:

Early morning. Pink dawn smiles amiably at the people standing by the water pump with pails and cans. But people with pails in their hands are not interested in pleasant smiles. For 2 solid hours they melancholily contemplate the backs of their neighbors. After waiting for another hour or so, they disperse. There won't be any water today.⁴²

³⁴ *Voprosy ekonomiki* (Problems of Economics), No. 7, 1960, p. 56.

³⁵ *Voprosy ekonomiki* (Problems of Economics), No. 3, 1962, p. 69.

³⁶ *Izvestia*, Dec. 23, 1960, p. 4; *Gradostroitel'stvo*, op. cit., pp. 136, 543.

³⁷ *Gradostroitel'stvo*, op. cit., p. 184.

³⁸ Colin Clark, "The Real Productivity of Soviet Russia, a Critical Evaluation." Washington, 1961, p. 44.

³⁹ L. D. Bronner, op. cit., p. 115.

⁴⁰ *Zhiliщно-kommunal'noye khozyaistvo* (The Housing and Municipal Economy), No. 12, 1960, p. 1.

⁴¹ Almost 40 years ago, the average family of the American worker consumed 46.9 kilowatt-hours of electricity per month. *Ekonomicheskoye obozreniye* (Economic Review), March 1927, p. 95.

⁴² *Pravda*, Sept. 14, 1960, p. 6.

TABLE 8.—Urban population provided with municipal utilities: 1927, 1939, and 1956 (in millions of persons and percent)¹

Type of municipal utilities	1927						1939						1956					
	Urban population	With municipal utilities	In percent	Including population of private houses			Urban population	With municipal utilities	In percent	Including population of private houses			Urban population	With municipal utilities	In percent	Including population of private houses		
				Population	With municipal utilities	In percent				Population	With municipal utilities	In percent				Population	With municipal utilities	In percent
Electric lighting.....	26.3	10.7	40.7	13.8	2.9	21.0	56.1	47.6	84.8	20.5	14.2	69.2	87.0	77.9	89.3	28.3	19.6	69.2
Running water.....	26.3	6.8	25.9	13.8	.9	6.5	56.1	21.7	38.7	20.5	.2	1.0	87.0	29.6	34.0	28.3	.3	1.0
Plumbing.....	26.3	4.6	17.5	13.8	.4	2.9	56.1	15.8	28.1	20.5	.2	1.0	87.0	27.3	31.4	28.3	.3	1.0
Central heating.....	26.3	(*)	(*)	13.8	(*)	(*)	56.1	6.2	11.1	20.5	-----	-----	87.0	19.5	22.4	28.3	.1	.3
Gas.....	26.3	-----	-----	13.8	-----	-----	56.1	(*)	(*)	20.5	-----	-----	87.0	13.6	15.6	28.3	.1	.3
Bath.....	26.3	(*)	(*)	13.8	(*)	(*)	56.1	7.2	7.5	20.5	-----	-----	87.0	7.7	8.9	28.3	.1	.3
Hot water.....	26.3	-----	-----	13.8	-----	-----	56.1	.4	.7	20.5	-----	-----	87.0	1.9	2.2	28.3	.1	.3

¹ (1) Per capita living space is assumed to be the same for persons living in state and private houses for the beginning of 1927, 1939, and 1956.

(2) The correlation between the state and private housing fund for the beginning of 1939 is accepted as also applicable to the beginning of 1941.

(3) The level of municipal utilities in the housing fund belonging to local soviets of the R.S.F.S.R. at the beginning of 1939 are assumed for all state housing funds at the beginning of 1939.

(4) The level of municipal utilities of private housing funds for the beginning of 1939 are assumed to apply to the beginning of 1956.

* No data.

Sources: Vsesoyuznaya perepis' naseleniya 1926 goda (The All-Union Population Census of 1926), Moscow, 1929, pp. 90-91, 330-331, 440-441; Veselovskiy B. B. Kurs ekonomiki i organizatsii gorodskogo khozyaistva (Course in the Economics and Organization of the Urban Economy), 3d revised and enlarged edition, Moscow, 1951, p. 160; Broner, D. L. Sovremennyye problemy zhilishchnogo khozyaistva, Opyt ekonomika-statisticheskogo analiza (Contemporary Problems in Housing Service, Experiment in Economic and Statistical Analysis), Moscow, 1961, p. 263.

At present, a little more than half of the cities that have central water supply also have sewerage, although in many cities running water is available in houses along some 35 to 40 percent of the streets.⁴³ Also, only approximately half of the total sewage is subjected to treatment, and, during a 24-hour period, 11 million cubic meters of industrial waste empty into Soviet reservoirs without treatment. As a result, large rivers such as the Volga, Kama, Belaya, and others are presently very polluted and the degree of their pollution keeps increasing.⁴⁴

Gas supply and central heating in cities are virtually in the embryonic stage. According to the 7-year plan for the development of the national economy of the U.S.S.R., it is planned to supply gas to all residential housing, by the end of 1965, only in Moscow, Kiev, and Leningrad.⁴⁵

Much worse is the situation with the bathroom and running hot water. Even in Moscow, only 39 percent of all the apartments have a private bathroom and only 10 percent of all apartments have hot water.⁴⁶

The communal transport services for the urban population of the largest Soviet cities, such as Gor'ky, Khar'kov, Sverdlovsk, Tashkent, Chelyabinsk, Novosibirsk, are very inadequate. The weight, capacity, and comfort of cars of the urban communal transport system do not correspond to current standards or demands.⁴⁷

The proportion of paved streets in Soviet cities is very low. For example, only 18 percent of the 1,200 kilometers of streets of Novosibirsk (1962 population, 985,000) are paved;⁴⁸ in Sverdlovsk, only 40 percent of the streets are paved.⁴⁹

Facilities for personal services, such as laundry, drycleaning, repair of clothing and household equipment, are provided only in the largest cities, and even there most inadequately. The fact that a pickup and delivery service for laundry has recently been instituted in Moscow, was reported as a great achievement.⁵⁰ The inadequacy in services may be judged by the fact that in 1960, each Soviet citizen spent an average of only 32.8 kopeks (old) for the repair of items of everyday use, including 15.1 kopeks for such services as repair of radios, television sets, vacuum cleaners, washing machines, refrigerators, and other appliances.⁵¹

Although some progress has been made in the regime's efforts to provide the population with social-cultural establishments, these facilities are still inadequate.

In 1959, for every 1,000 people there were 18.3 children in kindergartens and creches, as compared to the norm of 70 to 90 per 1,000. There were only 3.6 commercial establishments for every 1,000 people, as compared to the norm of 6.6. In establishments of public nourish-

⁴³ D. L. Broner, *op. cit.*, p. 117.

⁴⁴ Gradostroitel'stvo, *op. cit.*, p. 185.

⁴⁵ A. Kucherenko, *Plan velikikh rabot* (Plan of the Great Work), Moscow, 1959, p. 49.

⁴⁶ "Moskva, Razvitiye khozyaistva i kultury goroda" (Moscow, the development of city economy and culture), Moscow, 1958, p. 75; *Ekonomicheskaya gazeta* (Economic Gazette), Oct. 6, 1960, p. 3.

⁴⁷ In the United States in 1960, of 58.3 million apartments (urban and rural), 93.1 percent had running water, 90 percent were linked up with the sewage system, 94 percent had gas, 100 percent had electric lighting, 81.2 percent had either a bath or a shower, 67 percent had central heating, and 87.4 percent had hot water. Data provided by Mr. E. Everett Ashley, Director of the Statistical Reports Staff, Housing and Home Finance Agency, Washington, D.C.

⁴⁸ "Gradostroitel'stvo," *op. cit.*, p. 171, 388.

⁴⁹ "Gradostroitel'stvo," *op. cit.*, p. 325.

⁵⁰ "Zhilishchno-kommunal'noye khozyaistvo" (The Housing and Municipal Economy), No. 6, 1960, p. 5.

⁵¹ *Pravda*, Dec. 16, 1959, p. 6.

⁵² "Narodnoye Khozyaistvo v 1960 godu," *op. cit.*, pp. 9, 342. In other words, in the new prices, each Soviet citizen has spent 3.28 kopeks and 1.51 kopeks respectively.

ment, only 50 percent of the norm has been achieved. The norm of hospital beds for every 1,000 population is 11.2; however, in 1959 there were only 7.62 beds.⁵²

The inadequacies in all types of service facilities have a particular effect on Soviet women. According to a 1958-59 survey, women workers and employees with small children spend 4 to 5 hours during weekdays, and even more time on their days off, in doing household chores. The same survey showed that in numerous Siberian cities workers spend 1½ to 2 hours in commuting to and from their jobs and that quite frequently half of this time is spent in waiting for transportation. The purchasing of food and other goods also requires a considerable amount of time.⁵³

The Soviet people have paid a heavy tax for the backwardness of their communal economy and social-cultural establishments. The State Economic Council (Gosekonsovet) has estimated that in 1958 the population of the U.S.S.R. has spent approximately 12 billion workdays on domestic-type chores (samoobsluzhivaniye). This is equivalent to nearly 40 million man-years,⁵⁴ or, on the basis of 50.3 million families in 1959, 250 8-hour workdays per family.⁵⁵

V. SOCIAL ASPECTS OF INADEQUATE HOUSING

Most members of the family spend more time at home than any other place * * * most accidents occur in the home, and many causes of ill health originate there. A safe, comfortable, healthful, pleasant house can contribute a great deal to happiness and high standards of living. Home should be a place to relax, entertain, enjoy hobbies, and do as you please.⁵⁶

The overcrowding and lack of privacy in apartment living, leave an important imprint on the everyday life of the Soviet citizen.

People from all walks of life, of different ages, education, and background are thrown together in the same apartment and are compelled to share the same dwelling space, kitchen, and bathrooms. As a rule, as was noted before, an apartment accommodates as many families as there are rooms (sometimes two and even three families share a single room). In other words, one room serves as bedroom, living room, dining room, and kitchen.

The social effects of such housing conditions on the Soviet citizens are very bad, indeed.

It is not difficult to imagine the innumerable problems that arise from many families living together in such close proximity and sharing inadequate kitchen, bath, and toilet facilities, particularly when this utility space is itself occupied by a family and encumbered with household items. Ventilation is, of course, poor, the air is stuffy, contagious diseases spread rapidly. The frequent absence of running water, plumbing, gas, and even kitchens, the lack of storage space for food and other items make the accumulation of dirt a foregone conclusion. The most unsanitary conditions prevail and the apartments are infested with vermin. The din is constant; it is impossible to have a normal night's rest, and studying is out of the question. The

⁵² "Gradostroitel'stvo," op. cit., p. 135.

⁵³ *Kommunist*, No. 15, October 1960, pp. 43, 45.

⁵⁴ "Voprosy ekonomiki" (Problems of Economics), No. 7, 1962, p. 148.

⁵⁵ Each Soviet family had an average of 3.7 persons at the beginning of 1959; 3.5 persons in the urban family and 3.9 persons in the rural family. "Vestnik Statistiki" (Herald of Statistics), No. 11, 1961, p. 93.

⁵⁶ Kelley, Pearce G., *Consumer Economics, Homewood*, III, Richard C. Irvin, 1953, p. 487.

air is permeated with the smell of kerosene and with fumes from primus stoves, used for cooking and heating water in rooms.

The physical hardships of everyday living has a telling effect on the nerves of the tenants who, more often than not, are stumbling over one another or waiting impatiently in a long line for the toilet or other facilities. There is constant bickering and quarreling within and among families, vociferous arguments often flare up, and even fighting is not unknown.

In this connection a special order from the Soviet highest authority was published, which included the following statement:

Hooligan-like behavior on the part of the tenants is particularly inadmissible as, for example, the holding of regular drinking bouts in the apartment, accompanied by noise, fights, and abusive language; the inflicting of beatings (especially on women and children), throwing insults, threatening revenge by capitalizing on one's work status or party position, perverse conduct, baiting of nationalities, defamation of character, other kinds of mischief (throwing out another person's belongings from the kitchen and other rooms used in common, spoiling food prepared by other tenants, damaging other things and products, etc.).⁵⁷

Two hundred and two cases of hooliganism which had come up before the people's courts of Moscow in the midtwenties were the object of a special study. It was found that 25 percent of the cases were "the result of the acute housing problem and overcrowding" of dwellings.⁵⁸

The influence of alcohol on the growth of crime is too well known to need any elaboration here. A survey of Moscow workers' and employees' budgets from 1924 to 1927⁵⁹ indicated the close relationship between housing conditions and the consumption of alcohol: Families occupying up to 4 square meters of dwelling space per capita spent 522 to 549 kopeks (3.6 to 4 percent of monthly income) per month on alcohol; 4.1 to 5 square meters, 430 to 491 kopeks (2.8 to 3.3 percent); more than 5.1 square meters, 379 to 412 kopeks (2.5 to 2.9 percent).⁶⁰ Hence, as dwelling space per capita decreases, expenditures for alcohol increase. Furthermore, those families who occupied the most congested quarters were, as is to be expected, the most indigent elements. But the lack of material resources was no deterrent to the spending of money on alcohol.⁶¹

As a rule the Soviet Government does not publish data on crime. Incidental news items, however, suggest that the situation has not improved. For example, in the city of Kuybyshev (882,000 population at the beginning of 1962), during one day, in May 1961, city ambulances provided emergency first aid for 32 victims of hooliganism. On the same day, the city militia picked up 98 drunks.⁶²

⁵⁷ "Deistviyushcheie zhilishchnoye zakonoductel'stvo" (Current Housing Legislation), Moscow, 1937, pp. 174, 175.

⁵⁸ "Khuliganstvo i ponozhovshchina, Sbornik Statey" (Hooliganism and Knifing, Collected Articles), Moscow, 1927, pp. 66, 67. Among those convicted of hooliganism was a large percentage of "housewives, for the most part wives of workers, imprisoned for apartment and kitchen fights, the outgrowth of our congested conditions, where for a stove ring or a frying pan they become enemies to the death," *ibid.*, pp. 77, 147.

⁵⁹ "Plakavoye khozyaistvo" (Planned Economy), Moscow, No. 6, 1929, p. 290.

⁶⁰ *Ibid.*, pp. 311, 312.

⁶¹ *Ibid.*

⁶² *Izvestiya*, June 27, 1961, p. 4.

VI. CONCLUSION

At this point it is worth while to consider the future of housing in the Soviet Union. What will the conditions be in 1965 and later?

It is important to note that during the first 3 years of the 7-year plan (1959-65) in the field of housing construction the plan was fulfilled by only 88.2 percent.⁶³ The plan for 1962 will also be under fulfilled by probably 13.6 million square meters of floor space.⁶⁴ Of course, while this fact is reported in specialized journals and newspapers, it is ignored by Soviet propaganda, which concentrates on the overfulfillment of planned production of steel, oil, and so forth.

If housing construction in the 1962-65 period proceeds at the rate it has during the past several years, 211 million square meters of living space will be built by the end of 1965. The new increase, however, will be considerably smaller, since it is estimated that an equivalent of 25 percent of the newly constructed living space (52.3 million square meters will be lost due to the redevelopment of cities, natural amortization of living space, fires, and so on.⁶⁵ Thus, by 1965 urban living space should increase by 158.7 million square meters and reach a total of 817.8 million square meters.

This would be a significant improvement, were it not for the fact that the urban population will also be increasing. Academician S. Strumilin estimated the urban population increase for the 7-year period beginning in 1959 at 15 million persons, or an urban population of 115 to 117 million by the end of 1965.⁶⁶ Later, however, N. Khrushchev announced at the 22d Party Congress that "by the end of 1965 the urban population will increase by approximately 15 million persons more than was previously assumed,"⁶⁷ or reach nearly 130 to 132 million. For the purpose of this paper, the 1965 urban population is estimated at 128 million. Combining this population with the estimated 1965 living space of 817.8 million square meters, an average of 6.39 square meters of living space is obtained for every urban resident of the U.S.S.R. The housing situation would remain serious even if the lower urban population, as suggested by Strumilin, was to be used in this calculation.

As has been the case in the past, it is also true today and in the foreseeable future: the principal reason for the bad housing condition in the Soviet Union is the completely inadequate investment of money and resources. Even the relatively modest 7-year plan was not fulfilled. In 1961 the plan for housing construction was not fulfilled by more than 16 million square meters of floor space, which is equivalent to an expenditure of about 1.6 billion rubles.⁶⁸ Neither was the plan fulfilled in 1960, when the Soviet Union missed its housing goal by 18.2 million square meters of floor space, or almost 1.8 billion rubles of equivalent value.⁶⁹

⁶³ "O gosudarstvennom byudzete SSSR no. 1959 god i ob ispolnenii gosudarstvennogo byudzheta za 1957 god" (U.S.S.R. State Budget 1959 and the Fulfillment of the State Budget in 1957), Moskva, 1959, p. 24; "Narodoye khozyaistvo SSSR v 1960 godu," op. cit., p. 615; Pravda, Oct. 28, 1959, p. 5; Jan. 23, 1962, p. 2; Izvestiya, Dec. 21, 1960, p. 5.

⁶⁴ Pravda, Dec. 7, 1961, p. 3; Nov. 7, 1962, p. 2.

⁶⁵ From 1951 to 1955 (fifth 5-year plan) the housing fund losses constituted from 10 to 30 percent of the total, while in some large cities, such losses were as high as 25 to 40 percent of the constructed living space. See Trudy II sessii, op. cit., p. 46; Pravda, Aug. 4, 1957, p. 2.

⁶⁶ Oktyabr' (October), No. 3, March 1960, p. 141.

⁶⁷ Pravda, Oct. 18, 1961, p. 8; "Planovye Khozyaistvo" (Planned Economy), No. 7, 1962, p. 3.

⁶⁸ Izvestiya, Dec. 21, 1960, p. 5; Pravda, Jan. 23, 1962, p. 2.

⁶⁹ Pravda, Oct. 28, 1959, p. 5; "Narodnoye khozyaistvo SSSR v 1960 godu," op. cit., p. 615.

This lack of investment in housing is not surprising when one considers the defense expenditures of the U.S.S.R. For example, the direct defense expenditure in 1961 of 9.3 billion rubles⁷⁰ was increased by one-third (3,144 million rubles) in connection with the Berlin crisis.⁷¹ In other words, instead of direct defense expenditures equaling 11.9 percent of the total state budget in 1961, they actually equaled 12.4 billion rubles, or 15.3 percent of the state budget. For 1962, direct military expenditures are now placed at 13.4 billion rubles, which constitutes 16.6 percent of all expenditures⁷² and represents a 44.1 percent increase over the original 1961 budget. These increases in the direct military expenditures in 1961 and 1962, once again showed the ease with which the Soviet Government can find the necessary funds in priority fields.

In the light of the military increases, the Soviet actions with regard to the recent increases in the prices for meat and butter are particularly hypocritical. They emphasize that the development of cattle breeding will require enormous resources and very innocently ask the Soviet people:

Where do we get these resources? Maybe it would be possible to find some resources if we reduced housing construction? The Soviet people understand that it is impossible.⁷³

Since the housing situation in the Soviet Union is serious—even critical—why is so little known about it? Why are so many people convinced that the Soviet Union has made tremendous strides in this field? This certainly is not the case with regard to the agricultural crisis, which is receiving wide publicity.

First of all, it is the result of intensive, skillful, and uninterrupted Soviet propaganda about the “great achievements” in housing. Secondly, it is due to the uncritical acceptance of Soviet statistics dealing with housing, as for example, the figures that every urban resident in the U.S.S.R. had 7.36 square meters of living space in 1955,⁷⁴ 7.75 square meters in 1957,⁷⁵ and over 7 square meters in 1960.⁷⁶

The uncritical use of housing data is easy to illustrate. Soviet Academician Nemchinov wrote that “the Soviet goal of 129 square feet per person will not be achieved until much later than 1965.”⁷⁷ From the context of this sentence, it is clear that even Soviet estimates place this achievement considerably beyond 1965. One author, however, simply repeated the figure and the argument,⁷⁸ while another alleged that, by the end of 1965, every Soviet citizen will have 14 square meters of living space.⁷⁹

Actually, as was shown above, the per capita living space by the end of 1965 should equal only about 6.39–6.50 square meters (70 percent

⁷⁰ “O gosudarstvennom byudzhete SSSR na 1961 god,” *op. cit.*, p. 38.

⁷¹ *Pravda*, July 9, 1961, p. 3.

⁷² *Pravda*, Dec. 9, 1961, p. 1.

⁷³ *Pravda*, June 1, 1962, p. 1.

⁷⁴ *Vestnik instituta po izucheniyu S.S.S.R.* (Institute for the Study of the U.S.S.R.), No. 4 (21) 1956, p. 88, by Marchenko.

⁷⁵ *Foreign Affairs*, July 1960, p. 636, by Goldman.

⁷⁶ *Problems of Communism*, No. 4, 1960, p. 17, by Balinskiy.

⁷⁷ *Kommunist* (Communist), No. 1, 1959, p. 86.

⁷⁸ *Foreign Affairs*, July 1960, p. 636.

⁷⁹ V. P. Marchenko, *Osnovnyye cherty khozyaistva poslestatinskoy epokhi* (Basic Feature of the Economy After Stalin's Era), *Munikh*, 1959, p. 4.

of the sanitary norm), and every room should have an average of 2.5 persons living in it.

All the efforts that are being made by the Soviet Government in the field of housing stem from the well-known 1957 decision to eliminate the housing shortage within 10 to 12 years.⁸⁰ The gist of this decision was to build small individual apartments for one-family occupancy, beginning in 1958. This is a departure from the previously built large apartments, which had, as a rule, one room per family and a large kitchen to be shared with as many as two to three or more families.

The overwhelming majority of the small apartments have two rooms. Apartments with one room constitute about 20 to 25 percent of the total; there are even fewer three-room apartments.⁸¹ These economy apartments are planned to contain 6 to 7 square meters of living space per person. However, efficiency apartments with 18 square meters of living space often are occupied by more than three persons, while apartments planned for one family are often occupied by two families.⁸² Even in Moscow, only 60 percent of the people who occupied small apartments during the last 4 years, had them to themselves.⁸³ A special survey of the new type small apartments made in 42 cities during the 1958-59 period, showed that each person had an average of 6.58 square meters of living space.⁸⁴

Apartment occupancy by size of family is shown in table 9.

TABLE 9.—Occupancy of small-size apartments in 1958-59

Number of family members	Living space per family in square meters	Living space per person in square meters	Number of family members	Living sprce per family in square meters	Living space per person in square meters
1.....	13.7	13.7	5.....	29.6	5.9
2.....	18.6	9.3	6.....	31.0	5.2
3.....	22.0	7.3	7 and more.....	35.6	5.1
4.....	26.4	6.6			

Sources: Broner, op. cit., p. 115.

By its decision to build small apartments for the urban population, the Soviet Government has accomplished two important objectives. By promising every family a private apartment, it has boosted the people's morale by giving them hope for the eventual procurement of such an apartment. It has also reduced the cost of building apartments by 20 percent for each meter of living space.⁸⁵

Needless to say, the reduced construction costs for small apartments was made possible only by lowering building standards. The height of the ceiling was lowered, access to one room through an adjoining one was permitted, the size of kitchens, anterooms, and bathrooms was reduced.⁸⁶ Furthermore, 5 years have passed since the decision

⁸⁰ O Razvitií zhilishchnogo stroitel'stva v S.S.S.R. (Development of Housing in the U.S.S.R.), Pravda Aug. 2, 1957, p. 1.

⁸¹ V. I. Svetlichnyy, Zhilishchnoye stroitel'stvo v S.S.S.R. (Housing in the U.S.S.R.), Moskva, 1960, p. 10. The rooms in the apartments are counted without kitchen.

⁸² Stroitel'naya Gazeta (Construction Gazette), Mar. 16, 1960, p. 2; Zhilishchnoye stroitel'stvo (Housing Construction), No. 5, 1960, p. 1.

⁸³ Gorodskoye khozgaistvo Moskvy (The Urban Economy of Moscow), No. 3, 1962, p. 1.

⁸⁴ Zhilishchnoye stroitel'stvo (Housing Construction), No. 4, 1960, p. 8; No. 3, 1961, p. 18.

⁸⁵ Data obtained from the survey of construction of small-size apartments in 62 cities in 1959-60. See Gradostroitel'stvo, op. cit., p. 532.

⁸⁶ Stroitel'naya gazeta (Construction Gazette), Mar. 16, 1960, p. 2; Zhilishchnoye stroitel'stvo (Housing Construction), No. 5, 1960, p. 1.

was made to build these small apartments, but, so far, none have been designed to accommodate different sized families.⁸⁷

Despite these deficiencies, it must be pointed out that the Soviet people are enthusiastically awaiting the distant time when they may be able to obtain a small apartment. The reason for this is well known to the Soviet Government. The population is so tired of the lack of privacy in communal apartments (see *Social Aspects of Inadequate Housing*), that they gladly move into a smaller living area, but one where they will have their own kitchen, a private toilet, and a lock on the front door. Taking all these factors into consideration, it is easy to see why it is stated that "the building of small apartments is the only correct way of solving the housing problem at this time."⁸⁸

It should be noted that the 7-year plan for the development of the national economy has decided upon the average apartment size of 28.6 square meters of living space.⁸⁹ As in all plans dealing with housing, however, this figure was not achieved. As may be seen from table 10, the actual size of apartments built between 1958 and 1961 hovered in the vicinity of 23.5 square meters.

TABLE 10.—*Apartment size in cities and workers' settlements, 1958-61*

	1958	1959	1960	1961
Floorspace constructed (in millions of square meters).....	71.2	80.7	82.8	80.0
Number of apartments (in thousands).....	1,986	2,237	2,294	2,200
Living space per apartment (in square meters).....	23.3	23.5	23.5	23.7

Sources: Narodnoye khozyaistvo v 1959 godu, Statisticheskiy ezhegodnik (National Economy of the U.S.S.R. in 1959, Statistical Yearbook), Moskva, 1960, p. 127; Narodnoye khozyaistvo v 1960 godu, op. cit., pp. 205, 611, 618; Pravda, Jan. 23, 1962, p. 2.

Of course there is a very simple and painless way to solve the housing crisis in the Soviet Union—a method actually suggested by some authorities. This solution would "change the amount of space per person by adopting a basic index, not of living space, but of floor space."⁹⁰ In other words, the space of the kitchen, toilet, bathroom, anteroom, and so forth, would be considered as living space, thus increasing per capita living space.

It seems evident, as this author has previously stated,⁹¹ that the Soviet Government has not given the necessary priority to the solution of the housing problem. Furthermore, because of completely different criteria, the solution of this problem, as viewed by the regime, would provide living conditions that would in no way approach those existing in the countries of Western Europe and the United States. From our point of view, the housing problem can only be resolved when every family has either a private apartment or a house, with a minimum of one room per person. The Soviets, on the other hand, consider that the small private apartment, with an average of 2.5 persons per room, would completely resolve the housing problem. This is not to say that some effort has not been exerted on the part of the regime, or that the widespread destruction caused by the Second

⁸⁷ Arkhitektura S.S.S.R. (Architecture S.S.S.R.), No. 6, 1962, p. 11.

⁸⁸ Bröner, op. cit., p. 112.

⁸⁹ Kontrol'nyye tsifry vazvitiya narodnogo khozyaistva S.S.S.R. na 1959-65 gody. Tezisy doklada N. Khrushcheva na XX s'ezde (Planned Figures for the Development of the National Economy of the U.S.S.R., 1959-62, Khrushchev's report at the XXI Party Congress), Moskva, 1958, p. 98.

⁹⁰ Zhilishchnoye-stroitel'stvo (Housing Construction), No. 1, 1961, p. 13.

⁹¹ The American Economic Review, vol. LII, No. 1, Mar. 1962, pp. 254-255.

World War did not set back the country's housing program. These factors, however, do not detract from the fact that the continuing competition between East and West assumes first priority in all Soviet plans, and that were it not for the concentration on military preparedness, there would be no housing crisis in the U.S.S.R. This is why Khrushchev stated that "we still must make sacrifices for the future".⁹²

The housing problem is strikingly illustrated by considering two Soviet statements: In 1920, a decree of the People's Commissariat of Labor promised that "each workers' family shall be given a separate apartment with a total floor space of at least 50 square meters. The apartment will consist of two habitable rooms, vestibule, kitchen, bathroom, and a separate storeroom or cellar."⁹³ Forty years later, the Soviet Government again promised:

As a result of the second decade (to 1980), every family, including newlyweds, will have a comfortable flat conforming to the requirements of hygiene and cultural living. In the course of the second decade, housing will be gradually provided to all citizens rent free.⁹⁴

What assurance do the people of the Soviet Union have that the latest promise will be fulfilled any more than the earlier one? Is it sufficient for the Government to proclaim that the housing shortage is the most acute problem for the improvement of the well-being of the Soviet people? Probably the city of Leningrad has correctly appraised the housing situation in its plan for the reconstruction of the city. Realistically it calls for 9 square meters of living space in 25 years,⁹⁵ an area equivalent to the sanitary norm accepted by the regime almost half a century prior to the time of anticipated fulfillment.

In a speech in his native village of Kalinovka, Khrushchev said—we made a great revolution in order to give the people all of the good things in life. If we do not give the people what was promised, they will say "What good was the revolution for us."⁹⁶

Undoubtedly this is a question that has already been asked many times by the citizens of the Soviet Union.

⁹² New York Times, June 22, 1962, p. 2.

⁹³ A. N. Marzeev, *Kommunal'naya gigiena* (Municipal Hygiene), Moskva, 1952, pp. 413-414.

⁹⁴ New York Times, Aug. 1, 1961, p. 18, Text of Soviet Party's Draft Program.

⁹⁵ *Gradostroitel'stvo*, op. cit., p. 59.

⁹⁶ Pravda, Aug. 3, 1962, p. 1.

RECENT TRENDS IN SOVIET PERSONAL
INCOME AND CONSUMPTION

BY

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RECENT TRENDS IN SOVIET PERSONAL INCOME AND CONSUMPTION

I. INTRODUCTION

As part of the examination of recent economic growth in the Soviet economy, this paper concerns itself with trends in real personal income and the several components of consumption. During the 1930's and 1940's consumption was awarded an extremely low priority. The primary concern of the Soviet planners was to train and maintain an effective labor force as cheaply as possible. Thus, only those resources essential for this purpose were allocated to consumption.

The low priority awarded to consumption throughout the period of recent Soviet history stems only indirectly from Marxian ideology. Karl Marx, in his famous treatise "*Das Kapital*", set forth a formula by which an economy that wishes to increase its rate of growth can best attain its goal. He explained that a nation, by increasing the share of its national product allocated to producer goods and reducing the share allocated to consumer goods, can increase its rate of growth. Nevertheless, Marx did not indicate the criteria to be followed by a socialist economy in allocating its resources between producer and consumer goods, nor the appropriate speed and pattern for such a nation's economic development. Instead it was necessary for the Soviet Government, the first nation to adopt Marx's political philosophy, to adjust this formula to its goals.

The formula adopted in 1928, the year in which the Soviet Union's first 5-year plan was initiated, placed primary emphasis on heavy industry as the most rapid road to economic development. Thereafter the needs of heavy industry were to continue to enjoy the highest priority. The results of this policy were forced savings and a diversion of resources from consumption to investment channels. Furthermore, the increase in the share of national output going to investment was not primarily oriented toward the future production of consumer goods and services, but rather to the output of more investment goods. Thus since 1928, the most important production targets have been machine tools, steel, and chemicals, not textiles, shoes, and radios.

Illustrative of this policy was the fall of consumption, which represented 84 percent of GNP in 1928, to 60 percent of GNP by 1940, according to computations made by Professor Bergson.¹ During World War II, the proportion of GNP which was devoted to consumption continued to fall rapidly, reaching 40 percent in 1944. However, upon termination of the war, consumption as a share of GNP rose, reaching approximately 56 percent in 1950.²

Since the death of Stalin in 1953, consumer welfare has been awarded a somewhat higher priority. However, this higher priority

¹ Bergson, A. *The Real National Income of Soviet Russia Since 1928*, Harvard University Press, Cambridge, 1961, p. 237. Both consumption and GNP are valued in terms of 1937 ruble factor costs.

² It should be noted, however, that even though consumption as a share of GNP might decline between two points in time, the increase in GNP during the period might be sufficient to enable consumption to be greater in the second period than in the first.

has not taken the form of a growing share of the national product, but rather a relatively constant share of a growing national product. For example, consumption as a share of GNP in 1955 was approximately 57 percent, or only slightly higher than in 1950,³ and while there is presently no published measure of consumption as a share of GNP (valued in factor costs) for the period since 1955, an independent calculation suggests that this component has probably declined. The shift in allocational policy probably did not represent signs of a more benevolent dictatorship but rather an attempt by the Soviet leadership to adopt a policy more conducive to maximizing growth. Increases in labor productivity were to be obtained partly through effective economic incentives rather than through the harsh and oppressive measures used in the 1930's and 1940's.

In discussing consumption in the U.S.S.R., this paper will focus primarily on the period since 1955. Nevertheless, since the great improvement in the welfare of the Soviet consumer dates from approximately 1950, the events which occurred in the period 1950-55 will frequently be compared with what has happened since.

Despite the significant gains in per capita consumption of goods and services during the 1950's, in recent years agriculture and industry have failed to maintain the earlier growth rates in the output of food, fibers, and manufactured consumer goods. As a result, there has been a slowdown in the increments in goods and services available for consumption. Meanwhile, disposable income received by the Soviet population has continued to increase rapidly. The growing disparity between the rates of increase in personal income and real goods and services has resulted in inflationary pressures. The government attempted to alleviate this situation somewhat by suspending the scheduled abolition of income taxes in September 1962. In addition, the increase in the prices of meat and butter in June 1962 has also helped to reduce inflationary pressures.

II. PERSONAL INCOME AND CONSUMPTION

The position of the consumer in the recent period of rapid Soviet growth can be evaluated by observing the trends in personal income and consumption. This paper, therefore, is devoted primarily to estimating these trends on the basis of the best available data.

Corresponding to U.S. practice, personal income is defined in this paper to include both money income and income-in-kind. In contrast to the Soviet definition, it does not include the value of communal services provided by the state, for example, through its health and education systems. Money income in turn is comprised mostly of wages received for labor performed in the State sector or on collective farms,⁴ transfer payments, and proceeds from the sale by individuals of consumer goods (mostly foodstuffs). Income-in-kind, an important share of personal income in the Soviet Union, is the value of com-

³ Bergson, op. cit. (1, above), p. 237.

⁴ The wages of wage and salary workers come directly from state sources. In general the total wage of the individual worker is comprised of the basic wage, bonuses, and premias, and is nearly independent of the production performance of the enterprise. The collective farm, on the other hand, is nominally a co-operative form of enterprise. Persons participating in collective farm work earn "workdays" (*trudodni*), and their earnings per "workday" are directly related to the current income of the farm. Thus, collective farm workers are reimbursed after the collective farm has paid its taxes, insurance, contribution to the capital fund, and production and administrative expenses from the money revenue which it has earned from the sale of farm products. After these expenses are met, the remainder is available for distribution to the peasants, along with the produce set aside for this purpose. The cash and produce are paid to the participants in proportions determined by the number of "workdays" each earned during the year.

modities consumed by households for which no monetary payment is made. These products consist primarily of the unmarketed share of payments-in-kind received from the collective farm for labor services and those agricultural commodities produced from small private holdings in the form of gardens and livestock. Table 1 sets forth the relative importance of the different types of compensation for the Soviet population in 1955.⁵

TABLE 1.—*Relative share of various types of personal income received by the population in 1955*

	[In percent]
Money income	77
Wage fund of wage and salary workers in state sector.....	48
Money income received by collective farmers from wages and income from sale of farm products.....	9
Transfer payments.....	7
Other ¹	13
Income-in-kind ²	23
Total income.....	100

¹ Includes cooperative artisans wages, income from the sale of farm products by workers and employees in the state sector, prisoners' wages, profits distributed to cooperative members, other urban labor income, and military pay (including subsistence).

² Includes imputed rent, prisoner subsistence, farm household income-in-kind, and investment in kind.

Section III discusses the trends in real personal disposable income in the Soviet Union from 1950 to 1961. For an examination of trends in consumer welfare, personal income is converted to real personal disposable income by deducting direct taxes and net bond purchases and then deflating the residual by a price index of consumer goods and services. This price index is a weighted index combining several individual price indexes in a manner designed to approximate the changes in the cost of goods and services purchased by a Russian consumer in a base year.

The trends in the components of real consumption are discussed in section IV. Real consumption is defined as the quantity of consumer goods and services valued in base-year prices that the economy supplies to its members. In the Soviet Union, real consumption consists of five basic categories: (1) goods and services sold by the state retail trade network; (2) goods acquired by consumers in collective farm markets;⁶ (3) purchases of services from municipal enterprises or artels; (4) that part of personal production on private plots or collective farm earnings-in-kind which is consumed rather than sold; and (5) the array of goods and services supplied to the population by the state free of direct charge. Section IV also contains a brief discussion of the qualitative changes in Soviet consumption and the problems the planners face in selecting the correct assortment of consumer goods and services to be offered to the Russian people.

Section V discusses the problem of recent inflation in the Soviet Union, and the steps which the Government has taken to offset it.

⁵ A detailed report on the data in this paper is being prepared for publication elsewhere.

⁶ Collective farm markets are local retail food markets where collective farms and individuals are able to sell any surpluses remaining at their disposal after they have met their legal obligations to the government and satisfied their own requirements. Prices on the collective farm markets, in contrast to prices in state-controlled stores, fluctuate in response to the conditions of supply and demand. In 1961, food sales on the collective farm markets and in state-controlled stores constituted 7 percent and 93 percent, respectively, of total sales of foodstuffs.

III. TRENDS IN REAL PERSONAL DISPOSABLE INCOME, 1951-61

Real disposable income increased at a rapid rate from 1950 through 1955, but since 1955 the rate of increase has declined somewhat. In the periods 1951-55 and 1956-61 real personal disposable income (which represents disposable income deflated by an index of consumer prices) increased at the average annual rates of 8.7 percent and 6.6 percent, respectively, or on a per capita basis by 7.1 percent and 4.9 percent, respectively. Since personal disposable income depends on the behavior of money earnings, income-in-kind, transfer payments, and the extent of deductions from money income in the form of direct taxes and compulsory bond purchases, the varying trends in these components are discussed below.

TABLE 2.—Average annual rates of growth of real personal disposable income

[In percent]

	1951-55	1956-61	1956-58	1959-61 ¹
Total ²	8.7	6.6	7.1	6.2
Per capita ³	7.1	4.9	5.4	4.4

¹ Data for 1961 are based on preliminary estimates.

² The index of real personal disposable income was obtained by estimating personal disposable income in 1950, 1955-61, and deflating it by a price index of goods and services. Estimates of the components of personal disposable income employed in the construction of the index were obtained or derived from official statements contained in the Soviet press or publications and from research performed by Western students of the Soviet economy. The weights for the index of the cost of goods and services to households were obtained by estimating purchases by households in 1955 of (1) goods purchased in State and cooperative stores, (2) services, excluding housing, (3) housing, (4) collective farm market sales, and (5) consumption-in-kind. The price indexes to which these weights were assigned were estimated from official sources and from independent research.

³ Based on unpublished estimates of population of the U.S. Bureau of the Census, Foreign Manpower Office.

A. GROSS EARNINGS OF WAGE AND SALARY WORKERS

The gross earnings of wage and salary workers in the State sector increased at the average annual rate of 7.9 percent in the period 1956-61.⁷ Workers' wages grew by an annual average of 2.9 percent, while the labor force increased at the average annual rate of 4.6 percent.⁸

It has often been observed in modern industrial economies that over a period of time, wage differentials tend to narrow. Under conditions of market competition for labor, one would expect a rather continuous decrease in wage differentials in the rapidly growing Soviet economy. But as is characteristic of a State directed economy such as that of the U.S.S.R., relative wages tend to be rigid in the short run with large changes introduced from time to time. According to Soviet literature, it would appear that such a change in the structure of relative wages has recently been initiated in the Soviet Union, the first significant change since the 1930's. For example, in 1957, the minimum wage rates (*stavki*) for all wage and salary workers in State enterprises and budgetary organizations were raised by about one-third to 27 to 35 rubles per month.^{9 10} An independent calculation reveals that this

⁷ Includes wages of cooperative artisans in both 1955 and 1961, although cooperative artisans did not become part of the state labor force until 1960.

⁸ A portion of the expansion of the state labor force represents the transfer of workers from collective farms to state enterprises.

⁹ Ruble values in this report are given in new rubles established by the Soviet currency reform of Jan. 1, 1961. A nominal rate of exchange based on the gold content of the respective currencies is 0.90 ruble to US\$1. This rate, however, should not be interpreted as an estimate of the equivalent dollar value of similar U.S. goods and services.

¹⁰ Kapustin, E. I. "Zarabotnaya Plata v. Promyshlennosti SSSR i Yeye Sovershenstvovaniye" ("Wages in Industry in the U.S.S.R. and Their Perfection"), Moscow, 1961, p. 21.

adjustment affected more than 12 percent of the workers employed in the state sector.¹¹ In 1962, minimum wage rates are scheduled to be increased to 40 to 45 rubles per month, while in 1963-65, they are to jump to 50 to 60 rubles.¹² However, research indicates that the new minimum wage levels installed in 1962 represent little more than an institutionalization of the earning levels of the lowest paid workers before the wage adjustment.

Similarly, a major wage reform was to be accomplished during 1956-62. According to official sources, the average wages received by workers in the State sector were to increase by 10 to 20 percent, while the wages of lower paid workers were to increase by 30 to 35 percent.¹³ This action was to be accomplished partly by reducing the pay differential between the highest and lowest grades. For example, a six-step pay scale for wage workers (instead of an eight-step pay scale) was introduced in most industries. The ratio between the sixth and first step was set at approximately 2:1, rather than the 3.5 to 2.5:1 which existed just prior to the wage reform.¹⁴ Together with the change in the structure of workers' wages, the salaries of engineers and other technicians were also raised, but by less than the relative increase in the wages of workers. Nevertheless, Walter Galenson has demonstrated that these Soviet comparisons are spurious, and that no sharp reduction in differentials actually took place because there were almost no wage workers in the first two grades of the wage scales.¹⁵ Thus, one should actually have compared the dispersion between the eighth step and the third step in the old scale with the dispersion between the sixth step and the first step in the new wage scale. The new extreme ratios in the various industries correspond roughly to the extreme ratios which were in existence prior to the wage reform. Not only were the "actual" extreme ratios relatively unchanged by the wage adjustment, but the distribution of workers by "actual" wage grades was also not altered significantly.

One important result of the wage reform was the increase in the portion of an employee's total earnings which he receives in the form of base pay. While base pay constituted approximately 45 to 55 percent of total earnings prior to the wage reform, it is presently believed to constitute 75 to 85 percent.¹⁶ Because the higher and middle paid workers' compensation was often based on a piece-rate scale and included proportionally greater amounts of bonuses and premia than did the pay of certain lower paid (and less skilled) coworkers who were paid on a straight-time basis, the change in the wage structure, which will make it more difficult for a worker to earn bonuses

¹¹ In addition to the minimum wage which a worker would be able to earn, he might receive an additional 15 to 25 percent in the form of bonuses and other types of incentive pay. Thus although prior to the increase in the minimum wage, a worker's total earnings might be more than 27 to 35 rubles per month; if his base pay (*stavki*) was less than this amount, he would be allotted a supplement to bring his base pay up to the minimum amount.

¹² U.S.S.R. Nauchno-Issledovatel'skii Institut Truda, "Metodologicheskiye Voprosy Izucheniya Urovnya Zhizni Trud'yashchikhsya" ("Methodological Problems of Studying the Standard of Living of Workers"), Moscow, 1959, p. 104.

¹³ *Ibid.*, p. 105.

¹⁴ Aganbegian, A. G. "Dlya Blaga Sovetskovo Cheloveka" ("For the Welfare of the Soviet People"), Moscow, 1960, p. 58.

¹⁵ Galenson, Walter. "Soviet Wage Reform" (reprint from proceedings of the 13th annual meeting of the Industrial Relations Research Association in St. Louis, December 1960) pp. 5-6.

¹⁶ Aganbegian, A. G., *op. cit.*, (14, above) p. 57.

and premia, is expected to reduce the disparity in rates between the various classes of workers.¹⁷ However, the actual effect of this action on reducing the disparity between income groups is expected to be only slight because the number of lower paid workers who are paid on a straight-time basis is relatively small, probably constituting less than 10 percent of all industrial production personnel. It would thus appear that the recent Soviet attempt to improve the system of wage payments and to reduce wage differentials has not changed earnings differentials significantly.

B. MONEY INCOME OF COLLECTIVE FARMERS AND SECONDARY INCOME OF RURAL RESIDENTS

The peasant population in households attached to collective farms has two primary sources of money income: (1) the remuneration for labor services expended on the collective farm and (2) money income from the sale of farm products. In addition, state farm workers and other rural residents derive supplementary income from the sale of farm products. In the period 1956-61, cash wages earned by collective farmers and income derived from the sale of farm products by the rural population increased by 47 percent as a result of a 90 percent increase in cash wages and a 21 percent increase in earnings from the sale of farm products.

Much of the increase in money income from participating in collective farm activity can be explained by the change in the manner in which the collective farm labor force was compensated for its work. Over the past decade official policy recommended that the compensation of the collective farmers be, wherever possible, in the form of cash payments rather than payments-in-kind. The effect of the new policy can be seen by the fact that in 1955 the portion of the total income paid out by collective farms in the form of cash for services rendered was 42 percent, but by 1960 had increased to 68 percent.¹⁸ Thus the 90-percent increase in the wages paid to farmers represents not only an increase in the amount which these workers received for a day's labor, but also represents a payment in lieu of the portion of the payments-in-kind which they no longer received under the new compensation arrangement.

Money income from the sale of farm products by the rural population comes from the sale of products either obtained from their "own enterprises"—land allotment and livestock held by the household—or from the sale of products obtained from the collective farm as in-kind payments. Since 1958, income received from this source has remained relatively constant.

Great disparities exist in income distributed not only within each collective farm, but also among the various collective farms. It has been estimated that farm mechanizers (tractor drivers, combine operators, etc.), who comprise about 10 percent of the labor force on

¹⁷ The wage reform not only increased a worker's base pay, but also the amount of work it was necessary to perform in order to receive that base pay. In so doing, it became increasingly more difficult for a worker to earn bonuses and premia by overfulfilling his goals.

¹⁸ Akademiya Nauk S.S.S.R. "Obschestvennyy Fondy Kolkhoz i Raspredeleniya Kolkhoznnykh Dokhodov" (Public Funds of Collective Farms and the Distribution of Collective Farm Income), Moscow, 1961, p. 269. These shares are based on an official calculation which values payments-in-kind in state retail prices.

collective farms, receive about 20 to 25 percent of the income distributed from the farms.¹⁹ Workers on model farms and on those farms which produce high-priced crops, primarily industrial crops, are also in a favored status in relation to other farms. According to the calculations performed by Arcadius Kahan, "about 20 percent of the collective farm population absorbs 40 to 45 percent of the total labor remuneration distributed by the collective farms."²⁰ Since the lower paid workers on the majority of collective farms receive a relatively small portion of the collective farms' total income, the output from their small private holdings of land and livestock represents an important supplement to their income.²¹ Recently the Government has attempted to reduce the size of these "own enterprises" attached to the households of collective farmers. Thus, by reducing the importance of the private sector, the Government is, in effect, tending to widen the differences in income within the collective farm labor force.

C. INCOME-IN-KIND

Income-in-kind represents the imputed value of agricultural produce consumed directly without a monetary transaction. This value is comprised of the unmarketed portion of commodities (1) received by collective farmers as payment for the services which they render on the collective farms, and (2) produced by households (both urban and rural) on their small holdings of land and livestock. Since this production is consumed by households without passing through the normal trade channels, it is not included in data on sales transactions. Income-in-kind constitutes a significant proportion of the total income in the Soviet Union. This is especially true of lower and middle income groups. As mentioned above, there are significant variations in the money income received by collective farmers. As a result, persons in the lower paid categories such as milkmaids, shepherds, etc., rely heavily on the production from their private plots to compensate for their lower money earnings.

The most important portion of income-in-kind is that derived from private plot production. The vacillating policies which the Government has pursued in regard to private agriculture have caused income-in-kind to fluctuate widely. For example, the severe restrictions imposed on private agriculture during the late 1930's were again applied after World War II. However, following Stalin's death and until 1958, the Soviet leadership eased these restrictions somewhat and even encouraged private holdings. Beginning in 1958, measures were again imposed to restrict the size of agricultural holdings of households.

As a result of these vacillating policies, in the period 1951-55, income-in-kind increased at the average annual rate of 2.4 percent. The encouragement of private agriculture resulted in a rate of increase in the period 1956-58 almost double the earlier average annual growth rate. However, due to the increased unreliability of Soviet agricultural statistics in recent years, the range of error in estimating income-in-kind is appreciable. Nevertheless, it appears likely that in

¹⁹ Kahan, A., "Recent Trends in Soviet Farm Incomes," "Problems of Communism," vol. X, No. 6, November-December 1961, p. 56.

²⁰ *Ibid.*

²¹ Although all households attached to collective farms maintain "own enterprises" the importance of these plots in the total income of higher paid workers and agricultural specialists is much less than for the lower paid workers.

the period 1959-61, income-in-kind remained relatively constant, or possibly declined by 5 to 10 percent.

D. TRANSFER PAYMENTS

During the period 1956-61, transfer payments increased at the average annual rate of 14.3 percent. This sharp rise is explained largely by the 1956 revision in the pension laws and the increase in the number of persons receiving such pensions. Prior to 1956, the maximum old age pension was 20 rubles per month.²² However, with the revision of the pension laws, the minimum rate was set at 30 rubles per month.²³ In addition, a new scale of payments benefiting lower paid workers was instituted. (See table 3.) Persons earning up to 35 rubles per month would receive pensions amounting to 100 percent of their earnings, with progressively smaller percentages granted to those with high earnings. As a result of these revisions, the average pension in 1961 was approximately 2.5 times the average in 1955.²⁴

TABLE 3.—*Share of wages received by wage and salary workers as retirement benefits*¹

Monthly wage (rubles):	Percent of wages received as pension payments ²
Up to 35.....	100
35-50.....	85
50-60.....	75
60-80.....	65
80-100.....	55
100 and more ³	50

¹ U.S.S.R. GIPL. "Na Blago i Schast'e Naroda: Sbornik Dokumentov" (For the Welfare and Happiness of the People: Collection of Documents), Moscow, 1961, p. 164.

² Received by all wage and salary workers except those engaged in underground work, and in harmful, dangerous, or arduous occupations.

³ With certain exceptions, the maximum rate was set at 120 rubles per month.

Other transfer payments received by individuals from the state include sickness benefits, maternity leave, and grants and stipends. Although no recent changes have been made in rates of payment, overall expenditures for these purposes have increased as a result of increases in the total numbers of persons receiving such payments and the increase in the average wage. Sick pay and maternity leave payments are made on a graduated scale of payments which is based on length of service. Persons who are injured at work, or suffer from diseases incurred on their jobs, are entitled to 100 percent of their earnings regardless of the length of service. Since 1960, a worker who voluntarily leaves his job for another, is entitled to sick pay for ordinary illness on his new job if he finds work within 1 month.²⁵ Although maternity benefits in the past several years have not been changed, the period of paid maternity leave was extended in 1956 from 70 to 112 days.

E. DIRECT TAXES AND COMPULSORY BOND PURCHASES

Disposable income was also increased between 1955 and 1961 by the reduction or elimination of direct taxes on certain income groups and the suspension of compulsory bond purchases. In 1957-58,

²² Nove, A., "Toward a 'Communist Welfare State?'" Problems of Communism, vol. IX, No. 1, January-February 1960, p. 4. Persons in certain favored occupations were exempted from this provision.

²³ Further increases in minimum old age pension payments are to be made in 1963 and 1966.

²⁴ Kapustin, E. I., "Obshchestvenny Fondy i Rost Blagosostoyaniya Naroda v SSSR." (The Social Fund and the Growth of the Welfare of the Soviet People of the USSR.), Moscow, 1962, p. 42.

²⁵ Certain people are exempt from this provision.

persons earning 37 rubles per month, or less, were relieved of their tax obligations, while the burden of taxation on those earning between 37.1 and 45 rubles per month was reduced.²⁶ As a result, approximately 1.3 billion rubles was added to the purchasing power of the population.²⁷ More significant was the announcement by the Supreme Soviet, in 1960, of the gradual abolition of the income tax, which, by 1965, was expected to add a total of 7.4 billion rubles to the population's disposable income.²⁸ (See table 4.)

However, in September 1962, the Government decided to postpone further tax cuts. While not affecting those persons in the lower income groups whose taxes had already been eliminated or reduced, the September announcement curtailed the growth in disposable incomes and the inflationary pressures which this growth was exerting.

An additional factor in the explanation of the rise in disposable income was the suspension of compulsory bond purchases in 1958. As a result, bond purchases dropped from 2.5 billion rubles in 1955 to 0.3 billion rubles in 1958, and thereafter declined to an insignificant level.

TABLE 4.—*Time schedule for the abolition of income tax for wage and salary workers, 1960-65*¹

	October 1960	October 1961	October 1962	October 1963	October 1964	October 1965
Persons earning the following or less per month are not required to pay income tax as of the following dates (in rubles).....	50	60	70	-----	-----	-----
Range of monthly earnings on which tax to be adjusted downward on an average of 40 percent (in rubles).....	50.1-60	60.1-70	70.1-80	70.1-90	70.1-100	(*)
Expected annual increase in aggregate disposable income during the year (in millions of rubles).....	360	400	450	240	240	‡ (5,710)

¹ U.S.S.R. "S.S.S.R.-U.Sh.A.: Tsifrah i Fakti" (U.S.S.R.-U.S.A.: Figures and Facts), Moscow, 1961, p. 101.

² Full abolition of income tax. By 1966, persons earning up to 100 rubles per month would have been entirely relieved of taxation, while those earning between 100 to 200 rubles per month would have had their base pay adjusted downward by a portion of the tax originally imposed on their incomes. Workers who earned more than 200 rubles a month would have had their pay adjusted downward by the complete amount of the tax that had been collected on their pay prior to the abolition of the tax.

³ Difference between total increases in disposable income from tax deductions of 7.4 billion rubles and sum of reductions for previous 5 years, 1960-64.

IV. RECENT TRENDS IN CONSUMPTION

The previous section was concerned with real personal income in the Soviet Union in the period 1950-61. In this section, attention will be focused on how the disposable income received during this period has been spent on consumer goods and services. The discussion of trends in personal consumption expenditures is supplemented by a discussion of trends in communal consumption. Communal consumption includes the value of health, education, and other social services supplied by government institutions to the population free of direct charge. Viewed as an aggregate of total consumption, personal consumption expenditures comprise about 90 percent, and communal con-

²⁶ Aganbegian, A. G., op. cit. (14, above), p. 27.

²⁷ Ibid.

²⁸ In 1960, approximately 7 percent of an individual's gross income was expended for taxes.

sumption about 10 percent of the total. The rates of growth of the several components of consumption since 1950 are shown in table 5.

TABLE 5.—Average annual per capita rates of growth of components of consumption
[In percent]

	1951-55	1956-61	1956-58	1959-61 ¹
Food goods ²	4.5	2.5	2.7	2.2
Nonfood goods ³	10.8	6.9	7.8	5.9
Soft goods ⁴	8.4	4.3	5.1	3.5
Consumer durables ⁵	29.1	11.9	12.3	11.0
Services to households ⁶	6.3	7.2	6.9	7.5
Communal services ⁷	2.7	3.5	2.2	4.9

¹ Data for 1961 are based on preliminary estimates.

² The index of growth in the consumption of foodstuffs was estimated as follows:

1. Estimates were made of Soviet output of 25 representative food products in 3 categories—basic foods (flour, potatoes, vegetables), animal products, and processed foods.

2. The production data were adjusted to exclude waste, losses, seed, and animal feed, and were further adjusted to reflect net imports and inventory changes when more than 5 percent of total production was involved.

3. In order to eliminate double counting of products at different stages of production, some of the basic foods and animal products series were modified accordingly. For example, the milk required to produce canned milk, butter, and cheese was subtracted from the fluid-milk series.

4. These physical estimates of human consumption of various food products over time were then combined into one aggregate series. The weight of each individual series in the aggregate index for the consumption of foodstuffs is the proportion of its 1955 value (physical consumption priced in 1955 state store prices) to the total value of the sample.

³ The index of consumption of nonfood goods is obtained by (1) deducting from officially reported state and cooperative retail sales of nonfood goods estimates of household purchases on nonfood goods for non-consumption purposes, household purchases of personal and repair services and Communist Party literature, and retail purchases by institutions, enterprises, and collective farms; (2) adding estimates of purchases on the nonfood portion of subsistence by military and internal security forces; (3) deflating the total of (1) and (2) by the official index of state and cooperative retail prices for nonfood goods.

⁴ The index for growth in consumption of soft goods is based on the following procedure: (1) Retail sales in 1955 are obtained for 4 categories of textiles and for sewn garments, knitted wear, hosiery, and leather footwear; (2) these 1955 values are moved over time by production indexes based on official data. Since the production data have not been adjusted for net imports, changes in composition, or for inventory changes, the value series are not precise indications of the trends in consumption of these products in constant prices; (3) the summation of the individual value series provides the basis for the overall index for the consumption of soft goods.

⁵ In constructing an index for the consumption of durable goods, the procedure used to calculate an index for soft goods (c. above) was adopted. Again retail sales in 1955 serve as base-year weights. The sample of durable goods includes furniture, bicycles and motorcycles, radio and television sets, watches and clocks, electrical appliances, sewing machines, cameras, and kerosene burners.

⁶ Services reflected in the index of purchases of services by consumers include household utilities, transportation, recreation and sports, religion, personal and repair services, and housing services. The majority of services were valued by multiplying estimates of the physical quantity purchased by 1958 prices. In some cases, they were estimated partly or entirely from official data on sales of these services in current prices and then deflated by price indexes based on 1958. The overall index is computed from the aggregate value of these services in 1958 prices. The index of housing services is simply an index of total housing stock measured in M² of living space.

⁷ The index of communal services is based on the trend in the total value of health and educational services as estimated from state budget data and collective farm and state enterprise expenditures. Expenditures on capital investment were deducted as was also the wage component. The residual series, or the expenditures on goods and services by the health and education sector, was converted to 1958 rubles by the use of an index of the cost of materials purchased. The wage bill was estimated by moving the 1957 value through time by an index of the number of workers and employees engaged in health care and education. The sum of the deflated expenditures on goods and services and the wage bill series serves as the index of the state's provision of communal services.

A. CONSUMPTION OF FOODSTUFFS

In the period 1956-61, the value of per capita consumption of foodstuffs increased at the average annual rate of 2.5 percent, or substantially less than the average annual per capita rate of 4.5 percent in the period 1951-55.

Since the death of Stalin there has been a substantial improvement in the Soviet diet. One indication of this improvement is the decline in the "starchy-staple ratio," that is, the percentage of total calories ingested that are derived from grains and potatoes. The "starchy-staple ratio" generally reflects the relative level of real personal income of a country's population. The presence of a low ratio usually indicates that the population's income is high enough to allow

the substitution of relatively expensive foods such as meat and dairy products for the cheaper starchy staples. For example, traditionally as consumers' real disposable incomes rise, animal products, oils, fats, sugar, and other "quality" foods tend to be substituted for the basic staples. At the same time the total quantity of food ingested—both in physical weight and calories—may remain relatively stable. The substitution of higher quality foods for the basic foods causes this ratio to fall.

In 1953, approximately 75 percent of the calories consumed in the U.S.S.R. were derived from low-quality starchy foods, while only 10 percent were derived from animal products—meat, dairy products, and eggs. By 1960, the proportion of per capita caloric intake from starchy foods had dropped to 65 percent, while the proportion contributed by animal products had increased to 17 percent. In the case of the Soviet Union, where real consumer disposable income has been rising steadily, one would expect the "starchy-staple ratio" to continue to decline. Instead, since 1960 there has been a general leveling off in the improvement of the Soviet diet. This has been due not to the satisfaction of the Soviet consumer with his diet, but rather to the inability of the agricultural sector to keep pace with the increase in the demand for higher quality foodstuffs. Evidence of the population's unsatisfied demand for high-quality foodstuffs, particularly for animal products, has been the rise in collective farm market prices, reports of civil disturbances due to shortages, and the State store price increases on meat and butter of 30 and 25 percent, respectively, in June 1962. Nevertheless, Khrushchev, at the 22nd Party Congress implied that by 1970 the "starchy-staple ratio" would decline to about 28 percent, or to the level which prevailed in the United States in 1948-49.²⁹ As indicated in the paper in this series concerned with agricultural production, such claims are viewed by Western students of the Soviet economy with considerable skepticism, if not outright disbelief.

While improving the quality of their diet, the Soviet consumers have also been able to reduce the share of their total income spent on foodstuffs. For example, in 1950, approximately 60 percent of total money income was spent on foodstuffs. By 1961, this figure had declined to approximately 53 percent. In addition, during this period the proportion of foodstuffs purchased in state stores had increased from approximately 45 percent to approximately 65 percent, while the share derived from collective farm markets and private production had declined proportionately. This trend is expected to continue.

B. CONSUMPTION OF NONFOOD GOODS

In the period 1956-61, per capita consumption of nonfood goods increased at the average annual rate of 6.9 percent, which was substantially less than the average annual per capita rate of growth registered in the period 1951-55. While the average annual per capita rates of growth of both soft goods and consumer durables in the period 1956-61 were approximately half of the increases achieved in 1951-55, the more rapid growth of consumer durables tended to produce a continuing shift in the composition of nonfood consumption. For example, in 1952, approximately one-fourth of consumer

²⁹ Bennet, M. K. "The World's Food: A Study of the Interrelations of World Populations, National Diets, and Food Potentials," Harper & Bros., New York, 1954, p. 73.

expenditures on nonfood goods were for consumer durables,³⁰ while by 1961, this figure had increased to approximately one-third.³¹

Since 1955, there have been growing indications of consumer resistance to the nonfood goods manufactured in state enterprises. In recent years the most graphic evidence has come from the size of unsold inventories in the hands of the retail and wholesale networks. In 1961, total inventories of nonfood goods were 100 percent above 1955, while retail sales were only 60 percent above their 1955 level.³² That this increase in inventories is attributed partially to unsalable goods (at present prices) is suggested by the heavy press commentary concerning the poor quality of soft goods and consumer durables and the lack of an assortment desired by consumers.

In response to the growing signs of consumer dissatisfaction, the state ordered the production managers to manufacture better and more attractive goods and at the same time strengthened the position of trade officials in deciding whether to accept or reject shipments of consumer goods. The increased authority granted to the trade officials has not yet resulted in any substantial improvement in the consumers' position.

The difficulties of bringing consumption and production into equilibrium are numerous. In the Soviet Union both production and prices react only sluggishly, if at all, to the forces of demand, so that the conflict between consumers' and planners' preferences results in a piling up of some goods on the shelves at the same time as there are long waiting lists for certain other products. Since most of the trade officials have received their training and experience in an economy in which buyers were willing to purchase any goods available, they have had little experience or training in estimating or anticipating consumers' demands.

To reduce inventories, credit purchases were introduced in 1959 for goods in relatively ample supply. The terms for such purchases were relatively liberal: 25 percent of the purchase price was required as a downpayment, with 6 months to 1 year in which to pay the balance. The effective rate of interest on the credit received was 1 to 2 percent per year.³³ But in 1961, such sales constituted slightly more than 1 percent of total retail sales.³⁴

³⁰ USSR. TSU. "Narodnoye Khozyaystvo SSSR v 1958 Godu" (The National Economy of the U.S.S.R. in 1958. Hereafter referred to as "Narkhoz 1958.") Moscow, 1959, pp. 725, 727.

³¹ USSR. TSU. "Narodnoye Khozyaystvo SSSR v 1961 Godu" (The National Economy of the U.S.S.R. in 1961. Hereafter referred to as "Narkhoz 1961.") Moscow, 1962, p. 640.

³² *Ibid.*, pp. 640, 644, 647, and "Narkhoz 1958," *op. cit.* (31, above), pp. 725, 747, 753.

³³ Strumilin, S. G., "Ekonomicheskaya Zhizn SSSR: Khronika Sobitii i Faktov 1917-1959" (Economic Life of the U.S.S.R.: Chronical of Events and Facts 1917-59), Moscow, 1961, p. 705.

³⁴ "Narkhoz 1961", *op. cit.* (32, above), p. 637.

TABLE 6.—Per capita consumption of soft goods in the U.S.S.R. and the United States

	Unit of measurement	U.S.S.R.		United States, 1959 ²
		1952 ¹	1960 ²	
Textiles, total.....	Square meter.	20.0	26.0	70.0
Cotton.....	do.....	17.0	19.0	52.0
Wool.....	do.....	1.3	2.2	2.7
Silk and artificial fabrics.....	do.....	.7	3.4	15.0
Linen.....	do.....	1.2	1.3	Negligible.
Knitted wear.....	Pieces.....	1.6	2.9	⁴ 11.0
Stockings, hose.....	Pairs.....	3.1	⁵ 4.5	⁶ 10.0
Leather shoes.....	do.....	1.3	1.8	⁷ 3.4

¹ Estimated apparent consumption based on production estimates in the U.S.S.R., TSU, "Narodnoye Khozyaystvo SSSR v 1958 Godu" (The National Economy of the U.S.S.R. in 1958), Moscow, 1959, several pages, and U.S.S.R., TSU, "Sovetskaya Torgovlya" (Soviet Trade), Moscow, 1956, pp. 82, 90, 131.

² Tyukov, V., "Sovetskaya Torgovlya v Period Razvertnutovo Stroitel'stva Kommunizma" (Soviet Trade in the Period of the Development of Communism), Planovoye Khozyaystvo, No. 11, November 1961, p. 44.

³ All figures rounded to 2 significant digits.

⁴ Erro, I., "Catching Up and Outstripping: An Appraisal," Problems of Communism, vol. X, No. IV, July-August 1961, p. 25.

⁵ Aganbegyan, A., "Uroven' Zhizni Trudyashchikhsya v SSSR i v USHa" (The Standard of Living in the U.S.S.R. and the United States) "Mirovaya Ekonomika i Mezhdunarodnye Otnosheniya," p. 35. The figure is for 1959.

⁶ Erro, op. cit., p. 27. Estimate of 1960 per capita production.

⁷ Ibid., p. 25.

1. Soft goods

In the period 1951-55, the per capita availability of soft goods, as measured by weighted production indexes, increased at the average annual rate of 8.4 percent.³⁵ However, in the period since 1955, it has increased at only 4.3 percent per year. Investigation of a shorter time period reveals that the growth of soft goods production has continued to decline. For example, in the period 1959-61, the average annual increase in the production of soft goods dropped to 3.5 percent.

Despite its slowdown, there have been important structural changes in the consumption of soft goods since the early 1950's. For example, of total sales of textiles in 1952, about 64 percent were of cotton, and 16 percent of silklike fabrics (mostly rayon goods),³⁶ while, by 1961, the proportion of cotton to the total had dropped to 39 percent and the proportion of silklike fabrics had climbed to 29 percent.³⁷ Although such a shift would seem to represent a sharp improvement in the quality of the fabrics consumed by the Soviet people, the paper in this series dealing with consumer goods production tends to discredit such a conclusion.

In addition to the change in the structure of textile consumption, the proportion going directly into ready-made garments increased, while the share of textiles which was purchased by consumers in state stores, and custom processed into garments either at home, by seamstresses, or artels, declined.

The increased demand for higher quality merchandise also affected the consumption pattern for footwear. Whereas in 1952, only about 57 percent of the total sales of footwear represented the sale of leather shoes,³⁸ by 1961, purchases of leather shoes comprised approximately 74 percent of total sales of footwear.³⁹

³⁵ A volume index of soft goods and consumer durables was constructed for the U.S.S.R. in the period 1950-61, with 1955 retail sales used as value weights.

³⁶ Narkhoz, 1958, op. cit. (31, above) p. 725.

³⁷ Narkhoz, 1961, op. cit. (32, above) p. 640.

³⁸ Narkhoz, 1958, op. cit. (31, above) p. 725.

³⁹ Narkhoz, 1961, op. cit. (32, above) p. 640.

2. Consumer durables

Although during the decade of the 1950's, production of consumer durables increased at an extremely rapid rate, the stock of consumer durables in the U.S.S.R. in 1960 was still extremely low. Data has been published on the stocks in households of certain durable goods in 1960, and these are reproduced in table 7 together with the available estimates of 1960 U.S. stocks of the same goods. It should be noted, however, that Soviet and United States stocks of consumer durables are not strictly comparable due to the poorer quality of Soviet goods and to the fact that the Soviet models differ substantially from their American counterpart. For a discussion of the quality of Soviet durable goods, see the paper in this series by Erro.

TABLE 7.—Stocks of consumer durables per 100 families in the U.S.S.R. and the United States

Name of product	U.S.S.R., 1960 ¹	United States, 1960 ²
Radio equipment.....	48.0	94
Television.....	10.0	89
Cameras and photographic equipment.....	17.0	(3)
Watches and clocks.....	263.0	(3)
Refrigerators.....	3.5	498
Sewing machines.....	35.0	(3)
Washing machines.....	15.0	95
2-wheeled modes of transportation.....	45.0	(3)

¹ Tyukov, V., "Sovetskaya Torgovlya v Period Razvernutovo Stroitel'stva Kommunizma" (Soviet Trade in the Period of the Development of Communism), *Planovoye Khozyaystvo*, No. 11, November 1961, p. 44. These figures exclude rental equipment.

² Commerce, Bureau of the Census, *Statistical Abstract of the United States 1961*, Washington, 1961, p. 821. Based on 51,690,000 potential users except for radios where potential users are 53,300,000.

³ Not available.

⁴ Electric refrigerators only.

⁵ Lokshin, R., "Narodnoye Potrebleniye i Torgovlya Dvadsatiletke" (National Consumption and Trade in 20 Years), *Sovetskoye Torgovlya*, No. 11, November 1961, p. 10.

C. SERVICES

Household expenditures for utilities (heat, gas, electricity, telephone, etc.), transportation, recreation and sports, religion, personal care and repair services, and housing are estimated to have increased at the average annual per capita rate of 7.2 percent during the period 1956-61, which was somewhat more than the average annual increase of 6.3 percent registered in the period 1951-55.

The notable laggard in the service sector has been in housing. Although the urban housing stock (measured in terms of living space⁴⁰) increased by 95 percent from 1950 to 1961, there has been only a 6 percent increase in the rural housing stock. Adjusting the urban housing stock for population changes, the per capita increase in living space during this same period of time was only 28 percent. The decline in the rural population coupled with the 6 percent increase in housing stock resulted in an 8 percent increase in per capita rural housing.

The big spurt in urban housing (increasing the stock by 33 percent) occurred in the period 1957-60. In 1957, the Government pledged to "overcome the housing shortage" in 10 to 12 years and took the

⁴⁰ In the Soviet Union, living space is defined to include dining rooms, living rooms, bedrooms, but does not include bathrooms, kitchens, hallways, and corridors. Approximately 73 percent of the total urban housing stock is estimated as living space.

necessary steps to increase housing construction between 1957 and 1960. In addition to allocating additional funds for state housing, the goals for private urban housing were increased by 33 percent.

TABLE 8.—Average annual rates of growth of urban and rural living space

[Percent]

	1951-55	1956-61	1956-58	1959-61
Urban housing.....	4.4	7.9	7.5	8.3
Public.....	4.9	6.2	5.1	7.1
Private.....	3.6	10.2	10.5	9.8
Rural housing.....	0	1.0	1.0	1.0
Urban housing, per capita.....	.4	3.7	3.0	4.4
Rural housing, per capita.....	0	1.4	1.2	1.7

To facilitate the fulfillment of the goals for private housing construction, the Government made building lots available and encouraged local enterprises to help private builders obtain materials and even urged them to provide trucks for the purpose of hauling the materials. As a result of the regime's attitude, substantial increases in the construction of private housing took place between 1957-60. Since then, however, the increase in state investment in housing has slowed and private home construction has begun to falter because of a reversal in 1959 in the Government's policy toward private homebuilding. Not only has credit been tightened in certain regions, but the number of building lots and supplies of building materials made available for that purpose have been restricted.

Although there has been a rapid spurt in homebuilding in the last several years, the Soviet housing stock is still woefully inadequate. For example, in 1961, per capita living space in urban areas was only 71 square feet, while in rural areas it was even less—66 square feet. This compares with an estimate of approximately 300 square feet per capita in the United States in the same period. In addition, after years of neglect and undermaintenance, the condition of the Soviet housing stock is extremely poor.

D. COMMUNAL CONSUMPTION

Communal consumption includes the value of health, education, and other social services supplied by the Government, collective farms, and other enterprises to the population free of direct charge. Included are the conventional services associated with health care such as doctor's services; the upkeep of clinics, hospitals, rest homes, and sanitoriums; public health measures; etc.

The expenditures for education, which are included in the definition of communal services, consist not only of expenditures for schools, but also expenditures for libraries, museums, parks, and other cultural and recreational activities. Although the Soviet concept of communal services includes expenditures on scientific research, these costs have been excluded in the concept of communal services as defined in this paper.

In the period 1956-61, consumption through communal services increased at the average annual per capita rate of 3.5 percent, with an increase of 4.9 percent in the period since 1958. This compares favorably with the average annual per capita increase of 2.7 percent

between 1951-55. Throughout the entire period, expenditures for health care increased at a considerably faster rate than expenditures for education.

V. THE PROBLEM OF THE RECENT INFLATION

As indicated above, since 1950, real consumer disposable income has increased at a rapid rate. Until recently, the State has provided (at given prices) a sufficient quantity of goods and services to absorb the growth in purchasing power. However, evidence has recently become available of a growing disparity between the rates of increase in money income and of real consumption of goods and services. The imbalance between the supply of goods and services and consumer purchasing power, which Khrushchev has called “* * * a situation fraught with dangerous consequences,” is the basis of his immediate problem with the consumer.

Because the regime has had a consistent policy of not raising prices in retail stores, the resulting inflationary pressures took the form of long waiting lists for consumer durables, growing queues for certain nonfood goods in state outlets, rising prices in the collective farm markets, and a growth in unplanned savings on the part of the consumers. In the face of this inflationary gap and the dim prospects for future acceleration of production for consumer purposes, a 30 percent increase in the average price of meat and meat products and a 25 percent increase in the price of butter was put into effect in state stores on June 1, 1962. The purpose of these price increases was to bring supply and demand in state-controlled outlets for these two commodities closer to equilibrium and at the same time to reduce purchasing power held by the population. As Khrushchev explained in a speech to Cuban students on June 3, “* * * we have run into difficulties caused by the fact that our people now have more money than there are goods being turned out by our industry and agriculture.”⁴¹ Apparently the reaction of the urban population to these large price increases was rather violent in certain urban centers. A series of protest rallies and riots caused dozens and possibly hundreds of deaths, necessitating the use of Soviet army units to quell the disturbances.⁴² In an attempt to increase the supply of those products which were in greatest demand, and thus reduce inflationary pressures, the Government also announced in June 1962 an average increase of 35 percent in the price it would pay to individuals and collective farms for the meat it purchases.

Apparently the steps taken in June 1962 to reduce or prevent the expansion of inflationary pressures on the economy were insufficient, for on September 24 the Government announced the postponement of the scheduled abolition of the income tax. However, whether the recent price adjustment and the postponement of the tax cut will successfully curtail its growth remains to be seen. At the time of this writing, it appears highly unlikely that substantial resources will be allocated to the consumer sector in an effort to ease the inflationary pressure.

⁴¹ Pravda, June 3, 1962, p. 1.

⁴² New York Times, Oct. 8, 1962, p. 1.

TRENDS IN THE PRODUCTION OF
CONSUMER GOODS

BY

IMOGENE ERRO

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TRENDS IN THE SOVIET PRODUCTION OF CONSUMER GOODS

I. INTRODUCTION

Consumer production in the U.S.S.R. has increased in recent years, but not sufficiently to meet the requirements of the population. Under existing priorities for investment funds and other resources, the consumer industries have concentrated on expanding output at the expense of improvements in quality, design, and assortment of goods. Consequently, production is now at a level where some choice is possible in consumer buying, although the chronic shortcomings of the industries are being emphasized by customer rejection of merchandise.

The Soviet people, whose comfort and well-being have been sacrificed for the building of heavy industry and military strength, now are pressing for a fairer deal in consumer goods. As supplies improve, consumers are becoming increasingly selective, often declining to buy some commodities at all because of poor assortment, absence of proper sizes, low quality of materials, or faulty workmanship. Such complaints thus reflect failures in planning, in production, or in distribution; often the trouble lies in all of these areas. On balance, it appears that the job of producing clothing, footwear, and other consumer items in accordance with demand, and marketing these goods efficiently presents a range of problems that so far the planners—central, regional, and local—have not been able to solve.

Khrushchev's position in regard to the allocation of resources for production of consumer goods has been subject to rather drastic change since his rise to power. Although he denounced initially the proconsumer policy of Malenkov of 1953-54, supporting instead an overriding priority for heavy industry, Khrushchev later adopted a policy of paying serious attention to living standards. In the summer of 1959, Khrushchev, just home from his first visit to the United States, and obviously impressed by the enormous gap in the levels of consumption in the two countries, altered his earlier position rather sharply and proceeded to initiate, in rapid succession, a number of official actions designed to improve consumer welfare.

The first decree, issued by the Soviet Government in October 1959, called for increases in the production and assortment of a whole range of household goods, from cleaning fluids to refrigerators, although the real emphasis was on increasing the production of household appliances.¹ The decree set new 1961 goals which required annual increases in the production of refrigerators of 30 percent, where the 7-year plan implied a 22-percent annual increase. Similarly, output of washing machines was to increase at the rate of 31 percent instead of 28 percent, and vacuum cleaners by 28 percent instead of 19 percent. A textile decree, which followed in December, provided for a broad program of reconstruction and expansion of textile plants;² it

¹ Radio Moscow, Oct. 15, 1959.

² Pravda, Dec. 10, 1959.

increased the production goals for spinning machines and looms, and called for an acceleration of programs in textile research and designing of machinery. A trade decree was issued in August 1960 to accelerate the already ambitious plans to expand and modernize the retail trade facilities,³ a sector where the cash register had hardly begun to replace the abacus.

In May of the following year, 1960, Khrushchev revealed plans to increase investment in light industry,⁴ to abolish personal income taxes, and to institute certain other welfare measures. The Premier went so far as to suggest that "now that the industrial base of the country is built" light industry and heavy industry could henceforth develop at equal rates.⁵ He pointed out that:

Neglect for the material requirements of the working people and the concentration of emphasis on * * * social and moral forms of incentive and reward has retarded development of production and the raising of the living standards of the working people.⁶

Although Khrushchev's proconsumer attitudes may have been sparked by a glimpse at living conditions within the United States other reasons for stressing consumer welfare (even in the face of apparently strong opposition at times) are also compelling. Certainly, a rising level of living may tend to increase the people's trust in the leadership, thus lending stability to the political system. Overriding this consideration, however, are other important factors. The Soviet leadership, which long has emphasized the importance of increased labor productivity in the "building of socialism and communism," now is trying to achieve more rapid increases in productivity by decreasing idle time, improving production flow, introducing more productive machinery, and the like.⁷ But increases in the productivity of labor can also be stimulated by meeting more adequately the workers' desires for consumer goods, balancing the rise in money incomes of the population which have resulted from reforms in prices, wages, and pensions instituted by Khrushchev. However, in June 1962, Moscow sharply increased prices on butter and meat; this was followed in September by the indefinite deferral of the promised abolition of income taxes. Both of these measures would decrease anticipated disposable incomes available for the purchase of nonfood consumer goods.⁸

The year 1961 seemed to mark the eclipse of Khrushchev's consumer program. In what was apparently a sincere effort to narrow the gap between consumption in the U.S.S.R. and Western countries, Khrushchev had been characteristically overoptimistic, and his efforts to improve the consumer's lot have fallen far short of the goal. Although before the 22d Party Congress, Khrushchev had indicated his desire to equalize the rates of growth of heavy and consumer industries, the decisions of the Congress in October 1961 clearly gave

³ Pravda, Aug. 9, 1960.

⁴ Additional investment funds of 2.5 billion to 3 billion rubles were allocated for the development of the textile and footwear industries, for the expansion of the agricultural production of raw materials for these industries, and for production of light industrial machinery. ⁵ The share which light industry itself is to receive cannot be determined exactly, but probably would increase the investment funds provided by the 7-year plan by about one-third.

Ruble values in this report are given in new rubles established by the Soviet currency reform of Jan. 1, 1961. Values reported in old rubles were converted to new rubles at a rate of 10 to 1.

⁶ "Tekstil'naya promyshlennost'," No. 10, 1960, p. 1.

⁷ Quoted in the New York Times, June 21, 1961.

⁸ Kommunist, No. 1, 1961, p. 14.

⁹ "Trud i zarabotnaya plata," No. 1, 1959, pp. 9-16.

¹⁰ Pravda, June 1, 1962, and Pravda, Sept. 25, 1962.

the edge to heavy industry. Thus, by 1980, the "production of the means of production (group A) was scheduled to rise to a level 6.8 to 7 times that of 1960, while the production of consumer goods (group B) was scheduled to reach a level only 5 to 5.2 times the 1960 level."⁹ Furthermore, the decisions of the Congress made clear that necessary military expenditures might further limit consumer production if "complications in the international situation" should so demand.

II. PRODUCTION RECORD

A. GENERAL

The Soviet level of living, as indicated by increases in production per capita of basic consumer commodities, has continued to rise slowly but at a rate which is sufficient to achieve neither the goals of the 7-year plan nor the levels of consumption set by the "scientific norms" for 1970.¹⁰ The following tabulation shows comparisons in production per capita for key commodities—total textiles (including fabrics of cotton, wool, linen, silk, rayon, and synthetic fibers) and leather footwear:

Unit	1955 ¹	1958 ¹	1961 ¹	1965 plan ¹	Consumption norm ²
Textiles (square meters).....	27.4	28.1	29.9	35.2	58.1
Leather footwear (pairs).....	1.4	1.7	2.0	2.2	3.5

¹ Derived from tables 2 and 3 and estimates of population of the U.S. Bureau of the Census, Foreign Manpower Office. Data for 1965 are derived from planned output goals.

² "Planovoye khozyaystvo," No. 8, 1960, pp. 51-63.

Khrushchev's goal of surpassing the United States in the production of consumer goods by 1970¹¹ is also spurious when measured against performance. The following comparisons of basic items of clothing and footwear indicate the degree to which the Soviet Union lags behind the United States in production per capita:

Commodity	Unit	1961		1965 plan U.S.S.R. ³
		U.S.S.R. ¹	United States ²	
Cotton fabric.....	Square meters.....	22.4	48.3	24.7
Wool fabric ⁴	do.....	2.1	2.2	2.7
Fabric of rayon, synthetic fiber and silk.....	do.....	3.1	14.8	5.3
Hosiery.....	Pairs.....	4.6	11.0	5.6
Leather footwear.....	do.....	2.0	3.3	2.2

¹ Derived from data in tables 2 and 3 and estimates of the U.S. Bureau of Census, Foreign Manpower Office.

² Derived from data in the Statistical Abstract of the United States, 1962, U.S. Bureau of the Census, 1962, pp. 797-803.

³ Derived from plan data published in Pravda, Feb. 8, 1959.

⁴ Soviet wool fabrics may be woven of blended fibers containing as little as 30 percent wool, whereas U.S. wool fabrics must contain 50 percent or more of wool fiber in order to classify as wool.*

* "Tovarovedeniye promyshlennykh i prodovol'stvennykh tovarov," Moscow, 1955, pp. 368-374, and U.S. Bureau of Census, Facts for Industry, "Woolen and Worsted Woven Goods," M22T, 3-1-8 supplement, Mar. 23, 1959.

⁹ Pravda, Oct. 19, 1961.

¹⁰ Soviet planners have set up standards—so-called scientific norms—for consumption of basic commodities produced by the light and other consumer industries. But the list of commodities considered "really necessary" is extremely limited by comparison with the wide range of goods available, for example, in the average U.S. department store. Although the Soviet norms for food approach U.S. quantitative consumption levels, norms for textiles and clothing are generally lower.*

* "Planovoye khozyaystvo," No. 8, 1960, pp. 51-63.

¹¹ Pravda, May 6, 1960.

Although the Soviet leadership has committed itself to providing a more adequate supply of basic consumer commodities such as textiles, clothing, and footwear, it clearly does not intend to emulate Western consumption standards in the broader range of consumer goods. Luxury items are largely excluded from the Soviet plans.

For the period, 1950-60, light industry, according to the Soviet official indexes of production, has grown less rapidly than other important sectors of Soviet industry, particularly heavy industry. The official indexes which are tabulated below show that light industry, while increasing at a substantial rate, has since 1955 begun to lag further behind the machine-building and metalworking industry and also behind industrial production as a whole than it did in the early postwar years.

[1950=100]

Years	Light industry	Machine-building and metalworking industry	Total industry
1950.....	100	100	100
1955.....	178	220	185
1958.....	217	323	249
1959.....	234	372	277
1960.....	250	430	300

¹ "Narodnoye khozyaystvo SSSR v 1960 godu," p. 226.

Computed from these indexes, production of light industry from 1955 through 1960 increased by 40 percent, whereas the total industrial production increased by 62 percent and the machine-building and metalworking industry by 95 percent for the same period. The measurements in overall growth, however, only partly indicate the real gap between the consumer industries and the high-priority industries, inasmuch as they ignore relative development of the industries in the base year of the index. In that year, 1950, light industry, having about recovered its prewar level of production was capable of producing fewer goods than were required to fill the basic needs of a large Soviet population. But the industries producing machinery and heavy equipment had developed beyond the prewar production levels and were being given priority for future development.

Since 1959, the first year of the 7-year plan, the various branches of Soviet light industry—textiles, clothing, and footwear—have all registered declining rates of growth. (See table 1.) The sharpest decline occurred in 1961, coinciding with a decline in the rate of growth for Soviet industry as a whole after the shift from an 8- to a 7-hour workday.¹² The following tabulation shows the rates of growth achieved in the first 3½ years of the 7-year plan, as announced officially, for some of the important branches of Soviet industry in relation to the growth of total industrial production:

¹² Izvestiya, Oct. 14, 1960.

Annual increase

[Percent]

Industry	1959 ¹	1960 ²	1961 ³	January-June 1962 ⁴
Total.....	11	10	9	10
Machine-building and metalworking.....	15	16	16	15
Chemicals.....	10	12	14	17
Construction materials.....	22	18	12	9
Light.....	9	8	5	4
Food processing.....	11	4	7	10

¹ Pravda, Jan. 22, 1960.

² Pravda, Jan. 26, 1961.

³ Pravda, Jan. 23, 1962.

⁴ Pravda, July 21, 1962. Percentage increase over January-June 1961.

TABLE 1.—Rates of growth in Soviet light industry, selected years, 1952–62, and the 7-year plan ¹

[In percent]

Commodity	Average annual increase, 1952-58	Annual increase				Average annual increase 7-year plan, 1959-65
		1959	1960	1961	January through June 1962 ²	
Cotton fabric.....	2.8	7.1	4.8	0.7	2	³ 4.2
Wool fabric.....	8.1	7.7	5.6	3.9	3	7.4
Fabric of rayon, synthetic fiber, and silk..	25.3	(⁴)	1.9	1.2	8	8.4
Linen fabric.....	6.3	10.2	6.5	(⁴)	(⁵)	4.0
Knit outerwear.....	7.4	6.9	7.4	5.2	6	7.4
Knit underwear.....	10.5	9.8	7.7	3.3	6	10.0
Hosiery.....	5.8	4.3	4.1	3.7	(⁵)	5.6
Leather footwear.....	5.9	9.4	7.5	5.5	4	5.4

¹ Percentages were derived from data contained in the following sources: Data for 1951, "Promyshlennost' SSSR," Moscow, 1957, pp. 328, 343, 351; data for 1953-61, "SSR v tsifrakh v 1961 godu," Moscow, 1962, pp. 127, 128; percentages for January-June 1962 were reported in Pravda, July 23, 1962; and data for the 7-year plan (1959-63), Pravda, Feb. 8, 1959.

² Percentage increase over January-June 1961.

³ Lower limit of the range.

⁴ A decrease. Production was 96 percent of previous year.

⁵ A decrease. Production was 98 percent of previous period.

⁶ Not available.

Thus, light industry, the food industry, and the industry producing construction materials have been increasing at rates below the 1959 level, while the metalworking industry has maintained its high rate of growth of 15 to 16 percent and the chemical industry has increased in rate of growth from 10 to 17 percent. By mid-1962, industrial output as a whole had recovered the 10-percent rate previously achieved in 1960, but the rate for light industry continued to decline. The 4-percent increase achieved during the first 6-month period of 1962 and the 5 percent achieved in 1961 are well below the 6-percent average increase needed to fulfill the 7-year plan,¹³ and are far short of the 7-percent average annual increase achieved during the previous 7-year period, 1952-58.¹⁴

¹³ Pravda, Feb. 8, 1959.

¹⁴ The average annual rate of increase for the period 1952-58 was computed from an index of production of finished commodities and weighted by retail prices of 1955. The computed index is slightly lower than the official index of production which is a gross value index in factory prices.

B. TEXTILES

Recent trends in Soviet output of textiles show that fabric production increased at the relatively high rates of 6 and 5 percent, respectively, during 1959 and 1960, but that the rate of growth dropped off sharply in 1961. Increases in the production of fabric for recent years and that planned for 1965 can be seen in the following tabulation:

Year	Production of fabrics (million square meters) ¹	Index (1958=100)	Year	Production of fabrics (million square meters) ¹	Index (1958=100)
1955.....	5,402	93	1960.....	6,467	111
1958.....	5,823	100	1961.....	6,505	112
1959.....	6,178	106	1965 plan.....	8,135	140

¹ Figures are from table 2.

The decline in the rate of growth in the textile industry can be attributed in large part to shortages of raw materials and to other troubles in the industry. (See sec. III, p. 16.) The textile industry still is basically dependent on supplies of agricultural raw materials even though chemical fibers are increasing in the total supply. Shortfalls in agricultural production of fibers are being felt by the industry, as reported by plant managers who complain of lagging supplies.¹⁵ The shortening of the workday from 8 to 7 hours apparently contributed to the increasing strain on the industry in 1961. In addition to these problems, the textile industry is exhorted by planners, retailers, and consumers alike to broaden the assortment of goods and to raise the quality, the accomplishment of which would tend to slow the rate of growth of the industry but would increase the effectiveness of its output in satisfying consumer demand.

During the period, 1950 through 1961, the total production of textile fabrics in terms of square meters almost doubled, as shown in table 2. Moreover, marked shifts have occurred during this period in the distribution of textiles according to type, in part an indication of a broader assortment. Cotton fabric, which comprised 84 percent of production in 1950, declined in its share of total fabric to 75 percent by 1961 because of gains in other fabrics, particularly fabrics of rayon and synthetic fibers. Woolen and linen fabrics made nominal gains.¹⁶ Table 2 shows the production of the major groups of textiles since 1950 and goals for the 7-year plan.

¹⁵ "Tekstil'naya promyshlennost'," No. 12, 1961, pp. 1-4.

¹⁶ Changes in the percentage distribution of fabrics according to type were as follows (based on data in table 2):

Type of fabric	1950	1961
Cotton.....	83.7	74.9
Wool.....	5.7	7.0
Rayon, synthetic, and silk.....	3.1	10.5
Linen.....	7.5	7.6

TABLE 2.—Soviet production of textile fabrics for selected years¹ 1950 through 1961 and 1965 plan

[In million square meters]

Type	1950 ²	1955 ³	1958 ³	1959 ³	1960 ³	1961 ⁴	1965 plan ⁵
Cotton.....	2,885	4,370	4,308	4,615	4,838	4,874	5,700
Wool.....	197	320	385	415	438	455	635
Rayon, synthetic, and silk.....	106	431	690	663	675	683	1,215
Linen.....	260	281	440	485	516	493	585
Total.....	3,448	5,402	5,823	6,178	6,467	6,505	8,135

¹ Production of fabrics in 1950 and 1955 were converted from linear to square meters using the following coefficients: cotton 0.74; wool 1.27; rayon, synthetic, and silk 0.82; and linen 0.92. These coefficients, derived from official data for 1958, which were reported in both linear and square meters, in Narodnoye khozyaystvo S.S.S.R. v 1959 godu, p. 245, do not account for possible changes in the widths of fabrics during the earlier period, but such changes if they occurred were probably small.

² Narodnoye khozyaystvo S.S.S.R. v 1960 godu, p. 321.

³ Ibid.

⁴ S.S.S.R. v tsifrakh v 1961 godu, p. 127.

⁵ Pravda, Feb. 8, 1959.

In both quantity and quality, the Soviet Union still has far to go to reach production levels of textiles in the United States. Total Soviet production of textiles (measured in square meters) in 1961 was only a little more than half the American volume,¹⁷ a level that is not adequate to supply—at anything approaching the consumption standards of many Western countries—the needs of a population more than 18 percent larger than that of the United States.

Some of the factors that contribute to the relatively poor quality of Soviet textiles can be enumerated. Fabrics generally are lighter in weight and narrower than those produced in Western countries. Thread counts are lower and yarns receive less twist. The numerous irregularities found in yarns and fabrics result from the use of raw materials of low quality and from a lack of precision in the spinning and weaving processes. A group of U.S. specialists visiting the Soviet cotton textile industry in 1959 reported on quality as follows:¹⁸

Mills are somewhat concerned about the quality of the raw cotton they get, but they have to use what is furnished and turn out as good a product in maximum quantity as they can. Since they have little responsibility for the product after it leaves the plant, they have no strong incentive to be concerned about anything more than meeting minimum standards.

C. CLOTHING AND FOOTWEAR

Much greater amounts of clothing and footwear have been reaching the Soviet consumer in recent years than in the earlier years of the post-World War II period. The amount of sewn garments distributed annually through the retail stores in 1960 had more than tripled the 1950 level and was almost 80 percent above the 1955 level.¹⁹ Sales of fabrics, on the other hand, have increased much less rapidly—only 31 percent since 1955—reflecting a trend away from home sewing and in

¹⁷ In 1961, Soviet production of fabrics was 6,505 million square meters (see table 2) whereas the U.S. production was equivalent to 12,100 million square meters.

¹⁸ U.S. Bureau of Census, Statistical Abstract of the United States, 1962, p. 797.

¹⁹ U.S. Department of Agriculture, Foreign Agricultural Service, Cotton in the Soviet Union, June 1959, p. 10.

²⁰ Production data for the garment industry is incomplete. When it is reported, production of sewn garments is based on value added which excludes the cost of materials. Before 1959, sewn garments were reported as gross value of production. The data for retail sales provide a more continuous series which may be more meaningful for making comparisons.

²¹ Sovetskaya torgovlya, February 1960, p. 26

favor of factory-made clothing. Sales of these commodities in the state and cooperative stores in recent years were as follows:

[Million rubles]

Commodity	1950 ¹	1955 ²	1958 ³	1960 ³
Sewn garments.....	2, 172	3, 939	5, 582	7, 051
Fabrics ³	3, 950	4, 566	5, 619	5, 982

¹ Narodnoye khozyaystvo SSSR v 1958 godu, p. 724. For 1950 only, sewn garments include fur goods.

² Narodnoye khozyaystvo SSSR v 1960 godu, p. 690.

³ Most of the fabrics sold in retail stores probably are sewn into clothing either at home or by private tailors or seamstresses.

Soviet-made clothing is notoriously shoddy, reflecting the poor quality of materials and workmanship, and the inexperience of the designers. Much of the factory-made clothing, according to trade officials, is unsalable due to "low-grade sewing, poor finishing, and simplified, old-fashioned, and unvaried styling * * * with serious defects."²⁰ During a 9-month period in 1961, the Ministry of Trade, R.S.F.S.R., rejected 41 percent of the production of the garment industry, reclassifying the goods as seconds.²¹ In the knitting trades, output of hosiery has doubled since 1950, and knit outerwear and underwear have increased even more rapidly, albeit over a relatively small base. (See table 3.)

Although production of leather footwear has more than doubled since 1950, neither the quality of materials and workmanship nor the assortment have improved appreciably. In order to meet production quotas, footwear manufacturers produce somewhat standardized models in a narrow range of sizes as a means of achieving production goals. Customer complaints concern shortages of particular sizes and the generally cheap quality that means ultimately a lack of durability. As for materials, artificial suede and other simulated leathers which are used to extend the supplies of genuine leather are far less durable materials, although composition soles probably are an acceptable substitute for leather. A further lack of durability results from construction methods that often either are outmoded or are geared to maximum output rather than to producing a high-quality product.

TABLE 3.—Soviet production of knitted garments and leather footwear, selected years 1950–61 and 1965 plan

[Million pieces or million pairs]

Commodity	1950 ¹	1955 ²	1958 ³	1959 ²	1960 ²	1961 ²	1965 plan ³
Leather footwear.....	203	271	356	390	419	442	515
Knit outerwear.....	47	85	97	104	112	117	160
Knit underwear.....	150	346	399	439	472	488	780
Hosiery.....	473	772	888	926	964	1, 000	1, 300

¹ Promyshlennost' S.S.S.R., Moscow, 1957, pp. 343, 351.

² S.S.S.R. v tsifrakh v 1961 godu, pp. 127, 128.

³ Pravda, Feb. 8, 1959.

²⁰ Sovetskaya trgovlya, March 1962, p. 9.

²¹ Ibid., pp. 10–13.

D. CONSUMER DURABLES

The production of consumer durables is increasing rapidly, although the output is still small for household appliances except for sewing machines and radios. Household refrigerators, washing machines, and television sets which have come into production in large numbers only since 1950, are scheduled for rapid increases in the 7-year plan (see table 4). Many other appliances that are common in the United States—such as dishwashers, clothes dryers, and food freezers—are virtually unknown to the Soviet public.

Stocks of household appliances by the end of the 7-year plan in 1965, according to Soviet estimates, will include 7.6 million refrigerators, 12.3 million washing machines, and 40 million sewing machines.²² If these levels are reached by 1965, Soviet officials estimate that there will be one refrigerator for every five urban households, one washing machine for every three urban households, and one sewing machine for every two households (both urban and rural). Although this inventory compares unfavorably with present U.S. inventories, it approaches the current level of availability of these appliances in the United Kingdom and some of the other European countries.²³ Radios, because of their value as means of propaganda dissemination, enjoy a relatively high priority in consumer production and are priced fairly cheaply. Stocks of radios, according to official Soviet estimates, had grown by 1960 to a level which provided 48 sets per 100 families. Stocks of television sets provided only 10 per 100 families.²⁴

TABLE 4.—Soviet production of consumer durables, selected years 1955–61 and 1965 plan

[In thousands]

Commodity	1950 ¹	1955 ¹	1958 ²	1959 ²	1960 ²	1961 ²	1965 plan ²
Sewing machines.....	502	1,611	2,686	2,941	3,096	3,292	4,550
Refrigerators.....	1.2	151	360	426	530	686	1,450
Washing machines.....	0.3	87	464	648	896	1,286	2,570
Radios.....	1,072	3,549	3,902	4,035	4,165	4,229	6,000
Television sets.....	12	495	979	1,277	1,726	1,949	3,300

¹ Narodnoye khozyaystvo S.S.S.R. v 1958 godu, pp. 298–300.

² S.S.S.R. tsifrah v 1961 godu, p. 128.

³ Pravda, Feb. 8, 1959.

Although consumers in the U.S.S.R. are anxious to own appliances and other durable goods, they usually must wait many months for delivery, and are often dissatisfied when they finally obtain them. Few of these items would be salable in retail markets in the United States. Appliances, on the whole, are poorly designed, crudely built, and subject to breakdowns. Soviet refrigerators have a small amount of usable space in relation to their size and weight. The washing machines are simple in design, usually with roller wringers operated by hand; some have motor-driven centrifugal spinners; and a small part of the production have simple timing devices. Electric sewing machines have been so unreliable that many housewives are returning to treadle machines while a good portion of the newer models rust in

²² Planovoye khozyaystvo, No. 12, 1959, p. 23.

²³ U.S. Department of Commerce, Business and Defense Services Administration, Major Household Appliances, September 1960, p. 105.

²⁴ Sovetskaya trgoviya, No. 11, 1961, p. 44.

warehouses.²⁵ Even in the urban areas, the usefulness of appliances is limited by the undependable nature of the Soviet supplies of electric power.²⁶

Both the availability and quality of Soviet appliances have been influenced adversely by the preoccupation of planners with heavy industry. Instead of plants which specialize in appliances, production has been relegated to subsidiary shops of plants that specialize in other types of machinery. Production is poorly organized; there is little coordination among producers, and inadequate specialization has led to high costs. Until these deficiencies are rectified, Soviet consumers will find that household appliances, on the whole, are scarce, expensive, and of poor quality.

III. CURRENT GROWTH PROBLEMS AND PROSPECTS

Strains now being felt by the consumer industries apparently are caused by factors which are numerous and complex. The sharp decline in the rates of growth of the textile, clothing, and footwear industries in 1961 coincided with the period following the shortening of the work day from 8 to 7 hours, but other factors including shortages of raw materials, and failures in investment also contributed to the decline. How great has been the effect relatively of each of these factors cannot be determined, but collectively they are probably responsible for the lower rate of growth.

A. MATERIALS SHORTAGES

Providing increasing quantities of raw materials is one of the major factors limiting the growth of light industrial production at present and in future years. Judging from past experience in production of textile fibers by Soviet agriculture, fulfillment of plans is likely to fall short of the 7-year plan goals. Moreover, even if goals are reached, the output of natural fibers will barely support the planned increase in textile fabrics. For example, the 7-year plan requires that production of cotton fabric increase at an annual rate of 4.2 to 4.7 percent, whereas the plan for output of cotton fibers requires an increase of 3.8 to 4.9 percent.²⁷ Soviet planners do recognize that Soviet agriculture can no longer, as it has in the past, supply fibers in adequate quantities to support the planned expansion of the textile production. Thus, future goals for textiles are based on the assumption that rayon and synthetic fibers can be produced in quantities adequate to supply the requirements of the industry over and above that which agriculture can produce. Production of rayon and synthetic fibers is scheduled to grow at the rate of 22 percent annually during the 7-year plan.²⁷ Woolen plants in particular are to rely on large quantities of synthetic fibers, and cotton mills are to use synthetic fibers suitable for blending.

Production of agricultural textile fibers in recent years has been slowing down; plans frequently are underfulfilled, particularly in years of adverse weather conditions. The following tabulation of

²⁵ Sovetskaya torgovlya, Jan. 30, 1962.

²⁶ Problems of erratic flow of current and fluctuations in voltage which have been reported result in part from inadequate wiring and improper distribution of current. More than 800,000 voltage stabilizers for use in operating home appliances were bought during 1959 alone.*

*Izvestiya, May 27, 1960.

²⁷ Pravda, Feb. 8, 1959.

production of textile fibers shows the output of cotton in 1960 and 1961 was lower than the level achieved in 1959; annual increases in wool have declined for the past 3 years; and production of flax fiber fluctuates from year to year.

[Thousand metric tons]

Year	Cotton (ginned) ¹	Wool (grease)	Rayon and synthetic	Flax fibers
1955.....	1,290	256	110	381
1958.....	1,450	322	166	438
1959.....	1,550	356	180	364
1960.....	1,430	357	211	425
1961.....	1,510	367	250	403

¹ S.S.S.R. v tsifrakh 1961, passim.

² Converted from the weight of seed cotton at 33.3 percent.

Although no figures are available currently on supplies of textile fibers reaching the textile mills, shortages of raw materials reportedly are responsible for production failures in some areas in 1961 and 1962.²⁸ Even so, the U.S.S.R. exports large amounts of cotton, mainly to the East European satellites, an export volume which varies between 20 and 25 percent of Soviet domestic production each year. Although increasing requirements at home appear to strain the ability of the U.S.S.R. to continue such extensive export, these commitments appear fairly rigid as indicated by the export pattern of the past 10 years.²⁹ Cotton imports on the other hand have increased somewhat in response to growing demands of Soviet light industry, but exports still are far greater—actually twice the size of imports in 1960.³⁰ Wool is also in short supply because of failures in domestic production. Soviet production of wool in 1960 and 1961 increased by 1 percent and 3 percent, respectively, compared with an increase of 12 percent in 1959. (See tabulation above.)

The fulfillment of future goals for light industry thus depends in large part on a lagging agricultural sector for supplying increases in natural fibers and on a heavily burdened chemical industry for supplying rayon and synthetic fibers.³¹ Should agriculture and the chemical industry fail to meet the requirements of light industry, the official program for increasing the supplies of textiles and clothing to Soviet consumers would be placed in serious jeopardy. In this event, Soviet planners would have to look abroad for large quantities of textile fibers with which to supplement domestic supplies.

B. LOW LEVEL OF TECHNOLOGY

The low level of technology which characterizes much of Soviet light industry can be attributed in large part to the fact that, in the allocation of investment funds and resources, light industry has been given a low priority. The 7-year plan provided some improvement in the allocation of funds for light industry relative to other main

²⁸ Tekstil'naya promyshlennost', No. 12, 1961, pp. 1-4.

²⁹ U.S. Joint Publications Research Service: JPRS/DC-349, Foreign Trade of the U.S.S.R., 1956, Nov. 4, 1958, pp. 22, 40. JPRS 526-D, Foreign Trade of the U.S.S.R., 1958, Feb. 17, 1959, pp. 21, 37. JPRS 6220, Foreign Trade of the U.S.S.R., 1959, Nov. 14, 1960, pp. 24, 41. JPRS 13349, Foreign Trade of the U.S.S.R., 1960, Apr. 5, 1962, pp. 27, 49.

³⁰ Ibid.

³¹ A sharp reduction in the growth rate for rayon and synthetic fibers was announced for 1962—from 20 percent implied by the 7-year plan to 12 percent.^a

^a Pravda, Feb. 8, 1959.

branches of industry (see III C below), yet this higher level of investment apparently is not great enough to constitute a significant rise on the priority scale. Allocations of funds for the 7-year plan period and the preceding 7-year period for the light and food industries are compared with allocations for other selected industries as follows:

Branch of industry ¹	1952-58 (billion rubles) ²	1950-65 (billion rubles) ²	1959-65 in percent of 1952-58
Light and food.....	4.0	8.0-8.5	200-212
Machine building.....	6.6	11.8	180
Ferrous metallurgy.....	4.1	10.0	245
Oil and gas.....	7.2	17.0-17.3	235-240

¹ U.S. Joint Publications Research Service: JPRS: 14,600 Capital Construction: A Statistical Collection, July 26, 1962, p. 48.

² In prices of July 1, 1955, adjusted to the new 1961 rate of exchange.

Thus, the share in investments of the light and food industries (representing personal consumption) is less for both the 7-year periods than the shares, respectively, of the machine building, ferrous metallurgical, and oil and gas industries, and the increase in the 7-year plan for the light and food industries is less than that in two of the heavy industries enumerated.

Because light industry has been starved for resources over the years, technological improvements have been slow to develop and as a result labor is used extensively, including much hand labor. The number of production workers in Soviet light industry ³² ranks high in the total of production workers of all of Soviet industry, being exceeded only by the number of workers in the machine building and metalworking industry. Of the 18.6 million production workers (rabochiy) in Soviet industry in 1960, light industry employed 3.4 million, or 18 percent. ³³

Even in the textile industry, which is more advanced in the mechanization of processes than are the clothing and footwear industries, much larger numbers of workers on the whole are used for given operations than in U.S. textile industry. The size of the industrial labor force for textiles in the U.S.S.R. is far greater than that of the U.S. textile industry, but the Soviet output of textiles is only about half as great. Ratios for the two countries have been reported by the Soviet writer S. A. Kheyman, for cotton fabric, in 1958, showing Soviet production at 56 percent of U.S. production, but the Soviet labor force reportedly was 87 percent greater than its U.S. counterpart. ³⁴

Measurements of labor productivity in the various branches of light industry are difficult to make because of the lack of data; figures on the Soviet industrial labor force, in particular, are scarce. However, some comparative research in labor productivity has been made

³² Production workers (rabochiy) employed in Soviet light industry in recent years were as follows:

	<i>Thousands</i>
1955.....	2,158
1958.....	2,515
1959.....	2,579
1960.....	3,371

The increase of 792,000 workers in 1960 over 1959 reflects mainly the integration of the producer cooperatives into the state industrial system. Source: Narodnoye khozyaystvo 1960 godu, p. 217.

³³ Narodnoye khozyaystvo v 1960 godu, p. 217.

³⁴ S. A. Kheyman, "Organizatsiya proizvodstva i proizvoditel'nost' truda," Moscow, 1961, p. 42.

by both Soviet and United States writers. A comparison of the productivity of labor in the U.S.S.R. and the United States has been made by the Soviet writer A. Kats, which shows that the Soviet output per production worker in the textile and footwear industries ranged from 38 to 44 percent of output per production worker in the United States, when comparing U.S. ratios for 1956 with Soviet ratios for 1957. Data from the Kats study are as follows:

Branch of industry ¹	Unit of measure	Output per worker		U.S.S.R. in percent of United States
		United States (1956)	U.S.S.R. (1957)	
Cotton fabric.....	Linear meter....	20,052	7,712	38.5
Fabrics of rayon, synthetic fiber, and silk.....	do.....	19,668	7,512	² 41.5
Wool fabric.....	do.....	3,411	1,443	42.3
Footwear.....	Pair.....	2,527	1,112	44.0

¹ V. A. Zhamin, [Ed.], "Ekonomicheskoye sorevnovaniye sotsializma s kapitalizmom," 1962, p. 200.

² As reported in the source. Using the data for output per worker as presented in the source actually yields 38.2 percent.

The ratios obtained by Kats, however, are high when compared with results obtained by Western researchers. To the advantage of Soviet statistics, the Kats ratios are based on output of fabric in linear meters which ignore the fact that the U.S. fabrics are wider than Soviet fabrics in all cases. Thus, comparatively, the U.S. output per production worker is understated for each of the various fabrics. The measurements made by Gertrude Schroeder for 1956,³⁵ based on output of fabrics in square meters, shows Soviet output per worker much lower than the Kats figures. For example, the Schroeder comparisons show Soviet output of cotton fabric per worker to be as low as 23 percent of the U.S. output as against 38 percent derived by Kats. Similarly, the ratio for rayon, synthetic, and silk fabrics was 27 percent compared with 42 percent derived by Kats. In spite of the wide variation, however, the low output per Soviet worker shown by both of these measurements reflects the large inputs of labor and the relatively low level of technology of Soviet light industry.

Recognizing the general backwardness of their consumer industries, Soviet officials aspire to emulate the technological level of the more advanced consumer industries abroad, mainly that in the United States. Procurement of textile plants and machinery from Western manufacturers plays a major role in expanding the capacity of the Soviet consumer industry, particularly the textile industry, and has

³⁵ The output per production worker in the U.S.S.R. and the United States were reported as follows (1956):

Commodity	Unit	United States	U.S.S.R.	Ratio (United States = 100)
Cotton fabric.....	Square meter....	24,838	5,798	23
Rayon, synthetic, and silk fabric.....	do.....	22,524	6,164	27
Wool fabric.....	do.....	4,377	1,815	41
Footwear (except rubber).....	Pairs.....	2,672	1,046	39

Source: Gertrude Schroeder, "Some Measurement Problems in Comparing United States and U.S.S.R. Industrial Labor Productivity." Paper presented at the International Conference on Labor Productivity: Lake Como, Italy, 1961.

the added advantage of contributing to the technological advancement of the industry as well. Furthermore, the purchase of machinery abroad lessens the pressure on the machine-building plants at home and at the same time saves costly research and designing time by making possible the outright copying of the most advanced models produced by Western industry.

Although Soviet purchasing officials have indicated a strong interest in and preference for U.S. textile processes, mainly those using synthetic fibers, they also are purchasing textile machinery from firms in West Germany, the United Kingdom, Italy, and Japan, in addition to that imported from the East European satellites. Imports of machinery for light industry, largely textile machinery and equipment, has increased rapidly in recent years, the total in 1961 reaching 57 million rubles as compared with 20 million rubles in 1958.³⁶ By contrast, the U.S.S.R. appears generally less interested in importing technology and equipment for other branches of light industry, such as the garment, knitwear, and footwear branches that in general are even more backward than is the textile branch. Planned improvement in the technology for light industry thus is centered primarily in the spinning and weaving of textiles.

C. INVESTMENT OF CAPITAL

1. *Plans and performance*

Larger amounts of investment funds have been allocated to Soviet light industry for the construction of new plants, the expansion of existing plants, and for modernization and reequipment than have been invested during earlier plans. Investment in state-owned enterprises of light industry, as originally announced in the 7-year plan, totaled 3.3 billion rubles³⁷ or 2.6 times the investment of the preceding 7-year plan. (See table 5.) Still this allocation of funds apparently was not sufficient to support the expansion program scheduled for light industry. In 1960 Khrushchev called for additional investment funds of 2.5 to 3 billion rubles to be allocated, not to light industry alone, but "for the development of the textile and footwear industries (and) their bases for raw materials and machinery construction * * *"³⁸ The division of this investment among the various industries—light industry, agriculture, and the chemical and machine-building industries—was not announced but directly or indirectly, light industry will profit from all these investments.

³⁶ "Vneshnaya trgovlya soyuzov SSR za 1959 god, passim," "Vneshnaya trgovlya soyuzov SSR za 1960 god, passim."

³⁷ In prices of July 1, 1955, adjusted to the new 1961 rate of exchange. The producer cooperatives were still operating outside of state industry when the 7-year plan began and thus their investment plans are not reflected in the original plans for investment in light industry. By the end of 1960, the cooperatives had been integrated into the state system, presumably adding their small share of funds to the investment funds allotted to light industry.

³⁸ "SSSR v tsifrah v 1960 godu," pp. 310, 312.

³⁹ "Tekstil'naya promyshlennost'," No. 10, 1960, p. 1.

TABLE 5.—*Capital investment in Soviet light industry 1952-58 and 1959-65*

	Million rubles ¹		Ratio of planned investment, 1959-65, to actual investment, 1952-58
	Actual investment, 1952-58	Planned investment, 1959-65	
Total light industry ²	1, 260	* 3, 300	2.6 to 1.
Textiles ³	900	2, 500	2.8 to 1.
Cotton.....	385	780	2 to 1.
Rayon, synthetic, and silk.....	74	710	9.6 to 1.
Wool.....	131	385	2.9 to 1.
Other textiles ⁴	310	625	2 to 1.
Knitwear and hosiery ⁴	53	185	3.5 to 1.
Sewn garments ⁵	89	178	2 to 1.
Leather footwear ⁵	218	437	Do.

¹ In prices of July 1, 1955, adjusted to the new 1961 rate of exchange.

² "Tekstil'naya promyshlennost," No. 1, 1959, p. 9.

³ As originally announced. Investment subsequently has been increased.

⁴ Promyshlennoye stroitel'stvo" No. 9, 1959, pp. 2, 3.

⁵ Residual.

⁶ Estimate based on information contained in "shveytnaya promyshlennost," No. 6, 1959, p. 3.

The 1961 investment plan which provided the spectacular increase of 54 percent (reflecting both the new allocations of funds and the transfer of investments from the cooperatives) was underfulfilled, according to official reports, and an increase of only 18 percent achieved over the previous year. The planned increase of 33.5 percent for 1962 ³⁹ does not appear to be especially high considering the need to make up for the investment failures in 1961.

Because of failures in bringing new plants into production on schedule, a reevaluation of the construction program was undertaken as early as 1960. The number of new textile plants scheduled for construction were reduced and emphasis shifted to the expansion of existing plants and to modernization of machinery and production processes.⁴⁰ For example, new textile plants originally planned for construction in 1960 were reduced from 38 to only 15.⁴¹ The rising cost of expanding the capacity for production is most pronounced in the construction of complete new plants (as opposed to modernization) where the costs of building and ancillary facilities are added to those of machinery and equipment.

2. *The rising cost of expansion*

According to official planning figures, light industry is becoming more capital-intensive. A reflection of the cost of expanding the industry is seen in a shift in the marginal capital-output ratio. For the 7-year plan in relation to the preceding 7-year period, the marginal capital-output ratio, derived from Soviet overall plans for light in-

³⁹ Pravda, Dec. 7, 1961.

⁴⁰ Industry officials note that reconstruction of plants in light industry takes one-fourth to one-third the investment of capital as does the construction of new plants, for equivalent increases in output.*

* "Planovoye khozyaystvo," No. 5, 1957, p. 1.

⁴¹ "Ekonomika stroitel'stva," No. 4, 1960, p. 13.

dustry is calculated from official data as 0.40 in contrast to 0.16 for the earlier period, as shown in the following tabulation:

Period	Increments to production ¹ (billion rubles ²)	Capital investment ¹ (billion rubles ²)	Ratio ³
1952-58.....	7.64	1.26	0.16
1959-65 (planned).....	8.33	3.30	0.40

¹ *Tekstil'naya promyshlennost'*, No. 1, January 1959, pp. 2, 3.

² In prices of July 1, 1955, adjusted to the new 1961 rate of exchange.

³ Derived.

Although the ratio for light industry as a whole for the 7-year plan is more than double that for the earlier period, ratios for individual commodities would probably vary considerably. For example, in cotton textile production the change would probably not be as great as in a new and expanding area such as the processing of synthetic fiber into yarns, knit goods, and fabrics. Thus, the relatively high ratio of capital to output reflects the changing technology in textile processes, the substitution of capital for labor, and, in part, the lag between new investment and the resulting gain in output, rather than a definite decline in the marginal productivity of capital. In this branch of industry, major increments to production may be forthcoming in subsequent periods beyond the 7-year plan.

D. PLANNING AND ADMINISTRATIVE WEAKNESSES

Centralized planning for consumer needs, as it exists in the U.S.S.R. has been established in a climate of scarcity; whether such planning can work efficiently where the supply of goods permits a greater degree of consumer choice is yet to be proven. So far there is little evidence that Soviet planning can cope effectively with the problems of growing consumer requirements without broad revisions of present practices in production and supply.

Inventories of consumer goods at the production plants and in the trade network have increased rapidly, almost doubling in the period 1955-60. Stocks of wool fabric, sewn garments, and leather footwear have grown at a particularly rapid rate during this period, although stocks of cotton fabric have grown very little, a development which suggests that cotton may be more acceptable in quality or price, or both, than some of the other commodities. The following tabulation shows the growth of stocks in wholesale trade organizations and in industry for important consumer items in recent years:

[In million rubles]

Commodity ¹	1955	1958	1960
Cotton fabric.....	271	267	282
Wool fabric.....	151	185	289
Silk fabric.....	154	223	274
Sewn goods.....	84	155	324
Leather footwear.....	96	106	214

¹ "Narodnoye khozyaystvo v S.S.S.R. v 1960 godu," p. 699.

Although recent organizational changes in planning and administration of light industry have improved its operation, many problems remain. Through the decentralization of Soviet industry in 1957, the planning functions of the Ministry of Trade for light industry were transferred chiefly to union and republic planning bodies (Gosplans),⁴² while the regional sovnarkhozes took over the administration of the industry and assumed only limited planning functions.⁴³ Later, in 1960, the producer cooperatives (collective groups of artisans and handicrafters) operating outside of state industry were placed under the administration of the local sovnarkhozes, a move which further increased state control over consumer production.⁴⁴

Such administrative changes, while improving the direction of the industry added other problems, particularly in coordination. Production goals and allocations of materials, in large part, are controlled at union and republic levels, whereas the administration and management are mainly the responsibility of the sovnarkhozes. In practice, plant managers claim, the U.S.S.R. Gosplan sets up the aggregate goals for production taking no account of the increased cost of changing the assortment, such as providing more working capital, labor, and the like. Thus, plant managers who vary the assortment in response to orders from the trade organizations may run the risk of failing to meet overall plan goals. Because of this, plants tend to narrow rather than to broaden the assortment of goods produced.

The distribution system for consumer goods in the U.S.S.R. is notoriously inefficient because of the inadequacy of funds, lack of modern merchandising equipment, and because of organizational weaknesses. Consumers are accustomed, but not necessarily reconciled, to alternating gluts and scarcities of goods. In recent years a number of changes have been introduced in planning and administration, particularly in the state trade system, in order to meet more effectively the requirements of consumers.

Since 1957, details of assortment, design, and quality have been worked out by sovnarkhoz officials, and factory managers, working with the trade representatives.⁴⁵ Orders for goods by wholesale and retail organizations on contract include detailed specifications as to the kinds of goods and the delivery dates. While individual store managers have thus gained some voice in determining the kinds of goods they will carry on their shelves, strict observance of contract terms often increases the burden of the producers.

While the assortment of goods is planned regionally or locally, the aggregate goals and the allocations of materials to be used are planned centrally. Plant managers, thus, are obliged to meet output levels set by Gosplan (with penalties for failure) while at the working level they are at the mercy of the trading organizations who place orders, but who also can change these orders according to need, and ultimately to reject the goods if they fail to meet specifications.⁴⁶ Such a multiplicity of organizational authority—interdependent, overlapping, and tangled in detail—presents a range of problems of coordination which planners have been unable to solve in the past and

⁴² Except for long-term planning which in April 1960 was transferred from gosplan, U.S.S.R. to the State Scientific Economic Council (Gosekonomsovet), U.S.S.R.

⁴³ "Planovoye khozyaystvo," No. 1, 1960, p. 91.

⁴⁴ "Ekonomika stroitelstva," No. 4, 1960, p. 13.

⁴⁵ "S.S.S.R. v tsifrah v 1960 godu," pp. 310, 312.

⁴⁶ Pravda, Nov. 28, 1958.

⁴⁷ Ibid.

which may be expected to increase in intensity as the assortment of commodities expands.

IV. SUMMARY

In the U.S.S.R., which now ranks as a leading world power, the consumers' share in the total product of industry is still too small to satisfy their basic requirements, in spite of the gradual rise in the level of living that has been achieved. Under the existing system of priorities for investment funds and other resources since 1950, light industry has grown more slowly than total industry and slower still compared with the machine-building branch of heavy industry. Nevertheless, by 1960, light industrial production had grown to 2.5 times the level in 1950, almost doubling the output of textiles, more than doubling the output of leather footwear and hosiery, and increasing at an even faster rate the output of knitwear and sewn garments. Still these goods were far from adequate when measured either by consumer satisfaction or by the official standards for optimum consumption.

Presently light industry, growing at a rate below that needed to reach the 1965 goal, is producing half the textiles and only a little more than half of leather footwear needed to reach the norms which Khrushchev has pledged to achieve by 1970. Even the production required by the 7-year plan, should it be reached, is still far short of supplying the prescribed norms as shown by the following data per capita.

	1961	1965 plan	Consumption norm
Textiles.....square meters..	29.9	35.2	58.1
Leather footwear.....pairs..	2.0	2.2	3.5

As for apparel, Soviet consumers are receiving much more factory-made clothing than they did in earlier years. Retail sales of sewn garments in 1960 were almost 80 percent above the 1955 level, whereas sales of fabrics in that period increased only 30 percent, indicating that as the supply of factory-made clothing increases, the need for sewing at home and by private seamstresses and tailors is diminishing.

Besides the radios and sewing machines which are fairly common throughout the U.S.S.R., many urban householders in recent years have acquired their own television sets, refrigerators, and washing machines. However, the appliances are of poor design, low quality of construction, and undependable operation to the extent that many of them would not be salable in Western markets. By 1965 Soviet officials estimate that for each five urban households there will be one refrigerator; for each three urban households, one washing machine; and of all Soviet households, urban and rural, half will have sewing machines. Few plants specialize in household appliances, production being relegated instead to subsidiary shops of machine building plants that specialize in other types of machinery.

Soviet light industry recently has suffered a decline in rate of growth, falling from an increase of 9 percent in 1959 to an increase of 4 percent during the first 6 months of 1962 over the corresponding period in 1961. The present rate of growth thus is below the 6 percent aver-

age annual increase required to meet the 1965 goal and is also below the 7 percent achieved annually in the preceding 7-year period. Contributing heavily to the decline in rate of growth are shortages of raw materials and failures in achieving the investment plans.

That Soviet agriculture may be unable adequately to meet the requirements of the textile industry in the future is a probability which planning officials apparently accept. The output of agricultural fibers recently has increased at a declining rate, increases for both cotton and wool falling in 1960 and 1961 far below the increase achieved in 1959. Light industry thus must rely more heavily on the nonagricultural types of textile fibers—rayon and the various types of synthetic fibers which are now being developed.

The low technological level at which Soviet light industry operates is reflected by high inputs of labor and a relatively low investment of capital. Light industry's share of investment, even when combined with the food industry, is still below the shares, respectively, of the machine-building, ferrous metallurgical, and oil and gas industries for both the 7-year plan and the 7-year period preceding it. Because of its technological lag, the Soviet light industry compares poorly with that in the United States, the annual output per Soviet production worker amounting to less than half of that of his U.S. counterpart. To help in raising the level of technology, the U.S.S.R. is importing modern machinery and equipment from firms in Western countries—mainly the United States, the United Kingdom, West Germany, and others—as well as from the East European satellites.

On balance, the Soviet consumers' lot has improved gradually over time, but the prospects are that future gains also will be gradual in spite of the growing desires of consumers for more and better goods. Soviet light industry, which continues to build gradually on achievements of past years, is becoming increasingly burdened with problems of expansion. To increase the capacity for production and to provide enough raw materials to support it, is the task of the present and of the future.

RECENT TRENDS IN LABOR CONTROLS
IN THE SOVIET UNION

BY

EDMUND NASH

RECENT TRENDS IN LABOR CONTROLS IN THE SOVIET UNION

Since the time of the first post-Stalin 20th Congress of the Communist Party, held in February 1956, an event which has been called "the turning point in the life of our party and of the Soviet people,"¹ the Government of the U.S.S.R. has carried out an unprecedented relaxation of labor controls, accompanied by the adoption of measures aimed at gradually improving working and living conditions. This policy of relaxation and beneficial measures may be accounted for partly by the change in party leadership after the death of Stalin, with the apparent realization by the new leaders that such a policy would be more profitable than the previous one of compulsion and terror, and partly by the growth of the Soviet economy to a stage where more resources can be allocated to the production of consumer goods and to the extension of consumer services.

The two subsequent Congresses—the 21st in January-February 1959 and the 22d in October 1961—continued the policies of the 20th Congress in stressing the need for expanding the national economy, for increasing the productivity of labor, and for strengthening the political indoctrination of the workers, especially the new generation. It was the 22d Congress which adopted the Communist Party program for the completion of the transition from a Socialist to a basically Communist society in the Soviet Union by 1980. This program reiterated the accepted policies that—

labor for the welfare of society is the sacred obligation of every man * * *. All workers must be trained on the best examples of labor, on the best examples of administering the public economy.²

Although the major relaxations in Soviet labor controls were legislated after the 20th Congress of the Communist Party in 1956, there was apparently some earlier relaxation in the form of the nonstrict enforcement, since about 1951, of the decree of October 2, 1940, providing severe penalties for tardiness at and absence from work.³ A formal relaxation was the decree of March 18, 1955, which abolished the draft of youth (boys, 14 to 17 years of age, and girls, 15 to 17) into trade and railroad schools. The decree stated that the draft was no longer necessary because of the "great striving of young people to obtain technical and trade education."⁴ It would appear that this "striving" reflects the effect of Government and Party propaganda and pressure—moral and economic—on the young people.

¹ Resheniya XXII s'ezda KPSS-boevaya programma deyatel'nosti sovetskikh profsoyuzov (The Decisions of the 22d Congress of the CPSU—the Militant program of Soviet Trade Union Activity). Profizdat, Moscow, 1962, p. 5.

² O kommunisticheskom otnoshenii k trudu (The Communist Attitude Toward Labor), Moscow, 1962, p. 3.

³ For discussion, see "Recent Trends in Soviet Labor Policy," by Jerzy G. Gliksman, *Monthly Labor Review*, July 1956.

⁴ "Principal Current Soviet Labor Legislation," a compilation of documents. BLS Rept. No. 210, U.S. Department of Labor, January 1962, p. 68.

THE 20TH PARTY CONGRESS AND THE NEW LABOR PROGRAM

It was during the 20th Party Congress in February 1956 that Party leader Nikita Khrushchev announced a specific program to improve working and living conditions which was gradually implemented by the following more-important legislation, so unusual for the Soviet Union in volume and nature that it merits detailed review.⁵

The decree of March 8, 1956, cut the length of the working day from 8 to 6 hours on Saturday and on days preceding holidays (most Soviet workers work 6 days a week).

The decree of April 25, 1956, abolished the penal liability of workers for unauthorized absences or quitting; however, workers are required to give 2 weeks' notice before quitting. (Subsequently, the decree of March 4, 1960, condemned the bureaucratic demands for numerous documents at the time a worker applies for a new job and declared the worker's passport and his workbook to be sufficient documents. A person without a workbook must submit with his passport a certificate concerning his last employment from the management of his apartment building or from the village council.)⁶

The decree of May 26, 1956, reduced the workday of workers 16 and 17 years of age from 7 to 6 hours (15-year-old trainees have a 4-hour workday).

In June 1956, consumers were authorized to return defective and certain Unsatisfactory Goods to stores.

The state pensions law of July 14, 1956, raised the pension rates for the lower categories of pensioners (as a result, the average of all pensions reportedly increased about 50 percent). The minimum old-age pension was set in present-day rubles at 22.5 rubles (about \$25) a month in rural areas and 30 rubles (\$33) in towns. The maximum old-age pension is 120 rubles (\$132) a month.

As of September 1, 1956, tuition fees were abolished for students in high schools, vocational schools, and higher educational institutions.

The decree of September 8, 1956, fixed the minimum basic monthly pay, effective January 1, 1957, at the present equivalent of 27 rubles (\$30) in rural areas, and at the present equivalent of 30 rubles (\$33) in urban areas. In some important industrial areas the minimum was set at the present equivalent of 35 rubles (\$39). Exempted from the income tax were earnings of up to the present equivalent of 37 rubles (\$41).

The decree of December 13, 1956, forbade the hiring of juveniles under 16 years of age, except for training purposes (15-year-olds only).

On January 12, 1957, standard factory and office regulations concerning employees were approved by the U.S.S.R. Council of Ministers' State Committee on Wage and Labor Questions (this committee had been created on May 24, 1955). The stated purpose of these regulations was "to assure the strengthening of socialist discipline of labor, the proper organization and the safe conditions of work, the full and efficient utilization of working time, the increase in productivity of labor, and the production of good quality merchandise." These regulations reaffirmed that no worker may be hired without the submission of his internal passport and his workbook (the workbook was introduced by the decree of December 20, 1938, and contains the

⁵ Most of this legislation is presented in "Principal Current Soviet Labor Legislation." (See footnote 4.)

⁶ Pravda (Truth, Communist Party daily), Mar. 4, 1960.

worker's identification, a record of his education and training, a list of all the jobs he has had, the reasons for being separated from all previous jobs, and a record of any rewards for outstanding work).

Workers are obliged, among other things, to come to work on time, to fulfill work quotas and to strive to overfulfill them, to protect factory property, to avoid waste, to observe fully safety and fire regulations, and to keep their working places clean. Management may impose the following penalties for the violation of labor discipline (the most frequent serious violation being unjustified absence from work): (1) a warning, (2) a reprimand, (3) a severe reprimand, or (4) the transfer of the employee to a lower paid job, or one with lesser responsibilities, for a period of up to 3 months. Management has also the option of transmitting the labor discipline violation case to the comrades court for review (this court of 5 to 15 members is elected at a general meeting of employees in enterprises with at least 100 employees). In addition to disciplinary authority, the management has the following incentive measures at its disposal: (1) an expression of appreciation, (2) an award of an honorary certificate, (3) the placing of the employee's name in the book of honor or on the board of honor, (4) the granting of the title of best worker in his type of job, (5) a money award, and (6) an award of a valuable gift.

On January 31, 1957, an improved procedure for the settlement of workers' disputes or grievances was decreed. Wages, hours of work, and working conditions are set by law and are not subject to dispute; nor are penalties by management for violation of labor discipline. Among the more important subjects concerning which disputes are permitted are dismissal or transfer of worker; proper job classification of a worker and the application of the proper wage scale; questions of payment for overtime, sick leave, defective products, and other work; severance pay; and deductions from wages for material damages to factory property. The disputes are normally handled by labor disputes boards, which are composed of an equal number of permanent representatives of the trade union in the enterprise and of the management. An employee who is dissatisfied with the decision of a labor disputes board may appeal to a public court for a review of his dispute. Top level managerial and technical personnel, editors of publications, teachers in higher educational institutions, and higher level trade union personnel cannot take their disputes in connection with dismissals or transfers to labor disputes boards but must appeal to "higher authorities," apparently the public courts.

On February 1, 1957, disability benefits amounting to average full earnings were extended to all workers temporarily disabled or ill from causes connected with their work (previously those with less than 6 months of service were not qualified to receive benefits).

On April 19, compulsory bond purchases for 1957 were cut approximately in half and ceased to be compulsory thereafter; however, the redemption dates of all bonds bought by workers over the past 20 years were extended for 20 years.

On July 13, a ban, with certain exceptions, was decreed on underground mining work by women.

The decree of July 31, announced an all-out program to eliminate the "important national problem" of the housing shortage in the Soviet Union within the next 12 years.

On December 18, 1957, the Presidium of the Supreme Soviet of the U.S.S.R. decreed effective January 1, 1958, the abolition of the tax on earnings of single women and of persons with one or two children.⁷

The year 1957 ended with an amnesty decree shortening or abolishing the sentences of prisoners "who do not constitute a great danger to the state."

The two major labor developments in 1958 were the announcement on April 22 of the policy of the gradual introduction during 1958 and 1959 of the 7-hour workday into heavy industry and the Decree of July 15 extending the functions of Soviet trade unions by increasing the powers of the executive committee of the trade union local.

The latter decree empowered the executive committee: (1) To participate in the drafting of production and construction (including workers' housing) plans and in the determination of work quotas and wage payments; (2) to hear reports from the management on the fulfillment of production plans and management's collective agreement obligations (as before, a collective agreement spelling out the obligations of management and of the trade union will be signed periodically by the trade union local and management); (3) to control general meetings of workers and the technical and production conferences; (4) to check on management's observance of labor laws, on the distribution of housing space to workers, and on the efficient operation of various consumer services; (5) to permit the discharge of a worker only with its consent; (6) to criticize and recommend the discharge or disciplinary punishment of managerial workers who are inefficient or careless of workers' rights; (7) to be obligatorily consulted by management in the appointment of workers to managerial positions at all levels, and (8) to continue to administer the social security laws.

On December 25, 1958, a new Soviet educational law combining school and on-the-job training was promulgated. This law provided primarily for the replacement, "within 3 to 5 years," of the then existing 7-year elementary education system with an 8-year system. Under the new system, most of the elementary school graduates (aged 15 and 16) are to be directed to factory and other work. After working for 2 years, they have the right to make an application for entry into secondary school (grades 9 through 11). While attending school, students must spend some time during the week in on-the-job training. Only a small proportion (very small compared with the U.S. proportion) of the secondary school graduates are accepted in regular (day) higher educational institutions.⁸

THE 21ST PARTY CONGRESS AND RESULTANT LABOR LEGISLATION

By the time the 21st Congress of the Communist Party assembled in January 1959, most of the basic labor legislation to appear in the recent period (1956-62) had been enacted and only a few noteworthy laws remained to be adopted in 1960 and 1961. However, the decisions of this Congress relating to labor policy were so considerable that they occasioned a collection of articles in book form devoted to a discussion of existing and proposed labor legislation in various fields.⁹ In the

⁷ Pravda, Dec. 21, 1957.

⁸ For discussion, see "Education and Professional Employment in the U.S.S.R.," by Nicholas DeWitt, Washington, 1961, pp. 19-21 and 260-262.

⁹ "Trudovoe pravo v svete reshenii XXI s'ezda KPSS" (Labor Law in the Light of the Decisions of the 21st Congress of the Communist Party of the Soviet Union), a collection of articles, N. Aleksandrov, editor, Moscow 1960, 295 pages.

first article of this book, "The Role of Labor Law in the Expanded Building of Communism," by N. G. Aleksandrov, it was pointed out that the 21st Congress "marked the entrance of our country into the period of developed construction of a Communist society." During this period, it was stressed, must be created the necessary prerequisites for the universal transition to the acceptance of "labor as the need of a healthy organism" (Lenin's phrase). The prerequisites were listed as: (1) the continued technical progress in the whole national economy on the basis of the priority development of heavy industry; (2) a fundamental lightening of labor (particularly by shortening the work-day and introducing mechanization) and the improvement of the safety of workers by means of greater mechanization and automation in production; (3) the progressive abolition of the distinction between mental and physical work in connection with raising the cultural-technical level of workers and the closer union of education with production; and (4) the further strengthening of labor discipline on the basis of the development of moral incentives to work and the augmenting of the interest of workers in greater production by corresponding immediate material rewards for the results of their work.¹⁰ The last point would appear to contradict the Communist claim of the gradual disappearance of wages as an incentive to work during the period of transition from a Socialist society to a Communist society wherein would prevail the law of "from each according to his ability, to each according to his needs."

The 21st congress reaffirmed, furthermore, that the maximum possible increase in labor productivity was the main condition for assuring the economic growth under the 7-year plan (1959-65) of the Communist society, and set forth in its decisions the following basic ways to achieve this (ways obviously designed to induce the increased cooperation of workers):¹¹ (1) by further shortening the workday; (2) by completing the regularization of wages (that is, to have them reflect more closely production quotas); (3) by further improving the protection of workers (through safety techniques, industrial sanitation); (4) by combining school education with work in production; (5) by improving social security benefits; (6) by increasing the role of trade unions in promoting labor discipline and improving labor conditions; and (7) by enforcing the labor rights of workers.

The post-1956 body of legislation, reviewed above, appears to have been implementing in varying degrees the 21st congress seven points, as the phrases "by further," "by completing," and "by increasing" clearly indicate in several cases.

A minor but significant piece of legislation in connection with the 21st Congress recommendation to improve social security benefits was the decree of January 25, 1960, which relaxed indirect controls on job turnover by providing that workers who had left their former jobs at their own request will be paid benefits in all cases of temporary disability, regardless of the length of time worked at the new place.

On May 7, 1960, the Supreme Soviet of the U.S.S.R. adopted a law providing for a 7-hour or shorter (for example, 6 hours for underground miners) workday by the end of 1960. As a result most workers are now formally on a 41-hour workweek (five 7-hour workdays and 6 hours on Saturday). The 21st Congress had approved the Govern-

¹⁰ *Ibid.*, p. 6.

¹¹ *Ibid.*, pp. 6-7.

ment's plan to achieve a 40-hour workweek in 1962 by making Saturday a 5-hour workday.¹² Overtime work in the Soviet Union has long been forbidden except in certain special situations, and then permission must be obtained from the factory or local trade union committee.

In this connection it is interesting to note that at the June 1956 International Labor Conference in Geneva, a Soviet Government delegate announced that the Soviet Union by becoming the second country to ratify the 1935 International Labor Organization Convention, which approves the 40-hour workweek in principle, brought it into effect.

Some success has been achieved in decreasing the disparity between the highest and lowest basic wage rates based on skills in various industries.¹³ However, the recommendation of the 21st Congress to raise minimum monthly wages from the present 27 to 35 rubles (\$30 to \$39) to 40 to 50 rubles (\$44 to \$55) has not as yet been implemented, although some easement has been afforded the lower paid workers by the ill-fated law of May 7, 1960, providing for the gradual abolition of the tax on wages in six annual steps from October 1960 to October 1965. On October 1, 1960, the income tax and the bachelor's and small family tax was abolished for those earning under 50 rubles (\$56) a month, and on October 1, 1961, for those earning under 60 rubles (\$67).

In September 1962, the Government announced the suspension of further income tax abolitions and reductions, because of its need for additional budget appropriations for defense and other purposes.

As for the recommendation of the 21st Congress to combine school-work by students with work in production, especially on the university level, the operational details were yet to be worked out, preferably on the basis of legislation and not administrative action.¹⁴

The recommendation of the 21st Congress to enlarge the role of trade unions in increasing production required no new enabling legislation. The subsequently revised trade union constitution of March 27, 1959, summarized the legal obligations and powers of the trade unions in this respect.¹⁵ Primarily the trade unions are obligated to encourage workers to fulfill and overfulfill production plans; for this purpose they are obligated to promote competition in production among workers and to check on labor discipline (namely, on absenteeism, tardiness, and negligence). The regime's stated goal is gradually to supplant management-imposed disciplinary penalties by persuasive informal appeals to individuals by trade union officials, stressing the social and moral responsibilities of the violators of labor discipline.¹⁶

That persuasion is not yet sufficient to elicit cooperation from all Soviet citizens has recently been made clear by the Decree of May 4, 1961, entitled "Concerning the Intensification of the Fight Against Persons Who Avoid Socially Useful Work and Lead an Antisocial Parasitic Way of Life." This decree provided that thenceforth, by a decision in each case of a public court, such persons will be deported to specially designated localities where they must work for a period of from 2 to 5 years. In some cases such a sentence may be handed down

¹² *Ibid.*, p. 7.

¹³ For discussion, see "Purchasing Power of Workers in the U.S.S.R.," *Monthly Labor Review*, April 1960, p. 363.

¹⁴ "Trudovoe pravo v svete reshenii XXI s'ezda KPSS" (Labor Law in the Light of the Decisions of the 21st Congress of the Communist Party of the Soviet Union), a collection of articles, N. Aleksandrov, editor, Moscow, 1960, p. 13.

by the collective of workers at an enterprise, workshop, institution, or collective farm. Persons who are subject to such a penalty are, reads the decree, "able-bodied adult citizens who avoid socially useful work and derive unearned income from the exploitation of land plots, automobiles, or housing, or commit other antisocial acts that enable them to lead a parasitic way of life," and "persons who take jobs * * * only for the sake of appearance and live on funds obtained by non-labor means."¹⁷

The preceding law points to the existing system of "corrective labor colonies" in the Soviet Union. However, the prisoner population in these colonies appears to have decreased considerably in recent years, as a result of amnesties, such as the one of 1957 mentioned earlier, and of new legislation providing that only courts of law may convict and send persons to such colonies. Whereas before 1957 the forced laborers could be counted in millions, now it is probable that they could be counted in hundreds of thousands.¹⁸

When the 21st Party Congress expressed its concern about the enforcement of the rights of workers, it apparently had uppermost in mind the prevention of the reportedly frequent arbitrary illegal (that is, unauthorized by the trade union) discharges and transfers of workers, without their consent, by management.¹⁹ Other reported violations of workers' rights include the practice by managements of arbitrarily directing workers to work overtime or on Sundays without the prior approval of trade unions, and the introduction of factory machinery without the proper safety guards.²⁰

THE 22D CONGRESS AND LABOR POLICIES FOR THE FUTURE

By the time the 22d Congress of the Communist Party convened in October 1961, all the major legislative concessions and benefits to labor, for the period 1956-62, had been made. However, there remained evident the pressing need for greater implementation of existing legislation.

The discussions and decisions of the 22d Congress on the whole, therefore, reaffirmed among other things the labor policies approved by the two previous congresses and emphasized the most important tasks of the immediate future, embodied in the Congress-adopted 20-year program to construct the material-technical base of communism in the Soviet Union.

Of most immediate urgency continues to be the fulfillment, and a hoped-for overfulfillment, of the 7-year Economic Plan (1959-65). For the purpose of achieving this, and beyond that, the more distant goals in the 20-year program (1960-80), Party leader Khrushchev, in his report to the Congress, called upon the Soviet people for a demonstration of "real heroism" and for the acquisition of the necessary know-how in order to increase, in every way possible, the productivity of labor. He stressed the need, above all, for the introduction of modern techniques, mechanization, and automation in production. The achievement of these objectives would require, he said, more electrification

¹⁷ See "Principal Current Soviet Labor Legislation," Bureau of Labor Statistics Report No. 210. Washington, D.C., 1962. pp. 112-119.

¹⁸ *Trudovoe pravo v svete reshenii XXI s'ezda KPSS*, op. cit., p. 17.

¹⁹ "Principal Current Soviet Labor Legislation," pp. 125-127.

²⁰ For discussion, see Paul Barton, "An End to Concentration Camps?" *Problems of Communism*, Washington, D.C., No. 2, March-April 1962, pp. 38-46.

²¹ *Trudovoe pravo v svete reshenii XXI s'ezda KPSS*, op. cit., p. 17.

²² *Trud* ("Labor," the trade union daily), Moscow. November 25, 1961, p. 2.

and, what he called "the problem of problems," a high level of capital investment. In this investment program, heavy industry would continue to have priority for defense purposes and because of its "decisive role in the creation of the material-technical base of communism."²¹

The regime's proclaimed imperative need for continuously increasing labor productivity has made it necessary to continue to exhort the workers to observe labor discipline, to work diligently, to improve their skills, to compete among themselves with a view to raising the quantity and the quality of production, and to economize on raw materials, fuel, and other production expenditures. Management, on the other hand, has been asked, in addition to providing technological improvements, to "improve" (which usually means "to raise") the production quotas of workers, and to offer bonuses for successful production.²²

One of the latest developments in the drive to stimulate production has been "the movement for Communist labor," promoted by the Soviet trade unions. At the 22d Congress, Victor V. Grishin, chairman of the All-Union Central Council of Trade Unions reported that in the 3 years of its existence this movement had grown to include some 20 million persons (out of a total of some 63 million wage and salary earners in the Soviet Union), that some 187,000 labor brigades (teams of workers) had won the title, "Communist Labor Collective," and that over 3 million persons had won the title "Shockworker of Communist Labor."²³

In his report to the 22d Congress, the First Secretary of the Central Committee of the Communist Party, Nikita Khrushchev, emphasized that the main function of the trade unions "must be the struggle to realize the program of Communist construction," and that the trade unions will increasingly be assigned tasks now performed by Government agencies.²⁴

The trade union chief, V. Grishin, summarized the main tasks of the trade unions under the new program as follows: to develop further worker competition not only for increasing the volume and quality of production but also for lowering the costs of production; to inspire the workers with enthusiasm for Communist ideals and goals; to pay more attention to meeting the material and cultural needs of everyday living; and to draw workers into greater participation in the administration of factory, Government, and social activities. He acknowledged the subordination of the unions to Communist Party control by asserting that "the trade unions are profoundly grateful to the Communist Party, and to its Central Committee, for their day-to-day help and support, for their tremendous solicitude and trust."²⁵

The trade unions have also been assigned the added responsibility of attracting housewives into work by promoting consumer services to ease their housework (such as take-home meals from factory and public kitchens) and the establishment of nurseries at working places and kindergartens elsewhere where working mothers may leave their young children. Under discussion is proposed legislation authorizing

²¹ Pravda, October 18, 1961, p. 5, and November 2, 1961, p. 5.

²² Pravda, Nov. 2, 1961, p. 5; Trud, Oct. 4, 1962, p. 2.

²³ Trud, Oct. 22, 1961, p. 2.

²⁴ Pravda, Oct. 18, 1961, p. 10.

²⁵ Trud, Oct. 22, 1961, p. 2.

factories to employ women in part-time work. On March 26, 1956, the Government made it economically advantageous for women workers to continue in their jobs by extending maternity leave with pay from 77 to 112 days. In 1959, 48 percent of all wage and salary workers in the Soviet Union were women.²⁶ (In the United States, in the same year, about 33 percent of all the workers were women.)

In return for the expected increase in their labor effort, the workers have been promised a set of grandiose future benefits on a scale that, as claimed in the program, would eventually make their level of living the highest in the world.²⁷ They have also been assured that there will be a stronger application of the principle of the material self-interest of the workers (a principle originally propounded by V. I. Lenin, according to which the higher the skill of the worker and the greater his production, the more he gets paid).²⁷ This policy will continue to be in force, according to Khrushchev, "as long as an abundance of material goods has not been created."²⁸ Accordingly, it has been stated that one of the main lines of development in Soviet labor law will be the enactment of measures to improve the system of wage payment and to combine the use of material and moral incentives to work.²⁹ In March 1961, some 63 percent of the Soviet wage earners were paid on the piece-rate basis.³⁰

The specified benefits promised within 10 to 20 years by the program include the following: ³¹ free meals in schools and at places of work; the reduction of the workday of most workers from 7 hours to 6 hours and a 35-hour workweek (there will be for most workers 6 workdays a week as at the present time); the improvement of working conditions by the introduction of modern safety techniques and health standards; the abolition of nightwork except for indispensable public services; the raising of the annual minimum vacation from 2 weeks to 3 weeks (and eventually to 1 month); an apartment for every family, eventually rent free; free medicines; and free transportation. An apartment for every family is specified because in the fall of 1962, the Government suspended the allocation of lots and the granting of loans for the building of private urban homes in the larger cities.

Thus far, the Government has delayed the transition from the 41-hour workweek to a 40-hour workweek, though preparations are being made for this.³²

At the end of the 20-year Program, according to the official claim, wages—which will still be paid according to the amount of work done, but with the level of the lowest wage rates nearer the level of the top rates—will account for only about half of the workers' income and benefits, in view of the various services, benefits, and pensions that will be paid for by the state. This, it has been asserted, will be an indication of the increasing implementation of the Communist principle of distribution of goods to the people according to need.³³

Another benefit Khrushchev was reported as promising at the 22d Congress was the improvement of the quality and quantity of consumer

²⁶ *Sotsialistichesky trud* ("Socialist Labor," a monthly periodical of the U.S.S.R. Council of Ministers), Moscow, February 1961, p. 36.

²⁷ *Kommunist*, tri-weekly magazine of the Communist Party of the Soviet Union, Moscow, No. 16 (November), 1961, p. 71.

²⁸ *Pravda*, Oct. 18, 1961, p. 8.

²⁹ *Trud i zarobotnaya plata* (Labor and Wage Payment, a monthly). September 1962, p. 36.

³⁰ *Vestnik statistiki* ("Statistical Herald," a monthly), Moscow, No. 6, 1962.

³¹ *Kommunist*, *ibid.*, pp. 73-76.

³² *Trud i zarobotnaya plata*, September 1962, p. 33.

³³ *Ibid.*, pp. 72 and 76.

goods and services. As for goods, he acknowledged the shortage of meat, milk, clothing, furniture, and other consumer goods, saying in addition that—

The time has come to face more seriously the question of a sharp improvement in the quality of all goods.

As for services, he asserted that—

questions of consumer services are not trifles, not secondary matters. The mood of the people and the productivity of their labor depend on the extent and quality of consumer services.³⁴

The foregoing promises and expressions of concern reflect what the regime unceasingly proclaims to be a basic Communist principle—that the welfare of the people is the paramount consideration. Trade union leader Victor Grishin echoed this sentiment when he said:

Every line of the new program is imbued with the deepest Leninist solicitude for the happiness and welfare of the Soviet people.³⁵

SOME PROBLEMS OF ENFORCEMENT OF LABOR CONTROLS

It would appear, however, that despite all the promises the Soviet people are still not responding ardently enough to the demands of the new Program. Pravda, the Communist Party daily, on October 6, 1962, called for more Communist ideological educational activity by Party organs among the masses, saying:

The higher the [Communist] awareness of the workers, the fuller and broader will be their creative activity, the faster and more successfully will the Program of the Communist Party of the Soviet Union be realized.

One of the more striking manifestations of a lack of "awareness" among the workers, or of noncooperation with the regime's policies, is the reluctance of many Soviet citizens, especially graduates of secondary and college-level technical and professional schools, to accept, and continue in, job assignments in the more remote regions of the country, where living conditions are far inferior to those of most of the European part of the Soviet Union. For example, Pravda, on June 14, 1962, reported that only half of the number of teachers assigned by universities in the Russian Republic to Tadjikistan schools in 1961 arrived there and that in recent years about the same number of specialists (i.e., graduates of secondary and college level schools) left Kazakhstan annually as were sent there.

Under Soviet law, graduates of secondary specialized and college-level professional schools are obligated to work in places to which they are assigned for the first 3 years after graduation. They cannot quit by giving management 2 weeks' notice. This also applies to graduates of trade schools who must work where assigned for the first 4 years. If any such graduate quits his job without the permission of management before his 3 or 4 years are up he will not be liable criminally but will suffer not only moral condemnation by Party-directed "social groups" and individuals but also serious economic consequences, for the management of his enterprise before surrendering his workbook (which must be submitted when a new job is applied for) will note in it that he was discharged for absence without valid reasons, and the management will have the right to recover from him the expenses

³⁴ Pravda, Oct. 18 and 23, 1962.

³⁵ Trud, Oct. 22, 1961, p. 2.

(such as transportation and per diem allowances) involved in getting him to the place of work after graduation.³⁶ One important feature of the Soviet labor control system is that workers who are grievously disaffected with the prevailing system and living conditions are not permitted, however much they might want it, to emigrate from the Soviet Union.

Closely related to the problem of control is the reportedly very important problem of the economic allocation of labor resources. A national system of labor exchange offices does not exist. The main agency for considering problems in this field is the Scientific-Research Institute of Labor, an organ of the U.S.S.R. Council of Ministers' State Committee on Questions of Labor and Wages (created on May 24, 1955), which intends in the next few years to perform considerable research throughout the country and to analyze the comparative effectiveness of the utilization and interregional distribution of labor resources.³⁷ Of interest in this connection is the report that many workers who have received degrees in specialized fields of study from night and correspondence schools on the secondary specialized and college level often continue in the jobs they have held, making no use whatever of their acquired specialties.³⁸

The above survey of the major Soviet labor legislation of the past half dozen years clearly indicates that the regime has expended considerable efforts in its drive to win the approval of the workers by relaxing the severity of labor controls and by persistently and repeatedly stressing its intention to improve gradually working and living conditions. All the recent labor legislation herein discussed, as well as all previous legislation, has been scrutinized for possible amendment and extension in the preparation of a draft of a new labor code which is now under discussion in the Soviet Union. As for proposed changes—the draft of the code reportedly includes a provision authorizing enterprises to give part-time work to physically handicapped persons and to housewives taking care of young children or of other dependents incapable of working; as a further step in the direction of relaxation, it omits the prevailing severe legal penalties against workers who have damaged factory property; and it extends to 4 months (at the present time, it is 2 months) the right to his job of a worker out on sick leave.³⁹

Although the list of existing and planned ameliorative legislation on labor reviewed herein is doubtless impressive, there always arises the question as to how effectively the basic legislation has been and is being implemented, and whether this legislation is of an enduring character. In the past, some legislation on the books apparently received no implementation; for example, Article 129 of the 1922 Labor Code of the Russian Soviet Federated Socialist Republic, forbade the employment of women in underground work; however, 35 years later the U.S.S.R. Council of Ministers, by a decision of July 13, 1957, found it necessary to ban once more, still with certain exceptions, underground mining work by women. In other cases there has been evident instability, for favorable labor legislation has been countermanded. For instance, the Law of May 7, 1960, providing for the

³⁶ *Chto nuzhno znat' rabochim i sluzhashchim o trudovom zakonodatel'stve* (What the Workers Need To Know About Labor Legislation). Moscow, 1960, pp. 40-41.

³⁷ *Trud i zarabotnaya plata*, No. 8, 1962, p. 6.

³⁸ *Ibid.*, No. 9, 1962, p. 37.

³⁹ *Trudovoe pravo v svete*, etc., pp. 19-20.

gradual abolition of the income tax by 1965 was suspended in the fall of 1962.

Some labor legislative trends have been reversed; for instance, there was a series of annual across-the-board price reductions in state stores from 1947 to 1954; after that, prices of basic consumer goods remained relatively stable but only until June 1, 1962, when the prices of meat were raised 30 percent and the prices of butter, 25 percent.⁴⁰ These price increases apparently were a serious matter to the Soviet people, for they reportedly were the cause of protest rallies and riots in several cities which resulted in the death of dozens of people.⁴¹

There also appears to be a certain laxity in the implementation of Soviet laws and regulations. This can perhaps best be illustrated by Article 21 of the Constitution of the Trade Unions of the U.S.S.R. which provides that the congress of the trade unions be convened not less than once in 4 years. But the 12th congress (March 1959) was convened almost 5 years after the 11th congress (June 1954), and the 11th over 5 years after the 10th (April 1949). This, however, is an improvement by Soviet standards, for 17 years had elapsed between the 9th and 10th trade union congresses. This element of delay would appear to permeate the Soviet labor field, and may be illustrated by another example: The 21st Party Congress in January-February 1959 called for an early raising of the minimum wage rates by another step; yet by October 1962 nothing had been done in practice.

Despite the uncertainties of implementation of some specific instances of Soviet labor legislation, as indicated above, the bulk of Soviet labor laws would appear to be more or less effectively enforced especially where the legal provisions are so specific that workers can assert their claims by appealing to their trade unions, to the management, to the factory labor disputes boards, and to the courts. In the past, and to a large extent today, the shortage of resources has prevented the widespread implementation of certain labor legislation—especially that providing for the introduction of modern safety equipment and the improvement of working conditions, and that providing for adequate housing space for workers.

This appears to be confirmed by the practice of the Soviet press to gloss over the present difficult and in many ways unpleasant—for most Soviet people—working and living conditions and to dwell on or to play up benefits that have been promised to be granted or gradually introduced in the future—that is, for example, by the end of the 7-year plan in 1965, or by the end of 1980 (under the 20-year Party program), or even later, at some distant time when the promised “completion of the building of the Communist society will take place.”⁴²

⁴⁰ Tables showing the trend in the purchasing power of Soviet workers and a recent comparison with the purchasing power of United States workers are attached.

⁴¹ New York Times, Oct. 8, 1962, p. 1.

⁴² Program of the Communist Party of the Soviet Union. Pravda, Nov. 2, 1961, p. 5.

APPENDIX

TABLE A.—Approximate worktime required to buy selected foods at State-fixed prices in Moscow, Apr. 1, 1928, Apr. 1, 1953, Aug. 15, 1959, and June 15, 1962

Food	Prices (in rubles)				Quantity consumed per week by a family of 4 ⁴	Approximate worktime for weekly consumption ⁵						
	1928 ¹	1953 ²	1959 ³	1962 ³		In hours				1953 ² as percent of 1928	1959 ³ as percent of 1928	1962 as percent of 1928
						1928 ²	1953 ²	1959 ²	1962			
Rye bread, 1 kilogram.....	0.080	1.35	1.30	0.13	9.84 kilograms.....	2.71	4.52	3.20	2.84	167	118	105
Potatoes, 1 kilogram.....	.085	.75	1.00	.10	12.16 kilograms.....	3.56	3.10	3.04	2.70	87	85	76
Roof, 1 kilogram.....	.870	12.60	12.00	1.60	3.68 kilograms.....	11.04	15.77	11.04	13.08	143	100	118
Butter, 1 kilogram.....	2.430	26.75	27.00	3.60	.44 kilogram.....	3.69	4.00	2.97	3.52	108	80	95
Sugar, 1 kilogram.....	.620	9.09	9.40	.89	1.80 kilograms.....	3.85	5.57	4.23	3.56	145	110	92
Milk, 1 liter.....	.063	2.20	2.20	.29	4.96 liters.....	1.08	3.71	2.73	3.20	344	253	296
Eggs, per 10.....	.200	6.88	8.00	.80	6.40 eggs.....	.44	1.50	1.28	1.14	341	200	259
All 7 foods.....						26.37	38.17	28.49	30.04	145	108	114

¹ Official Soviet prices from the People's Commissariat of Labor, as transmitted to the International Labor Office (see International Labor Review, vol. 18, October–November 1928, pp. 657–660). These prices were lower than those in private trade which played a large role in workers' consumption, and their use may somewhat inflate the workers' real purchasing power at that time. On the other hand, it appears that Moscow food prices were noticeably higher than the national average in 1928; but Moscow goods were superior in quality. (See Naum Jasny, "The Soviet Economy During the Plan Era," Stanford, Calif., Stanford University Press, 1951, p. 105.)

² Data from "Purchasing Power of Soviet Workers in the U.S.S.R." (in Monthly Labor Review, April 1960, pp. 359–364).

³ Prices in Moscow state stores during June 1962, based on information appearing in the Soviet press and in reports of U.S. visitors to the U.S.S.R.

⁴ Weekly consumption figures per person in 1928 from International Labor Review, *ibid.*, p. 659; the average worker's family in 1928 consisted of 4 persons. (See Solomon Schwarz, *Labor in the Soviet Union*, New York, Praeger, 1952, p. 145.) The same percent relationship between 1928 and 1962 would be obtained if the quantities for 1 person were used instead of the quantities for a family of 4.

⁵ Worktime is computed by multiplying quantity consumed by price and dividing the product by average hourly earnings. In 1928, official national average earnings were 703 rubles per year (figure given in *Trud v SSSR [Labor in U.S.S.R.]*, Moscow, 1936, p. 17), or 0.29 ruble per hour; in 1953, the estimated average earnings were about 600 rubles a month, or 2.94 rubles per hour; in 1959, the estimated average earnings were about 800

rubles a month, or approximately 4 rubles per hour, according to an analysis of scattered data appearing in the Soviet press. In June 1962, estimated average earnings of manufacturing workers, in terms of the recently revaluated ruble were about 80 rubles a month, or 0.45 ruble an hour.

COMMENTS.—The increase in food prices, mainly butter and beef which are in short supply, by about 25 to 30 percent on June 1, 1962, reversed the downward trend in the postwar period in the worktime required by workers to purchase basic foods. For instance, in 1953, the average Soviet worker was required to work about 45 percent longer than he did in 1928 (the high point in workers' food purchasing power) in order to buy for his family the same average weekly supply of 7 essential foods listed in this table; in 1959 it was 8 percent longer, and as of June 1, 1962, it is 14 percent longer.

In the interest of a balanced view of the main trends in living standards in the U.S.S.R. since 1928, it is important to take cognizance of the fact that as a result of the increase in industrial production under the economic plans, manufactured consumer goods have become more available, although they are still inadequate to meet existing consumer needs and are well below prevailing standards in other industrialized countries. In addition, it needs to be noted that the consumer in the U.S.S.R. is provided by the state with a number of free services, such as medical service, education, and pensions. Furthermore, Soviet workers pay low housing rentals, usually amounting to 4 to 6 percent of their monthly earnings. However, most workers live in cramped quarters; for example, in Moscow most families live in only 1 room and have to share bathrooms and kitchens with other families.

APPENDIX TABLE B.—Approximate worktime required to buy selected commodities at state-fixed prices ¹ in Moscow and at retail store prices in New York City, June 16, 1962

Commodity	Moscow price (in rubles) ²	New York City price (in dollars) ³	Approximate worktime ⁴			Moscow worktime as a percent of New York City worktime
			Unit	Moscow	New York City	
Foods:						
White bread:						
1 pound.....	0.27	0.241	Pound.....	36 minutes.....	6 minutes.....	600
1 kilogram (2.2 pounds).....	.60	.531	Kilogram.....	80 minutes.....	13 minutes.....	
Potatoes:						
1 pound.....	.045	.063	Pound.....	6 minutes.....	1.6 minutes.....	400
1 kilogram.....	.10	.139	Kilogram.....	13.3 minutes.....	3.5 minutes.....	
Beef, rib roast:						
1 pound.....	.73	.754	Pound.....	97 minutes.....	19 minutes.....	500
1 kilogram.....	1.60	1.662	Kilogram.....	217 minutes.....	42 minutes.....	
Butter, salted:						
1 pound.....	1.63	1.737	Pound.....	206 minutes.....	19 minutes.....	1,100
1 kilogram.....	3.60	1.625	Kilogram.....	480 minutes.....	42 minutes.....	
Sugar:						
1 pound.....	.40	.113	Pound.....	54 minutes.....	3 minutes.....	1,900
1 kilogram.....	.89	.249	Kilogram.....	117 minutes.....	7 minutes.....	
Milk, at grocery:						
1 quart.....	.27	.265	Quart.....	36 minutes.....	7 minutes.....	500
1 liter (1.06 quarts).....	.29	.281	Liter.....	39 minutes.....	7.4 minutes.....	
Eggs, 24 grade:						
Per dozen.....	.96	1.516	Dozen.....	128 minutes.....	13 minutes.....	1,000
Per 10.....	.80	.430	Per 10.....	107 minutes.....	11 minutes.....	
Tea, 50 grams (1¾ ounces).....						
	.38	.186	50 grams.....	29 minutes.....	3 minutes.....	1,000
			50 grams.....	51 minutes.....	5 minutes.....	
Men's clothing:						
Shirt, cotton.....	6.00	3.01	Each.....	13 hours.....	76 minutes.....	1,000
Suit, wool, single-breasted, middle of price range.....	110.00	54.90	do.....	244 hours.....	23 hours.....	1,050
Shoes, leather oxfords, pair.....	24.50	16.75	Pair.....	54 hours.....	7 hours.....	800
Women's clothing:						
Dress, street, rayon.....	29.40	10.63	Each.....	65 hours.....	4 hours 28 minutes.....	1,400
Shoes, leather oxfords, middle of price range.....	23.00	12.35	Pair.....	51 hours.....	5 hours 13 minutes.....	1,000
Stockings, nylon.....	3.20	1.48	do.....	7 hours.....	37 minutes.....	1,100
Other commodities:						
Soap, toilet, 100-gram cake (3½ ounces).....	.21	.103	Each.....	28 minutes.....	2.6 minutes.....	1,100
Cigarettes, package of 20.....	1.18	.28	Package.....	24 minutes.....	7 minutes.....	350
Vodka:						
Fifth.....	4.05	4.77	Fifth.....	9 hours.....	2 hours.....	450
½ liter (.682 fifth).....	2.68	3.16	½ liter.....	5 hours 57 minutes.....	1 hour 20 minutes.....	

¹ Prices observed on the open market, where collective farmers sell their produce, were much higher in comparison with state store prices. For example, potatoes were 0.15 ruble per kilogram; beef, 2.50 rubles per kilogram; and eggs, 1.50 rubles for 10.

² Moscow prices in state stores, based on information appearing in the Soviet press and in reports of U.S. visitors to the U.S.S.R. The prices for pound, quart, and dozen were calculated from Moscow prices for kilograms, liter, and 10 eggs, respectively.

³ New York City prices in retail stores were collected by the Bureau of Labor Statistics; the prices for kilogram, liter, and 10 eggs were calculated from New York City prices for pound, quart, and dozen, respectively.

⁴ Worktime figures for Moscow were computed on the basis of estimated average gross

earnings of 0.45 ruble per hour of Moscow workers in manufacturing, a figure that is consistent with the Bureau of Labor Statistics estimate of about 80 rubles a month. New York City worktime figures were computed from BLS retail prices and earnings in mid-June 1962 of \$2.38 per hour of production workers in manufacturing in New York City.

⁵ First quality (92-93 score).

⁶ Large eggs, grade A.

⁷ Lowest priced shirt in Moscow.

⁸ Brand name: Avtozavodskie.

⁹ Spirit blended whisky.

87th Congress }
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DIMENSIONS OF
SOVIET ECONOMIC POWER

STUDIES PREPARED FOR THE
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Part VI
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THE SOVIET UNION IN THE
WORLD ECONOMY

BY

PENELOPE HARTLAND THUNBERG

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THE EXTERNAL IMPACT OF SOVIET ECONOMIC POWER

I. INTRODUCTION

Since the middle of the 1950's the U.S.S.R. has emerged from the economic isolation that had characterized its behavior through most of its history and has increasingly participated in the world economy. During the same period the Soviet leaders have continued to place heavy emphasis upon economic growth, a fact that can be explained by their desire to achieve economic, and especially technologic independence of the West. By the mid-1950's, Soviet industry was using up-to-date techniques to produce the raw materials, fuel, and equipment necessary for the sectors of industry deemed by the authorities to be most important. Since they had already achieved the basic economic independence which was the goal of their earlier autarkic policies, they were now prepared to shift from an international economic policy that had been essentially passive and defensive to one which was active and aggressive.

Whereas in the prewar period the U.S.S.R. had imported in order eventually to eliminate the necessity for imports, in the postwar period the country attained sufficient strength to engage on an increasingly large scale in trade for political purposes—in order to enhance Soviet influence or to achieve some noneconomic goal in various parts of the world.

The increasing use of international economic relations as a tool of Soviet international policy does not, of course, imply that the domestic economy had attained complete economic and technologic independence of the West. On the contrary, the U.S.S.R. today must import not only certain industrial materials of strategic significance, but, most important, it continues to be dependent on Western technological advance in many key industrial branches. And in the fields of agriculture and consumer goods the technological lag is greatest. Despite a costly and longstanding program for the development and production of synthetics, the U.S.S.R. still is dependent on imports of natural rubber for industry and transport. A primary goal of the present plan period, the expansion of the chemical industry, is patently dependent for its success on imports of Western chemical equipment which, embodying most recent technology, serve as prototypes to be copied, adapted, and perhaps even improved at some future date. Although Soviet resource endowment is not all-encompassing and although Soviet techniques of production in many fields are notably dated as compared with the West, the U.S.S.R. has achieved parity with, and therefore technological independence of, the West in those sectors of the economy which it considers of primary importance: military output and much of heavy industry.

Externally the burgeoning of Soviet economic power has been manifest in a volume of international trade which has grown more rapidly than either Soviet production or total world trade. Although still of minor significance in the total of the world economy, Soviet

exports have increased from 3 percent to 5 percent of the total of world exports between 1950 and 1960. Soviet commodity trade has expanded at an average annual rate of about 11 percent since 1955, a pace more rapid than either that of GNP or industrial production.

Meanwhile, the new, more aggressive Soviet foreign economic policy was reflected in the increasing relative importance of Soviet trade with the free world in the total of Soviet international trade. During the first half of the 1950's transactions with other countries of the Communist bloc accounted for 80 percent of total Soviet commodity trade, exchanges with the free world accounting for about one-fifth. Between 1955 and 1960, however, because trade with Western countries grew more rapidly than trade with other bloc members, the share of the free world rose from 20 to 30 percent, and in 1961 even reached one-third of total trade.

Thus, between 1955 and 1961, while total trade was growing at about 11 percent a year, trade with the Communist bloc rose by only 7 percent, but trade with the free world expanded at an annual rate of 20 percent. This westward shift in the orientation of Soviet international exchange was a measure both of the success of its new foreign economic policy and of the importance of imports from the West to the fulfillment of the prevailing 7-year plan (1959-65).

TABLE 1.—*Distribution of Soviet foreign trade, 1950, 1955, and 1961*

[Millions of dollars and percent]

	1950	1955	1961
Total.....	\$3,250 (100)	\$6,484 (100)	\$11,838 (100)
Bloc.....	2,637 (81)	5,108 (79)	7,778 (66)
Eastern Europe.....	1,866 (57)	3,455 (53)	6,486 (55)
China.....	576 (18)	1,392 (22)	919 (8)
Asian Satellites.....	195 (6)	261 (4)	374 (3)
Free world.....	613 (19)	1,376 (21)	4,052 (34)
Industrial West.....	(1)	975 (15)	2,152 (18)
Underdeveloped countries.....	(1)	347 (5)	1,769 (15)

¹ Not available.

II. TRADE AS AN IDEOLOGICAL WEAPON

A. LAYING THE FOUNDATION

Before World War II Soviet international commodity exchanges were almost exclusively determined by their ability to contribute to Soviet industrial strength. Indeed the most compelling goal of Soviet policy was the attainment of industrial power at the most rapid rate consistent with domestic security. Exports represented a diversion of resources from domestic use which was suffered only because the resources could be exchanged for commodities whose contribution to industrial growth would be even greater—modern machinery. At the same time the Soviet leaders, smarting from their treatment as international outlaws by the Western Powers, strove so to comport themselves in international transactions as to prove their respectability. The Soviet Union was scrupulous in meeting all of its commitments on time and at par. It purchased almost entirely for cash, exporting gold to meet its debts when its export receipts were insufficient. When legal disputes arose over international commerce, Soviet courts strove for maximum objectivity both in their treatment of foreign commercial representatives and in the nature of their decisions.

By 1940, as a result of urgent and ruthless measures to mobilize and concentrate domestic resources, the U.S.S.R. had achieved an impressive measure of industrial strength. And through diligent and scrupulous cultivation of its international commercial reputation, it succeeded in attaining a position of commercial respectability and in fashioning for itself a small niche in world trade.

During these formative years, exclusive concentration on overcoming its economic weakness inhibited the Soviet leadership from developing a more aggressive foreign economic policy. Certain hesitating steps along the path of economic diplomacy were attempted but not pursued. The fact that traditional Russian interest in neighboring Asia, for example, was sustained by the Communist regime was illustrated by offers of economic aid to Afghanistan, Turkey, and Persia in the early 1920's. Indeed the stripling Soviet economy constructed several textile plants, financed by its own long-term credits, and provided technical aid to these countries; but such activities were necessarily limited by compelling Soviet domestic requirements.

The full development of trade as an ideological weapon awaited the growth of Soviet economic power. When, after World War II, through the use of subversion and armed force, the U.S.S.R. succeeded in creating an empire of satellite states in Eastern Europe, it was for the first time in a position of influence in a number of foreign markets. The Soviet Union was therefore able, within a few years, to use commodity exchange as the chief means of consolidating and extending its position of power in Eastern Europe. The creation of a Communist state in mainland China in 1949 further extended the scope of the international market organized on the basis of Soviet institutions. Because the U.S.S.R. was the largest trading partner in this "Socialist world market," the scale of its transactions could not help but influence the climate in this market.

Even this extension of its international economic relations to encompass other Socialist partners, however, brought little change in basic Soviet foreign economic policy. The role of international trade, with socialist and capitalist countries alike, remained essentially growth-oriented. It continued to be valued for its contribution to the modernization and expansion of Soviet industry. Between 1948 and 1955, a variety of devices enabled the U.S.S.R. both to extract a sizable import surplus in its trade with the European satellites and to effect a complete reorientation of the international commerce of these countries, away from former trading partners in Western Europe toward the Soviet Union and other Communist states. Through reparation deliveries and war booty the U.S.S.R. acquired machinery and equipment estimated to have amounted to upward of \$10 billion. Pseudo-legal techniques further enabled the U.S.S.R. to arrange a redistribution of former German assets in Eastern Europe in such a way that it acquired a claim to as much as one-half of the current production of certain satellite countries. By placing orders for equipment and materials in Eastern Europe the U.S.S.R. was able to direct the course of industrial investment and thus the structure of industry in these countries to suit its own requirements. The Soviet Union became the main supplier of raw materials to satellite industry and the prime market for their finished product. The ubiquitous presence of Soviet advisers throughout

Eastern Europe at all levels of government and industry insured the efficacy of Soviet control.

The development of economic relations with mainland China after the accession of the Communist regime in 1949 followed quite a different path. The Chinese Communist party attained control over the mainland without aid from the Soviet Union. From the outset economic relations between the U.S.S.R. and Communist China were governed by a policy of mutual accommodation. Chinese agricultural products and raw materials were exchanged for Soviet industrial goods; the Soviet Union provided several long-term credits for purposes of industrial development and the services of scientists, technicians, and specialists of various kinds to advise and instruct the Chinese in their economic development. From the Soviet viewpoint the expansion of trade with China provided an efficient and economic contribution to the economic development of the Soviet Far East.

B. FASHIONING THE WEAPON

The shift to an aggressive foreign economic policy in the 1950's appeared to be abrupt, but actually was quite carefully conceived, having long been part of broad Communist strategy. The conceptual scheme of Lenin concerning the historically necessary course of political development, while ordaining that capitalism ultimately give way to communism, insisted that the underdeveloped countries need not necessarily pass through the stage of capitalism in progressing toward communism. And since the 1920's Soviet writers have looked forward to the day when the U.S.S.R. would be in a position materially to aid these countries along the direct route to communism. By the mid-1950's the Soviet leadership apparently felt that internal economic growth had so diminished the country's vulnerability that it was finally in a position to inaugurate an aggressive program of economic diplomacy.

Offers of foreign aid "without strings" to underdeveloped countries began to flow from the U.S.S.R. in 1954 and 1955, and although a few minor credits were extended in these years, the Soviet aid offensive was on the whole skeptically received abroad. The conclusion of a major military aid agreement with Egypt in late 1955,¹ and the prompt delivery of the equipment and technical personnel contracted for, gave the program its first real momentum.

In the second half of the decade, following the leadership of the U.S.S.R., credits and grants were extended by other members of the Communist bloc to underdeveloped countries for military and developmental purposes in increasing volume. In the military sphere, the form of Soviet aid varied from the training of officers in staff colleges of the U.S.S.R. to the provision of modern jet fighters. Economic aid has similarly embraced a great variety of industries, ranging from a modern integrated steel mill to geologic surveys and small workshops. Trade agreements were signed providing for an exchange of the major exports of these countries against machinery, materials, and technical advice from the U.S.S.R. and Eastern Europe and cultural and technical delegations moved to and from the bloc in growing magnitude.

By 1961 the U.S.S.R. had achieved a secure position of influence in the economies of Egypt,² India, Afghanistan, Indonesia, and Cuba and

¹ Although the bloc signatory partner was nominally Czechoslovakia, the materiel provided was primarily Soviet in origin.

had established the basis for expanding relations with a large number of other countries. At the same time Soviet offers of scholarships for academic and technical training in the U.S.S.R. provided an increasing flow of students and trainees from most of the underdeveloped countries of Asia, Africa, and Latin America.

The shift away from a defensive foreign economic policy was also evident in Soviet relations with the European satellites. In contrast to the early postwar period, when the satellites were forced to contribute heavily to Soviet economic reconstruction, in the late 1950's the Soviet Union provided sizable quantities of both emergency and developmental aid to other Communist countries. The policy shift from the stick to the carrot in Soviet treatment of Eastern Europe was partially the result of the 1956 satellite revolts; at the same time, however, the relative affluence of the Soviet Union made the policy shift possible.

Since 1954 Soviet economic aid to underdeveloped free world countries has amounted to about \$3.5 billion, or about 70 percent of the total aid program of the Sino-Soviet bloc. During the same period, the U.S.S.R. extended nearly \$4 billion of aid, also in the form of credits and grants, to other Communist countries. While during the past 2 years new aid extensions to underdeveloped countries have slowed considerably, the opposite has been true of aid for the bloc. In these years credits and grants for East Germany and the Communist Far East were probably at an alltime high.

Soviet adventures in international finance have not been confined to the development of their foreign aid program, for in recent years the U.S.S.R. has been active not only as a lender of long and medium term capital, but also as a borrower.

In contrast with its earlier history when Soviet trade with Western countries was conducted almost exclusively on a cash basis, since the initiation of the current 7-year plan (1959-65) Soviet purchasing missions in Western Europe, Japan, and the United States have bargained as vigorously over the terms of the sale as over the price of the plant and machinery for which they were negotiating. With heightening competition among the engineering industries of the industrialized countries of the free world, the difference between winning or losing a sizable contract has often been determined on the basis of such financial terms. The U.S.S.R. has consequently been able to finance a significant portion of Soviet imports from these countries since 1960 on the basis of 5- and even 7-year credits. By the end of 1962 net Soviet indebtedness to the industrial West for such credit financing will probably be about half a billion dollars.

Deliveries of aid goods tend to lag behind the aid commitment. Soviet goods and services delivered to underdeveloped countries amount to about one-quarter of aid commitments, or to less than \$1 billion for the entire recent period since 1954. Considering the aggregate of Soviet borrowing and lending activities with non-Communist countries for the same period, the U.S.S.R. has delivered unrequited exports to the underdeveloped nations outside the bloc and has received unrequited imports from the industrial West. On balance net Soviet international capital movements with non-Communist countries have represented a net outflow of Soviet goods and services to the West of only about one-quarter of a billion dollars.

Perhaps the most dramatic use of international trade as a weapon of foreign policy occurred in mid-1960 in the course of the Sino-Soviet ideological dispute. At that time the Soviet Union precipitously withdrew most if not all of its technicians, numbering upward of 3,000, who were working in China to aid in Chinese industrialization. This act of economic warfare was followed by a veritable collapse in Sino-Soviet trade which by the end of 1961 had dropped to two-fifths of its 1959 level.²

Thus, in less than a decade Soviet international economic activities have ceased to be of a cautious, conservative nature and have rather become adventurous and at times even flamboyant. That these new policies have been successful is attested by the position of economic and political influence that the U.S.S.R. has achieved in the international arena. Although Soviet international trade accounts for only a barely significant portion of total world trade, its ability to influence the economies of certain countries and the behavior of certain commodity markets has been impressively demonstrated.

III. TRADE WITH THE COMMUNIST BLOC

A. THE INSTITUTIONS OF THE SOCIALIST WORLD MARKET

1. *Insulation of the domestic economy*

In a completely controlled economy in which production and consumption are planned at a level and of a composition to insure a very rapid rate of industrial growth, the prime function of foreign trade is to provide the commodities necessary to plan fulfillment which are not available from domestic sources. At the same time, because stability and predictability are necessary to operational planning, as well as to plan fulfillment, the foreign trade mechanism must operate in such a fashion as to protect the domestic economy from disturbing foreign influence.

The internal price system of a Communist country is so devised as to encourage the use of some commodities and discourage the use of others; in order to function successfully, in the light of Communist goals, it must be insulated and isolated from foreign influences. For example, in order to restrict the demand for consumer goods in bloc countries, relatively high prices are set for such commodities. In a free economy, high prices would direct a major part of commodity imports to the consumer sector, a development which would thwart bloc military and industrial growth imperatives. Strict controls over foreign trade, accordingly, are necessary in a Communist country.

Writers in the Communist bloc have long pointed with pride to the fact that their economies are protected from the volatile and erratic price movements that characterize Western markets. Insofar as their pride is justified, it is equally true that the internal price systems of bloc countries bear no relation to one another, for the barricades which protect the domestic systems against all influences from the capitalist world also operate to insulate them from developments within the bloc.

This isolation of the internal price systems of bloc countries has been achieved by means of rigid state controls over all international

² Although a sizable decline in Sino-Soviet exchange would have occurred in any event because of the serious economic difficulties in China, the unilateral withdrawal of Soviet technicians by itself fostered mistrust and caused a diversion of China's trade away from the U.S.S.R.

transactions. Foreign trade is a monopoly of the state and with other bloc countries is subject to rigid bilateral balancing; with few exceptions, no cash moves, all transactions being settled by the movement of goods. International purchases and sales are conducted in prices and denominated in currencies which are different from those prevailing internally. The separation of the two price systems has been achieved and maintained by an elaborate system of artificial exchange rates and budgetary supports. As a result bloc currencies are purely national currencies with no international uses. The zloty is usable only within Poland, the forint only within Hungary, and the Soviet ruble only within the U.S.S.R. Economic intercourse between a Communist country and a country of the free world is negotiated in a Western monetary unit. Bilateral payments accounts are also maintained in a Western monetary unit and balances are settled in Western exchange. Trade among members of the Communist bloc themselves, however, are conducted in terms of an accounting unit termed a ruble.

2. *Foreign exchange ruble and bloc foreign trade prices*

The ruble used in intrabloc commodity transactions, which can be termed the foreign exchange ruble or the *devisa ruble*, is purely an accounting unit. It is not represented by any certificate or piece of metal or paper as is the internal ruble. The *devisa ruble* is solely a conceptual standard for measuring value and need have no more relation to the internal ruble than the quart which is the unit of liquid measure has to the quart which is the unit of dry measure. As long as bloc foreign trade prices are different from Soviet internal prices for the same commodity, the value of the foreign exchange ruble is different from the value of the Soviet ruble.

(a) *Nature of bloc trade pricing practice.*—Trade agreements, or protocols to existing agreements, are negotiated among countries of the bloc annually. These agreements simply list the commodities to be exchanged and the total value of trade to be achieved. It is left to trade delegations to decide in conference the details of price and quantity for each specific commodity to be exported or imported. These meetings are marked by strenuous bargaining and vigorous competition between the negotiating partners. The exporters of commodities for which the demand is strong—for example, most Czechoslovak machinery, Polish coal, Rumanian oil and timber, and Soviet industrial goods and materials—can command not only good prices but also “hard” commodities in exchange. In fact, because of the pervasiveness of shortages throughout the bloc, a strong bargaining position is used more often to acquire scarce commodities than to achieve a more favorable price.

The negotiating partners go to these meetings armed with documentation about world market prices. This involves information about prices at which the commodity in question has actually been sold recently in specific transactions in the West. In fact, in the Ministry of Foreign Trade of most bloc countries, there is a division which does nothing except collect such price information. Thus world market prices do form the basis for bloc foreign trade prices. These prices (the dollar price multiplied by the official exchange rate of the ruble for the dollar) are the point at which bargaining begins.

Strictly, however, there is no such thing as a single world market price. The price at which the United Kingdom buys bacon from Denmark, for example, may be quite different from the price it pays for bacon from New Zealand or Argentina. Thus, the bloc exporter can always find a relatively high Western price to support his claim, but the importer can also document from free world sources his claim to a lower price. The price finally agreed on depends on the relative bargaining strength of the two countries as colored by their needs and availabilities.

Once the price has been agreed on, it remains in force for the entire year, and often for several years. It not infrequently happens, however, that no agreement on prices can be reached. Then trade continues, being recorded at last year's prices, subject to final adjustment when agreement is at length reached. In fact, it appears that the difficulties attendant on reaching agreement on price have been as important as the necessity of stability and predictability for planning purposes in keeping prices constant over several years.

(b) *Historical course of bloc trade prices.*—Although bloc trade prices have been determined at bargaining sessions since the end of World War II, the relative strength of the bargaining partners has changed. Immediately after the war the U.S.S.R. announced that commodities would be exchanged within the bloc at world market prices. At this time, satellite trade representatives, who had no way of knowing what these prices were, could only take the word of the Soviet representatives.

They began to realize, however, that the prices of Soviet exports were very high and that the prices of their own exports were low. They themselves undertook some market research and thereafter went to the negotiations possessed of documentation. In this way the satellites probably have gradually forced bloc trade prices to their world market levels. There is some evidence to indicate that in the late 1940's most bloc trade prices were considerably above world market prices, with Soviet export prices being higher than Soviet import prices. Since then, bloc trade prices seem on the average to have declined.

3. *The exchange rate*

In March 1950 by an appropriate definition of its gold content, the U.S.S.R. set the rate at which the ruble was to be measured against other currencies at the equivalent of \$0.25, and maintained this official exchange rate until January 1, 1961. At this rate the ruble was considerably overvalued in the sense that 25 cents in the United States would buy much more than would 1 ruble in the U.S.S.R. A rate which overstated the value of the ruble was probably chosen for purposes of prestige. That the rate was purely arbitrary had no significance to the trading partners of the U.S.S.R., however, for those in the free world never had occasion to use it,³ and those in the bloc used it only for accounting purposes. Other Communist countries similarly determined at an arbitrary level the rates at which their currencies were to be measured against the dollar and the ruble.

³ The exceptional case of noncommodity transactions is discussed below.

TABLE 2.—Official exchange rates per U.S. dollar and per ruble for Soviet bloc national currencies in commercial transactions, 1954-60 and 1961-62

Country	Unit	1954-60		1961-62	
		Per dollar	Per ruble	Per dollar	Per ruble
Albania.....	Lek.....	50.0	12.5	50.00	55.56
Bulgaria.....	Lev.....	6.8	1.7	11.17	11.30
Czechoslovakia.....	Crown.....	7.2	1.8	7.20	8.00
East Germany.....	Ostmark.....	2.2	.5	2.22	2.47
Hungary.....	Forint.....	11.7	2.9	11.74	13.04
Poland.....	Zloty.....	4.0	1.0	4.00	4.44
Rumania.....	Leu.....	6.0	1.5	6.00	6.67
U.S.S.R.....	Ruble.....	4.0	-----	.90	-----

¹ Effective Jan. 1, 1962. Official rates during 1961: 6.8 leva per U.S. dollar; 7.56 leva per ruble.

² Although this is the official rate, the rates in use since 1959 are as follows: 4.2 DME per U.S. dollar; 4.67 DME per ruble.

Because these official exchange rates were set with the intention of insulating the internal economy from external influences with no regard to relative price levels, the conversion of export receipts or import payments into the domestic currency, an adjustment necessary for maintaining domestic accounts, resulted in foreign trade prices which bore no relation to domestic prices. In general, internal bloc prices, when converted at official rates, were higher—but higher by varying degrees—than Western prices. Consequently, the domestic equivalent of export receipts was, in most cases, considerably below the internal price of the commodity, and the opposite was true of import payments. These price differentials thus resulted in price losses on exports and profits on imports which were absorbed by the country's budget.

Because of the existence of these price differentials, and especially the negative differential characteristic of exports, bloc exports have been termed "subsidized." This is a very special type of subsidy, however, and result solely from the existence of an arbitrarily high foreign exchange rate. Moreover, exports to other bloc countries as well as exports to the West would be subsidized by Communist countries in this sense, and necessarily so as long as bloc foreign trade prices remained lower than internal prices of member countries.

The only bloc exports which would not be subsidized because of the artificially high exchange rate would be exports of those commodities whose internal price in the exporting country was equal to or lower than the export price converted into the domestic currency at official rates. Thus, if the legal price of some raw material within the U.S.S.R. were 100 rubles per ton, and if this commodity were exported by the U.S.S.R. at \$20, or 80 rubles, per ton, a price loss of 20 rubles would be involved. This price loss is directly attributable to the use of a 25-cent ruble exchange rate when the implicit exchange rate appropriate for this commodity is at the level of 5 rubles to the dollar, or 20 cents.

Whether the total of price differential losses borne by the budget is greater or less than the total of profits depends on the structure of the internal price system of the Communist country, as well as on the level of the exchange rate. If the isolated internal price system is such that, at the official exchange rate, the purchasing power of the currency is overvalued, but considerably more overvalued in regard

to some goods than others, then the structure of the internal price system, as well as its level, is distorted from that of the world market. Under such conditions—which seem to characterize the internal price systems of Communist countries—a change in the exchange rate by itself could decrease the gross price differential loss and profit, but would not eliminate a net profit or loss. A realistic exchange rate would be one representing the average relationship between internal ruble prices and world prices in dollars or sterling for goods entering international trade. Given a distorted internal price structure, however, the variation of individual ruble-dollar price relationships around the average would be large and probably skewed, resulting in some net price differential for the sum of price losses and profits on trade.

The 1961 revision of the official exchange rate of the ruble, which was ostensibly an appreciation of the ruble in terms of Western currencies, was probably undertaken for the purpose of reducing the gross price differential profit and loss to be borne by the Soviet budget on account of foreign trade. By redefining the gold content of the ruble, its relationship to the dollar was changed from the equivalent of 25 cents to \$1.11, or from 4 rubles to 0.9 ruble to the dollar. Ostensibly the value of the ruble was raised by 4.4 times. Since the U.S.S.R. revised its internal price level simultaneously, however, by dividing all prices by 10, the exchange rate of the ruble, as a measure of relative purchasing power, was, in fact, depreciated. The new exchange rate, however, appears to be more realistic as a measure of relative price levels. While considerations of prestige were probably not absent in setting the value of the ruble higher than the dollar, the degree of overvaluation has certainly been considerably reduced, if not wholly eliminated.

In setting the foreign exchange rate of the ruble at a more realistic level, the amount of price differential profits collected on imports by the budget, and price differential losses paid by the budget on exports, would be considerably reduced. In fact, at the new exchange rate differences between internal and external prices will reflect, almost exclusively, distortions in the Soviet price structure. Soviet planners are, therefore, in a position to note the commodity composition of their foreign trade which involves most extreme price differentials and to examine the reasons for these differentials in the interests of economic efficiency and maximum productivity. Although, in the past, Soviet planners have been little concerned with relative costs in determining the composition of their foreign trade, pressure on growth rates will tend to lead toward increased rationalization of all sectors of their economy.

4. Noncommercial transactions

Before 1957, the countries of the Communist bloc maintained a single schedule of exchange rates, the rates being all consistent with one another and with the rate of 4 rubles to the dollar. The rates were applicable to both commercial and so-called noncommercial transactions. The distinction between these two rests on the difference between transactions involving commodities and services exchanged with someone outside the country, and transactions involving goods and services sold to and consumed by a foreigner within the country's borders. Commercial transactions include the international purchases and sales of commodities and commodity transport. Noncommercial transactions include receipts and expenditures by

international tourists and by embassies, receipts and expenditures for passenger transportation and international telephone and telegraph services, and individual and institutional remittances. Because bloc credit transactions—borrowing and lending—relate to goods, and are directly effected in goods, commercial exchange rates apply both to the receipt of the credit and to the payment of interest and principal.⁴

Beginning in early 1957, bloc members individually announced new official exchange rates for noncommercial transactions. In most cases, these new rates represented a depreciation of the bloc currency in terms of Western currencies (for example, Western tourists were able to buy Soviet rubles at the rate of 10 to U.S. \$1, compared with only 4 to U.S. \$1 before 1957) and, except for Poland, an appreciation of satellite currencies in terms of the Soviet ruble. Some satellite currencies were appreciated, others depreciated, in terms of other satellite currencies.

The reason for the new rates for noncommercial purposes in relation to the West seemed to lie in an attempt on the part of all bloc members to increase earnings of Western currencies by encouraging tourists from the West. The new rates in relation to other bloc countries seemed to represent an attempt to make intrabloc settlements of noncommercial accounts more equitable by relating the cost of currencies to their various purchasing powers.

Whereas bloc commercial exchange rates were all internally consistent with one another, and with free world currencies, these new noncommercial rates, in themselves, involved each bloc member in a system of dual rates. The noncommercial exchange rates proclaimed by any one country represented one internally consistent set in relation to all free world countries, and a second internally consistent set for all bloc countries, but between the bloc and the West they were not consistent. For example, the Polish zloty exchanged at a rate of 24 to US\$1 for these purposes and the Soviet ruble at a rate of 10 to US\$1, but the noncommercial rate between Poland and the U.S.S.R. was set at 1.5 zlotys to the ruble rather than 2.4 zlotys, which would be consistent with the dollar rates. These discrepancies could be maintained only because of strict controls over the uses of domestic currencies by all bloc members.

All transactions among bloc countries are finally settled in goods. When, for example, Soviet specialists or technicians are sent to a satellite country, the latter pays the U.S.S.R. for their services eventually by exporting commodities to the U.S.S.R. Each bloc country maintains, with every other member, a noncommercial account through which the value of these noncommodity transactions is recorded. At the end of each year, these accounts are balanced against one another, the net debit or credit being transferred to the commodity account for settlement.

Because of their nature noncommercial transactions involve purchases and sales at domestic prices rather than at foreign trade prices and because the internal price levels of individual bloc members are not only unrelated to one another but vary considerably, the previous system of clearing noncommercial balances at commercial exchange rates put at a disadvantage those countries whose currencies

⁴ Bloc credit transactions almost always are credits to finance the exports of the lending country. The commodities involved are usually valued at the prices prevailing in the trade agreement between the two countries concerned. Similarly, repayments are effected in goods at the prices of the current trade agreement.

were least overvalued or whose internal prices were relatively low. Since the Soviet ruble was appreciated in terms of only one satellite currency but depreciated in terms of five, it seems likely that the net effect on intrabloc commodity flows of the noncommercial exchange rate revisions would have been a reduction in Soviet purchasing power in the satellites.

In 1961 after the revision of the Soviet official exchange rate, the distinction between a commercial and noncommercial rate for transactions with Western countries was eliminated, the new rate applying to tourist and embassy expenditures as well as to commodity transactions. The original schedule of noncommercial rates vis-a-vis other bloc countries was retained, however, the only change being the appreciation of the ruble by 10 times to reflect the change in internal Soviet prices.

TABLE 3.—Official exchange rates per U.S. dollar and per ruble for Soviet bloc national currencies in noncommercial transactions

Country	Unit	Units per dollar		Units per ruble ¹	
		Number	Date	Number	Date
Albania.....	Lek.....	150	July 1, 1957	100	Jan. 1, 1961
Bulgaria.....	Lev.....	1.17	Jan. 1, 1962	.89	Jan. 1, 1962
Czechoslovakia.....	Crown.....	14.34	July 1, 1957	11.6	Jan. 1, 1961
East Germany.....	Ostmark.....	4.2	Jan. 1, 1958	3.9	Do.
Hungary.....	Forint.....	23.48	Apr. 1, 1957	14.0	Do.
Poland.....	Zloty.....	24.00	Feb. 11, 1957	15.0	Do.
Rumania.....	Leu.....	15.00	May 11, 1960	9.7	Do.
U.S.S.R.....	Ruble.....	.9	Jan. 1, 1961	-----	-----

¹ Before 1961 the ruble exchanged for $\frac{1}{10}$ of these rates.

The 1957 adjustment of intrabloc noncommercial rates represented the first step taken by bloc countries to relate exchange rates to relative purchasing powers. As such it also represented a retreat from the philosophy of "insulation and isolation" and from the concept of an absolute internal economy unrelated to that of the outside world. The 1961 revision of the basic commercial rate of the ruble in terms of Western currencies was the second step in the same direction. At the least these moves are evidence of a recognition of the impossibility of absolute insulation without complete cessation of all economic intercourse. Settlement of noncommercial transactions on an equitable basis requires the use of an exchange rate which reflects relative purchasing power. A meaningful exchange rate can serve many other useful purposes, however, and is essential for determining the relative merit of an expansion of domestic output as opposed to an increase in imports of a given good. An economy committed to high growth rates must increasingly be concerned with all aspects of economic efficiency, including the efficiency of its foreign trade operation.

B. TRADE WITH EASTERN EUROPE: FROM THE STICK TO THE CARROT

1. *The period of the stick*

In the early postwar period Soviet foreign economic policy was dominated by two related goals: the rapid restoration of domestic economic strength and the creation in Eastern Europe of a Soviet-controlled buffer area to protect the exposed frontier. The immediate

postwar years were a period of plunder, the U.S.S.R. taking as the victor's spoils in former enemy countries productive equipment of all kinds, dismantling factories, transport facilities, workshops for transfer to the Soviet Union. In addition to such war booty, the U.S.S.R. took as reparations title to much German property located in Hungary, Rumania, and Bulgaria, thereby obtaining control over several hundred producing enterprises. These former German assets provided the basis for the Soviet-satellite joint-stock companies, formed in 1946-48, through which the U.S.S.R. acquired control over a major share of satellite mining, manufacturing, transportation, and finance. Reparations deliveries from the current output of these and other plants were important not only to the restoration of the Soviet economy but provided the mechanism for obtaining a high degree of control over economic activity in Eastern Europe. East German reparation deliveries during 1945-50, for example, amounted to about \$9 billion while commercial exports to the U.S.S.R. aggregated only \$5.5 billion.

After the initial period of plunder when Soviet exploitation of resources and capital assets had threatened to destroy the economic foundations of Eastern Europe, the pattern of Soviet treatment shifted to one more consistent with its longrun goal of consolidating its domination of the area. Through reparation deliveries and export orders, Communist party pressures, and the presence of Soviet advisers in key ministerial and production posts, satellite trade was redirected from its traditional Western orientation into Soviet bloc channels. Satellite economies were developed in such a way as to make them dependent on the Soviet Union for markets and raw materials. Priority development of heavy industry and neglect of traditional agricultural and consumer goods production narrowed the basis for satellite trade with the West. The economic reorientation of Eastern Europe was formalized by the formation in 1949 of the Council for Mutual Economic Assistance (CEMA) to coordinate internal economic plans and foreign economic relations of the Soviet bloc.

The shift in the pattern of trade and production of Eastern Europe subjected the satellite economies to severe strains. In addition Soviet exploitative policies and autarchic development plans overtaxed the productive resources of the area and caused much resentment against local governments as well as against the U.S.S.R. In 1953 the new Kremlin leadership, recognizing that the stability of the area was threatened, began to relax the more burdensome controls and lighten its iron demands. Soviet advisers were withdrawn, discriminatory pricing practices were revised and the dissolution of the joint stock companies was initiated. The Soviet leadership also urged some modifications in satellite economic plans to provide some concessions to consumer demand.

The adjustments made in Soviet-satellite relations were not adequate, however, to reverse the growing disproportion between the industrial capacity being created in Eastern Europe and the raw materials, fuel, and power resources necessary to support it. The Soviet Union thus either had to divert increasing quantities of its own raw material resources to bolster the lagging satellite economies or risk satellite economic reorientation toward the West. The Soviet Union chose to do neither, and, as a result, the initial measures taken were wholly inadequate to avert the further deterioration in the economies of the satellites which contributed directly to the Polish and Hungarian upheavals in the fall of 1956.

2. The period of the carrot

Following the 1956 uprisings the U.S.S.R. sought to restore political and economic stability to the satellites by offering major economic concessions and by removing the more blatant inequities in Soviet economic dealings with several of the satellites. Concessions included debt cancellations, eliminating discriminatory pricing practices, and the like. Most important, the Soviet Union agreed to assist the satellites in overcoming dislocations caused by the Polish and Hungarian events and generally to assist their economic recovery. Thus, the Soviet Union extended large emergency credits in the form of commodity deliveries and foreign exchange (see discussion on credits below). It also negotiated supplementary trade agreements notably with East Germany and Bulgaria, assuring those countries of additional markets for the products of depressed industries and guaranteeing them additional supplies of industrial raw materials and foodstuffs generally in short supply.

Following the attainment of relative economic stability in the satellites, the U.S.S.R. in 1957 and 1958 renewed its efforts to achieve economic coordination in Eastern Europe. New long-term economic plans of the satellites for the period 1961-65 were to be dovetailed with the new Soviet 7-year plan (1959-65). Economic coordination was to be effected on a sector-by-sector basis, with priority going to the development, on a national or regional scale as appropriate, of an adequate raw material base for the Soviet bloc as a whole. In support of the economic coordination program, the Soviet Union negotiated 5-year (1961-65) trade agreements with each of the satellites, in which it undertook to be the principal supplier of satellite import requirements for industrial raw materials, fuels, and foodstuffs, and the principal export market for satellite manufactures.

The U.S.S.R. has since made continued efforts to strengthen the satellite economies within the framework of the CEMA integration program, increasing supplies of raw materials, furnishing economic development loans and emergency credits where needed, encouraging joint satellite investment projects, etc. That the Soviet leadership is now far from satisfied with the progress of the satellite economies and the integration program is evident in the decision in June 1962 to create a new executive directorate to oversee CEMA and the appointment to that body on a full-time basis of the men who have been the chief economic planners of the U.S.S.R. and some of the satellites.

Indeed, the appointment of top-level planners would appear to indicate that a major effort will be made to correct the "unproductive expenditures of material resources [which] held back * * * growth * * *," to assist the limping agricultural economies of the European bloc, and to strengthen the Soviet bloc economy in general. Given Khrushchev's self-imposed economic competition between East and West, the task of making the CEMA economic grouping more viable becomes even more urgent in the face of the rapid strides being made by the European Common Market.

3. Economic assistance

Varying use of the carrot and stick by the U.S.S.R. with respect to its European satellites is perhaps best exemplified by its economic assistance policy (or lack thereof). During the first decade following

World War II when unrequited Soviet imports (reparations payments, war booty, profits from Soviet-satellite joint-stock companies, etc.) could be counted in the tens of billions of dollars, the U.S.S.R. sporadically extended credits to the satellites as an ad hoc response to particular situations. The bulk of the economic assistance extended by the Soviet Union during the period 1945-55, which amounted to about \$1.5 billion, consisted of credits to Poland and East Germany, in the latter case, apparently in response to the unrest in East Germany in 1953.

TABLE 4.—*Soviet economic credits and grants extended to the European satellites, 1945-62*

[Millions of U.S. dollars]

	1945-55	1956	1957	1958	1959	1960	1961	1962	Total
Albania.....	106	-----	48	-----	93	-----	-----	-----	247
Bulgaria.....	108	92	72	44	-----	162	-----	-----	568
Czechoslovakia.....	48	-----	14	-----	-----	-----	-----	-----	62
East Germany.....	363	20	260	235	-----	-----	475	(1)	1,353
Hungary.....	43	41	262	35	-----	-----	-----	-----	381
Poland.....	614	300	-----	-----	-----	-----	-----	-----	914
Rumania.....	94	95	-----	-----	-----	-----	-----	-----	189
Total.....	1,466	548	656	314	93	162	475	(1)	3,7

¹ The U.S.S.R. reported a credit to East Germany in February 1962 valued at \$310 million. It is believed that this was part of the \$475 million credit extended in 1961.

During the year of the revolts and in the succeeding year (1956-57) the U.S.S.R. provided economic aid to the satellites amounting to about \$1.2 billion,⁵ or almost as much as that provided in the previous decade. In addition, the U.S.S.R. wrote off various debts for Soviet aid extended before 1956 and for the repurchase of Soviet shares in the joint Soviet-satellite companies estimated at a value of \$1 billion. Also, the Soviet Union agreed to renegotiate to the advantage of the satellites previous agreements concerning prices for "commercial and noncommercial services," costs of Soviet troop maintenance, and certain transfers of Soviet property. The estimated value of these additional concessions was almost \$1 billion. Other benefits which have accrued to the satellites since 1956 include more favorable loan repayment terms.

The 1956-57 period thus represented the pinnacle of Soviet largesse with respect to Eastern Europe, and it was essentially a rescue operation. Nevertheless, despite the decline in credits to the European satellites since that time, these years marked the end of gross Soviet exploitation of the area and the beginning of Soviet recognition that its own self-interest lay in the economic well-being of the Soviet bloc as a whole. With the exception of aid to East Germany, practically all Soviet economic assistance to the bloc since this period has been in the form of economic development credits to the lesser developed countries.

4. Trade

Spurred by the "closed bloc" policy of Stalin, Soviet trade with the European satellites increased rapidly in the early postwar period—from approximately \$400 million in 1946, or less than one-third of total Soviet trade, to more than \$3 billion in 1953, or more than half

⁵ Excluding Soviet credits for the purchase of Soviet holdings in the dismantled joint-stock companies.

of total Soviet trade of \$5,700 million. More importantly, the orientation of the Satellite countries' trade shifted radically toward the U.S.S.R. By 1953, the share of the U.S.S.R. ranged from one-third of the foreign trade of Hungary and Poland to nearly three-fifths of Bulgarian and Albanian trade (see table 6). The failure of the Soviet Union to provide an expanding market for satellite exports or a reliable source of raw materials is reflected in the decline of the share of the U.S.S.R. in the satellites' trade between 1953 and 1955. Since then, however, Soviet-satellite trade has undergone a substantial increase, averaging more than 11 percent annually through 1961 when it reached \$6.5 billion (see table 5). The growth of Soviet-satellite trade has been particularly rapid since the beginning of the Soviet 7-year plan period (1959-65), and is expected to be maintained throughout the period, engendering an even greater dependence of the satellites on the U.S.S.R.

TABLE 5.—*Soviet-satellite trade since 1955*

[In million of current U.S. dollars]

	1955	1956	1957	1958	1959	1960	1961
Soviet exports.....	1,792	1,768	2,550	2,320	2,950	3,118	3,420
Soviet imports.....	1,663	1,815	1,915	2,206	2,520	2,819	3,066
Total.....	3,455	3,583	4,465	4,526	5,470	5,937	6,486

TABLE 6.—*Soviet share in satellite trade*

[Percent of total satellite trade]

	1953	1955	1960	1965 estimate
Albania.....	57	40	53	(¹)
Bulgaria.....	56	46	53	54
Czechoslovakia.....	36	34	34	38
East Germany.....	(¹)	38	43	45
Hungary.....	34	22	29	36
Poland.....	33	32	30	35
Rumania.....	(¹)	49	40	44

¹ Not available.

In recent years, the bulk of Soviet trade with the satellites has been conducted with the more highly industrialized countries of East Germany, Czechoslovakia, and Poland; trade with these countries accounts for more than two-thirds of total Soviet-satellite trade. These three countries, as well as Hungary, provide the U.S.S.R. with about three-fourths of total Soviet imports of machinery and equipment. These imports supply a substantial share of total Soviet requirements for the plan goals of certain sectors, for example, transport, metallurgy, chemicals. By the same token, these are the countries which account for a large share of the Soviet fuels and raw materials exported to the satellites. Soviet trade with the lesser developed satellites of Rumania and Bulgaria is of a different nature, involving, generally, the export of Soviet manufactured goods in exchange for raw materials. Generally speaking, however, Soviet-satellite trade can be represented as an exchange of Soviet fuels and

raw materials for satellite machinery and equipment and finished consumer goods (see tables 14 and 15 appendix).

C. TRADE WITH CHINA: FROM THE CARROT TO THE STICK

From the very beginning of Communist rule in China, Soviet-Chinese trade increased at a rapid pace. Throughout most of the decade of the 1950's, China was the U.S.S.R.'s most important trading partner and Soviet economic policy toward China was reflected in the economic, technical, and military assistance provided to China by the U.S.S.R. The keystone of Soviet-Chinese economic relations was in the 291 major industrial projects scheduled to be built in China through 1967 using Soviet machinery, equipment, and technical assistance.

Such Soviet support as has been provided for China's drive to become a major industrial and political power has been motivated by a desire to bolster an alliance designed to enhance the strength and world power position of the Soviet Union and the bloc as a whole. Thus, until recently, the economic relationships between the two countries could be characterized as one of mutual accommodation. The intrusion, however, of ideological and political differences into Sino-Soviet economic relations led to the mass withdrawal of Soviet technicians from China in mid-1960. The resulting mistrust between the two trading partners, combined with rapidly worsening economic conditions in China and the apparent refusal of the U.S.S.R. to provide more than a modicum of economic assistance (or the refusal of China to make the ideological obeisances which might be the price of such aid), caused Sino-Soviet trade to decline sharply. In 1961 this exchange was only two-fifths of the 1959 peak.

In view of the ambitious industrialization program envisaged by the Chinese leadership, Soviet financial assistance to China cannot be characterized as having been extensive. While the value of the equipment involved in the projected 291 industrial installations has been estimated at \$3.3 billion, the payment for much of this equipment was apparently scheduled out of current Chinese export earnings. During the first half of the 1950's the U.S.S.R. extended China some \$1.3 billion in financial assistance, only part of which was designated for economic purposes. Practically all of these credits had been utilized by the Chinese by 1956 and the Soviet equipment moving under the technical assistance program since that time has had to be financed out of current Chinese export earnings. No other assistance was provided until 1961 when the U.S.S.R., recognizing that China could not settle its accumulated trade indebtedness of \$320 million, funded this debt over a period of 5 years. Apart from providing \$40 million worth of sugar on credit, however, the U.S.S.R. did nothing to facilitate China's acquisition from abroad of badly needed commodities and foodstuffs in 1961. Thus, the total of Soviet credits extended to China since 1950 has amounted to about \$1.7 billion, a sum roughly equivalent to Soviet credits and grants extended to the small Asian bloc countries of Mongolia, North Vietnam, and North Korea.⁶

⁶ A substantial increase in extensions of credits and grants to these countries by both the U.S.S.R. (about \$500 million in 1960-61) and China (about \$300 million) may have been attributable to Sino-Soviet competition for the fealty of these countries. The outcome of the competition with respect to Mongolia appears to have been resolved in favor of the U.S.S.R. as testified by the recent adherence of Mongolia to CEMA.

TABLE 7.—*Soviet-Chinese trade, 1950-61*

[Millions of current U.S. dollars]

Year	Exports	Imports	Balance	Total
1950.....	388	188	+200	576
1951.....	476	322	+144	808
1952.....	554	414	+140	968
1953.....	698	475	+223	1,173
1954.....	759	578	+181	1,337
1955.....	748	644	+104	1,392
1956.....	733	764	-31	1,497
1957.....	544	738	-194	1,282
1958.....	634	881	-247	1,515
1959.....	955	1,100	-145	2,055
1960.....	817	848	-31	1,665
1961.....	367	551	-184	918

The statistics of Sino-Soviet trade reflect the recent vagaries of Soviet-Chinese economic relations. (See table 7.) These show a relatively steady increase in the volume of trade between these two countries until 1959 and then a sharp decline beginning in 1960. As indicated in the table, the level of trade in 1961 marked a 10-year low in Sino-Soviet exchange. Reflected in the trade balance figures is the Chinese utilization of Soviet credits in the early period and repayments beginning in 1956. According to Chinese budget figures, repayments by the end of 1960 amounted to some \$800 million, leaving about \$900 million yet to be repaid.

The commodities exchanged in Soviet-Chinese trade represent essentially an exchange of Soviet machinery and equipment for Chinese raw materials and consumer goods. This pattern reflects Soviet-Chinese trade throughout the period until 1961 when Soviet exports of equipment and Chinese exports of food dropped sharply as a result of Chinese economic difficulties.

In 1961, Soviet exports of machinery and equipment to China dropped by some \$400 million and amounted to less than 30 percent of total exports while Soviet exports of petroleum, maintained at the same absolute limit, rose to almost 50 percent of total Soviet exports. Soviet imports of food dropped almost to zero. Imports of manufactured consumer goods also declined somewhat, but accounted for almost two-thirds of the total in a smaller volume of total imports from China. (See tables 16 and 17, appendix.)

IV. TRADE WITH THE FREE WORLD

A. THE TRADITIONAL PATTERN

1. *Unchanging commodity composition of trade with industrial West*

Soviet economic intercourse with industrialized non-Communist countries has always represented a timesaving device, for trade has made possible a rapid shift from a primitive to a modern, more productive technology in a large number of industries. So long as some part of the Soviet economy lags technologically behind the West, the U.S.S.R. will always have available a ready device for buoying its growth rate through imports. In shifting to a more advanced—i.e., more productive—technology, the Soviet Union borrows all the resources, including time, that must go into the research and development of more efficient techniques.

Soviet trade with the industrial West today comprises the same type of exchange, attended by the same kind of problems as that of

the late 1920's. Soviet agricultural goods and raw materials are exported to pay for the technology embodied in imported Western machinery. In addition Soviet exports must earn sufficient foreign exchange to pay for the services of Western transport facilities and certain industrial raw materials not produced in sufficient quantity within the U.S.S.R.

Any economy whose resources are consistently as fully utilized as are those of the U.S.S.R. is subject to overt or repressed inflationary pressures. In the case of the U.S.S.R. repressed inflation has long been manifest in the chronic tendency of imports to outrun exports with the accompanying chronic necessity for an export of gold.

The fact that the commodity composition of Soviet trade with the industrial West has remained virtually unaltered over the past three decades, despite great changes in the volume and composition of domestic output, is indirectly the result of these chronic inflationary pressures. The Soviet economy, subject to full resource utilization, high investment, and rapid growth, is taut; it is an economy of shortages, one which we would describe as a "sellers' market." Because of pervasive and persistent shortages, no energy need be devoted to selling or marketing; rather, buyers seek out sellers, often on a black market with the offer of illegally high prices.

Although the Soviets have proven themselves to be experienced bargainers in a situation of bilateral monopoly, they remain inexperienced sellers in a competitive market of differentiated products. Thus, although their own output of highly fabricated goods, especially producers goods, is now a much larger proportion of total product than it was three decades ago, their exports to the developed countries of the West continue to be composed almost entirely of raw materials. The composition of their exports has been stable because they are unable—or unwilling—to develop the selling and service organization necessary to market their manufactured products. It is easier, and therefore in the short run yields a greater return in net foreign exchange receipts, for the U.S.S.R. to continue to export the great staple raw materials.

2. Preference for predictable markets

There are in the West highly organized markets (for wheat or cotton, for example) where the total volume of the commodity purchased and sold is so great, and the numbers of buyers and sellers active in the market so large that Soviet exports can normally be absorbed without causing a flurry. In dealing in such markets Soviet selling costs are kept to a minimum and their net foreign exchange receipts are that much larger. Moreover, because Soviet exports are a small part of the total supplies traded on these markets, the U.S.S.R. can expand significantly the amount it offers for sale there without depressing price. These markets are additionally attractive to the U.S.S.R. because the ability to predict with some certainty the quantity that must be sold in order to earn the necessary foreign exchange is a great advantage for a planned economy.

This same stability and predictability characterizes the market for petroleum, aluminum, tin, and gem diamonds, commodities offered in increasing quantities by the U.S.S.R. in recent years. These are administered markets where prices remain stable over relatively long periods of time and where the quantities of the commodity handled

are subject to fairly rigid direct or indirect controls administered by the sellers. In order to gain access to such markets, the U.S.S.R. has often had to lower prices enough to attract marginal buyers. These bargain prices have caused considerable concern in the West that the U.S.S.R. was attempting to disrupt the order of the market. Actually, however, a careful study of Soviet behavior in these cases indicates that after Soviet sales at bargain prices have attained the desired volume, the U.S.S.R. has quietly raised its prices to the level of the market.

It seems quite likely that no one was more surprised than Soviet exporters when in 1958 Soviet sales of tin were so large as to cause the temporary suspension of the International Tin Agreement. In contrast, Soviet market research in such fields as aluminum, gem diamonds, flax, and zinc seems to have been of much higher quality. Additional quantities of these and other materials have been successfully marketed in the West, either with no depressing effect on price or with only a temporary price reduction.

3. Chronic problems of finance

Despite expanding raw material sales, Soviet foreign exchange earnings have consistently fallen short of the requirements of their import program. Since 1950 the U.S.S.R. has been forced to sell nearly \$2 billion in gold to settle its international accounts. Soviet gold holdings and Soviet gold production are state secrets of the highest order, known probably only to a very few of the Kremlin leaders. Although Soviet spokesmen had done nothing to discourage Western speculation of an immense hoard of gold in Moscow which is annually enriched by a huge flow from current output, the fact remains that Soviet behavior in international markets is not that of a country possessed of a large reserve. The assiduousness with which they have cultivated their reputation in international commercial circles, the promptness with which they have filled contracts, the eagerness with which they have pursued new trade contacts bespeak their longrun interest in international trade with the West.

The vigor of their bargaining over price, their attempts to tie imports to exports, their recent search for medium-term credits of increasingly long duration, their pressure for most-favored-nation treatment from the West, above all the unpredictable composition of their raw material exports which suggests an annual harrying search for additional foreign exchange earners—all these bespeak an attempt to conserve what gold they have. In addition, gold production appears to be a relatively expensive operation within the U.S.S.R., making gold sales at the fixed price of \$35 an ounce an exceedingly expensive means of settling international accounts.

It thus appears that Soviet eagerness to sell more to the West represents a genuine concern about the means of financing their imports. Despite this concern, however, Soviet trade officials have given no indication of knowing what to do about it. The only devices for increasing sales in the industrial countries of the free world of which they seem to be aware are participation in monopolistic agreements or bargain prices. They have given no indication of a willingness to make the investment in time and resources necessary for successful marketing of their highly fabricated goods at competitive rather than cutthroat prices. On the other hand the promptness

with which they have raised prices once this device has produced the desired result is a strong indication of their interest in minimizing the cost of acquiring foreign exchange.

B. THE ECONOMIC OFFENSIVE

Since the mid-1950's the expansion of Soviet economic relations with the underdeveloped countries of the free world has been the most dramatic of the many dynamic developments characterizing total Soviet foreign trade. Until the shift from a defensive to an aggressive foreign economic policy, Soviet trade with these areas amounted to only about 5 percent of total Soviet trade, and to one-quarter of Soviet trade with the free world. By 1962, however, trade with these areas had grown to 15 percent of total trade, and to nearly 45 percent of Soviet-free world trade. The rapid expansion of commodity exchange between the U.S.S.R. and these areas was accompanied by an equally rapid expansion of other contacts—economic, cultural, and political. The number of Soviet technicians working on various developmental projects in underdeveloped countries has grown to nearly 7,000 while the number of students and trainees from these areas in schools or institutes in the U.S.S.R. has similarly mushroomed. Whole armies have been provided with Soviet military equipment and trained in Soviet military techniques, and delegations of various sorts constantly travel back and forth between the bloc and the underdeveloped countries.

All this is a very great change. Before the onslaught of the economic offensive, Soviet interest in these areas was probably equally great, but its ability to implement the interest was limited by domestic priorities. Economic contacts were largely confined to commerce, and commerce was primarily the purchase of certain materials—rubber, cotton, and wool—for cash. An export surplus in Soviet trade with the industrial West was used to finance imports primarily from the outer sterling area.

The Soviet economic offensive is an integral part of Soviet foreign policy to extend Soviet influence. The uncommitted and politically unstable countries of the free world, most of which have recently emerged from colonial rule with a legacy of anti-Western sentiment, have offered the Communists the "weakest links" in the chain of international relations through which the political and economic encirclement of Europe and the political isolation of the United States could be accomplished. The immediate Soviet ambition has been to eradicate Western influence in these newly independent areas and simultaneously to render them increasingly vulnerable to communism. At the same time the Communists have hoped to create economic pressures in Western industrialized countries which are presumed to be dependent on underdeveloped areas for markets and sources of supply.

The economic offensive has employed a variety of techniques to accomplish its ends. It has been characterized by a pragmatic eclecticism in which offers of trade and various forms of aid have been combined with propaganda, subversion, and political support. It has provided a wide variety of arms and military equipment on credit, the signing of the military agreements being followed very promptly by the shipment of the equipment and dispatch of Soviet

technicians to train the recipients in its use. The U.S.S.R. has offered lines of credit for economic development, typically \$100 million at 2½ percent for 12 years. Most of Soviet foreign aid has specified repayment in either the exports of the country or in convertible currency, the form to be determined by negotiation at the time repayment is due.

Soviet economic aid has been used to construct projects as sizable as the Aswan Dam in Egypt or the Bhilai steel mill in India, and as modest as small cement plants or workshops. A significant proportion of total aid expenditures to date has been used to finance the services of Soviet technicians and specialists of all kinds. Soviet geologists have surveyed the natural resources of countries from Ghana and Egypt, through Iraq, Afghanistan, and India to Nepal; Soviet advisers have been active in key governmental ministries and Soviet engineers have erected a great variety of industrial installations and trained indigenous populations in their use.

The economic offensive had been supported by a propaganda barrage equally diverse in its composition. Radio broadcasts in the tongues of Africa, the Middle East, Asia, and Latin America have multiplied in number, printed matter has been distributed directly to literate populations, books and periodicals in native languages have been made available to local dealers at token prices and newsprint has been sold to publishers at prices which could not fail to curry favor. In addition a program of scholarships for study in the U.S.S.R. has brought nearly 6,000 students from Asia, Africa, and Latin America to the U.S.S.R. since its inception.

Although the U.S.S.R. has served as the leader and prime mover, this program to win the underdeveloped countries from the West is a blocwide effort. The U.S.S.R. accounts for about three-quarters of the total effort, while the European satellites have supported the Soviet economic thrust and Communist China has engaged in a smaller foreign aid program of its own, largely restricted to southeast Asia. The countries of Eastern Europe appear to participate in the aid program both on their own account and as subcontractors and suppliers to the U.S.S.R.

Since 1959 and 1960, the peak years of the Soviet economic aid program, the emphasis in Soviet foreign aid has shifted back to military aid and technical training. From the Soviet viewpoint military aid must seem to yield maximum returns with minimum costs. First, countries seeking arms are often deeply embroiled in a dispute, domestic or foreign, and therefore in the state of turmoil in which Communist agitation gains most adherents. Second, the sale of arms, on current or deferred payment terms, costs the U.S.S.R. little. If the military equipment sold is obsolete in the U.S.S.R., as has often been the case, its opportunity cost is zero, for it has already been superseded by an improved model. If the equipment is in current production, then the amount provided to the underdeveloped countries is likely to be such a small fraction of total output that its opportunity cost is slight. In contrast, the opportunities for domestic use of the resources going into a modern integrated steel plant, which are foregone when the plant is sold on credit to another country, would be much more significant to Soviet economic planners.

Perhaps of prime importance is the potential impact of Soviet military assistance to underdeveloped countries on the unity and cohesiveness of the Western Allied Powers. The prospect of a politically as well as an economically United Europe has not only become more imminent in recent months, but more formidable from the Soviet viewpoint for two reasons. The first is Britain's recently evidenced willingness to place ties with the six continental countries of the European Economic Community ahead of existing ties with members of the Commonwealth and the European Free Trade Area, both of which were created by the British. British participation will mean a more potent European Community, economically and politically. The second lies in the fact that Communist parties all over the world are deeply divided into two groups: those who favor traditional, Stalinist policies and those neoclassicists of the Communist movement who support Khrushchev's revision of the doctrine. The approach to Western unity could not come at a more uncomfortable time for the Kremlin leaders, struggling as they are with a fracture in their erstwhile monolithic body politic. Thus Moscow, while acting to reinforce the economic and political bonds existing in Eastern Europe, would place a special premium on any current development which might promote divisiveness among the Western allies. If the provision of arms to Indonesia could so exacerbate the West Irian issue as to cause a split between the Dutch and their Western allies, Moscow would undoubtedly consider the rewards ample to cover its costs. And if the installation of medium-range missiles on the island of Cuba could make the United States impotent in the world arena, economic calculus would be considered irrelevant.

Soviet bloc trade with the underdeveloped countries has been stimulated both indirectly by the existence of Soviet aid and the fact of more extensive contacts and directly by Soviet and satellite offers to buy and actual purchases of the major exports of these countries. The Soviet bloc has sometimes contracted to buy nearly the entire annual production of the single or most important export of a country dependent on export receipts, and has timed the offer to coincide with a period when the world price of the commodity was especially depressed. In this way it has become the major trading partner of Guinea, Egypt, Mali, and Cuba. It has further signed long-term trade and payments agreements providing for the barter of raw material exports against Soviet fuel and capital goods. Such agreements are especially attractive to the underdeveloped countries whose imports of capital and consumer goods are dependent on export receipts which have fluctuated rather violently with the world price of their export commodity.

As a result Soviet commodity exchange with the underdeveloped countries has grown at a rate of 30 percent a year since 1955. Cotton, rubber, and sugar account for 68 percent of total Soviet imports from these countries. Soviet exports show a similarly concentrated commodity composition, with machinery and petroleum representing one-half of the total. Roughly two-fifths of Soviet exports to these areas represent credit-financed exports moving under the aid program while about one-fifth of Soviet imports represents repayment of past credits, mainly military.

TABLE 8.—*U.S.S.R. trade with underdeveloped countries in 1961*

[Millions of dollars and percent]

	Value	Percent
Total exports.....		100
Machinery and equipment.....		
Complete plants.....		
Petroleum.....		
Rolled steel.....		
Wood products.....		
Food.....		
Total imports.....		100
Cotton.....		
Rubber.....		
Food.....		
Nonferrous metals.....		

The pattern of Soviet trade within the underdeveloped areas in part reflects the concentration of the Soviet economic offensive. Five countries have received 70 percent of total Soviet economic aid while the entire program embraces 2 dozen recipients. The greater importance of Latin America in trade than in aid reflects the lack of receptivity on the part of countries in the area (excepting Cuba) to Soviet aid offers. Soviet interest in the area, however, is indicated in the volume of commerce. The concentration of aid and trade among individual countries is in part a reflection of a few large aid contracts. During the years (1956-58) when Soviet materials were being delivered for the construction of the Bhilai steel plant, Indian imports from the U.S.S.R. more than tripled in value. The period of heavy deliveries of Soviet goods for the Aswan Dam began in 1961.

TABLE 9.—*Economic credits and grants extended by U.S.S.R. to underdeveloped countries, January 1954-June 1962*

[Million U.S. dollars]	
Total.....	3, 550
Latin America.....	400
Argentina.....	100
Cuba.....	300
Middle East.....	875
Iraq.....	180
Syrian Arab Republic.....	150
Turkey.....	10
United Arab Republic.....	510
Yemen.....	25
Africa.....	420
Ethiopia.....	100
Ghana.....	95
Guinea.....	65
Mali.....	50
Somali Republic.....	55
Sudan.....	25
Tunisia.....	30
Asia.....	1, 775
Afghanistan.....	505
Burma.....	10
Cambodia.....	5
Ceylon.....	30
India.....	810
Indonesia.....	370
Nepal.....	10
Pakistan.....	35
Europe.....	80
Iceland.....	5
Yugoslavia.....	75

TABLE 10.—*Distribution of Soviet trade and aid with free world underdeveloped countries, by area*

[Millions of dollars and percent]

	Total trade (1961)		Economic aid deliveries 1954-62	
	Value	Percent	Value	Percent
Total.....	1, 769	100	882	100
Latin America.....	667	38	52	6
Middle East.....	368	21	269	30
Africa.....	122	7	68	8
Asia.....	502	28	418	47
Europe.....	109	6	75	9

Concentration of Soviet aid in a few countries reflects also an increasing selectivity on the part of the U.S.S.R. Although aid has always been concentrated among a few recipients, in the early years of the program, its scope and distribution were probably more limited by lack of receptivity on the part of the underdeveloped countries than by Soviet choice. As the program has grown, as projects have been successfully implemented with no more than normal delays and missteps, and above all since the Soviet sputniks have endowed the U.S.S.R. with a new aura of strength and respectability, the number of countries willing to accept Soviet aid has also grown. The degree of concentration, however, has remained about the same. At present the Soviet aid program is concentrated in countries of strategic geographic location like Afghanistan, strategic international significance like India, or countries considered ripe for "socialism" like Cuba. For example, since 1960 when the Castro regime in Cuba adopted an "anti-imperialist" foreign policy, and nationalized the means of production, more than one-quarter of total Soviet aid extensions has gone to Cuba alone.

Soviet foreign aid has become an accepted fact of life in the underdeveloped world; in fact, it is generally acceptable because the U.S.S.R. has demonstrated its willingness and ability to provide up-to-date industrial equipment and training of all kinds. Since it has established itself, the U.S.S.R. can now afford to be more selective in dispensing its munificence. It seems likely that in the future the Soviet economic aid program will ebb and flow in intensity, continuing at less than peak levels until such time as the leadership perceives a new opportunity for an important potential candidate for membership in the Communist camp.

SOVIET TRADE WITH THE FREE WORLD IN 1961

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SOVIET TRADE WITH THE FREE WORLD, 1961

I. SOVIET FOREIGN TRADE POLICY

Foreign trade is a state monopoly in the Soviet Union and is wielded as an important instrument of national policy. Prior to World War II the Kremlin was obsessed with minimizing its vulnerability to economic pressure from the West, which allegedly held it in a "capitalist encirclement," and with insulating its planned economy from the business cycles typical to the outside world. Exports were offered on free world markets in sufficient volume to finance imports required to meet planned goals, and imports of capital goods were planned with a view to reducing the future need to import. Having a rigidly planned economy with a limited range of competitive exports, the Soviet Union typically favored a bilateral framework for the conduct of trade.

In the postwar period, and particularly since the death of Stalin, new circumstances and new directions in Soviet foreign policy have been accompanied by some modifications in Soviet foreign trade policy. Emerging from the war with a newly acquired string of European satellites, Stalin at first merely expanded somewhat his defensive and xenophobic theories on foreign trade and forged the satellites into what he called "the parallel market of the socialist world." This involved a radical shift of the economic ties of the European satellites from West to East, which served several Soviet objectives: (1) initially it facilitated the postwar reconstruction of the U.S.S.R. at the expense of the satellites; (2) it bolstered Soviet politico-strategic objectives by reducing economic ties with the West and consolidating the East European economies under Soviet hegemony; (3) it was expected to aggravate and expedite the "inevitable crisis of capitalism" by depriving the West of bloc markets.

Toward the end of the Stalin era, Soviet reconstruction had been accomplished and satellite economic ties with the West had been largely eliminated. But the problem of dealing with the economic requirements of Communist China and the appearance of serious internal difficulties in Eastern Europe required a reappraisal of Soviet economic policy toward the bloc. Furthermore, Soviet foreign policy in the less developed countries began to shift to the offensive, and this called for a new and more aggressive foreign trade and aid policy in those areas. Finally, the resistance shown by capitalism to its "inevitable" final crisis and doom, coupled with the emergence of the "peaceful competition" strategy, called for a more sophisticated approach to trade with the developed countries of the free world. Such a policy would provide for Soviet acquisition of Western technology on a continuing basis and perhaps also provide the Soviet Union with small toeholds for political leverage.

The Soviet Union now makes more flexible use of foreign trade in implementing its policies. The pursuit of economic self-sufficiency is still a major factor in Soviet trade with the free world, particularly

with the developed countries. But this is now tempered by increased Soviet self-confidence vis-a-vis the West and by the Soviet courtship of the less developed countries. In order to make closer association with the Soviet Union look more attractive to newly emerged nations, it is in Moscow's interest for its satellites to show a rapid rate of economic development. The metamorphosis of CEMA into a meaningful multilateral organization integrating the economies of Eastern Europe for dynamic and efficient growth (a goal which is not likely to be attained in the near future) could also enhance the image of the bloc as a commonwealth, beneficial to all members, an image which the Soviet Union wishes to project in the less developed areas.

At the same time, however, the less-developed countries are looking for tangible assistance, and to the extent that the Soviet Union grants such assistance in the form of long-term credits this represents a drain of capital away from the urgent requirements of the Soviet and satellite economies. Consequently, such credits may be held below the optimum level (in terms of Soviet political gain in the less developed countries) and Soviet assistance instead may take the form of trade deals in which the U.S.S.R. accepts the commodities which the less developed country can offer.

II. CURRENT TRENDS IN SOVIET FOREIGN TRADE

A. TRADE VOLUME

According to official Soviet statistics, Soviet trade turnover amounted to \$11.8 billion in current prices in 1961, representing a modest increase of 5.7 percent over the previous year. As shown in table 1, the growth of Soviet trade turnover in recent years has been irregular.

TABLE 1.—*Total Soviet trade turnover, 1955-61*

[In millions of dollars at current prices]

	1955	1956	1957	1958	1959	1960	1961
Turnover.....	6,530	7,215	8,319	8,647	10,514	11,191	11,831
Percent increase over previous year.....		10.4	15.3	3.9	21.6	6.4	5.7

Source for this and the other statistical tables in this paper: Foreign Trade of the U.S.S.R., a Statistical Review, for the respective years, published by the Ministry of Foreign Trade, Moscow.

However, a significant factor in the irregular growth of total Soviet trade in recent years has been the fluctuation in Sino-Soviet trade, which increased sharply in 1959, but declined in 1960 and dropped drastically in 1961. Total Soviet foreign trade with all countries except Communist China showed a more even development, increasing by 18.6 percent in 1959, 12.6 percent in 1960, and 14.5 percent in 1961.

In terms of constant unit prices, as given in official Soviet statistics, Soviet foreign trade turnover increased by 5.8 percent in 1961 over 1960, with exports rising by 9.7 percent and imports increasing by only 1.9 percent. Total trade turnover in terms of constant unit prices increased by 94.3 percent between 1955 and 1961. But as shown in table 2, the annual rate of increase in 1960 and 1961 was significantly lower than during any of the 4 previous years.

TABLE 2.—Index of physical volume of Soviet foreign trade, 1955-61

[Preceding year=100]

	1956	1957	1958	1959	1960	1961
Turnover.....	110.6	113.4	110.6	126.2	105.0	105.8
Exports.....	105.9	119.5	102.7	131.8	100.6	109.7
Imports.....	115.9	107.1	119.6	120.7	109.7	101.9

B. GEOGRAPHICAL DISTRIBUTION OF TRADE

Trade with the bloc.—Sino-Soviet trade declined precipitously in 1961, continuing a trend begun in 1960. Communist China, which, in 1959, was the Soviet Union's most important trading partner, dropped to fourth place, behind East Germany, Czechoslovakia, and Poland (see appendix A). Trade with the bloc, as a whole, amounted to nearly \$7.8 billion in 1961, accounting for 66 percent of Soviet trade turnover in 1961, as compared with 73 percent in 1958, 74 percent in 1959, and 71 percent in 1960. (Cuba is not counted here as a member of the bloc.)

The share of the CEMA countries in total Soviet trade rose to 54.8 percent in 1961, the highest point in the period 1955-60 (the average share during this period being 52.3 percent). The rise was presumably due, in part, to a redirecting of trade caused by the abrupt decline in Sino-Soviet trade in 1961.

Developments in 1962 in the field of bloc economic integration could have some effect on the direction of Soviet trade in the future. A meeting of the top leaders of the CEMA countries in June co-opted CEMA's first Asian member, Outer Mongolia, and adopted a set of principles intended to govern increased integration of the bloc economies. At the same time, bloc discussion of developments in the Common Market suggest that a more realistic appraisal of the successes of the Common Market now prevails within the bloc. This could bring about more determined bloc efforts to deal with the challenge of the Common Market and with the problems resulting from Common Market actions affecting the importation of bloc goods.

On the other hand, economic stumbling blocks built into the Communist system, as well as the political obstacle represented by reluctance of the satellite leaders to go too far along the road of interdependence, can be expected to operate against rapid progress toward bloc economic integration. Furthermore, it is by no means certain that increased bloc integration would necessarily involve a significant redirection of Soviet trade. The natural tendency of the Soviet Union, as a powerful country with rich resources, is to develop all branches of industry, and as a result much of the integrating effort of CEMA has its most pronounced effect on intrasatellite relations, rather than on Soviet satellite relations. Finally, the Soviet Union must consider the requirements of its political policies in other areas, particularly among the less developed countries of the free world.

Trade with nonbloc¹ countries.—Soviet trade with countries outside the Sino-Soviet bloc in 1961 amounted to about \$3.9 billion, accounting

¹ The term "bloc" is used in this paper for convenience to refer to countries which by Communist definition comprise the "socialist camp"—i. e. the U.S.S.R., Poland, Czechoslovakia, Rumania, Bulgaria, East Germany, Hungary, Albania, Communist China, Mongolia, North Korea, and North Viet Nam. Cuba is not included.

for 34 percent of total Soviet trade turnover. Free world developed countries accounted for 18 percent of the Soviet total, and the less developed countries accounted for 15 percent.²

Soviet trade with the developed countries of the free world increased slightly in 1961 in absolute terms, but as a percentage of total Soviet trade turnover remained the same as in 1960. The United Kingdom, with 3 percent of total Soviet trade turnover, was the U.S.S.R.'s leading trade partner among the developed countries, followed by West Germany and Finland. Soviet imports from the United Kingdom and West Germany in 1961 included equipment for food and light industry (\$53.5 million), equipment for chemical industry (\$62.1 million), steel pipe (\$52.4 million), copper (\$22.7 million), and rolled steel (\$21.7 million). Finland's exports to the U.S.S.R. included wood, cellulose, and paper products (\$55.6 million) and ships (\$35.8 million).

Japan, with 1.5 percent of Soviet trade turnover in 1961, ranked as one of the Soviet Union's less important trading partners. However, there are prospects for a significant increase in trade as a result of the current quickening of interest on the part of Japanese business. A delegation of Japanese businessmen visited the Soviet Union in August of this year and returned with a contract to sell ships and part equipment worth \$96 million to the Soviet Union in 1964-65. The group also discussed a deal including sales of textiles worth \$500 million over a 3-year period. However, an important obstacle to increase Soviet-Japanese trade has been the dearth of Soviet commodities appropriate to the Japanese market. Japan bought 2.2 million tons of Soviet crude oil in 1961, but has indicated reluctance to accept significantly larger amounts.

Trade with the United States continued to be an insignificant factor in total Soviet trade, amounting to \$75 million in 1961, according to Soviet data, less than 1 percent of Soviet trade turnover. (U.S. Department of Commerce data show that United States-Soviet trade amounted to \$65.9 million in 1961.)

Soviet trade with the less developed countries—principally Cuba—showed a sharp increase in 1961, jumping from \$1,208 million in 1960 to \$1,769.2 million in 1961. This large increase reflects Soviet political interest in these countries, and was presumably made possible in part by the utilization of Soviet credits. Soviet exports of machinery and equipment to the less developed countries doubled in 1961 over 1960, probably representing in part a diversion of these items from Communist China.

As a percentage of total Soviet trade, the share of the less developed countries jumped from 9.2 percent in 1959 and 10.8 percent in 1960 to 15 percent in 1961. However, the major factor in the increase registered by this group of countries was the striking increase in Soviet trade with Cuba: turnover between the two countries rose from \$174.6 million in 1960 to \$587.8 million (5 percent of Soviet turnover) in 1961. Soviet imports from Cuba, consisting almost wholly of raw sugar, amounted to \$312 million in 1961, while Soviet exports to Cuba,

² A residue of about 1 percent of turnover is unaccounted for in Soviet statistics, and as a result geographic breakdowns in this paper do not add up to 100 percent. The residue presumably involves, in part, trade with free world countries too insignificant to list.

principally machinery and equipment, petroleum and petroleum products, amounted to \$276 million (Soviet data do not include military shipments).

Following Cuba, the United Arab Republic was the next most important Soviet trading partner among the less developed countries. Soviet exports to the United Arab Republic amounted to \$109 million, 40 percent of which consisted of machinery and equipment (chiefly complete industrial plants), while imports, consisting chiefly of cotton, amounted to \$96 million. Although the United Arab Republic was drawing on Soviet credits during the year, a high level of exports had to be maintained in order to meet current payments on earlier arms credits.

The Malayan Federation qualifies as an important Soviet trading partner almost solely on the basis of sales to the Soviet Union of crude rubber, valued at \$169.5 million in 1961. India, accounting for 1.4 percent of Soviet trade turnover, received Soviet goods valued at \$95 million (including complete industrial plants valued at \$39.6 million and aircraft valued at \$6.7 million) while exporting goods valued at \$70 million to the Soviet Union.

Trade with African countries other than the United Arab Republic amounted to \$121.5 million in 1961, representing a slight increase over 1960. In both years, trade with these countries accounted for 1 percent of Soviet trade turnover. Guinea and Ghana were the most important trading partners among this group. Soviet exports to Guinea, valued at \$27.2 million, included complete industrial installations, trucks, and aircraft. Soviet exports to Ghana, amounting to \$15.4 million, included more than \$13 million worth of aircraft. Aircraft also constituted the principal Soviet export to Mali.

C. COMMODITY COMPOSITION

In the commodity structure of Soviet trade, machinery and equipment, ore, iron and steel, textile raw materials, and food play an important role in both imports and exports, as shown in table 3. In addition, rubber, textiles, and clothing are important imports, and petroleum and wood are important among the exports.

TABLE 3.—Commodity structure of Soviet trade, 1961

	Imports, as percent of total	Exports, as percent of total
Total.....	100.0	100.0
Machinery and equipment.....	29.8	16.1
Coal.....	1.3	3.6
Coke.....	.3	1.2
Petroleum, crude.....	.3	5.4
Petroleum products.....	1.8	7.3
Metalliferous ores and concentrates.....	4.8	4.2
Ferrous.....	(1)	(3.1)
Iron and steel.....	5.9	11.9
Rolled steel.....	(2.7)	(7.6)
Steel pipe.....	(2.7)	(1.0)
Nonferrous metals.....	2.8	3.5
Cable and wire.....	1.3	.....
Chemicals.....	1.5	1.2
Agricultural chemicals and fertilizers.....	.....	1.3
Rubber and rubber products.....	4.7	1.0
Wood and cellulose-paper products.....	2.1	6.0
Textile raw materials.....	5.2	6.1
Cotton.....	(2.2)	(4.7)
Grain.....	8	7.9
Wheat.....	(.8)	(5.5)
Meat and milk products, eggs.....	2.2	1.5
Vegetables and fruits.....	.....	.....
Sugar and confectionaries.....	5.8	1.5
Textiles.....	3.3	.9
Clothing.....	6.8	.2
Footwear.....	2.4	.1
Furniture.....	1.2	.....
Cultural and household goods.....	1.9	1.3

¹ Breakdown not given by source.

Machinery and equipment.—Soviet exports of machinery and equipment declined by 15 percent in 1960, dropping to 16.1 percent of the total value of Soviet exports in 1961, as compared with 20.5 percent in 1960 and 21.5 percent in 1959. The drop was caused by the sharp decline in deliveries of machinery and equipment to Communist China, which was partially offset, however, by increased machinery exports to other areas. Exports of machinery and equipment to less-developed countries more than doubled, rising to nearly one-third of Soviet exports in this category (see table 4). The share going to bloc countries, other than Communist China, also increased.

TABLE 4.—Distribution of Soviet exports of machinery and equipment, 1960-61

[Percent]

	1960	1961
Total.....	100.0	100.0
To European bloc countries.....	36.3	47.6
To Asian bloc countries.....	49.5	19.2
Communist China.....	44.2	11.2
To free world developed countries.....	1.2	1.8
To less-developed countries.....	12.8	31.2
Cuba.....	.6	6.3
India.....	2.2	5.6
UAR.....	2.0	4.6

In 1961, 37 percent of Soviet machinery exports consisted of complete industrial installations. Other important items in this category include tractors and agricultural machines, motor transport and garage equipment, laboratory and medical equipment, and civil aircraft and equipment.

On the other side of the ledger, machinery and equipment accounted for nearly 30 percent of Soviet imports in 1961, as they did in 1960. Equipment for the food industry and other light industry, railroad rolling stock, ships and marine equipment, and equipment for the chemical industry were the most significant types. About 27 percent of Soviet imports of machinery and equipment came from free world countries, headed by West Germany, England, France, and Finland (see table 5). Bloc countries, particularly East Germany and Czechoslovakia, provided nearly 72 percent of Soviet machinery and equipment imports. There is evidence that new Soviet orders for machinery and equipment from free world countries have been reduced beginning in mid-1961, but this slowdown in ordering will probably not be fully reflected in trade data until 1963.

TABLE 5.—Soviet trade in machinery and equipment, 1961

[In millions of dollars]

	Imports	Percent of total	Exports	Percent of total	Net imports ¹
Total.....	1,739.1	100.0	964.6	100.0	+774.4
European bloc.....	1,245.2	71.6	459.2	47.6	+786.1
Of which:					
East Germany.....	493.3	28.4	56.9	5.9	-----
Czechoslovakia.....	336.1	19.3	82.8	8.6	-----
Asian bloc.....	0	0	184.8	19.2	-184.8
Of which Communist China.....	0	0	108.1	11.2	-----
Free world developed.....	474.4	27.3	17.5	1.8	+456.9
Of which:					
West Germany.....	91.2	5.2	.5	0	-----
United Kingdom.....	77.0	4.4	0	0	-----
France.....	68.6	3.9	.7	0	-----
Finland.....	67.7	3.9	10.7	1.1	-----
Italy.....	43.2	2.5	0	0	-----
Japan.....	28.7	1.7	1.2	.1	-----
Sweden.....	25.3	1.5	.5	0	-----
Less developed.....	13.8	.8	301.3	31.2	-280.1
Of which:					
Cuba.....	0	0	60.9	6.3	-----
India.....	0	0	53.9	5.6	-----
United Arab Republic.....	0	0	44.1	4.6	-----

¹ + indicates an excess of imports over exports; - indicates an excess of exports over imports.

The Soviet Union is a net importer of machinery and equipment, and as a result of the decline in shipments to Communist China, net imports in this category rose from \$534 million in 1960 to \$774 million in 1961. As table 5 shows, the modern machinery imported from free-world developed countries in 1961 was approximately equal in value terms to shipments of Soviet machinery exported to Communist Asia and to the less developed countries. Thus an important factor in the large net Soviet importation of machinery and equipment is the net importation of these items from the East European satellites.

Food.—In 1961, food accounted for 13 percent of Soviet imports and 13.2 percent of Soviet exports. As shown in table 6, exports slightly exceeded imports in 1961 and 1960 in value terms at current prices. Some principal imports were fruits and vegetables from Bulgaria and Communist China; coffee and tea from India, Brazil, Communist China, and Ghana; and sugar from Cuba. Grain was exported to East Germany, Czechoslovakia, Poland and the United Kingdom. Food deliveries to the Soviet Union from Communist China have declined as follows: 1958, \$290 million; 1959, \$266 million; 1960, \$153 million; 1961, \$16 million. As shown in table 7, Chinese

deliveries of significant commodities such as soybeans, meat, rice, and vegetable oils dwindled to nearly zero in 1961.

TABLE 6.—*Soviet trade in food, 1960 and 1961*

[In millions of dollars]

	1960		1961	
	Imports	Exports	Imports	Exports
Total food ¹	640.0	701.3	756.7	792.3
Of which—				
Grain.....	17.0	467.8	46.3	473.8
Of which—				
East Germany.....		132.7		123.0
Czechoslovakia.....		119.9		83.0
Poland.....		59.1		39.0
North Korea.....		4.7		21.5
United Kingdom.....		14.1		41.0
West Germany.....		10.4		18.2
Netherlands.....		12.3		14.7
Cuba.....		3.4		14.6
Brazil.....		12.3		12.2
Finland.....		17.8		11.8
Italy.....		3.7		11.3
Rice.....	65.1		2.8	
Of which Communist China.....	55.2		.3	
Flour.....	2.1	7.0	2.0	23.0
Soybeans.....	47.8			15.0
Of which Communist China.....	35.7			1.0
Livestock for slaughter.....	26.0		40.6	
Meat and milk products, eggs.....	43.2	85.6	45.8	91.2
Of which—				
Communist China.....	19.6		1.9	
Poland.....	2.0	2.0	17.1	4.4
East Germany.....		43.3		54.9
Czechoslovakia.....		17.6		16.2
Cuba.....		5.2		6.8
Fish.....	18.8	36.2	8.4	40.2
Fruits and vegetables.....	111.0	8.3	128.4	2.6
Of which—				
Bulgaria.....	37.6		54.1	
Communist China.....	18.2		9.7	
Jam.....	15.4		20.6	
Of which Bulgaria.....	15.3		20.4	
Coffee, cocoa, tea.....	81.1	5.0	50.6	5.7
Of which—				
India.....	20.0		19.1	
Communist China.....	13.0		2.7	
Brazil.....	9.2		18.2	
Ghana.....	21.6		6.8	
Sugar, crude and refined.....	131.2	25.3	328.2	83.1
Of which—				
Cuba.....	103.8		300.4	
Communist China.....				* 46.2
Vegetable oil, edible.....	19.2	29.1	16.0	38.0

¹ Including corn and "seeds and fruits for industrial purposes" (chiefly soybeans).² Crude.TABLE 7.—*Soviet food imports from Communist China, 1958-61*

	Unit	1958	1959	1960	1961
Wheat.....	Thousand tons.....	0	48.0	47.6	10
Soybeans.....	do.....	478.4	638.9	351.0	10.3
Rice.....	do.....	452.8	658.4	415.6	2.3
Livestock for slaughter.....	Thousand tons live weight.....	11.2	13.0	13.1	4.0
Meat and meat products.....	Thousand tons.....	125.3	82.5	38.6	3.3
Fish.....	do.....	18.7	13.0	18.0	4.9
Tea.....	do.....	13.0	17.3	10.2	3.0
Vegetables.....	do.....	28.2	24.7	6.7	4.9
Fresh fruits.....	do.....	136.2	124.0	91.6	35.1
Canned fruits.....	Million cans.....	44.7	40.0	9.7	12.5
Edible vegetable oil.....	Thousand tons.....	68.0	64.3	29.4	0

¹ The U.S.S.R. exported 101,000 tons of wheat and 100,000 tons of rye to Communist China in 1961.

Petroleum.—An important earner of foreign exchange in the past, petroleum has played an increasingly important role in recent years. In 1961, petroleum and petroleum products together accounted for nearly 13 percent of the total value of Soviet exports, and, as shown in table 8, Soviet petroleum exports have climbed steadily since 1955. Offerings of Soviet crude petroleum below market prices have caused some stir in the world petroleum market. Soviet efforts have had the most success in Italy, which was the largest buyer of Soviet crude in 1961. A long-term Soviet-Italian trade agreement for the years 1962–65, signed in mid-1961, provided that Italy would import 4.2 billion tons of Soviet crude in 1962, this amount to increase by 100,000 tons each year through the last year of the agreement. Letters were also exchanged to the effect that Italy will purchase from the Soviet Union up to 14 percent of its import requirements for crude, so that actual purchases could exceed the amounts provided in the trade agreement. Cuba was the second largest purchaser of Soviet crude oil in 1961, followed by Czechoslovakia and Japan. The largest purchaser of Soviet petroleum products in 1961 was Communist China, followed by Sweden, Poland, and Finland.

TABLE 8.—*Soviet petroleum exports, 1955–61*

[In millions of metric tons]

		CRUDE	
1955 total	2.9	1960 total	17.8
Of which:		Of which:	
East Germany	.7	Italy	3.9
Poland	.4	Czechoslovakia	2.4
Czechoslovakia	.4	East Germany	1.8
Communist China	.4	Cuba	1.6
1956 total	3.9	Hungary	1.4
1957 total	5.9	West Germany	1.2
1958 total	9.1	Japan	1.2
1959 total	12.5	1961 total	23.4
Of which:		Of which:	
Italy	2.4	Italy	5.5
Czechoslovakia	1.8	Cuba	3.0
East Germany	1.6	Czechoslovakia	2.8
Hungary	1.2	Japan	2.2
		East Germany	2.1
		PETROLEUM PRODUCTS	
1955 total	5.0	1961 total	17.8
Of which:		Of which:	
Communist China	1.2	Communist China	2.9
Sweden	.7	Sweden	2.4
Finland	.6	Poland	1.7
1956 total	6.1	Finland	1.2
1957 total	7.8	Bulgaria	1.1
1958 total	9.0	Cuba	1.0
1959 total	12.9		
1960 total	15.4		
Of which:			
Communist China	2.4		
Sweden	2.0		
Finland	1.4		
Poland	1.4		

Other Commodities.—Soviet trade in other significant commodities is shown in table 9. Exports of rolled steel exceeded 3 million metric tons in 1961, with East Germany, which received 1.3 million tons,

TABLE 9.—Soviet trade in selected commodities

	1960		1961	
	Imports	Exports	Imports	Exports
	Billion dollars			
Metalliferrous ores and concentrates.....	314.0	242.9	280.2	252.6
	Thousand tons			
Rolled steel.....	949.6	3,728.3	927.3	3,017.9
Of which:				
France.....	156.4		124.5	
Italy.....	162.0	23.0	102.3	54.1
Austria.....	105.9		105.4	
East Germany.....		1,209.9		1,291.1
Rumania.....		499.1		584.6
Steel pipe.....	578.5	204.5	631.0	230.9
Of which:				
West Germany.....	245.8		199.8	
Rumania.....	146.1	28.0	183.3	30.7
Czechoslovakia.....	89.2	2.5	113.6	1.8
East Germany.....		72.1		99.7
Communist China.....		50.8		31.5
Natural rubber.....	190.9	49.1	360.3	63.4
Of which:				
Malaya.....	132.2		267.7	
Indonesia.....	33.4		52.3	
Cotton.....	193.1	390.9	141.6	382.6
Of which:				
United Arab Republic.....	111.0		91.8	
Communist China.....	46.9		11.3	
East Germany.....		86.3		83.2
Poland.....		76.8		74.8
Wool.....	61.5	18.0	55.3	28.1
Of which:				
Australia.....	15.6		14.4	
Communist China.....	11.1		5.8	
Mongolia.....	9.8		11.0	
East Germany.....		9.6		20.1
	Million meters			
Cotton textiles.....	143.3	195.3	60.9	197.1
Of which:				
Communist China.....	100.2		24.1	
Bulgaria.....		35.2		35.7
Indonesia.....		23.2		33.5
Mongolia.....		29.8		22.8
	Million dollars			
Clothing.....	400.0	10.3	397.4	10.6
Of which:				
Communist China.....	192.0		175.2	
Bulgaria.....	54.3		58.9	
Czechoslovakia.....	50.2		34.1	
	Million pairs			
Footwear, leather.....	29.7	.4	25.1	.4
Of which:				
Czechoslovakia.....	13.3		13.0	
Communist China.....	9.5		2.9	
	Million cubic meters			
Timber.....	.2	4.4	.2	5.7
Of which:				
Japan.....		1.0		1.3
Hungary.....		.9		1.0
Lumber.....	.4	5.0	.5	5.2
Of which:				
United Kingdom.....		1.8		1.6
East Germany.....		.7		.9

the most important customer. At the same time, a significant amount of rolled steel was imported from Western Europe and Japan. The Soviet Union imported large amounts of nonferrous ores and concentrates from bloc countries, but Soviet statistics do not provide a detailed breakdown. Ores and concentrates, chiefly iron ore but also including manganese and chrome ores, were exported to various bloc and nonbloc destinations. Natural rubber was imported from Malaya and Indonesia. Cotton was imported from the UAR and Communist China and exported to East Germany and Poland, with net exports amounting to 240,000 tons in 1961. Clothing, one of the more significant Soviet imports, came chiefly from Communist China, Bulgaria, and Czechoslovakia. Timber and lumber, an important Soviet export, went to a variety of customers inside and outside the bloc.

D. BALANCE OF TRADE AND BALANCE OF PAYMENTS

The Soviet Union enjoyed an export surplus of \$165.8 million in 1961, reversing the unfavorable balance of \$66.9 million in 1960. The export surplus in trade with the European satellites increased somewhat to \$354.1 million (see table 10), while the deficit with the Asian satellites increased more sharply to \$136.4 million as a result of the \$184.1 million deficit in trade with Communist China (representing Chinese payments against earlier Soviet credits).

Soviet trade with the developed countries of the free world continued to show a small deficit, but less than that accrued in 1960. Exports to the less developed countries almost doubled, and as a result the deficit in Soviet trade with those countries was sharply reduced, in comparison with 1960, to \$131.6 million. The total Soviet trade deficit with all nonbloc countries amounted to \$360 million in 1960 and \$165 million in 1961, of which the deficit with free world developed countries was \$91 million in 1960 and \$33 million in 1961.

TABLE 10.—U.S.S.R. balance of trade, 1960 and 1961

[In millions of dollars]

	1960			1961		
	Exports	Imports	Balance ¹	Exports	Imports	Balance ¹
Total.....	5,562.1	5,629.0	-66.9	5,998.1	5,832.3	+165.8
Bloc countries.....	4,083.5	3,821.7	+261.8	3,998.1	3,780.4	+217.7
European bloc.....	3,119.6	2,819.5	+300.1	3,420.1	3,066.0	+354.1
Asian bloc.....	963.9	1,002.2	-38.3	578.0	714.4	-136.4
Nonbloc countries.....	1,441.0	1,800.0	-359.8	1,877.7	2,042.7	-165.0
Developed countries.....	971.2	1,062.6	-91.4	1,058.9	1,092.3	-33.4
Less developed countries.....	469.8	738.2	-268.4	818.8	950.4	-131.6
Unlisted residual.....	37.6	6.5	+31.1	122.3	9.2	+113.1

¹ Plus (+) indicates a favorable balance, i.e., an export surplus, and minus (-) indicates an unfavorable balance.

Except for trade statistics, the Soviet Union does not publish the data necessary to give a precise accounting of the Soviet balance of payments. Even the most important elements in the payments balance with the free world can be described only in most general terms. The chronic Soviet trade deficit with the free world mentioned above is normally accompanied by a net transportation outlay on ocean freight charges paid to free world shipping lines amounting to about \$100 million annually.

An additional factor in recent years has been the medium-term government-guaranteed credits which the Soviet Union has received from various West European countries. Drawings on these credits are estimated at \$200 million annually in 1960 and 1961. On the other hand, however, substantial sums, probably exceeding \$200 million in 1961, are being drawn down against long-term Soviet credits extended to various less developed countries. Repayments of earlier drawn credits have been minimal, with the possible exception of some military credits to the United Arab Republic. The net effect of these factors can be assessed only in terms of the Soviet gold sales which offset presumably substantial deficits in the Soviet balance of payments. Soviet gold sales have averaged about \$200 million annually since 1955.

The Soviet Union at the present time is apparently faced with a number of foreign exchange problems which may make necessary a variety of adjustments in Soviet trade and credit arrangements if abnormal gold sales are to be avoided. Among such problems are the following:

(1) That portion of Soviet credits extended to less developed countries which has not yet been drawn down by those countries, amounting to about \$2.7 billion, constitutes a large potential drain on Soviet resources. These drawings have been increasing and appear to be slated for further increases during the next year or two.

(2) The credits obtained from Western Europe beginning in 1959 generally require repayment in 3 to 5 years. Repayments may already exceed new loans, and within another year or two the difference may be so large as to constitute a substantial net outflow of funds from the U.S.S.R.

(3) The Soviet Union may be earning less than planned from given volumes of exports as the result of a possible deterioration in its terms of trade. Soviet data regarding physical volume of trade show a rise of 1.8 percent in unit prices of imports and a decline of 1.7 percent in the unit prices of exports. It is not possible to distinguish between bloc and nonbloc countries in this apparent overall deterioration. To take a concrete example, however, the unit price received for exports of crude petroleum to nonbloc countries, which accounted for about 9 percent of Soviet exports to these countries in 1961, declined by 11.3 percent in 1961 compared with 1960.

(4) Finally, the dramatic decline in Sino-Soviet trade has undoubtedly caused disruptions in Soviet foreign trade planning: large quantities of machinery and equipment previously allocated for export to Communist China have not been readily salable in the free world. On the other hand, Moscow may be forced to seek elsewhere certain foodstuffs previously imported from Communist China.

Several recent moves by the U.S.S.R. may be explained, at least in part, as responses to actual or potential balance-of-payments pressures. The previously mentioned cutback in Soviet orders for Western capital equipment presumably is in part a consequence of these pressures. Other Soviet actions, e.g., the current Soviet efforts to obtain long-term credits in the West and to find new sources of medium-term credits, such as Japan, can also be explained in part by the balance-of-payments situation.

APPENDIX A.—Soviet foreign trade, by country, 1960 and 1961

[In millions of dollars]

	1960		1961		Percent total turnover
	Turn-over	Imports	Exports	Turn-over	
Total.....	11,191.1	5,832.3	5,998.2	11,830.5	100.0
Communist bloc, Europe.....	5,939.1	3,066.0	3,420.1	6,486.0	54.8
Albania.....	67.8	21.8	20.3	42.1	.4
Bulgaria.....	627.6	326.1	356.2	682.3	5.8
Hungary.....	559.7	326.8	359.3	686.1	5.8
East Germany.....	1,981.0	875.9	1,209.1	2,085.0	17.6
Poland.....	877.4	476.9	530.7	1,007.6	8.5
Rumania.....	540.7	340.8	291.8	632.6	5.3
Czechoslovakia.....	1,284.9	697.7	652.7	1,350.3	11.4
Communist bloc, Asia.....	1,966.1	714.4	578.0	1,292.6	10.9
Communist China.....	1,665.2	551.4	367.3	918.8	7.8
North Vietnam.....	47.6	25.7	41.3	67.0	.6
North Korea.....	114.1	79.1	77.0	156.1	1.3
Outer Mongolia.....	139.2	58.2	92.4	150.7	1.3
Free developed.....	2,033.8	1,092.3	1,058.9	2,152.5	18.2
Austria.....	128.7	76.7	45.2	121.9	1.0
United Kingdom.....	300.6	128.2	226.8	355.0	3.0
Belgium.....	51.4	33.9	33.7	67.6	.6
Netherlands.....	69.9	29.0	46.9	75.9	.6
Denmark.....	44.7	5.3	23.3	28.7	.2
Italy.....	192.9	96.0	130.2	226.2	1.9
Norway.....	35.9	16.3	18.4	34.8	.3
West Germany.....	318.0	179.3	118.8	298.1	2.5
Finland.....	293.3	145.8	136.9	282.7	2.4
France.....	203.4	120.4	79.4	200.0	1.7
Switzerland.....	14.3	8.9	6.2	15.1	.1
Sweden.....	99.6	51.8	51.4	103.2	.9
Japan.....	137.7	66.6	113.0	179.6	1.5
Australia.....	35.1	28.9	.7	29.6	.3
New Zealand.....	8.9	8.8	0	8.8	.1
Canada.....	15.1	45.7	4.7	50.3	.4
United States.....	84.3	50.7	24.3	75.0	.6
Less developed.....	1,208.0	950.4	818.8	1,769.2	15.0
Greece.....	44.8	16.9	21.1	38.0	.3
Iceland.....	21.1	5.2	9.3	14.6	.1
Spain.....	15.1	2.1	1.9	4.0	0
Portugal.....	4.8	0	0	0	0
Yugoslavia.....	108.2	54.7	35.9	90.6	.8
Afghanistan.....	48.9	19.7	39.4	59.1	.5
Burma.....	6.7	2.4	3.9	6.3	.1
India.....	115.4	66.9	95.4	162.3	1.4
Indonesia.....	47.7	33.9	31.3	65.2	.6
Iraq.....	23.7	4.7	37.3	42.0	.4
Iran.....	37.0	18.3	18.1	36.4	.3
Yemen.....	4.9	1.4	2.1	3.6	0
Cambodia.....	5.1	6.2	1.6	7.8	.1
Cyprus.....	1.0	1.6	1.4	3.0	0
Lebanon.....	8.2	3.8	4.7	8.4	.1
Malayan Federation.....	113.7	169.6	2.0	171.6	1.5
Pakistan.....	6.9	4.3	3.0	7.3	.1
Syria.....	18.8	4.3	17.0	21.3	.2
Thailand.....	4.9	9.8	1.7	11.4	.1
Turkey.....	13.4	4.9	5.8	10.7	.1

APPENDIX A.—Soviet foreign trade, by country, 1960 and 1961—Continued

[In millions of dollars]

	1960		1961		Percent total turnover
	Turn-over	Imports	Exports	Turn-over	
Less developed—Continued					
Ceylon.....	9.6	9.0	1.8	10.8	.1
Algeria.....	2.3	0	1.4	1.4	0
Ivory Coast.....	5.4	0	0	0	0
Ghana.....	27.2	6.8	15.4	22.2	.2
Guinea.....	8.0	4.2	27.2	31.4	.3
Cameroons.....	.2	0	0	0	0
Libya.....	1.3	.6	1.4	2.0	0
Mali.....	0	3.8	8.6	12.3	.1
Morocco.....	9.8	5.2	3.3	8.6	.1
Nigeria.....	7.0	1	0	.1	0
United Arab Republic.....	190.9	96.2	108.7	204.9	1.7
Federation of Rhodesia.....	26.4	13.2	0	13.2	.1
Sudan.....	11.2	10.4	9.3	19.8	.2
Togoland.....	0	0	.1	.1	0
Tunisia.....	4.8	2.8	2.3	5.1	0
Uganda.....	4.9	4.1	0	4.1	0
Ethiopia.....	1.3	.7	.9	1.6	0
Union of South Africa.....	7.6	0	0	0	0
Argentina.....	37.5	19.9	10.6	30.4	.3
Brazil.....	25.1	24.0	18.3	42.3	.4
Cuba.....	174.6	311.9	275.9	578.4	5.0
Mexico.....	4.0	.3	.1	.4	0
Peru.....	0	2.4	0	2.4	0
Uruguay.....	2.7	4.1	.6	4.7	0

THE SCOPE AND DISTRIBUTION OF
SOVIET ECONOMIC AID

BY

GEORGE S. CARNETT

AND

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SOVIET AID TO LESS DEVELOPED COUNTRIES THROUGH MID-1962

1. SOVIET MOTIVES

The peoples of Asia, Africa, and Latin America have always been regarded by the Soviet leadership as potential allies in the cause of the Communist revolution. In the early postwar period, and especially during the years 1948-50, the Kremlin encouraged the local Communist parties in the less developed areas to follow militant tactics aimed at bringing about Communist revolutions. As these areas increasingly attained national status and independence, however, Soviet policy became increasingly out of date. New tactics were called for, tactics which would have an appeal to the widespread desire in the less developed areas for national independence and economic expression.

After the death of Stalin in 1953, Soviet policy toward the less developed countries, reflecting the altered world situation, underwent a dramatic change. A new Soviet approach was devised, based essentially on efforts to court the non-Communist bourgeois governments in the less developed countries by a combination of approaches in the political, economic, and cultural fields. Communist state efforts to establish good relations with the governments of the neutralist less developed countries were usually accompanied by a slowing down of the militant, aggressive action in which the local Communist parties had previously been engaged. Country-to-country aid for economic development and the introduction of other facets of modern society have played a key role in the new approach. The Soviet Union in the intervening years has come to regard its foreign aid program as an index of its growing power and role in the world and as an important element in its general support to "national liberation struggle." The very knowledge that it provides an alternative source of economic aid will, the Kremlin hopes, encourage neutral states to be more demanding in their relations with free world nations. Economic assistance also provides the U.S.S.R. with a political entree into countries where its role has hitherto been very limited and lays the groundwork for a more sensitive attitude toward the desires of the Communist countries.

Neutral states are told that acceptance of bloc economic assistance not only is consistent with a true policy of neutrality but also contributes to their ability to follow an independent policy. Those nations which have chosen to remain allies of the free world are told that, by becoming neutral and accepting assistance from the bloc, they would receive more, rather than less, assistance from the free world. Once the bloc has secured a foothold in a country, Soviet officials and their local Communist agents do all they can to discredit free world aid programs and to encourage the local government to reduce and even break off relations with the free world.

Even routine economic features of Soviet aid are designed to complement political intentions of the Soviet approach. Most Soviet assistance is in the form of interest-bearing credits to finance specific projects, in part to give the impression of making businesslike deals and because the Soviets may consider that interest-free loans or grants arouse suspicion as to "strings" in the recipient countries. Obviously the guarantee of repayment with interest, even if at a low rate, makes the assistance virtually free of cost to the U.S.S.R. At the same time, the impression that the low interest rate conveys is that Soviet foreign assistance is "mutually profitable" and that the only reason the free world nations charge higher rates is to reap "capitalist profits."

The use of credits rather than grants also serves as a restraint on the volume of requests, enabling the U.S.S.R. from the outset to limit the overall scope of its aid program with minimum adverse political effects. Finally, the use of credits assures that throughout the repayment period the Soviets will be able to maintain close and continuing relations with the target countries, while some of the exports of the debtor countries are diverted from traditional markets elsewhere, thus depriving the exporting countries of foreign exchange earnings.

2. SCOPE OF AID PROGRAM

Since 1954, the U.S.S.R.'s program of foreign assistance has been enlarged continuously both in size and geographical scope. At the present time it encompasses 25 independent nations in the free world. Initially modest in total annual amounts, credits and grants were extended at an average rate of about \$700 million annually during the 1959-61 period. The rate thus far in 1962, however, has been somewhat lower than this.

By the end of June 1962, the U.S.S.R. had extended \$5.6 billion (or 78 percent of the total extended by the bloc) in credits and grants to 25 less developed countries on 4 continents. Economic credits accounted for about \$3.6 billion and military credits for about \$2 billion. (See table 1 for economic credits and grants.) The European satellites have extended about \$920 million, or 13 percent of the bloc total, and Communist China has participated to the extent of about \$410 million, or 6 percent of the bloc total. On some major economic credits the Soviet Union appears to be acting as financier and prime contractor, utilizing the more industrialized satellites as subcontractors.

The U.S.S.R. is concentrating on major lines of credit for general economic development. Agreements involving \$100 million or more account for nearly 70 percent of all Soviet economic assistance. These include a series of credits amounting to \$500 million to Afghanistan; \$100 million to Argentina and Ethiopia; \$100 million to Cuba for the expansion of nickel industry in addition to \$200 million for general economic development; three credits to India of \$135 million for a steel mill, \$125 million for industrial enterprises under India's second 5-year plan, and \$500 million under its third 5-year plan; \$325 million to Egypt for the Aswan Dam, in addition to \$175 million for industrial development; \$150 million to the Syrian Arab Republic; \$138 million to Iraq; and two credits to Indonesia of \$100 and \$250 million, respectively. The other bloc countries have tended to provide

smaller lines of credit for individual projects. Czechoslovakia and Poland, however, have provided India with substantial lines of credit.

Five countries—United Arab Republic, Indonesia, India, Afghanistan, and Cuba—account for more than two-thirds of all Soviet aid commitments. The impact potential of smaller lines of credit, however, may be substantial when viewed in the context of the level of the recipient country's investment from domestic sources, recent aid received from free world sources, and general level of technology.

Although its campaign is worldwide in scope, it is apparent that the U.S.S.R. directs its aid where it believes situations exist which lend themselves to exploitation for political, psychological, or even, in a broad sense, strategic gains. In a number of cases Soviet aid overtures have coincided with a strain in the country's relations with the United States or one of its allies. Offers to Greece, Iran, Turkey, and Pakistan provide notable examples of Soviet attempts to use aid as a means of weakening Western defense pacts; but despite much pressure, U.S. Allies have accepted only very limited bloc credits. Among the neutralists, Soviet tactics include concentrated efforts in key countries whose regional influence is expected to expand.

3. INTEREST RATES

One of the features of Soviet credits to less developed countries which has attracted great attention has been the low interest rates—typically 2 or 2.5 percent. The interest rate on Soviet credits is presumably politically motivated rather than based on economic calculations. These rates approximate the Soviet state bank's domestic interest rates on short-term loans, although the foreign credits are long-term and for investment purposes. Soviet theory and practice do not even recognize the use of interest charges internally on investment capital. The chronically severe shortage of capital in the U.S.S.R. in relation to planned investment would undoubtedly impose a considerably higher rate than is used in Soviet foreign credits. The Soviets probably regard interest rates as necessary in order to strengthen the credibility of the claim to "stringless" aid. At the same time, interest rates are kept low so as to suggest that the bloc is not taking advantage of less fortunate, capital-shy nations. Higher rates, they insinuate, imply "capitalist profits."

4. REPAYMENT TERMS

Repayment is generally scheduled over a period of 12 years or less, which compares unfavorably with many U.S. Government loans. Many of the major Soviet credit agreements provide for future negotiations to establish lists, prices, and quantities of goods to be delivered in repayment. It is not yet clear just what these provisions imply, but obviously they leave a large area for later bargaining, which may become a source of future friction and possible pressure if the U.S.S.R. should find this opportune.

In its recent deals the U.S.S.R. has agreed to defer repayments until completion of its own deliveries of equipment and services. For the recipients of such assistance, this is attractive because it permits production to begin on Soviet-financed projects before payments are due.

5. BLOC CREDITS USED OVER A PERIOD OF YEARS

When the U.S.S.R. extends a line of credit to a less developed country, the plans for its implementation generally are not immediately specified. Project lists may be agreed upon, but even these are subject to considerable revision. After the general agreement is negotiated, the bloc country involved sends numerous engineers and designers into the recipient country to undertake the detailed studies necessary before installation work can be started. The survey and investigative work is time consuming and results in lengthy delays before a project can be started—much less completed and placed in operation.

Since most drawings to date under Soviet economic credits have been for survey and design work, and to a much lesser extent for construction or purchases of machinery and equipment, Soviet assistance expenditures are at present a moderate fraction of total aid commitments. The modest level of expenditures, compared with total commitments, also reflects the recency of many of the large extensions of aid. Deliveries under military aid pacts have been rapid, since they generally involve shipment of hardware out of stocks or in current production rather than items requiring special designs.

6. BLOC TECHNICAL ASSISTANCE

An extremely important phase of bloc aid programs is the technical guidance provided in conjunction with other assistance. These services are paid for by the recipient. In the first half of 1962 approximately 9,000 Soviet technicians spent a month or more on the job in 25 less developed countries. The U.S.S.R. played host to the majority of the estimated 22,000 technicians and students from the less developed countries who have gone to the bloc for study and training of various types during the last 5 to 6 years.

There has been a continued increase in the size and scope of this aspect of the Soviet aid program. Only 4 years ago, for example, the number of Soviet technicians employed in less developed countries was less than half the present number. The increased activity reflects growing implementation of economic assistance agreements and the conclusion of new accords.

The technical assistance programs provide valuable opportunities and means for ultimately influencing the nationals of the less-developed countries. While Soviet technicians as a whole have been careful to avoid the appearance of engaging in subversive activities, this type of assistance provides valuable means for ultimately influencing the nationals of less-developed countries in directions favorable to Communist aims. By sending technicians to countries where they are needed and by providing training both in the U.S.S.R. and in the countries concerned, many key individuals and groups have been brought into contact with the economic and technical achievements of the U.S.S.R. as well as with its culture and its systems of values. The U.S.S.R. has made special efforts to place personnel as advisers to influential officials in key ministries and on important projects.

Approximately 6,700 Soviet technicians were employed on economic projects during 1962. The largest single group was engaged in planning or supervising the construction of a wide variety of industrial installations. Technicians engaged in prospecting for petroleum and other minerals or in making geographic or geological surveys accounted

for the next largest grouping, while the remainder were engaged primarily as laborers employed on roads, harbors, and power projects. The U.S.S.R. provided the bulk of the 2,500 bloc military specialists who were engaged in assembling bloc equipment and training local forces in 10 different countries.

About 30 percent of all Soviet nonmilitary technicians were in the Middle East. About 20 percent were in Africa, nearly 40 percent in Asia, and the remainder in Latin America. The Soviet Union's role in the dispatch of technicians has continued to increase, now accounting for approximately 70 percent of all bloc specialists. In the first half of 1962, India, Cuba, Afghanistan, the U.A.R., Guinea, Iraq, and Yemen were the principal hosts to Soviet economic technicians, accounting for more than 75 percent of the total of this category.

7. MILITARY ASSISTANCE

By the end of June 1962 the U.S.S.R.'s agreements to supply arms and military training to non-Communist countries provided for military aid of nearly \$2.5 billion. The main recipients have been Syria, Egypt, Indonesia, Iraq, Cuba, and Afghanistan. Commitments to Yemen, Guinea, and Mali, which are much smaller, are still of major significance in relation to the size and requirements of the recipient country. The amount of credit involved in the extensive Soviet arms buildup in Cuba before 1962 is believed to amount to at least \$100 million; recent large shipments have increased overall bloc military aid to Cuba to a much larger level.

The types of equipment range from small arms to tanks, submarines, and jet aircraft, plus substantial amounts of spare parts and ammunition. Recently Soviet deliveries have tended to include more items of advanced technological design, such as TU-16 jet medium bombers, MIG-21 jet fighters, and some tactical missiles.

The U.S.S.R. does not require any commitment that its arms be used only for defensive purposes. Most of its military aid has been rendered under circumstances in which the arms have increased the threat of hostilities between countries. In some cases it appears that the arms have been intended to permit exports of military aid items by the recipient to political dissidents elsewhere.

8. SOVIET CAPABILITIES

The rapid and continuing growth of the Soviet economy has given the Kremlin sufficient economic and technological power to meet its commitments under present aid and trade agreements. Moreover, these commitments could be considerably expanded if the Soviet leadership should decide that the political gains justify the diversion of resources from alternative uses within the bloc. Growing experience in implementing projects under agreements concluded in earlier years is adding to the U.S.S.R.'s ability to carry out foreign-aid programs. A growing body of trained technicians and increasing professional expertise are also increasing Soviet capabilities to provide technical services abroad.

Among the factors which are expected to enhance further bloc foreign aid capabilities over the next several years are an acceleration in research on the less-developed areas, with a concomitant increase in highly trained Soviet personnel who have a specialized knowledge of

the language, politics, social structure, and economic problems of the country to which they are assigned. Facilities are being greatly expanded for providing academic and technical training for civilians from less-developed countries, and special programs have been set up for military personnel from Africa, Asia, and Latin America.

9. ADMINISTRATION OF SOVIET FOREIGN ECONOMIC AID

The Soviet organization most comparable to the U.S. Agency for International Development is the State Committee for Foreign Economic Relations. It enjoys ministerial rank and performs functions under the aegis of the U.S.S.R. Council of Ministers. It is charged with the responsibility for supervising technical and economic assistance and cooperation, scientific collaboration, aid in the construction of enterprises abroad, training and provision of specialists, and grants of credit. It has established offices in some of the countries receiving Soviet aid.

In addition, there is a Commission for Foreign Economic Affairs attached to the Presidium of the Council of Ministers which appears to coordinate the foreign economic relations of various governmental ministries and committees. While this commission's responsibilities include the full range of Soviet aid and trade activities, its precise relationship to the State Committee for Foreign Economic Relations is not clear.

Very little exact information is available on the relationship between the State Committee for Foreign Economic Relations and CEMA (the Council for Mutual Economic Assistance). Some of the Soviet delegates to the latter are also members of the State Committee for Foreign Economic Relations, and hence in this dual capacity are in a position to guide CEMA activities in conformity with broad Soviet policy objectives.

10. SOVIET AID TO OTHER BLOC COUNTRIES

The U.S.S.R. has extended a total of \$6.2 billion in credits and grants to other bloc countries since 1946 (see table 2). The principal beneficiaries have been East Germany, Poland, Communist China, North Korea, Outer Mongolia, Bulgaria, Hungary, North Vietnam, Albania, Rumania, and Czechoslovakia in that order. Most of the aid extended has been in the form of credits.

The bulk of Soviet credits extended in recent years have been for industrial development purposes in contrast with the period 1956-57, when in response to widespread popular dissatisfaction in Eastern Europe the Soviet Union made large-scale credits available for emergency support to the satellite regimes. Recent aid has included a \$91.5 million credit to Albania in 1959, primarily for industrial projects under its third 5-year plan; a \$25 million credit to North Korea in 1959, to finance the construction of powerplants, a coal mine and other projects under its 3-year plan; \$383 million in 1960 and 1961 to Outer Mongolia, for the establishment of a building materials industry, the expansion of housing and the means of communication, and the development of stockbreeding under its third 5-year plan; and a credit of \$162.5 million to Bulgaria in 1961 for equipment for a metallurgical combine and an electric power station. Credits extended to East Germany in 1961 and 1962 were primarily for economic

development. (A 1961 credit was valued at \$475 million and a 1962 credit amounted to \$310 million, but the latter apparently included an unknown residue of the 1961 credit.)

Responsibility for the coordination of intrabloc aid is exercised by CEMA, which was created in 1949 as a Soviet counter to the OEEC to foster economic integration and cooperation in Eastern Europe. Since Stalin's death and particularly since 1956, the activities of CEMA have increased in both scope and importance. In recent years CEMA has assumed a leading role in coordinating bloc trade, aid, and economic planning. Intrabloc coordination and integration have taken on a new urgency as a result of the successes of the Common Market in accomplishing similar goals, and CEMA has been assigned, in consequence, broader functions and greater responsibilities. To date, although the accomplishments of CEMA in bringing a more tightly built economic structure in Eastern Europe have been modest, an organizational structure has been created which has greater potency than its predecessor. Whether it will be given sufficient authority to overcome the formidable obstacles to effective integration, or whether the various members of CEMA will be willing to subordinate national decisionmaking in any meaningful sense, remains to be seen.

Mutual economic assistance as a means of furthering agricultural and industrial specialization among members of the Soviet bloc is an explicit function of CEMA. Despite Soviet prodding of the more advanced bloc countries to assist in the financing of the economic development of the less-developed satellites, by far the largest share of intrabloc aid continues to come from the U.S.S.R. Most of its assistance has been provided on a bilateral basis, the most important exception being the 3,600-mile oil pipeline system linking Soviet oilfields with refineries in Poland, East Germany, Czechoslovakia, and Hungary.

APPENDIX

BLOC CREDITS AND GRANTS TO SOME SPECIFIC LESS-DEVELOPED COUNTRIES

A. ASIA

Afghanistan.—Afghanistan is a major recipient of economic aid from the U.S.S.R. Credits and grants received since 1954 amount to \$507 million and have been offered on unusually liberal terms. The first large loan (\$100 million) carries an interest rate of 2 percent and is to be repaid over a 22-year period. More recent loans provide for payment up to 50 years, with grace periods up to 25 years. Afghanistan is the only country which has received a substantial grant from the U.S.S.R. It also is the recipient of a substantial amount of local currency aid, not generally available from the U.S.S.R.

Small credits extended in 1954 have been used for the construction of two wheat elevators, a flour mill, and a bakery, and for the paving of streets in Kabul. A \$100 million credit, extended by the U.S.S.R. in 1956, has been earmarked for a number of projects. Machinery for a metals workshop complex has been delivered and installed. Work is either finished or well toward completion on transportation projects, such as the Salang Pass road and the Bagram and Kabul

airfields. Considerable progress has been made on the Darunta irrigation and hydroelectric project and on the Naghlu dam and hydroelectric plant.

The large grant of \$80 million was provided by the U.S.S.R. in 1959. It provides for Soviet assistance in building a 470-mile road from Kandahar to the Kushka railhead on the Soviet border. Projects covered by other credits include port work at Quizil Qala (completed), oil exploration (half finished), and POL storage facilities (completed). Some wheat also has been given to Afghanistan. Recent credits of more than \$200 million are for use during the second 5-year plan. Petroleum exploitation and power development account for the major part of these credits.

India.—India has received more economic aid from the U.S.S.R. than any other country in the free world. All but a minor portion of the approximate \$810 million that India has been extended by the U.S.S.R. has been in the form of credits. The first Soviet credit was extended in 1955, for \$116 million, to cover the foreign exchange cost of the Bhilai steel mill. Additional large lines of credit were extended in 1956 (\$126 million), in 1959 (\$375 million), and in 1960 (\$125 million). Other, smaller credits for specific purposes also were extended by the U.S.S.R. during the 1955–60 period.

Terms for Soviet credits call for repayment over 12 years. Early credit extensions specified that repayment would begin 1 year after following the drawing of any part of the overall credit. Agreements since 1959, however, have stipulated that repayment would not begin until 1 year after project completion. Interest rates are generally 2.5 percent.

The Bhilai steel mill is the major Soviet bloc project that has thus far been finished. The Soviets are now expanding the capacity of the mill. A number of projects are under construction; progress has been made, for example, on the large hydroelectric installation in Neyveli, though the installation of power equipment there is behind schedule. The large projects, promised for construction during the period of India's third 5-year plan, generally have not been carried beyond the survey and planning stage. Many of the bloc projects, such as the expansion of the mill at Bhilai, a heavy machinery plant at Ranchi, and a mining equipment plant at Durgapur, will play a key role in fulfilling the construction goals of the plan period. Important also is the Soviet bloc assistance promised for petroleum and gas exploration and development.

Indonesia.—The U.S.S.R. extended economic credits to Indonesia amounting to \$368 million, primarily in large credits of \$100 million (1956) and \$250 million (1960). These credits follow the 12-year repayment at 2.5 percent patterns.

The \$100 million Soviet credit—not ratified by the Indonesian Parliament until 1958—has been committed in large part for road construction and a steel mill, both of which are underway. Some of this credit was used to purchase cargo and tanker ships from the U.S.S.R., as well as a fertilizer plant, rice projects, and roadbuilding and construction equipment. The \$250 million credit has been only partially obligated; the commitments include hydroelectric and aluminum reduction facilities, an integrated iron and steel mill, and several small chemical, textile, and metalworking plants. Nuclear reactors (one for Djakarta) also have been promised under this credit.

A large hospital as well as the stadium for Asian games also are Soviet projects, the former as a grant.

Enormous amounts of military goods have been supplied by the U.S.S.R. to Indonesia. Ground, air, and naval equipment has been delivered and training has been furnished under credits extended by the U.S.S.R. Much of the equipment, moreover, has been priced with substantial discount allowances.

Burma.—Burma has received about \$7 million in extensions of economic assistance from the U.S.S.R. Soviet projects, all of which have been completed, consist of a technological institute, a hotel, and a hospital.

Cambodia.—Soviet economic assistance to Cambodia now totals about \$6.2 million, not including a recent credit whose value has not been announced. A Soviet-built hospital provided under a \$6 million grant has been completed. Construction or surveys for other aid, a technological institute and hydroelectric power development have begun.

Other Asian countries.—Ceylon accepted \$30 million in credits and grants from the U.S.S.R. in 1958. Implementation has been limited largely to surveys that have been made for a number of small projects.

Nepal has accepted about \$10 million in Soviet economic grants for small plants and transport aid. Pakistan accepted a \$30 million credit from the U.S.S.R. during 1961. The entire sum is being used for oil exploration.

B. MIDDLE EAST

The UAR (Egypt).—The UAR has accepted about \$510 million in economic credits and grants from the U.S.S.R. as well as a substantial amount of military aid. The first Soviet commitment was a \$175 million line of credit in 1958. It provided for 40 specific projects, including geological research and mining, petroleum research and refinery operations, equipment for metallurgical and engineering industries, three textile plants, and other manufacturing enterprises. Construction of almost all of these projects either has been completed or is well underway.

The U.S.S.R. agreed in 1959 to provide Egypt a credit of \$100 million for the construction of the first stage of the Aswan high dam and followed this up in 1960 with a \$225 million credit for second-stage construction. Soviet credits are expected to cover the cost of machinery and equipment as well as a portion of the expenses of Soviet experts working on the dam. It is Egypt's responsibility to finance the local costs of construction, which may run as high as \$200 million for the first stage alone over the next 4 or 5 years. Construction was formally inaugurated in 1960.

The UAR is to repay the Aswan Dam credits in 12 annual installments beginning the year after work has been completed. Interest at 2.5 percent per annum will accrue from the time each part of the credit is drawn upon.

Work on the first stage of the Aswan Dam appears reasonably on schedule, considering engineering difficulties encountered. It was necessary, however, for the U.S.S.R. to send to Egypt in late 1961 a high official in its foreign assistance organization in order to iron out some of the more difficult troubles that had arisen. While final, second-stage plans have not yet been presented to UAR officials for

approval, the Soviets have announced that production of the necessary machinery and equipment is underway.

Syria.—Soviet aid commitments to Syria amount to \$150 million under a credit opened in 1957. Projects provided for include river development programs and related irrigation schemes, geophysical surveys, electrification programs, and the construction of a railway, electric powerplants, and a fertilizer plant. Implementation of this agreement has moved slowly. Only a small sum has been drawn, and this primarily for geological surveys. A number of contracts have been let, and several technical studies have begun. Three major contracts (valued at about \$71 million) awarded to the Soviet Union relate to construction of an ammonium nitrate fertilizer plant at Homs, oil and phosphate prospecting in northern Syria, and construction of the Qamishli-Latakia-Aleppo Railway. A major undertaking that the U.S.S.R. was expected to assume in the Euphrates River Basin, however, is currently under discussion with free world interests.

Yemen.—Yemen has received about \$26 million in credits and grants from the U.S.S.R. for various economic development projects. Part of the \$25 million credit was earmarked for port construction work at Hodeida, now finished. About \$5 million has been obligated for projects related to the development of agriculture, particularly irrigation works and cotton cultivation projects on the coastal plain near Hodeida. The U.S.S.R. has completed an airport north of San'a. It delivered a 10,000-ton gift shipment of wheat for famine relief in 1959.

The U.S.S.R. has also provided Yemen with some technical assistance. A geological survey of mineral resources was carried out by Soviet technicians in 1958 and the U.S.S.R. has dispatched small numbers of medical personnel to Yemen.

Iraq.—Since it seized power in 1958, the Qasim government in Iraq has accepted about \$182 million in economic credits from the U.S.S.R. Military forces in Iraq have been receiving substantial quantities of Soviet material, largely under credits.

The U.S.S.R. has been the principal bloc creditor, extending for economic assistance about \$138 million in 1959 and \$45 million in 1960. The Soviet credit of 1959 envisaged its use for a steel mill, a fertilizer plant, a pharmaceutical plant, an agricultural machinery plant, a glass factory, railway expansion, three textile mills, a shipyard, three telephone exchanges, a geological survey, and river development projects. A number of stumbling blocks have prevented the Soviets from making more than modest progress on these projects.

The 1960 credit of \$45 million from the U.S.S.R. was for major rehabilitation of the Basra-Baghdad Railway. This work has been started.

Difficulties in carrying out Soviet-aided projects appear to be reflected in mutual charges of procrastination and failure to cooperate, and in Iraqi criticism of the bloc's failure to deliver goods on schedule and lack of quality control. In general, projects have not progressed beyond various stages of planning and survey. Exceptions include activity on experimental farms, a broadcasting station, and a telephone exchange, and the oil exploration program in the area near Khansqin. Laying of track on the Baghdad-Basra railroad has begun. A food-processing plant and a tractor station are nearly completed. Con-

struction of a garment factory and a drugs plant has gotten underway. Specific contracts for many of the other bloc projects have been signed.

Other Middle Eastern countries.—Turkey has accepted about \$10 million in Soviet credits for textile mills, a glass factory, and some transport equipment. Additional and substantial Soviet offers of aid have not been accepted.

C. LATIN AMERICA

Cuba.—The U.S.S.R. had through 1961 extended \$200 million in economic development credits to Cuba for use during Cuba's 1961-65 plan period. An additional credit of \$100 million was probably granted in 1962 for the purchase of industrial plants. No major project has been completed. During 1962 Cuba also obtained credits for deliveries of Soviet consumer goods and producer materials.

Soviet assistance has been instrumental in other ways, however, in providing assistance for the Cuban economy. Soviets account for approximately 70 percent of the 950 or more bloc technical personnel who have been employed in existing factories and plants, filling part of the gap created by the departures of the supervisory, technical, and administrative personnel who had been running these establishments. Moreover, by paying premium prices for its sugar (4 cents per pound as compared with the present world market price of less than 2.5 cents), the U.S.S.R. is in effect providing a grant to Cuba. These purchases amounted to about 3.3 million tons during 1961.

Brazil.—A Soviet offer to construct a pilot plant for the extraction of gas from extensive oil shale deposits in Brazil has been proposed. Also unsettled is a Soviet proposal for extensive projects in the restive northeastern area of Brazil.

Argentina.—Extensions of bloc credits to Argentina amount to \$100 million. A Soviet credit of \$100 million was obtained in 1958, to be used for the purchase of petroleum equipment. Supplies valued at about \$32 million have been delivered. An agreement has been reached permitting the remainder of the credit to be drawn upon also for other types of equipment and machinery. A small delivery of roadbuilding machinery has been made.

D. AFRICA

Guinea.—Guinea has been a major target of the Soviet bloc in Africa and has now accepted Soviet credits and grants totaling about \$70 million, which constitutes almost 60 percent of the total amount extended by the bloc.

In 1959 Guinea accepted a \$35-million line of credit from the Soviet Union for material and technical assistance. Projects later agreed upon included: a technical institute, a 17,000-acre state rice farm, a number of small industrial projects, a 25,000-seat sports stadium, and reconstruction of the Conakry airport and the Conakry-Kankan railway line. The Soviets extended a further development credit of approximately \$21.5 million to Guinea in the fall of 1960. The only specific project mentioned under the new Soviet credit was U.S.S.R. participation in a couple of projects on the Konkoure River. The number of Soviet technicians operating in Guinea has been decreasing since the end of 1961.

Ethiopia.—Soviet credits and grants extended to Ethiopia amount to \$101 million. The largest extension of assistance by the U.S.S.R. was a 1959 credit of \$100 million for construction of an oil refinery in Assab, a gold ore processing plant in Adola, geological and mineralogical surveys, and a feasibility study for a metallurgical plant. To date, the only portion of the credit actually used by Ethiopia has been \$2 million in convertible currency for the Emperor's land reform program. A contract for a \$12 million oil refinery, however, was signed in 1961. The U.S.S.R. also provided Ethiopia with a \$1.8 million grant in 1959 for the construction of a technical school.

Ghana.—The U.S.S.R. has extended \$95 million in credits to Ghana. Under the U.S.S.R. credits the Soviets are committed to work on a geological survey, a steel mill, a study for a major hydroelectric power station on the Volta River, a shipyard at Tema, housing development in Accra, a tractor assembly plant, and other projects. While some specific obligated contracts have been signed, few projects have gone beyond the planning stage. Delivery has been made, however, of several aircraft (IL-18's) for Ghana Airways.

Other African countries.—Soviet activity in other parts of Africa during 1961 increased considerably the scope of its economic relations with the newly independent countries on the continent. Mali has now accepted \$55 million in Soviet credits, the Somali Republic \$57 million, including a \$5 million grant, Sudan \$25 million, and Tunisia \$28 million.

The U.S.S.R. is committed in Mali to engage in mineral prospecting, to build a cement plant and a connecting rail line to the Guinean line, and to deliver aircraft. All of these have been started. Other uses of its funds, for a training center and a stadium, have not begun.

The principal credit received by the Somali Republic amounts to \$52 million from the U.S.S.R. No firm project agreements have been signed as yet under the line of credit; however, surveys have been completed and contracts may soon be forthcoming. Among the most probable undertakings are a hydroelectric complex on the Giuba River, water well drilling, and a tractor assembly plant.

Sudan concluded a \$22 million credit agreement with the U.S.S.R. in November 1961. The U.S.S.R. is to provide assistance in the construction of three grain elevators, four canning factories, an asbestos cement plant, agricultural and animal husbandry research laboratories, and a cotton selection station. Soviet technicians already have begun the surveys preparatory to construction.

A Soviet credit of \$28 million was extended to Tunisia in August 1961 for use in building several irrigation dams and to establish a National Technical Institute at the University of Tunis.

E. EUROPE

Iceland.—Iceland has accepted a \$3.1 million credit from the U.S.S.R. Contracts were signed in 1957 with East Germany for 12 ships (250-ton fishing vessels) valued at \$3.1 million. In 1958 this agreement was converted into a long-term credit, and the U.S.S.R. agreed to refinance it over a 12-year period by increasing the overdraft facility under its clearing agreement with Iceland. Interest on this Soviet \$3.1 million credit was set at 2.5 percent, with payments to be made in fish products. The delivery in 1959 of several of these small trawlers was followed by mounting criticism of faulty construction, inferior aluminum linings in the holds, defective auxiliary engines, and poor-quality ballast. Iceland has drawn only about half of the credit, and it seems unlikely that the remainder will be utilized.

Yugoslavia.—In 1956 Yugoslavia accepted \$281 million in economic credits from the U.S.S.R. Almost all the credits had a 10-year repayment period and bore 2 percent interest. The ideological controversy with Yugoslavia was renewed early in 1958, and as a result the U.S.S.R. in May of that year suspended a \$110 million Soviet investment credit earmarked for a thermoelectric power station, fertilizer factories, dredging equipment, and mining improvements. A joint Soviet-East German credit for \$175 million extended for the construction of an aluminum combine was also suspended at the same time. Prior to suspension, Yugoslavia had been able to utilize only \$15.8 million of these two credits. Work had already started on one fertilizer factory and on the coal-mining combine, but little progress had been made on the huge aluminum combine to be constructed in Montenegro under the joint Soviet-East German credit.

All of a U.S.S.R. credit of \$30 million in hard currency had been used, but only \$27.1 million of a \$54 million Soviet commodity credit, likewise extended in 1956, had been drawn upon before the remainder was suspended in May 1958. Thus, of the total \$281 million in Soviet credits extended in 1956, only \$72.9 million has been used and the remainder has been suspended.

Despite limited improvement in Yugoslavia's economic relations with most Soviet bloc countries since mid-1959, the suspended credits have not been revived. Moreover, there has been no new extension of credit.

TABLE 1.—Total Soviet economic credits and grants extended to less-developed countries of the free world,¹ Jan. 1, 1954–June 30, 1962

Area and country	Millions of U.S. dollars
Total.....	3,560.1
Latin America.....	400.0
Argentina.....	100.0
Cuba.....	300.0
Middle East.....	876.9
Iraq.....	182.5
Syrian Arab Republic.....	150.5
Turkey.....	9.6
United Arab Republic (Egypt).....	508.6
Yemen.....	25.7
Africa.....	433.7
Ethiopia.....	101.8
Ghana.....	95.4
Guinea.....	71.1
Mali.....	55.4
Somali Republic.....	57.2
Sudan.....	25.0
Tunisia.....	27.8
Asia.....	1,773.5
Afghanistan.....	507.0
Burma.....	7.1
Cambodia.....	6.2
Ceylon.....	30.0
India.....	811.1
Indonesia.....	368.5
Nepal.....	10.4
Pakistan.....	33.2
Europe.....	76.0
Iceland.....	3.1
Yugoslavia.....	² 72.9

¹ Not including military credits and grants.

² Not including about \$281 million in credits that were extended in 1956 and subsequently either canceled or allowed to expire.

TABLE 2.—Soviet aid to other bloc countries—Receipts

[In millions of U.S. dollars: 1945–62]

	1945–62	1959	1960	1961	1962
Albania.....	245.9	92.6			
Bulgaria.....	569.2				
Czechoslovakia.....	61.5				
East Germany.....	1,352.9		162.5	475.0	(¹ 310.0)
Hungary.....	381.1				
Poland.....	913.9				
Rumania.....	188.7				
Communist China.....	790.0			360.0	
North Korea.....	690.0				
North Vietnam.....	368.9	25.0	200.0	3.9	(²)
Outer Mongolia.....	658.0		186.3	135.4	
Total.....	6,221.1	117.6	548.8	974.3	

¹ Part of which appears to be a residue of the 1961 credit of \$475 million, not included in total.

² Amount of credit unknown.

THE POLITICAL GOALS OF SOVIET
FOREIGN AID

BY

LEON M. HERMAN

THE POLITICAL GOALS OF SOVIET FOREIGN AID

Anyone who wishes to try his hand at it, can muster a variety of reasons why the Soviet Union ought not to engage in the effort of extending foreign aid outside the Communist bloc. There is, to begin with, the rather obvious reason that the kind of resources that are most in demand for the task of supporting economic development abroad are notoriously scarce within the Soviet Union. These resources are also costly, especially in terms of opportunities foregone; in terms of dislocations caused at home. There is, furthermore, the familiar reason that there are still large and promising regions of the vast Soviet land today that cry out for development and for incorporation into the mainstream of the country's drive toward modernization. There could be mentioned, moreover, the important sectors of the economy that continue to live on short rations of precisely the kind of development capital, physical and human, that is required to sustain foreign economic assistance projects.

In addition, attention could also be called to the urgent needs in the sphere of economic development within the Soviet bloc, especially among Russia's Communist allies in Asia. Then, too, there is an added ideological factor to be considered, namely, that economic aid as a social technique belongs more appropriately in the storehouse of the protagonists of stabilization and reformism rather than in the arsenal of the champions of class antagonism and social revolution.

No matter how persuasive these reasons may appear to the outside observer, however, they have, obviously enough, not carried the day among the present rulers of the U.S.S.R. As we know, the decision to venture into the field of foreign aid outside the bloc was taken by the Soviet inner circle some 8 years ago, for reasons that were sufficiently compelling from their point of view. Since then, the Soviet commitment of resources to foreign aid has grown steadily from year to year, until it has come to encompass some 25 countries, scattered far and wide in Asia, the Middle East, and Africa.

What are these compelling reasons that account for the substantial commitment made by the Soviet Union to foreign aid? What are the ascertainable main considerations that have persuaded the Soviet leaders that they can derive more political advantage from the expensive and exposed foreign-aid operation than their economically better endowed competitors in the field; namely, the industrial nations of the West?

I. LENINISM IN ACTION

From time to time, the principal Soviet leaders take occasion in their public statements to provide an explanation of, and thereby to elicit popular approval for, the policy of granting foreign aid to non-Communist countries. In discussing this issue in its broadest terms, they have generally explained foreign aid as a form of practical contemporary application of the basic Leninist principles in international relations. Speaking from the rostrum of the 22d Congress of the

CPSU,¹ in late October 1961, Deputy Premier Anastas Mikoyan justified the official Soviet position on foreign aid in terms of its relevance to the broad international aims of communism:

The Soviet Union and the other Socialist countries [he said] have entered into the arena of life of these less-developed peoples, bringing their just methods of maintaining economic ties on the basis of equality and their noble intentions of facilitating the advance of these peoples on the road of progress. We were taught this by the great Lenin. This is an example of proletarian internationalism in action under modern conditions.²

To the initiated, who made up Mikoyan's audience, his compact political formula told a great deal. It indicated, in the first place, that Stalin's narrow approach to the promotion of the international goals of the Communist movement, with his primary reliance on expansion by military force and by open subversion, had been found wanting by his successors. It told, furthermore, that the party was once again moving in the open sea of international politics, guided by Lenin's bold vision of a "history-making alliance" between the Communist-ruled states and the former colonial peoples. As now frequently paraphrased in the official press, Lenin had forecast that great historic changes could flow from a policy of active economic and political assistance to the former colonial peoples:

With the support of the countries of socialism, the nations that find themselves in the stage of precapitalist social relationships can bypass the capitalist stage, and the countries having a low level of capitalist development can break with it, can cut short the ordeal of passing through all the stages, and launch upon the building of socialism.³

Needless to say, the prospect of a "noncapitalist development" for more than a third of the world's population is a political goal of great attraction to the rulers of the Soviet Union. As they view the course of world events, moreover, such a development appears to them eminently plausible. They have no difficulty, as we know, in ascribing their own feeling of monumental hatred for the capitalist West to all other "anti-imperialists," especially the leaders of the newly liberated nations. This theme of common antagonism looms large in the Soviet approach to the emerging states and is fervently promoted as a basis for a common world policy. Here, too, Stalin evidently went wrong. He had failed to appreciate the fact that from the standpoint of Soviet foreign policy the international class struggle generates a higher order of antagonism than the domestic class tension. It provides a basis for useful alliances. The stress upon the "common enemy" is, therefore, now accorded a place of honor in official pronouncements. The "20-year program," adopted at the 22d party Congress, declares, for example:

The interests of a small group of imperialist states are incompatible with the interests of other nations, with the interests of all peoples. A deep antagonism separates the imperialists from the countries that have conquered national independence, the countries that are struggling for their liberation.⁴

The reasons that motivate the Soviet leaders to extend aid to the developing nations are, in short, largely external to the specific needs of the recipients. They do not spring from a desire to bring relief

¹ Communist Party of the Soviet Union.

² *Pravda*, Oct. 22, 1961.

³ *World Economics and International Relations* (in Russian); henceforth referred to as WEIR, monthly organ of the Institute bearing the same name and specializing in the "systematic analysis of the capitalist world," No. 3, 1962, p. 33.

⁴ Quoted in *Economic Gazette* (in Russian), June 16, 1962, p. 40.

from temporary economic pressures, such as food shortages or balance-of-payments difficulties. Rather, the sights of the Soviet leadership are fixed on finding ways to promote the building of economic institutions likely to produce the "correct" historymaking changes in these countries. They would not be Marxist politicians if they acted otherwise. Their overriding objective, therefore, is not so much to help the new nations emerge from economic backwardness. Real as this need may in fact be, it is evidently not critical. The greater need is "to speed their transition from backwardness to socialism." Just where the journey will ultimately end, according to Soviet doctrine, is a settled matter. All that needs to be arranged, in this light, is to accelerate the speed of the passage.

II. THROUGH THE SOVIET LOOKING GLASS

What is it, we may ask, that makes the Soviet leaders so confident that their direct involvement in the economic development of the new nations will produce the desired far-reaching changes in their internal and external political orientation? The answer can be found in the basic phenomenon that they are economic determinists. Accordingly, they are persuaded that they can discern on the horizon a series of "significant signs" pointing to a useful political hypothesis; namely, that the whole thrust of the domestic economic development of the new nations, slow and indecisive as it is, nevertheless tends to undermine the position of the capitalist powers of the West, "to deepen the general crisis of capitalism." An historic force of this kind is obviously worthy of the utmost support by the sworn enemy of capitalism.

One of the 'significant signs,' for example, is the fact that the new nations resort to state enterprise in promoting some sectors of the domestic economy. This may look innocent on the surface, but the net effect of this practice, as the Soviet experts tell them, is—

to reduce the sphere of influence of foreign imperialist exploitation, to strengthen the political independence of the country, to prevent the restoration of colonialism.⁵

More specifically, assert the specialists who advise the Soviet Government, as the state sector within a given underdeveloped nation expands, the sphere of activity of the foreign monopolies is reduced, especially as related to the natural resources of the country. Gradually, too, the economy of such a developing country tends to become more productive. As a consequence, domestic products begin more and more to displace the goods previously imported into their markets from the Western capitalist countries.

Nor is this the end of the trouble for world capitalism. In a number of industries, the Soviet experts reason, the newly developing nations also begin to appear as competitors against the products of the capitalist West in third markets. When this happens, another very important train of social events is set into motion:

After losing these long-established markets * * *, the imperialist monopolies must strive in every way to reduce costs at their enterprises; i.e., to increase the degree of exploitation of the workers, thereby sharpening the struggle between labor and capital in the imperialist countries.⁶

⁵ WEIR, No. 3, 1962, p. 16.

⁶ Materials of the All-Union Conference of Chairmen of Social Science Departments (in Russian), Moscow, 1958, p. 189.

The unfolding sequence of events, in fact, looks so favorable to the Soviet experts in this field that they refuse to be alarmed by the evident growth of private capitalist enterprise in the economies of the developing countries. This, too, is adjudged to be a force moving in the "correct" direction. Thus, for example, they dismiss out of hand the proposition, presumably advanced by skeptics, at home and abroad, that Soviet foreign aid, by its support of the economic growth of non-Communist countries, is in effect bolstering the cause of capitalism. Such a thesis, they argue, "bespeaks a superficial assessment of the situation." If the whole broad situation is viewed in the proper perspective, that is "from the standpoint of the correlation of world forces," the strengthening of private enterprise among the new nations is also a force working to the disadvantage of the principal capitalist powers. The reason for this sanguine conclusion is given by one expert as follows:

The contemporary world capitalist system rests on the power of the monopolies. The way to bring this system down crashing is by undermining the rule of the monopolies. Everything that inflicts damage upon the monopolies changes the correlation of forces in favor of socialism.⁷

In any event, they regard the economic climate in the new countries to be most unfavorable for private enterprise. All signs within the new nations, as they read them, point not to the entrepreneur but to the state as the principal organizer of economic activity related to development. Among these signs they include: the extreme scarcity of private financial resources; of private access to foreign sources of credit; of private managerial talent. These lacks, coupled with the strong urge to attain rapid growth, as Soviet observers see it, help to push the emerging countries in the direction of state enterprise. This results in ever greater inroads of government direction and regulation of the economy.

These reported tendencies, needless to say, are adjudged by Soviet observers to be both positive and progressive. They see in them a strong kinship to the basic economic method employed in the Communist countries. Such an area of common interest, they stress, needs to be cultivated and enlarged.

At present—

reports one Soviet expert approvingly—

over 40 less developed nations have their own programs for developing the economy * * * In one way or another, they are striving to feel their way toward new forms for the organization of production, to utilize the rich positive experience accumulated by the socialist countries.⁸

In addition, newly emerged nations are considered worthy of Soviet support for pursuing a series of "positive" internal policies designed to restrict the activity of foreign capital. The measures of this kind, as often cited for approval in the Soviet press, naturally add up to a long list. They approve, among others, of the practice of designating certain branches of production as the exclusive sphere of operation by the state, barred not only to foreign but also to domestic capital. In the same connection are cited such practices as: limitation of the size of private business enterprises; the exercise of control over the scale of new construction and expansion of existing plants; the regulation of

⁷ *Ibid.*, p. 192.

⁸ W.E.I.R., No. 3, 1962, p. 24.

domestic companies and banks, and the maintenance of control over foreign trade.

These "healthy tendencies," according to Soviet analysts, are not the result of mere accident. They emerge logically from the growing "sharp and stubborn struggle of the progressive forces against all reactionary and unstable elements in the new societies." In the course of such struggles, the argument runs, the local Communist movements gain prestige as well as new recruits. What happens, they explain, is that as a result of these battles "the more farsighted representatives of the nonproletarian elements are won over to the position of the working class."⁹

It follows that the road to "true, progressive, noncapitalist development" must be paved by some working alliance of proletarian and patriotic forces. This is a goal toward which Premier Khrushchev has given his firm support on more than one occasion. He repeated this advice in his principal address to the 22d party congress, on October 17, 1961, declaring:

The entry of the former colonial and dependent nations onto the noncapitalist path of development, cannot be achieved by the drift of events (*samotok*). Only the active struggle of the working class, the toiling masses, the union of all democratic and patriotic forces, and the broad national front can lead the nations onto such a road.

At the same time, Khrushchev urged the new nations to bear in mind the "advantages" of reliance upon the Soviet bloc.

They have on their side [he indicated] the nations of the whole world socialist system, which are powerful international forces, endowed with all that is necessary for extending effective moral and material support.

III. THE SELECTIVE APPLICATION OF SOVIET AID

It is not surprising, therefore, that the content of the Soviet aid program is carefully controlled, on the basis of a set of criteria that would help to promote the main official goals of the U.S.S.R. in the field of economic development. Care is generally exercised that the projects selected for support must, to begin with, serve to accelerate those trends in the process of economic and social change in the client countries which the Soviet Government considers to be "positive" in character. For these reasons, Soviet aid in general displays a strong bias, for example, in favor of industrial projects. Nearly 60 percent of all Soviet bloc credit obligations, through 1961, were committed to installations in the field of manufacturing. The promotion of industry helps, of course, to expand the ranks of the proletariat, a process that contributes, in Soviet terms, to the widening of the class base of the local Communist parties. By the same token, it serves to offset the influence of the potentially hostile class, the "national bourgeoisie."

The use of Soviet aid to build production plants, especially in the heavy industrial sector, also helps to project a favorable image of the U.S.S.R. in the new countries. It lends visual proof to a major Marxist theme, namely, that only the U.S.S.R. is willing and able to buttress the "real economic independence" of the emerging nations, a condition, they insist, that is quite impossible of attainment without a domestic heavy industry. In this part of the program, the Soviet dispensers of foreign aid know that they are working to enlist on their

⁹ Ibid, p. 32.

side the forces of economic nationalism of the emerging states. Thus, for example, in 12 out of the 20-odd countries now receiving its economic aid, the U.S.S.R. has offered financial and technical support to help develop a "national oil industry." To no one's surprise, too, this offer has evoked a favorable response from countries as far apart in social development as Ethiopia and Argentina.

Soviet aid is also selectively applied in still another sense, in the sense that it is directed exclusively toward the state sector in the economy of the recipient country. Here indeed is one of the principal pillars of the Soviet aid structure. On this practice in selection rests a great deal of the optimism that marks the official view of the evolving state of affairs within the developing countries. Support to the state sector is expected to accomplish several things. It is counted upon, first, to build up the strength of the "progressive" state sector in its struggle against the "internal enemy," namely, private enterprise.

Aid from the Socialist countries—

states one official source—

compels the foreign monopolies to retreat from their former positions, but it also helps the state sector * * * to resist the self-seeking pressures of local private capital.¹⁰

So long as such support continues, the official Soviet view holds, the balance will continue to be tilted firmly in favor of state enterprise, a prime objective of the U.S.S.R. in these countries. Ultimately, too, such supports and the resultant rise in state enterprise, is counted upon to slow down the flow of private investment from the West—

to discourage the imperialist powers from an all-out export of capital to these countries, despite the tempting prospects of obtaining big profits.¹¹

Still another strategic ingredient of the Soviet aid program is the conspicuous support of technical training in the client countries. This type of project is designed to drive home to the new nations two favorite Soviet themes: (1) that only the Soviet Union is ready to meet their aspirations to acquire the technical skills of modern industry; (2) that Soviet support, financial as well as technical, has no ulterior motives of self-interest: it is offered only for the duration of the period of shortage of "nationally trained cadres."

In a number of countries, therefore, the Soviet Union is building technical institutes as part of its economic aid program. In such cases, they not only supply the equipment but also help to staff the schools with teaching and research personnel. In other instances, where the prospects may be less immediately promising, the Soviet commitment provides for the transmission of technical skills by a less formal instrumentality, namely by the acceptance of local workers for training in the appropriate industrial enterprises of the U.S.S.R.

There is yet another, heavily used route by which the managers of the Soviet aid program offer to guide the interested less-developed countries toward "economic independence." This is the route of the geological survey, followed by prospecting for mineral deposits. The cost of these surveys are, as a rule, covered by the long-term credit from the U.S.S.R., and carried out with the aid of Soviet technical personnel. Hence, there is no current outlay by the recipient country;

¹⁰ The U.S.S.R. and the Lands of the East [in Russian], Academy of Sciences of the U.S.S.R., Moscow, 1961, pp. 84-85.

¹¹ W.E.I.R. No. 6, 1962, p. 104.

only a glittering promise of sudden enrichment by means of some important mineral find. At the same time, the Soviet Union stands by, ready to help in the process of extraction, and to defend the resource against "the greed of capitalist interests." As may be expected, this element in Soviet foreign aid occupies a position of great prominence in official commentaries on the subject. Also, the extension of this type of offer is quite prominent in Soviet proposals. Work on geological surveys is going on in a majority of the countries included in the Soviet aid program.

IV. THE LIMITS OF THE SOVIET "ALTERNATIVE"

Everything about the Soviet program—its calculated application, its cost, and expanding scale—leaves little room for doubt that the Communist leaders have a strong and immediate incentive to influence the political direction of economic organization in the developing countries. What they expect to see emerge in the upshot, they tell us, is nothing less than "a radical change in the balance of forces on a world scale in favor of socialism." In order to accomplish this critical shift in the world balance they offer to the new nations an "alternative way," a shortcut to help resolve their domestic and international difficulties. At home, they urge the developing countries to order their economic and political affairs on the basis of Soviet-tested, "non-capitalist" forms of social organization. In regard to their economic needs from abroad, Communist spokesmen also point unhesitatingly in the direction of the Soviet bloc as an "alternative" source for filling their current wants as well as their requirements for long-term economic development.

As a practical matter, however, the foreign economic resources of the Soviet camp can scarcely be qualified as a plausible "alternative." Because of their built-in institutional commitment to autarchy, internal national as well as intrabloc, the Communist countries do not have much to spare for trade with the outside world. Taken together, all Communist lands contribute only \$4.2 billion to the total volume of goods flowing through the channels of world trade. In 1961, total world trade was measured by an export figure of \$118 billion. In direct contrast, the newly developing nations are very much involved in the activities of the world market. Like it or not, most of them are, by their very nature, export economies. They do not, and can not, live in isolation. As a group, they sell currently some \$28 billion worth of commodities in the world market. Of this total, the share of the Soviet bloc as a whole comes to only 4.3 percent. The proportion is roughly the same on the import side: only 4.1 percent of the \$30 billion worth of goods imported by the less-developed countries in 1961 came from the Sino-Soviet group of nations.

World trade of the non-Communist countries, 1961

	Export			Import		
	Total	To Sino-Soviet bloc		Total	From Sino-Soviet bloc	
	<i>Billions</i> \$117.7	<i>Billions</i> \$4.2	<i>Percent</i> 3.6	<i>Billions</i> \$123.3	<i>Billions</i> \$4.6	<i>Percent</i> 3.8
World, total.....						
Developed areas.....	90.0	3.0	3.3	93.3	3.4	3.7
Underdeveloped areas.....	27.7	1.2	4.3	30.0	1.2	4.1

Source: Based on United Nations. Monthly Bulletin of Statistics, April 1962, pp. 88-89; unpublished data of the U.S. Department of Commerce.

In the field of trade, the prime objective of the newly developing nations is to employ their export resources in such a way as to help speed up their economic development. To this end, they try to maximize the import of industrial equipment in the course of any given year. Here, too, the preponderant source is the capitalist world market. In 1960, the industrialized nations of the West delivered to the underdeveloped countries a quantity of equipment valued at \$7.6 billion. In contrast, imports in this category from the Soviet bloc amounted to less than \$300 million in the same year; i.e., a ratio of nearly 25 to 1.¹²

It is worthy of note, in this connection, that in the course of the more recent months the discussions on the developing nations among Soviet specialists have lost some of their earlier extreme tendencies toward oversimplification and absolute certitude. The shadow of doubt, it is fair to say, seems to be lengthening across their horizon. At a conference devoted to "the national-liberation movement," held in early 1962, several speakers stressed the rather novel theme that the imminence of the shift toward "noncapitalist" methods among the new nations may have been overstated. On this score, one speaker declared:

Certain comrades are sometimes hasty in their conclusions, ignoring the historically evolved local conditions of life and culture.¹³

At the same conference, a number of the time-honored slogans in the area of underdevelopment were frankly questioned by some participants. In regard to Africa, for example, one rapporteur argued that—

it is incorrect to base the forecast for the future development of this group of nations on the single premise that capitalism has discredited itself on that continent.

Another official expert called for a new look at the priorities in economic development, as hitherto prescribed in the Soviet approach to the new nations. In his view, "it is wrong to put forward economic independence [meaning industrialization] as the most immediate problem, and as the principal political slogan for the progressive elements in these countries." He urged, instead, that the main stress be placed on "the democratic solution of the agrarian problem" in order thereby to win the "sympathy of the peasantry, the majority of the population in these countries, in the systematic struggle against imperialism."

¹² U.N. Monthly Bulletin of Statistics, March 1962, p. XXVIII.

¹³ W.E.I.R. No. 6, 1962, pp. 103-105.

It may be reasonably concluded from the above brief survey, that the Communist leaders' appreciation of the usefulness of economic aid as an instrumentality for improving their power position in general, and their influence among the developing nations in particular, has in no way diminished in recent years. Some of the initial heady optimism has, to be sure, worn off with the passage of time, reflecting the perceptible fact that the forces working for stabilization and gradual economic betterment among the new nations have proved themselves to be far more durable than originally assessed by the Soviet leadership. We can be quite certain, however, that the Soviet rulers continue to regard stabilization, under capitalism, as a transitory phase; as something in the way of an unpleasant, unproductive interlude between rounds of revolutions. On the basis of this fundamental belief, the Soviet Union will surely continue to exert its energies in the direction of influencing the economies of the developing nations. Undoubtedly, too, this pressure will be applied in a contradictory manner, alternating between the support of the efforts of the national governments toward stabilization on the one hand, and the drive of the Communist minorities toward revolution on the other. This dualism in policy appears to be unavoidable because, in a very real sense, it reflects the dual character of the Soviet state, which is at one and the same time a sovereign national community interested in normal diplomatic intercourse with its neighbors and the principal base of operations for the promotion of Communist revolutions.

APPENDIX TABLE

The Communist bloc and the West in the world economy, 1961

Indicator	Unit	Communist bloc ¹	West ²	Rest of the world	Total world
Population.....	Million.....	1,047	559	1,455	3,061
	Percent.....	34.2	18.3	47.5	100.0
Gross national product ³	Billion dollars.....	418	982	(⁴)	(⁴)
	Percent.....	(⁴)	(⁴)	(⁴)	(⁴)
Energy consumption ⁴	Million metric tons (HCE).....	1,391	2,624	547	4,562
	Percent.....	30.5	57.5	12.0	100.0
Exports.....	Billion dollars.....	16.1	81.4	36.3	133.8
	Percent.....	12.0	60.9	27.1	100.0
Imports.....	Billion dollars.....	16.3	80.9	42.7	139.9
	Percent.....	11.7	57.8	30.5	100.0
Production:					
Electric power.....	Billion kilowatt-hours.....	512	1,574	349	2,435
	Percent.....	21.0	64.6	14.4	100.0
Coal ⁴	Million metric tons (HCE).....	1,113	874	233	2,220
	Percent.....	50.1	39.4	10.5	100.0
Crude steel.....	Million metric tons.....	110	203	42	355
	Percent.....	31.0	57.2	11.8	100.0
Crude petroleum.....	Million metric tons.....	185	401	534	1,120
	Percent.....	16.5	35.8	47.7	100.0
Primary aluminum.....	Thousand metric tons.....	1,065	3,252	258	4,575
	Percent.....	23.3	71.1	5.6	100.0
Passenger cars.....	Thousands.....	291	10,511	519	11,321
	Percent.....	2.6	92.8	4.6	100.0
Commercial vehicles.....	Thousands.....	494	2,401	740	3,635
	Percent.....	13.6	66.0	20.4	100.0

¹ U.S.S.R., East Germany, Poland, Czechoslovakia, Hungary, Rumania, Bulgaria, Albania, Communist China, North Korea, North Viet-Nam, and Outer Mongolia.

² United States, Canada, and Western Europe.

³ Converted at purchasing power equivalents.

⁴ Not available.

⁵ For 1960. Hard Coal, lignite, coke, peat, petroleum, natural gas and hydropower in terms of hard coal equivalents.

⁶ Hard coal and lignite in terms of hard coal equivalents.

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DEMOGRAPHIC TRENDS AND POPULATION
POLICY IN THE SOVIET UNION

BY

JAMES W. BRACKETT

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DEMOGRAPHIC TRENDS AND POPULATION POLICY IN THE SOVIET UNION ¹

CHAPTER I. INTRODUCTION AND SUMMARY

The purposes of this paper are to examine: (1) the present size and composition of the population of the Soviet Union; (2) the general development of the population during the period of Communist rule; (3) the prospective demographic trends through 1980; and (4) the policies of the Soviet Government relating to population and the Marxist context for these policies. Insofar as they are pertinent to an understanding of the situation in the Soviet Union, comparisons of the Soviet Union and the United States are drawn. Finally, the paper presents extensive statistical data, including estimates prepared at the U.S. Bureau of the Census as well as official Soviet statistics, many of which are not discussed in the text. In general, the more extensive tables and those which are less germane to the discussion in the text have been relegated to the appendix.

In addition to the introductory chapter which outlines the scope of the paper and summarizes its main points, the paper consists of two main parts, one dealing with demographic trends and the other with population policy. Part I contains three chapters. The first (chapter II) discusses the quality of Soviet demographic statistics and attempts to point out some of the limitations of the figures presented. Particular attention is paid to the problem of establishing the reliability of Soviet mortality statistics because the abnormally low death rates reported for the older ages cast serious doubt on their creditability. Chapter III discusses the growth of total population, age and sex composition, urban-rural distribution, redistribution, nationality composition, and fertility.² These subjects are discussed in their historical context, and, where feasible, projected into the future. Chapter IV compares demographic trends in the Soviet Union and in the United States.

Part II has two chapters devoted to population policy. Chapter V discusses the general historical development of Marxist theories of population with the object of establishing the overall ideological framework for the interpretation of Soviet population policies. Chapter VI attempts to define and interpret Soviet population policy and presents a chronology of the principal Soviet programs relating to population.

In addition to the figures given in the text and in the appendix, the Foreign Demographic Analysis Division, Bureau of the Census, has prepared, for distribution to a limited number of specialists, a report on the Soviet Union containing population estimates and projections by sex and single years of age for January 1, of each year 1950-81. Estimates and projections for three models based on differing assump-

¹The assistance of Miss Mary Lu Fries and Mrs. Frances T. Manning in the preparation of this paper is deeply appreciated.

² Because a large part of chapter II has been devoted to a discussion of mortality rates, no section on mortality was included in the chapter on demographic trends.

tions about the level of mortality, and for four series based on differing assumptions about the level of fertility in 1962 and later are included in that report.

METHODOLOGICAL NOTE

Mortality assumptions.—The population estimates and projections for the period 1950–81 used in this paper are, unless otherwise noted, the Census Bureau's model 3. This model is based on the acceptance of the official death rates for ages under 45 years. Death rates for ages 45 years and over were taken from the official life table for the city of Kalinin.³ Death rates for the older ages in Kalinin are markedly higher than the official death rates for the country as a whole despite the fact that death rates for the younger ages are reportedly much lower in Kalinin than they are in the country as a whole. The rate for the age group 70 years and over was 90.3 deaths per 1,000 population in Kalinin, but only 63.8 for the Soviet Union as a whole, according to official statistics. This composite set of death rates served as the basis for the constructed 1958–59 life table. Death rates by age prior to this date were assumed to be higher, and those for later dates lower, than the levels established for 1958–59. The reasons for accepting this particular model are given in chapter II. Summary results from the Census Bureau's model 1, which was based on an acceptance of the official death rates, and model 3 are presented in the appendix tables A-1 to A-6. Model 2, which is based on an intermediate adjustment of the death rates, is not shown.

Fertility assumptions.—For the projected population, beginning with January 1, 1963, four series of figures are shown for each model for the total population and for the age groups containing persons born in 1962 or later. These series, designated A, B, C, and D, are based on differing assumptions about the future course of fertility. These assumptions, stated in terms of the maternal gross reproduction rates, are given below:⁴

Assumption A.—That the maternal gross reproduction rate will rise from its level of 130 in 1961 to 140 in 1962 and that it will continue to rise by a constant annual amount until 1970, after which it will stabilize at 160.

Assumption B.—That the maternal gross reproduction rate will remain constant at its 1961 level of 130 throughout the projection period.

Assumption C.—That the maternal gross reproduction rate will be the arithmetic means of those used for assumptions B and D, stabilizing at 115 in 1970.

Assumption D.—That the maternal gross reproduction rate will decline to 120 in 1962 and will continue to decline until 1970, after which it will stabilize at 100.

³ Kalinin is in the R.S.F.S.R. about 100 miles northwest of Moscow.

⁴ The maternal gross reproduction rate may be defined as the number of female children that will be born per 100 women, all of whom survive through the reproductive ages, if a constant set of age-specific fertility rates prevails throughout the period. Estimates of the gross reproduction rates for the years 1950–61 are shown in ch. III in the section on fertility.

The fertility assumptions are summarized in the following table:

Assumptions	Assumed maternal gross reproduction rate	
	1962	1970-80
A.....	140	160
B.....	130	130
C.....	125	115
D.....	120	100

Significance of the models and series.—The mortality assumptions affect the size of the projected population much less than do the fertility assumptions. The projected difference by 1981 between the total populations according to models 1 and 3 is about 2 million. On the other hand, the difference between the series A and D projections is almost 37 million, and that between series B and C is more than 9 million. The mortality assumptions, of course, affect mainly the older ages whereas the fertility assumptions affect only those age groups containing persons born in 1962 and later. For the age group 75 years and over, the model 3 projection figure for 1981 is about 2.1 million less than the model 1 figure. (See table 1.) Stated differently, the model 3 projection for the 75 years and over group is about one-fifth lower than the model 1 projection. For the age group under 5 years of age, on the other hand, series A exceeds series D by 13.2 million, or by 60 percent, and series B exceeds series C by 3.3 million, or by 13 percent. (See table 2.) Other 5-year age groups through 15 to 19 years show significant, but smaller, differences between the series.

TABLE 1.—Comparison of population projection models 1 and 3, by age: Jan. 1, 1981
[In thousands. The figures shown are the series B projections for the respective models]

Age	Model 1	Model 3	Model 1 minus model 3
All ages.....	282,166	280,204	1,962
Under 5 years.....	28,569	28,632	-63
5 to 9 years.....	24,266	24,344	-78
10 to 14 years.....	21,958	22,046	-88
15 to 19 years.....	23,123	23,235	-112
20 to 24 years.....	24,441	24,515	-74
25 to 29 years.....	22,668	22,714	-46
30 to 34 years.....	19,183	19,208	-25
35 to 39 years.....	11,903	11,914	-11
40 to 44 years.....	21,168	21,245	-77
45 to 49 years.....	16,874	16,929	-55
50 to 54 years.....	17,901	17,963	-62
55 to 59 years.....	13,182	13,216	-34
60 to 64 years.....	8,726	8,727	-1
65 to 69 years.....	9,309	9,142	167
70 to 74 years.....	8,025	7,621	404
75 years and over.....	10,870	8,753	2,117
		79,430	-251
Under 16 years.....	79,179		
16 to 59/54 years ¹	158,266	158,723	-457
60/55 years and over ²	44,721	42,051	2,670

¹ Males, 16 to 59 years; females, 16 to 54 years. In Soviet usage these age groups are referred to as the "able-bodied" ages.

² Males, 60 years and over; females 55 years and over.

Source: Tables A-2 and A-5.

SUMMARY

Total population.—The present (end of 1962) population of the Soviet Union is about 223 million. This figure can be compared with a population of 208.8 million according to the census in January 1959 and about 180 million at the beginning of 1950. These estimates imply an annual average growth rate of 1.6 percent. In comparison, the U.S. population now numbers about 188 million, or roughly 84 percent as large as that of the Soviet Union, and the rate of population growth since 1950 has probably been slightly higher than that for the Soviet Union. Projections of the Soviet population to 1981 assume that the rate of population growth during most, if not all, of the next 18 years is likely to be below the 1.6 percent for the period since 1950.

Urban-rural distribution.—During the period of Communist rule, the Soviet Union has changed from an overwhelmingly rural (82 percent) country to one in which a slight majority (51 percent) of the population is urban. In comparison, about 70 percent of the 1960 population of the United States was urban. The urban population of the U.S.S.R. is more heavily concentrated in middle-sized cities of from 100,000 to 1 million population; the urban population of the United States is more heavily concentrated in large cities of 1 million or more and in smaller cities and towns of less than 100,000.

TABLE 2.—*Comparison of population projections series A, B, C, and D, for the total population and for the ages under 20 years, Jan. 1, 1981 (model 3)*

[In thousands. The figures shown are the model 3 projections for the respective series]

Age	Population according to series				Series A minus series D	Series B minus series C
	A	B	C	D		
All ages.....	298, 598	280, 204	271, 005	261, 809	36, 789	9, 199
Under 5 years.....	35, 240	28, 632	25, 327	22, 025	13, 215	3, 305
5 to 9 years.....	29, 961	24, 344	21, 535	18, 726	11, 235	2, 809
10 to 14 years.....	26, 294	22, 046	19, 938	17, 798	8, 496	2, 108
15 to 19 years.....	25, 156	23, 235	22, 258	21, 313	3, 843	977

Source: Table A-5.

Age-sex composition.—Because persons born during the Second World War when birth rates were low are now in their late teens, the Soviet Union is faced with a paucity of population (1) of conscription age, (2) in the ages from which students of higher education are principally drawn, and (3) in the ages from which new entrants to the labor force normally come. To satisfy her conscription needs, the Soviet Government has lowered the draft age by 1 year (which will make two age groups susceptible to the draft during 1963). To obtain sufficient students for higher education, many persons who are above the usual college age have been allowed to enroll. The required new entrants to the labor force above those which can be recruited from among youths entering the work force for the first time are to come primarily from collective farms, the household and private subsidiary economies, and the schools.

The Soviet Union, however, does not have a shortage of males of prime military age. She has almost 30 million males 18 to 34 years of age as compared with about 20 million for the United States.

Although the Soviet Union's numerical superiority in the number of males of these ages will decline sharply over the next several years the United States is not expected to have as many military age males as the Soviet Union at any time during the next 18 years, at least.

Nationality composition.—Although Slavs (Russians, Ukrainians, and Belorussians) comprise more than three-fourths of the Soviet Union's population, the 1959 census listed 19 nationality groups with a million or more members and 46 with 100,000 or more members. Russians make up a majority of the population of the R.S.F.S.R. and a plurality of the population of the Kazakh S.S.R. The largest population increases between 1939 and 1959 were recorded by the non-Slavic minorities of central Asia and the Caucasus region.

Fertility.—Since 1950 the fertility of Soviet women has been markedly lower than that of American women. On the other hand, during most of the 1950's, the fertility of Soviet men was higher than that of American men, although at present male fertility in the Soviet Union is lower than male fertility in the United States.

Since 1950 the fertility of Soviet women has been stable despite a sharp rise in the ratio of males to females. This stability is probably the result of two factors canceling out each other: (1) A rise in the proportion married among females of reproductive age, and (2) declining marital fertility. Since numerical equality of the sexes exists for ages under 35 years, future increases in the sex ratio will be of diminishing importance as a factor in countering declines in marital fertility. Thus, if marital fertility continues to decline as seems likely, female fertility will also decline.

Marxist theories of population.—Although Marxist writers have been severe critics of Malthus, contending that the misery which he attributed to overpopulation was actually a consequence of the maldistribution of wealth under the capitalist mode of production, they have evolved the ideological framework to justify government intervention to attain optimum population development. The most advanced theoretical development has been by the Czechoslovak demographer, Vobornik, but his ideological framework should be applicable in the Soviet Union. The significance of these ideological developments is that a Communist country can now adopt any population policy it wishes without running afoul of Marxist philosophy.

Population policy.—The present Soviet population policy, as far as it applies to fertility, can probably best be described as passive. Two main factors very likely dictate this policy; (1) conflicting opinions among the planners on whether more or fewer births would be desirable, and (2) concern that an action program may not be successful or controllable. The Soviet Union is committed to a program of expanded health facilities and lower mortality. It also pursues a very stringent policy of limiting emigration.

Part I. Demographic Trends

CHAPTER II. THE QUALITY OF SOVIET DEMOGRAPHIC STATISTICS

INTRODUCTION

Throughout most of the 45 years since the Bolshevik revolution, and indeed throughout virtually all the Czarist period, the size of the population of the Soviet Union and its predecessor, the Russian

Empire, has been mostly a matter of conjecture. Although there were several earlier attempts to enumerate segments of the Russian population, the first and only complete census of pre-Communist Russia was taken in 1897—a mere 20 years before the demise of Czarism. The Soviets attempted a census in 1920 and enumerated the populations of cities in 1923, but they were not successful in taking a full census until December 17, 1926—a lapse of almost 30 years since the Czarist census. Full censuses have been carried out on three other occasions—1937, 1939, and 1959. The 1937 census was “annulled,” however, leaving a total of three official censuses for the Soviet period.

The censuses, however, have supplied the basis for reliable population estimates only for a relatively short time around the date of enumeration. During each of the intercensal periods, war, civil strife, and famine have decimated the population and depressed the birth rate. The recording of population change—births, deaths, and migration—has been either nonexistent or grossly inaccurate. Thus, postcensal population estimates for the Soviet Union have tended to overstate the population. Intercensal estimates, which attempt to reconstruct the year-to-year changes between two censuses, cannot reliably pinpoint the effects of catastrophic events.

Even during times of relative stability, reliable population estimates for the Soviet Union are not easy to construct. Vital statistics registration—particularly death registration—may be incomplete. Data from the population registers, voters' lists, and other sources which frequently serve as the basis for population estimates are often inaccurate.

AN EVALUATION OF MORTALITY STATISTICS

Officially reported death rates by age for 1958–59 show moderately high mortality for the younger ages and abnormally low mortality for the older ages. Rates of 63.8 deaths per 1,000 population for ages 70 years and over and 87 deaths per 1,000 population for ages 75 years and over are considerably lower than rates for any country in which death registration is complete. Death rates for these 2 age groups rarely fall below 72 and 100 deaths per 1,000 population, respectively. The rate for 70 years and over is 8 per 1,000 lower, and that for 75 years and over 14 per 1,000 lower, than the respective rates for females in the Netherlands, which are among the lowest in the world.

As can be seen from table 3, age-specific death rates for the U.S.S.R. are higher than rates for the United States for the age groups under 45 years and progressively lower than U.S. rates for the age groups 45 years and over. The Soviet infant mortality rate in 1958–59, for example, was almost 38 percent above the U.S. rate for 1959, while for ages 70 years and over the Soviet rate was 21 percent below the U.S. rate. Officially reported death rates by age for the Soviet Union for 1926 and 1938–39, as well as rates for the Russian Empire for 1896–97, display the same general pattern.⁵

Several explanations for the abnormal pattern of death rates have been offered. The Soviet demographer, S. A. Novosel'skiy, attributed the low death rates at the older ages which he observed in the 1926

⁵ Tsentral's noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskii yezhegodnik* (The National Economy of the U.S.S.R. in 1960, A Statistical Yearbook), Moscow, Gosstatizdat, 1961, p. 60, cited hereafter as Nar. khoz. v 1960.

data to "natural selection." Novosel'skiy's theory was that conditions were so bad that the less hardy died off at the younger ages, leaving only persons with an "unusually high resistance to disease."⁶ Another Soviet demographer, M. V. Ptukha, writing in 1957 about the 1926 death rates, hints at a more reasonable explanation—under-registration of deaths.

TABLE 3.—Comparison of death rates by age for the Soviet Union, 1958–59, and for the United States, 1959

Age	Deaths per 1,000 population		Death rate for the Soviet Union as a percent of the rate for the United States
	Soviet Union, 1958–59	United States, 1959	
All ages.....	7.4	9.4	78.7
Under 1 year.....	140.6	29.5	137.6
1 to 4 years.....	24.0	1.1	363.6
5 to 9 years.....	1.1	.5	220.0
10 to 14 years.....	.8	.5	160.0
15 to 19 years.....	1.3	.9	144.4
20 to 24 years.....	1.8	1.1	163.6
25 to 29 years.....	2.2	1.2	183.3
30 to 34 years.....	2.6	1.7	152.9
35 to 39 years.....	3.1	2.2	140.9
40 to 44 years.....	4.0	3.6	111.1
45 to 49 years.....	5.4	5.7	94.7
50 to 54 years.....	7.9	9.2	85.9
55 to 59 years.....	11.2	14.0	80.0
60 to 64 years.....	17.1	20.8	82.2
65 to 69 years.....	25.2	33.3	75.7
70 years and over.....	63.8	80.8	79.0
75 years and over.....	87.0	105.1	82.8

¹ Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *SSSR v tsifrakh v 1961 godu kratkiy statisticheskiy sbornik* (The U.S.S.R. in Figures in 1961, A Brief Statistical Compilation), Moscow Gosstatizdat, 1962, p. 367.

² V. Starovskiy, "Proizvoditel'nost' obshchestvennogo truda i problemy narodonaseleniya" ("The Productivity of Socialized Labor and Population Problems"), *Izvestiya* (News), May 23, 1962, p. 3.

Source: Soviet Union, except where otherwise noted: Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy yezhegodnik* (The National Economy of the U.S.S.R. in 1960, A Statistical Yearbook), Moscow Gosstatizdat, 1961, p. 60. United States: Based on data published in *United Nations, Demographic Yearbook, 1960*, New York, 1961, pp. 190–191 and 536–537.

Ptukha states that—

* * * mortality in the older age groups * * * was low compared with that of some other countries. This gave some writers grounds for doubting the correctness of the statistics. The thought was expressed that the lower death rates are the results of defects in the registration of statistics.⁷

Another Soviet author, M. Ya. Kassatsiyer, writing in 1960, believes that the cause-of-death statistics may explain the pattern of death rates. He attributes the comparatively high mortality for the ages under 45 years to relatively high incidence of pneumonia as a cause of death in the Soviet Union. Low death rates at the older ages, on the other hand, were attributed to the relatively low death rates from cardiovascular diseases and from malignant tumors.⁸

⁶ S. A. Novosel'skiy, *Voprosy demograficheskoy i sanitarnoy statistiki, izbrannyye proizvedeniya* (Problems of Demographic and Public Health Statistics, Selected Works), Moscow, Gosstatizdat, 1958.

⁷ M. V. Ptukha, "Osnovy ischisleniya naseleniya USSR na vtoruyu pyatiletku" ("The Basis of Calculation of the Population of the Ukrainian S.S.R. in the Second Five-Year Plan") in *Akademiya nauk SSSR, Voprosy ekonomiki, planirovaniya i statistiki* (Questions of Economics, Planning and Statistics), Moscow, Izdatel'stvo Akademii nauk SSSR, 1957, p. 441.

⁸ M. Ya. Kassatsiyer, "O standartizatsii pokazateley smertnosti" ("About the Standardization of Indexes of Mortality"), *Sovetskoye zdravookhraneniye* (Soviet Public Health), No. 10, October 1960, pp. 67–69.

Novosel'skiy's "natural selection" theory has also been advanced in a modified form by some Western observers to explain the low mortality of the 1950's. The severe conditions created by the Second World War, according to this theory, would have caused persons who were already weak to die prematurely. Deaths which under normal conditions would have occurred after the war were "bunched" in the war years, leaving a paucity of persons who were subject to death in the years immediately following the war. However, this theory fails to take into account the effects of famine and war on the persons who do survive. It is difficult to believe that prolonged malnutrition, war wounds, etc., would not have their effect on the physical makeup of the survivors. Moreover, it does not seem to be an appropriate explanation for low death rates 15 years after the war.

Ptukha's suggestion that underregistration of deaths might explain the low death rates at the older ages has considerable merit. The two well-known Soviet demographers, A. Ya. Boyarskiy and P. P. Shusherin, writing in 1955, verified that underregistration of vital statistics was still a problem. According to them, underregistration was more serious in rural areas:

Registration (of births and deaths) in cities is * * * more complete than in villages * * * (because) * * * the cities have at their disposal means of control such as * * * data from cemetery administrations * * *⁹

As suggested by Boyarskiy and Shusherin, the source of the difficulty might be the procedure for registering deaths. In urban areas deaths are registered at the Civil Records Registry Office (ZAGS). This office was set up especially to handle civil records and apparently does not have other functions. In rural areas, however, deaths are registered at the office of sel'soviet (rural soviet or commune) administration. This office is responsible for the administration of the varied affairs of the sel'soviet. The compilation and reporting of vital statistics is only one of their duties—and not the one looked upon by higher authorities as being the most important.¹⁰ Further, although in cities death certificates must be shown to cemetery managers before burial is permitted, there apparently is no such requirement in rural areas.¹¹

Reports of deaths among persons in school or in the work force are more likely to be made to the sel'soviet administration since the failure of these persons to show up for work or for school would have to be explained. Furthermore, there would be an incentive for the sel'soviet administration to remove these persons from their rolls since the number of persons in the "able-bodied" ages is undoubtedly a factor in the production demands made on the sel'soviets and discrepancies between school enrollment and population of school age might have to be explained. The death of an older person, however,

⁹ A. Ya. Boyarskiy and P. P. Shusherin, *Demograficheskaya statistika (Demographic Statistics)*, Moscow, Gosstatizdat, 1955, p. 224. The authors suggest that birth registration might also be incomplete. An evaluation of the relevant material, however, indicate that although birth registration may still be incomplete in some areas, underregistration of births is probably no longer a serious problem on the national level.

¹⁰ In his concluding plenum speech to the Central Committee of the Communist Party of the Soviet Union, on Mar. 9, 1962, Khrushchev made the following comments on the rayispolkom, which administers the territory of the rayon, the next higher unit above the sel'soviet: "(The rayispolkom) * * * pays equal attention to the registration of births, marriages, and divorces and pays only some part of its attention to agricultural production on which the well-being of man depends. Such a situation cannot be recognized as normal." *Pravda*, Mar. 11, 1962.

¹¹ Boyarskiy and Shusherin (*op. cit.*) state that: "In cities the burial of deceased persons is forbidden without a death certificate from ZAGS." The authors' reference to "data from cemetery administrations" as a means of control which insures more complete registration in cities than in rural areas has already been cited.

might go unreported because of lack of incentive to report it. The sel'soviet is more concerned with production and with the population capable of producing than with the older population. There would be little incentive for sel'soviet employees to make a special effort to register deaths among older people, especially if this effort interfered with other duties.¹² Relatives and friends of the deceased might not feel sufficient compulsion to register the death, particularly if the sel'soviet center is in another village.¹³

Sel'soviets are often composed of several villages, one of which is designated the administrative center. The outlying villages are often some distance from the center. Moreover, there are no medical personnel in many villages and it seems likely that deaths in such villages are not infrequently omitted from death registration because no one is at hand to prepare a death certificate. Perhaps one indication of the effect of distance from an administrative center on completeness of statistical reporting in the Soviet Union is indicated by morbidity statistics for Burmakinskiy Rayon.

According to N. M. Korobov, during 1958 there were 286 registered illness per 1,000 population in the Burmakino medical district. But in the village of Burmakino, where the medical unit was located, the registered rate was 644 illnesses per 1,000 population; in the other populated places in the Burmakinskiy sel'soviet, the registered illness rate was 559; but in the other sel'soviets in the medical district, the registered illness rate was only 90 per 1,000 population.¹⁴ The differences were stated to be due to reporting failures in outlying areas.

Kassatsiyer's thesis that the high incidence of pneumonia and the low incidence of cardiovascular diseases and malignant tumors explain the pattern of Soviet death rates warrants close scrutiny. The Soviet Minister of Health, Sergey Kurashov, speaking to the 1960 conference of health ministers, stated that the death rate from cardiovascular diseases in the Soviet Union, presumably for 1958 or 1959, was lower than that for any other country. The highest rate for men, according to Kurashov, was observed in the United States (578 deaths per 100,000 male population) while the lowest rate (315 deaths per 100,000 male population) was found in the Soviet Union. Female rates of 447 for the United States and 279 for the Soviet Union were also cited.

Crude death rates, however, are greatly influenced by the age structure of the population, and the Soviet Union has substantially fewer older people than does the United States. (According to the 1959 census, 4.6 percent of the male population and 7.6 percent of the female population in the Soviet Union were 65 years old and over. The 1960 census for the United States found 8.5 percent of the male population and 10.0 percent of the female population in this age group.) Had the Minister of Health released death rates by age for cardiovascular diseases, a meaningful examination of his claim could be made.

¹² The sel'soviet employees might be interested in removing deceased persons from the social security rolls if they are covered. On the other hand, the social security system might provide an incentive for the family of the deceased to conceal the death from the authorities.

¹³ Locating the registration office nearer the population is cited by Boyarskiy and Shusherin as one means of achieving completeness of registration.

¹⁴ N. M. Korobov, "Opytlicheniya sostoyaniya zdorov'ya naseleniya Burmakinskogo rayona" ("The Experience of a Study of the Health Status of the Population of Burmakinskiy rayon"), *Sovetskoye zdrazhokhraneniye*, No. 5, May 1962, p. 36.

Perhaps some insight into the problem may be had by determining what the overall cardiovascular death rate would be, given the Soviet population structure and the cardiovascular death rates by age and sex for the United States. A rate calculated in this manner (usually referred to as a standardized or age-adjusted rate) indicates what the overall death rate for cardiovascular diseases would be in the United States if the structure of the U.S. population were the same as that for the Soviet Union. Thus, comparisons between the standardized rates and the official Soviet rates are not distorted by the differing age structures of the two countries.

The standardized male rate is 358 deaths per 100,000 population and the standardized female rate is 369 deaths per 100,000 population. (See table 4.) In each case the standardized rate is markedly *lower* than the crude rate for the United States (38.7 percent for males, 18 percent for females), but markedly *higher* than crude Soviet rates (13.7 percent for males, 32.3 percent for females). This comparison suggests that if the age structure of the U.S. population were the same as that for the Soviet Union, the United States death rate from cardiovascular diseases would be lower than it is now, but not as low as that reported for the Soviet Union. However, if corrections for underregistration of deaths in the Soviet Union are introduced, the remaining differences could be erased.

TABLE 4.—*Crude and standardized cardiovascular death rates*

Category	Deaths from cardiovascular diseases per 100,000 population	
	Male	Female
Crude rate for the Soviet Union (no date specified) ¹	315	279
U.S. rates:		
Standardized ²	358	369
Crude (1958).....	584	450

¹ As reported by the Soviet Minister of Health, Sergey Kurashov (TASS, September 1960).

² Age-specific cardiovascular death rates for the United States, 1958, applied to the Soviet population. The death rates for the United States are given in U.S. Department of Health, Education, and Welfare, *Vital Statistics of the United States, 1958*, vol. 1, Washington, D. C., 1960, pp. 6-23.

Nor does the high pneumonia death rate appear to offer a satisfactory explanation for the pattern of death rates by age. Data for many countries of the world suggest that even for the very high levels of the pneumonia death rate, the older population will normally experience higher mortality than all other age groups except very young children. Thus, if pneumonia is to explain the moderately high mortality at the younger ages in the Soviet Union, one would expect to find high rates at the older ages as well.

Another possible explanation for the low death rates at the older ages is that exaggeration of age in the population and death statistics might lead to artificially low death rates. Frequently, in societies which bestow prestige on older persons and in countries where the illiteracy rate is high and records of age incomplete, people claim to be older than they really are. But since these people should experience the mortality level associated with their biological (actual) age rather than their assumed age, statistics for the age groups into which these persons are incorrectly placed would reflect some of the characteristics of their true ages.

That exaggeration of age in Soviet demographic statistics might be a problem is amply supported. The Soviet Union claims to have 21,708 persons 100 years old and over according to the 1959 census, or 10 persons 100 years old and over for every 100,000 population.¹⁵ According to other Soviet data, there were 4 persons 100 years old and over per 100,000 urban dwellers and 16 per 100,000 rural dwellers. Among rural females, 21 persons per 100,000 were said to be 100 years old or over.¹⁶ According to the same source, the proportion of very old persons to the total population in the Soviet Union is 6.7 times the proportion for the white population in the United States, 16.7 times the proportion in England, 14.3 times the proportion in France, and 100 times the proportion in Japan. A footnote in this source commenting on the ratio for the United States notes that among the nonwhite population in the United States there were 16 persons 100 years old and over per 100,000 population, but that "these data are considered doubtful." Evidently the Soviet writer entertained no such reservations about the Soviet data.

That longevity is a point of pride in Soviet society is demonstrated not only by the great attention given the population 100 years old and over at the time of the census, but by numerous articles on longevity in the Soviet press. Investigations have been carried out in many parts of the country to determine the size and characteristics of the older population. A card index containing information on the population 90 years old and over has been established at the A. A. Bogomolets Institute of Physiology in Kiev.¹⁷ Persons included in this index are frequently mentioned in the press, usually with some folk explanation of their success in attaining old age. Thus, an incentive is created, particularly in rural areas where records of age are less adequate and illiteracy more pronounced, to become "old."

If overstatement of age in the population and death statistics is to explain the low death rates, however, a minimum of 1.6 million persons, or 20 percent of the population 70 years old and over, would have to be reassigned to some younger ages.¹⁸ Presumably these persons would be allocated primarily to the ages 50 to 69 years, but increases in the population at these ages without increases in the number of deaths would lower even further the already low death rates at these ages.

¹⁵ The number of persons actually enumerated as 100 years old and over was 28,015, but 6,307 of these were "disqualified." However, of the 21,708 persons "certified" as being legitimately 100 years old and over, 1,667 could not be specifically classified by age.

¹⁶ *Nar. khoz. v 1960*, p. 13.
¹⁷ Yu. Spasokukotskiy, "11,000 chelovek starshe 90 let" ("11,000 Persons Over 90 Years of Age"), *Znaniye sila (Knowledge-Strength)*, vol. XXXIV, No. 11, November 1959, pp. 15-16.

¹⁸ This minimum adjustment is based on the assumption that the death rate for age 70 years and over should be 80 per 1,000 population (a rate comparable to that for the United States and that for Latvia) and that ages are accurately reported in the death statistics. The calculation is as follows:

Let P_{70} = the population enumerated as 70 years and over,
 N = the number of people erroneously classified as 70 years and over,
 63.8 = the official death rate for the age group 70 years and over, and
 80.0 = the "true" death rate for this age group.

Then,

$$80.0 (P_{70} - N) = 63.8 P_{70}$$

$$80.0 P_{70} - 80.0 N = 63.8 P_{70}$$

$$80.0 N = 16.2 P_{70}$$

$$\frac{N}{P_{70}} = \frac{16.2}{80.0} = 20.25 \text{ percent.}$$

An alternate assumption might be that overstatement of age is a problem for both population and death statistics. This assumption would provide the additional deaths required for the ages to which the excess population is transferred. Although it is more difficult to establish the minimum adjustment required by this assumption, it is probable that no less than one-fourth of the population 70 years old and over would have to be reassigned.¹⁹

When shifts of the magnitude indicated were attempted, increases in the age groups into which the "excess" population was reassigned were so great as to cast doubt on this solution. Further, the minimum shifts of 20 to 25 percent of the older population were insufficient to allow the retention of the official crude death rates. Shifts in excess of one-third of the age group 70 years and over appear to be necessary if the crude death rates are to be maintained.

In evaluating mis-statement of age, perhaps one other fact should be mentioned. Since it is unlikely that any significant number of persons under 60 years of age could have claimed that they were 70 years or over, either all the increase must be added to ages 60 to 69 years (probably most to ages 65 to 69), or one must assume that a rather substantial "bumping" effect is operating (e.g., that persons age 50 claimed to be age 55, persons age 55 claimed to be age 60, etc.). Neither of these possibilities appears to be acceptable. A marked increase in the population age 60 to 64 or 65 to 69 would put these age groups out of line with the other age groups in the distribution. Moreover, the implied changes in the various cohorts between 1939 and 1959 are more or less regular. Any marked increase in the number of persons 60 to 69 would reduce the implied change for that group below the acceptable minimum. The "bumping" thesis implies that age exaggeration in the 1959 census was rampant, consisting not only of the 2 to 3 million persons age 70 years and over, but perhaps several times that number. Although the possibility remains that overstatement of age constituted a problem of this magnitude, it appears unlikely.

¹⁹ The number of population to be reassigned is a function of the number of deaths reassigned. If the ages recorded on death certificates are consistent with ages reported in the census, the number of deaths to be reassigned should be equal to the death rate associated with the true ages of the people to be reassigned times their number. Algebraically,

Let P_{70} = the population enumerated as 70 years and over,
 N = the number of persons erroneously classified as 70 years and over,
 d = the "true" death rate for the persons to be reassigned,
 63.8 = the official death rate for the age group 70 years and over, and
 80.0 = the "true" death rate for this age group.

Then,

$$\begin{aligned} 80.0 (P_{70} - N) &= 63.8 P_{70} - dN \\ 80.0 P_{70} - 80.0 N &= 63.8 P_{70} - dN \\ (80.0 - d) N &= 16.2 P_{70} \end{aligned}$$

$$\frac{N}{P_{70}} = \frac{16.2}{80.0 - d}$$

$$\text{If } d \text{ is 10 per 1,000, } \frac{N}{P_{70}} = \frac{16.2}{70.0} = 23 \text{ percent;}$$

$$\text{If } d \text{ is 20 per 1,000, } \frac{N}{P_{70}} = \frac{16.2}{60.0} = 27 \text{ percent;}$$

and if d is 25.2 per 1,000 (the official death rate for the

$$\text{age group 65 to 69), } \frac{N}{P_{70}} = \frac{16.2}{54.8} = 29.6 \text{ percent.}$$

If the more likely death rate for 70 years and over of 90 per 1,000 population is accepted, 40 percent or more of the population would have to be reassigned.

AN EVALUATION OF CURRENT OFFICIAL POPULATION ESTIMATES

Beginning with January 1, 1960, the Central Statistical Administration established the practice of publishing population totals estimated for each half year. These estimates usually appear very shortly after the date to which they apply.²⁰ Some are later revised.

Table 5 presents official population estimates from three different sources published in 1960, 1961, and 1962. Most of these figures were published in the press initially. For comparison, figures implied by the vital rates are also shown. One feature of the official estimates seems to be a tendency to overstate or at least to "maximize" population size on the first announcement. For example, the population estimate for January 1, 1961, was initially reported as 216.2 million. It was later shown as 216,151,000 and still later as 216,101,000. The official vital statistics rates imply a population of between 216,175,000 and 216,133,000. Thus, the last downward revision (to 216,101,000) is outside the range implied by the vital rates.

Similarly, the population figure for January 1, 1962, of "approximately 220 million" was later published as 219,745,000, again slightly below the minimum figure implied by the natural increase rates. A figure of 214.4 million for July 1, 1960 has been published without later revision. This figure is higher than the maximum figure implied by the vital rates. An official estimate of 221,465,000 for July 1, 1962, has also been published.

TABLE 5.—Official population estimates for the Soviet Union: 1960-1962

[In thousands]

Date	Estimates published in—			Estimates based on vital statistics rates ¹	
	Narodnoye khozyaystvo ² * 1959	Narodnoye khozyaystvo ³ * 1960	SSSR v tsifrakh ⁴ * 1961	Maximum	Minimum
Jan. 1, 1960.....	212,323	212,300	212,300	212,351	212,330
July 1, 1960.....	214,400			214,263	214,232
Jan. 1, 1961.....		216,151	216,101	216,175	216,133
July 1, 1961.....		218,000		218,005	217,948
Jan. 1, 1962.....			219,745	219,826	219,762

¹ Based on the 1959 census results and official vital statistics rates. The maximum and minimum figures reflect only the effect of rounding in the vital rates.

² Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *Narodnoye khozyaystvo SSSR v 1959 godu, statisticheskiy yezhegodnik* (The National Economy of the U.S.S.R. in 1959, A Statistical Yearbook), Moscow, Gosstatizdat, 1960, pp. 7-8.

³ Narodnoye khozyaystvo S.S.S.R. v 1960 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1960, A Statistical Yearbook), Moscow, Gosstatizdat, 1961, pp. 8-9.

⁴ SSSR v tsifrakh v 1961 godu, kratkiy statisticheskiy sbornik (The U.S.S.R. in Figures in 1961, A Brief Statistical Compilation), Moscow, Gosstatizdat, 1962, pp. 27 and 29.

⁵ Also shown as 212,300,000.

⁶ Also shown as 216,200,000.

⁷ Also shown as 216,100,000.

⁸ Also shown as 219,700,000 and as "approximately (okolo) 220,000,000."

While the tendency to "maximize" the population size can perhaps be attributed to the usual Soviet practice of presenting their "accomplishments" in the best light, explaining the downward revision of some of the estimates is more difficult. A population below that

²⁰ For example, an estimate for Jan. 1, 1962, was published in the Jan. 8, 1962 issue of *Pravda*. During his visit to the United States last year, Mr. Petr Pod'yachikh of the Central Statistical Administration was asked how it was possible to announce population estimates and vital rates so soon after the close of the year. Pod'yachikh replied that data on vital statistics are sent to Moscow by telegram immediately after the close of the year.

implied by the official vital statistics could be due to (1) net out-migration, (2) adjustment of vital statistics for underregistration, or (3) the reliance upon the population registers for the estimates.

Migration.—In 1955 the Soviet Union concluded an agreement with Poland whereby former Polish citizens would be allowed to leave the Soviet Union if they chose. Although no Soviet statistics have been published, the Polish statistical yearbook for 1961²¹ lists “repatriations” as follows:

Year:	Number	Year—Continued	Number
1955.....	8, 523	1958.....	86, 883
1956.....	33, 240	1959.....	33, 087
1957.....	95, 275	1960.....	747

Although the origins of these repatriations are not specified, no other significant movement of persons into Poland has been reported.²²

Taking the Polish figures as representing net out-migration from the Soviet Union, a total of 33,834 persons left the Soviet Union during 1959 and 1960 (that is, between the 1959 census and January 1, 1961). This would lower the minimum estimate based on vital rates to 216,099,000, slightly below the revised official estimate of 216,101,000. The downward revision was 50,000, however, (from 216,151,000 to 216,101,000), or 16,000 more than the emigration. Moreover, most of the emigration occurred during 1959 and should have been known to the Central Statistical Administration well in advance of the publication of the initial population estimate for January 1, 1961.

Vital statistics.—Another possible explanation for the downward revision of the official population estimates is that the initial estimates were based on deficient vital statistics which were subsequently adjusted. As indicated above, there is certainly ample reason to suspect that deaths may be underregistered, and the Central Statistical Administration must surely be aware that something is wrong with the mortality rates. If the vital statistics were revised, however, the new rates have not been published nor have the unadjusted rates been suppressed. In the same publication in which the revised population estimate for January 1, 1961, was published, the previously reported vital rates are repeated.

Population registers.—One other possible explanation for the discrepancies between the current population estimates and the vital statistics is that the estimates of population could be based on tabulations from the various registers. Regular reports are required from the sel'soviets, house administrations, address bureaus, etc. These reports were among those used to prepare the April 1956 estimate. They could also have served as the basis for the postcensal estimates.

The system of reporting in rural areas is fairly well covered in the literature. The sel'soviets are required to file reports annually, indicating the total population of the sel'soviet, the number of persons within specified age groups, and a variety of other information relating to January 1.²³ The population data are supposed to be taken from the household books *after* the entries in the books have been verified and corrected. The secretary of the sel'soviet is required to visit every household personally to verify the household books. This

²¹ Główny Urząd Statystyczny Polskiej Rzeczypospolitej Ludowej, *Rocznik Statystyczny 1961 (Statistical Yearbook 1961)*, Warsaw, Nakładem Głównego Urzędu Statystycznego, 1961, p. 41.

²² Three main streams of migration are known to have affected Poland's population since 1955: (1) The in-migration of former Polish citizens from the Soviet Union, (2) the out-migration of ethnic Germans under the program of “uniting German families,” and (3) the outmigration of Jews to Israel.

visitation is supposed to take place in December immediately prior to his filing his report. The system of reporting for urban areas is not clearly stated in the literature, perhaps because the sources of data are more diverse. Presumably reports providing demographic information comparable to that obtained from sel'soviets are required at least annually.

Whether the Central Statistical Administration would accept estimates based on the registers as superior to those based on the census and on vital statistics is not known. Soviet writers indicate that the registers have many faults. Dolgushevskiy states that the household books are inaccurate and incomplete. Some groups residing in the sel'soviet are said to be erroneously omitted. These include persons living in dormitories and those occupied on construction sites, in railroad repair yards, and in timber cutting. Age data are reported to be inaccurate in many cases.²⁴

At the same time, the publication of postcensal population estimates for local areas suggests data based on the registers. Population estimates for local areas are difficult to construct because migration constitutes a significant part of the population change for a number of these areas. The only known sources of statistics on internal migration in the Soviet Union are the registers. It would have been far easier for the Central Statistical Administration to have accepted the population counts for local areas from the registers (which presumably already take account of population change) than to attempt the construction of new estimates.

CONCLUSION

Because the basis for the postcensal population estimates cannot be established nor the revisions of the estimates explained, the official estimates for the Soviet Union as a whole have been rejected, leaving the census of January 15, 1959, as the only reliable benchmark for the postwar population of the Soviet Union. However, official postcensal estimates for areas within the Soviet Union have been used in this paper because reliable independent estimates cannot be made.

None of the rationalizations advanced by the Soviet demographers to justify the low death rates for the older ages seem reasonable. The low death rates probably reflect underregistration of deaths at the older ages, combined with some unknown amount of mis-statement of age in the population and death statistics.

CHAPTER III. SIZE AND COMPOSITION OF THE SOVIET POPULATION

GROWTH OF TOTAL POPULATION

Early Soviet period.—When the Russian Empire entered the First World War, about 140 million people lived in the 21.7 million square kilometers (8.4 million square miles) which was to constitute the Soviet Union between the World Wars, and about 160 million persons resided in the present territory. Lorimer²⁵ cites population figures by the Russian demographer Volkov which show the population of the

²⁴ F. G. Dolgushevskiy, "Uchety naseleniya v SSSR" ("Population Counts in the U.S.S.R."), *Nauchnyye zapiski (Learned Essays)*, vol. VI, Odessa, issued by Odessa Credit-Economic Institute, 1956.

²⁵ *Ibid.*

²⁶ Frank Lorimer, *The Population of the Soviet Union: History and Prospects*, Geneva, League of Nations, 1946, pp. 29 and 30.

interwar territory as reaching a high of about 145 million persons in 1915 and then after remaining at about that level for 2 or 3 years, declining to a low of 136 million at the beginning of 1923. Volkov estimates the population losses (including the birth deficit) for the First World War, the Revolution, the Civil War, the foreign intervention, the famine, and the epidemics at 30 million. The largest population losses are attributed to the period 1918 to 1922, that is, after the Bolshevik Revolution. The absolute decline during this period was 7.3 million as compared with a net loss of 1.6 million between 1915 and 1917. The annual average loss for the 5 years following the revolution was almost as large as the combined loss for the 3 years preceding the revolution (See table 6).

TABLE 6.—*Population estimates for the interwar territory of the Soviet Union, 1914 to 1927, according to the Russian demographer Volkov*

[In thousands. A minus (-) sign denotes a decrease]

Year	Estimated population at beginning of year	Estimated net change	Year	Estimated population at beginning of year	Estimated net change
1914	142,389	2,693	1922	136,508	-406
1915	145,082	-310	1923	136,102	1,572
1916	144,772	229	1924	137,674	2,945
1917	145,001	-1,551	1925	140,619	3,141
1918	143,450	-1,185	1926	143,760	3,368
1919	142,265	-2,590	1927	147,128	-----
1920	139,675	-2,799	1915-17	-----	1,632
1921	136,876	-368	1918-22	-----	7,348

Source: E. Z. Volkov, *Dinamika naseleniya SSSR za vosem'desyat let (Dynamics of the Population of the U.S.S.R. During Eighty Years)*, Moscow, Gos. Izd., 1930. Cited in Frank Lorimer, *The Population of the Soviet Union: History and Prospects*, Geneva, League of Nations, 1946, p. 30.

By the end of 1926 when the Soviets conducted their first complete census, there were only 147 million persons in the interwar territory, a mere 7 million more than the population living in the same territory at the beginning of the war. The figure is, however, about 11 million above Volkov's 1923 estimate, implying a fairly brisk recovery during the last few years immediately preceding the census.

Period of collectivization.—Between 1927 and 1939 the Soviet population increased by almost 24 million, or by 16 percent, reaching 170.6 million according to the census of January 17, 1939. It is difficult to determine the effect on population growth of the campaign to collectivize agriculture. Lorimer found that:

Our information does * * * indicate the loss of some 5 million lives during the intercensus period above the number of deaths that would normally have been expected.²⁶

However, Lorimer was by no means certain that 5 million deaths should be attributed to collectivization. He continues:

Nevertheless, it is possible that the apparent "excess" in deaths during the interval should be explained as due in part, if not wholly, to higher "normal" death rates at the beginning or end of the period, or both, than we have assumed. In the end we are faced with the conclusion that mortality in the Soviet Union has generally been much higher than the available data seem to indicate, or that there was some depletion of the population during the intercensus period owing to special conditions at that time.²⁷

²⁶ *Ibid.*, p. 136.

²⁷ *Ibid.*, p. 137.

TABLE 7.—*Population estimates for the interwar territory of the Soviet Union, 1927–39, according to Lorimer*

[In thousands]

Year	"Hypothetical" population at the beginning of the year	Estimated net change
1927	147,135	2,869
1928	150,004	2,770
1929	152,774	2,145
1930	154,919	1,782
1931	156,701	1,393
1932	158,094	74
1933	158,168	988
1934	159,156	893
1935	160,049	1,223
1936	161,272	2,116
1937	163,388	3,471
1938	166,859	3,456
1939	170,315	

Source: Frank Lorimer, *The Population of the Soviet Union: History and Prospects*, Geneva, League of Nations, 1946, p. 135.

Lorimer has worked out a series of population estimates for the beginning of each year, 1927 to 1939 (see table 7). These estimates, which Lorimer refers to as "hypothetical," were based on the assumption that the "loss of some 5 million lives" referred to above was attributable to the collectivization drive. As Lorimer indicates, however, reliable estimates of the population during this period are impossible to make, and the losses which the series imply for the collectivization period may be wholly erroneous. Lorimer's population estimates as well as the earlier ones by Volkov are presented here as the best available guesses on the population development during the periods in question.

Period of World War II.—As a result of the Second World War, the Soviet Union added about 0.7 million square kilometers of territory in which about 23 million persons lived before the war. Taking into account the 170.6 million persons in the interwar territory enumerated by the 1939 census, the estimated 23 million persons in the acquired territory, and the natural increase of the population following the census, about 200 million persons lived in the present territory at the time of the German attack on the Soviet Union in June 1941.

Recent Soviet statistics imply such large population losses during World War II that some Western observers question the accuracy of the statistics. The 1959 census counted only 208.8 million persons, less than 5 percent above the estimated population in mid-1941. Since the estimated population growth between 1950 and 1959 amounted to about 28.5 million, the population at the beginning of 1950 must have been about 180 million.²⁸

It is difficult to establish the size of the population prior to 1950. The country probably had recovered sufficiently by 1947 to record a net increase in population. Assuming what is probably a minimal increase of 5 million for the years 1947, 1948, and 1949, the Soviet population must have dropped to a low of somewhere between 170 and 175 million in 1945 or 1946. Thus, between 1941 and 1946 the Soviet Union experienced an absolute population decline of between 25 and 30 million persons.

²⁸ The official vital statistics imply a population of 178.6 million at the beginning of 1950. This population estimate implies substantially the same war losses as the alternate estimate cited in the text.

Some indication of the military losses can be had by comparing prewar and postwar populations by sex. There were probably about 95 million males and 105 million females in mid-1941. At the beginning of 1950 the estimates show only 78 million males and 102 million females. The net declines of 17 million males and 3 million females would suggest that male military losses may have approached 15 million. This figure is markedly higher than previous estimates, the highest of which is about 9.5 million.

Postwar period.—The population of the Soviet Union grew by almost 32 million during the 1950's, increasing from 180.3 million at the beginning of 1950 to 212.2 million in 1960. The present population is about 223 million. The period since 1950 has been devoid of the catastrophic events which have plagued so much of Soviet history. This relative stability is reflected in the population growth. The annual increases in the population since 1950, according to our estimates, have ranged from a low of 2.8 million (1950) to a high of 3.6 million (1962) (see the appendix table A-1). In contrast, the annual increases in population implied by Lorimer's estimates for the period 1927 to 1939 range from less than 0.1 million to 3.5 million while Volkov's estimates for the previous 13 years shown annual changes ranging from an absolute loss of 2.8 million to a gain of 3.4 million.

Prospects for the future.—The future growth of the Soviet Union's population depends primarily on the level of fertility. If fertility remains at the level observed in 1961, the Soviet population is expected to reach 243 million by 1970 and 276 million by 1980. If fertility declines, our projections provide for a population as low as 238 million by 1970 and 259 million by 1980. If, on the other hand, fertility increases, the projections provide for a population as high as 248 million by 1970 and 293 million by 1980 (see appendix table A-6). All the figures cited incorporate the assumptions that mortality will decline and that there will be no migration.

All four of the projections series (based on differing assumptions about the future course of fertility) point to declines in the rate of population growth in the immediate future while the women born during the low birth rate years of World War II are in the reproductive ages. Even the series A projections, which provide for an increase between 1961 and 1962 of 7 percent in the level of fertility and for an increase between 1963 and 1970 of an additional 14 percent in the level of fertility, show a significant decline in the rate of population growth (see table 8). The annual rate of growth, according to series A, will decline over the course of the next several years and will not again reach the estimated 1960 rate until near the end of the 1970's. The other three series point to much sharper declines in the growth rate and do not indicate a rate as high as that estimated for 1960 at any time during the projection period.

Since the age structure of the Soviet population is becoming less favorable to population growth, the only factor which could prevent a declining rate of growth would be a very sharp increase in the fertility of women in the reproductive ages, an increase substantially above that incorporated into the series A projections. As stated in the later section on fertility trends, however, conditions in the Soviet Union appear to be more conducive to a lower level of fertility than to either constant or higher fertility.

TABLE 8.—*Estimated and projected annual rates of population change in the Soviet Union: 1950-80 (model 3)*

[In percent]									
Year	Projection series				Year	Projection series			
	A	B	C	D		A	B	C	D
1950.....			1.54		1966.....	1.48	1.21	1.07	.93
1951.....			1.60		1967.....	1.48	1.18	1.03	.88
1952.....			1.62		1968.....	1.50	1.17	1.01	.83
1953.....			1.53		1969.....	1.54	1.17	.98	.79
1954.....			1.69		1970.....	1.57	1.20	.97	.77
1955.....			1.63		1971.....	1.58	1.20	.99	.78
1956.....			1.62		1972.....	1.60	1.21	1.01	.80
1957.....			1.67		1973.....	1.62	1.23	1.03	.82
1958.....			1.69		1974.....	1.64	1.25	1.05	.84
1959.....			1.68		1975.....	1.65	1.27	1.07	.85
1960.....			1.68		1976.....	1.67	1.29	1.08	.87
1961.....			1.60		1977.....	1.71	1.33	1.12	.90
1962.....	1.65	1.48	1.40	1.31	1978.....	1.77	1.38	1.17	.95
1963.....	1.58	1.39	1.30	1.21	1979.....	1.86	1.46	1.25	1.02
1964.....	1.53	1.31	1.19	1.09	1980.....	1.93	1.53	1.31	1.08
1965.....	1.51	1.25	1.12	.99					

Source: Based on appendix table A-6.

URBAN-RURAL DISTRIBUTION

Historical development.—When the Soviets came to power in Russia, more than four-fifths of the population was rural. According to official Soviet estimates, the urban population residing in the interwar territory in 1917 numbered 25.8 million, or 18 percent of the total population of 143.5 million. By 1920 the urban population, according to Soviet figures, had declined to 20.9 million and accounted for only 15 percent of the total population of 136.8 million. The rural population declined slightly, from 117.7 million in 1917 to 115.9 million in 1920. (See table 9.)

The 1926 census (taken some 9 years after the revolution) counted a rural population of 120.7 million persons and an urban population of only 26.3 million persons. Less than 10 million persons were recorded as living in cities with populations of 100,000 or more.

TABLE 9.—*Population of the Soviet Union, by urban and rural residence: Selected years, 1917-62*

[Population figures in millions]

Territory and dates	Population			Percent		
	Total	Urban	Rural	Total	Urban	Rural
Interwar territory:						
1917.....	143.5	25.8	117.7	100	18	82
1920.....	136.8	20.9	115.9	100	15	85
Dec. 17, 1926.....	147.0	26.3	120.7	100	18	82
Jan. 17, 1939.....	170.6	56.1	114.5	100	33	67
1940 territory: ¹ January 1939.....	190.7	60.4	130.3	100	32	68
Postwar territory:						
Jan. 15, 1959.....	208.8	100.0	108.8	100	48	52
Jan. 1, 1960.....	212.3	103.8	108.5	100	49	51
Jan. 1, 1961.....	216.1	108.3	107.8	100	50	50
Jan. 1, 1962.....	219.7	111.8	107.9	100	51	49

¹ The figures shown are official Soviet estimates "for the territory of the U.S.S.R., including the western oblasts of the Ukraine and Belorussia, Moldavia, Lithuania, Latvia and Estonia." The figures presumably apply to the interwar territory adjusted for the annexations of 1939 and 1940, but exclude the population in the territory retroceded to Poland at the end of the war.

Source: Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *SSSR v tsifrakh y 1961 godu, kratkiy statisticheskiy sbornik (The U.S.S.R. in Figures in 1961, A Brief Statistical Handbook)*, Moscow, Gosstatizdat, 1962, pp. 28-29.

Between 1926 and 1939 the urban population grew by almost 30 million, or by 113 percent, reaching 56.1 million according to the census of January 17, 1939. In 1939, 27 million persons lived in cities with populations of 100,000 or more. The rural population amounted to 114.5 million persons, a decline of only about 5 percent below the 1926 figure.

Territorial acquisitions in 1939 and 1940 (adjusted to exclude the territory retroceded to Poland at the end of the war) added about 4.3 million urban population and 15.8 million rural population, bringing the total in 1939 to an officially estimated 190.7 million persons, of which 60.4 million were urban and 130.3 million were rural. Another 2 million persons lived in the territories acquired at the end of the war.

The urban population at the beginning of 1951 has been officially estimated at 71.4 million.²⁹ Assuming a total population at that time of about 183 million, the rural population was about 112 million. Thus, despite the almost 8 million fewer people in 1951 as compared with 1939, the urban population increased by some 11 million while the rural population declined by 18 million.

Substantial growth in the urban population was registered during the 1950's. The increase of almost 30 million urban persons between 1951 and 1959 represented 42 percent of the 1951 figure. The total population grew by only 14 percent during this period while the rural population declined by about 3 million persons, or 3 percent. Although the growth rate of urban population during the period is not as large as that reported for the period between the censuses of December 17, 1926, and January 17, 1939, the absolute increase of 30 million in the urban population between 1951 and 1959 was accomplished in 8 years, whereas the comparable increase between 1926 and 1939 required about 12 years.

The 1959 census enumerated an urban population of 100 million persons—almost 4 times the 1926 figure—and a rural population of about 109 million persons. Almost 50 million persons—half the urban population and nearly one-fourth the total population—lived in cities with populations of 100,000 or more.

In 1926 only 1,925 populated places were classified as urban, of which 1,446 (three-fourths) had populations of less than 10,000 persons and 748 (39 percent) had populations of less than 3,000 persons. On the other hand, only 3 places had populations of 500,000 or more. The 1959 census lists 4,619 urban places, almost 2½ times as many as in 1926. The number of places with populations of less than 10,000 persons had increased to 3,043 in 1959, a little more than twice the number in 1926. Places with less than 10,000 inhabitants accounted for two-thirds of all urban places in 1959. (See table 10.)

²⁹ Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *Narodnoye khozyaystvo SSSR v 1956 godu, statisticheskiy yezhegodnik* (*The National Economy of the U.S.S.R. in 1956, A Statistical Yearbook*), Moscow, Gosstatizdat, 1957, p. 32. This estimate (which was made prior to the 1959 census) was probably based on a compilation of data from the various population registers. Its comparability with the 1959 and 1939 censuses cannot be judged. Several precensus estimates of the urban population have been published. These estimates, in millions, are as follows:

Jan. 1, 1951.....	71.4	Jan. 1, 1956.....	86.6
1953.....	80.0	April 1956.....	87.0
Jan. 1, 1955.....	84.6		

TABLE 10.—Number and population of urban places, by size of place, selected years, 1926-61

[Population figures in millions]

Category and size of place	Interwar territory		1940 territory ¹ January 1939	Postwar territory	
	December 1926	January 1939		January 1959	January 1961
NUMBER OF PLACES					
All places.....	1,925	2,373	2,759	4,619	4,842
Under 3,000.....	748	353	467	842	788
3,000 to 5,000.....	320	418	531	904	952
5,000 to 10,000.....	378	672	757	1,297	1,411
10,000 to 20,000.....	253	466	501	798	864
20,000 to 50,000.....	135	288	315	474	510
50,000 to 100,000.....	60	94	99	156	150
100,000 to 500,000.....	28	71	78	123	141
500,000 and over.....	3	11	11	25	26
POPULATION					
All places.....	26.3	56.1	60.4	100.0	108.3
Under 3,000.....	1.2	0.7	0.9	1.6	1.5
3,000 to 5,000.....	1.3	1.7	2.1	3.6	3.8
5,000 to 10,000.....	2.7	4.7	5.3	9.2	10.0
10,000 to 20,000.....	3.5	6.5	6.9	11.2	12.0
20,000 to 50,000.....	4.0	8.7	9.6	14.8	16.0
50,000 to 100,000.....	4.1	6.8	7.1	11.0	10.4
100,000 to 500,000.....	5.4	14.2	15.7	24.4	27.8
500,000 and over.....	4.1	12.8	12.8	24.2	26.8

¹ The figures shown are official Soviet estimates "for the territory of the U.S.S.R., including the western oblasts of the Ukraine and Belorussia, Moldavia, Lithuania, Latvia, and Estonia." The figures presumably apply to the interwar territory adjusted for the annexations of 1939 and 1940, but exclude the population in the territory retroceded to Poland at the end of the war.

Source: Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy yezhegodnik* (*The National Economy of the U.S.S.R. in 1960. A Statistical Yearbook*), Moscow, Gosstatizdat, 1961, pp. 50-51.

The pattern of change in the number of very small urban places (under 3,000 population) is striking. The 1939 census lists 353 places in this class, less than half the number in 1926. The territorial acquisitions in 1939 and 1940 raised the 1939 number to 467. By 1959, however, the number of very small urban places had grown to 842, an increase of 13 percent over 1926 and almost double the 1939 figure for the expanded territory.

Recent developments.—The urban population of the Soviet Union is continuing its rather rapid growth. According to official Soviet estimates (table 9), the urban population increased by 3.8 million during 1959, 4.5 million during 1960, and 3.5 million during 1961—a total of nearly 12 million in 3 years. The average annual rate of increase in the urban population, according to the official estimates, was 3.8 percent—2.3 times the officially reported growth rate for the country as a whole. The official estimates for January 1, 1961, indicated that for the first time a majority of the Soviet Union's population was urban. The January 1, 1962, estimates place the urban population at nearly 112 million, or 51 percent of the total population.

The trend in the Soviet Union is not simply movement to urban places, but to the larger and middle-sized cities. Official estimates indicate that the number of people living in small towns has changed very little. Of the 8.3 million increase in urban population between 1959 and 1961, almost one-third (2.6 million persons) occurred in cities of 500,000 or more, while more than two-fifths (3.4 million persons) occurred in cities of 100,000 to 500,000 population. In

contrast to the rather large increase in the number of persons living in cities of 100,000 inhabitants or more the number of persons residing in cities of 50,000 to 100,000 population declined by 0.6 million. The number of persons residing in small cities and towns of less than 50,000 inhabitants increased by 2.9 million.

During this same period (1959 to 1961) one additional city reached the 500,000 population mark and the number of places with 100,000 to 500,000 population increased by 18. Official data for January 1, 1962, indicate that at least one additional city reached the 500,000 population level during 1961. In 1962 the Soviet Union had six cities with 1 million population or more as compared with only three in 1959 and two in 1939.³⁰

POPULATION REDISTRIBUTION

Recent trends.—The area of most rapid population growth in the Soviet Union is northern Kazakhstan where the population of some oblasts increased by 15 to 17 percent between 1959 and 1961 (see fig. 1). This area is the heart of Khrushchev's "Virgin Lands" and is the destination of large numbers of young Russian migrants from the European part of the country. The high rate of increase here has three main sources: (1) In-migration; (2) relatively high birth rates among the young migrants who are generally in the early stages of family formation; and (3) a relatively high rate of natural population increase among the indigenous population.

Other areas in which the growth rate was markedly higher than that for the Soviet Union as a whole are southern Kazakhstan, the areas around the southwestern shore of the Caspian Sea, the Moldavian S.S.R., in the extreme southwestern part of the country, and the areas in the extreme northeastern part of the country. The high rate of population growth in Moldavia stems from her high natural increase rate, which reportedly exceeds 2.5 percent annually. Most of the other principal areas of above-average growth have experienced heavy in-migration as well as high rates of natural increase.

Regions of population decline or of below-average population growth include most of the European part of the country, the southeastern part of the country along the Chinese border, the island of Sakhalin, and scattered areas in Siberia. Rates of natural increase in these areas are generally lower than rates for the country as a whole.³¹ Moreover, most of the migrants to the Virgin Lands and other regions of heavy in-migration are recruited in the European part.

³⁰ Tsentral'noye statisticheskoye upravleniye pri Soveto ministrov SSSR, *SSSR v tsifrakh v 1961 godu, kratkiy statisticheskiy sbornik* (*The U.S.S.R. in Figures in 1961, A Brief Statistical Handbook*), Moscow, Gosstatizdat, 1962, pp. 30, 31, and *Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy vnezhegodnik* (*The National Economy of the U.S.S.R. in 1960, A Statistical Yearbook*), Moscow, Gosstatizdat, 1961, p. 52.

³¹ Regional differences in birth rates are discussed in a later section of this paper.

FIGURE 1.—Percent change of the population, by oblast: 1959 to 1961

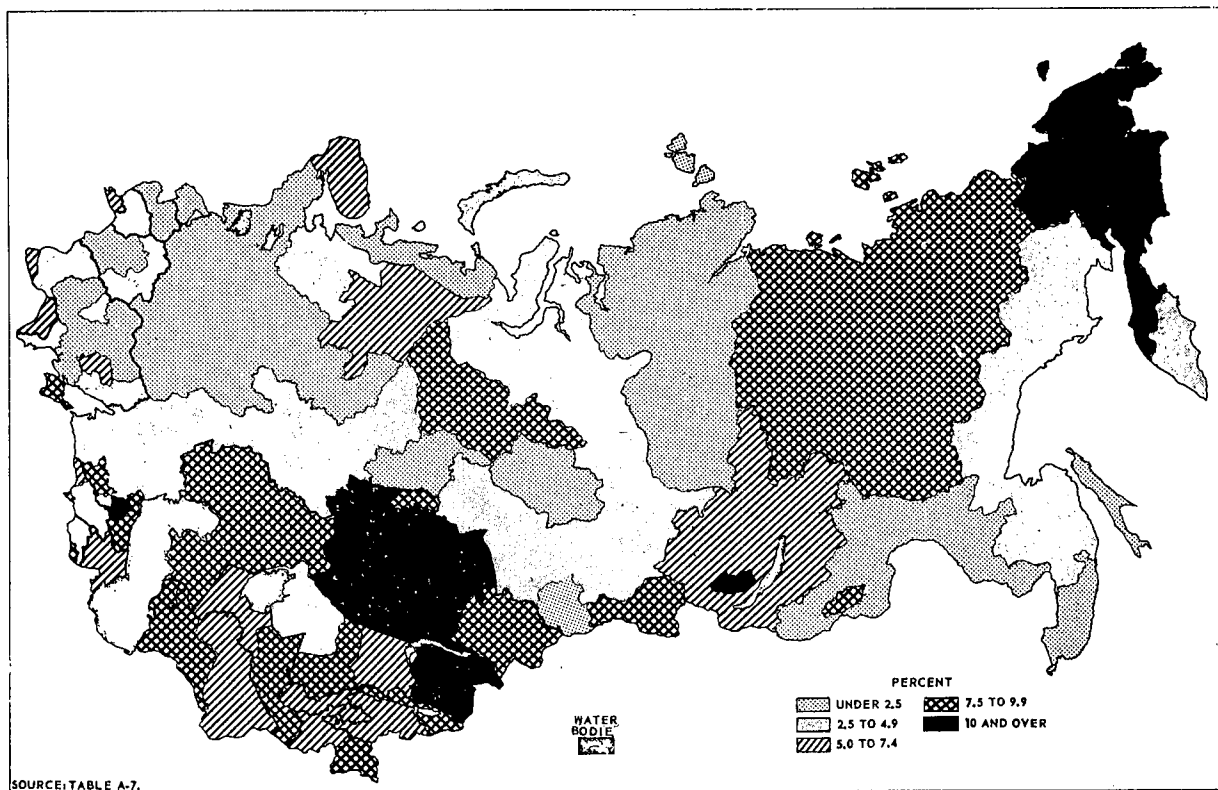
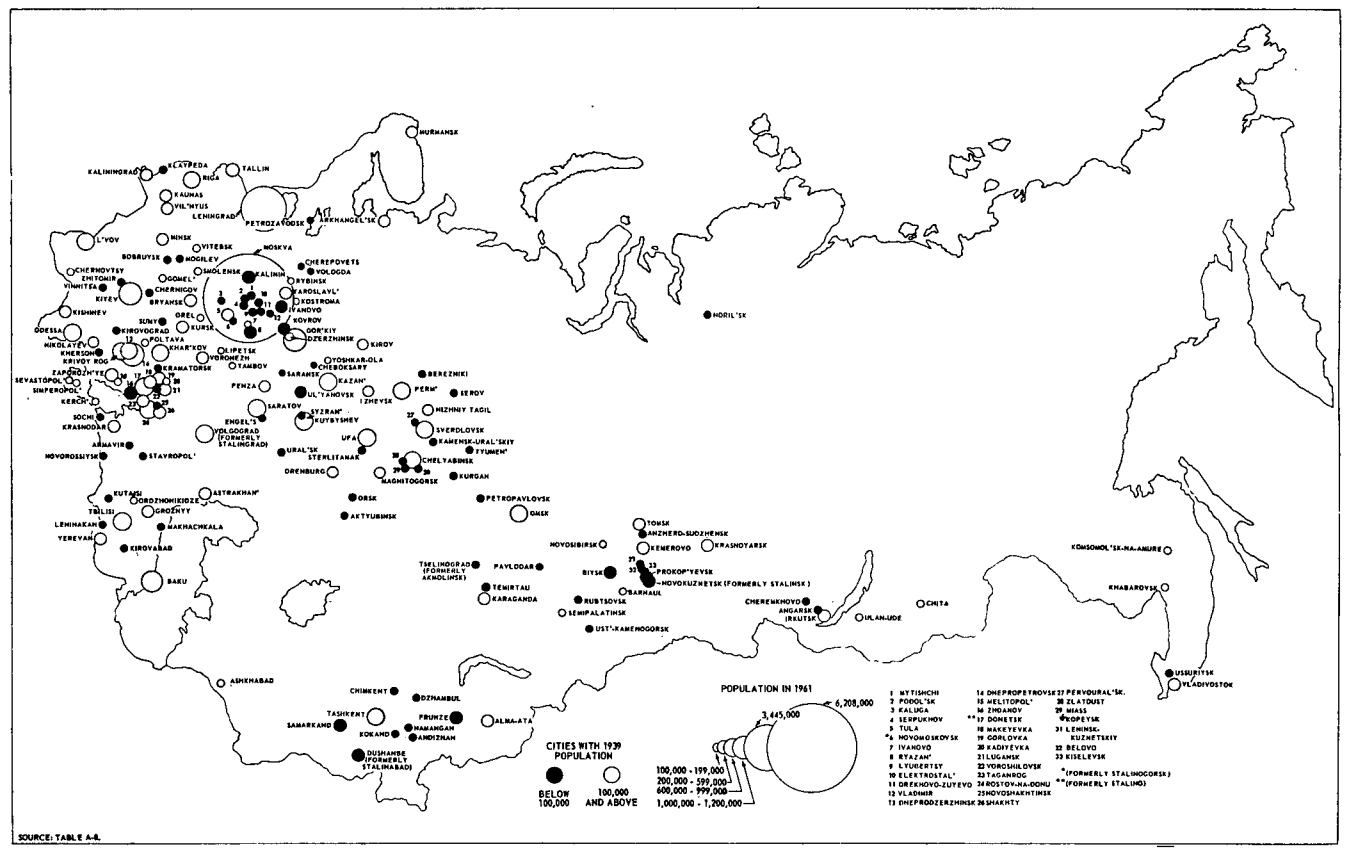


FIGURE 2.—Cities of 100,000 inhabitants or more: 1939 and 1961



Growth of cities: 1939 to 1961.—At the beginning of 1961 there were 167 cities of 100,000 inhabitants or more as compared with 89 in the present territory in 1939.³² These cities are concentrated in (1) a belt beginning roughly with Moscow and running southeast along the Trans-Siberian Railroad, (2) a shorter belt running from Rega, Latvia, across Belorussia and the Ukraine into the Caucasus region, and (3) a triangle in central Asia running roughly from Alma-Ata to Samarkand to Dushanbe (formerly Stalinabad) (see fig. 2). The largest cities, however, are the older urban centers of the European part. At present Moscow, with about 6.2 million population, and Leningrad, with almost 3.5 million, account for almost 9 percent of the Soviet Union's urban population. The other cities with a million or more inhabitants at the beginning of 1961 (Kiev, Gor'ki, and Baku) are all in the European part of the country. Tashkent, the largest city in the Asian part of the country, became the Soviet Union's sixth city of a million or more inhabitants during 1961.

Most of the cities of 100,000 inhabitants or more which are experiencing the most rapid growth are located in (1) the Moscow area, (2) the Virgin Lands region of Western Siberia, and (3) Central Asia. The population of the large cities in these areas grew by an average of more than 50 percent during the period 1939 to 1961. A number of cities, particularly in the Virgin Lands area, grew from mere hamlets in 1939 to medium-size cities in 1961. The city of Temirtau in northern Kazakhstan, for example, reportedly increased from a mere 5,000 persons in 1939 to 113,000 in 1961 while the neighboring city of Tselinograd (formerly Akmolinsk) increased from 32,000 in 1939 to 114,000 in 1961. Ust'-Kamenogorsk in eastern Kazakhstan increased from 20,000 to 173,000. The city of Angarsk (Irkutskaya Oblast), which was established after 1939, had attained a population of 154,000 by 1961.

As might be expected, the cities of least rapid population growth are those in the western part of the country. Leningrad, for example, actually had fewer people in 1959 than in 1939—3,321,000 as compared with 3,385,000. Leningrad's population does appear to be growing currently, however, although the rate of growth is rather low. Official estimates for 1961 place the city's population at 3,445,000 and for 1962 at 3,498,000.³³ Similarly, the 1959 census enumerated fewer persons than did the 1939 census in the city of Smolensk, although the official estimate for 1961 indicates that the city's population is increasing again.

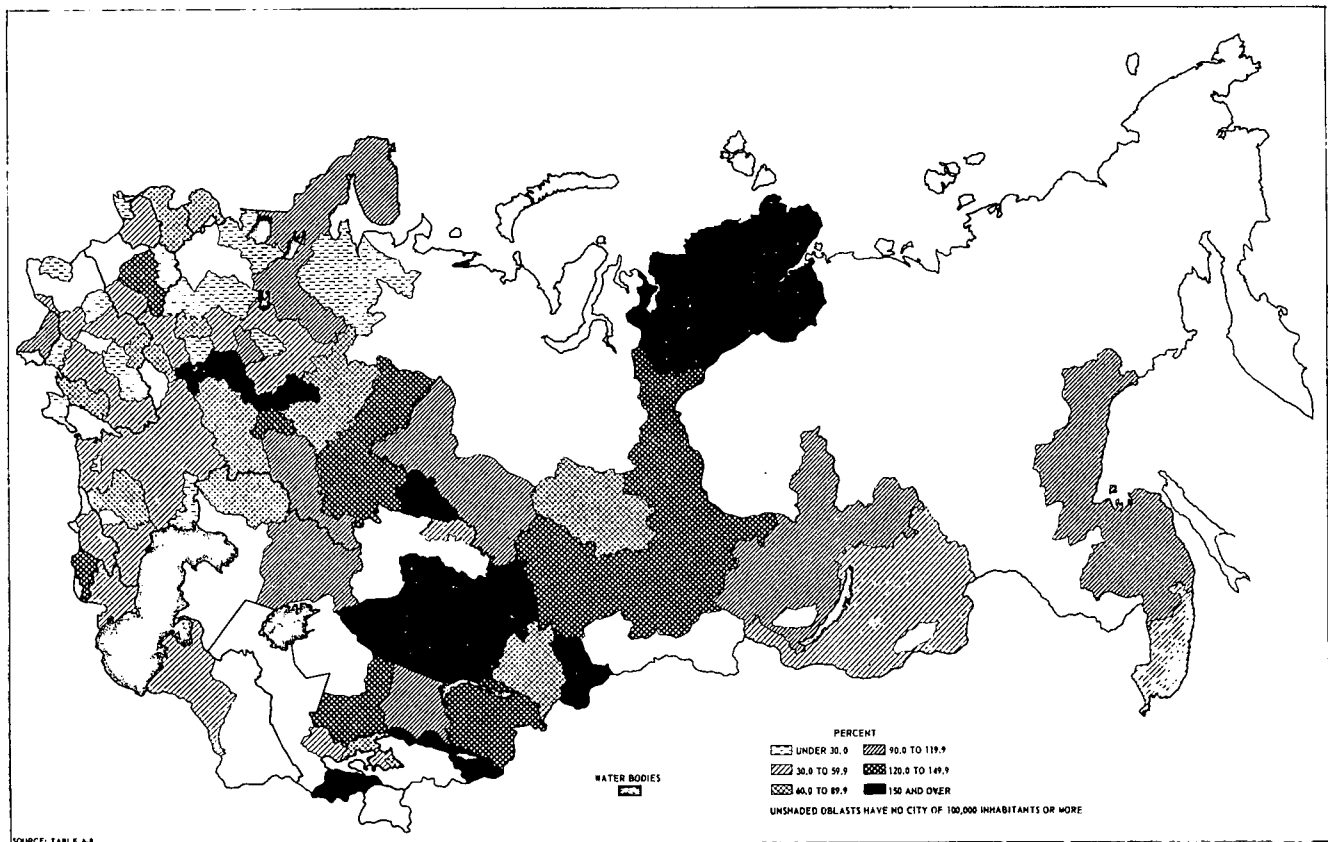
Figure 3 illustrates the growth of population in cities with 1961 populations of 100,000 inhabitants or more. To construct the figure, cities in this size class were classified according to the oblast or other comparable administrative area in which they are *physically* located. The aggregate population for 1939 and 1961 for all the cities in each oblast was derived, and a single growth rate for each oblast was calculated.³⁴

³² According to Soviet sources, there were 89 cities of 100,000 population or more in the adjusted 1940 territory (see table 10). The present city of Kaliningrad was built after World War II on the site of the old East Prussian city of Königsberg. According to the 1939 German census, 372,000 persons lived in Königsberg, but most of these were expelled at the end of the war. The present city of Kaliningrad was settled by Russians transferred there from other areas of the Soviet Union.

³³ The figures cited include several satellite cities which are administratively a part of Leningrad City but which are noncontiguous. The population excluding these areas was 3,015,000 in 1939, 2,900,000 in 1959, and 2,997,000 in 1961. The estimate for 1962 has not been reported.

³⁴ This method of illustrating the regional pattern of the population growth of larger cities has the advantage of avoiding the cluttered and often confusing appearance when growth rates for individual cities are plotted on a map. It has the disadvantage of distorting somewhat the geographical pattern of growth since the entire oblast is shaded even if it has only a single city. For example, the rather large Taymyrskiy National Okrug in north-central Siberia is shaded to reflect the population growth in the city of Noril'sk.

FIGURE 3.—Percent change in the population in cities with 1961 populations of 100,000 inhabitants or more, by oblast: 1939 to 1961



AGE-SEX COMPOSITION

The composition of the Soviet Union's population reflects her turbulent history. The incredibly high military losses during the two World Wars, the revolution, and the civil war, so decimated the male population that for the ages 35 years and over, there are currently only an estimated 60 males per 100 females. Further, the number of births during World War II was so sharply depressed that according to our estimates there are at the present time only about one-third as many persons aged 18 and 19 years as there were a few years ago and less than two-thirds as many 17-years-olds. Moreover, the general pattern of relatively high mortality and moderate fertility which the Soviet Union has experienced during most of her early history coupled with the large civilian and military losses attributable to the several wars have given the Soviet Union a relatively young population.

Male deficit.—Since World War II the Soviet Union has been faced with a substantial deficit of males. In 1950, for example, there were only about 80 males per 100 females in the age group 16 to 34 years and only 59 males per 100 females in the age group 35 to 59 years. To compensate for this deficit, many more women were added to the labor force than might otherwise have been, and women were employed in occupations normally reserved for men.

The deficit of males, however, is becoming less critical. By 1960 there were almost 95 males per 100 females in the age group 16 to 34 years and by 1965 there should be almost as many males as females in this age group. The sex ratio for the age group 35 to 59 years is also rising but cannot become completely "normal" until the late 1980's when the last of the World War II veterans reach age 60. Even by 1965, however, our projections point to a sex ratio of 69 males per 100 females in this age group and by 1970 a sex ratio of 76. (See table 11.) Thus, at the present time the sex ratio is normal for the age groups from which most new entrants into the labor force are drawn.

Among the older population, however, there are only about half as many men as women, and this ratio is not expected to improve very much during the next two decades. By 1980, our projections show only about 52 males per 100 females age 60 years and over, only 2 per 100 above the ratio for 1960 and about 3.5 per 100 above that projected for 1965. Sometime in the 1980's, however, as persons who were below military age during World War II begin reaching age 60 years, the sex ratio of the older population will rise.

TABLE 11.—Number of males per 100 females, by age group, 1950-80 (model 3)

[Series B projections]

Age	1950	1955	1960	1965	1970	1975	1980
All ages.....	76.2	79.5	82.5	85.1	87.3	89.5	91.7
Under 16 years.....	100.8	102.8	103.8	104.2	104.9	105.3	105.4
16 to 34 years.....	79.5	87.9	94.7	99.5	100.9	102.8	103.6
35 to 59 years.....	59.1	59.5	61.7	69.2	76.1	83.5	88.7
60 years and over.....	49.7	50.7	50.4	48.9	51.1	52.1	52.4

Source: Tables A-4 and A-5.

Population of "able-bodied" age.—For the last several years there has been much discussion of a "labor shortage" in the Soviet Union. This discussion was sparked by the knowledge that persons born during World War II, when birth rates were low, have been moving into the "able-bodied" ages (i.e., males 16 to 59 years and females 16 to 54 years) and that consequently the net increase in the population of "able-bodied" age has been less than the planned increase in the labor force. The significance of the low numbers of persons reaching age 16 can be seen from the estimates of the population of "able-bodied" age shown in table 12. Between 1950 and 1957 the annual net increase in the population of "able-bodied" age ranged from 1.6 to 2.8 million persons, and averaged 2.1 million. For 1958, however, when persons born during 1942 became 16, the increase was only 0.2 million. During the 2-year period 1959 and 1960, as persons born in 1943 and 1944 (when birth rates were probably at their lowest) became age 16, the estimates show an absolute decline in the "able-bodied" age of more than a million persons. The estimates show increases again for 1961, but by only about 0.7 million. Not until 1964 or later are the number of persons reaching age 16 expected to be "normal."

The net increases in the population of "able-bodied" age during the period of the current 7-year plan (1959–65) is expected to fall far short of the number of net additions to the labor force required by the plan. The present goal requires a net increase of 22 million persons to the "workers and employees" category, with 33 million new persons to be added and 11 million removed because of retirements and deaths. Although some part of the 33 million "new" workers and employees will be more or less paper additions resulting from the conversions of collective farms to state farms and producers' cooperatives to state enterprises, most of the additions apparently represent new entrants.³⁵

As the figures in table 13 show, the demand for new workers and employees cannot be satisfied by the expected net change in the population of "able-bodied" age. The estimates show 19.5 million persons as reaching age 16 and 14.3 million persons as becoming overage or dying. Even if all the 19.5 million persons expected to reach age 16 between 1959 and 1965 were available for work, they would satisfy only about 60 percent of the requirement for 33 million new additions to the workers and employees category. Moreover, the net increase of 5.2 million persons in the population of "able-bodied" age is less than one-fourth the net addition of 22 million provided for in the plan. The increase in the workers and employees group which cannot be satisfied by the expanding population must be met primarily by transfers of persons from collective farms, from the household and private subsidiary economies, and from the schools.³⁶

³⁵ In Soviet usage, the term "workers and employees" (*rabochiye i sluzhashchiye*) covers most of the personnel in the state sector of the economy. Excluded from this category are such groups as collective farmers, members of producers' cooperatives, independent artisans, domestic servants, etc. When a collective farm is converted to a state farm or a producer's cooperative to a state enterprise, the former members of the collective or cooperative normally become employees of the new state enterprise. The transfer of the personnel of the enterprise to the "workers and employees" category increases the number of "workers and employees" but entails neither the employment of persons who were not previously employed nor the transfer of personnel from the one type of employment to another.

³⁶ The problem of fulfilling the manpower requirements of the plan are discussed more fully in the companion paper "Employment in the U.S.S.R.: comparative U.S.S.R.—U.S. Data," by Murray S. Weitzman, Murray Feshback, and Lydia Kulchycka.

TABLE 12.—*Estimated and projected population of "able-bodied" age in the Soviet Union, Jan. 1 of each year, 1950-81 (model 3)*

[In thousands]

Year	Both sexes		Males		Females	
	Population of "able-bodied" ages ¹	Net change	Population 16 to 59 years	Net change	Population 16 to 54 years	Net change
1950.....	102,668	1,582	43,820	1,024	58,848	558
1951.....	104,250	1,655	44,844	1,070	59,406	585
1952.....	105,905	2,144	45,914	1,328	59,991	816
1953.....	108,049	2,747	47,242	1,651	60,807	1,096
1954.....	110,796	2,776	48,893	1,690	61,903	1,086
1955.....	113,572	2,367	50,583	1,512	62,989	855
1956.....	115,939	1,929	52,095	1,312	63,844	618
1957.....	117,868	1,639	53,407	1,171	64,461	464
1958.....	119,507	234	54,578	458	64,929	-227
1959.....	119,741	-609	55,036	41	64,705	-650
1960.....	119,132	-448	55,077	117	64,055	-565
1961.....	118,684	672	55,194	683	63,490	-11
1962.....	119,356	1,227	55,877	976	63,479	251
1963.....	120,583	1,185	56,853	953	63,730	232
1964.....	121,768	1,593	57,806	1,171	63,962	422
1965.....	123,361	1,586	58,977	1,169	64,384	417
1966.....	124,947	1,740	60,146	1,251	64,801	489
1967.....	126,687	1,893	61,397	1,291	65,290	602
1968.....	128,580	2,085	62,688	1,332	65,892	753
1969.....	130,665	1,988	64,020	1,232	66,645	756
1970.....	132,653	2,322	65,252	1,350	67,401	972
1971.....	134,975	2,333	66,602	1,332	68,373	1,001
1972.....	137,308	2,414	67,934	1,380	69,374	1,034
1973.....	139,722	2,574	69,314	1,498	70,408	1,076
1974.....	142,296	2,704	70,812	1,591	71,484	1,113
1975.....	145,000	2,744	72,403	1,636	72,597	1,108
1976.....	147,744	2,794	74,039	1,704	73,705	1,090
1977.....	150,538	2,577	75,743	1,665	74,795	912
1978.....	153,115	2,183	77,408	1,555	75,707	628
1979.....	* 155,298	1,866	* 78,963	1,481	* 76,335	385
1980.....	* 157,164	1,559	* 80,444	1,424	* 76,720	135
1981.....	* 158,723	-----	* 81,868	-----	* 76,855	-----

¹ According to Soviet usage, the "able-bodied" ages are 16 to 59 years for males and 16 to 54 years for females.

² Series B projections.

Source: Tables A-4 and A-5.

To the extent that males are more apt to be economically active than females, the increasing proportion of males in the "able-bodied" ages should partly offset the number of persons reaching age 16. In 1950 there were 102.7 million persons in the "able-bodied" age, of

TABLE 13.—*Expected changes in the population of able-bodied age in the Soviet Union during the period of the current 7-year plan: 1959-1965 (Model 3)*

[In millions]

Population group	Net change in the population of able-bodied age	Number of persons reaching age 16	Number of persons reaching retirement age or dying
Both sexes.....	5.2	19.5	14.3
Males (16 to 59 years old).....	5.1	9.9	4.8
Females (16 to 54 years old).....	.1	9.6	9.5

Source: Tables A-4 and A-5.

which 43.8 million, or 42.7 percent, were males. During the period 1950-58 when the population of "able-bodied" age increased by 16.8 million, the male segment accounted for 10.8 million, or 64 percent of the increase. Even during the period 1958-62 when the lowest birth cohorts reached age 16 years, the estimates postulate slight increases in the male population of "able-bodied" age (table 12).

Males of prime military age.—Despite the sharply reduced number of persons becoming 18 years old, the Soviet Union does not have a shortage of males of military age. At the present time our estimates show almost 30 million males age 18 to 34 years, only about 2 million fewer than the postwar peak of 32 million estimated for 1960 and almost one-third more than the 22 million estimated for 1950. (See table 14.) The male population of military age is expected to decline slightly (to about 29 million) by 1964 and to remain at that level during most of the 1960's. By 1970, however, the projections point to a slow rise in this group, and by 1980 it may number about 38 million.

TABLE 14.—*Estimated and projected male population of prime military age in the Soviet Union: Jan. 1 of each year, 1950-81 (model 3)*

[In millions]

Year	Age		
	18 to 34 years	18 and 19 years	20 to 34 years
1950.....	22.2	3.5	18.6
1951.....	23.1	3.6	19.5
1952.....	24.1	3.7	20.3
1953.....	24.9	3.6	21.3
1954.....	25.8	3.4	22.4
1955.....	26.9	3.7	23.2
1956.....	28.4	4.3	24.1
1957.....	29.9	4.7	25.2
1958.....	31.1	4.6	26.5
1959.....	31.8	4.2	27.6
1960.....	32.2	3.9	28.3
1961.....	31.7	3.1	28.6
1962.....	30.6	2.0	28.6
1963.....	29.5	1.6	27.9
1964.....	29.1	2.3	26.8
1965.....	29.1	3.2	25.9
1966.....	29.1	3.5	25.6
1967.....	29.4	3.8	25.6
1968.....	29.7	4.1	25.6
1969.....	30.0	4.3	25.7
1970.....	30.6	4.4	26.1
1971.....	31.2	4.6	26.6
1972.....	31.4	4.6	26.9
1973.....	31.5	4.6	26.9
1974.....	31.6	4.8	26.8
1975.....	31.8	4.8	27.0
1976.....	32.3	4.9	27.4
1977.....	32.9	5.0	27.9
1978.....	34.3	5.1	29.2
1979.....	36.1	5.1	30.9
1980.....	37.7	5.1	32.6
1981.....	38.7	5.0	33.8

Source: Same as for tables A-4 and A-5.

However, the number of males age 18 to 34 years is probably less significant for peacetime armies than the number aged 18 and 19 years, since conscripts in the Soviet Union are largely to be drawn

from these ages.³⁷ The Soviet Union is not so fortunate when the 18- and 19-year-olds are considered alone.

During the 1950's the number of males age 18 and 19 years ranged, according to the estimates, from a low of 3.4 million (1954) to a high of 4.7 million (1957). By 1961, however, when persons born during the early years of the war (1941 and 1942) were in these ages, the estimates show only 3.1 million. By 1962, when persons born during 1942 and 1943 comprise the group, the estimates show a further decline to 2 million. However, the Soviet Union has the smallest number of 18- and 19-year-old males at the present time—1.6 million on January 1, 1963. Although the Soviet Union can expect increasing numbers of males in the conscription age, the size of this group is not expected to reach the 1950 level for several years. The projections show only 2.3 million for 1964, and only 3.2 million for 1965. The Soviet Union probably requires a little less than one million conscripts annually to meet and maintain her armed forces at the current level. Since the 18 and 19 year groups must, under normal conditions, provide the draftees for 2 years, the universe from which conscripts are drawn should be about one-half the number of 18- and 19-year-old males. Thus, for 1961 about 1.5 million males would be available, for 1962 about 1 million, for 1963 about 0.8 million, for 1964 about 1.2 million, and for 1965 about 1.6 million. The universe in each case must be further reduced to exclude those physically or mentally incapable of performing military service and persons exempted or deferred.

Apparently to offset the shortage of males of conscription age, the Supreme Soviet issued a decree in July 1962 lowering the age for registration from 18 to 17 years for those who have completed secondary school and from 19 to 18 years for those who have not completed their secondary education.³⁸ The effect of the decree is to provide, during 1963 when the male population of conscription age will be at its lowest point, what would normally be a 2-year contingent of draftees. The effect of the decree after 1963 will be merely that draftees will be drawn from a group which is about 1 year younger than formerly. The decree will probably provide sufficient manpower to tide the Soviet Union over the current period of small populations of conscription age.

College age population.—Since students of higher education are generally drawn from more or less the same age group as draftees, the decline in the number of males of conscription age means a decline in the age group from which students of higher education are usually drawn. For the purpose of the discussion the term "college age" will be used to refer to the age group 18 to 21 years. This age group has been used by the U.S. Office of Education in its analysis of college enrollment in the United States and according to that Office it is from this age group that between 55 and 60 percent of the college students in the United States are drawn. Although students of higher education

³⁷ The system of filling conscription quotas in the Soviet Union is basically different from that in the United States. In the Soviet Union, draftees are drawn from a single "age class" (i.e., persons born during a particular year). Males who have completed their secondary education are required to register during January and February of the year they will reach age 17 years (until recently the age was 18 years); those who have not finished their secondary education register at age 18 years (formerly 19 years). Draft quotas are filled in September and October of each year from among those registering in January and February of that year. Men who are given deferments, as well as those who are not drafted in the years in which the available manpower pool is greater than the quota, are subject to later call if needed. In the United States, on the other hand, the draft quotas are filled from among males in a range of ages (normally 18 to 26 years), the older eligible males being drafted first.

³⁸ *Vedomosti Verkhornogo Soveta Soyuza Sovetskikh Sotsialisticheskikh Respublik (Decrees of the Supreme Soviet of the Union of Soviet Socialist Republics)*, July 8, 1962.

in the Soviet Union are probably somewhat older than their U.S. counterparts, a large part of the enrollment in higher education in the Soviet Union must come from this age group.

For the 1950's our estimates show a college age population of between 14.4 and 18 million. By 1961, however, as persons born during World War II began reaching college age, the number of persons 18 to 21 years old had declined to 14.6 million, a level near the lowest figure estimated for the 1950's. The decline is continuing and the college age population is not expected to reach its perigee until about 1964, when the projections show only 8.4 million persons 18 to 21 years old. Increases are expected after 1964, but the group is not likely to reach its lowest level for the 1950's until near the end of the present decade. (See table 15.)

The declining number of college age persons in the Soviet Union is coming at a time when increased enrollment in higher education is essential to the fulfillment of announced goals. Increased enrollment will necessarily mean a sharp increase in the proportion of the college age population which is enrolled in higher education. Between 1955 and 1959 there were about 12 students of higher education per 100 persons of college age. In 1960, however, there were 14.1 students per 100 college age persons and in 1961 the ratio increased to 17.8. (See table 16.)

TABLE 15.—*Estimated and projected college age population in the Soviet Union, Jan. 1 of each year, 1960-81 (model 3)*

[In millions]			
Year	Population, 18 to 21 years old	Year	Population, 18 to 21 years old
1950.....	15.0	1966.....	11.5
1951.....	14.8	1967.....	13.8
1952.....	14.7	1968.....	15.1
1953.....	14.5	1969.....	15.9
1954.....	14.4	1970.....	16.9
1955.....	14.8	1971.....	17.4
1956.....	15.6	1972.....	17.7
1957.....	17.0	1973.....	18.1
1958.....	17.9	1974.....	18.4
1959.....	18.0	1975.....	18.5
1960.....	17.0	1976.....	19.0
1961.....	14.6	1977.....	19.2
1962.....	11.7	1978.....	19.5
1963.....	9.4	1979.....	19.8
1964.....	8.4	1980.....	19.9
1965.....	9.5	1981.....	19.7

¹ Series B projections.

Source: Same as for tables A-4 and A-5.

The enrollment ratio is certain to continue its sharp increase. Even if there is no increase in the number enrolled, the ratio is expected to rise to more than 30 students per 100 college age persons in 1964. If enrollment in higher education increases (as it must to meet the requirements of the Seven-Year Plan), the ratio will rise even more sharply. An annual rate of increase in enrollment of 7.1 percent (the average level for the period 1950 to 1961) would yield a ratio of about 38 students per 100 persons 18 to 21 years old for 1964 while a 10.2 percent annual increase in enrollment (the observed rate between 1960 and 1961) would yield a ratio of almost 42. After 1964, as the college age population begins to increase once more, the enrollment ratio is expected to drop somewhat, even if enrollment increases sharply.

TABLE 16.—*Estimated and projected numbers of students of higher education in the Soviet Union per 100 persons age 18 to 21 years, 1950-70*

Year	Series				Year	Series			
	I	II	III	IV		I	II	III	IV
1950.....		8.0			1963.....	27.7	29.8	31.9	34.0
1955.....		12.8			1964.....	31.0	34.5	38.1	41.7
1956.....		12.8			1965.....	27.4	31.6	35.8	41.1
1957.....		12.4			1966.....	22.6	27.0	31.3	37.4
1958.....		12.3			1967.....	18.8	23.2	28.3	34.1
1959.....		12.8			1968.....	17.2	21.9	27.8	34.4
1960.....		14.1			1969.....	16.4	21.4	28.3	35.8
1961.....		17.8			1970.....	15.4	20.7	28.4	37.3
1962.....	22.2	23.1	23.9	24.8					

Source: The single series for 1950-61 is based on officially reported enrollment and the estimated population 18 to 21 years old. The 4 series for 1961 and later were based on 4 separate assumptions about the trend of enrollment after 1961 and on a single series of population projections for ages 18 to 21 years. The 4 assumptions about the future trend of enrollment were:

- Series I: That enrollment will remain constant at the 2,600,000 level reported for 1961.
- Series II: That enrollment will increase at an annual rate of 3.8 percent, the lowest observed rate for the period 1955-61.
- Series III: That enrollment will increase at an annual rate of 7.1 percent, the average annual rate for the period 1957-61.
- Series IV: That enrollment will increase at an annual rate of 10.2 percent, the highest observed rate for the period 1955-61.

The rapid increase in the enrollment ratio will require some adjustment in the educational system. In 1954 there was only one student in higher education for every three students in regular secondary schools. By 1959 the figures show three students in higher education for every four in secondary. The increases in the ratio of enrollment in higher education to that in secondary schools is attributable partly to the increase in enrollment in higher education and partly to a decrease in secondary enrollment. Decreases in secondary enrollment are in turn related to lower numbers of persons of secondary school age.

The Soviet Union seemingly has two short-run alternatives for obtaining the required students: (1) to increase the proportion of the current secondary school graduates who go on to higher education, and (2) to permit persons who graduated from secondary school earlier (or who complete secondary school after going to work) to enter higher education. For the long run, there is the added possibility of increasing the number of graduates from secondary school by raising the proportion of the population of secondary school age who finish their secondary education. Each of these possibilities is associated with a special set of problems.

If the proportion of secondary school graduates who go on to higher education is increased sharply, marginal and even unqualified students might be selected for higher education. A substantial portion of the enrollees in higher education probably comes from cities, while rural areas supply a disproportionately small share of enrollees.³⁹ Secondary schools in the larger cities are undoubtedly superior to those in rural areas in terms of qualifications of faculty, quality of school plant, etc. An increase in the proportion of secondary school graduates who go on to higher education would mean that rural secondary schools whose graduates are not as well prepared would provide a

³⁹ For a discussion of the urban-rural differences in education opportunity, see Nicholas DeWitt *Educational and Professional Employment in the U.S.S.R.*, Washington, D.C., National Science Foundation 1961, p. 442.f.

large part of the additional enrollees in higher education. Improvements in the quality of education offered by these schools can be made, of course, but they are expensive and cannot be accomplished quickly.

The short-run solution of admitting to higher education older persons who have been out of school for some time has several important economic disadvantages. As a result of the delayed entrance into higher education and the longer period of study for those students who remain in the labor force, the age at graduation will be advanced and the length of time the skills of the graduates will be available to the economy shortened. Further, many of the older persons selected to go on to higher education may have received technical training, and many may have been placed in responsible positions. Not only would the economy be faced with the difficulty of finding competent replacements for these persons, but the training they have received would be lost.

The long-term alternative of making secondary education more nearly universal is related to the problem of improving the educational system. Statistics for the school year 1954-55 (the last year for which such data are available for the country as a whole) indicate some of the problems associated with making these improvements. Fifty-seven percent of the primary schools had only one teacher, 32.6 percent had two teachers, while only 5.7 percent had four or more teachers. Less than 0.3 percent of the rural primary schools had as many as 160 pupils and only 2 percent had as many as 80 students.⁴⁰

Secondary schools are generally larger, of course, but the majority, particularly in rural areas, are probably not large enough to provide a diversified program. Twenty-eight percent of all secondary schools in the country had fewer than 400 pupils and another 50 percent have between 400 and 800. In rural areas 43.6 percent had fewer than 400 pupils while 51 percent had from 400 to 800. Only 20 rural secondary schools had more than 1,200 pupils.⁴¹ Moreover, the schools that do exist are obviously overcrowded. According to the official statistics for the school year 1955-56, 52 percent of the Soviet schools operated two shifts and a few (1,393) even operated three.⁴² It would appear that about the only schools in the Soviet Union operating on one shift are those with only one teacher.

Because a decrease in the number of school-age children has lowered enrollment in recent years, the present system may be able to accommodate a larger proportion of the school-age population for the short run. However, even for a short period the urban-rural and regional differences limit the degree to which these facilities may be used. The only real solution to the problem is heavy investment in educational facilities. But, heavy investments in school facilities require diversion of investment from other areas of the economy, and, of course, even after embarking on vast school building projects, results cannot be expected immediately. Moreover, improvements in school systems require more than the mere construction of buildings; the training of qualified teachers can take many years.

The Soviet planners who were faced with the task of finding solutions to the problem of providing sufficient, and hopefully qualified,

⁴⁰ Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *Kul'turnoye stroitel'stvo SSSR* (Statisticheskii sbornik) (*Cultural Construction in the U.S.S.R., A Statistical Compilation*), Moscow, Gosstatizdat, 1956, p. 164. Data for the R.S.F.S.R. and for Latvia for the school year 1956-57 give the same general picture.

⁴¹ *Ibid.*, pp. 166, 167.

⁴² *Ibid.*, p. 168.

students for higher education appear to have settled on the short-run solution of admitting older persons to higher education, apparently as a means of buying time for the establishment of more permanent solutions. Although the quality of the students obtained in this way is probably inferior to that of students admitted to higher education during the 1950's, their quality should be superior to that of the students who would attend if all new enrollees in higher education were recruited from the current secondary school graduates. This short-term solution had one effect which the Soviet Government undoubtedly welcomed. During the middle and late 1950's there were large numbers of graduates of secondary schools who were denied admission to higher education. By extending to this group the belated opportunity to go on to higher education, the Soviet Government was able to ease a point of irritation for this segment of the population.

ETHNIC COMPOSITION

Size and distribution.—The 1959 census lists 19 nationality groups with a million or more persons and 46 with 100,000 or more persons. The three major Slavic groups, however, comprise about three-fourths of the population. The 114 million Russians account for 55 percent of the population, the 37 million Ukrainians for about 18 percent, and the nearly 8 million Belorussians for a little less than 4 percent. Of the non-Slavic people, the Uzbeks (6 million) are the most numerous followed by the Tatars (5 million), Kazakhs (3.6 million), Azerbaydzhanis (2.9 million), Armenians (2.8 million), and Georgians (2.7 million). The data on nationality groups are presented in appendix tables A-9 and A-10.

Within the various Union Republics, Russians predominate in two—the R.S.F.S.R. and Kazakhstan. They comprise about 83 percent of the population in the R.S.F.S.R. and almost 43 percent of that in Kazakhstan. Russians comprised more than 10 percent of the populations of 10 other Union Republics. In Kirgizia they represent 30 percent of the total population, in Latvia 27 percent, and in Estonia 20 percent. Armenia has the smallest proportion (3.2 percent), followed by Belorussia (8.2 percent), and Lithuania (8.5 percent).

In two Republics, Kazakhia and Kirgizia, the nationality groups for which the Republics are named constitute minorities of the population. Kazakhs comprise only 30 percent of the population of their Republic. The Kirgiz constitute 40 percent of the population in the Kirgiz S.S.R., but they do constitute the largest single nationality group in their Republic.

In addition to the 16 million Russians living outside the R.S.F.S.R., several other nationality groups for which union republics have not been established have large minorities in other republics. Armenians comprise 11 percent of the population of Georgia and 12 percent of the population of Azerbaydzhan. Ukrainians make up almost 15 percent of the Moldavian S.S.R.'s population and 7 percent of the population of the Kirgiz S.S.R. Uzbeks form 23 percent of the population of the Tadzhik S.S.R., 11 percent of the population of the Kirgiz S.S.R., and 8 percent of the population of the Turkmen S.S.R.

Among the larger groups for which Republics have not been established, 82 percent of the Tatars live in the R.S.F.S.R., and another

9 percent live in the Uzbek S.S.R. Of the 2.3 million Jews, 39 percent live in the R.S.F.S.R., 37 percent in the Ukraine, 7 percent in Belorussia, and 4 percent in Moldavia. The Chuvash, the Bashkirs, and the Dagestan peoples are found mostly in the R.S.F.S.R., while the Poles live mostly in Belorussia, the Ukraine, and Lithuania, in or near the areas annexed from Poland in 1939.

Changes, 1939 to 1959.—The Soviet Union experienced several significant changes in its ethnic composition between 1939 and 1959. Partly as a result of the assimilation of peoples from other nationalities, the Russians increased their proportion of the total population from 52 to 55 percent. The other two major Slavic groups—Ukrainians and Belorussians—declined as a percent of the total. The data point to an absolute decline in the number of Belorussians.⁴³

The failure of the Ukrainians and Belorussians to maintain their relative positions is attributable to several factors. First because they are ethnically related to the Russians, they are able to assimilate more easily than the other groups. Second, the Ukraine and Belorussia suffered heavily during the war. Both were occupied by the Germans. In addition to the substantial numbers of persons killed, many people were taken to Germany as forced labor or departed on their own accord in advance of the returning Soviet army.

The Jewish population, of course, suffered most from the war. The 1959 census shows 2.3 million Jews as compared with a reported 4.8 million in 1939, a decline of 53 percent. Although a small part of this loss may be attributable to assimilation and to out-migration, most of the loss resulted from the German extermination attempts. Declines registered by the Latvians and Estonians are also partially attributable to the war. The 32 percent decline in the number of Poles is related to the repatriation agreements of 1945 and 1955 between Poland and the Soviet Union and to population movements during the war.

The largest increases were reported for the central Asian and Caucasus peoples. The Armenians increased by 29.5 percent, the Azerbaydzhanis by 29.2 percent, the Uzbeks by 24.1 percent, and the Turkmen by 23.4 percent. These relatively large increases are attributable to the higher birth rates among these peoples and to the lesser impact of the war on them.

TRENDS IN SOVIET FERTILITY

Introduction.—The term "fertility" as it is used here does not refer to the birth rate but to a more refined concept which takes into account the age structure of the population. The concept may also take into account such other variables as marital status, occupation, and social class, but data for the Soviet Union are not sufficient to permit meaningful analysis of these factors. A limited discussion of regional and ethnic differences, however, is included.

In order to study the trends in Soviet fertility, some measure relating births to the age of parents had to be devised. Had the Soviet Union reported birth rates by the ages of mothers and fathers, ma-

⁴³ The 1939 data referred to in this section apply to the adjusted 1940 territory, i.e., to the interwar territory plus territories acquired during 1939 and 1940, but excluding the territory retroceded to Poland at the end of the war. They were taken from an article by Yu. P. Mironenko entitled "Natsional'nyy sostav naseleniya SSSR po dannym sovetskoy statistiki" ("Nationality Composition of the Population of the U.S.S.R., According to Soviet Statistical Data") which appeared in the Munich publication *Vestnik instituta po izucheniyu SSSR, (Journal of the Institute for the Study of the U.S.S.R.)*, No. 2, 1958, pp. 45-63. Mironenko's data were reportedly taken from various Soviet sources.

ternal and paternal gross reproduction rates could have been easily calculated. Gross reproduction rates indicate the replacement potential of the population in the reproductive ages. They are more commonly based on the female population of reproductive age, indicating the number of female children that will be born to 100 women during their reproductive lives if a given set of birth rates by age of mother remains in effect. Paternal gross reproduction rates, relating male births to the male population of reproductive age, however, may also be calculated. A maternal gross reproduction rate of 100, for example, signifies that 100 women will, during their reproductive lives, give birth to 100 daughters; a rate of 150 signifies that 100 women will bear 150 daughters, etc.

The gross reproduction rate, however, does not take mortality into consideration. Since some people will die before reaching childbearing age, the gross reproduction rate must be somewhat greater than 100 if the parent group is to replace itself to the point of providing sufficient progeny to insure the survival to the childbearing ages of 100 offspring. The net reproduction rate, which takes mortality into consideration, is a measure of replacement potential in this more refined sense.

The only recent data relating to fertility for the Soviet Union as a whole are crude birth rates (i.e., numbers of births per 1,000 total population) for 1950 to 1961.⁴⁴ Using the patterns of birth rates by age of mother and father for several other countries, estimated maternal and paternal gross reproduction rates consistent with the officially reported crude birth rates for the Soviet Union were derived. Although these estimates varied, depending upon the pattern of age-specific birth rates, fertility trends over time implied by the various patterns are similar. The gross reproduction rates implied by the pattern of age-specific birth rates for females in the Soviet Zone of Germany and by the pattern for males in the Federal Republic of Germany will be used in the following discussion. These rates are presented as indications of the trend in fertility and of the general level of fertility, but should not be taken as predictions of the actual Soviet gross reproduction rates, although the actual rates are probably not greatly different from these.

Recent trends.—The most striking feature of postwar Soviet fertility is that despite tremendous changes in a wide range of factors which normally influence the level of fertility, female fertility has remained remarkably stable. The estimated maternal gross reproduction rates shown in table 17 have been around 130 for the period 1950 to 1961. Male fertility, on the other hand, has been declining—by about 30 percent over the same period.

There are countermending factors in the Soviet environment which probably contribute to this phenomenon. First, in 1950 there were only 75 males per 100 females in the age group 15 to 44 years, which includes the parents of most new babies. Thus, even if all males in this age group were married, about 25 percent of the females in this age group would be without husbands.⁴⁵ By 1960, however, there were 87 males per 100 females in this age range. Thus, if all males were married in 1960, only 13 percent of the females would be without husbands. Moreover, in 1950 there was a paucity of males even at

⁴⁴ The total number of births for 1959 has also been published.

⁴⁵ Assuming, of course, that all marriage partners were within the same age group.

age 25 years whereas by 1960 the ages 15 to 34 contained about the same number of males and females. An increase in the proportion married among females in the reproductive ages, and especially in the younger ages, should have contributed to a rise in female fertility.

TABLE 17.—*Estimated maternal and paternal gross reproduction rates for the Soviet Union: 1950 to 1961*

Year	Gross reproduction rate		Index (1950=100)	
	Maternal	Paternal	Maternal	Paternal
1950.....	131	256	100	100
1951.....	133	253	102	99
1952.....	132	242	101	95
1953.....	127	224	97	88
1954.....	136	231	104	90
1955.....	132	219	101	86
1956.....	130	211	99	82
1957.....	132	209	101	82
1958.....	132	203	101	79
1959.....	131	197	100	77
1960.....	133	193	102	75
1961.....	130	184	99	72

Source: See text.

Several other factors, however, might be expected to decrease fertility. In 1954, the Soviet Union along with most other Communist countries put into effect new regulations making abortions generally available. (See ch. VI.) In a number of countries the liberalization of the abortion laws was followed by moderate to large increases in the number of abortions. Although data for the Soviet Union are lacking, the number of abortions in that country probably increased also. Moreover, the tight housing situation and the large-scale employment of women might be expected to lower fertility.

In the absence of data, we can only speculate about the trend in marital fertility. As the number of males in the reproductive ages became more nearly equal to the number of females, it is likely that a larger proportion of the female population in the reproductive ages married. However, since total female fertility has not increased since 1950, the fertility of married women in the Soviet Union has probably been declining steadily since at least 1950.

Urban-rural differences.—Despite the severely limited statistical evidence on the subject, there is little doubt that fertility in urban areas is lower than that in rural areas. According to the 1959 census, there were in urban areas almost 50 million persons in the reproductive ages, taken here as 16 to 44 years, as compared with only 44 million in rural areas. However, there were only 10 million children under 5 years old in urban areas as compared with 14 million in rural areas. The only other piece of statistical information relating to recent levels of fertility in all urban areas is an announcement that in 1958 the urban birth rate was 22.5 births per 1,000 population.⁴⁶ For the country as a whole, 25.3 births per 1,000 population were reported for that year.

⁴⁶ Reported in the *New York Times*, Apr. 10, 1960.

Urban and rural birth rates, for a number of subdivisions of the Soviet Union, have been reported. The 1956 birth rate for the city of Leningrad, for example, was 13.9 per 1,000, as compared with a rate of 22.8 for Leningrad Oblast. In Krymskaya Oblast, the urban birth rate in 1956 was 17.9 as compared with a rural rate of 25; for central Asia, the urban birth rate in 1956 was 33.2, the rural rate was 38.2; and in Moldavia, the urban rate in 1955 was 24 as compared with a rural rate of 32. Data for all these areas support the contention that urban fertility is lower than rural.

Regional differences.—The highest birth rates in the Soviet Union are reported for the area around the Caspian Sea (the Kazakh, Uzbek, Turkmen, Azerbaydzhan, and Armenian S.S.R.'s and the Dagestanskaya, Severo-Osetinskaya, and Kalmytskaya A.S.S.R.'s) and for Irkutskaya Oblast in Siberia. These areas report birth rates of 35 or more per 1,000 population. (See figure 4.)

Moderately high birth rates (between 30 and 35 per 1,000 population) are reported for the central Asian Republics of Kirgizia and Tadzhikistan, for the Moldavian S.S.R., for several areas in Siberia, and for the Karel'skaya, Komi, Bashkirskaya, Mariyskaya, and Chuvashskaya A.S.S.R.'s.

The lowest birth rates for any area in the Soviet Union are reported for the larger cities in the European part of the country. The 1956 birth rate of 13.9 for the city of Leningrad has already been cited. The rate for Moscow Oblast (which includes the city of Moscow) has been reported as 20.1, and that for Kiev City, the Ukrainian capital, as 16.6. These rates may be compared with a 1956 birth rate of 25.2 for the country as a whole.

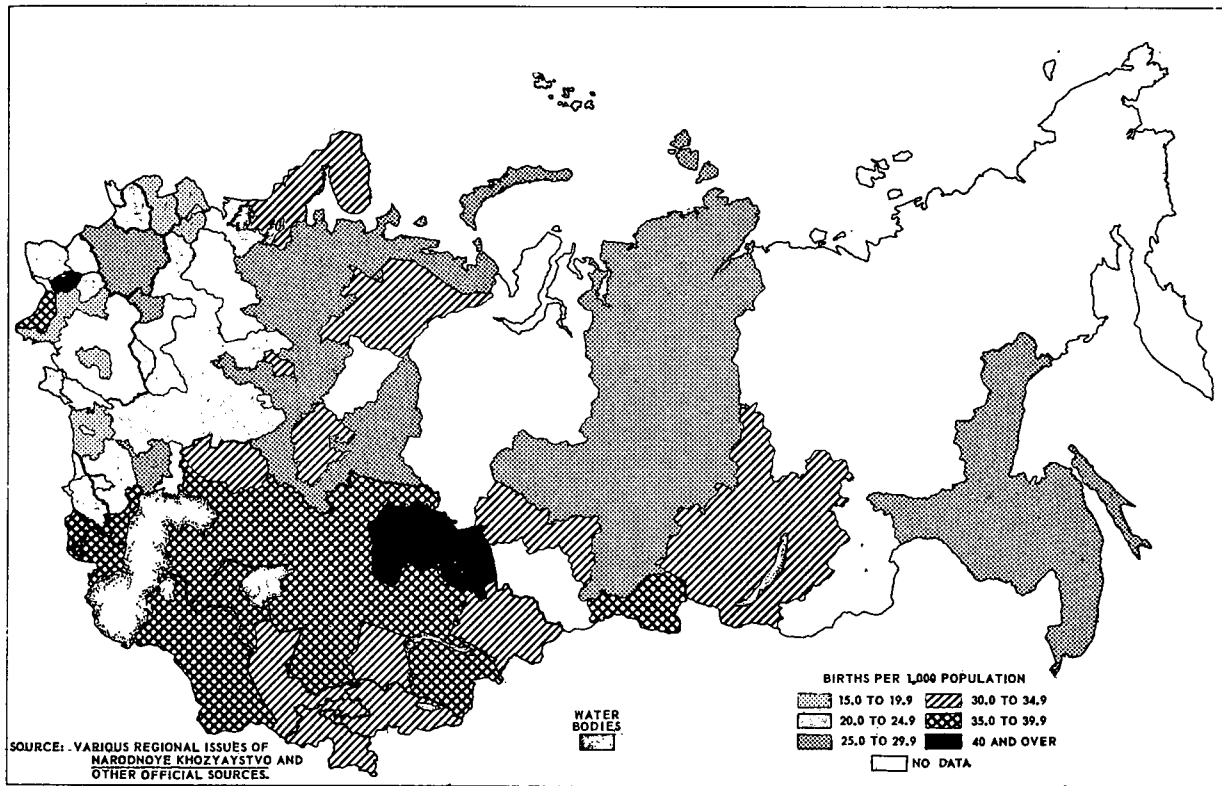
The significance of these comparisons, however, probably lies less in the regional differences than in the underlying ethnic differences. Virtually all the areas for which birth rates higher than those for the country as a whole have been reported are either predominately non-Slavic or have substantial non-Slavic minorities. On the other hand, Slavs predominate in most areas in which birth rates are below the birth rate of the country as a whole, the only significant exception being the Baltic Republics—Estonia, Latvia, and Lithuania.⁴⁷

Future trends.—Speculation on the future course of fertility is risky. The number of births which will occur in the future is contingent upon the decisions of many millions of persons about their family size and upon their ability to attain the desired number of children. There are many factors which influence these decisions and which govern success in family planning. Even if all of them were known, predicting their future trends would be a formidable task.

Despite the pitfalls of speculation, however, there is a legitimate interest in the subject, and a report on demographic trends would be incomplete without some discussion of future fertility. Moreover, some of the factors which influence fertility are known, and the future trends of some of these can be projected with some degree of certainty. The discussion which follows attempts to interpret the prospective trends of those factors which are thought to affect fertility and to speculate on the influence of these factors on fertility.

⁴⁷ The birth rate for the Jewish population is probably below that for the Soviet Union as a whole. However, measures of the birth rate are not available for this group.

FIGURE 4.—Birth rates by oblast: Ca. 1956



It seems likely that both male and female fertility in the Soviet Union will decline. As the ratio of males to females in the reproductive ages becomes more normal, the rise in the proportion married among females should level off, and any continued decline in marital fertility would be reflected in declining rather than stable female fertility.

There are a number of reasons to expect marital fertility to decline. First, at least for some time to come, the Soviet Union faces the prospect of maintaining a high degree of participation of females in the labor force. The monumental manpower requirements of the current 7-year plan coupled with the small increase in the working age population seemingly leaves no alternative. Second, although the housing situation presumably is improving, most Soviet families have little hope of immediate amelioration of their present conditions whereby an entire family lives in one or two rooms (or reportedly in many cases even a part of a room), sharing kitchen and bathroom with several other families. Moreover, even for the families fortunate enough to have apartments to themselves, the apartments are apt to be small. Third, as the supply of consumers' goods becomes more adequate, many people may wish to use their incomes to purchase these goods rather than to pay the cost of children. The wide dissemination of contraceptives and the easy access to abortion leaves little room for doubt that couples should have a high degree of success in planning the size of their families.

But even if Soviet fertility remains constant, the decline in the female population of prime reproductive age will result in a drop in the annual number of births. Between 1950 and 1960 the annual number of births increased gradually, from 4.8 to 5.3 million. But in 1961 only 5.2 million babies were born and the number is expected to decline each year until the late 1960's, reaching a low of perhaps 4.5 million in 1967 or 1968. If fertility declines as it is expected to do, however, the annual number of births may decline to somewhere between 3.5 and 4 million in the late 1960's.

The drop in the birth rate (that is, the number of births per 1,000 population) will, of course, be sharper than the drop in the absolute number of births because even with fewer births, the population is expected to increase. An assumption of constant fertility points to a decline in the birth rate from a reported 23.9 births per 1,000 population in 1961 to a low of about 19 per 1,000 population for the years 1967 to 1970. If fertility declines, the birth rate could be 15 per 1,000 population, or lower.

The question might be asked whether the Soviet Union could duplicate the American experience and reverse the trend to smaller families. The answer, of course, is imponderable. It probably depends upon a better understanding than we now have of the underlying factors which brought about the reversal of the traditional trend in the United States. However, to the extent that larger families are associated with a level of living comparable to that found in the United States, it is unlikely that fertility in the Soviet Union will increase in the foreseeable future. Despite recent announcements that more adequate supplies of consumers' goods will be made available, the Soviet Union remains committed to the development of heavy industry to the detriment of consumers' goods production and there is little likelihood that this policy will be changed. Moreover, even

if the policy were changed completely, the smaller industrial base in the Soviet Union coupled with the results of long neglect in this area would push well into the future the time when anything comparable to the American level of living could be attained.

CHAPTER IV. SOME COMPARISONS OF DEMOGRAPHIC TRENDS IN THE SOVIET UNION AND IN THE UNITED STATES

GROWTH OF TOTAL POPULATION

A comparison of population growth in the Soviet Union and in the United States shows that the difference between the population size of the two countries has been decreasing. In 1913 the population of the United States was 97 million as compared with estimated populations of 139 million persons for the interwar territory and 159 million for the present territory of the Soviet Union (see table 18). Thus, the population of the United States was only about 70 percent as large as that in the interwar territory of the Soviet Union and only about 60 percent of that in the present territory. By 1926, however, the U.S. population had grown to 117 million, or to 80 percent of the population in the interwar territory. Although population estimates for the present Soviet territory for 1926 have not been constructed, it is probable that the population of the United States was about 70 percent as large as that within the large Soviet territory.

TABLE 18.—*Estimated and projected population of the Soviet Union and the United States: 1913-80*

[Unless otherwise noted, figures relate to July 1. Beginning with 1939, the figures for the United States include Armed Forces overseas; prior to 1962, they exclude Alaska and Hawaii]

Year	Population of the Soviet Union in—		Population of the United States	U.S. population as a percent of the Soviet population in—	
	Present territory	Interwar territory		Present territory	Interwar territory
1913	159.2	139.3	97.2	61.1	69.8
1926		¹ 147.0	117.4		79.9
1939		² 170.6	131.0		76.8
1941	200.0		133.4	66.7	
1950	181.2		152.3	84.1	
1962	220.9		186.6	84.5	
1970:					
B	242.8		214.2	88.2	
C	240.2		208.9	87.0	
1980:					
B	275.9		259.6	94.1	
C	267.5		245.7	91.9	

¹ Census of Dec. 17, 1926.

² Census of Jan. 17, 1939.

Source: Soviet Union: 1913-39: Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1960, A Statistical Yearbook)*, Moscow, Gosstatizdat, 1961, p. 9. 1941: Estimate. 1950-80: Averages of Jan. 1 figures shown in tables A-3 and A-6.

United States 1913-41: U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1957*, Washington, U.S. Government Printing Office, 1960, p. 70. 1950 and 1962: —, "Estimates of the Population of the United States, Jan. 1, 1950, to Sept. 1, 1962," *Current Population Reports*, series P-25, No. 256, Oct. 15, 1962. 1970 and 1980: —, "Interim Revised Projections of the Population of the United States, by Age and Sex: 1975 and 1980," *Current Population Reports*, series P-25, No. 251, July 6, 1952. The assumptions underlying these two projection series are given in the source to table 20.

Between 1926 and 1939 the U.S. population grew less rapidly than the Soviet population. There were 131 million persons living in the United States in 1939 as compared with 171 million in the interwar territory of the Soviet Union. The U.S. population was only 77 percent of that for the interwar territory. In mid-1941, when the Soviet Union entered the Second World War, there were 133 million persons in the United States as compared with about 200 million in the present territory of the Soviet Union.

As a result of the Soviet Union's very substantial population loss during World War II and the relatively small loss suffered by the United States, the population of the United States grew to 152 million by mid-1950 while that in the present territory of the Soviet Union declined to about 182 million. Thus, during the decade of the 1940's the U.S. population had increased from 67 percent to 84 percent of the size of the Soviet population.

Since 1950 the population of the United States has probably been growing at a slightly faster rate than has that of the Soviet Union. Between 1950 and 1962 the population of the United States grew by about 23.1 percent. Our model 3 estimates, which assume a higher death rate than that officially reported, imply an increase of 21.9 percent for the Soviet Union. Our model 1 estimates, which are based on unadjusted official vital statistics rates, imply the same rate of growth for the Soviet Union as that observed for the United States.

For the period 1962 to 1980 the series B projections, which for the Soviet Union assume constant fertility at the 1961 level and for the United States constant fertility at the 1955 to 1957 level, imply an increase of about 25 percent in the population of the Soviet Union as compared with 39 percent for the United States. The series B projections show a population of about 276 million for the Soviet Union and about 260 million for the United States in 1980. According to this series, the U.S. population will be about 94 percent as large as that for the Soviet Union. If, however, fertility in the Soviet Union declines as it seems likely to do and if fertility in the United States remains constant, the population of the United States may be greater than that of the Soviet Union within the next two decades.

Urban-rural distribution.—The urban and rural populations of two countries are not easily compared. Variations in the social, economic, and historical development of the Soviet Union and of the United States have led to widely diverse settlement patterns, and to different concepts of what constitutes urban and rural. Virtually all of the United States was settled initially by individual farmsteads, with the farmhouse located on the individual farm. Thus, when an American speaks of "rural" he usually thinks of isolated farms. In the Soviet Union, on the other hand, virtually all of the rural population lives in villages. Thus, when a Russian speaks of "rural" he usually thinks of farmhouses clustered together in villages. In fact, the Russian word for rural (*selo*) literally means "village."

Different concepts are used for "urban." The United States uses what is basically a size-density criteria for determining what is urban. In general, a populated place will be classified as urban (by the Census Bureau) if a minimum of 2,500 people live in it. In addition, a density criteria is applied to certain types of areas, and if the population density is 1,500 persons or more per square mile, the area will be defined as urban. In the Soviet Union, however, a size-function

criteria is used. In general, a populated place will be classified as rural regardless of its size until a certain minimum proportion of its population derives its livelihood from nonagricultural employment. At the same time, a populated place is required to have a certain minimum population before it can be classified as urban even if it meets the other requirements.

One other important difference between the urban-rural concept in the two countries is that in the United States the classification of a locality as urban or rural is administrative. That is, all places meeting the established criteria for urban are classified as urban and those that do not meet the criteria are classified as rural. In the Soviet Union, however, "urban" has a legal significance roughly equivalent to "incorporated" in many parts of the United States. That is, a place is not automatically declared urban simply because it meets the requirements; this status must be bestowed by decree. Similarly, a locality does not cease being urban merely because changes in its characteristics no longer qualify it as urban according to the established criteria. Again, the urban status is lost by decree.

According to the 1960 census, 125 million Americans—70 percent of the total population of the United States—lived in urban areas and 54 million lived in rural areas. The urban population of the Soviet Union in 1960 was officially estimated at 103.8 million, or a little less than half the total Soviet population. More than 50 percent of the U.S. population has been urban since 1920.

The urban population in the Soviet Union has been increasing more rapidly than that in the United States. The urban population of the United States increased by 28 million, or about 38 percent between 1950 and 1960; the urban population of the Soviet Union increased by 32 million, or 52 percent, between 1951 and 1961.

The urban population of the United States is more heavily concentrated in large cities of 1 million population or more and in small cities and towns of less than 100,000 population while the urban population of the Soviet Union is more heavily concentrated in middle sized cities of from 100,000 to 1 million population. In the United States, 17.5 million persons lived in cities of 1 million population or more in 1960 as compared with 10.5 million persons in the Soviet Union in 1959. On the other hand, 38 million persons lived in middle sized cities (100,000 to 1 million population) in the Soviet Union as compared with only 33 million in the United States. (See table 19.)

AGE AND SEX COMPOSITION OF THE POPULATION

Age and sex distribution.—The age pyramids for the Soviet Union and for the United States for mid-1960 shown in figure 5 illustrate the influence of history on the population structures of the two countries. The highly irregular pyramid for the Soviet Union mirrors that country's erratic history. The indentations in the pyramid at ages 15 to 19 years and 40 to 44 years show the effects of the depressed birth rates during the two World Wars. The lesser indentation at ages 10 to 14 years and 35 to 39 years reflect the lower birth rates of the recovery period following the wars. The markedly shorter bars on the male side of the figure are the results of the larger military losses sustained.

The remarkably regular shape of the pyramid for the United States is a result of our relatively stable history. Although the United States has been a major combatant in at least four wars within the last 75 years, the military losses have been small as compared with those suffered by some other countries and have not materially affected the structure of the population.

TABLE 19.—Urban population by size of place; Soviet Union, 1959, and United States, 1960

[In millions of persons]

Size of place	Soviet Union	United States
Total urban.....	100.0	125.3
1,000,000 or more.....	10.4	17.5
500,000 to 1,000,000.....	13.8	11.1
100,000 to 500,000.....	24.4	22.4
50,000 to 100,000.....	11.0	13.8
10,000 to 50,000.....	26.0	32.5
Under 10,000.....	14.4	18.1

¹ The definition of urban employed by the U.S. Bureau of the Census in 1960 yields residual urban population of 9,900,000 persons in "unincorporated parts of urbanized areas."

Source: Soviet Union Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy vezhegodnik (The National Economy of the U.S.S.R. in 1960, a statistical Yearbook)*, Moscow, Gosstatizdat, 1961, pp. 50 and 51.

United States: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States: 1962*, Washington, U.S. Government Printing Office, 1962, p. 21.

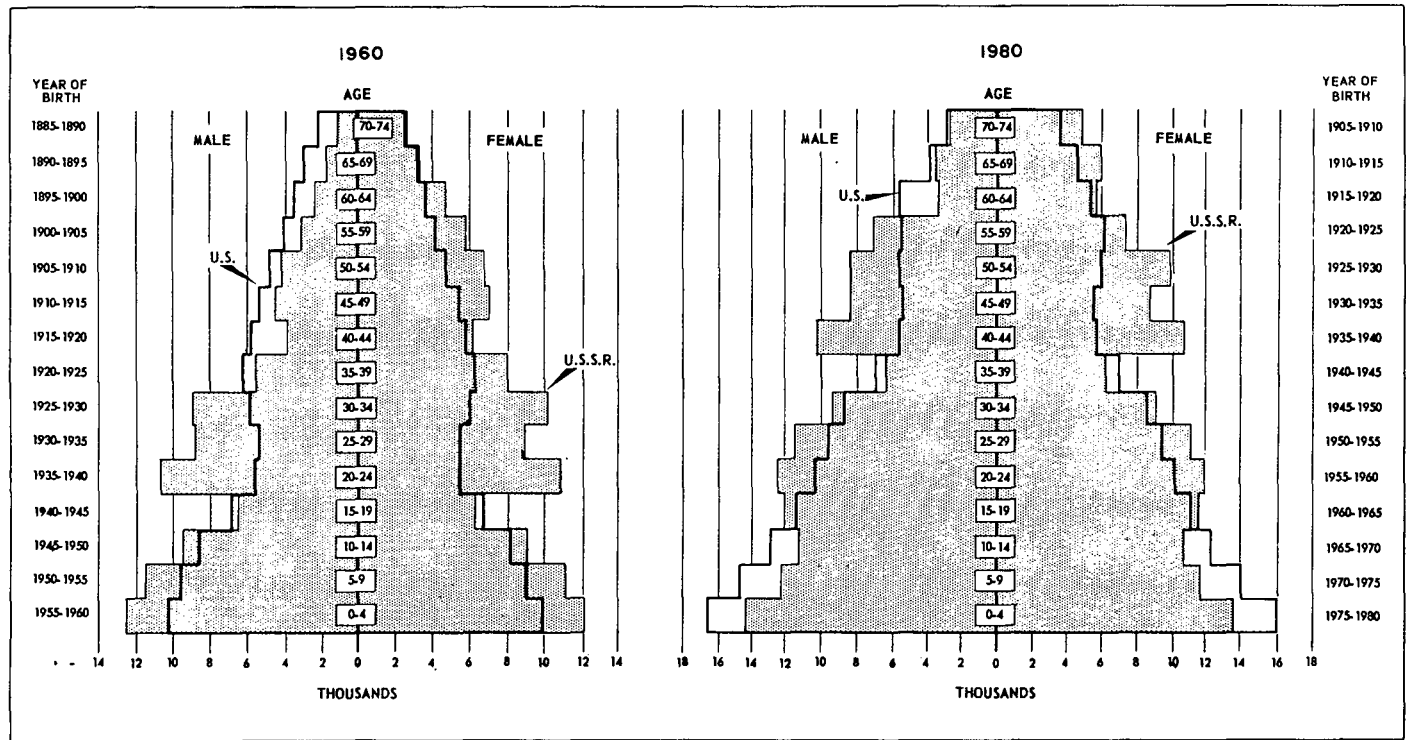
The structure of the U.S. population was altered somewhat by the depression of the 1930's. The pyramid shows an indentation at ages 20 to 24 years and 25 to 29 years, the age groups born during the 1930's when the birth rate was relatively low. It also reflects the postwar "baby boom" beginning with the age group 10 to 14 years representing persons born during last half of the 1940's.

The Soviet Union has more males at most ages under 35 years than does the United States. She has more females at almost all ages. At ages 15 to 19 (persons born during World War II), the Soviet population is slightly smaller than that of the United States. (See table 20.)

If female fertility⁴⁸ remains constant in both the Soviet Union and the United States until 1980, the Soviet Union will have fewer people under 15 years than will the United States. Regardless of the future level of fertility, the Soviet Union is expected to have fewer people than the United States in the age group 35 to 39 years and among males 60 years and over. Because the projections assume a continuation of the relatively stable period experienced by the Soviet Union since 1950, the Soviet Union's population pyramid for mid-1980 is more regular for the ages under 30 years than is the 1960 pyramid. However, the indentation at ages 10 to 14 years, representing persons born between 1965 and 1970, illustrates the potential ripple effect on the population of past catastrophes. Between 1965 and 1970 persons born during World War II when birth rates were low will be in the prime reproductive ages. The sharply reduced numbers of potential parents are expected to give birth to fewer children than were born during the period 1955-65. Even in 1980, however, the pyramid for the Soviet Union is expected to be quite irregular and

⁴⁸ The term "fertility" is used here in the same context as in ch. III; namely, to refer to a measure which relates births to women in the reproductive ages.

FIGURE 5.—Estimated and projected population of the Soviet Union and of the United States, by age and sex: July 1, 1960 and 1980.



SOURCE: Table 20. THE PYRAMIDS FOR 1980 SHOW ONLY THE SERIES B PROJECTIONS FOR EACH COUNTRY.

particularly at the upper ages. The age pyramid for the United States for 1980 displays the considerably expanded base resulting from an increase in the number of persons in the reproductive ages coupled with the maintenance of relatively high fertility. The pyramid, of course, retains the regularity evident in 1960.

TABLE 20.—Estimated and projected population of the Soviet Union and of the United States, by age and sex: July 1, 1960 and 1980

[In thousands]

Age	1960				1980			
	Soviet Union		United States		Soviet Union		United States	
	Males	Females	Males	Females	Males	Females	Males	Females
All ages:								
B.....	96,935	117,079	89,340	91,330	133,181	144,892	128,140	131,444
C.....					128,648	140,588	121,064	124,672
Under 5 years:								
B.....	12,643	12,082	10,320	9,983	14,411	13,647	16,621	15,884
C.....					12,750	12,071	14,286	13,654
5 to 9 years:								
B.....	11,599	11,205	9,566	9,243	12,343	11,705	14,697	14,065
C.....					10,919	10,354	12,642	12,097
10 to 14 years:								
B.....	9,529	9,226	8,627	8,342	11,271	10,722	12,879	12,344
C.....					10,246	9,747	11,085	10,624
15 to 19 years:								
B.....	6,466	6,365	6,806	6,640	12,053	11,507	11,370	10,942
C.....					11,630	11,105	10,478	10,086
20 to 24 years.....	10,730	10,895	5,553	5,547	12,417	11,912	10,343	10,164
25 to 29 years.....	8,750	8,985	5,433	5,526	11,429	11,101	9,582	9,505
30 to 34 years.....	8,960	10,301	5,914	6,079	9,337	9,126	8,656	8,646
35 to 39 years.....	5,614	8,028	6,147	6,410	6,274	6,235	6,884	6,949
40 to 44 years.....	3,851	6,270	5,731	5,938	10,332	10,638	5,626	5,768
45 to 49 years.....	4,518	7,286	5,385	5,539	8,300	8,669	5,395	5,600
50 to 54 years.....	4,255	6,763	4,763	4,899	8,286	9,775	5,613	5,962
55 to 59 years.....	3,146	5,947	4,144	4,321	5,007	7,439	5,478	6,079
60 to 64 years.....	2,416	4,685	3,420	3,749	3,210	5,556	4,672	5,402
65 to 69 years.....	1,825	3,402	2,941	3,347	3,347	5,961	3,837	4,703
70 to 74 years.....	1,261	2,675	2,191	2,566	2,632	4,831	2,827	3,729
75 years and over.....	1,375	2,978	2,399	3,202	2,532	6,068	3,660	5,702

Source: Soviet Union: Averages of estimates for Jan. 1, shown in tables A-4 and A-5.

United States: U.S. Department of Commerce, Bureau of the Census, "Interim Revised Projections of the Population of the United States, by Age and Sex: 1975 and 1980," *Current Population Reports*, series P-25, No. 251, July 6, 1962. The figures shown above as series B and C are given in the source as series II and III, respectively. The series II (B) projections assume constant fertility at the 1955-57 level; the series III (C) projections assume that fertility will decline to the 1949-51 level by 1965-70 and that it will remain at that level until 1980. Both series assume that mortality will decline and that there will be a net immigration of 300,000 persons annually.

Males of prime military age.—In 1960 the Soviet Union had 32 million males in the prime military age (18 to 34 years) as compared with 19 million for the United States. (See table 21.) Despite the drop in the number of military-age males in the Soviet Union and the corresponding rise in the number in the United States, the Soviet Union is expected to maintain her numerical superiority at least through 1980. The ratio of military-age males in the United States to those in the Soviet Union, however, is expected to rise sharply through 1975 and then to decrease somewhat between 1975 and 1980. In 1975 the projections show 91 males 18 to 34 years old in the United States per 100 in the Soviet Union. By 1980, however, the ratio is expected to drop to about 87.

Fertility.—The fertility of Soviet women is lower than the fertility of U.S. women. Between 1955 and 1960 the maternal gross reproduction rate for the Soviet Union, according to the estimates presented

in chapter III, was about 130. The maternal gross reproduction rate for the United States during this period was about 180, or almost 40 percent higher. (See table 22.)

Fertility of males in the two countries was apparently at about the same level during the late 1950's. The estimates, however, indicate that fertility of males in the Soviet Union has been declining as the ratio of males to females in the reproductive ages has become more normal, but that fertility of males in the United States has been increasing slowly.

TABLE 21.—*Estimated and projected number of males of prime military ages in the Soviet Union and in the United States: 1960-80*

[Population figures are in millions and refer to July 1]

Year	Males 18 to 34 years		United States as a percent of the Soviet Union
	Soviet Union	United States	
1960.....	32.0	19.4	60.6
1965.....	29.1	22.5	77.3
1970.....	30.9	24.8	80.3
1975.....	32.1	29.2	91.0
1980.....	38.2	33.1	86.6

Source: Soviet Union: Averages of Jan. 1 figures shown in table 14.

United States: U.S. Department of Commerce, Bureau of the Census, "Interim Revised Projections of the Population of the United States, by Age and Sex: 1975 and 1980," *Current Population Reports: Population Estimates*, series P-25, No. 251, July 6, 1962.

TABLE 22.—*Estimated maternal and paternal gross reproduction rates for the Soviet Union and the United States: 1955 to 1960*

Year	Soviet Union		United States	
	Maternal	Paternal	Maternal	Paternal
1955.....	132	219	174	189
1956.....	130	211	179	191
1957.....	132	209	183	193
1958.....	132	203	180	194
1959.....	131	197	180	196
1960.....	133	193	179	197

Source: Soviet Union: Table 17.

United States: Maternal: U.S. Department of Commerce, Bureau of the Census, "Interim Revised Projections of the Population of the United States, by Age and Sex: 1975 and 1980," *Current Population Reports*, series P-25, No. 251, July 6, 1962. Paternal: Estimates based on unpublished data from the National Center for Health Statistics, U.S. Department of Health, Education, and Welfare.

The birth rates (the number of births per 1,000 population) in the two countries have been about the same during recent years. (See table 23.) Comparisons of birth rates for countries with widely different age structures, however, are less meaningful than comparisons of some more refined measures of fertility such as the gross reproduction rate which has already been discussed. Birth rates for the two countries can be at about the same level despite the markedly lower female fertility in the Soviet Union because a larger proportion of the Soviet population is concentrated in the reproductive ages. In 1960, for example, females 15 to 44 years comprised 27 percent of the Soviet population but only 23 percent of the U.S. population.

TABLE 23.—*Birth rates for the Soviet Union and the United States: 1955 to 1961*

[Births per 1,000 population]

Year	Soviet Union	United States
1955.....	25.7	25.0
1956.....	25.2	25.2
1957.....	25.4	25.3
1958.....	25.3	24.6
1959.....	25.0	24.3
1960.....	24.9	24.1
1961.....	23.9	23.4

Source: Soviet Union: Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *SSSR v tsifrakh v 1961 godu, kratkiy statisticheskiy sbornik (The U.S.S.R. in Figures in 1961, A Brief Statistical Handbook)*, Moscow, Gosstatizdat, 1962, p. 367.

United States: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1962*, Washington, D.C., 1962, p. 52.

Mortality.—Comparisons of the levels of mortality in the Soviet Union and in the United States are complicated by the question of the validity of Soviet death rates which was discussed in chapter II. According to the official statistics, life expectancy at birth in the Soviet Union was 69 years in 1958–59. Life expectancy in the United States was 69.4 years in 1958 and 69.7 in 1959, or only slightly above the value for the Soviet Union. Life expectancies for males were reported to be 64 years in the Soviet Union and about 66.5 years in the United States (see table 24). The female values are 72 for the U.S.S.R. and almost 73 for the United States. Thus, according to the official statistics, the male life expectancy in the Soviet Union is about 2.5 years behind that for the United States whereas the female life expectancy is less than 1 year behind.

As we pointed out in chapter II, Soviet death rates by age (which have been reported only for both sexes combined) are higher at the younger ages and lower at the older ages than are U.S. death rates. Two possible explanations for this phenomenon were advanced: (1) that the overall number of registered deaths is correct, but that biases in age reporting produced abnormally low death rates at the older ages, or (2) that deaths at the older ages are incompletely reported. The latter solution was accepted for this paper and life tables constructed which were consistent with adjusted death rates at the older ages. The life expectancies, consistent with these life tables,

TABLE 24.—*Expectation of life at birth for the Soviet Union and the United States, 1955 to 1959*

[In years]

Year	Soviet Union			United States		
	Both sexes	Male	Female	Both sexes	Male	Female
1955.....	} 67	63	69	69.5	66.6	72.9
1956.....				69.6	66.7	73.0
1957.....				69.3	66.3	72.5
1958.....				69.4	66.4	72.7
1959.....	} 69	64	72	69.7	66.5	73.0

Source: Soviet Union: Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *SSSR v tsifrakh v 1961 godu, kratkiy statisticheskiy sbornik (The U.S.S.R. in Figures in 1961, A Brief Statistical Handbook)*, Moscow, Gosstatizdat, 1962, p. 371.

United States: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1962*, Washington, D.C., 1962, p. 60; and U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States: 1959*, Washington D.C., 1959, p. 59.

were 65.6 years for males and 69.6 years for females. The value for both sexes combined was about 67.6 years. Whether these values are near the actual levels is, of course, not known.

Comparisons of the officially reported crude death rates (total deaths per 1,000 population) for the two countries show much lower death rates for the Soviet Union (see table 25). The crude death rate for the Soviet Union implied by the adjusted official death rates by age was 8.3 deaths per 1,000 population for 1958-59. Again, there is no certainty that this rate is correct.

The lower crude death rate for the Soviet Union even after the adjustments for underregistration is a function of the differences in the age structures of the two countries. As is apparent from the age pyramids presented in figure 5, the Soviet Union has relatively fewer older people than does the United States and especially fewer older males. Since the crude death rate is essentially the weighted average of individual death rates for each age-sex group (the weights being the proportion of the total population in the respective age groups), the lower the proportion of the population in the older ages where the probability of dying is greater, the lower the overall death rate.

TABLE 25.—*Death rates for the Soviet Union and for the United States, 1955 to 1961*
[Deaths per 1,000 population]

Year	Soviet Union	United States
1955.....	8.2	9.3
1956.....	7.6	9.4
1957.....	7.8	9.6
1958.....	7.2	9.5
1959.....	7.6	9.4
1960.....	7.1	9.5
1961.....	7.2	9.3

Source: Soviet Union: Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *SSSR v tsifrakh v 1961 godu, kratkiy statisticheskiy sbornik (The U.S.S.R. in Figures in 1961, a Brief Statistical Handbook)*, Moscow, Gosstatizdat, 1962, p. 367.

United States: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States: 1962*, Washington, D.C., 1962, p. 52.

Part II. Population Policy ⁴⁹

CHAPTER V. RECENT DEVELOPMENTS IN COMMUNIST THEORIES OF POPULATION

BACKGROUND ⁵⁰

Early Marxist writers generally denied the existence of a population problem. They considered Malthus an apologist for the evils of capitalism and asserted that the misery which Malthus attributed to overpopulation was really due to the maldistribution of wealth. They contended that under the communist form of society there could be no population problem.

⁴⁹ The writer is indebted to Miss Lydia Kulchycka who not only provided much of the source material for this part of the paper, but also made available a copy of her paper "U.S.S.R. Population Policy: Fertility Control," which was presented at the 1960 meetings of the American Sociological Association.

⁵⁰ It is not the intent here to cover fully the historical development of Marxist theories of population, but merely to provide a sufficient background to enable the reader to consider current developments in theory and practice in their historical context. Those readers who are interested in a more complete discussion of the subject might wish to consult Sidney H. Coontz, "Population Theories and the Economic Interpretations," London, Routledge & Kegan Paul, Ltd., 1957, and United Nations, "The Determinants and Consequences of Population Trends," New York, 1953, as well as the various sources cited later in the footnotes.

Marx and Lenin.—Marx believed that there was no universal law of population, but rather specific laws for each social system. According to him, "overpopulation" occurs because under capitalism "variable capital" (i.e., that part of capital which is available to purchase "labor-power") tends to increase less rapidly than does population. This slower rate of growth in "variable capital" comes about because the capitalists, through the process of accumulation, divert part of the produce of labor. Thus, "overpopulation" was actually "relative surplus labor;" that is, unemployment created by the capitalist mode of production. Marx asserted that unemployment was a necessary consequence of capitalism and was necessary to its continuation.

Marx did not develop an explicit law of population growth for the new form of society which he advocated. From his writings it would appear that the rising level of living for the working masses and the reduction of the inequalities in income distribution which he believed would follow the demise of capitalism would reduce the death rate and thus produce a more viable population. Marx apparently gave little thought to what would happen to the birth rate in his new communist society. He apparently believed that something intrinsic in communism prevented overpopulation from arising. Thus, there was no need for his being concerned about whether the birth rate would rise or fall.⁵¹

Like Marx, Lenin rejected Malthus' doctrine without evolving a concrete theory of population under socialism.⁵² He glorified child-bearing as a noble task providing a weapon for the class struggle. Rapid population growth in a Socialist country apparently was considered a source of strength for the Socialist camp. On the other hand, Lenin advocated the legalization of abortion and the unrestricted dissemination of contraceptives. He regarded the prohibition of abortion and the suppression of medical knowledge about contraception as hypocrisy of the ruling classes. He believed that these restrictions "* * * did not cure the ills of capitalism but made them that much more malignant, more burdensome to the oppressed masses." The decision as to whether a child should be born was recognized as a basic right of the citizen.⁵³

One basic difference between Lenin and Marx is, of course, that Lenin, at least for the last few years of his life, had the responsibility for running a country. Although his tenure of office was rather short, we are able to judge his deeds as well as his words. Thus, in November 1920, the new Soviet Government recognized Lenin's "basic right of the citizen" by legalizing abortion.⁵⁴ This decree may have been inspired by something more than Lenin's principle, however. In 1920, unemployment, that great evil of capitalism which socialism was supposed to alleviate, was rampant in the Soviet Union. The granting of free abortion provided some measure of relief for the impoverished masses. Further, illegal abortions were being performed en masse by untrained abortionists in conditions which resulted in a

⁵¹ The United Nations (op. cit. (p. 34)), has interpreted Marx as implying a declining birth rate because of the rise in the level of living and the end of the exploitation of children.

⁵² In Communist terminology, "socialism" refers to the period of transition between the overthrow of capitalism and the advent of pure communism. During this period all the bourgeois traits are supposed to be purged from society.

⁵³ V. I. Lenin, "Rabochiy klass i neomalthuzianstvo" ("The Working Class and Neomalthusianism") *Lenin, Sochineniya (Lenin's Collective Works)*, vol. XVI, Moscow, Gosizdat, 1930 (2d ed.), pp. 498-499.

⁵⁴ A. Gens, "Iskusstvennyy abort kak sotsial'no-bytovoye yavleniye" ("Artificial Abortion, A Social Phenomenon in Everyday Life"), *Bol'shaya meditsinskaya entsiklopediya (Great Medical Encyclopedia)*, vol. I, Moscow, Aktsioneroye obshchestvo Sovetskaya entsiklopediya, 1928, cols. 43 and 44.

reported 50-percent infection rate and a 4-percent mortality rate.⁵⁵ Free abortions performed by qualified medical personnel working in sanitary surroundings held out the promise of reducing these rates.

Soviet population theories between the World Wars.—Faced with the reality of a Socialist state, Soviet theorists were forced to give more attention to a theory of population under socialism. Marx had stated that each social system has its own unique law of population. He had also posed socialism as the antithesis of capitalism. Thus, it was probably only natural that early Soviet writers believed that the laws of population under socialism were the antithesis of those under capitalism. If under capitalism birth rates must decline, under socialism they must rise; if abortion is damaging to the capitalist society, it must be beneficial to Socialist society, and so on. But unlike the armchair theoreticians of the 19th century, Soviet writers in the third and fourth decades of the 20th century were faced with the unhappy prospect of seeing their theories put to the test.

During the interwar period birth rates declined in the Soviet society just as they did in contemporary capitalist societies. Moreover, investigations carried out during the 1930's suggested that differences in the fertility levels of the several social and occupational classes had not vanished or even diminished as they were supposed to. True, the studies reportedly show that birth rates in rural areas were declining, thus reducing the differences between urban and rural fertility, but this development reflected the effects of industrialization on the peasants rather than the effects of socialism on either the peasants or the city dwellers. The data collected during this period reveal the same inverse relationship between income and level of fertility which, according to Marx, was characteristic of the bourgeois society. But even worse, infant mortality, generally a reliable indicator of overall mortality, was also found to be inversely related to income.⁵⁶ Thus, the higher death rates among the working classes which Marx believed to be one of the evils of capitalism were found in Soviet Union.

Abortions, far from benefiting the Socialist state, had become so numerous by the mid-1930's that the Soviet Government found it necessary to reverse itself. In June 1936, following a period in which progressively stricter abortion control measures were introduced, the Soviet Government issued a decree which provided for the virtually complete prohibition of abortions on the grounds that they were harmful to health.

Thus faced with these embarrassing developments, the Soviet economist, Strumilin, attempted to explain the paradox:⁵⁷

* * * The declining fertility in the U.S.S.R. during the period of its stormy industrialization is a logical and normal consequence of a steady growth of wages and prosperity * * *

Could this reasoning be applied to the capitalist countries where birth rates are also declining? No; for there the prosperity of the working masses is not growing. Analogous results and particularly declining birth rates under various social conditions may reflect the consequences of widely different processes. Thus, for example, in the U.S.S.R., the decline in the birth rate reflects the stormy growth of the prosperity of the working masses, whereas in the countries of rotting capitalism—the process of social degradation and of a direct extinction of the fading bourgeoisie.

⁵⁵ *Ibid.*

⁵⁶ S. G. Strumilin, *Problemy ekonomiki truda (Problems of Labor Economics)*, Moscow, Gospolitizdat, 1957, pp. 193 and 200.

⁵⁷ *Ibid.*, pp. 202 and 203. Although this book was published in 1957, Strumilin wrote the section cited here in 1936.

Some people may still be baffled that the same law of an inverse relationship between wages and fertility which was discovered by Marx found its application on Soviet soil * * * We do not see, however, any reason for concern.

The basic law of population under the capitalist economy consists of an unavoidable *relative overpopulation*, i.e., of enormous reserves of unemployed proletarians. This kind of "overpopulation" hits even capitalist countries with *negative* increases of population. This is impossible in *our* country where the unemployment inherited from the old social regime disappeared long ago * * * Thus, this basic law of population of capitalist society which is not linked to any specific level of fertility and mortality has already been overcome in our Socialist system.

Strumilin then turns directly to the problem of explaining the inverse relationship between wages and fertility in the Soviet Union.⁶⁸

We are still in the first stages of communism and at the present level of development of productive forces we cannot yet afford to reject the distribution based on quantity and quality of work. * * * But as long as we have to accept the resulting differences in wages, we cannot a priori reject all the resulting consequences. Things will change in the second phase of communism. Public catering and upbringing of children will liberate women from household duties. Instead of the old division of work with its lifelong assignment to an occupational group, we will practice a changeable system whereby the differences between unskilled and skilled, physical and intellectual work will lose all their significance. The Communist principle of distribution "from each according to his capacity, to each according to his needs," eliminating the last fears that each extra mouth will represent for somebody a danger of lower consumption or more work, will eliminate at the same time the last reasons for an artificial social-economic retardation of the natural increase of population and the corresponding differentiation of birth rates.

THE DEVELOPMENTS OF COMMUNIST THEORIES OF POPULATION SINCE WORLD WAR II

Following World War II, the Marxist theoreticians were faced with new problems. Whereas for some 30 years there had been only one socialist country,⁶⁹ now there were many. These countries were rather different in their economic and social makeup and displayed rather different demographic developments. For example, the birth rate in the Soviet Union declined between the 1930's and early 1950's whereas during the same period the birth rate in Czechoslovakia rose. Soviet theories had to explain these phenomena as well as the rising birth rates in the United States and a number of other Western countries.

Apparently the Soviet theorists attribute the rising birth rates in the Western World to a reversal of the traditional relationship between income and fertility. According to the Soviet demographer, Smulevich, at the present stage of capitalism it is the very poorest strata of the working class which is experiencing sharp declines in the birth rate. These declines are easily explained by the intensification of work, limitation of child labor, the increase of women's work without adequate maternity protection, etc. On the other hand, there has been a tendency for the bourgeois classes to want more children. Smulevich contends that although during the period of development of industrial capitalism the capitalist limited his family so as not to complicate the problem of succession, during the period of imperialism he saw an advantage in larger families because of the aspiration of the monopolistic group for economic power through

⁶⁸ *Ibid.*, pp. 203 and 204.

⁶⁹ Mongolia, of course, became, in the early 1920's, the first "People's Republic," but its relative unimportance, coupled with its almost total isolation, led to its being ignored by most Soviet writers.

personal (family) control over the affiliates of multienterprise companies.⁶⁰

To explain the seeming paradox of declining fertility in one Socialist country and rising fertility in another, Smulevich says that although there are specific laws of population growth for each social system, "the concrete forms of these laws are dependent upon a complicated complex of socioeconomic, cultural-historical, and other factors" which cause countries entering the road to socialism at different points in their development to display a great variety of concrete forms of the Socialist law of population. Smulevich goes on to explain that prerevolutionary Russia was characterized by high fertility and mortality and a "fast change of generations." Under socialism, the Soviet Union has now attained a higher type of population reproduction characterized by admittedly lower fertility but also by even lower mortality and a higher rate of natural increase than in prerevolutionary times.

The type of reproduction in Czechoslovakia has also changed. Smulevich states that the birth rate in the 1930's was too low to insure the preservation of the population. Thus, the type of reproduction found in Czechoslovakia was replaced by the same higher type attained in the Soviet Union.⁶¹

DEVELOPMENT OF A COMMUNIST THEORY OF OPTIMUM POPULATION

Perhaps the most significant development in theories of population for communist or socialist countries has been the justification of government intervention to secure the proper development of population and, in fact, the development of a Communist theory of optimum population. Strumilin, for example, states that—⁶²

* * * We do not visualize the relationship between the growth of prosperity and the decline of the birth rate in our country as a mechanical bond between the two acting automatically and not subject to any planned influence. It is clear to us that this bond is determined by many intermediary social-psychological and other reactions and among them * * * all kinds of contraceptive and abortive measures. And, of course, if necessary, they should be eliminated or at least limited by means of public pressure.

The development of a Communist theory of optimum population, however, occurred in Eastern Europe⁶³ and apparently has not been specifically discussed in the Soviet literature. The Czech demographer Vobornik, in a two-part paper entitled "The Basic Problems of Demography and Population Policy Under Socialism," develops a complete context for an optimum population policy under communism.⁶⁴ According to Vobornik:

Population policy deals with the perspectives of the development of the population as a whole. It, thus, cannot be a separately independent branch of science, but is predicated upon the socio-political activities of society. The aims of population policy must be in accordance with the requirements of the working masses of the entire country, and—in a Communist country—it must be in rapport with the Marxist policies.

⁶⁰ B. Smulevich, "O zakonomernostyakh rosta naseleniya," ("On the Laws of Population Growth"), *Kommunist (Communist)*, No. 12, 1958, pp. 84-91.

⁶¹ *Ibid.*

⁶² Strumilin, *op. cit.*, p. 204.

⁶³ For a discussion of the development of population policies in Eastern Europe, see James W. Brackett and Earl E. Huyek, "The Objectives of Government Policies on Fertility Control in Eastern Europe," *Population Studies*, November 1962 (in press).

⁶⁴ Bohumil Vobornik, "Zakladni problemy demografie a populačni politika za socialismu" ("The Basic Problems of Demography and Population Policy Under Socialism"), *Demografie, Revue pro Vyzkum populačního vývoje (Demography, A Review for Research on Population Development)*, vol. 1, Nos. 2-3, Prague, 1959.

One of the basic population problems considered as practical by Socialist demography is the question: "What is the most desirable population development in the foreseeable future, and how could it be attained?"

Even the posing of this question entails the supposition that population growth is amenable to influence, both in the affirmative and negative sense * * *.

Vobornik points out that although population growth in a Socialist society is subject to definite laws, Marxism has only recently begun to be concerned with the laws of demography. The gigantic task of building socialism in the Soviet Union and the favorable population growth in that country, according to Vobornik, led more to the development of demographic statistics than to demographic laws.

Having thus laid the groundwork for his theories, Vobornik states that:⁶⁵

The only theoretical approach to the problem of establishing a population policy should be based on the teachings of political economics and its laws. Above all, it is based on a regularly planned development of the national economy which requires that the means of production and the labor force should be proportionally divided between the various branches of the national economy; in other words, that the material, labor, and financial means be utilized in the most effective manner for supplying the fullest requirements and ever-growing needs of all members of society. The long-term perspectives for fulfilling the needs for the necessary manpower should be the authoritative basis for this population policy.

Exactly what relevance Vobornik's theories have to the Soviet Union is, of course, open to question. They are clearly Marxist and were developed in a Socialist country. There is no apparent reason why the logic he employed would not be applicable to the Soviet Union. On the other hand, his theories apparently have not been acknowledged by Soviet demographers, perhaps because they have not felt the need to do so.

SUMMARY

With the development of Vobornik's theory of optimum population and with Strumilin's justification of government intervention to regulate population growth, it is clear that the Soviet Union could adopt any population policy it wishes without running afoul of Marxist philosophy. Moreover, regardless of the trend in the birth rate, Soviet writers manage to "justify" the trend by some manipulation of Marxist doctrine or by excusing it as being influenced by unpurged bourgeois tendencies in the population. Marxist doctrine, while infallible as far as Marxist writers are concerned, is amazingly flexible and amenable to "reinterpretation."

CHAPTER VI. POPULATION POLICIES IN THE SOVIET UNION

CURRENT POPULATION POLICY

The present Soviet population policy is too often summed up by quoting Khrushchev's 1956 pronouncement that even if 100 million persons were added to the Soviet population, this still would not be enough. An official population policy has many facets. While one area of the economy might benefit from a given change in the rate of population growth, another might find the change most detrimental. Moreover, while changes in the growth rate may have an immediate effect on the number of children, the working-age group will not feel

⁶⁵ Ibid.

the effects of the change for many years. Further, there is the practical problem of actually producing the desired change. The factors which affect fertility are varied and complex and not very well understood by demographers. Efforts to introduce a new growth pattern could have the opposite effect from that which was desired, or the change might be more extreme than planned.

The Soviet Union very likely has the natural resources to support Khrushchev's 100 million additional population even at a much higher standard of living than now prevails in the Soviet Union. Whether it has the economic base to support this population is an entirely different question. Soviet agriculture has trouble providing a rather mundane diet for the present population. It would be hard pressed to feed an additional 100 million. Natural resources are of little value until they are developed. Despite the rather rapid rate at which the Soviet Union is developing her resources, the level of living in that country is quite low.

The current population policy in the Soviet Union, insofar as it applies to fertility, can probably best be described as passive. There are contravening forces in the country which make extremely difficult the adoption of a definite program to raise or lower the birth rate. The administrators who have the responsibility of running the economy currently depend heavily upon the participation of women in the labor force. They might favor a lower birth rate now during the period of tight labor supply since fewer women would be taken out of the labor force to bear and raise children. Another group which might like to see a lower birth rate are those planners who are trying to increase the per capita supply of consumers' goods. A lower birth rate would reduce the number of consumers (and consequently the demand for consumers' goods) but would not affect the number of producers for some 15 to 20 years. On the other hand, those planners who must think in long-range terms might prefer a higher birth rate now in order to insure a more abundant labor supply in the future. They would view a lower birth rate with misgivings, particularly since they are constantly reminded that the tight labor supply in the Soviet Union at the present time is traceable to the depressed birth rates during World War II.

There is one other factor which undoubtedly serves as a deterrent to the adoption of an overt action program in population. Action programs are not always successful, and those that do succeed sometimes get out of control. India, for example, has been trying unsuccessfully for many years to lower her growth rate. Hitler, even with all the power at his command, never really succeeded in raising the German birth rate. Japan, Poland, Czechoslovakia, and Hungary, on the other hand, were successful in lowering their birth rates, primarily through the use of abortion. The campaigns in Czechoslovakia and Hungary, however, apparently got out of hand. Both countries are now searching for ways to raise the birth rate, thus far without success.

The Soviet Union does have several laws which are sometimes interpreted as being a part of her population policy, but they are either leftover measures from past action programs or laws put into effect to accomplish some purpose unrelated to a population policy. For example, the current family allowance and income tax provisions are left over from the program introduced in 1944 to raise the war-depressed birth rate. The monetary rewards for having children,

however, have been reduced over the years, and probably are no longer significant incentives. The purpose of the liberalization of the abortion laws in the mid-1950's apparently was to curb the substantial health hazard created by the large numbers of illegal abortions by permitting abortions to be performed in hospitals by qualified medical personnel. The campaigns for the dissemination of the knowledge and mechanical means of birth control were reportedly initiated as part of a program to curb the abortion rate.

In the area of mortality the Soviet policy is far from passive. The Soviet Government is committed to the policy of lowering mortality and to implement this policy medical facilities are constantly being improved and expanded.

The Soviet Government pursues a very strict policy of preventing her citizens from emigrating. Except in very unusual circumstances, residents of the Soviet Union are not given permission to leave the country for the purpose of establishing residence abroad and, in fact, until quite recently, Soviet citizens were rarely permitted to go abroad as tourists. The only major exception made to the restrictive emigration policy in recent years was that of allowing former Polish citizens (mostly persons currently residing in the territory annexed from Poland during World War II) to move to Poland if they wished. This policy was established in 1955, and by 1960, when it terminated, some 250,000 persons are believed to have taken advantage of the opportunity to emigrate. Many of the emigrants were reportedly Jews who shortly after arriving in Poland elected to move on to Israel. Poland has pursued a policy of allowing Jewish emigration to Israel, whereas the Soviet Union has not.

HISTORICAL DEVELOPMENT OF PROGRAMS AFFECTING FERTILITY

Abortion.—In November 1920, the Soviet Union put into effect its first law governing abortion. The new decree junked the Czarist law equating abortion to murder and recognized the seeming futility of efforts to curb abortions by punitive means. Abortions were made free of charge, but the decree specified that only doctors could legally perform them and that they had to be performed in hospitals. The justification given for the decree was an increase in the number of abortions performed secretly by unprincipled profiteers. These illegal abortions allegedly caused 50 percent of the women receiving them to become ill and 4 percent to die.⁶⁶

Following the enactment of the 1920 law, the abortion rate increased sharply, partly because women who would otherwise seek illegal abortions (for which statistics are incomplete) obtained legal ones (which are more apt to be registered) and partly because women who would not seek illegal operations were willing to obtain legal ones. Moscow's abortion rate increased from 19 per 100 live births in 1921 to 55 in 1926.⁶⁷ In 1934, 270 abortions per 100 live births were reported for Moscow.⁶⁸ For 1924-25, a rate of 13 abortions per 100 live births was reported for 20 provinces in the European part of the Soviet Union.⁶⁹ By 1934, there were as many abortions as live births in some areas.

⁶⁶ Gens, *op. cit.* col. 44.

⁶⁷ *Ibid.*, cols. 43 and 44.

⁶⁸ Reported in Frank Lorimer, *The Population of the Soviet Union: History and Prospects*, Geneva, League of Nations, 1946, p. 128.

⁶⁹ Gens, *op. cit.*, col. 45.

The number of abortions had grown so large by 1935 that the Soviet Government issued new regulations forbidding abortions for first pregnancies. Abortions were restricted to the first 3 months after conception with a minimum of 6 months between operations.

In June 1936, the Soviet Government issued even stricter regulations on abortions. Operations were forbidden except in cases in which the continuation of the pregnancy threatened the life of the woman or undermined her health, and in cases in which there was a danger of transmitting a serious disease to the child.⁷⁰ These regulations reportedly brought about a drastic reduction in the number of abortions. In Moscow, for example, 30,877 abortions were reported in the third quarter of 1935 but only 2,306 in the third quarter of 1936. The birth rate in Moscow increased from 14.7 per 1,000 population in 1934 to 17.3 in 1935, to 19.9 in 1936, and to a peak of 35.4 in 1937. The number of abortions in the country as a whole reportedly decreased by 97 percent while the birth rate reportedly increased from 30.1 per 1,000 population in 1935 to 33.6 in 1936 and to a peak of 39.6 in 1937.⁷¹

The reduction in the abortion rates, however, apparently was short lived. Moscow's birth rate declined by 20 percent between 1937 and 1938. The birth rate for the country as a whole declined only slightly between 1937 and 1938, but by 1940 it had dropped to 31.7 per 1,000 population, a level only 5 percent above the 1935 rate.⁷²

Data are not available on the number of abortions during the war, but apparently they were sufficiently numerous to cause the Soviet Government in July 1944 to reemphasize the criminal responsibility for abortion. But again the reemphasis does not appear to have had any lasting effect because by the mid-1950's the Soviet Government was once more expressing alarm about the serious danger to the health of women receiving illegal abortions. The regulations governing abortion were gradually eased and in November 1955 virtually all restrictions were removed for abortions performed during the first 12 weeks after conception.⁷³

The express purposes of the 1955 decree were (1) to implement Lenin's avowed principle that the decision as to whether a child should be borne is a basic right of the citizen (mother), and (2) to eliminate the health hazard created by the illegal abortionist. The Soviet Government, however, does not consider the high abortion rate to be desirable. In an effort to curb abortions, the government has started campaigns for the dissemination of the knowledge and mechanical means of birth control. Women workers, particularly in urban areas, have become the target of the campaigns. Birth control information as well as contraceptive devices are dispensed through the industrial enterprise and through gynecological clinics.⁷⁴

⁷⁰ Ministerstva zdravookhraneniya SSSR, Institut organizatsii zdravookhraneniya i istorii meditsiny imeni N. A. Semashko, *Postanovleniya KPSS i sovetskogo pravitel'stva ob okhrane zdorov'ya naroda (Decisions of The Communist Party of the U.S.S.R. and the Soviet Government About the Protection of the Health of the People)*, Moscow, Medgiz, 1958, pp. 265 and 266.

⁷¹ Lorimer, *op. cit.*, p. 130.

⁷² A. A. Dol'skaya, *Sotsialisticheskiy zakon porodonaseleniya (na primere SSSR) (Socialist Laws of National Population [U.S.S.R. as an Example])*, Moscow, Sotsekgiz, 1959, p. 126.

⁷³ Ministerstvo zdravookhraneniya SSSR . . . , *Postanovleniya . . . (op. cit.)*, p. 333.

⁷⁴ See, for example, M. D. Piradova, "Organizatsiya akusherskoginekologicheskogo obsluzhivaniya zhenshchin, rabotayushchikh na promyshlennyykh predpriyatiyakh" ("Organization of Obstetrics-Gynecological Service to Women Working in Industrial Establishments"), *Akusherstvo i ginekologiya (Obstetrics and Gynecology)*, No. 2, 1959, p. 5, and "Zhenskaya konsul'tatsiya" ("Women's Consultations"), *Meditsinskiy rabotnik (Medical Worker)*, Sept. 24, 1957, p. 1.

Financial assistance.—The Soviet Union adopted its first major program of family allowances in June 1936, at the time abortions were outlawed.⁷⁵ Annual grants of 2,000 rubles for 5 years beginning at birth were awarded for the 7th through the 10th child. A single grant of 5,000 rubles, payable at birth, plus annual grants of 3,000 rubles per year for 4 years, beginning with the second year, were awarded for subsequent children.⁷⁶ Although grants of this size appear impressive in comparison to the average annual wage of 3,000 rubles, they were probably intended as welfare measures rather than as inducements to bear children. It is unlikely that any significant number of couples would be encouraged to have the large families required before grants begin, particularly since the grants would stop when the youngest child became 5 years old.

The decree of July 8, 1944, which initiated a many-sided pronatalist program designed to raise the war-depressed birth rate, provided more meaningful grants which probably did contribute to a higher birth rate. Under the new program one-time grants, payable at birth, were awarded for the third and subsequent child. Monthly stipends, payable for a period of 4 years, beginning with the child's second year, started with the fourth child. The one-time grants ranged from 400 rubles for the 3d child to 5,000 rubles for the 11th.⁷⁷ Monthly stipends began at 80 rubles for the 4th child and rose to 300 for the 11th. The stipend for a given child continued until he reached his fifth year.⁷⁸

Monthly payments to unmarried mothers were 100 rubles for one child, 150 rubles for two children, and 200 rubles for three or more children. These payments continued until the child's 12th year and were not terminated should the mother marry. Unmarried mothers with three or more children were also eligible for the regular payments to mothers of large families.⁷⁹

The decree of November 25, 1947, cut the grants in half, including those for unmarried mothers.⁸⁰ The schedule of payments created by the 1936, 1944, and 1947 decrees are given in table 26.

The income tax law of April 30, 1943⁸¹ and the "bachelors" tax provisions of the July 1944 decree⁸² should be considered as an adjunct to the family allowance program. The income tax law grants a 30-percent reduction in the income tax payable by all persons with more

⁷⁵ A one-time grant of 32 rubles to cover the cost of the layette and a monthly food allowance of 5 rubles were already in effect. The 1936 decree increased these to 45 and 10 rubles, respectively.

⁷⁶ *Ministerstvo Zdravookhraneniya S.S.S.R. . . . Postanovleniya . . . (op. cit.)*, p. 266.

⁷⁷ The grant to cover the cost of the layette was increased to 120 rubles.

⁷⁸ Formerly, the manner in which monthly family allowances were calculated was not entirely clear. Lorimer had interpreted the regulations to mean that the allowances for a given child were terminated regardless of the child's age when the mother became eligible for allowances for a child of higher birth order. Other Western writers have generally come to the same conclusion as Lorimer. Recent evidence, however (see, S. E. Kopelyanskaya, *Prava materi i rebenka v SSSR (Rights of Mothers and Children in the U.S.S.R.)*, Moscow, Medgiz, 1960, pp. 31 and 32) indicates that the mother continued to receive the allowances for each child until he is 5 years old without regard to the birth of later children. The new interpretation makes the family allowance program far more attractive. For example, a mother with four children, the youngest of which is 2 years old, would receive 40 rubles per month. (See table 26.) According to Lorimer's interpretation, when a fifth child became eligible, the mother would receive 60 rubles provided for the fifth child but would no longer receive the 40 rubles for the fourth. Her total monthly payment would be 60 rubles, or 20 rubles more than she received for the fourth child alone. According to the new interpretation, however, she would receive 100 rubles per month until her fourth child is 5 years old (60 rubles for the fifth and 40 rubles for the fourth) and then 60 rubles (for the fifth child only) until the fifth child becomes 5 years old. For women with larger numbers of children, the differences between the two interpretations is even more significant.

⁷⁹ *Ministerstvo zhravookhraneniya S.S.S.R. . . . , Postanovleniya . . . op. cit.*, pp. 310 and 312.

⁸⁰ *Ibid.*, pp. 323 and 324.

⁸¹ M. I. Yumashev and B. A. Zhaleyko (eds.), *Sbornik zakonov SSSR i ukazov Prezidiuma Verkhonogo soveta SSSR (1938—iyul' 1956 gg.) (A Compilation of Laws of the U.S.S.R. and Decrees of the Presidium of the Supreme Soviet of the U.S.S.R. [1938—July 1966])*, Moscow; Gosyurizdat, 1956, pp. 327–335.

⁸² *Ibid.*, pp. 335 and 336.

than three children. The "bachelors" tax is levied against males aged 20 to 50 years and females aged 20 to 45 years. For persons subject to income tax, the "bachelors" tax amounts to 6 percent of the income of persons with no children, 1 percent of the income of those with one child, and 0.5 percent of the income of those with two children. Collective farmers and persons with no independent income (e.g., students) pay a comparable tax.

TABLE 26.—Family allowances in the Soviet Union according to the decrees of 1936, 1944, and 1947

[In rubles]

Number of children	Decree of June 27, 1936		Decree of June 8, 1944		Decree of Nov. 25, 1947	
	Single ¹ payment	Annual ² payment	Single ¹ payment	Monthly ³ payment	Single ¹ payment	Monthly ³ payment
3d child.....	-----	-----	400	-----	200	-----
4th child.....	-----	-----	1,300	80	650	40
5th child.....	-----	-----	1,700	120	850	60
6th child.....	-----	-----	2,000	140	1,000	70
7th child.....	-----	2,000	2,500	200	1,250	100
8th child.....	-----	2,000	2,500	200	1,250	100
9th child.....	-----	2,000	3,500	250	1,750	125
10th child.....	-----	2,000	3,500	250	1,750	125
11th and each successive child.	5,000	3,000	5,000	300	2,500	150

¹ Payable at the birth of the child.

² Payable annually until the child's 5th birthday. For the 11th and subsequent children, however, the 5,000 rubles paid at birth serve as payment for the 1st year.

³ Payable monthly for 4 years beginning with the child's 1st birthday.

Source: Ministerstva zdravookhraneniya SSSR, Institut organizatsii zdravookhraneniya i istorii meditsiny imeni N. A. Semashko, *Postanovleniya KPSS i sovetskogo pravitel'stva ob zdorov'ya naroda (Decisions of the Communist Party of the Soviet Union and the Soviet Government About the Protection of the Health of the People)*, Moscow, Medgiz, 1958, pp. 266, 310-312, and 323, 324.

Considered in relation to the estimated 1944 average annual wage of 5,500 rubles,⁸³ the financial awards under the 1944 decree were substantial. Taking the family allowances and the exemptions from income and "bachelors" taxes together, the grants for the fourth child during the first year amounted to 30 percent of the average annual wage and the awards during the second amounted to 25 percent. For the 11th child the first-year awards amounted to 98 percent of the average annual wage while those for the second year equaled about 70 percent of the average wage. Since mothers with five or more children are apt to have more than one child under 5 years of age, the awards could conceivably have been substantially more than the women could earn from employment outside the home.

The 1947 decree cutting the grants in half, coupled with a rise in the average annual wage to an estimated 7,000 rubles in 1948,⁸⁴ reduced considerably the significance of the awards as incentives to bear children. Since the present average annual wage, following the re-evaluation of the ruble, is probably in excess of 1,000 new rubles (10,000 old rubles), the incentive capacity of the grants has been even further reduced.

Moreover, in May 1960 the Soviet Union announced plans for the gradual abolition of all taxes on income. Persons earning between 500 and 700 old rubles monthly were to be relieved of all income taxes by October 1, 1962. By October 1, 1964, taxes on monthly incomes

⁸³ Abram Bergson, *The Real National Income of Soviet Russia Since 1928*, Cambridge, Harvard University Press, 1961, p. 422.

⁸⁴ *Ibid.*

between 700 and 1,000 old rubles were to be reduced by 40 percent and by October 1, 1965, abolished entirely. Taxes on monthly incomes of more than 1,000 old rubles were to be gradually reduced and eventually abolished altogether. The "bachelors" tax was to end by October 1, 1965.

On September 24, 1962, however, the Soviet Government announced that the provisions of the 1960 decree which were scheduled to become effective on October 1, 1962, were being postponed because funds were needed for various domestic programs, including increased output of consumers' goods and housing, and because of "the intensification of the aggressive intrigues of imperialism and the necessity to strengthen the defense capacity of the Soviet Union."⁸⁵

The reductions already made in income taxes have weakened the incentive character of the tax structure. If the plan for the eventual abolition of the income and "bachelors" taxes is reinstated, the financial assistance program will consist solely of the already reduced family allowances.

Maternity leave.—The policy of granting paid maternity leave to working mothers was initiated by the decree of November 16, 1920. Women engaged in physical work were allowed 8 weeks before and 8 weeks after delivery. Intellectuals and office workers were permitted only 6 weeks before and 6 weeks after delivery.⁸⁶ This rather generous leave policy remained in effect until December 28, 1939, when the maternity leave for all eligible women was reduced to 35 days before and 28 days after delivery, ostensibly because of widespread "abuses" in the system.⁸⁷

The decree of July 8, 1944, raised the paid leave from 63 to 77 days by adding 2 weeks to the postnatal leave and provided for an extension of the postnatal leave to 56 days (rather than 42) in the event of an abnormal or multiple birth.⁸⁸ The decree of March 23, 1956, increased the maternity leave to 112 calendar days, 56 before and 56 after delivery. This law also provides that women cannot be dismissed or downgraded while they are on leave.⁸⁹

As with most of the other related Soviet programs, there is no way to judge the effect of maternity leave on the birth rate. The policy of granting leave was probably established in the first place more as a welfare or social measure than as a pronatalist measure. From a financial point of view, it can at best guarantee the mother against the loss of income (within specified limits) and the loss of her job because of pregnancy. However, a number of cases have been cited in the press in which women have returned to work from maternity leave to find their jobs taken. Some of these women were reportedly restored to their jobs only after appealing through the trade unions. While there is no indication of the extent of this problem, the cases reported in the press were presented as symptomatic of a general problem for which a remedy had to be found. Whether or not women face a serious threat of losing their jobs while on maternity leave, it seems unlikely that the overall benefits from this program can serve as much of an incentive to bear children.

⁸⁵ TASS, Sept. 24, 1962.

⁸⁶ E. I. Svezhkov, *Prakticheskiy kommentariy k Kodeksy Zakonov* [*Trude* (*Practical Commentary on the Code of Labor Laws*)], Moscow, "Voprosy truda", 1928, p. 224.

⁸⁷ Vsesoyuzniy institut yuridicheskikh nauk SSSR, *Trudovoye zakonodatel'stvo SSSR, sbornik zakonov, ukazov i postanovleniy* (U.S.S.R. Labor Legislation, A Collection of Laws, Decrees, and Resolutions), Moscow, Yuridicheskoye izdatel'stvo narodnogo komissariata yustitsii SSSR, 1941, p. 215. Also reported in *Pravda*, Dec. 29, 1938.

⁸⁸ Ministerstvo zdravookhraneniya SSSR . . . , *Postanovleniya . . . op. cit.*, p. 312.

⁸⁹ *Ibid.*, p. 334.

Medals.—One other part of the 1944 pronatalist program was the establishment of a series of medals to be awarded to women with large numbers of children. The “Medal of Motherhood, Second Degree” was awarded to women bearing and raising five children. The “Medal of Motherhood, First Degree” went to mothers of six children. The “Mother Glory” medal carried three degrees which went to mothers of seven through nine children. The “Mother Heroine” medal, accompanied by a diploma from the Presidium of the Supreme Soviet of the U.S.S.R., was awarded to women bearing and raising 10 children. The law provided that children killed or missing at the front during World War II were to be counted along with the living. Awards were to be made when the last child becomes of age.⁹⁷

⁹⁷ *Ibid.*, pp. 313 and 314.

TABLE A-1.—Estimated population of the U.S.S.R., by age and sex: Jan. 1 of each year, 1950-62 (model 1)

[In thousands]

Age and sex	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
ROTH SEXES													
All ages.....	178,554	181,615	184,784	187,968	191,000	194,411	197,844	201,357	204,934	208,678	212,342	216,156	219,797
Under 5 years.....	18,403	19,943	20,953	21,959	22,318	22,929	23,273	23,515	23,779	24,306	24,504	24,856	25,045
5 to 9 years.....	13,593	12,343	12,013	13,156	15,658	18,091	19,682	20,571	21,626	22,023	22,615	22,977	23,251
10 to 14 years.....	21,682	22,221	21,941	19,586	16,300	13,523	12,279	11,949	13,086	15,581	18,008	19,496	20,481
15 to 19 years.....	18,174	18,041	18,538	19,587	20,508	21,525	22,065	21,797	19,467	16,206	13,443	12,210	11,887
20 to 24 years.....	19,907	19,645	19,023	18,509	18,389	17,979	17,851	18,353	19,404	20,329	21,342	21,889	21,626
25 to 29 years.....	13,204	14,917	16,777	18,315	19,249	19,623	19,377	18,780	18,283	18,180	17,781	17,670	18,169
30 to 34 years.....	10,571	10,433	10,506	10,931	11,762	12,994	14,683	16,526	18,049	18,989	19,367	19,134	18,540
35 to 39 years.....	12,628	12,141	11,536	10,985	10,606	10,371	10,241	10,327	10,752	11,580	12,801	14,471	16,286
40 to 44 years.....	11,523	11,958	12,367	12,599	12,577	12,327	11,861	11,287	10,756	10,398	10,175	10,061	10,149
45 to 49 years.....	9,810	10,040	10,258	10,513	10,819	11,173	11,609	12,019	12,256	12,254	12,025	11,584	11,026
50 to 54 years.....	7,939	8,238	8,548	8,852	9,136	9,403	9,638	9,864	10,120	10,438	10,798	11,229	11,638
55 to 59 years.....	6,335	6,516	6,727	6,957	7,203	7,477	7,778	8,092	8,398	8,694	8,966	9,204	9,429
60 to 64 years.....	5,336	5,391	5,445	5,523	5,637	5,790	5,980	6,198	6,435	6,692	6,969	7,268	7,574
65 to 69 years.....	4,011	4,183	4,348	4,482	4,584	4,663	4,739	4,819	4,912	5,039	5,202	5,393	5,605
70 to 74 years.....	2,684	2,767	2,871	2,985	3,116	3,266	3,435	3,604	3,748	3,865	3,962	4,044	4,125
75 years and over.....	2,754	2,838	2,933	3,029	3,138	3,272	3,453	3,656	3,863	4,104	4,384	4,670	4,957
Under 16 years.....	57,117	58,037	58,974	59,429	59,086	59,002	59,209	59,829	60,881	63,449	66,818	70,161	72,239
16 to 54/59 years ¹	102,631	104,264	105,939	108,080	110,808	113,563	115,917	117,874	119,435	119,741	119,095	118,648	119,294
55/60 years and over ²	18,806	19,314	19,871	20,459	21,106	21,846	22,713	23,654	24,503	25,488	26,429	27,347	28,264
MALES													
All ages.....	77,600	79,282	81,006	82,744	84,406	86,258	88,118	90,016	91,958	93,981	95,975	98,049	100,044
Under 5 years.....	9,377	10,161	10,661	11,173	11,356	11,682	11,863	11,993	12,133	12,408	12,521	12,713	12,819
5 to 9 years.....	6,848	6,247	6,115	6,710	7,982	9,204	9,953	10,442	10,978	11,182	11,499	11,691	11,841
10 to 14 years.....	10,766	11,062	10,950	9,795	8,174	6,803	6,207	6,077	6,668	7,936	9,153	9,900	10,386
15 to 19 years.....	8,980	8,932	9,175	9,689	10,149	10,081	10,975	10,867	9,727	8,120	6,759	6,170	6,042
20 to 24 years.....	9,213	9,247	9,102	8,987	9,028	8,874	8,829	9,074	9,587	10,049	10,578	10,874	10,770
25 to 29 years.....	5,351	6,267	7,278	8,150	8,739	9,066	9,103	8,971	8,864	8,912	8,764	8,728	8,971
30 to 34 years.....	4,062	3,981	4,177	4,604	5,255	6,157	7,156	8,017	8,606	8,606	8,934	8,978	8,850
35 to 39 years.....	4,877	4,687	4,458	4,245	4,087	3,975	3,890	3,907	4,099	4,523	5,167	6,057	7,041
40 to 44 years.....	4,523	4,689	4,822	4,881	4,851	4,743	4,562	4,347	4,141	3,993	3,888	3,810	3,822
45 to 49 years.....	3,418	3,604	3,805	4,005	4,187	4,355	4,522	4,656	4,720	4,701	4,603	4,435	4,227
50 to 54 years.....	2,826	2,867	2,910	2,981	3,095	3,242	3,424	3,624	3,820	4,006	4,175	4,339	4,473
55 to 59 years.....	2,314	2,453	2,517	2,572	2,672	2,822	2,970	3,127	3,288	3,466	3,654	3,832	3,996
60 to 64 years.....	1,802	1,846	1,895	1,950	2,005	2,070	2,142	2,215	2,287	2,348	2,402	2,447	2,496
65 to 69 years.....	1,349	1,387	1,424	1,459	1,494	1,531	1,570	1,635	1,693	1,751	1,819	1,892	1,967
70 to 74 years.....	920	937	963	990	1,022	1,060	1,100	1,140	1,180	1,220	1,262	1,311	1,365
75 years and over.....	974	993	1,014	1,035	1,061	1,095	1,145	1,201	1,256	1,320	1,397	1,472	1,548

DIMENSIONS OF SOVIET ECONOMIC POWER 555

See footnotes at end of table, p. 556.

TABLE A-1.—Estimated population of the U.S.S.R., by age and sex: Jan. 1 of each year, 1950-62 (Model 1)—Continued

[In thousands]

Age and sex	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
MALES—continued													
Under 16 years.....	28,683	29,213	29,739	30,023	29,904	29,915	30,063	30,415	30,930	32,306	34,034	35,749	36,816
16 to 59 years ¹	43,872	44,906	45,971	47,287	48,920	50,587	52,089	53,410	54,562	55,036	55,061	55,178	55,852
60 years and over ²	5,045	5,163	5,296	5,434	5,582	5,756	5,966	6,191	6,416	6,639	6,880	7,122	7,376
FEMALES													
All ages.....	100,954	102,333	103,778	105,224	106,594	108,153	109,726	111,341	112,976	114,697	116,367	118,107	119,753
Under 5 years.....	9,026	9,782	10,292	10,786	10,962	11,247	11,410	11,522	11,646	11,898	11,983	12,143	12,226
5 to 9 years.....	6,745	6,096	5,898	6,446	7,076	8,887	9,629	10,129	10,048	10,841	11,116	11,286	11,410
10 to 14 years.....	10,916	11,159	10,991	9,791	8,126	6,720	6,072	5,872	6,418	7,645	8,855	9,596	10,095
15 to 19 years.....	9,194	9,109	9,363	9,893	10,359	10,844	11,090	10,930	9,740	8,086	6,684	6,040	5,845
20 to 24 years.....	10,694	10,398	9,921	9,522	9,361	9,105	9,022	9,279	9,817	10,280	10,764	11,015	10,856
25 to 29 years.....	7,853	8,650	9,499	10,165	10,510	10,502	10,274	9,809	9,419	9,268	9,017	8,042	9,108
30 to 34 years.....	6,509	6,458	6,525	6,754	7,158	7,739	8,526	9,370	10,032	10,383	10,433	10,156	9,699
35 to 39 years.....	7,751	7,454	7,078	6,740	6,519	6,396	6,351	6,424	6,653	7,057	7,634	8,414	9,245
40 to 44 years.....	7,000	7,269	7,545	7,718	7,726	7,584	7,299	6,940	6,615	6,405	6,287	6,251	6,327
45 to 49 years.....	6,392	6,436	6,453	6,508	6,632	6,818	7,087	7,363	7,536	7,553	7,422	7,149	6,799
50 to 54 years.....	5,113	5,371	5,638	5,871	6,041	6,161	6,214	6,240	6,300	6,432	6,623	6,890	7,165
55 to 59 years.....	4,021	4,135	4,274	4,440	4,631	4,855	5,111	5,377	5,610	5,788	5,912	5,972	6,003
60 to 64 years.....	3,534	3,545	3,550	3,573	3,632	3,720	3,838	3,983	4,148	4,344	4,567	4,821	5,078
65 to 69 years.....	2,662	2,796	2,924	3,023	3,090	3,132	3,160	3,184	3,219	3,288	3,353	3,501	3,638
70 to 74 years.....	1,764	1,830	1,908	1,995	2,004	2,206	2,335	2,404	2,568	2,645	2,700	2,733	2,700
75 years and over.....	1,780	1,845	1,919	1,994	2,077	2,177	2,308	2,455	2,607	2,784	2,987	3,198	3,409
Under 16 years.....	28,434	28,824	29,235	29,406	29,182	29,087	29,146	29,414	29,901	31,143	32,784	34,412	35,423
16 to 54 years ¹	58,759	59,968	59,968	60,793	61,888	62,976	63,828	64,464	64,923	64,705	64,034	63,470	63,442
55 years and over ²	13,761	14,151	14,575	15,025	15,524	16,090	16,752	17,463	18,152	18,849	19,549	20,225	20,888

¹ Males, 16 to 59 years; females, 16 to 54 years. In Soviet usage these age groups are referred to as the "able-bodied" ages.

² Males, 60 years and over; females, 55 years and over.

Source: Prepared by the Foreign Demographic Analysis Division, Bureau of the Census, U.S. Department of Commerce. The numbers of births and deaths are consistent with the officially reported crude birth and death rates. The constructed 1958-59 life table was used to distribute deaths by age and sex. This life table is based on the official age-specific death rates for the U.S.S.R.

TABLE A-2.—Projected population of the U.S.S.R., by age and sex, Jan. 1 of each year, 1963-81 (model 1)

[In thousands]

Series and age	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
BOTH SEXES																			
All ages:																			
A.....	223,585	227,271	230,891	234,497	238,080	241,703	245,425	249,286	253,281	257,370	261,561	265,866	270,285	274,813	279,458	284,286	289,362	294,780	300,502
B.....	223,213	226,469	229,567	232,561	235,471	238,357	241,240	244,146	247,103	250,127	253,223	256,409	259,682	263,037	266,473	270,064	273,834	277,877	282,166
C.....	223,028	226,066	228,888	231,577	234,153	236,669	239,150	241,576	244,012	246,504	249,058	251,686	254,383	257,150	259,980	262,951	266,073	269,435	272,998
D.....	222,841	225,665	228,245	230,628	232,867	235,016	237,057	239,008	240,919	242,788	244,888	246,957	249,084	251,264	253,498	255,838	258,310	260,984	263,832
Under 5 years:																			
A.....	25,275	25,331	25,358	25,289	25,346	25,301	25,465	25,833	26,369	27,021	27,763	28,522	29,262	29,986	30,738	31,574	32,551	33,758	35,161
B.....	24,903	24,520	24,034	23,353	22,737	22,321	22,071	22,005	22,108	22,365	22,750	23,229	23,774	24,363	24,974	25,654	26,447	27,428	28,569
C.....	24,718	24,126	23,355	22,369	21,419	20,816	20,376	20,106	19,995	20,055	20,259	20,585	21,032	21,562	22,092	22,694	23,396	24,205	25,273
D.....	24,531	23,725	22,712	21,420	20,133	19,346	18,680	18,175	17,845	17,707	17,735	17,937	18,289	18,741	19,211	19,734	20,344	21,099	21,976
5 to 9 years:																			
A.....	23,518	24,034	24,259	24,620	24,828	25,076	25,146	25,186	25,122	25,189	25,147	25,319	25,693	26,232	26,892	27,628	28,391	29,138	29,867
B.....						24,710	24,355	23,874	23,205	22,602	22,187	21,946	21,885	21,995	22,256	22,642	23,123	23,679	24,266
C.....						24,527	23,960	23,203	22,227	21,289	20,695	20,261	19,998	19,891	19,950	20,162	20,489	20,943	21,465
D.....						24,344	23,563	22,566	21,284	20,011	19,232	18,752	18,079	17,756	17,624	17,652	17,855	18,211	18,600
10 to 14 years:																			
A.....	21,537	21,932	22,529	22,891	23,166	23,436	23,959	24,193	24,563	24,776	25,025	25,096	25,135	25,074	25,138	25,098	25,272	25,648	26,189
B.....											24,660	24,305	23,828	23,153	22,553	22,140	21,906	21,846	21,958
C.....											24,478	23,911	23,158	22,186	21,248	20,655	20,224	19,965	19,859
D.....											24,295	23,516	22,521	21,246	19,973	19,195	18,541	18,048	17,728
15 to 19 years:																			
A.....	13,023	15,511	17,931	19,418	20,404	21,461	21,859	22,457	22,821	23,101	23,375	23,900	24,137	24,510	24,729	24,981	25,054	25,094	25,035
B.....																24,617	24,264	23,788	23,123
C.....																24,435	23,870	23,120	22,151
D.....																24,252	23,476	22,484	21,212
20 to 24 years.....	19,317	16,085	13,350	12,132	11,817	12,953	15,435	17,852	19,340	20,328	21,386	21,784	22,382	22,747	23,028	23,303	23,830	24,068	24,441
25 to 29 years.....	19,219	20,143	21,161	21,708	21,460	19,178	15,974	13,262	12,057	11,752	12,888	15,365	17,776	19,262	20,248	21,302	21,702	22,301	22,668
30 to 34 years.....	18,073	17,980	17,603	17,502	18,007	19,057	19,982	20,999	21,550	21,311	19,047	15,868	13,177	11,882	12,823	15,293	17,098	19,183	19,893
35 to 39 years.....	17,797	18,731	19,118	18,898	18,331	17,872	17,792	17,428	17,336	17,841	18,887	19,811	20,828	21,881	21,831	21,147	18,905	15,752	13,083
40 to 44 years.....	10,574	11,394	12,602	14,252	16,050	17,547	18,471	18,863	18,653	18,100	17,664	17,581	17,224	17,138	17,645	18,691	19,612	20,619	21,168
45 to 49 years.....	10,517	10,170	9,959	9,852	9,944	10,369	11,183	12,374	13,998	15,769	17,244	18,154	18,546	18,341	17,800	17,368	17,301	16,955	16,874
50 to 54 years.....	11,882	11,886	11,670	11,245	10,710	10,222	9,892	9,692	9,593	9,689	10,107	10,905	12,070	13,659	15,389	16,831	17,719	18,100	17,901
55 to 59 years.....	9,687	9,994	10,349	10,771	11,170	11,408	11,413	11,214	10,808	10,296	9,834	9,522	9,333	9,242	9,337	9,744	10,518	11,646	13,182
60 to 64 years.....	7,872	8,152	8,412	8,635	8,849	9,093	9,391	9,730	10,133	10,515	10,742	10,749	10,565	10,186	9,708	9,277	8,987	8,812	8,726
65 to 69 years.....	5,835	6,080	6,338	6,614	6,897	7,173	7,428	7,664	7,874	8,072	8,299	8,573	8,885	9,257	9,610	9,821	9,826	9,657	9,309
70 to 74 years.....	4,224	4,348	4,495	4,662	4,845	5,046	5,259	5,487	5,725	5,974	6,213	6,436	6,643	6,824	6,993	7,189	7,427	7,699	8,025
75 years and over.....	5,235	5,500	5,757	6,008	6,256	6,511	6,776	7,052	7,339	7,630	7,950	8,281	8,629	8,992	9,369	9,749	10,127	10,504	10,870

TABLE A-2.—Projected population of the U.S.S.R., by age and sex, Jan. 1 of each year, 1963-81 (model 1)—Continued

[In thousands]

Series and age	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
[BOTH SEXES—con.]																			
Under 16 years:																			
A.....	73,854	75,329	76,264	77,120	77,787	78,393	78,997	79,927	80,737	81,712	82,788	83,888	85,040	86,346	87,711	89,404	91,237	93,533	96,210
B.....	73,482	74,527	74,940	75,184	75,178	75,047	74,812	74,787	74,559	74,469	74,450	74,431	74,437	74,570	74,726	75,182	76,074	77,420	79,179
C.....	73,297	74,124	74,261	74,200	73,860	73,359	72,722	72,217	71,468	70,846	70,285	69,708	69,138	68,683	68,239	68,069	68,495	69,371	70,679
D.....	73,110	73,723	73,618	73,251	72,574	71,706	70,629	69,649	68,375	67,220	66,115	64,979	63,839	62,797	61,751	60,956	60,914	61,315	62,149
16-69/54 years: 1																			
A.....	120,497	121,664	123,237	124,806	126,524	128,393	130,461	132,428	134,728	137,042	139,436	141,991	144,675	147,387	150,167	152,721	155,246	157,518	159,571
B.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	154,881	156,266
C.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	154,699	156,335
D.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	154,517	155,940
60/55 years and over 1																			
A.....	29,234	30,278	31,390	32,571	33,769	34,917	35,967	36,931	37,816	38,616	39,337	39,987	40,570	41,080	41,580	42,161	42,879	43,729	44,721
MALES																			
All ages:																			
A.....	102,120	104,143	106,137	108,123	110,103	112,103	114,164	116,296	118,500	120,760	123,079	125,460	127,901	130,401	132,965	135,627	138,422	141,302	144,518
B.....	101,929	103,732	105,457	107,130	108,765	110,386	112,016	113,658	115,331	117,043	118,800	120,607	122,460	124,358	126,301	128,332	130,453	132,718	135,111
C.....	101,834	103,525	105,109	106,625	108,089	109,520	110,944	112,340	113,744	115,184	116,664	118,184	119,739	121,337	122,972	124,680	126,470	128,387	130,405
D.....	101,738	103,319	104,779	106,139	107,429	108,672	109,869	111,023	112,159	113,284	114,524	115,757	117,020	118,316	119,642	121,029	122,487	124,050	125,702
Under 5 years:																			
A.....	12,947	12,985	13,003	12,968	13,002	12,979	13,067	13,257	13,535	13,870	14,255	14,648	15,029	15,400	15,787	16,215	16,718	17,341	18,062
B.....	12,756	12,574	12,323	11,975	11,664	11,449	11,325	11,292	11,348	11,480	11,681	11,929	12,210	12,512	12,827	13,176	13,563	14,089	14,676
C.....	12,661	12,367	11,975	11,470	10,988	10,677	10,455	10,317	10,262	10,294	10,402	10,572	10,802	11,069	11,347	11,655	12,016	12,464	12,983
D.....	12,565	12,161	11,645	10,984	10,328	9,923	9,584	9,327	9,160	9,089	9,106	9,212	9,393	9,625	9,867	10,135	10,449	10,838	11,289
5 to 9 years:																			
A.....	11,985	12,255	12,383	12,579	12,694	12,832	12,879	12,904	12,872	12,912	12,891	12,983	13,180	13,461	13,801	14,182	14,577	14,958	15,334
B.....	-----	-----	-----	-----	-----	12,645	12,473	12,231	11,890	11,585	11,373	11,254	11,227	11,287	11,421	11,623	11,871	12,153	12,459
C.....	-----	-----	-----	-----	-----	12,551	12,271	11,888	11,389	10,912	10,609	10,390	10,258	10,207	10,241	10,350	10,519	10,752	11,020
D.....	-----	-----	-----	-----	-----	12,457	12,067	11,561	10,906	10,257	9,859	9,525	9,274	9,111	9,044	9,061	9,167	9,349	9,583
10 to 14 years:																			
A.....	10,924	11,128	11,448	11,640	11,790	11,935	12,210	12,344	12,547	12,666	12,805	12,850	12,872	12,839	12,875	12,854	12,946	13,142	13,423
B.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	12,618	12,445	12,203	11,858	11,551	11,343	11,222	11,103	11,254
C.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	12,525	12,243	11,859	11,360	10,882	10,578	10,360	10,230	10,178
D.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	12,431	12,041	11,533	10,879	10,229	9,830	9,497	9,247	9,086
15 to 19 years:																			
A.....	6,632	7,895	9,108	9,855	10,341	10,879	11,083	11,403	11,596	11,750	11,899	12,176	12,313	12,518	12,639	12,777	12,820	12,830	12,804
B.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	12,591	12,416	12,171
C.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	12,498	12,214	11,829
D.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	12,404	12,013	11,504
20 to 24 years.....																			
A.....	9,642	8,052	6,706	6,125	6,002	6,592	7,850	9,058	9,805	10,291	10,829	11,033	11,353	11,547	11,702	11,852	12,131	12,269	12,474
25 to 29 years.....																			
A.....	9,484	9,945	10,474	10,769	10,672	9,557	7,985	6,654	6,080	5,962	6,552	7,805	9,007	9,752	10,236	10,772	10,976	11,297	11,493

30 to 34 years.....	8,751	8,804	8,666	8,635	8,879	9,391	9,351	10,379	10,675	10,583	9,478	7,921	6,604	6,035	5,922	6,512	7,758	8,954	9,698
35 to 39 years.....	7,893	8,476	8,805	8,853	8,732	8,640	8,698	8,566	8,539	8,784	9,293	9,752	10,278	10,573	10,483	9,930	7,850	6,547	5,987
40 to 44 years.....	4,016	4,433	5,068	5,945	6,916	7,757	8,332	8,660	8,711	8,696	8,511	8,443	8,420	8,666	8,423	9,174	9,630	10,149	10,441
45 to 49 years.....	4,030	3,886	3,785	3,711	3,725	3,919	4,331	4,955	5,813	6,765	7,592	8,157	8,482	8,534	8,423	8,344	8,407	8,285	8,263
50 to 54 years.....	4,541	4,526	4,433	4,272	4,075	3,887	3,751	3,656	3,587	3,603	3,793	4,195	4,802	5,638	6,563	7,367	7,915	8,231	8,283
55 to 59 years.....	3,619	3,796	3,961	4,119	4,248	4,314	4,300	4,216	4,063	3,877	3,701	3,574	3,485	3,421	3,437	3,619	4,006	4,589	5,391
60 to 64 years.....	2,570	2,670	2,819	2,984	3,165	3,344	3,511	3,664	3,813	3,935	3,998	3,986	3,908	3,769	3,598	3,437	3,320	3,240	3,180
65 to 69 years.....	2,037	2,096	2,147	2,188	2,233	2,300	2,399	2,524	2,675	2,838	2,999	3,148	3,286	3,420	3,531	3,589	3,577	3,508	3,380
70 to 74 years.....	1,423	1,481	1,543	1,607	1,669	1,727	1,775	1,819	1,852	1,891	1,948	2,033	2,141	2,260	2,405	2,542	2,668	2,784	2,900
75 years and over...	1,626	1,706	1,788	1,873	1,960	2,050	2,142	2,237	2,337	2,437	2,535	2,628	2,718	2,805	2,897	3,001	3,123	3,259	3,405
Under 16 years:																			
A.....	37,645	38,414	38,912	39,379	39,742	40,073	40,406	40,903	41,339	41,858	42,426	43,007	43,614	44,288	44,992	45,863	46,810	47,994	49,373
B.....	37,454	38,003	38,232	38,380	38,404	38,356	38,258	38,265	38,170	38,141	38,147	38,154	38,173	38,245	38,322	38,568	39,028	39,724	40,633
C.....	37,359	37,796	37,884	37,881	37,728	37,490	37,186	36,947	36,583	36,282	36,011	35,731	35,452	35,224	34,999	34,916	35,138	35,594	36,260
D.....	37,263	37,590	37,554	37,395	37,068	36,642	36,111	35,630	34,998	34,422	33,871	33,304	32,733	32,203	31,669	31,265	31,248	31,459	31,891
16-59/54 years: 1																			
A.....	56,819	57,767	58,928	60,092	61,334	62,609	63,931	65,149	66,484	67,801	69,173	70,658	72,234	73,850	75,542	77,195	78,924	80,607	82,280
B.....																	78,737	80,203	81,613
C.....																	78,644	80,002	81,271
D.....																	78,551	79,800	80,946
60/55 years and over 1	7,656	7,962	8,297	8,652	9,027	9,421	9,827	10,244	10,677	11,101	11,480	11,795	12,053	12,263	12,431	12,569	12,688	12,701	12,865
FEMALES																			
All ages:																			
A.....	121,465	123,128	124,754	126,374	127,977	129,600	131,261	132,990	134,781	136,610	138,482	140,406	142,384	144,412	146,493	148,659	150,940	153,388	155,984
B.....	121,284	122,737	124,110	125,431	126,706	127,971	129,224	130,488	131,772	133,084	134,423	135,802	137,222	138,679	140,172	141,732	143,381	145,159	147,055
C.....	121,194	122,541	123,779	124,952	126,064	127,149	128,206	129,236	130,268	131,320	132,394	133,502	134,644	135,813	137,014	138,271	139,603	141,048	142,593
D.....	121,103	122,346	123,466	124,489	125,438	126,344	127,188	127,985	128,760	129,554	130,364	131,200	132,064	132,948	133,856	134,809	135,823	136,934	138,130
Under 5 years:																			
A.....	12,328	12,346	12,355	12,321	12,344	12,322	12,398	12,576	12,834	13,151	13,508	13,874	14,233	14,586	14,951	15,359	15,833	16,417	17,099
B.....	12,147	11,955	11,711	11,378	11,073	10,872	10,746	10,713	10,760	10,885	11,069	11,300	11,564	11,851	12,147	12,478	12,864	13,339	13,893
C.....	12,057	11,759	11,380	10,899	10,431	10,139	9,921	9,789	9,733	9,761	9,857	10,013	10,230	10,483	10,745	11,039	11,380	11,801	12,290
D.....	11,966	11,564	11,067	10,436	9,805	9,423	9,096	8,848	8,685	8,618	8,629	8,725	8,896	9,116	9,344	9,599	9,895	10,261	10,687
5 to 9 years:																			
A.....	11,533	11,779	11,876	12,041	12,134	12,244	12,267	12,282	12,250	12,277	12,256	12,336	12,513	12,771	13,091	13,446	13,814	14,180	14,533
B.....						12,065	11,882	11,643	11,315	11,017	10,875	10,692	10,658	10,708	10,835	11,019	11,252	11,520	11,807
C.....						11,976	11,689	11,315	10,838	10,377	10,377	10,086	9,871	9,740	9,684	9,715	9,812	9,970	10,145
D.....						11,887	11,496	11,005	10,378	9,754	9,373	9,050	8,805	8,645	8,580	8,512	8,688	8,802	9,083
10 to 14 years:																			
A.....	10,613	10,804	11,081	11,251	11,376	11,501	11,749	11,849	12,016	12,110	12,220	12,246	12,263	12,235	12,263	12,244	12,326	12,506	12,766
B.....											12,042	11,860	11,625	11,300	11,002	10,803	10,684	10,653	10,704
C.....											11,953	11,668	11,299	10,826	10,366	10,077	9,864	9,735	9,681
D.....											11,864	11,475	10,988	10,367	9,744	9,365	9,044	8,801	8,642
15 to 19 years:																			
A.....	6,301	7,616	8,823	9,563	10,063	10,582	10,776	11,054	11,225	11,351	11,476	11,724	11,824	11,992	12,090	12,204	12,234	12,255	12,231
B.....																12,026	11,848	11,617	11,296
C.....																11,937	11,656	11,291	10,822
D.....																11,848	11,463	10,980	10,363

See footnotes at end of table, p. 560.

TABLE A-2.—Projected population of the U.S.S.R., by age and sex, Jan. 1 of each year, 1963-81 (model 1)—Continued

[In thousands]

Series and age	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
FEMALES—con.																			
20 to 24 years.....	9,675	8,033	6,644	6,007	5,815	6,361	7,585	8,794	9,535	10,037	10,557	10,751	11,029	11,200	11,326	11,451	11,699	11,799	11,907
25 to 29 years.....	9,735	10,198	10,687	10,939	10,788	9,621	7,989	6,608	5,977	5,790	6,336	7,560	8,769	9,510	10,012	10,532	10,726	11,004	11,175
30 to 34 years.....	9,322	9,176	8,937	8,867	9,128	9,666	10,131	10,620	10,875	10,728	9,569	7,947	6,573	5,947	5,765	6,311	7,535	8,744	9,485
35 to 39 years.....	9,904	10,255	10,313	10,045	9,599	9,232	9,094	8,862	8,797	9,057	9,594	10,059	10,550	10,808	10,664	9,515	7,902	6,536	5,816
40 to 44 years.....	6,558	6,961	7,534	8,307	9,134	9,790	10,139	10,203	9,942	9,504	9,143	9,010	8,781	8,718	8,979	9,517	9,982	10,470	10,727
45 to 49 years.....	6,487	6,284	6,174	6,141	6,219	6,450	6,852	7,419	8,185	9,004	9,652	9,997	10,064	9,807	9,377	9,024	8,894	8,670	8,611
50 to 54 years.....	7,341	7,360	7,237	6,973	6,635	6,335	6,141	6,036	6,006	6,086	6,314	6,710	7,268	8,021	8,826	9,464	9,804	9,869	9,618
55 to 59 years.....	6,068	6,198	6,388	6,652	6,922	7,094	7,113	6,998	6,745	6,419	6,133	5,948	5,848	5,821	5,900	6,125	6,512	7,057	7,791
60 to 64 years.....	5,302	5,473	5,593	5,651	5,684	5,749	5,880	6,066	6,320	6,580	6,744	6,763	6,657	6,417	6,110	5,840	5,667	5,572	5,546
65 to 69 years.....	3,798	3,984	4,191	4,426	4,664	4,873	5,029	5,140	5,199	5,234	5,300	5,425	5,599	5,837	6,079	6,232	6,249	6,149	5,929
70 to 74 years.....	2,801	2,867	2,952	3,055	3,176	3,319	3,484	3,668	3,873	4,083	4,265	4,403	4,502	4,555	4,588	4,647	4,759	4,915	5,125
75 years and over...	3,609	3,794	3,969	4,135	4,296	4,461	4,634	4,815	5,002	5,199	5,415	5,653	5,911	6,187	6,472	6,748	7,004	7,245	7,465
Under 16 years:																			
A.....	36,209	36,915	37,352	37,741	38,045	38,320	38,591	39,024	39,398	39,854	40,362	40,881	41,426	42,058	42,719	43,541	44,427	45,539	46,837
B.....	36,028	36,524	36,708	36,798	36,774	36,691	36,554	36,522	36,889	36,328	36,303	36,277	36,264	36,325	36,398	36,614	37,046	37,696	38,546
C.....	35,938	36,328	36,377	36,319	36,132	35,869	35,536	35,270	34,885	34,564	34,274	33,977	33,686	33,459	33,240	33,153	33,357	33,777	34,410
D.....	35,847	36,133	36,064	35,856	35,506	35,064	34,518	34,019	33,377	32,798	32,244	31,675	31,106	30,594	30,082	29,691	29,666	29,556	30,258
16 to 59/54 years: ¹																			
A.....	63,678	63,897	64,309	64,714	65,190	65,784	66,530	67,279	68,244	69,241	70,263	71,333	72,441	73,537	74,625	75,526	76,322	76,911	77,291
B.....																	76,144	76,525	76,653
C.....																	76,055	76,333	76,327
D.....																	75,966	76,140	76,016
60/55 years and over: ²	21,578	22,316	23,093	23,919	24,742	25,496	26,140	26,687	27,139	27,515	27,857	28,192	28,517	28,817	29,140	29,592	30,191	30,938	31,856

¹ Males, 16 to 59 years; females, 16 to 54 years. In Soviet usage these ages are referred to as the "able-bodied" ages.

² Males, 60 years and over; females, 55 years and over.

Source: Prepared by the Foreign Demographic Analysis Division, Bureau of the Census, U.S. Department of Commerce. The assumptions used in the preparation of the projections are as follows:

Mortality: The official age-specific death rates for 1958-59 were used to construct the base life table. A single assumption was made about the future course of mortality; namely, that the age-specific death rates will decline from the levels assumed for 1958-59.

Fertility: Series A: That the gross reproduction rate (GRR) will rise from its level of 130 in 1961 to 140 in 1962 and that it will continue to rise by a constant annual amount until 1970, after which it will stabilize at 160. Series B: That the GRR will remain constant at the 1961 level of 130 throughout the projection period. Series C: That the GRR will be the arithmetic mean of those used for assumptions B and D, stabilizing at 115 in 1970. Series D: That the GRR will decline to 120 in 1962 and will continue to decline by a constant annual amount until 1970, after which it will stabilize at 100.

TABLE A-3.—Estimated and projected total population, births, and deaths, by sex, U.S.S.R.: 1950-81 (model 1)

[In thousands. Population figures are as of Jan. 1; other figures relate to the indicated year]

Year and sex	Series A				Series B				Series C				Series D			
	Popula- tion	Net change	Births	Deaths	Popula- tion	Net change	Births	Deaths	Popula- tion	Net change	Births	Deaths	Popula- tion	Net change	Births	Deaths
BOTH SEXES																
1950	178,554	3,061	4,808	1,747												
1951	181,015	3,169	4,946	1,777												
1952	184,784	3,184	4,939	1,755												
1953	187,068	3,032	4,756	1,724												
1954	191,000	3,411	5,126	1,715												
1955	194,411	3,433	5,040	1,607												
1956	197,844	3,513	5,030	1,617												
1957	201,357	3,577	5,160	1,583												
1958	204,934	3,744	5,232	1,488												
1959	208,678	3,664	5,264	1,600												
1960	212,342	3,814	5,335	1,521												
1961	216,156	3,641	5,210	1,569												
1962	219,797	3,788	5,368	1,580	219,797	3,416	4,984	1,568	219,797	3,231	4,793	1,562	219,797	3,044	4,601	1,557
1963	223,585	3,686	5,270	1,584	223,213	3,256	4,824	1,568	223,028	3,038	4,602	1,564	222,841	2,824	4,379	1,555
1964	227,271	3,620	5,224	1,604	226,469	3,098	4,684	1,586	226,066	2,822	4,395	1,573	225,665	2,580	4,143	1,503
1965	230,801	3,606	5,217	1,611	229,567	2,994	4,582	1,588	228,888	2,689	4,265	1,576	228,245	2,383	3,948	1,565
1966	234,497	3,583	5,219	1,636	232,561	2,910	4,523	1,613	231,577	2,576	4,174	1,598	230,628	2,239	3,827	1,588
1967	238,080	3,623	5,267	1,644	235,471	2,886	4,504	1,618	234,153	2,516	4,123	1,607	232,867	2,149	3,742	1,593
1968	241,703	3,722	5,394	1,672	238,357	2,883	4,524	1,641	236,669	2,481	4,107	1,626	235,016	2,041	3,654	1,613
1969	245,425	3,861	5,562	1,701	241,240	2,906	4,576	1,670	239,160	2,426	4,083	1,657	237,057	1,951	3,590	1,630
1970	249,286	3,995	5,728	1,733	244,146	2,957	4,654	1,697	241,576	2,436	4,117	1,681	239,008	1,911	3,580	1,660
1971	253,497	4,089	5,851	1,762	247,103	3,024	4,754	1,730	244,012	2,492	4,205	1,713	240,919	1,959	3,657	1,698
1972	257,370	4,191	5,992	1,801	250,127	3,066	4,869	1,773	246,504	2,554	4,306	1,752	242,878	2,010	3,745	1,735
1973	261,561	4,305	6,141	1,836	253,223	3,186	4,989	1,803	249,058	2,628	4,414	1,786	244,888	2,069	3,838	1,769
1974	265,866	4,419	6,291	1,872	256,409	3,273	5,111	1,838	251,686	2,697	4,522	1,825	246,957	2,127	3,932	1,806
1975	270,285	4,528	6,440	1,912	259,682	3,355	5,233	1,878	254,383	2,767	4,629	1,862	249,084	2,180	4,025	1,845
1976	274,811	4,645	6,591	1,946	263,037	3,436	5,354	1,918	257,150	2,836	4,737	1,901	251,264	2,234	4,119	1,885
1977	279,458	4,828	6,815	1,987	266,473	3,591	5,537	1,946	259,986	2,965	4,898	1,933	253,498	2,340	4,259	1,919
1978	284,286	5,076	7,110	2,034	270,064	3,770	5,777	2,007	262,951	3,122	5,110	1,988	255,838	2,472	4,444	1,972
1979	289,362	5,418	7,499	2,081	273,834	4,043	6,093	2,050	266,073	3,362	5,390	2,028	258,310	2,674	4,687	2,013
1980	294,780	5,722	7,848	2,126	277,877	4,289	6,377	2,088	269,435	3,563	5,641	2,078	260,984	2,848	4,905	2,057
1981	300,602				282,166				272,998				263,832			

TABLE A-3—Estimated and projected total population, births, and deaths, by sex, U.S.S.R.: 1950-81 (model 1)—Continued

[In thousands. Population figures are as of Jan. 1; other figures relate to the indicated year]

Year and sex	Series A				Series B				Series C				Series D			
	Population	Net change	Births	Deaths	Population	Net change	Births	Deaths	Population	Net change	Births	Deaths	Population	Net change	Births	Deaths
MALES																
1950	77,600	1,682	2,476	794												
1951	79,282	1,724	2,547	823												
1952	81,006	1,738	2,544	806												
1953	82,744	1,662	2,449	787												
1954	84,406	1,852	2,640	788												
1955	86,258	1,860	2,596	736												
1956	88,118	1,898	2,590	692												
1957	90,016	1,942	2,657	715												
1958	91,958	2,023	2,694	671												
1959	93,981	1,994	2,711	717												
1960	95,975	2,074	2,748	674												
1961	98,049	1,995	2,683	688												
1962	100,044	2,076	2,765	689	100,044	1,885	2,567	682	100,044	1,790	2,469	679	100,044	1,694	2,370	676
1963	102,120	2,023	2,714	691	101,929	1,803	2,484	681	101,834	1,691	2,370	679	101,738	1,581	2,255	674
1964	104,143	1,994	2,691	697	103,732	1,725	2,413	688	103,525	1,584	2,264	680	103,319	1,460	2,134	674
1965	106,137	1,986	2,686	708	105,457	1,673	2,359	686	105,109	1,516	2,196	680	104,779	1,360	2,033	673
1966	108,123	1,980	2,688	708	107,130	1,635	2,330	695	106,625	1,464	2,150	686	106,139	1,290	1,971	681
1967	110,103	2,000	2,712	712	108,765	1,621	2,319	698	108,089	1,431	2,123	692	107,429	1,243	1,927	684
1968	112,103	2,001	2,778	717	110,386	1,630	2,330	700	109,520	1,424	2,115	691	108,672	1,197	1,882	685
1969	114,164	2,132	2,805	733	112,016	1,642	2,357	715	110,944	1,396	2,103	707	109,869	1,154	1,849	695
1970	116,296	2,204	2,950	746	113,658	1,673	2,397	724	112,340	1,404	2,121	717	111,023	1,136	1,844	708
1971	118,500	2,260	3,013	753	115,331	1,712	2,448	736	113,744	1,440	2,165	725	112,159	1,165	1,853	718
1972	120,760	2,319	3,086	767	117,043	1,757	2,508	751	115,184	1,480	2,218	738	113,324	1,200	1,929	729
1973	123,079	2,381	3,163	782	118,800	1,807	2,570	763	116,664	1,520	2,274	754	114,624	1,233	1,977	744
1974	125,460	2,441	3,240	799	120,607	1,853	2,632	779	118,184	1,553	2,329	774	115,767	1,263	2,025	762
1975	127,901	2,500	3,317	817	122,460	1,898	2,695	797	119,739	1,598	2,384	786	117,020	1,296	2,073	777
1976	130,401	2,564	3,394	830	124,358	1,943	2,757	814	121,337	1,635	2,439	804	118,316	1,326	2,121	795
1977	132,965	2,662	3,506	847	126,301	2,031	2,851	820	122,672	1,708	2,522	814	119,642	1,387	2,193	806
1978	135,627	2,795	3,662	867	128,332	2,121	2,976	855	124,680	1,790	2,632	842	121,026	1,458	2,280	831
1979	138,422	2,970	3,862	892	130,453	2,265	3,138	873	126,470	1,917	2,776	859	122,487	1,563	2,414	851
1980	141,392	3,126	4,042	916	132,718	2,393	3,284	891	128,387	2,018	2,905	887	124,050	1,652	2,526	874
1981	144,518				135,111				130,405				125,702			
FEMALES																
1950	100,954	1,379	2,332	953												
1951	102,333	1,445	2,399	954												
1952	103,778	1,446	2,395	949												

1953	105,224	1,370	2,307	937																		
1954	106,594	1,559	2,486	927																		
1955	108,153	1,573	2,444	871																		
1956	109,726	1,615	2,440	825																		
1957	111,341	1,635	2,503	868																		
1958	112,976	1,721	2,538	817																		
1959	114,697	1,670	2,553	883																		
1960	116,367	1,740	2,587	847																		
1961	118,107	1,646	2,527	881																		
1962	119,753	1,712	2,603	891	119,753	1,531	2,417	886	119,753	1,441	2,324	883	119,753	1,350	2,231						881	
1963	121,465	1,663	2,556	893	121,284	1,453	2,340	887	121,194	1,347	2,232	885	121,103	1,243	2,124						881	
1964	123,128	1,626	2,533	907	122,737	1,373	2,271	898	122,541	1,238	2,131	893	122,346	1,120	2,009						889	
1965	124,754	1,620	2,531	911	124,110	1,321	2,223	902	123,779	1,173	2,069	896	123,466	1,023	1,915						892	
1966	126,374	1,603	2,531	928	125,431	1,275	2,193	918	124,952	1,112	2,024	912	124,489	949	1,856						907	
1967	127,977	1,623	2,555	932	126,706	1,265	2,185	920	126,064	1,065	2,000	915	125,438	906	1,815						909	
1968	129,600	1,661	2,616	955	127,971	1,253	2,194	941	127,149	1,057	1,992	935	126,344	844	1,772						928	
1969	131,261	1,729	2,697	968	129,224	1,264	2,219	955	128,206	1,030	1,980	950	127,188	797	1,741						944	
1970	132,990	1,791	2,778	987	130,488	1,284	2,257	973	129,236	1,032	1,996	964	127,985	775	1,736						961	
1971	134,781	1,829	2,838	1,009	131,772	1,312	2,306	994	129,268	1,052	2,040	988	128,760	794	1,774						980	
1972	136,610	1,872	2,906	1,034	133,054	1,339	2,361	1,022	131,320	1,074	2,088	1,014	129,554	810	1,816						1,006	
1973	138,482	1,924	2,978	1,054	134,423	1,379	2,419	1,040	132,394	1,108	2,140	1,032	130,364	836	1,861						1,025	
1974	140,406	1,978	3,051	1,073	135,802	1,420	2,479	1,059	133,502	1,142	2,193	1,051	131,200	864	1,907						1,043	
1975	142,384	2,028	3,123	1,095	137,222	1,457	2,538	1,081	134,644	1,169	2,245	1,076	132,064	884	1,952						1,068	
1976	144,412	2,081	3,197	1,116	138,679	1,493	2,597	1,104	135,813	1,201	2,298	1,097	132,948	908	1,998						1,090	
1977	146,493	2,166	3,306	1,140	140,172	1,560	2,686	1,126	137,014	1,257	2,376	1,119	133,856	953	2,066						1,113	
1978	148,659	2,281	3,448	1,167	141,732	1,649	2,801	1,152	138,271	1,332	2,478	1,146	134,809	1,014	2,155						1,141	
1979	150,940	2,448	3,637	1,189	143,351	1,778	2,955	1,177	139,603	1,445	2,614	1,169	135,823	1,111	2,273						1,162	
1980	153,388	2,596	3,806	1,210	145,159	1,896	3,093	1,197	141,048	1,545	2,736	1,191	136,934	1,196	2,379						1,183	
1981	155,934				147,055				142,593				138,130									

Source: Same as for tables A-1 and A-2.

TABLE A-4.—Estimated population of the U.S.S.R., by age and sex: Jan. 1 of each year, 1950-62 (model 3)

[In thousands]

Age and sex	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
BOTH SEXES													
All ages.....	180,342	183,146	186,109	189,152	192,072	195,342	198,551	201,790	205,182	208,678	212,210	215,816	219,305
Under 5 years.....	18,472	19,969	20,960	21,961	22,317	22,929	23,273	23,515	23,779	24,306	24,546	24,902	25,108
5 to 9 years.....	13,624	12,361	12,026	13,163	15,665	18,095	19,584	20,572	21,626	22,023	22,621	22,985	23,263
10 to 14 years.....	21,717	22,244	21,957	19,597	16,311	13,529	12,280	11,949	13,086	15,581	18,010	19,499	20,488
15 to 19 years.....	18,241	18,093	18,574	19,613	20,515	21,530	22,069	21,797	19,465	16,206	13,447	12,213	11,890
20 to 24 years.....	19,954	19,672	19,038	18,520	18,400	17,095	17,809	18,364	19,414	20,329	21,350	21,900	21,643
25 to 29 years.....	13,242	14,936	16,783	18,317	19,251	19,626	19,375	18,774	18,283	18,180	17,790	17,679	18,183
30 to 34 years.....	10,574	10,433	10,511	10,934	11,784	12,098	14,683	16,518	18,049	18,989	19,375	19,145	18,565
35 to 39 years.....	12,611	12,124	11,518	10,968	10,592	10,361	10,240	10,326	10,752	11,530	12,806	14,478	16,303
40 to 44 years.....	11,531	11,955	12,359	12,591	12,571	12,326	11,861	11,281	10,754	10,398	10,177	10,065	10,155
45 to 49 years.....	9,788	10,033	10,261	10,521	10,833	11,191	11,620	12,026	12,264	12,254	12,026	11,581	11,024
50 to 54 years.....	7,854	8,163	8,485	8,804	9,105	9,388	9,635	9,864	10,127	10,438	10,795	11,221	11,624
55 to 59 years.....	6,364	6,518	6,714	6,939	7,190	7,467	7,768	8,085	8,398	8,694	8,973	9,212	9,439
60 to 64 years.....	5,619	5,640	5,655	5,696	5,776	5,892	6,044	6,234	6,450	6,692	6,956	7,245	7,549
65 to 69 years.....	4,395	4,609	4,624	4,724	4,801	4,855	4,885	4,910	4,957	5,039	5,153	5,299	5,477
70 to 74 years.....	3,087	3,159	3,233	3,313	3,398	3,492	3,598	3,703	3,794	3,865	3,918	3,953	3,983
75 years and over.....	3,269	3,337	3,411	3,491	3,577	3,668	3,767	3,872	3,984	4,104	4,267	4,439	4,611
Under 16 years.....	57,262	58,113	59,013	59,450	59,102	59,016	59,214	59,831	60,881	63,449	66,868	70,219	72,320
16 to 64/59 years.....	102,668	104,250	105,905	108,049	110,796	113,572	115,939	117,868	119,507	119,507	119,132	118,684	119,356
65/60 years and over.....	20,412	20,783	21,191	21,653	22,174	22,754	23,398	24,091	24,794	25,488	26,210	26,913	27,629
MALES													
All ages.....	78,001	79,622	81,310	83,034	84,694	86,529	88,332	90,151	92,043	93,981	95,937	97,932	99,867
Under 5 years.....	9,414	10,171	10,662	11,172	11,356	11,682	11,863	11,993	12,133	12,408	12,545	12,740	12,855
5 to 9 years.....	6,859	6,254	6,120	6,711	7,984	9,205	9,954	10,442	10,978	11,182	11,602	11,695	11,847
10 to 14 years.....	10,776	11,064	10,950	9,796	8,177	6,805	6,208	6,077	6,668	7,936	9,155	9,902	10,391
15 to 19 years.....	9,004	8,956	9,192	9,701	10,143	10,679	10,972	10,865	9,725	8,120	6,760	6,171	6,043
20 to 24 years.....	9,213	9,243	9,098	8,985	8,879	8,884	8,841	9,083	9,597	10,049	10,581	10,879	10,777
25 to 29 years.....	5,353	6,262	7,270	8,143	8,733	9,063	9,101	8,967	8,864	8,912	8,768	8,732	8,977
30 to 34 years.....	4,055	3,967	3,978	4,175	4,603	5,256	6,155	7,152	8,017	8,606	8,937	8,982	8,855
35 to 39 years.....	4,860	4,675	4,446	4,232	4,078	3,970	3,890	3,903	4,099	4,523	5,169	6,059	7,047
40 to 44 years.....	4,517	4,679	4,811	4,874	4,846	4,741	4,563	4,344	4,140	3,993	3,889	3,813	3,827
45 to 49 years.....	3,404	3,596	3,802	4,005	4,191	4,361	4,525	4,659	4,724	4,701	4,603	4,433	4,224
50 to 54 years.....	2,788	2,833	2,883	2,960	3,079	3,236	3,424	3,625	3,824	4,006	4,174	4,336	4,466
55 to 59 years.....	2,322	2,380	2,446	2,510	2,568	2,620	2,664	2,713	2,789	2,906	3,057	3,235	3,430
60 to 64 years.....	1,907	1,943	1,982	2,022	2,065	2,114	2,170	2,234	2,294	2,348	2,396	2,436	2,484

65 to 69 years.....	1,402	1,488	1,514	1,544	1,573	1,602	1,636	1,672	1,711	1,751	1,798	1,851	1,908
70 to 74 years.....	997	1,020	1,042	1,066	1,092	1,120	1,145	1,170	1,195	1,220	1,240	1,275	1,307
75 years and over.....	1,070	1,091	1,114	1,138	1,164	1,191	1,221	1,252	1,285	1,320	1,357	1,393	1,429
Under 16 years.....	28,745	29,236	29,744	30,022	29,907	29,919	30,065	30,416	30,980	32,306	34,063	35,783	36,862
16 to 64/69 years ¹	43,820	44,844	45,914	47,242	48,893	50,683	52,095	53,407	54,578	55,036	55,077	55,194	55,877
65/60 years and over ²	5,436	5,542	5,652	5,770	5,894	6,027	6,172	6,328	6,485	6,639	6,797	6,955	7,128
FEMALES													
All ages.....	102,341	103,524	104,799	106,118	107,378	108,813	110,219	111,639	113,139	114,697	116,273	117,884	119,438
Under 5 years.....	9,058	9,798	10,298	10,789	10,961	11,247	11,410	11,522	11,646	11,898	12,001	12,162	12,253
5 to 9 years.....	6,765	6,107	5,906	6,452	7,681	8,890	9,630	10,130	10,048	10,841	11,119	11,290	11,416
10 to 14 years.....	10,941	11,180	11,007	9,801	8,134	6,724	6,072	5,872	6,418	7,645	8,855	9,597	10,097
15 to 19 years.....	9,237	9,137	9,382	9,912	10,367	10,851	11,097	10,932	9,740	8,086	6,687	6,042	5,847
20 to 24 years.....	10,741	10,429	9,940	9,535	9,369	9,111	9,028	9,281	9,817	10,280	10,769	11,021	10,866
25 to 29 years.....	7,889	8,674	9,513	10,174	10,518	10,563	10,274	9,807	9,419	9,268	9,022	8,947	9,206
30 to 34 years.....	6,519	6,466	6,533	6,759	7,161	7,742	8,528	9,366	10,032	10,383	10,458	10,163	9,710
35 to 39 years.....	7,751	7,449	7,072	6,736	6,514	6,391	6,350	6,423	6,653	7,057	7,637	8,419	9,256
40 to 44 years.....	7,014	7,276	7,548	7,717	7,725	7,585	7,298	6,937	6,614	6,405	6,288	6,252	6,328
45 to 49 years.....	6,384	6,437	6,459	6,516	6,642	6,830	7,095	7,367	7,540	7,553	7,423	7,148	6,800
50 to 54 years.....	5,066	5,330	5,602	5,844	6,026	6,152	6,211	6,239	6,303	6,432	6,621	6,885	7,158
55 to 59 years.....	4,042	4,138	4,208	4,429	4,622	4,847	5,104	5,372	5,608	5,788	5,916	5,977	6,009
60 to 64 years.....	3,712	3,697	3,673	3,674	3,711	3,778	3,874	4,000	4,156	4,344	4,560	4,809	5,065
65 to 69 years.....	2,933	3,021	3,110	3,180	3,228	3,253	3,249	3,238	3,245	3,288	3,355	3,448	3,560
70 to 74 years.....	2,090	2,139	2,191	2,247	2,306	2,372	2,453	2,533	2,599	2,645	2,672	2,678	2,676
75 years and over.....	2,199	2,246	2,297	2,353	2,413	2,477	2,546	2,620	2,699	2,784	2,910	3,046	3,182
Under 16 years.....	28,517	28,877	29,269	29,428	29,195	29,097	29,149	29,415	29,901	31,143	32,805	34,436	35,458
16 to 64/59 years ¹	58,848	59,406	59,991	60,807	61,903	62,989	63,844	64,461	64,929	64,705	64,055	63,490	63,479
65/60 years and over ²	14,976	15,241	15,539	15,883	16,280	16,727	17,226	17,763	18,309	18,849	19,413	19,958	20,501

¹ Males, 16 to 59 years; females, 16 to 54 years. In Soviet usage these age groups are referred to as the "able-bodied" ages.

² Males, 60 years and over; females, 55 years and over.

Source: Prepared by the Foreign Demographic Analysis Division, Bureau of the Census, U.S. Department of Commerce. The numbers of births are consistent with the

officially reported crude birth rates. Death rates by age and sex were assumed to decline throughout the period. The life table used as the basis for distributing deaths by age and sex is based on the 1958-59 age-specific death rates for the U.S.S.R. for ages under 45 years and the 1953-59 age-specific rates for the city of Kalinin for ages 45 years and over.

TABLE A-5—Projected population of the U.S.S.R., by age and sex: Jan. 1 of each year, 1963-81 (model 3)

[In thousands]

Series and age	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
BOTH SEXES																			
All ages:																			
A.....	222,953	226,510	230,013	233,508	236,998	240,528	244,159	247,941	251,866	255,883	260,017	264,260	268,628	273,102	277,690	282,469	287,509	292,895	298,598
B.....	222,580	225,704	228,686	231,564	234,363	237,170	239,958	242,784	245,658	248,612	251,648	254,772	257,989	261,281	264,664	268,196	271,920	275,942	280,204
C.....	222,393	225,303	228,006	230,576	233,057	235,477	237,859	240,204	242,554	244,977	247,468	250,032	252,666	255,374	258,154	261,063	264,144	267,467	271,005
D.....	222,206	224,900	227,359	229,623	231,766	233,814	235,758	237,624	239,455	241,341	243,282	245,284	247,348	249,467	251,642	253,924	256,354	258,988	261,809
Under 5 years:																			
A.....	25,357	25,425	25,443	25,388	25,449	25,402	25,564	25,930	26,466	27,113	27,849	28,608	29,352	30,076	30,824	31,650	32,626	33,834	35,240
B.....	24,984	24,619	24,116	23,444	22,834	22,412	22,158	22,088	22,188	22,441	22,820	23,299	23,850	24,434	25,044	25,715	26,509	27,489	28,632
C.....	24,797	24,218	23,436	22,456	21,508	20,903	20,456	20,183	20,066	20,122	20,324	20,646	21,094	21,616	22,156	22,751	23,451	24,318	25,327
D.....	24,610	23,815	22,789	21,503	20,217	19,424	18,753	18,244	17,911	17,769	17,791	17,991	18,345	18,797	19,265	19,782	20,392	21,146	22,025
5 to 9 years:																			
A.....	23,538	24,066	24,319	24,688	24,910	25,171	25,248	25,281	25,236	25,301	25,266	25,432	25,802	26,337	26,986	27,728	28,491	29,236	29,961
B.....						24,803	24,453	23,966	23,306	22,702	22,293	22,047	21,978	22,081	22,336	22,721	23,203	23,755	24,344
C.....						24,610	24,056	23,291	22,324	21,386	20,792	20,355	20,085	19,971	20,027	20,233	20,561	21,014	21,535
D.....						24,435	23,658	22,650	21,380	20,103	19,322	18,660	18,156	17,828	17,687	17,713	17,917	18,273	18,726
10 to 14 years:																			
A.....	21,546	21,949	22,552	22,919	23,199	23,476	24,006	24,262	24,632	24,857	25,120	25,200	25,236	25,191	25,262	25,222	25,392	25,758	26,294
B.....											24,753	24,406	23,923	23,268	22,666	22,258	22,010	21,941	22,046
C.....											24,570	24,011	23,249	22,289	21,353	20,759	20,321	20,051	19,938
D.....											24,387	23,613	22,609	21,344	20,072	19,292	18,630	18,125	17,798
15 to 19 years:																			
A.....	13,029	15,518	17,943	19,433	20,425	21,484	21,889	22,494	22,862	23,143	23,421	23,952	24,209	24,583	24,814	25,079	25,162	25,198	25,156
B.....																24,712	24,369	23,888	23,235
C.....																24,530	23,973	23,215	22,258
D.....																24,347	23,577	22,575	21,313
20 to 24 years.....	19,334	16,099	13,362	12,139	11,825	12,964	15,448	17,868	19,358	20,350	21,410	21,815	22,420	22,789	23,071	23,350	23,882	24,141	24,615
25 to 29 years.....	19,239	20,169	21,190	21,745	21,496	19,209	15,997	13,278	12,065	11,760	12,899	15,378	17,793	19,283	20,275	21,353	21,740	22,345	22,714
30 to 34 years.....	18,093	18,002	17,624	17,524	18,033	19,092	20,028	21,049	21,604	21,358	19,087	15,896	13,193	11,990	11,695	12,834	15,308	17,718	19,208
35 to 39 years.....	17,825	18,766	19,158	18,941	18,372	17,909	17,826	17,459	17,369	17,885	18,943	19,875	20,892	21,446	21,204	18,952	15,786	13,104	11,014
40 to 44 years.....	10,584	11,408	12,628	14,284	16,094	17,602	18,534	18,928	18,718	18,160	17,706	17,628	17,272	17,187	17,701	18,755	19,684	20,694	21,245
45 to 49 years.....	10,519	10,178	9,969	9,866	9,961	10,388	11,201	12,407	14,039	15,820	17,308	18,227	18,615	18,413	17,865	17,424	17,354	17,008	16,929
50 to 54 years.....	11,866	11,865	11,651	11,227	10,966	10,212	9,887	9,690	9,598	9,695	10,117	10,919	12,099	13,692	15,432	17,484	17,780	18,159	17,963
55 to 59 years.....	9,695	9,997	10,348	10,763	11,157	11,396	11,400	11,196	10,793	10,290	9,825	9,518	9,335	9,248	9,346	9,756	10,531	11,675	13,216
60 to 64 years.....	7,847	8,135	8,402	8,631	8,849	9,093	9,383	9,720	10,116	10,491	10,719	10,723	10,533	10,159	9,687	9,255	8,972	8,804	8,727
65 to 69 years.....	5,678	5,902	6,147	6,416	6,700	6,978	7,244	7,491	7,705	7,906	8,132	8,400	8,711	9,075	9,419	9,629	9,637	9,472	9,142
70 to 74 years.....	4,028	4,106	4,211	4,341	4,495	4,673	4,869	5,084	5,317	5,566	5,809	6,041	6,255	6,435	6,608	6,803	7,037	7,304	7,621
75 years and over....	4,775	4,925	5,066	5,203	5,337	5,479	5,635	5,804	5,988	6,188	6,406	6,648	6,911	7,198	7,501	7,813	8,131	8,445	8,753

Under 16 years:																			
A.....	73,968	75,471	76,434	77,319	78,011	78,635	79,253	80,197	81,025	82,004	83,098	84,205	85,370	86,667	88,034	89,727	91,556	93,844	96,514
B.....	73,595	74,665	75,107	75,375	75,396	75,277	75,052	75,040	74,817	74,733	74,720	74,717	74,731	74,846	75,008	75,454	76,342	77,683	79,430
C.....	73,408	74,264	74,427	74,387	74,070	73,584	72,953	72,460	71,713	71,098	70,549	69,977	69,408	68,939	68,498	68,321	68,740	69,604	70,903
D.....	73,221	73,861	73,780	73,434	72,779	71,921	70,852	69,880	68,614	67,462	66,363	65,229	64,090	63,032	61,986	61,182	61,132	61,522	62,347
16-59/64 years: ¹																			
A.....	120,583	121,768	123,361	124,947	126,687	128,580	130,665	132,653	134,975	137,308	139,722	142,296	145,000	147,744	150,538	153,115	155,664	157,956	160,033
B.....																	155,208	157,164	158,723
C.....																	155,115	156,708	158,051
D.....																	154,933	156,371	157,411
60/65 years and over: ²																			
	28,402	29,271	30,218	31,242	32,300	33,313	34,241	35,091	35,866	36,571	37,197	37,759	38,258	38,691	39,118	39,627	40,289	41,095	42,051
MALES																			
All ages:																			
A.....	101,885	103,859	105,810	107,760	109,707	111,678	113,704	115,811	117,991	120,227	122,521	124,874	127,299	129,775	132,318	134,957	137,736	140,690	143,810
B.....	101,694	103,446	105,129	106,762	108,366	109,955	111,547	113,165	114,806	116,495	118,225	120,006	121,838	123,710	125,632	127,634	129,740	131,990	134,372
C.....	101,598	103,240	104,780	106,255	107,686	109,086	110,471	111,842	113,213	114,629	116,080	117,573	119,106	120,678	122,291	123,973	125,746	127,644	129,652
D.....	101,502	103,033	104,448	105,766	107,023	108,234	109,394	110,516	111,623	112,764	113,932	115,136	116,377	117,647	118,950	120,310	121,749	123,292	124,934
Under 5 years:																			
A.....	12,992	13,037	13,049	13,023	13,055	13,033	13,119	13,309	13,586	13,922	14,299	14,689	15,073	15,445	15,831	16,255	16,758	17,378	18,103
B.....	12,801	12,624	12,368	12,025	11,714	11,499	11,370	11,337	11,390	11,523	11,717	11,964	12,248	12,548	12,862	13,207	13,616	14,118	14,707
C.....	12,705	12,418	12,019	11,518	11,034	10,724	10,497	10,360	10,301	10,332	10,435	10,601	10,833	11,101	11,379	11,685	12,045	12,491	13,010
D.....	12,609	12,211	11,687	11,029	10,371	9,966	9,624	9,363	9,195	9,124	9,135	9,238	9,421	9,653	9,894	10,160	10,474	10,861	11,314
5 to 9 years:																			
A.....	11,996	12,273	12,417	12,620	12,744	12,887	12,937	12,957	12,935	12,971	12,957	13,045	13,239	13,515	13,851	14,231	14,623	15,006	15,377
B.....						12,698	12,529	12,283	11,946	11,638	11,431	11,309	11,276	11,332	11,464	11,662	11,908	12,192	12,495
C.....						12,604	12,326	11,937	11,442	10,963	10,662	10,441	10,305	10,249	10,279	10,384	10,553	10,786	11,053
D.....						12,510	12,122	11,608	10,958	10,306	9,908	9,571	9,315	9,149	9,078	9,091	9,196	9,379	9,611
10 to 14 years:																			
A.....	10,929	11,139	11,462	11,657	11,811	11,962	12,240	12,386	12,590	12,715	12,859	12,908	12,926	12,900	12,936	12,918	13,009	13,199	13,477
B.....											12,671	12,501	12,253	11,915	11,606	11,400	11,276	11,243	11,300
C.....											12,577	12,577	12,299	11,413	10,933	10,632	10,411	10,275	10,219
D.....											12,483	12,095	11,580	10,930	10,278	9,881	9,544	9,287	9,122
15 to 19 years:																			
A.....	6,636	7,898	9,113	9,861	10,353	10,892	11,104	11,429	11,625	11,780	11,932	12,211	12,358	12,563	12,689	12,831	12,878	12,893	12,867
B.....																12,643	12,472	12,223	11,884
C.....																12,550	12,269	11,878	11,384
D.....																12,456	12,067	11,551	11,001
20 to 24 years:																			
	9,647	8,055	6,710	6,127	6,003	6,596	7,853	9,063	9,811	10,303	10,543	11,055	11,380	11,577	11,733	11,886	12,166	12,314	12,619
25 to 29 years:																			
	9,493	9,957	10,486	10,785	10,688	9,569	7,993	6,660	6,082	5,963	6,586	7,808	9,013	9,761	10,263	10,793	11,005	11,330	11,627
30 to 34 years:																			
	8,759	8,812	8,673	8,642	8,888	9,405	9,870	10,398	10,697	10,603	9,493	7,931	6,610	6,037	5,923	6,516	7,763	8,963	9,911
35 to 39 years:																			
	7,902	8,488	8,819	8,869	8,747	8,655	8,711	8,578	8,552	8,800	9,315	9,777	10,303	10,602	10,510	9,410	7,804	6,557	5,971
40 to 44 years:																			
	4,024	4,443	5,084	5,962	6,938	7,782	8,361	8,691	8,743	8,626	8,537	8,595	8,466	8,443	8,690	9,203	9,663	10,184	10,480
45 to 49 years:																			
	4,030	3,890	3,792	3,720	3,796	3,932	4,344	4,975	5,837	6,794	7,623	8,192	8,516	8,569	8,456	8,373	8,434	8,310	8,290
50 to 54 years:																			
	4,533	4,514	4,424	4,263	4,067	3,882	3,750	3,658	3,592	3,610	3,803	4,206	4,820	5,657	6,586	7,391	7,944	8,259	8,313
55 to 59 years:																			
	3,621	3,794	3,956	4,112	4,238	4,306	4,290	4,204	4,053	3,870	3,694	3,571	3,487	3,424	3,443	3,629	4,015	4,605	5,408
60 to 64 years:																			
	2,557	2,670	2,812	2,981	3,164	3,341	3,503	3,657	3,801	3,920	3,983	3,969	3,890	3,753	3,585	3,425	3,313	3,238	3,181
65 to 69 years:																			
	1,960	2,009	2,062	2,090	2,137	2,206	2,310	2,438	2,590	2,752	2,910	3,055	3,192	3,320	3,425	3,481	3,471	3,405	3,288
70 to 74 years:																			
	1,339	1,374	1,415	1,459	1,506	1,552	1,593	1,630	1,662	1,703	1,764	1,852	1,960	2,085	2,218	2,348	2,466	2,578	2,686
75 years and over:																			
	1,467	1,506	1,540	1,589	1,632	1,678	1,726	1,778	1,835	1,893	1,953	2,012	2,066	2,124	2,189	2,267	2,364	2,471	2,592

See footnotes at end of table, p. 569.

TABLE A-5.—Projected population of the U.S.S.R., by age and sex: Jan. 1 of each year, 1963-81 (model 3)—Continued

[In thousands]

Series and age	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
MALES—con.																			
Under 16 years:																			
A-----	37,709	38,494	39,008	39,495	39,871	40,213	40,552	41,056	41,501	42,023	42,597	43,176	43,788	44,454	45,158	46,028	46,972	48,149	49,525
B-----	37,518	38,081	38,327	38,497	38,530	38,490	38,395	38,410	38,816	38,291	38,301	38,308	38,327	38,389	38,472	38,705	39,163	39,854	40,757
C-----	37,422	37,875	37,978	37,990	37,850	37,621	37,319	37,087	36,723	36,425	36,156	35,875	35,595	35,357	35,131	35,044	35,263	35,711	36,381
D-----	37,326	37,668	37,646	37,501	37,187	36,769	36,242	35,761	35,133	34,560	34,008	33,438	32,866	32,326	31,790	31,381	31,359	31,562	31,990
16-59/54 years: ¹																			
A-----	56,853	57,806	58,977	60,146	61,397	62,688	64,020	65,252	66,602	67,934	69,314	70,812	72,403	74,039	75,743	77,408	79,150	80,849	82,538
B-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	78,963	80,444	81,868
C-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	78,869	80,241	81,524
D-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	78,776	80,038	81,197
60/55 years and over ²	7,323	7,559	7,825	8,119	8,439	8,777	9,132	9,503	9,888	10,270	10,610	10,886	11,108	11,282	11,417	11,521	11,614	11,692	11,747
FEMALES																			
All ages:																			
A-----	121,068	122,651	124,203	125,748	127,291	128,850	130,455	132,130	133,875	135,656	137,496	139,386	141,329	143,327	145,372	147,512	149,773	152,205	154,788
B-----	120,886	122,258	123,557	124,802	126,017	127,215	128,411	129,619	130,852	132,117	133,423	134,766	136,151	137,571	139,032	140,562	142,189	143,952	145,832
C-----	120,795	122,063	123,226	124,321	125,371	126,391	127,388	128,362	129,341	130,348	131,388	132,459	133,560	134,696	135,863	137,090	138,398	139,823	141,353
D-----	120,704	121,867	122,911	123,857	124,743	125,580	126,364	127,108	127,832	128,577	129,350	130,148	130,971	131,820	132,692	133,614	134,605	135,696	136,875
Under 5 years:																			
A-----	12,365	12,388	12,394	12,365	12,394	12,369	12,445	12,621	12,880	13,191	13,550	13,919	14,279	14,631	14,993	15,395	15,868	16,456	17,137
B-----	12,183	11,995	11,748	11,419	11,120	10,913	10,788	10,751	10,798	10,918	11,103	11,335	11,602	11,886	12,182	12,508	12,893	13,371	13,925
C-----	12,092	11,800	11,417	10,938	10,474	10,179	9,959	9,823	9,795	9,989	10,045	10,261	10,515	10,777	11,066	11,386	11,746	12,127	12,517
D-----	12,001	11,604	11,102	10,474	9,846	9,458	9,129	8,881	8,716	8,645	8,656	8,753	8,924	9,144	9,371	9,622	9,918	10,285	10,711
5 to 9 years:																			
A-----	11,542	11,793	11,902	12,068	12,166	12,284	12,311	12,324	12,301	12,330	12,309	12,387	12,563	12,822	13,135	13,497	13,868	14,230	14,584
B-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
C-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
D-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
10 to 14 years:																			
A-----	10,617	10,810	11,090	11,262	11,388	11,514	11,766	11,876	12,042	12,142	12,261	12,292	12,310	12,291	12,326	12,304	12,383	12,559	12,817
B-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
C-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
D-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
15 to 19 years:																			
A-----	6,393	7,620	8,830	9,572	10,072	10,592	10,785	11,065	11,237	11,363	11,489	11,741	11,851	12,020	12,125	12,248	12,284	12,305	12,289
B-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
C-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
D-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
20 to 24 years																			
A-----	9,687	8,044	6,652	6,012	5,822	6,368	7,595	8,805	9,547	10,047	10,567	10,760	11,040	11,212	11,338	11,464	11,464	11,715	11,827
B-----	9,746	10,212	10,704	10,960	10,808	9,640	8,004	6,618	5,983	5,797	6,343	7,670	8,780	9,522	10,022	10,522	10,736	11,025	11,187
C-----	9,334	9,190	8,951	8,882	9,145	9,687	10,158	10,651	10,907	10,755	9,594	7,965	6,583	5,953	5,772	6,318	7,545	8,755	9,497

35 to 39 years.....	9,923	10,278	10,339	10,072	9,625	9,254	9,115	8,881	8,817	9,085	9,628	10,098	10,589	10,844	10,604	9,542	7,922	6,547	5,923
40 to 44 years.....	6,560	6,965	7,544	8,322	9,156	9,820	10,173	10,237	9,975	9,534	9,169	9,033	8,806	8,744	9,011	9,552	10,021	10,510	10,765
45 to 49 years.....	6,489	6,288	6,177	6,146	6,225	6,456	6,857	7,432	8,202	9,026	9,685	10,035	10,099	9,844	9,409	9,051	8,920	8,698	8,639
50 to 54 years.....	7,333	7,351	7,227	6,964	6,629	6,330	6,137	6,032	6,006	6,085	6,314	6,713	7,279	8,035	8,846	9,493	9,836	9,900	9,650
55 to 59 years.....	6,074	6,203	6,392	6,651	6,919	7,090	7,110	6,992	6,740	6,420	6,131	5,947	5,848	5,824	5,903	6,127	6,516	7,070	7,808
60 to 64 years.....	5,290	5,465	5,590	5,650	5,685	5,752	5,880	6,063	6,315	6,571	6,736	6,754	6,643	6,406	6,102	5,830	5,659	5,566	5,546
65 to 69 years.....	3,718	3,893	4,095	4,326	4,563	4,772	4,934	5,053	5,115	5,154	5,222	5,345	5,519	5,755	5,994	6,148	6,166	6,067	5,854
70 to 74 years.....	2,689	2,732	2,796	2,882	2,989	3,121	3,276	3,454	3,655	3,863	4,045	4,189	4,295	4,350	4,390	4,455	4,567	4,726	4,935
75 years and over....	3,308	3,419	3,520	3,614	3,705	3,801	3,909	4,026	4,153	4,293	4,453	4,638	4,845	5,074	5,312	5,546	5,767	5,974	6,161
Under 16 years:																			
A.....	36,259	36,977	37,426	37,824	38,140	38,422	38,701	39,141	39,524	39,981	40,501	41,029	41,582	42,213	42,876	43,699	44,584	45,695	46,989
B.....	36,077	36,584	36,780	36,878	36,866	36,787	36,657	36,501	36,501	36,442	36,428	36,409	36,404	36,457	36,536	36,749	37,179	37,829	38,673
C.....	35,986	36,389	36,449	36,397	36,220	35,963	35,634	35,373	34,990	34,673	34,393	34,102	33,813	33,582	33,367	33,277	33,477	33,893	34,522
D.....	35,895	36,193	36,134	35,933	35,592	35,152	34,610	34,119	33,481	32,902	32,355	31,791	31,224	30,706	30,196	29,801	29,773	29,960	30,357
16-59/54 years: ¹																			
A.....	63,730	63,962	64,384	64,801	65,290	65,892	66,645	67,401	68,373	69,374	70,408	71,484	72,597	73,705	74,795	75,707	76,514	77,107	77,495
B.....																	76,335	76,720	76,855
C.....																	76,246	76,527	76,527
D.....																	76,157	76,333	76,214
60/55 years and over: ²	21,079	21,712	22,393	23,123	23,861	24,536	25,109	25,588	25,978	26,301	26,587	26,873	27,150	27,409	27,701	28,106	28,675	29,403	30,304

¹ Males, 16 to 59 years; females, 16 to 54 years. In Soviet usage these age groups are referred to as the "able-bodied" ages.

² Males, 60 years and over; females, 55 years and over.

Source: Prepared by the Foreign Demographic Analysis Division, Bureau of the Census, U.S. Department of Commerce. The assumptions used in the preparation of the projections are as follows:

Mortality: The base life table for 1958-59 combines age-specific death rates for the U.S.S.R. for ages under 45 years with age-specific rates for the city of Kalinin for ages 45 years and over. A single assumption was made about the future course of mortality; namely, that the age-specific death rates will decline from the levels assumed for 1958-59.

Fertility:

Series A: That the gross reproduction rate (GRR) will rise from its level of 130 in 1961 to 140 in 1962 and that it will continue to rise by a constant annual amount until 1970, after which it will stabilize at 160.

Series B: That the GRR will remain constant at the 1961 level of 130 throughout the projection period.

Series C: That the GRR will be the arithmetic mean of those used for assumptions B and D, stabilizing at 115 in 1970.

Series D: That the GRR will decline to 120 in 1962 and will continue to decline by a constant annual amount until 1970, after which it will stabilize at 100.

TABLE A-6.—Estimated and projected total population, births, and deaths, by sex, U.S.S.R., 1950-81 (model 3)

[In thousands. Population figures are as of Jan. 1; other figures relate to the indicated year]

Year and sex	Series A				Series B				Series C				Series D			
	Population	Net change	Births	Deaths	Population	Net change	Births	Deaths	Population	Net change	Births	Deaths	Population	Net change	Births	Deaths
BOTH SEXES																
1950	180,342	2,804	4,808	2,004	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1951	183,146	2,963	4,946	1,983	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1952	186,109	3,043	4,939	1,896	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1953	189,152	2,920	4,756	1,836	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1954	192,072	3,270	5,126	1,856	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1955	195,342	3,209	5,040	1,831	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1956	198,551	3,239	5,030	1,791	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1957	201,790	3,392	5,160	1,768	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1958	205,182	3,496	5,232	1,736	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1959	208,678	3,532	5,264	1,732	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1960	212,210	3,606	5,335	1,729	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1961	215,816	3,489	5,210	1,721	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1962	219,305	3,648	5,371	1,723	219,305	3,275	4,988	1,713	219,305	3,088	4,796	1,708	219,305	2,901	4,604	1,703
1963	222,953	3,557	5,275	1,718	222,580	3,124	4,830	1,706	222,393	2,910	4,606	1,696	222,206	2,694	4,383	1,689
1964	226,510	3,503	5,231	1,728	228,704	2,982	4,690	1,708	225,303	2,703	4,402	1,699	224,900	2,459	4,149	1,690
1965	230,013	3,495	5,225	1,730	228,686	2,878	4,589	1,711	228,006	2,570	4,272	1,702	227,359	2,264	3,953	1,689
1966	233,508	3,490	5,226	1,736	231,564	2,819	4,529	1,710	230,576	2,481	4,181	1,700	229,623	2,143	3,832	1,689
1967	236,998	3,530	5,276	1,746	234,383	2,787	4,512	1,725	233,057	2,420	4,181	1,711	231,766	2,048	2,749	1,701
1968	240,528	3,631	5,401	1,770	237,170	2,788	4,530	1,742	235,477	2,382	4,112	1,730	233,814	1,944	3,659	1,715
1969	244,159	3,782	5,570	1,788	239,958	2,826	4,582	1,756	237,859	2,345	4,089	1,744	235,758	1,866	3,595	1,729
1970	247,941	3,925	5,737	1,812	242,784	2,874	4,662	1,788	240,204	2,350	4,124	1,774	237,624	1,831	3,586	1,755
1971	251,866	4,017	5,861	1,844	245,658	2,954	4,762	1,808	242,554	2,423	4,213	1,790	239,455	1,886	3,663	1,777
1972	255,883	4,134	6,001	1,867	248,612	3,036	4,877	1,841	244,977	2,491	4,314	1,823	241,341	1,941	3,751	1,810
1973	260,017	4,243	6,150	1,907	251,648	3,124	4,997	1,873	247,468	2,564	4,421	1,857	243,282	2,002	3,844	1,842
1974	264,260	4,368	6,299	1,931	254,772	3,217	5,118	1,901	250,032	2,634	4,527	1,893	245,284	2,064	3,937	1,873
1975	268,628	4,474	6,448	1,974	257,989	3,292	5,238	1,946	252,666	2,708	4,634	1,926	247,348	2,119	4,030	1,911
1976	273,102	4,588	6,600	2,012	261,281	3,363	5,362	1,979	255,374	2,780	4,744	1,964	249,467	2,175	4,125	1,950
1977	277,690	4,779	6,825	2,046	264,664	3,532	5,546	2,014	258,154	2,909	4,906	1,997	251,642	2,282	4,266	1,984
1978	282,469	5,040	7,123	2,083	268,196	3,733	5,788	2,055	261,063	3,081	5,120	2,039	253,924	2,430	4,452	2,022
1979	287,509	5,386	7,510	2,124	271,929	4,013	6,102	2,089	264,144	3,323	5,399	2,076	256,354	2,634	4,694	2,060
1980	292,895	5,703	7,861	2,158	275,942	4,262	6,387	2,125	267,467	3,538	5,649	2,111	258,988	2,821	4,913	2,092
1981	298,598	-----	-----	-----	280,204	-----	-----	-----	271,005	-----	-----	-----	261,809	-----	-----	-----

TABLE A-6.—Estimated and projected total population, births, and deaths, by sex, U.S.S.R., 1950-81 (model 3)—Continued

[In thousands. Population figures are as of Jan. 1; other figures relate to the indicated year]

Year and sex	Series A				Series B				Series C				Series D			
	Popu- lation	Net change	Births	Deaths	Popu- lation	Net change	Births	Deaths	Popu- lation	Net change	Births	Deaths	Popu- lation	Net change	Births	Deaths
FEMALES—continued																
1960	116,273	1,611	2,587	976												
1961	117,884	1,554	2,527	973												
1962	119,438	1,630	2,605	975	119,438	1,448	2,419	971	119,438	1,357	2,326	969	119,438	1,266	2,233	967
1963	121,068	1,583	2,559	976	120,886	1,372	2,343	971	120,795	1,268	2,234	966	120,704	1,163	2,126	963
1964	122,651	1,552	2,537	985	122,258	1,299	2,275	976	122,063	1,163	2,135	972	121,867	1,044	2,012	968
1965	124,203	1,646	2,534	989	123,557	1,245	2,226	981	123,226	1,095	2,072	977	122,911	946	1,917	971
1966	125,748	1,543	2,535	992	124,802	1,215	2,197	982	124,321	1,050	2,028	978	123,857	886	1,859	973
1967	127,291	1,559	2,558	999	126,017	1,198	2,188	990	125,371	1,020	2,003	983	124,743	837	1,818	981
1968	128,850	1,605	2,619	1,014	127,215	1,196	2,197	1,001	126,391	997	1,994	997	125,580	784	1,774	990
1969	130,455	1,675	2,702	1,027	128,411	1,208	2,223	1,015	127,388	974	1,984	1,010	126,364	744	1,744	1,000
1970	132,130	1,745	2,782	1,037	129,619	1,233	2,261	1,028	128,362	979	2,000	1,021	127,108	724	1,739	1,015
1971	133,875	1,781	2,843	1,062	130,852	1,265	2,310	1,045	129,341	1,007	2,044	1,037	127,832	745	1,777	1,032
1972	135,656	1,840	2,910	1,070	132,117	1,306	2,365	1,059	130,348	1,040	2,092	1,052	128,577	773	1,819	1,046
1973	137,496	1,890	2,982	1,092	133,423	1,343	2,423	1,080	131,388	1,071	2,144	1,073	129,350	798	1,864	1,066
1974	139,386	1,943	3,054	1,111	134,766	1,385	2,482	1,097	132,459	1,101	2,195	1,094	130,148	823	1,909	1,086
1975	141,329	1,998	3,128	1,130	136,151	1,420	2,541	1,121	133,569	1,136	2,248	1,112	130,971	849	1,955	1,106
1976	143,327	2,045	3,202	1,157	137,571	1,461	2,601	1,140	134,696	1,167	2,301	1,134	131,820	872	2,001	1,129
1977	145,372	2,140	3,310	1,170	139,032	1,530	2,690	1,160	135,863	1,227	2,379	1,152	132,692	922	2,059	1,147
1978	147,512	2,261	3,454	1,193	140,562	1,627	2,807	1,180	137,090	1,308	2,483	1,175	133,614	991	2,169	1,168
1979	149,773	2,432	3,643	1,211	142,189	1,763	2,960	1,197	138,398	1,425	2,619	1,194	134,605	1,091	2,277	1,186
1980	152,205	2,583	3,813	1,230	143,952	1,880	3,098	1,218	139,823	1,530	2,740	1,210	135,696	1,179	2,383	1,204
1981	154,788				145,832				141,353				136,875			

Source: Same as for tables A-4 and A-5.

TABLE A-7.—Total, urban, and rural population of the U.S.S.R., by republic, kray, and oblast: 1959 and 1961

[Population figures in thousands. Figures for 1959 refer to the census of January 15; those for 1961 are official estimates for Jan. 1. A minus (–) denotes a decrease]

Area	Total			Urban			Rural		
	1959	1961	Percent change, 1959 to 1961	1959	1961	Percent change, 1959 to 1961	1959	1961	Percent change, 1959 to 1961
U.S.S.R.....	208,827	216,151	3.5	99,978	108,273	8.3	108,849	107,878	–0.9
R.S.F.S.R.....	117,534	120,554	2.6	61,611	66,195	7.4	55,923	54,359	–2.8
Altayskiy Kray.....	2,683	2,765	3.1	882	967	9.6	1,801	1,798	–.2
Gorno-Altayskaya Autonomous Oblast.....	157	159	1.3	30	31	3.3	127	128	.8
Other.....	2,526	2,606	3.2	852	936	9.9	1,674	1,670	–.2
Krasnodarskiy Kray.....	3,762	3,898	3.6	1,462	1,584	8.3	2,300	2,314	.6
Adygeyskaya Autonomous Oblast.....	285	297	4.2	96	103	7.3	189	194	2.6
Other.....	3,477	3,601	3.6	1,366	1,481	8.4	2,111	2,120	.4
Krasnoyarskiy Kray.....	2,615	2,698	3.2	1,296	1,431	10.4	1,319	1,267	–3.9
Khakasskaya Autonomous Oblast.....	411	425	3.4	222	243	9.5	189	182	–3.7
Taymyrskiy (Dolgan-Nenetskiy) National Okrug.....	33	33	0	20	20	0	13	13	0
Evenskiy National Okrug.....	10	10	0	2	3	50.0	8	7	–12.5
Other.....	2,161	2,230	3.2	1,052	1,165	10.7	1,109	1,065	–4.0
Primorskiy Kray.....	1,381	1,401	1.4	928	989	6.6	453	412	–9.1
Stavropol'skiy Kray.....	1,833	1,957	3.9	587	635	8.2	1,296	1,322	2.0
Karachayev-Cherkesskaya Autonomous Oblast.....	278	300	7.9	66	70	6.1	212	230	8.5
Other.....	1,605	1,657	3.2	521	565	8.4	1,084	1,092	.7
Khabarovskiy Kray.....	1,142	1,166	2.1	848	891	5.1	294	275	–6.5
Yevreyskaya Autonomous Oblast.....	163	161	–1.2	117	117	0	46	44	–4.3
Other.....	979	1,005	2.7	731	774	5.9	248	231	–6.9
Amurskaya Oblast.....	718	728	1.4	429	438	2.1	289	290	.3
Arkhangel'skaya Oblast.....	1,276	1,305	2.3	675	759	12.4	601	546	–9.2
Nenetskiy National Okrug.....	46	37	–19.6	26	17	34.6	20	20	0
Other.....	1,230	1,268	3.1	649	742	14.3	581	526	–9.5

TABLE A-7.—Total, urban, and rural population of the U.S.S.R., by republic, kray, and oblast: 1959 and 1961—Continued
 [Population figures in thousands. Figures for 1959 refer to the census of January 15; those for 1961 are official estimates for Jan. 1. A minus (–) denotes a decrease]

Area	Total			Urban			Rural		
	1959	1961	Percent change, 1959 to 1961	1959	1961	Percent change, 1959 to 1961	1959	1961	Percent change, 1959 to 1961
R.S.F.S.R.—Continued									
Astrakhanskaya Oblast.....	702	734	4.6	365	413	13.2	337	321	-4.7
Belgorodskaya Oblast.....	1,226	1,250	2.0	240	265	10.4	986	985	-.1
Bryanskaya Oblast.....	1,550	1,657	.5	540	584	8.1	1,010	973	-3.7
Vladimirskaya Oblast.....	1,402	1,435	2.4	796	850	6.8	606	585	-3.5
Vologodskaya Oblast.....	1,308	1,312	.3	453	502	10.8	855	810	-5.3
Voronezhskaya Oblast.....	2,369	2,410	1.7	821	901	9.7	1,548	1,509	-2.5
Gor'kovskaya Oblast.....	3,591	3,657	1.8	1,882	2,021	7.4	1,709	1,636	-4.3
Ivanovskaya Oblast.....	1,322	1,338	1.2	876	919	4.9	446	419	-6.1
Irkutskaya Oblast.....	1,976	2,090	5.8	1,227	1,337	9.0	749	753	.5
Ust'ordinskiy Buryatskiy National Okrug.....	133	150	12.8	20	20	0	113	130	15.0
Other.....	1,843	1,940	5.3	1,207	1,317	9.1	636	623	-2.0
Kaliningradskaya Oblast.....	611	644	5.4	394	430	9.1	217	214	-1.4
Kalininskaya Oblast.....	1,807	1,790	-.9	788	828	5.1	1,019	962	-5.6
Kaluzhskaya Oblast.....	936	944	.9	350	373	6.6	586	571	-2.6
Kamchatskaya Oblast.....	221	231	4.5	141	158	12.1	80	73	-8.8
Koryakskiy National Okrug.....	28	32	14.3	6	8	33.3	22	24	9.1
Other.....	193	199	3.1	135	150	11.1	58	49	-15.5
Kemerovskaya Oblast.....	2,786	2,914	4.6	2,149	2,301	7.1	637	613	-3.8
Kirovskaya Oblast.....	1,916	1,843	-3.8	794	757	7.5	1,212	1,086	-10.4
Kostromskaya Oblast.....	920	914	-.7	366	389	6.3	554	525	-5.2
Kuybyshevskaya Oblast.....	2,258	2,368	4.9	1,397	1,517	8.6	861	851	-1.2
Kurganskaya Oblast.....	999	1,021	2.2	328	356	8.5	671	665	-.9
Kurskaya Oblast.....	1,483	1,507	1.6	393	346	14.2	1,150	1,161	-1.6
Leningradskaya Oblast.....	4,566	4,718	3.3	3,949	4,130	4.6	617	588	-4.7
Lipetskaya Oblast.....	1,141	1,162	1.8	344	380	10.5	797	782	-1.9
Magadanskaya Oblast.....	236	248	5.1	191	207	8.4	45	41	-8.9
Chukotskiy National Okrug.....	47	52	10.6	27	35	29.6	20	17	-15.0
Other.....	189	196	3.7	164	172	4.9	25	24	-4.0
Moskovskaya Oblast.....	10,949	11,204	2.3	8,577	9,072	5.8	2,372	2,132	-10.1
Murmanskaya Oblast.....	568	606	6.7	523	573	9.6	45	33	-26.7
Novgorodskaya Oblast.....	736	730	-.8	281	303	7.8	455	427	-6.2
Novosibirskaya Oblast.....	2,209	2,376	3.3	1,276	1,374	7.7	1,023	1,002	-2.1
Omskaya Oblast.....	1,645	1,698	3.2	711	782	10.0	934	916	-1.9

Orenburgskaya Oblast.....	1,829	1,909	4.4	826	899	8.8	1,003	1,010	.7
Orlovskaya Oblast.....	929	936	.8	221	253	14.5	708	693	-3.5
Penzonskaya Oblast.....	1,510	1,521	.7	500	551	10.2	1,010	970	-4.0
Permskaya Oblast.....	2,993	3,043	1.7	1,765	1,877	6.3	1,228	1,166	-5.0
Komi-Permyatskiy National Okrug.....	217	233	7.4	22	37	68.2	195	196	.5
Other.....	2,776	2,810	1.2	1,743	1,840	5.6	1,033	970	-6.1
Pskovskaya Oblast.....	952	918	-3.6	258	282	9.3	604	636	-8.4
Rostovskaya Oblast.....	3,312	3,455	4.3	1,899	2,048	7.8	1,413	1,407	-.4
Ryazanskaya Oblast.....	1,445	1,460	1.0	433	490	13.2	1,012	970	-4.2
Saratovskaya Oblast.....	2,163	2,221	2.7	1,164	1,246	7.0	999	975	-2.4
Sakhalinskaya Oblast.....	649	630	-2.9	489	492	.6	160	138	-13.8
Sverdlovskaya Oblast.....	4,044	4,162	2.9	3,074	3,255	5.9	970	907	-6.5
Smolenskaya Oblast.....	1,143	1,111	-2.8	366	390	6.6	777	721	-7.2
Stalingradskaya Oblast.....	1,854	1,923	3.7	1,008	1,140	13.1	846	783	-7.4
Tambovskaya Oblast.....	1,549	1,546	-.2	408	453	11.0	1,141	1,093	-4.2
Tomskaya Oblast.....	747	744	-.4	360	381	5.8	387	363	-6.2
Tuvin'skaya A. S. S. R.....	172	186	8.1	50	63	26.0	122	123	.8
Tul'skaya Oblast.....	1,920	1,928	.4	1,160	1,214	4.7	760	714	-6.1
Tyumenskaya Oblast.....	1,092	1,121	2.7	347	397	14.4	745	724	-2.8
Khanty-Mansiyskiy National Okrug.....	124	134	8.1	33	43	30.3	91	91	0
Yamalo-Nenetskiy National Okrug.....	62	64	3.2	22	24	9.1	40	40	0
Other.....	906	923	1.9	292	330	13.0	614	593	-3.4
Ul'yansovskaya Oblast.....	1,117	1,131	1.3	404	432	6.9	713	699	-2.0
Chelyabinskaya Oblast.....	2,977	3,100	4.1	2,276	2,390	5.0	701	710	1.3
Chitinskaya Oblast.....	1,036	1,046	1.0	564	594	5.3	472	452	-4.2
Aginskiy Buryatskiy National Okrug.....	49	53	8.2	-----	6	-----	40	47	-4.1
Other.....	987	993	.6	564	588	4.3	423	405	-4.3
Yaroslavl'skaya Oblast.....	1,396	1,392	-.3	814	853	4.8	582	539	-7.4
Bashkir'skaya A. S. S. R.....	3,342	3,464	3.7	1,281	1,403	9.5	2,061	2,061	0
Buryatskaya A. S. S. R.....	673	711	5.6	276	294	6.5	397	417	5.0
Dagestanskaya A. S. S. R.....	1,063	1,165	9.6	315	346	9.8	748	819	9.5
Kabardino-Balkarskaya A. S. S. R.....	420	455	8.3	166	181	9.0	254	274	7.9
Kalmytskaya A. S. S. R.....	185	193	4.3	39	46	17.9	146	147	.7
Karel'skaya A. S. S. R.....	651	659	1.2	409	428	4.6	242	231	-4.5
Komi A. S. S. R.....	806	851	5.6	475	519	9.3	331	332	.3
Mariyskaya A. S. S. R.....	648	662	2.2	183	203	10.9	465	459	-1.3
Mordovskaya S. S. S. R.....	1,000	1,003	.3	183	234	27.9	817	769	-5.9
Severo-Osetinskaya A. S. S. R.....	451	469	4.0	238	252	5.9	213	217	1.9
Tatarskaya A. S. S. R.....	2,850	2,948	3.4	1,190	1,280	7.6	1,660	1,668	.5
Udmurtskaya A. S. S. R.....	1,337	1,368	2.3	594	661	11.3	743	707	-4.9
Chochenno-Ingushskaya A. S. S. R.....	710	840	18.3	294	327	11.2	416	513	23.3
Chuvashskaya A. S. S. R.....	1,098	1,137	3.6	263	294	11.8	835	843	1.0
Yakut'skaya A. S. S. R.....	488	527	8.0	240	265	10.4	248	262	5.6

TABLE A-7.—Total, urban, and rural population of the U.S.S.R., by republic, kray, and oblast: 1959 and 1961—Continued

[Population figures in thousands. Figures for 1959 refer to the census of January 15; those for 1961 are official estimates for Jan. 1. A minus (–) denotes a decrease]

Area	Total			Urban			Rural		
	1959	1961	Percent change, 1959 to 1961	1959	1961	Percent change, 1959 to 1961	1959	1961	Percent change, 1959 to 1961
Ukrainian S.S.R.-----	41,869	43,091	2.9	19,147	20,823	8.8	22,722	22,268	-2.0
Vinnitskaya Oblast.....	2,142	2,160	.8	363	385	6.1	1,779	1,775	-.2
Volynskaya Oblast.....	890	925	3.9	231	267	15.6	659	658	-.2
Dnepropetrovskaya Oblast.....	2,705	2,854	5.5	1,899	2,070	9.0	806	784	-2.7
Zhitomirskaya Oblast.....	1,604	1,598	-.4	417	442	6.0	1,187	1,156	-2.6
Zakarpatskaya Oblast.....	920	966	5.0	265	279	5.3	655	687	4.9
Zaporozhskaya Oblast.....	1,464	1,529	4.4	829	893	7.7	635	636	.2
Kiyevskaya Oblast.....	2,823	2,934	3.9	1,548	1,666	7.6	1,275	1,268	-.6
Kirovogradskaya Oblast.....	1,218	1,241	1.9	376	417	10.9	842	824	-2.1
Krymskaya Oblast.....	1,201	1,297	8.0	775	850	9.7	426	447	4.9
Luganskaya Oblast.....	2,452	2,573	4.9	1,944	2,112	8.6	608	461	-9.3
L'vovskaya Oblast.....	2,108	2,185	3.7	821	893	8.8	1,287	1,292	.4
Nikolayevskaya Oblast.....	1,014	1,031	1.7	400	430	7.5	614	601	-2.1
Odesskaya Oblast.....	2,027	2,083	2.8	957	1,010	5.5	1,070	1,073	.3
Poltavskaya Oblast.....	1,632	1,647	.9	484	526	8.7	1,148	1,121	-2.4
Rovenskaya Oblast.....	926	961	3.8	158	215	36.1	768	746	-2.9
Donetskaya Oblast.....	4,262	4,439	4.2	3,656	3,855	5.4	606	584	-3.6
Stanislavskaya Oblast.....	1,095	1,138	3.9	250	292	16.8	845	846	.1
Sumskaya Oblast.....	1,514	1,528	.9	485	532	9.7	1,029	996	-3.2
Ternopol'skaya Oblast.....	1,086	1,116	2.8	180	210	16.7	906	906	-----
Kbar'korskaya Oblast.....	2,520	2,578	2.3	1,574	1,692	7.5	946	886	-6.3
Khersonskaya Oblast.....	824	842	2.2	332	388	16.9	492	454	-7.7
Khmel'nitskaya Oblast.....	1,611	1,628	1.1	345	351	1.5	1,306	1,277	-2.2
Cherkasskaya Oblast.....	1,803	1,482	-1.4	345	377	9.3	1,158	1,105	-4.6
Chernigovskaya Oblast.....	1,554	1,561	.5	350	434	24.0	1,204	1,127	-6.4
Chernovitskaya Oblast.....	774	795	2.7	293	297	16.7	571	558	-2.3
Belorussian S.S.R.-----	8,055	8,226	2.1	2,481	2,779	12.0	5,574	5,447	-2.3
Brestskaya Oblast.....	1,205	1,210	.4	284	323	13.7	921	887	-3.7
Vitebskaya Oblast.....	1,247	1,289	3.4	404	466	15.3	843	823	-2.4
Gomel'skaya Oblast.....	1,357	1,391	2.5	380	438	12.6	968	953	-1.6
Grodzenskaya Oblast.....	1,077	1,090	1.2	251	280	11.6	826	810	-1.9
Minskaya Oblast.....	2,037	2,064	1.3	793	867	9.3	1,244	1,197	-3.8
Mogilovskaya Oblast.....	1,132	1,182	4.4	360	405	12.5	772	777	.6

Uzbek S.S.R.....	8,106	8,665	6.9	2,729	3,047	11.7	5,377	5,618	4.6
Andizhanskaya Oblast.....	1,163	1,237	6.4	298	320	7.4	865	917	6.0
Bukharskaya Oblast.....	585	641	9.6	130	151	16.2	455	490	7.7
Samarkandskaya Oblast.....	1,148	1,226	6.8	314	337	7.3	834	889	6.6
Surkhandar'inskaya Oblast.....	919	993	8.1	132	147	11.4	787	846	7.5
Tashkentskaya Oblast.....	2,261	2,402	6.2	1,319	1,507	14.3	942	895	-5.0
Ferganskaya Oblast.....	1,139	1,218	6.9	333	366	9.9	806	852	5.7
Khorezmskaya Oblast.....	381	404	6.0	64	70	9.4	317	334	5.4
Kara-Kalpakskaya A.S.S.R.....	510	544	6.7	139	149	7.2	371	395	6.5
Kazakh S.S.R.....	9,310	10,387	11.6	4,067	4,622	13.6	5,243	5,765	10.0
Tselinnyy Kray.....	2,753	3,122	13.4	856	981	14.6	1,897	2,141	12.9
Kokchetavskaya Oblast.....	493	554	12.4	122	139	13.9	371	415	11.9
Kustanayskaya Oblast.....	711	833	17.2	188	228	21.3	523	605	15.7
Pavlodarskaya Oblast.....	455	526	15.6	132	154	16.7	323	372	15.2
Severo-Kazakhstanskaya Oblast.....	457	495	8.3	150	167	7.1	301	328	9.0
Tselinogradskaya Oblast.....	637	714	12.1	258	293	13.6	379	421	11.1
Akt'yubinskaya Oblast.....	401	439	9.5	174	188	8.0	227	251	10.6
Alma-Atinskaya Oblast.....	1,403	1,569	11.8	655	760	16.0	748	809	8.2
Vostochno-Kazakhstanskaya Oblast.....	735	796	8.3	394	428	8.6	341	368	7.9
Gur'yevskaya Oblast.....	288	313	8.7	162	176	8.6	126	137	8.7
Dzhambul'skaya Oblast.....	562	597	6.2	202	230	13.9	360	367	1.0
Zapadno-Kazakhstanskaya Oblast.....	381	415	8.9	113	121	7.1	268	294	9.7
Karagandinskaya Oblast.....	1,019	1,212	18.9	798	962	20.6	221	250	13.1
Kzyl-Ordinskaya Oblast.....	327	341	4.3	152	163	7.2	175	178	1.7
Semipalatinskaya Oblast.....	520	572	10.0	228	247	8.3	292	325	11.3
Yuzhno-Kazakhstanskaya Oblast.....	921	1,011	9.8	333	366	9.9	588	645	9.7
Georgia S.S.R.....	4,044	4,200	3.9	1,713	1,818	6.1	2,331	2,382	2.2
Abkhazskaya A.S.S.R.....	405	426	5.2	150	155	3.3	255	271	6.3
Adzharskaya A.S.S.R.....	245	260	6.1	111	117	5.4	134	143	6.7
Yugo-Osetinskaya Autonomous Oblast.....	97	98	1.0	24	31	29.2	73	67	-8.2
Other.....	3,297	3,416	3.6	1,428	1,515	6.1	1,869	1,901	1.7
Azerbaydzhan S.S.R.....	3,698	3,973	7.4	1,767	1,958	10.8	1,931	2,015	4.4
Nakhichevanskaya A.S.S.R.....	141	154	9.2	38	41	7.9	103	113	9.7
Nagorno-Karabakhskaya Autonomous Oblast.....	131	139	6.1	27	40	48.1	104	99	-4.8
Other.....	3,426	3,680	7.4	1,702	1,877	10.3	1,724	1,803	4.6
Lithuanian S.S.R.....	2,711	2,804	3.4	1,046	1,123	7.4	1,665	1,681	1.0
Moldavian S.S.R.....	2,885	3,040	5.4	643	727	13.1	2,242	2,313	3.2
Latvian S.S.R.....	2,093	2,142	2.3	1,174	1,233	5.0	919	909	-1.1
Kirgiz S.S.R.....	2,066	2,225	7.7	696	775	11.4	1,370	1,450	5.8
Oshskaya Oblast.....	870	933	7.2	279	312	11.8	591	621	5.1
Tyan'-Shan'skaya Oblast.....	136	145	6.6	26	28	7.7	110	117	6.4
Other.....	1,060	1,147	8.2	391	435	11.3	669	712	6.4

TABLE A-7.—Total, urban, and rural population of the U.S.S.R., by republic, kray, and oblast: 1959 and 1961—Continued
 [Population figures in thousands. Figures for 1959 refer to the census of January 15; those for 1961 are official estimates for Jan. 1. A minus (—) denotes a decrease]

Area	Total			Urban			Rural		
	1959	1961	Percent change, 1959 to 1961	1959	1961	Percent change, 1959 to 1961	1959	1961	Percent change, 1959 to 1961
Tadzhik S.S.R.....	1,980	2,104	6.3	646	723	11.9	1,334	1,381	3.5
Leninabadsкая Oblast.....	666	708	6.3	247	273	10.5	419	435	3.8
Gorno-Badakhshanskaya Autonomous Oblast.....	73	80	9.6	8	9	12.5	65	71	9.2
Other.....	1,241	1,316	6.0	391	441	12.8	850	875	2.9
Armenian S.S.R.....	1,763	1,893	7.4	882	973	10.3	881	920	4.4
Turkmen S.S.R.....	1,516	1,626	7.3	700	771	10.1	816	855	4.8
Maryyskaya Oblast.....	417	446	7.0	145	156	7.6	272	290	6.6
Tashauzskaya Oblast.....	295	312	5.8	71	81	14.1	224	231	3.1
Chardzhouskaya Oblast.....	321	344	7.2	129	144	11.6	192	200	4.2
Other.....	483	524	8.5	355	390	9.9	128	134	4.7
Estonian S.S.R.....	1,197	1,221	2.0	676	706	4.4	521	515	-1.2

Source: Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *Narodnoye khozyaystvo SSSR v 1959 godu, statisticheskiy yezhegodnik* (The National Economy of the U.S.S.R. in 1959, a Statistical Yearbook), Moscow, Gosstatizdat, 1960, pp. 27-33; and ———, *Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy yezhegodnik* (The National Economy of the U.S.S.R. in 1960, a Statistical Yearbook), Moscow, Gosstatizdat, 1961, pp. 44-49.

TABLE A-8.—Population of cities with 1961 populations of 100,000 inhabitants or more, by republic and oblast, 1939, 1959, and 1961

[Population figures in thousands. Figures for 1939 presumably relate to the beginning of the year; those for 1959 to the census of Jan. 15. Figures for 1961 are official estimates for Jan. 1. A minus sign (-) in the percent change columns denotes a decrease]

Republic, kray, oblast, and city	Population			Percent change		
	1939	1959	1961	1939-61	1939-59	1959-61
U.S.S.R.....	34,417	51,163	55,782	62.1	43.7	9.0
R.S.F.S.R.....	22,066	33,027	36,222	64.2	50.0	9.7
Altayskiy Kray.....	266	562	623	134.2	111.3	10.9
Barnaul.....	148	305	338	128.4	106.1	10.8
Biysk.....	80	146	162	102.5	82.5	11.0
Rubtsovsk.....	38	111	123	223.7	192.1	10.8
Khabarovskiy Kray.....	278	500	538	93.5	79.9	7.6
Khabarovsk.....	207	323	349	68.6	56.0	8.0
Komsomol'sk-na-Amure.....	71	177	189	166.2	149.3	6.8
Krasnodarskiy Kray.....	434	612	665	53.2	41.0	8.7
Armavir.....	84	111	120	42.9	32.1	8.1
Krasnodar.....	193	313	343	77.7	62.2	9.6
Novorossiysk.....	95	93	101	6.3	-2.1	8.6
Sochi.....	62	95	101	62.9	53.2	6.3
Krasnoyarskiy Kray.....	190	412	468	146.3	116.8	13.6
Krasnoyarsk.....	190	412	468	146.3	116.8	13.6
Primorskiy Kray.....	278	395	428	54.0	42.1	8.4
Ussuriysk.....	72	104	111	54.2	44.4	6.7
Vladivostok.....	206	291	317	53.9	41.3	8.9
Stavropol'skiy Kray.....	85	141	151	77.6	65.9	7.1
Stavropol'.....	85	141	151	77.6	65.9	7.1
Arkhangel'skaya Oblast.....	251	256	271	8.0	2.0	5.9
Arkhangel'sk.....	251	256	271	8.0	2.0	5.9
Astrakhanskaya Oblast.....	254	296	313	23.2	16.5	5.7
Astrakhan.....	254	296	313	23.2	16.5	5.7
Bryanskaya Oblast.....	174	207	231	32.8	19.0	11.6
Bryansk.....	174	207	231	32.8	19.0	11.6
Chelyabinskaya Oblast.....	616	1,421	1,502	143.8	130.7	5.7
Chelyabinsk.....	273	689	733	168.5	152.4	6.4
Kopeysk.....	60	161	168	180.0	168.3	4.3
Magnitogorsk.....	146	311	328	124.7	113.0	5.5
Miass.....	38	99	107	181.6	160.5	8.1
Zlatoust.....	99	161	166	67.7	62.6	3.1
Chitinskaya Oblast.....	121	172	182	50.4	42.1	5.8
Chita.....	121	172	182	50.4	42.1	5.8
Gor'kovskaya Oblast.....	747	1,106	1,179	57.8	48.1	6.6
Dzerzhinsk.....	103	164	176	70.9	59.2	7.5
Gor'kiy.....	644	942	1,003	55.7	46.3	6.5
Irkutskaya Oblast.....	306	623	656	114.4	103.6	5.3
Angarsk.....	(¹)	134	154	(¹)	(¹)	14.9
Cheremkhovo.....	56	123	122	117.9	119.6	-8
Irkutsk.....	250	366	380	52.0	46.4	3.8
Ivanovskaya Oblast.....	285	335	352	23.5	17.5	5.1
Ivanovo.....	285	335	352	23.5	17.5	5.1

¹ Angarsk was established in 1951.

TABLE A-8.—Population of cities with 1961 populations of 100,000 inhabitants or more, by republic and oblast, 1939, 1959, and 1961—Continued

Republic, kray, oblast, and city	Population			Percent change		
	1939	1959	1961	1939-61	1939-59	1959-61
<i>U.S.S.R.—Continued</i>						
Kaliningradskaya Oblast.....	(?)	204	226	(?)	(?)	10.8
Kaliningrad.....	(?)	204	226	(?)	(?)	10.8
Kalininskaya Oblast.....	216	261	279	29.2	20.8	6.9
Kalinin.....	216	261	279	29.2	20.8	6.9
Kaluzhskaya Oblast.....	89	134	145	62.9	50.6	8.2
Kaluga.....	89	134	145	62.9	50.6	8.2
Kemerovskaya Oblast.....	645	1,422	1,508	133.8	120.5	6.0
Anzhero-Sudzhensk.....	69	116	119	72.5	68.1	2.6
Belovo.....	43	107	115	167.4	148.8	7.5
Kemerovo.....	133	278	298	124.1	109.0	7.2
Kiselevsk.....	44	130	141	220.5	195.5	8.5
Leninsk-Kuznetskiy.....	83	132	138	66.3	59.0	4.5
Prokop'yevsk.....	107	282	292	172.9	163.6	3.5
Novokuznetsk.....	166	377	405	144.0	127.1	7.4
Kirovskaya Oblast.....	144	252	269	86.8	75.0	6.7
Kirov.....	144	252	269	86.8	75.0	6.7
Kostromaskaya Oblast.....	121	172	184	52.1	42.1	7.0
Kostroma.....	121	172	184	52.1	42.1	7.0
Kurganskaya Oblast.....	53	146	164	209.4	175.5	12.3
Kurgan.....	53	146	164	209.4	175.5	12.3
Kurskaya Oblast.....	120	205	222	85.0	70.8	8.3
Kursk.....	120	205	222	85.0	70.8	8.3
Kuybyshevskaya Oblast.....	473	955	1,020	115.6	101.9	6.8
Kuybyshev.....	380	806	863	121.3	106.7	7.1
Syzran'.....	83	149	157	89.2	79.5	5.4
Leningradskaya Oblast.....	3,385	3,321	3,445	1.8	-1.9	3.7
Leningrad.....	3,385	3,321	3,445	1.8	-1.9	3.7
Lipet'ak oblast.....	67	157	183	173.1	134.3	16.6
Lipetsk.....	67	157	183	173.1	134.3	16.6
Moskovskaya Oblast.....	4,623	5,773	7,000	51.4	24.9	21.3
Elektrostal'.....	43	97	102	137.2	125.6	5.2
Koloma.....	75	100	124	65.3	33.3	24.0
Lyubertsy.....	46	93	100	117.4	102.2	7.5
Moskva.....	4,137	5,046	6,208	50.1	22.0	23.0
Mytishchi.....	60	99	104	73.3	65.0	5.1
Orekhovo-Zuyevo.....	99	108	112	13.1	9.1	3.7
Podol'sk.....	72	124	139	93.1	72.2	12.1
Serpu'khov.....	91	106	111	22.0	16.5	4.7
Murmanskaya Oblast.....	119	222	237	99.2	86.6	6.8
Murmansk.....	119	222	237	99.2	86.6	6.8
Novosibirskaya Oblast.....	404	886	963	138.4	119.3	8.7
Novosibirsk.....	404	886	963	138.4	119.3	8.7
Omskaya Oblast.....	289	581	630	118.0	101.0	8.4
Omsk.....	289	581	630	118.0	101.0	8.4

² Because most of the prewar population of Kaliningrad (formerly the East Prussian city of Königsberg) has apparently been expelled and replaced by Russians, no figure for 1939 is shown.

TABLE A-8.—Population of cities with 1961 populations of 100,000 inhabitants or more, by republic and oblast, 1939, 1959, and 1961—Continued

Republic, kray, oblast, and city	Population			Percent change		
	1939	1959	1961	1939-61	1939-59	1959-61
R.S.F.S.R.—Continued						
Orenburgskaya Oblast.....	238	443	477	100.4	86.1	7.7
Orenburg.....	172	267	282	64.0	55.2	5.6
Orsk.....	66	176	195	195.5	166.7	10.8
Orlovskaya Oblast.....	111	150	167	50.5	35.1	11.3
Orel.....	111	150	167	50.5	35.1	11.3
Penzenskaya Oblast.....	160	255	277	73.1	59.4	8.6
Penza.....	160	255	277	73.1	59.4	8.6
Permskaya Oblast.....	357	735	795	122.7	105.9	8.2
Berezniki.....	51	106	117	129.4	107.8	10.4
Perm.....	306	629	678	121.6	105.6	7.8
Rostovskaya Oblast.....	882	1,102	1,168	32.4	24.9	6.0
Novosbakhtinsk.....	48	104	108	125.0	116.7	3.8
Rostov-na-Donu.....	510	600	645	26.5	17.6	7.5
Shakhty.....	135	196	201	48.9	45.2	2.6
Taganrog.....	189	202	214	13.2	6.9	5.9
Ryazanskaya Oblast.....	95	214	240	152.6	125.3	12.1
Ryazan'.....	95	214	240	152.6	125.3	12.1
Saratovskaya Oblast.....	441	672	724	64.2	52.4	7.7
Engel's.....	69	91	102	47.8	31.9	12.1
Saratov.....	372	581	622	67.2	56.2	7.1
Smolenskaya Oblast.....	157	147	159	1.3	-6.4	8.2
Smolensk.....	157	147	159	1.3	-6.4	8.2
Sverdlovskaya Oblast.....	743	1,447	1,541	107.4	94.8	6.5
Kamensk-Ural'skiy.....	51	141	151	196.1	176.5	7.1
Nizhniy Tagil.....	160	339	355	121.9	111.9	4.7
Pervoural'sk.....	44	90	101	129.5	104.5	12.2
Sverdlovsk.....	423	779	832	96.7	84.2	6.8
Serov.....	65	98	102	56.9	50.8	4.1
Tambovskaya Oblast.....	106	172	186	75.5	62.3	8.1
Tambov.....	106	172	186	75.5	62.3	8.1
Tomskaya Oblast.....	145	249	269	85.5	71.7	8.0
Tomsk.....	145	249	269	85.5	71.7	8.0
Tul'skaya Oblast.....	348	423	445	27.9	21.6	5.2
Stalinogorsk.....	76	107	112	47.4	40.8	4.7
Tula.....	272	316	333	22.4	16.2	5.4
Tyumenskaya Oblast.....	79	150	168	112.7	89.9	12.0
Tyumen.....	79	150	168	112.7	89.9	12.0
Taymirskiy National Okrug.....	14	109	109	678.6	678.6	0.0
Noril'sk.....	14	109	109	678.4	678.4	0.0
Ul'yanovskaya Oblast.....	98	206	226	130.6	110.2	9.7
Ul'yanovsk.....	98	206	226	130.6	110.2	9.7
Vladimirskaya Oblast.....	134	253	270	101.5	88.8	6.7
Vladimir.....	67	154	167	149.3	129.9	8.4
Kovrov.....	67	99	103	53.7	47.8	4.0
Vologodskaya Oblast.....	127	231	261	105.5	81.9	13.0
Cherepovets.....	32	92	113	253.1	187.5	22.8
Vologda.....	95	139	148	55.8	46.3	6.5

TABLE A-8.—Population of cities with 1961 populations of 100,000 inhabitants or more, by republic and oblast, 1939, 1959, and 1961—Continued

Republic, kray, oblast, and city	Population			Percent change		
	1939	1959	1961	1939-61	1939-59	1959-61
R.S.F.S.R.—Continued						
Volgogradskaya Oblast.....	445	592	632	42.0	33.0	6.8
Volgograd.....	445	592	632	42.0	33.0	6.8
Voronezhskaya Oblast.....	344	448	496	44.2	30.2	10.7
Voronezh.....	344	448	496	44.2	30.2	10.7
Yaroslavskaia Oblast.....	453	589	625	38.0	30.0	6.1
Rybinsk.....	144	182	192	33.3	26.4	5.5
Yaroslavl.....	309	407	433	40.1	31.7	6.4
Bashkirskaya A.S.S.R.....	297	659	713	140.1	121.9	8.2
Sterlitamak.....	39	112	125	220.5	187.2	11.6
Ufa.....	258	547	588	127.9	112.0	7.5
Buryatskaya A.S.S.R.....	126	175	188	49.2	38.9	7.4
Ulan-Ude.....	126	175	188	49.2	38.9	7.4
Checheno-Ingushskaya A.S.S.R.....	172	242	270	57.0	40.7	11.6
Groznyy.....	172	242	270	57.0	40.7	11.6
Chuvashskaya A.S.S.R.....	31	104	123	296.8	235.5	18.3
Cheboksary.....	31	104	123	296.8	235.5	18.3
Dagestanskaya A.S.S.R.....	87	119	129	48.3	36.8	8.4
Makhachkala.....	87	119	129	48.3	36.8	8.4
Karel'skaya A.S.S.R.....	70	136	139	98.6	94.3	2.2
Petrozavodsk.....	70	136	139	98.6	94.3	2.2
Mariyskaya A.S.S.R.....	27	89	103	281.5	229.6	15.7
Yoshkar-Ola.....	27	89	103	281.5	229.6	15.7
Mordovskaya A.S.S.R.....	41	91	108	163.4	122.0	18.7
Saransk.....	41	91	108	163.4	122.0	18.7
Severo-Osetinskaya A.S.S.R.....	131	164	175	33.6	25.2	6.9
Ordzhonikidze.....	131	164	175	33.6	25.2	6.9
Tatarskaya A.S.S.R.....	398	647	693	74.1	62.6	7.1
Kazan'.....	398	647	693	74.1	62.6	7.1
Udmurtskaya A.S.S.R.....	176	285	312	77.3	61.9	9.5
Izhevsk.....	176	285	312	77.3	61.9	9.5
Ukrainian S.S.R.....	6,736	8,839	9,437	40.1	31.2	6.8
Chernigovskaya Oblast.....	69	90	101	46.4	30.4	12.2
Chernigov.....	69	90	101	46.4	30.4	12.2
Chernovitskaya Oblast.....	106	146	147	38.7	37.7	.7
Chernovtsy.....	106	146	147	38.7	37.7	.7
Dnepropetrovskaya Oblast.....	864	1,242	1,346	55.8	43.8	8.4
Dneprodzerzhinsk.....	148	104	203	37.2	31.1	4.6
Dnepropetrovsk.....	527	660	707	34.2	25.2	7.1
Krivoy Rog.....	189	368	436	130.7	105.3	12.4

TABLE A-8.—Population of cities with 1961 populations of 100,000 inhabitants or more, by republic and oblast, 1939, 1959, and 1961—Continued

Republic, kray, oblast, and city	Population			Percent change		
	1939	1959	1961	1939-61	1939-59	1959-61
Ukrainian S.S.R.—Continued						
Donetskaya Oblast.....	1,205	1,749	1,870	55.2	45.1	6.8
Gorlovka.....	181	293	307	69.6	61.9	4.8
Kramatorsk.....	94	115	123	30.9	22.3	7.0
Makeyevka.....	242	358	381	57.4	47.9	6.4
Stalino.....	466	699	749	60.7	50.0	7.2
Zhdanov.....	222	284	310	39.6	27.9	9.2
Khar'kovskaya Oblast.....	833	934	976	17.2	12.1	4.5
Khar'kov.....	833	934	976	17.2	12.1	4.5
Khersonskaya Oblast.....	97	158	174	79.4	62.9	10.1
Kherson.....	97	158	174	79.4	62.9	10.1
Kirovograd Oblast.....	100	128	134	34.0	28.0	4.7
Kirovograd.....	100	128	134	34.0	28.0	4.7
Kiyevskaya Oblast.....	847	1,104	1,174	38.6	30.3	6.3
Kiyev.....	847	1,104	1,174	38.6	30.3	6.3
Krymskaya Oblast.....	361	432	463	28.3	19.7	7.2
Kerch'.....	104	98	104	0	-5.8	6.1
Sevastopol'.....	114	148	163	43.0	29.8	10.1
Simferopol'.....	143	186	196	37.1	30.1	5.4
Luganskaya Oblast.....	405	553	598	47.7	36.5	8.1
Kadiyevka.....	135	180	191	41.5	33.3	6.1
Lugansk.....	215	275	300	39.5	27.9	9.1
Voroshilovsk.....	55	98	107	94.5	78.2	9.2
L'vovskaya Oblast.....	340	411	436	28.2	20.9	6.1
L'vov.....	340	411	436	28.2	20.9	6.1
Nikolayevskaya Oblast.....	169	226	242	43.2	33.7	7.1
Nikolayev.....	169	226	242	43.2	33.7	7.1
Odesskaya Oblast.....	602	667	696	15.6	10.8	4.3
Odessa.....	602	667	696	15.6	10.8	4.3
Poltavskaya Oblast.....	128	143	150	17.2	11.7	4.9
Poltava.....	128	143	150	17.2	11.7	4.9
Sumskaya Oblast.....	64	98	108	68.8	53.1	10.2
Sumy.....	64	98	108	68.8	53.1	10.2
Vinnitskaya Oblast.....	93	122	131	40.9	31.2	7.4
Vinnitsa.....	93	122	131	40.9	31.2	7.4
Zaporozhskaya Oblast.....	358	530	577	61.2	48.0	8.9
Melitipol'.....	76	95	102	34.2	25.0	7.4
Zaporozh'ye.....	282	435	475	68.4	54.3	9.2
Zhitomirskaya Oblast.....	95	106	114	20.0	11.6	7.5
Zhitomir.....	95	106	114	20.0	11.6	7.5
Belorussia S.S.R.....	726	1,045	1,154	59.0	43.9	10.4
Gomel'skaya Oblast.....	139	168	184	32.4	20.9	9.5
Gomel'.....	139	168	184	32.4	20.9	9.5
Minskaya Oblast.....	237	509	570	140.5	114.8	12.0
Minsk.....	237	509	570	140.5	114.8	12.0

TABLE A-8.—*Population of cities with 1951 populations of 100,000 inhabitants or more, by republic and oblast, 1939, 1959, and 1961—Continued*

Republic, kray, oblast, and city	Population			Percent change		
	1939	1959	1961	1939-61	1939-59	1959-61
Belorussia S.S.R.—Continued						
Mogilevskaya Oblast.....	183	220	238	30.1	20.2	8.2
Bobruysk.....	84	98	104	23.8	16.7	6.1
Mogilev.....	99	122	134	35.4	23.2	9.8
Vitebskaya Oblast.....	167	148	162	-3.0	-11.4	9.5
Vitebsk.....	167	148	162	-3.0	-11.4	9.5
Uzbek S.S.R.....	936	1,466	568	67.5	56.6	7.0
Andizhanskaya Oblast.....	165	253	275	66.7	53.3	8.7
Andizhan.....	85	130	141	65.9	52.9	8.5
Namangan.....	80	123	134	67.5	53.8	8.9
Ferganskaya Oblast.....	85	105	113	32.9	23.5	7.6
Kokand.....	85	105	113	32.9	23.5	7.6
Samarkandskaya Oblast.....	136	196	209	53.7	44.1	6.6
Samarkand.....	136	196	209	53.7	44.1	6.6
Tashkentskaya Oblast.....	550	912	971	76.5	65.8	6.5
Tashkent.....	550	912	971	76.5	65.8	6.5
Kazakh S.S.R.....	920	2,027	2,293	149.2	120.3	13.1
Tselinnyy Kray.....	153	323	361	135.9	111.1	11.8
Pavlodarskaya Oblast.....	29	90	107	269.0	210.3	18.9
Pavlodar.....	29	90	107	269.0	210.3	18.9
Severo-Kazakhstanskaya Oblast.....	92	131	140	52.2	42.4	6.9
Petropavlovsk.....	92	131	140	52.2	42.4	6.9
Tselinogradskaya Oblast.....	32	102	114	256.3	218.8	11.8
Tselinograd.....	32	102	114	256.3	218.8	11.8
Aktyubinskaya Oblast.....	49	97	107	118.4	98.0	10.3
Aktyubinsk.....	49	97	107	118.4	98.0	10.3
Alma-Atinskaya Oblast.....	222	456	508	128.8	105.4	11.4
Alma-Ata.....	222	456	508	128.8	105.4	11.4
Dzhambulskaya Oblast.....	64	113	131	104.7	76.6	15.9
Dzhambul.....	64	113	131	104.7	76.6	15.9
Karagandinskaya Oblast.....	161	475	554	244.1	195.0	16.6
Karaganda.....	156	397	441	182.7	154.5	11.1
Temirtau.....	5	78	113	2,160.0	1,480.0	44.9
Semipalatinskaya Oblast.....	110	156	177	60.9	41.8	13.5
Semipalatinsk.....	110	156	177	60.9	41.8	13.5
Yuzhno-Kazakhstanskaya Oblast.....	74	153	171	131.1	106.8	11.8
Chimkent.....	74	153	171	131.1	106.8	11.8
Vostochno-Kazakhstanskaya Oblast.....	20	150	173	765.0	650.0	15.3
Ust'-Kamenogorsk.....	20	150	173	765.0	650.0	15.3
Zapadno-Kazakhstanskaya Oblast.....	67	104	111	65.7	55.2	6.7
Ural'sk.....	67	104	111	65.7	55.2	6.7

TABLE A-8.—Population of cities with 1961 populations of 100,000 inhabitants or more, by republic and oblast, 1939, 1959, and 1961—Continued

Republic, kray, oblast, and city	Population			Percent change		
	1939	1959	1961	1939-61	1939-59	1959-61
Georgia S.S.R.....	597	823	981	44.2	37.9	4.6
Kutaisi.....	78	128	137	75.6	64.1	7.0
Tbilisi.....	519	695	724	39.5	33.9	4.2
Azerbaijdzhan S.S.R.....	874	1,087	1,161	32.8	24.4	8.6
Baku.....	775	971	1,038	33.9	25.3	6.9
Kirovabad.....	99	116	124	24.2	17.2	6.0
Lithuanian S.S.R.....	* 367	* 540	* 587	* 32.7	* 22.6	* 8.7
Kaunas.....	152	214	232	52.6	40.8	8.4
Klaypeda.....	(¹)	90	100	(²)	(³)	11.1
Vil'nyus.....	215	236	255	18.6	9.8	8.1
Moldavian S.S.R.....	112	216	236	110.7	92.9	9.3
Kishinev.....	112	216	236	110.7	92.9	9.3
Latvian S.S.R.....	348	580	607	74.4	66.7	4.7
Riga.....	348	580	607	74.4	66.7	4.7
Kirgiz S.S.R.....	93	220	252	171.0	136.6	14.5
Frunze.....	93	220	252	171.0	136.6	14.5
Tadzhik S.S.R.....	83	224	248	198.8	169.9	10.7
Dushanbe.....	83	224	248	198.8	169.9	10.7
Armenian S.S.R.....	272	617	671	146.7	126.8	8.8
Yerevan.....	204	509	558	173.5	149.5	9.6
Leninakan.....	68	108	113	66.2	58.8	4.6
Turkmen S.S.R.....	127	170	187	47.2	33.9	10.0
Ashkhabad.....	127	170	187	47.2	33.9	10.0
Estonian S.S.R.....	160	282	298	86.3	76.3	5.7
Tallin.....	160	282	298	86.3	76.3	5.7

* Because much of the prewar population of Klaypeda (formerly Memel) has apparently been expelled and replaced by Russians, no figure for 1939 is shown. The percent change between 1939 and 1959 and between 1939 and 1961 for Lithuanian S.S.R. excludes Klaypeda.

Source: Based on data reported in Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy yezhegodnik* (The National Economy of the U.S.S.R. in 1960, A Statistical Yearbook. Moscow, Gosstatizdat, 1961, pp. 52-56.

TABLE A-9.—Nationality composition of the population of the U.S.S.R., 1939 and 1959

[Population figures in thousands. Figures for 1939 presumably relate to the beginning of the year; those for 1959 to the census of Jan. 15. A minus sign (—) in percent change column denotes a decrease]

Nationality	Population		Percent change, 1939 to 1959	Percent distribution	
	1939 ¹	1959		1939 ¹	1959
Total.....	191,700	208,827	8.9	100.0	100.0
Russian.....	100,391	114,114	13.7	52.4	54.6
Ukrainian.....	35,611	37,253	4.6	18.6	17.8
Belorussian.....	8,275	7,913	-4.4	4.3	3.8
Uzbek.....	4,845	6,015	24.1	2.5	2.9
Tatar.....	4,313	4,968	15.2	2.2	2.4
Kazakh.....	3,101	3,622	16.8	1.6	1.7
Azerbaijdzhan.....	2,275	2,940	29.2	1.2	1.4
Armenian.....	2,152	2,787	29.5	1.1	1.3
Georgian.....	2,249	2,692	19.7	1.2	1.3
Lithuanian.....	2,032	2,326	14.5	1.1	1.1
Jewish.....	4,800	2,268	-52.8	2.5	1.1
Moldavian.....	2,060	2,214	7.5	1.1	1.1
German.....	1,424	1,620	13.8	.7	.8
Chuvash.....	1,369	1,470	7.4	.7	.7
Latvian.....	1,628	1,400	-14.0	.8	.7
Tadzhik.....	1,229	1,397	13.7	.6	.7
Polish.....	2,027	1,380	-31.9	1.1	.7
Mordvian.....	1,456	1,285	-11.7	.8	.6
Turkmen.....	812	1,002	23.4	.4	.5
Bashkir.....	843	989	17.3	.4	.5
Estonian.....	1,143	989	-13.5	.6	.5
Kirgiz.....	884	969	9.6	.5	.5
Peoples of Dagestan.....	857	944	10.2	.4	.5
Avar.....		270			.1
Lezgin.....		223			.1
Dargin.....		158			.1
Kumyk.....		135			.1
Lak.....		64			(2)
Nogay.....		39			(2)
Tabasaran.....		35			(2)
Tsakhur.....		7			(2)
Agul.....		7			(2)
Rutul.....		7			(2)
Udmurt.....	606	625	3.1	.3	.3
Mari.....	481	504	4.8	.3	.2
Komi and Komi-Permyak.....	409	431	5.4	.2	.2
Chechen.....	408	419	2.7	.2	.2
Osetin.....	354	413	15.8	.2	.2
Bulgarian.....	113	324	186.7	.1	.2
Korean.....	180	314	74.4	.1	.2
Greek.....	286	309	8.0	.1	.1
Buryat.....	224	253	12.9	.1	.1
Yakut.....	242	237	-2.1	.1	.1
Karbardin.....	184	204	10.9	.1	.1
Karakalpak.....	185	173	-6.5	.1	.1
Karelian.....	253	167	-34.0	.1	.1
Hungarian.....		155			.1
Gypsy.....		132			.1
Peoples of the north.....		127			.1
Evenki.....		25			(2)
Nentsy.....		23			(2)
Khanty.....		19			(2)
Chukchi.....		12			(2)
Eveny.....		9			(2)
Nanay.....		8			(2)
Mansi.....		6			(2)
Koryaks.....		6			(2)
Sel'kup.....		4			(2)
Nivkhi.....		4			(2)
Ul'chi.....		2			(2)
Saam.....		2			(2)
Udegey.....		1			(2)
Eskimo.....		1			(2)
Itel'men.....		1			(2)
Ket.....		1			(2)
Orochi.....		1			(2)
Nganasan.....		1			(2)
Yukagir.....		1			(2)
Aleutian.....		(3)			(2)

See footnotes at end of table, p. 587.

TABLE A-9.—Nationality composition of the population of the U.S.S.R.: 1939 and 1959—Continued

Nationality	Population		Percent change, 1939 to 1959	Percent distribution	
	1939 ¹	1959		1939 ¹	1959
Gagauz.....		124			0.1
Rumanian.....		106			.1
Kalmyk.....	134	106	-20.9	0.1	.1
Ingush.....	92	106	15.2	(?)	.1
Tuvvinian.....		100			(?)
Uyгур.....		95			(?)
Finnish.....	143	93	-35.0	.1	(?)
Karachay.....	76	81	6.6	(?)	(?)
Adygey.....	88	80	-9.1	(?)	(?)
Abkhaz.....	59	65	10.2	(?)	(?)
Kurd.....	46	59	28.3	(?)	(?)
Khakas.....	53	57	7.5	(?)	(?)
Altay.....	48	45	-6.3	(?)	(?)
Balkar.....	43	42	-2.3	(?)	(?)
Turkish.....		35			(?)
Cherkessian.....		30			(?)
Chinese.....	30	26	13.3	(?)	(?)
Czech.....	(⁴)	25			(?)
Aysory.....		22			(?)
Dungan.....		22			(?)
Iranian.....	39	21	-46.2	(?)	(?)
Abazynty.....		20			(?)
Vepsy.....		16			(?)
Shortsy.....		15			(?)
Slovak.....	(⁴)	15			(?)
Taty.....		11			(?)
Arabs.....	22	8	-63.6	(?)	(?)
Beludzhi.....		8			(?)
Karaimy.....		6			(?)
Albanian.....		5			(?)
Yugoslav.....		5			(?)
Udiny.....		4			(?)
Spanish.....		2			(?)
Afghan.....		2			(?)
Mongol.....		2			(?)
Italian.....		1			(?)
Izhortsy.....		1			(?)
French.....		1			(?)
Japanese.....		1			(?)
Vietnamese.....		1			(?)
Tofalary.....		1			(?)
Other.....	1,099	17		.6	(?)

¹ The 1939 data presumably refer to the adjusted 1940 territory, i.e., to the interwar territory plus territories acquired during 1939 and 1940, but excluding the territory retroceded to Poland at the end of the war.

² Less than ½ percent.

³ Less than 500 persons.

⁴ Mironenko lists 27,000 "Czechs and Slovaks."

Source: 1939: Yu.P. Mironenko, "National'nyy sostav naseleniya S.S.S.R. po dannym sovetskoy statistiki" ("Nationality Composition of the Population of the U.S.S.R., According to the Soviet Statistical Data"), *Vestnik instituta po izucheniyu S.S.S.R. (Journal of the Institute for the Study of the U.S.S.R.)*, No. 2, 1958, pp. 45-63. Mironenko's data were reportedly taken from varied Soviet sources.

1959: Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1960, A Statistical Yearbook)*, Moscow, Gosstatizdat, 1961, pp. 14-16.

TABLE A-10.—Nationality composition of the population of the U.S.S.R., by republic, Jan. 15, 1959

[Population figures in thousands]

Republic and nationality	Population	Percent distribution	Republic and nationality	Population	Percent distribution
R.S.F.S.R.....	117,534	100.0	Kazakh S.S.R.....	9,310	100.0
Russian.....	97,864	83.3	Kazakh.....	2,795	30.0
Tatar.....	4,075	3.5	Russian.....	3,974	42.7
Ukrainian.....	3,359	2.9	Ukrainian.....	762	8.2
Chuvash.....	1,436	1.2	Tatar.....	192	2.1
Mordvian.....	1,211	1.0	Uzbek.....	137	1.5
Bashki.....	954	.8	Belorussian.....	107	1.1
Jewish.....	875	.7	Korean.....	74	.8
Belorussian.....	844	.7	Uyghur.....	60	.6
German.....	820	.7	Polish.....	53	.6
Peoples of Dagestan.....	797	.7	Dungan.....	10	.1
Udmurt.....	616	.5	Other.....	1,146	12.3
Mari.....	498	.4	Georgia S.S.R.....	4,044	100.0
Komi and Komi-Permyak.....	426	.4	Georgian.....	2,601	64.3
Kazakh.....	382	.3	Osetin.....	141	3.5
Armenian.....	256	.2	Abkhaz.....	63	1.6
Buryat.....	252	.2	Armenian.....	443	11.0
Osetin.....	248	.2	Russian.....	408	10.1
Yakut.....	236	.2	Azerbaijdzhan.....	154	3.8
Karabardin.....	201	.2	Greek.....	73	1.8
Karelian.....	164	.1	Ukrainian.....	52	1.3
Peoples of the North.....	126	.1	Jewish.....	52	1.3
Polish.....	118	.1	Kurd.....	16	.4
Kalmyk.....	101	.1	Other.....	41	1.0
Tuvinian.....	100	.1	Azerbaijdzhan S.S.R.....	3,698	100.0
Korean.....	91	.1	Azerbaijdzhan.....	2,494	67.4
Adygey.....	79	.1	Russian.....	501	13.5
Gypsy.....	72	.1	Armenian.....	442	12.0
Finnish.....	72	.1	Lezgin.....	98	2.7
Azerbaijdzhan.....	71	.1	Other.....	163	4.4
Moldavian.....	62	.1	Lithuanian S.S.R.....	2,711	100.0
Georgian.....	58	(1)	Lithuanian.....	2,151	79.3
Khakas.....	56	(1)	Russian.....	231	8.5
Greek.....	47	(1)	Polish.....	230	8.5
Altay.....	45	(1)	Belorussian.....	30	1.1
Other.....	922	0.8	Jewish.....	25	.9
Ukrainian S.S.R.....	41,869	100.0	Ukrainian.....	18	.7
Ukrainian.....	32,158	76.8	Other.....	26	1.0
Russian.....	7,091	16.9	Moldavian S.S.R.....	2,885	100.0
Jewish.....	840	2.0	Moldavian.....	1,887	65.4
Polish.....	363	.9	Ukrainian.....	421	14.6
Belorussian.....	291	.7	Russian.....	293	10.2
Moldavian.....	242	.6	Gagauz.....	96	3.3
Bulgarian.....	219	.5	Jewish.....	95	3.3
Hungarian.....	149	.4	Bulgarian.....	62	2.1
Greek.....	104	.2	Other.....	31	1.1
Rumanian.....	101	.2	Latvian S.S.R.....	2,093	100.0
Other.....	311	.7	Latvian.....	1,298	62.0
Byelorussian S.S.R.....	8,055	100.0	Russian.....	556	26.6
Belorussian.....	6,532	81.1	Belorussian.....	62	3.0
Russian.....	659	8.2	Polish.....	60	2.9
Polish.....	539	6.7	Jewish.....	37	1.8
Jewish.....	150	1.9	Lithuanian.....	32	1.5
Ukrainian.....	133	1.7	Ukrainian.....	29	1.4
Other.....	42	.5	Other.....	19	.9
Uzbek S.S.R.....	8,106	100.0	Kirgiz S.S.R.....	2,066	100.0
Uzbek.....	5,038	62.2	Kirgiz.....	837	40.5
Russian.....	1,091	13.5	Russian.....	624	30.2
Tatar.....	445	5.5	Uzbek.....	219	10.6
Kazakh.....	335	4.1	Ukrainian.....	137	6.6
Tadzhik.....	311	3.8	Tatar.....	56	2.7
Karakalpak.....	168	2.1	Kazakh.....	20	1.0
Korean.....	138	1.7	Tadzhik.....	15	.7
Jewish.....	94	1.2			
Kirgiz.....	93	1.1			
Ukrainian.....	88	1.1			
Turkmen.....	55	.7			
Other.....	250	3.1			

1 Less than 0.5 percent.

TABLE A-10.—Nationality composition of the population of the U.S.S.R., by republic, Jan. 15, 1959—Continued

[Population figures in thousands]

Republic and nationality	Popula- tion	Percent distribu- tion	Republic and nationality	Popula- tion	Percent distribu- tion			
Uygur.....	14	0.7	Turkmen S.S.R.....	1,516	100.0			
Other.....	144	7.0						
Tadzhik S.S.R.....	1,980	100.0				Turkmen.....	924	60.9
Tadzhik.....	1,051	53.1				Russian.....	263	17.3
Uzbek.....	454	22.9				Uzbek.....	125	8.2
Russian.....	263	13.3				Kazakh.....	70	4.6
Tatar.....	57	2.9				Tatar.....	30	2.0
Ukrainian.....	27	1.4				Ukrainian.....	21	1.4
Kirgiz.....	26	1.3				Armenian.....	20	1.3
Kazakh.....	13	.7				Other.....	63	4.2
Other.....	89	4.5	Estonian S.S.R.....	1,197	100.0			
Armenian S.S.R.....	1,763	100.0	Estonian.....	893	74.6			
Armenian.....	1,552	88.0	Russian.....	240	20.1			
Azerbaydzhan.....	108	6.1	Finnish.....	17	1.4			
Russian.....	56	3.2	Ukrainian.....	16	1.3			
Kurd.....	26	1.5	Belorussian.....	11	.9			
Other.....	21	1.2	Jewish.....	5	.4			
			Other.....	15	1.3			

Source: Tsentral'noye statisticheskoye upravleniye pri Sovete ministrov SSSR, *Narodnoye khozyaystvo SSSR v 1959 godu, statisticheskiy yezhegodnik* (The National Economy of the U.S.S.R. in 1959, A Statistical Yearbook), Moscow, Gosstatizdat, 1960, pp. 16-20.



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SOVIET ECONOMIC POWER

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JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES

Part VIII
EMPLOYMENT



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EMPLOYMENT IN THE U.S.S.R.:
COMPARATIVE U.S.S.R.-U.S. DATA

BY

MURRAY S. WEITZMAN, MURRAY FESHBACH,
AND LYDIA KULCHYCKA

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EMPLOYMENT IN THE U.S.S.R.: COMPARATIVE U.S.S.R.-U.S. DATA

CHAPTER 1. INTRODUCTION

I. SCOPE OF PAPER

This paper has a limited number of objectives that focus mainly on U.S.S.R. employment and its comparison with U.S. employment. Published Soviet employment data from the All-Union Population Census of January 15, 1959, and from current statistical reports are presented along with a substantial amount of additional employment information based on research in the field. In presenting U.S.S.R. and U.S. employment comparisons, adjustments to enhance their comparability are made when possible. Although the purpose of this paper is limited, the subject matter is vast. Accordingly, some of the textual material is rather brief, with the burden for imparting information placed on the estimates contained in the various text and appendix tables.

There are three terms used in this paper that may cause some difficulty to the reader. Two of these terms are of Soviet origin and both contain the adjective "able bodied"—the "population in the able-bodied ages," and the "able-bodied population." The last term, "work status," is one that has been coined for comparing the U.S.S.R. and U.S. population engaged in recognized economic activities.

The population in the able-bodied ages is defined currently in the U.S.S.R. as the total number of males of 16 to 59 years of age and females of 16 to 54 years of age. The able-bodied population consists of the same population group, but excludes nonworking invalids. These concepts are particularly important in Soviet demography, planning, and agricultural labor statistics, as well as for legislation relating to pensions. It might be noted that along with the able-bodied age group, the Soviet Union identifies two additional age groups: the underaged group, that is, those 12 to 15 years of age, and the overaged group, that is, males 60 years of age and over and females 55 years of age and over. For the purposes of comparison, U.S. data are also grouped according to these Soviet classifications.

In comparing the U.S.S.R. and U.S. population engaged in recognized economic activities, there is the difficult problem of conceptual differences underlying the data for each country. The 1959 U.S.S.R. Census of Population data on the population employed in the national economy are based on usual economic activity without reference to any specific time period. In contrast, U.S. labor force and work experience data relate to a specific time period. It was determined that U.S. work experience estimates adjusted to the U.S.S.R. employed

DIMENSIONS OF SOVIET ECONOMIC POWER

cept were most relevant for comparative purposes. "k status" was adopted to cover the different concepts

is divided into four chapters. The first chapter contains general observations on experience acquired in studying Soviet economics and some of the highlights pertaining to U.S.S.R. and U.S. employment comparisons. The second chapter describes and sets forth Soviet employment data and estimates prepared from Soviet information. The third chapter is devoted to a presentation of some of the techniques and organizations used in the U.S.S.R. in the management of the labor supply. The concluding chapter surveys the kind of U.S. data that are available for U.S.S.R. and U.S. employment comparisons and presents U.S.S.R. and U.S. estimates for total employment, agricultural and nonagricultural employment, and employment in industry.

II. SOME GENERAL OBSERVATIONS

Basic research in the field of Soviet economics is a tedious but challenging task. Endless hours are consumed in searching and examining Soviet source materials and in systematically assembling different pieces of information toward the ultimate goal of understanding and describing Soviet economic operations and performance. It is a field too often replete with complicated, tortuous, contradictory, and ambiguous Soviet explanations of many complex economic subjects. One of the more "entertaining" if not entirely enjoyable interludes for the Western researcher is reading Soviet studies on U.S.S.R. and U.S. economic comparisons. Whether these comparisons relate to production, investment, employment, productivity, or other subjects, the propaganda element is never far below the surface and the theme never varies. They invariably extol Soviet accomplishments in building communism, and deprecate American achievements in providing comparative abundance in freedom for its inhabitants and economic aid for other nations, including some having Communist regimes. The Soviet writer, in presenting material on the employed and nonemployed population in both countries, will point to an employed population consisting of 47.5 percent of the total population in the U.S.S.R. and 35 percent in the United States¹ as a clear-cut example of the advantage enjoyed by the Communist system over the capitalist one. Concerning the same Soviet estimates it might be written, but the Soviet writer is disinclined to write it, that in the United States each employed person supports more than 1.8 additional persons at a much higher level of living than in the U.S.S.R. where each employed person supports only 1.1 others.² A supposedly decadent capitalist system that is able to support over 65 percent more people per employed person, and at a higher living level than the Soviet system, is something that the Soviet writer does not care or dare to commit to print.

Soviet use of economic comparisons as a propaganda weapon in the world arena should not go unchallenged; it is not intended here, how-

¹ Nauchno-issledovatel'skiy institut truda Gosudarstvennogo komiteta Soveta ministrov SSSR po voprosam truda i zarabotnoy platy, Trudovyye resursy SSSR (Problemy raspredeleniya i ispol'zovaniya) (Labor Resources of the U.S.S.R. [Problems of Distribution and Utilization]), edited by N. I. Shishkin, Moscow, Ekonomizdat, 1961, p. 6. The author apparently derived the estimate for the U.S.S.R. from the 1959 Population Census by dividing the population reported as employed, including the armed forces but excluding those in private subsidiary agriculture, of 99.1 million, by the total population of 208.8 million. It has not been possible to reconstruct his estimate for the United States.

² See chapter 4 for estimates prepared for this paper.

ever, to systematically describe, dissect, and evaluate the prewar and postwar efforts of Soviet authors in this field. This would require a detailed study and considerably expand the scope of the paper.

One of the hard problems constantly encountered in describing changes in Soviet employment is that of comparability. The danger is always present that one is also inadvertently describing changes in Soviet series arising from modifications in specific definitions of activities, economic units covered, employment categories, and measurement standards. The problem of comparability applies equally as well to estimates derived in the absence of specifically reported Soviet data.

The scope and complexity of the comparability problem is considerably extended by the introduction of international employment comparisons. The introduction of spatial dimensions to what hitherto would be essentially a temporal dimension requires not only internal comparability, but also international comparability. The absence of detailed studies of U.S.S.R. and U.S. employment that cope with the comparability problem, except for industry, is the primary reason for limiting U.S.S.R. and U.S. employment comparisons in this paper to general comparisons and to those for industry.

Problems of comparability of Soviet employment data are particularly perplexing as they relate to the consistent exclusion or inclusion of the categories of "forced" or "corrective" labor, certain paid employment categories, that is, persons (carpenters, stovemakers, shepherds, etc.) hired by individuals or organized groups of citizens, and unpaid "voluntary" labor. The basic problems are those of completeness in coverage of officially reported Soviet employment statistics for workers and employees, and for purposes of employment series, whether the omitted categories are a constant proportion of reported employment totals. A decrease in the proportion, which might be brought about by incorporating all or part of the omitted employment categories, would indicate a faster increase in employment than warranted by the facts. On the other hand, an increase in the proportion would indicate a slower increase in employment than actually occurred. For the period 1940 to 1961, it is possible that there were both increases and decreases in the proportion in view of the different categories of employment considered here.

Quite understandably the Soviet Union is disinclined to release information concerning "forced" labor. There would be no statistical problem of comparability if this employment category were included consistently in the various reported Soviet employment series. However, there is reason to believe that "forced" labor has at times if not always been omitted from Soviet published employment data.³ Estimates of the size of "forced" labor in the period immediately preceding World War II vary from approximately 2 million to upward of five times this number. Considering the size and composition of the Soviet population and the reported and estimated employment (see tables 5 and 7), it is very likely that the amount of unreported "forced" labor was at the lower end of this range of estimates. Since the death of Stalin in 1953, there has probably been a considerable reduction in the number of persons engaged in "forced"

³ Some of the evidence and the following discussion is presented in U.S. Bureau of the Census, *The Magnitude and Distribution of Civilian Employment in the U.S.S.R.: 1928-59*, by Murray S. Weitzman and Andrew Elias. International Population Reports, Series P-95, No. 58, Washington, D.C., Foreign Manpower Research Office, Bureau of the Census, April 1961, pp. 4, 5. "Forced" labor in this context does not include work carried out by prisoners of war in the U.S.S.R.

labor. Historically, "forced" labor has been used principally in construction, mining, and logging.

Several Soviet articles reporting on the 1959 Population Census present, in addition to census results, an annual average employment figure for 1959 which permits an estimate of 1 million to be made for the volume of employment omitted from regularly reported employment data for workers and employees and members of producers' cooperatives. In these articles the annual average employment given for 1959 is 58.9 million and this figure includes employment of persons hired by organized groups of citizens, and carpenters, stovemakers, and other workers employed in private housing and repair work, whereas the employment figure derived from regularly reported establishment statistics on employment for 1959 is 57.9 million, of which 56.5 million relates to workers and employees and 1.4 million to members of producers' cooperatives.

Judging from reports in the Soviet press, journals, and studies, Soviet authorities are making concerted and protracted efforts to attract Soviet citizens into unpaid "voluntary" work as a manifestation of their enthusiasm in building Communism. The number of persons engaged in such voluntary unpaid work can be expected to expand if and when the scheduled workweek is further shortened in the Soviet Union and the "free" time away from paid work increases. There is a long list of long-term and short-term voluntary work that Soviet citizens perform in their "free" time. Volunteers serve as volunteer people's guards (*druzhinniki*), of which there are more than 1 million, volunteer fireguards, statistical auditors, scrap metal collectors, and so forth. A more expanded listing and a discussion of these activities are presented in chapter 3.

From 1938 to the publication of the first postwar U.S.S.R. statistical handbook in 1956, published Soviet statistics usually consisted of percentage increases from unknown bases. Although considerably more absolute data are now available in the West than during the Stalin freeze,⁴ the volume, detail, and descriptive material simply do not measure up to what was published prior to 1938. In research work on Soviet employment it is thus necessary to collect and process many different types of Soviet information and data, often vague and imprecise, from many sources. There is also the need to fill in gaps in data through the collateral use of secondary Soviet information. Consistency checks represent, therefore, an indispensable procedure in appraising the use of Soviet information and prepared estimates. The restraints that consistency checks impose serve to inhibit unwarranted speculation and lessen the danger of being swept away by a flood of Soviet propaganda claims. Checks for consistency can be made most effectively when the conceptual framework under which Soviet data (and estimates) are generated is known and understood. Invaluable in this connection are foundation studies that blueprint specific Soviet recordkeeping practices, reporting systems, and statistical procedures. The fact that employment is only one component in a complex web of economic relationships and that these relation-

⁴ See, for example, the statement of the Chief of the Central Statistical Administration, V. N. Starovskiy, that: "A majority of the materials of state and departmental accounting and statistics were unnecessarily made secret or were put aside into materials not subject to press publication. And until recently—statistical data were not published." Cited in U.S. Bureau of the Census, *The Soviet Statistical System: Labor Force Recordkeeping and Reporting*, by Murray Feshbach, International Population Statistics Reports, Series P-90, No. 12, Washington, D.C., U.S. Government Printing Office, 1960, p. 20.

ships are used in constructing employment estimates points up the utility of foundation studies on such subjects as production, investment, and prices. Proceeding from foundation studies to statistical studies should provide better groundwork for excursions into analytic endeavors.

III. SUMMARY

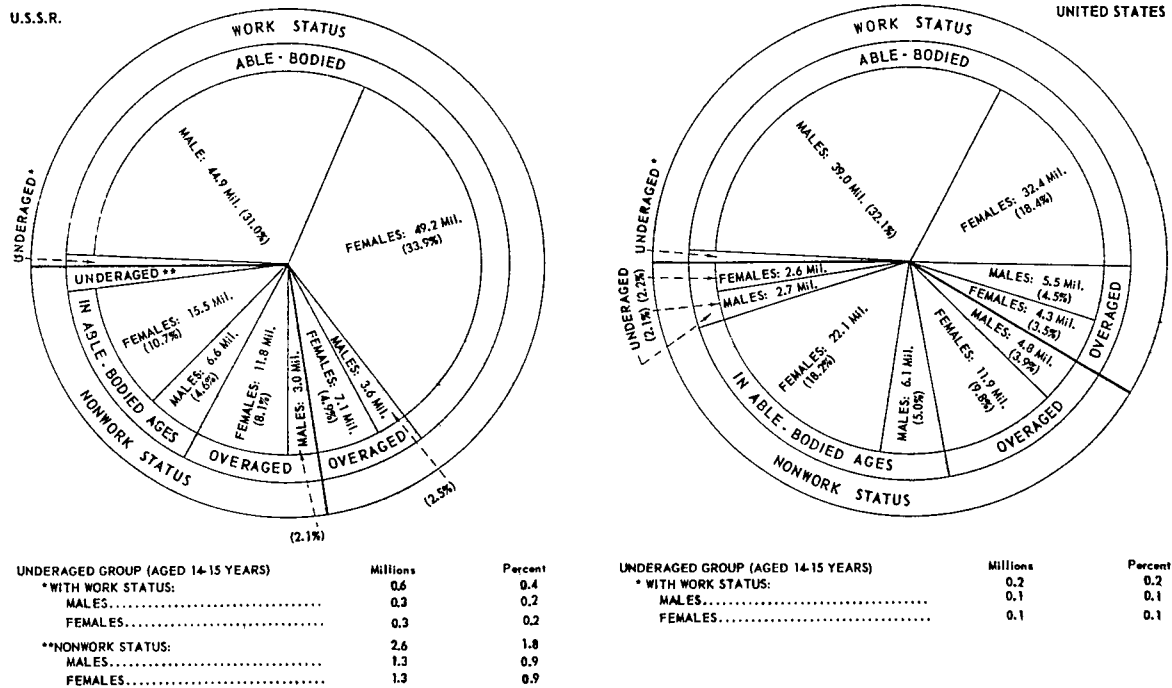
This section is devoted primarily to U.S.S.R.-United States employment comparisons. Any discussion of U.S.S.R.-United States comparisons from 1940 to 1960 must recognize Soviet losses sustained as a result of the Second World War, the last and costliest in a series of Soviet demographic disasters. The U.S.S.R. population increased from 193 million as of July 1, 1940 (in terms of the then current boundaries) to 214.2 million as of July 1, 1960, or by only 11.1 percent. These figures imply that military deaths, civilians killed by acts of war, war-induced excess mortality and decreased natality, and emigration could amount to 50 million people, or about one-quarter of the population enumerated at 208.8 million in the All-Union Population Census of January 15, 1959.

In contrast to Soviet population experience, the United States recorded a substantial increase in population. From April 1, 1940, to April 1, 1960, the U.S. population grew from 131.7 million to 179.3 million (including Alaska and Hawaii in 1960), or by 36.1 percent. The U.S. advantage over the U.S.S.R. in population growth has been considerably less for the population aged 16 years and over. For the United States this group increased from 95.2 million in 1940 to 119.8 million in 1960, or by 25.8 percent. In the U.S.S.R. this group rose from 120.1 million to 145.8 million, or by 21.4 percent.

The published results of the U.S.S.R. All-Union Population Census of January 15, 1959, permit a comparative analysis of the work status of the population of the U.S.S.R. and the United States at the beginning of 1959. This type of analysis is not possible for other years because of inadequate Soviet information on employment by age and sex. Adjustments of U.S. work experience data for increased comparability are described in chapter 4, section I.

At the beginning of 1959, the U.S.S.R. census reported the employed civilian population to be 105.4 million persons. This group comprised 72.7 percent of the 145 million persons 14 years of age and over. For the United States, the most comparable estimate is 71.4 million for persons with work experience, constituting 58.7 percent of the U.S. population 14 years of age and over (fig. 1). The higher work status rate for the U.S.S.R. is due largely to the more intensive employment of females in the U.S.S.R. since the work status rates for males were approximately the same for both countries. For males aged 16-59 years, the rates were 87.2 percent for the U.S.S.R. and 87.8 percent for the United States. Similarly for males 60 years of age and over the rates were 54.6 percent for the U.S.S.R. and 54.5 percent for the United States. However, for females aged 16-54 years, the work status rate was approximately 50.0 percent higher in the U.S.S.R.—76.0 percent for the U.S.S.R. and 51.0 percent for the United States. Similarly for females aged 55 years and over, the Soviet rate was found to be nearly 40 percent higher than the U.S. rate—37.6 percent for the U.S.S.R. and 27 percent for the United States.

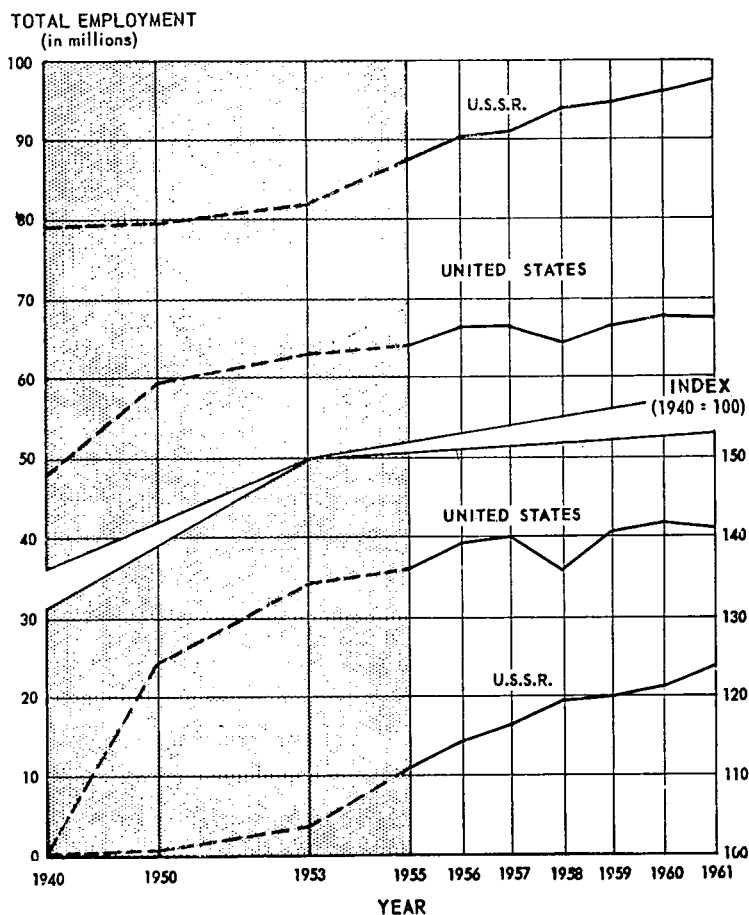
FIGURE 1.—U.S.S.R. and U.S. civilian populations aged 14 years and over, and work status, by age group and sex: 1959
(Absolute numbers in millions)



SOURCE: TABLE 9: U.S.S.R., COLUMNS 1, 4 AND 5; UNITED STATES, COLUMNS 1, 4 AND 5a.

Total civilian employment in the U.S.S.R. grew from 79 million in 1940 to 95.7 million in 1960. In the United States, it increased from 47.4 million to 67.4 million, based on a constructed employment series supported largely by U.S. Bureau of Labor Statistics estimates compiled from establishment reports, or alternatively from 45.3 million to 64.2 million, based on the results of monthly household interviews conducted by the U.S. Bureau of the Census. The U.S.S.R. growth in employment has been concentrated in the 1950 to 1960 period in contrast to the United States where employment expanded during each of the two decades. Of the 23.6 percent increase in employment in the U.S.S.R., all but 0.7 percent took place from 1950 to 1960. For the United States, total employment increased by 24.4 percent (constructed employment series) from 1940 to 1950 and by 42.2 percent from 1940 to 1960 (fig. 2).

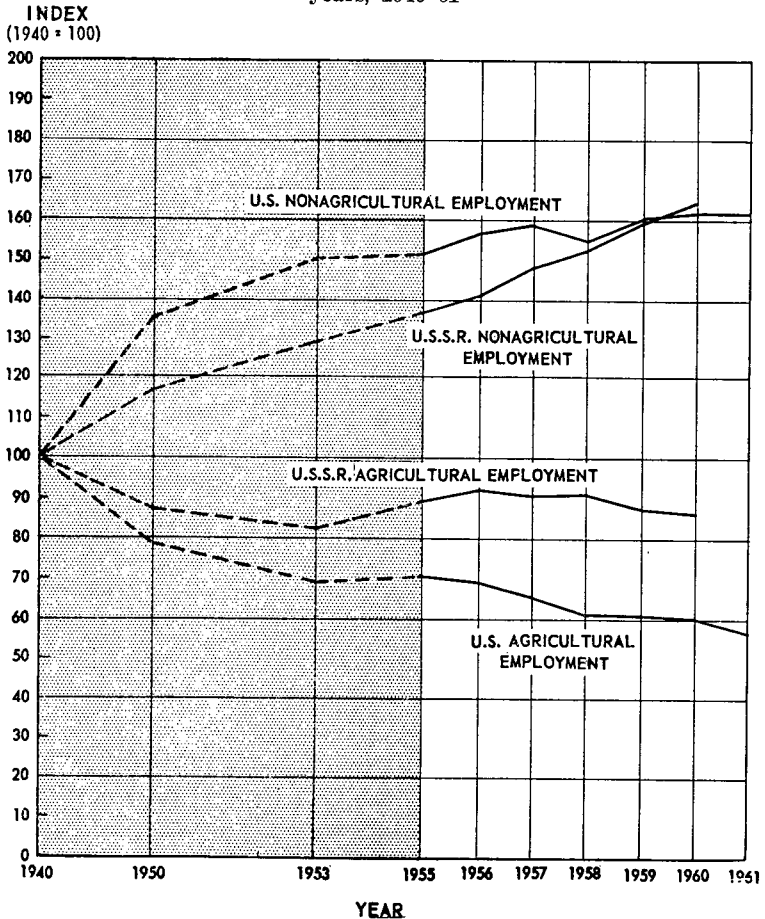
FIGURE 2.—U.S.S.R. and U.S. civilian employment: Selected years, 1940-61



SOURCE: TABLE 10.

For purposes of comparing agricultural and nonagricultural employment, U.S.S.R. employment estimates have been rearranged to correspond more closely to the U.S. classification (see ch. 4, sec. II, table 10). From 1940 to 1960, nonagricultural employment for both countries registered about the same percentage increases: 64.8 percent for the U.S.S.R. and 62.9 percent for the United States (constructed employment series). The U.S.S.R. had a relatively higher rate of growth during the second decade whereas the United States experienced its greater rate of growth during the first decade (fig. 3).

FIGURE 3.—U.S.S.R. and U.S. agricultural and agricultural employment: Selected years, 1940–61



SOURCE: TABLE 10.

One of the basic objectives in the development of the Soviet economy is the absolute reduction in human resources committed to agriculture and their transfer to nonagricultural endeavors. This effort has been only moderately successful, especially when the stunted growth in agricultural output is taken into consideration. Estimates of Soviet

agricultural employment, which have been adjusted for comparison with those for the United States, indicate a reduction of 13.8 percent from 1940 to 1960. During the same period, U.S. agricultural employment declined by 40 percent while agricultural output increased substantially.

CHAPTER 2. LABOR UTILIZATION IN THE U.S.S.R.

This chapter is divided into three major sections. The first two sections are devoted to a review and discussion of the size and distribution of employment in the U.S.S.R. The first of these sections is based on materials derived principally from the All-Union Population Census of January 15, 1959, and such information that is available for the preceding census taken in 1939. The second section deals with annual employment statistics. The final section is devoted to the presentation of some observations on U.S.S.R. labor resources and requirements for the 7-year plan, 1959-65.

I. LABOR UTILIZATION BASED ON THE ENUMERATION OF THE POPULATION

A. *The All-Union Population Census of January 15, 1959*

One of the most discussed aspects of the U.S.S.R. economy since the abrogation of the sixth 5-year plan in 1957 has been the country's labor situation. Prevalent conceptions concerning the relative abundance of human resources in the Soviet Union have been reexamined in the light of new demographic information bearing on the problem of war losses that appeared in the first postwar statistical handbook published in 1956. However, the full impact of the Second World War on the Soviet population generally and on the size and composition of the country's manpower resources specifically did not become apparent until the release of the age-sex distribution of the population from the 1959 census.

The devastations of the Second World War, in terms of the birth deficit and excessive child mortality became fully evident for the first time from the relatively low numbers of survivors of the 1942-45 cohorts (ages 13-16 years in 1959). The limited amount of demographic materials released so far also shows that the differential mortality and emigration during the war heavily unbalanced the prewar relationship between the sizes of the male and female population aged 19-20 years and older.

1. *Some census instructions relevant to the enumeration of the employed population.*—The census data on the economic status of the population⁵ are less illuminating and useful than the purely demographic information. Although not explicit in the instructions, the economic information collected in the census was geared to reflect major dogmatic principles governing manpower utilization in a Socialist society, particularly, full and universal employment, and absence of child labor. Thus, unlike U.S. census practice, no temporal limitation was imposed on the work status of the employed population. Those without a job at the time of the enumeration due to a "change in the place of work" were asked to report the previous place of em-

⁵ Collected on a 100-percent basis in response to questions on place and type of work or source of income.

ployment—seemingly of whatever date.⁶ This, of course, served to eliminate by definition any possibility of frictional unemployment let alone longer term unemployment in the census results. Acting to deflate the overall size of the employed population, on the other hand, was a virtual exclusion of persons under 16 years of age from among the economically active. Whenever applicable, a student's principal occupation (going to school) determined his economic status. As a result, the Soviet census reported only 600,000 underaged persons in the labor force (0.6 percent of total employment),⁷ whereas the 1959 annual employment report listed 2.5 million underaged persons participating in the work of the socialized sectors of the collective farms alone.⁸ A certain amount of leeway would also be expected in the classification of pensioners working on a part-time basis who could report their source of subsistence as their pension, another breadwinner in the family, or work—depending on the relative share of income from each source. The general conclusion in regard to the economic activities of the overaged population in the Soviet Union is one of high participation, principally in agriculture, and most likely in excess of the reported census figure.

Neither the seasonality of the respondent's work nor his partial employment found any discernible reflection in the 1959 census figures. Persons performing different kinds of work during the year entered the occupation which they considered their principal one. The census schedule contained no provision for registering different levels of labor participation comparable to hours of work in the U.S. census; persons engaged in temporary, day-to-day, or occasional work were to report their most frequent place of employment, or (in case of difficulties in specifying) the place where they worked last. The combined number of the part-time and occasionally employed may have reached as high as 4 million persons.

2. *General findings.*—With these limitations in mind, some general observations can be made about the economic activities of the Soviet population. According to the census the Soviet labor force numbered 108,995,000 persons, including 3,623,000 in the armed forces (table 1). This represented 52.2 percent of the total population and 75 percent of all persons 16 years of age and over. Of the total labor force, 87.4

⁶ The problem of new workers—graduates of educational institutions—seeking employment was probably quite minimal. Since the census was taken in January 1959, the bulk of the June 1958 graduates was most likely absorbed by that time into the labor force—either through actual employment or formal commitment. The problem of unemployed demobilized soldiers may have been more significant. However, a recommendation of some delegates to the Conference of Statisticians in 1957 to split up the "changing jobs, demobilized, and temporarily unemployed" category into separate groups was voted down by the majority of discussants. Pod'yachikh asserted that full and universal employment conditions prevailing in the Soviet Union eliminate any need for special treatment of these groups. TsSU pri Sovete ministrov SSSR, *Materialy no vsesoyuznoy perepisi naseleniya 1959 goda* (Materials for the All-Union Population Census of 1959), Moscow, Gosstatizdat, 1958, pp. 19-38.

⁷ Students considered in this connection include mostly those attending secondary general schools (roughly grades 8-10), secondary specialized schools, and technical-professional schools. It is mostly the employed students in the third category (specifically FZU students and those of rural schools) who qualified for inclusion among the employed population. Part-time summer jobs and similar economic activities of the other students have been mostly disregarded for purposes of the census; students in grades 5-8 may have been excluded by definition.

⁸ Nauchno-issledovatel'skiy Institut truda Gosudarstvennogo komiteta Soveta ministrov SSSR po voprosam truda i zarabotnoy platy, *Trudoye resursy SSSR* (Problemy raspredeleniya i ispol'zovaniya) (Labor Resources of the U.S.S.R. [Problems of Distribution and Utilization]), edited by N. I. Shishkin, Moscow, Ekonomizdat, 1961, pp. 98-99 (cited hereafter as Shishkin). Their labor participation ranges from at least 1 day to perhaps as many as 100 days per year; in 1959 it averaged 56 days (Shishkin, p. 98).

percent were engaged in civilian occupations of the socialized sector (which includes state-owned establishments and the collective farms) and 3.3 percent were in the armed forces. The private independent sector, consisting of independent artisans and individual peasants, virtually disappeared by 1959 from the Soviet economic scene. The private subsidiary sector,⁹ however, employing 4.2 million members of families of workers and employees and some 5.7 million members of families of collective farmers, represented a sizable proportion of persons in the labor force—over 9 percent of the total.

⁹ A branch of Soviet agricultural economy specializing in the production of truck gardening and animal products. In 1958-59 (the most recent years for which the data are available) the private sector produced on the whole about 35 percent of the country's gross value of agricultural output. In constant prices, the proportion would be lower.

TABLE 1.—Population of the U.S.S.R., by socio-economic category, sex, and age group: Jan. 15, 1959

[Figures for all ages in thousands; those for individual age groups are in millions. Figures in parentheses are estimated. Leaders indicate negligible or nonexistent; (n.a.) indicates data not available and no estimate made. Figures are independently rounded and may not add to totals]

Socio-economic category	Total				Male				Female			
	All ages	Under-aged	Able-bodied	Over-aged	All ages	Under-aged ¹	Able-bodied ¹	Over-aged ¹	All ages	Under-aged ¹	Able-bodied ¹	Over-aged ¹
Total population.....	208,827	63.5	119.8	25.5	94,050	32.3	55.1	6.6	114,777	31.2	64.8	18.9
Total labor force.....	108,995	.6	(97.7)	10.7	52,439	(.3)	(48.5)	(3.6)	56,556	(.3)	(49.2)	(7.1)
Armed forces.....	3,623		3.6		3,623		3.6					
Civilian labor force.....	105,372	(.6)	(94.1)	10.7	48,816	(.3)	(44.9)	(3.6)	56,556	(.3)	(49.2)	(7.1)
Socialized sector.....	95,241	(.6)	(88.8)	5.8	47,733	(.3)	(44.7)	2.8	47,503	(.3)	(44.2)	3.1
Workers and employees.....	62,961	(.1)	(60.8)	(2.0)	33,569		(n.a.)	(n.a.)	29,392		(n.a.)	(.6)
Nonagricultural branches.....	56,350	(.1)	(54.4)	(1.8)	(29,646)		(n.a.)	(n.a.)	(26,704)		(n.a.)	(n.a.)
Agricultural branches.....	6,611		(6.4)	(.2)	(3,923)		(n.a.)	(n.a.)	(2,688)		(n.a.)	(n.a.)
Collective farmers.....	32,280	(.5)	(28.0)	(3.8)	14,169	(.3)	(n.a.)	1.3	18,111	(.2)	(n.a.)	(2.5)
Nonagricultural branches.....	557		(.6)		(472)		(.5)		(85)		(.1)	
Agricultural branches.....	31,723	(.5)	(27.4)	(3.8)	(13,697)	(.3)	(n.a.)	(n.a.)	(18,026)	(.2)	(n.a.)	(n.a.)
Private independent sector.....	266		(.2)	(.1)	164		(.2)		102		(.1)	
Independent artisans.....	174		(.1)	(.1)	(122)		(.1)		(52)			
Individual peasants.....	92		(.1)		(42)				(50)			
Private agricultural subsidiary sector.....	9,865		(5.1)	4.8	914		(.1)	(.8)	8,951		(5.0)	(4.0)
Members of families of workers and employees.....	(4,185)		(3.4)	(.8)	(610)		(.1)	(.5)	(3,575)		(3.3)	(.3)
Members of families of collective farmers.....	(5,680)		(1.7)	(4.0)	(304)			(.3)	(5,376)		(1.7)	(3.7)
Population outside labor force.....	99,832	(62.9)	(22.1)	14.8	41,611	32.0	(6.5)	(3.0)	58,221	(30.9)	(15.6)	(11.8)
Dependents.....	81,340	(62.9)	(12.8)	(5.5)			(1.5)				(11.4)	(5.5)
Able-bodied students.....	4,082		4.1		35,007	{ (32.0)	(1.4)		50,415	{ (30.9)	(2.7)	
Stipendiaries.....	1,718		1.7		943		(.9)		775		(.8)	
Pensioners.....	12,423		3.3	(9.1)	5,580		(2.7)	(2.9)	6,843		(.6)	(6.2)
Other.....	269		(.1)	(.2)	81			(.1)	188		(.1)	(.1)

¹Underaged comprise both males and females 12-15 years of age. The able-bodied age group includes males 16-59 years of age and females 16-54 years of age. The overaged group relates to males 60 years of age and over and females 55 years of age and over.

Source:

Population:

Total—all age groups: TsSU pri Sovete ministrov SSSR, Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy yezbegodnik (The National Economy of the U.S.S.R. in 1960, A Statistical Yearbook). Moscow, Gosstatizdat, 1961, p. 11 (cited hereafter as Nar. khoz. v 1960).

Males and females—all ages: *Ibid.*, p. 12.

Underaged: TsSU pri Sovete ministrov SSSR, Zhenshchiny i deti v SSSR, statisticheskiy sbornik (Women and Children in the U.S.S.R., A Statistical Compilation). Moscow, Gosstatizdat, 1961, p. 57 (cited hereafter as Zhenshchiny).

Able-bodied: Total males or females minus underaged and overaged.

Overaged: Nar. khoz. v 1960, loc. cit.

Labor force (all ages):

Total: *Ibid.*, pp. 25-26; and P. G. Pod'yachikh, Naseleniye SSSR (Population of the U.S.S.R.). Moscow, Gospolitizdat, 1961, pp. 131, 134.

Males: Total labor force minus female labor force.

Females: Zhenshchiny, p. 55.

Population outside labor force:

Total: Pod'yachikh, op. cit., pp. 128-129, 131-132; Nar. khoz. v 1960, p. 25.

Males: Total population minus female population.

Females: Zhenshchiny, loc. cit.

From the government's point of view, the private subsidiary economy represents a reservoir of manpower which, presumably, could be siphoned off into the socialized sectors if and when needed. This approach seemingly determined the treatment of private subsidiary economy as an employment category in the 1959 census—only the members of a household “occupied exclusively with looking after the cattle and performing other agricultural chores in their own subsidiary agricultural enterprise” were included in the 9.9 million reported for this semioccupational group. In establishing the respondent's occupation and place of work, priority was given to employment in the socialized sector; dual job-holders were classified in terms of primary occupation in the socialized sector only, without any recognition of labor input into their private economic activities. Thus, as a measure of total manpower engaged in the private subsidiary economy, the census figure is incomplete, and disproportionately so in regard to the component of family members, workers and employees.

Persons outside the labor force numbered 99.8 million in 1959, i.e., every employed person in 1959 carried the burden of supporting roughly one more person in addition to himself. Of all dependents, 22.1 million were in able-bodied ages. Not all of them, of course, were fully dependent on other members of the family. Students, numbering 1.7 million, were reported as recipients of a state stipend. Some of them are thought to have part-time jobs during the summer, although not necessarily remunerative. The pensioners of these ages numbered 3.3 million people. They also included, in addition to job-associated early retirements, women who raised five or more children (with required length of service), and invalids unable to work. Very little can be said about the Soviet institutionalized population or the able-bodied dependents. According to the census instructions, the entry under “place of work” and “occupation” for all dependents (of private individuals as well as of the state) was to be “no.”¹⁰ Under “source of income” the mentally ill reported place of residence (“a hospital”)—the same as in the case of inmates of homes for the aged or invalids. Nothing is noted about the prison population. Most likely some or all of them have been included in the employed population category, as the figure reported for all state dependents (about 200,000) is much too low to cover all types of state-supported institutions.

Among the least surprising revelations of the 1959 census was the high participation of women in the Soviet labor force. Traditionally a ready substitute for shortages in capital and/or male labor, their proportion of the total civilian labor force amounted to 53.7 percent. The situation was a natural outcome of their abnormal predominance in the adult ages. Of the 116.5 million able-bodied persons available for employment, an estimated 64 million, or 55 percent, were women. In the advanced ages (i.e., 60 years and over), the sex ratio was most heavily unbalanced, with only 54 males per 100 females, as compared with a ratio of 78 for the age group 16–59 years. Consequently, with a lower overall labor participation ratio (69 percent of all women 16 years of age and older were in the labor force as compared with 85

¹⁰ An exception was made in the case of able-bodied orphans residing in children's homes but having an *outside* job. These persons were included in the labor force.

percent for the males) women comprised an estimated 50 percent of the total labor force in the able-bodied ages. Excluding the armed forces where, surprisingly, they do not figure at all, their proportion rose to 52 percent. In the older ages, 66 percent of the persons in the labor force were women:

Relationship	All ages	Able bodied	Overged
Females as percent of:			
Total labor force.....	51.9	50.4	66.4
Armed forces.....	0	0	0
Civilian labor force.....	53.7	52.3	66.4
Socialized sector.....	49.9	49.8	53.4
Private (independent) sector.....	38.3	50.0	-----
Private (subsidiary) sector.....	90.7	89.0	83.3

Source: Table 1.

The high proportion of women in the labor force is characteristic of economies where agriculture engages a substantial portion of the economically active population. This generalization applies to Soviet conditions as well. The private subsidiary sector is made up very largely by female members of the household. Traditionally there has been a large proportion of women among collective farmers, and this has raised considerably their representation in the civilian labor force (table 2).

TABLE 2. Civilian labor force of the U.S.S.R., by socioeconomic category, branch, and sex, Jan. 15, 1959

[Absolute figures in thousands. Figures in parentheses are estimated]

Labor force category	Total	Males	Females	Females as a percent of total
Total civilian labor force.....	105,372	48,816	50,556	53.7
I. Socialized and private independent sector.....	95,507	47,902	47,605	49.8
A. Branches of material production.....	80,862	42,520	38,342	47.4
Industry, construction, transport, and communications ¹	36,575	22,423	14,152	38.7
Agriculture.....	38,426	17,662	20,764	54.0
Collective farmers.....	31,723	(13,697)	(18,026)	(56.8)
Workers and employees.....	6,611	(3,923)	(2,688)	(40.7)
Individual peasants.....	92	(42)	(50)	(54.3)
Trade, public dining, etc.....	5,171	1,993	3,178	61.5
Other branches.....	690	412	248	35.9
B. Branches of nonmaterial production.....	14,453	5,249	9,204	63.7
Education, science, public health.....	9,793	2,865	6,928	70.7
Housing, communal economy, administration, finance-credit system.....	4,660	2,384	2,276	48.8
C. Unknown.....	192	133	59	30.7
II. Private subsidiary sector.....	9,865	914	8,951	90.7

¹ The census classification of material and nonmaterial production does not differentiate between productive and nonproductive transport and communications; regular annual reports do make this distinction.

Source: TsSU pri Sovete ministrov SSSR, "On the Distribution of the U.S.S.R. Population by Social Group, Branch of the National Economy and Occupation and on the Educational Level of Persons Performing Physical and Mental Labor," Vestnik statistiki (Statistical Herald), No. 12, December 1960, pp. 4-5; TsSU pri Sovete ministrov SSSR, Zhenshchiny i deti v SSSR, statisticheskiy sbornik (Women and Children in the U.S.S.R., A Statistical Compilation), Moscow, Gosstatizdat, 1961, pp. 55, 99; and table 1.

Among workers and employees there has been a tendency to concentrate male labor in durable goods industries, construction, freight transport, and communications. Women are heavily represented in the textile and food industries, public dining, and particularly the so-called nonproductive branches of the economy, including the urban transport network, where their overall proportion amounted to 54 percent of total employment.

B. Comparison of the 1939 and 1959 population census results

The comprehensive definition of the economically active population in Soviet censuses would normally minimize the problem of intercensal comparability of employment, provided a comparable territorial coverage could be achieved for the years in question. For comparable demographic characteristics, the additional 20 million people inhabiting the territories annexed in 1939 could be distributed, with a tolerable degree of error, proportionately to the population structure reported by the 1939 census. Fundamental differences in the economies of the political areas involved, however, do not permit a similar mechanical adjustment in the classification of the employed population by branch, sector, and sex. To make such an adjustment would obliterate among other things, the real magnitude of structural changes in agricultural employment between the two censuses, involving an almost complete disappearance of the private sector.¹¹ Taking into account the numerical additions to the private independent sector between 1939 and 1945 through the political expansion of the Soviet Union, collectivization and transfers to other branches of the economy between 1940 and 1953 involved an estimated 6 million individual peasants.

On an aggregate and comparable basis, the Soviet population increased from 190.7 million in 1939 to 208.8 million in 1959, or by 9.5 percent. A similar development is noted for the country's labor force—a recovery from wartime destruction and a modest increase of 12 percent by 1959 (table 3). The able-bodied segment of the population increased somewhat in proportion to the total population in these 20 years and its median age rose from 31.8 years to 32.5 years.

¹¹ In Lithuania, for example, 87.2 percent of the rural population in 1949 comprised individual peasants and independent artisans; collective farmers comprised only 9 percent of the total. In 1950, however, collective farmers already constituted the dominant group. See, K. Z. Surblis, "The Basic Sources for the Formation and Development of the Working Class of the Lithuanian S.S.R. in the Postwar Period," in *Akademiya obshchestvennykh nauk pri TsK KPSS, kafedra istorii sovetskogo obshchestva, Razvitiye rabocheho klassa v natsional'nykh respublikakh SSSR* (The Development of the Working Class in the National Republics of the U.S.S.R.), edited by Z. A. Astapovich and K. V. Gusev, Moscow, Izdatel'stvo VPSH i AON pri TsK KPSS, 1962, p. 113.

TABLE 3.—*Labor force of the U.S.S.R., by socio-economic category: 1939 and 1959 censuses*

[Absolute figures in thousands. Leaders indicate percentages not applicable; (n.a.) indicates data not available and no estimate made]

Labor force category	1939		1959		
	Pre-1940 boundaries		(Comparable 1959 boundaries)	Number	Percent
	Number	Percent	Number		
Total population.....	170,557	-----	190,678	208,827	-----
Total labor force.....	87,155	100.0	97,400	108,995	100.0
I. Armed forces.....	3,391	3.9	(n.a.)	3,623	3.3
II. Civilian employment.....	83,764	96.1	(n.a.)	105,372	96.7
1. Socialized sector.....	75,408	86.5	(n.a.)	95,315	87.4
a. Branches of material production.....	67,450	77.4	(n.a.)	80,862	74.2
Industry, construction, transport, and communications.....	23,718	27.2	(n.a.)	36,575	33.6
Agriculture.....	39,478	45.3	‡ (n.a.)	38,426	35.3
Collective farmers.....	34,277	39.3	(n.a.)	31,723	29.1
Workers and employees.....	3,625	4.2	(n.a.)	6,611	6.1
Individual peasants.....	1,576	1.8	(n.a.)	92	.1
Trade, public dining, procurement, material-technical supply and sale.....	3,861	4.4	(n.a.)	5,171	4.7
Other branches.....	394	.5	(n.a.)	690	.6
b. Branches of nonmaterial production.....	7,958	9.1	(n.a.)	14,453	13.3
Education, science, public health.....	4,649	5.3	(n.a.)	9,793	9.0
Housing, communal economy, administration, and finance-credits system.....	3,309	3.8	(n.a.)	4,660	4.3
2. Private subsidiary sector.....	8,357	9.6	(n.a.)	9,865	9.1
3. Unknown.....	(n.a.)	(n.a.)	(n.a.)	192	.2

¹ As officially reported in Soviet statistical handbooks, the figure of 190.7 million excludes post-World War II accessions as well as territories returned to Poland.

Source: TsSU pri Sovete ministrov SSSR, "On the Distribution of the U.S.S.R. Population by Social Group, Branch of the National Economy, and Occupation and on the Educational Level of Persons Performing Physical and Mental Labor," *Vestnik statistiki* (Statistical Herald), No. 12, December 1960, pp. 4-6, 8; and P. G. Pod'yachikh, *Naseleniye SSSR* (Population of the U.S.S.R.), Moscow, Gospolitizdat, 1961, pp. 42, 129. The labor force figure shown for 1939 in boundaries comparable to the 1959 census is estimated from the reported ratio of labor force to total population within the pre-1940 boundaries.

Since, as measured by Soviet censuses, labor force is primarily a function of the size of population in the working ages, not too much significance can be assigned to the quantitative changes in the country's labor force between the two censuses. The Soviet commitment to industrialization is more or less discernible in the shift of branch employment: while the overall proportion of the labor force in the branches of material production declined due to the agricultural component, the proportion of persons in industry, construction, transport, and communications (excluding nonproductive services) showed a large increase.

II. LABOR UTILIZATION BASED ON STATISTICAL REPORTS AND ANALYSIS OF ECONOMIC UNITS

Sustained increases in employment of workers and employees in the U.S.S.R. for the postwar years are recorded annually in official statistics. Although percentage distributions of total employment have been published, absolute total employment estimates, with the exception of the 1959 census figures, have not been published. From Soviet information it is known that they draw up annual labor balances which incorporate total use of labor in the economy distributed by the agricultural and nonagricultural sectors (see ch. 3). In tracing Soviet employment from 1940 to 1961, the attempt here is to follow, as closely as possible, Soviet procedures and classifications. Soviet population is shown by sex and age groupings that are most relevant for preparing labor balances, assessing theoretical employment limits, and analyzing the employed civilian population and other population groups. A total employment series, based on Soviet included in this section. Additional detailed employment data and estimates are presented as appendix tables.

A. Comparison of census employment and annual employment estimates

Although the demographic characteristics of the Soviet population are essential for establishing population benchmarks and for preparing annual population estimates, the corresponding economic characteristics of the population derived from census results are considerably less significant for measuring employment or for use as benchmarks in constructing employment series and analyzing employment trends. In terms of economic analysis, the focus must be more on the contributions or labor inputs of the population to the economy rather than on the status of the population criterion, employed or not employed, as used in the Soviet census. Accordingly, it is preferable in describing the Soviet utilization of manpower resources to use employment based on annual averages which is generally obtainable from current establishment reports, supplemented by independently derived estimates in the absence of reported figures. Table 4, based essentially on reported figures, indicates substantial differences between the labor force and annual average employment. Since the population census was taken at the beginning of 1959, annual average employment for 1958 seems more appropriate for comparative purposes than that for 1959 which has been juxtaposed in Soviet presentations.

TABLE 4.—Comparison of the labor force of the U.S.S.R. as reported in the 1959 census and annual average employment for 1958 and 1959

[Absolute figures in millions. Figures in parentheses are estimated. Leaders indicate data or percentages not applicable. Figures are independently rounded and may not add to totals]

Employment category	Reported in Soviet sources		Annual average civilian employment, 1958	Annual civilian employment as a percent of the civilian labor force	
	Civilian labor force from 1959 census	Annual average civilian employment, 1959		Col. (2) × 100 / Col. (1) × 100	
				(1)	(2)	(3)	(4)	(5)
Total civilian employment.....	105.4	90.5	88.9	85.9	84.3
Workers and employees ¹	63.0	58.9	(58.9)	93.5	90.3
Annual average employment, including nonreported segment.....		² 58.9	² (58.9)		
Reported annual average employment.....		² 57.9	² 55.9		
Collective farmers.....	32.3	24.5	24.9	75.9	77.1
Private agricultural subsidiary sector.....	9.9	6.8	(6.8)	68.7	68.7
Independent sector.....	.3	(.3)	(.3)	100.0	100.0

NOTE.—Annual employment totals differ from those presented in table 7. The primary reasons for differences are due to independently derived employment estimates for the private agricultural subsidiary sector in table 7 and also to the exclusion in that table of nonreported U.S.S.R. employment.

¹ Includes members of producers' cooperatives.

² Not included in total.

Source: Col. (1): Table 1. Col. (2): TsSU pri Sovete ministrov SSSR, "On the Distribution of the U.S.S.R. Population by Social Group, Branch of the National Economy and Occupation and on the Educational Level of Persons Performing Physical and Mental Labor," Vestnik statistiki (Statistical Herald), No. 12, December 1960, pp. 4; —, Sel'skoye khozyaystvo SSSR, statisticheskiy sbornik (Agriculture of the U.S.S.R., a Statistical Compilation), Moscow, Gosstatizdat, 1960, p. 450 (cited below as Sel' khoz.); —, Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1960, a Statistical Yearbook), Moscow, Gosstatizdat, 1961, p. 633 (cited below as Nar. khoz. v 1960). The "independent sector" employment is assumed to be the same as in col. (1). Col. (3): Sel' khoz., p. 450; Nar. khoz. v 1960, p. 633. The independent and private agricultural subsidiary sectors were assumed to be the same as in col. (2). The difference between the reported and nonreported segment of workers' and employees' employment (1,000,000) was assumed to be the same as in col. (2).

Differences between the census and annual employment data are actually greater than indicated in table 4 since, in the census, full-time students who worked were classified as going to school and only part of the pensioners with part-time jobs were recorded in the census data.¹² The difference is particularly striking in the case of collective farmers, even though the census figure omits most of the underaged participants, of which there were 2.5 million in 1959,¹³ and some of the over aged participants. One of the reasons for the difference is that collective farm activity is marked by sharp fluctuations in monthly employment. During 1959, monthly employment ranged from 18 million in January to 30.7 million in July. Another important factor contributing to the difference between the census and average annual employment figures for collective farmers is the considerable diversion of labor on the collective farms from the socialized to the private subsidiary agricultural sectors. As recently as 1959, 6.3 percent of

¹² TsSU pri Sovete ministrov SSSR, "On the Distribution of the U.S.S.R. Population by Social Group, Branch of the National Economy and Occupation, and on the Educational Level of Persons Performing Physical and Mental Labor," Vestnik statistiki (Statistical Herald) No. 12, December 1960, pp. 4-5; and P. Pod'yachikh, "Labor Resources of the U.S.S.R.," Sotsialisticheskiv trud (Socialist Labor), No. 1, January 1961, p. 15.

¹³ Shishkin, loc. cit.

the able-bodied males and 14 percent of the able-bodied females on collective farms worked less than the required minimum number of days.

B. Population and employment

The particular format chosen to present a composite balance of Soviet population and employment estimates for single years (see table 5) is similar to the annual manpower records account prepared in the U.S.S.R. If limitations pertaining to the data are recognized, information in the table can be quite useful in studying the growth of Soviet employment against the background of the country's population resources. No provisions have been made to adjust for different employment measurement standards used in the U.S.S.R. to compute worker and employee employment as compared with that for collective farmers, for the proration to a full-time basis of regular part-time jobholders, and for the partial double-counting of workers and employees and collective farmers (who in addition to being employed in state establishments and on collective farms also work on their private agricultural plots). The effect of these shortcomings is to impute minimal values to the "Other activities" category since it is a residual item. Employment figures in table 5 are based on the more detailed estimates appearing in subsequent text and appendix tables.¹⁴ Annual population estimates were prepared in the Foreign Demographic Analysis Division and are based on the fertility and mortality data officially reported by the Central Statistical Administration of the U.S.S.R. without any adjustment for suspected inaccuracies in the Soviet mortality rates. This was done in order to maintain comparability with the published Soviet estimates of population growth.

Given the following conditions: (1) The absence of comprehensive information on annual average employment by age and sex; (2) the need to estimate employment for the private subsidiary agricultural sector; and (3) the influence of changes in the estimated size of the armed forces, the relationships between population and employment shown in tables 5 and 6 must be considered as tentative.

¹⁴ Also in U.S. Bureau of the Census, "The Magnitude and Distribution of Civilian Employment in the U.S.S.R.: 1928-59," by Murray S. Weitzman and Andrew Elias, *International Population Reports*, Series P-95, No. 58, Washington, D.C., Foreign Manpower Research Office, Bureau of the Census, April 1961, 193 pages (cited hereafter as Weitzman and Elias).

TABLE 5.—Population and employment, U.S.S.R.: Selected years, 1940-65

[In thousands. Population figures are as of July 1; employment figures are annual averages. Figures are independently rounded and may not add to totals: (n.a.) indicates data not available and no estimate made]

Population characteristic	1940	1950	1953	1955	1956	1957	1958	1959	1960	1961	1965
Total population	193,000	180,085	189,484	196,128	199,600	203,146	206,806	210,510	214,249	217,977	232,694
I. Population aged 12 years and over	139,513	138,995	147,862	150,296	150,701	151,737	153,643	155,909	158,454	161,285	173,638
Excluding population aged 12 to 15 years.....	120,126	122,508	130,227	137,022	140,082	142,791	144,641	145,377	145,760	146,777	150,002
A. Able-bodied group	104,049	103,448	109,444	114,740	116,896	118,680	119,613	119,418	118,872	118,971	124,022
1. Males aged 16 to 59 years.....	50,908	44,389	48,104	51,338	52,750	53,986	54,799	55,048	55,120	55,515	59,510
2. Females aged 16 to 54 years.....	53,141	59,059	61,340	63,402	64,146	64,694	64,814	64,370	63,752	63,456	64,512
B. Overaged group	16,077	19,060	20,783	22,282	23,186	24,111	25,028	25,959	26,888	27,806	31,981
1. Males aged 60 years and over.....	5,042	5,104	5,508	5,861	6,078	6,304	6,523	6,760	7,001	7,249	8,475
2. Females aged 55 years and over.....	11,035	13,956	15,275	16,421	17,108	17,807	18,500	19,199	19,887	20,557	23,506
C. Underaged group	19,387	16,487	17,635	13,274	10,619	8,946	9,002	10,532	12,694	14,508	17,635
1. Males aged 12 to 15 years.....	9,770	8,163	8,799	6,855	5,341	4,523	4,580	5,370	6,466	7,378	8,948
2. Females aged 12 to 15 years.....	9,617	8,324	8,836	6,419	5,278	4,423	4,422	5,162	6,228	7,132	8,687
II. Civilian employment	79,019	79,593	81,942	87,476	90,313	91,512	93,790	94,352	95,692	97,644	(n.a.)
A. Socialized sector	61,292	67,695	70,860	74,980	77,437	78,648	80,805	82,409	84,332	86,000	(n.a.)
1. Workers and employees.....	31,192	38,895	43,431	46,462	48,715	51,583	54,105	56,509	62,032	66,000	(n.a.)
2. Members of producers' cooperatives.....	2,200	1,500	1,600	1,800	1,200	1,200	1,300	1,400	(1)	(1)	(n.a.)
3. Members of collective farms.....	27,900	27,300	25,829	26,718	27,522	25,865	25,400	24,500	22,300	20,000	(n.a.)
B. Nonsocialized sector	17,727	11,898	11,082	12,496	12,876	12,864	12,985	11,943	11,360	11,644	(n.a.)
1. Private agricultural sector.....	17,123	11,634	10,868	12,332	12,681	12,719	12,829	11,769	11,186	11,470	(n.a.)
(a) Workers and employees.....	2,039	2,543	2,599	3,003	3,009	3,542	3,654	3,418	3,893	(n.a.)	(n.a.)
(b) Collective farms.....	9,134	7,939	8,090	9,143	9,505	9,045	9,050	8,259	7,218	(n.a.)	(n.a.)
(c) Individual peasants.....	5,950	1,152	179	186	167	132	125	92	75	(n.a.)	(n.a.)
2. Independent artisans.....	604	264	214	164	195	145	156	174	174	174	(n.a.)
III. Other activities of persons aged 12 years and over—line I less line II—armed forces, domestics, day laborers, students, housewives, disabled, unemployed, etc.	60,494	59,402	65,920	62,820	60,388	60,225	59,853	61,557	62,762	63,641	(n.a.)
Excluding youths aged 12 to 15 years.....	41,107	42,915	48,285	49,546	49,769	51,279	50,851	51,025	50,068	49,133	(n.a.)

¹The system of producers' cooperatives was abolished in October 1960. Employment for this sector is now included in the workers and employees category.

Source: Population:

1940: U.S. Bureau of the Census, The Magnitude and Distribution of Civilian Employment in the U.S.S.R.: 1928-59, by Murray S. Weitzman and Andrew Elias.

International Population Reports, Series P-95, No. 58, Washington, D. O., Foreign Demographic Analysis Division, April 1961, p. 55.

1950-65: Estimates and projections prepared by the Foreign Demographic Analysis Division, Bureau of the Census.
Employment: Table 7.

TABLE 6.—Selected relationships of population and employment, U.S.S.R.: Selected years, 1940-65
 [In percent. Figures are independently rounded and may not add to totals. (n.a.) indicates data not available and no estimate made]

Relationship	1940	1950	1953	1955	1956	1957	1958	1959	1960	1961	1965
I. Civilian employment											
A. As a percent of civilian population aged 12 years and over	(n.a.)	59.0	58.0	60.5	62.0	62.2	62.6	61.9	61.6	61.5	(n.a.)
B. As a percent of civilian population aged 16 years and over	(n.a.)	67.2	66.3	66.7	66.9	66.2	66.6	66.5	67.1	67.7	(n.a.)
C. As a percent of civilian population aged 16-54 (59) years	(n.a.)	80.0	79.7	80.3	80.8	80.1	81.1	81.5	82.7	83.9	(n.a.)
II. Civilian employment											
A. As a percent of total population aged 12 years and over	56.6	57.3	55.4	58.2	59.9	60.3	61.0	60.5	60.4	60.5	(n.a.)
B. As a percent of total population aged 16 years and over	65.8	65.0	62.9	63.8	64.5	64.1	64.8	64.9	65.7	66.5	(n.a.)
C. As a percent of total population aged 16 to 54 (59) years	75.9	76.9	74.9	76.2	77.3	77.1	78.4	79.0	80.5	82.1	(n.a.)
III. Population aged 12 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
A. Able-bodied group	74.6	74.4	74.0	76.3	77.6	78.2	77.9	76.6	75.0	73.8	71.4
B. Overaged group	11.5	13.7	14.1	14.8	15.4	15.9	16.3	16.7	17.0	17.2	18.4
C. Underaged group	13.9	11.9	11.9	8.8	7.0	5.9	5.9	6.8	8.0	9.0	10.2
IV. Population aged 16 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
A. Able-bodied group	86.6	84.4	84.0	83.7	83.4	83.1	82.7	82.1	81.6	81.1	79.5
1. Males aged 16 to 59 years	42.4	36.2	36.9	37.5	37.7	37.8	37.9	37.9	37.8	37.8	38.1
2. Females aged 16 to 54 years	44.2	48.2	47.1	46.3	45.8	45.3	44.8	44.3	43.7	43.2	41.4
B. Overaged group	13.4	15.6	16.0	16.3	16.6	16.9	17.3	17.9	18.4	18.9	20.5
1. Males aged 60 years and over	4.2	4.2	4.2	4.3	4.3	4.4	4.5	4.6	4.8	4.9	5.4
2. Females aged 55 years and over	9.2	11.4	11.7	12.0	12.2	12.5	12.8	13.2	13.6	14.0	15.1
V. Population aged 16 years and over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
A. Males aged 16 years and over	46.6	40.4	41.2	41.7	42.0	42.2	42.4	42.5	42.6	42.8	43.6
1. Able-bodied group aged 16 to 59 years	42.4	36.2	36.9	37.5	37.7	37.8	37.9	37.9	37.8	37.8	38.1
2. Overaged group	4.2	4.2	4.2	4.3	4.3	4.4	4.5	4.6	4.8	4.9	5.4
B. Females aged 16 years and over	53.4	59.6	58.8	58.3	58.0	57.8	57.6	57.5	57.4	57.2	56.4
1. Able-bodied group aged 16 to 54 years	44.2	48.2	47.1	46.3	45.8	45.3	44.8	44.3	43.7	43.2	41.4
2. Overaged group	9.2	11.4	11.7	12.0	12.2	12.5	12.8	13.2	13.6	14.0	15.1

VI. Males aged 16 years and over.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
A. Able-bodied group aged 16 to 59 years.....	91.0	89.7	89.7	89.8	89.7	89.5	89.4	89.1	88.7	88.5	87.5
B. Overaged group.....	9.0	10.3	10.3	10.2	10.3	10.5	10.6	10.9	11.3	11.5	12.5
VII. Females aged 16 years and over.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
A. Able-bodied group aged 16 to 54 years.....	82.8	80.9	80.1	79.4	78.9	78.4	77.8	77.0	76.2	75.5	73.3
B. Overaged group.....	17.2	19.1	19.9	20.6	21.1	21.6	22.2	23.0	23.8	24.5	26.7
VIII. Civilian able-bodied males as a percent of civilian population ¹ aged 16 years and over.....	(n.a.)	34.1	33.6	34.7	35.3	35.7	36.2	36.3	36.4	36.7	(n.a.)

¹ The estimates for armed forces used to adjust population to civilian population are (in millions): 1950, 4.0; 1953, 6.6; 1955, 5.8; 1956, 5.1; 1957, 4.5; 1958, 3.9; 1959, 3.6; 1960, 3.2; and 1961, 2.6.

Source: See source to table 5.

The Second World War was the most costly in a series of 20th century catastrophes suffered by the population of the Soviet Union. In terms of current Soviet boundaries, the total population declined from approximately 193 million as of July 1940 to 180.1 million as of July 1, 1950. From 1950 to 1960, the total population increased by 34.2 million to reach a total of 214.2 million. The consequences of war include roughly an 8 million birth deficit (including associated war-induced increases in children's mortality), that are reflected in abysmally small numbers in the 12- to 15-year age group. This age group hit a low of 9 million in both 1957 and 1958 as compared with 19.8 million in 1940 within current boundaries. By 1965, the number in the 12- to 15-year age group is expected to number some 2 million less than in 1940.

An ameliorating factor in the midst of the catastrophic population situation occasioned by the Second World War was the increase in the proportion of the total population in the able-bodied ages from 53.9 percent in 1940 to 57.4 percent in 1950. The increase was due solely to the rise in the number of females in the able-bodied ages. This group accounted for 27.5 percent of the total population in 1940 and 32.8 percent in 1950; males in the able-bodied ages dropped from 26.4 percent of the total population in 1940 to 24.6 percent in 1950. From 1950 to 1960, males in the able-bodied population increased from a low point of 44.4 million to 55.1 million, or by 24.1 percent. In 1960, males in the able-bodied population constituted 25.7 percent of the total population, females constituted 29.8 percent.

The overall growth in civilian employment since 1950 has been affected to a large extent by changes in the size and composition of the population, particularly the able-bodied group, the size of the armed forces, and the proportions of persons in different sex and age categories who were employed. Between 1950 and 1953, coinciding with the Korean conflict, the increase in civilian employment amounted to only 2.3 million despite the fact that the net addition to the able-bodied ages amounted to 3.7 million males and 2.3 million females. From 1953 to 1955, employment rose by 5.5 million and the able-bodied group by 5.3 million, suggesting that the reported size of the armed forces of 5,763,000 at the beginning of 1955 was smaller than during the early 1950's. Demobilization of some 2.2 million personnel in the armed forces between 1955 and the beginning of 1959 contributed to the growth of civilian employment.

It appears quite reasonable to assume a direct relationship between the declining size of the new entrants (16 years of age) into the able-bodied population and the January 1960 decision of the Soviet Government to reduce the armed forces by an additional 1.2 million persons. The downward trend in the size of the maturing cohorts, which started around 1956, neared its trough in 1959 when there were only half as many 16-year-olds as in the peak year of 1955. In 1960 the trough was reached and in 1961 a gradual recovery began. The estimated net increase in civilian employment of 1.3 million from 1959 to 1960 was accomplished in the face of a net decline of almost 550,000 people in the able-bodied ages; males were estimated to have increased by 72,000 and females to have declined by 618,000. Presumably, the 1960 decision to demobilize 1.2 million persons was carried out to a considerable extent before the reversal of the decision in mid-1961.

C. Distribution of employment

Estimates for civilian employment in the U.S.S.R. from 1940 to 1961, classified by socioeconomic category and further classified by nonagricultural and agricultural branches and their constituent elements, are presented in table 7. To assist in the examination of the employment estimates, percentage distributions and an index of changes are included. A further aggregation of some of the items shown in the table is advisable to improve historical comparability; for example, the combination at least of members of producers' cooperatives engaged in industry with workers and employees in industry.

TABLE 7.—*Civilian employment, by socio-economic category, U.S.S.R.: Selected years, 1940-61*

[Absolute figures are annual averages and are in thousands. Leaders indicate data not applicable; (n.a.) indicates data not available and no estimate made]

Socio-economic category	1940	1950	1953	1955	1956	1957	1958	1959	1960	1961 (preliminary)
Total ¹	79,019	79,593	81,042	87,476	90,313	91,512	93,790	94,352	95,692	97,644
I. Nonagricultural branches ¹	31,020	36,778	41,032	43,798	45,447	47,323	49,499	51,893	54,717	57,795
A. Workers and employees ¹	28,216	35,014	39,218	41,834	44,052	45,978	48,043	50,319	⁴ 54,543	⁴ 57,621
1. Industry ²	10,967	14,144	16,261	17,367	18,500	19,144	19,675	20,207	22,291	23,350
2. Construction ³	1,563	2,569	2,843	3,190	3,550	4,000	4,421	4,800	5,136	5,310
3. Transportation and communications ⁴	3,903	4,624	5,352	5,650	5,840	5,996	6,332	6,663	7,017	7,344
4. Trade and public dining ⁵	3,303	3,325	3,463	3,725	3,826	4,017	4,190	4,389	4,675	5,064
5. Public health and education ⁶	4,531	6,080	6,815	7,607	7,933	8,350	8,775	9,275	10,027	10,797
6. Other ⁷	3,949	4,272	4,484	4,295	4,403	4,471	4,650	4,985	5,397	5,756
B. Members of producers' cooperatives ⁸	2,200	1,500	1,600	1,800	1,200	1,200	1,300	1,400	(⁹)	(⁹)
1. Industry ⁹ (industrial-production personnel).....	1,700	1,300	1,400	1,600	1,100	1,100	1,100	1,200	(⁹)	(⁹)
2. Services ¹⁰	500	200	200	200	100	100	200	200	(⁹)	(⁹)
C. Independent artisans ¹¹	604	264	214	164	195	145	156	174	174	174
II. Agriculture ¹	47,999	42,815	40,910	43,678	44,866	44,189	44,291	42,459	40,975	39,849
A. Workers and employees ¹	5,015	6,424	6,812	7,631	7,672	9,147	9,716	9,608	11,382	(n.a.)
1. Socialized sector ¹	2,976	3,881	4,213	4,628	4,663	5,605	6,062	6,190	7,489	8,379
a. State farms, etc. ⁴	1,760	2,425	2,552	2,832	2,925	3,961	4,614	4,957	6,324	7,400
b. Machine tractor stations and repair-technical stations ¹²	530	678	889	1,147	1,058	989	719	469	348	70
c. Forestry ⁶	279	444	416	389	390	377	367	352	369	379
d. Agricultural activities not specifically identified ⁶	407	334	356	260	290	278	362	412	458	530
2. Private sector (in conventional man-year equivalents) ¹⁴	2,039	2,543	2,599	3,003	3,009	3,542	3,654	3,418	3,893	(¹⁴)
B. Collective farmers in collective farm economy ¹	37,034	35,239	33,919	35,861	37,027	34,910	34,450	32,759	29,518	(n.a.)
1. Socialized sector—total ¹⁶	27,900	27,300	25,829	26,718	27,522	25,865	25,400	24,500	22,300	20,000
a. Nonagricultural collective farms ¹⁷	500	500	371	520	542	585	325	399	567	(n.a.)
b. Agricultural collective farms ¹⁸	27,400	26,800	25,458	26,198	26,980	25,280	25,075	24,101	21,733	(n.a.)
(1) Agricultural activities ¹⁹	24,700	24,200	23,100	23,900	24,600	23,000	22,400	21,400	20,100	18,000

(2) Nonagricultural activities ²⁰	2,700	2,600	2,400	2,300	2,400	2,300	2,700	2,700	1,600	(n.a.)
(a) Industry (in conventional man-year equivalents) ²¹	615	600	413	617	665	659	627	668	(n.a.)	(n.a.)
(b) Construction (in conventional man-year equivalents) ²¹	697	967	979	1,033	1,046	1,174	1,118	1,163	(n.a.)	(15)
2. Private sector (in conventional man-year equivalents) ¹⁴	9,134	7,939	8,090	9,143	9,505	9,045	9,050	8,259	7,218	(14)
C. Individual peasants ²²	5,950	1,152	179	186	167	132	125	92	75	(15)
PERCENT DISTRIBUTION										
Total:.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
I. Nonagricultural branches ²	39.3	46.2	50.1	50.1	50.3	51.7	52.8	55.0	57.2	59.2
A. Workers and employees.....	35.7	44.0	47.9	47.8	48.8	50.2	51.2	53.3	* 57.0	* 59.0
1. Industry.....	13.9	17.8	19.8	19.9	20.5	20.9	21.0	21.4	23.3	23.9
2. Construction.....	2.0	3.2	3.5	3.6	3.9	4.4	4.7	5.1	5.4	5.4
3. Transportation and communications.....	4.9	5.8	6.5	6.5	6.5	6.6	6.8	7.1	7.3	7.5
4. Trade and public dining.....	4.2	4.2	4.2	4.3	4.2	4.4	4.5	4.7	4.9	5.2
5. Public health and education.....	5.7	7.6	8.3	8.7	8.8	9.1	9.4	9.8	10.5	11.1
6. Other.....	5.0	5.4	5.5	4.9	4.9	4.9	5.0	5.3	5.6	5.9
B. Members of producers' cooperatives.....	2.8	1.9	2.0	2.1	1.3	1.3	1.4	1.5	(⁴)	(⁴)
1. Industry (industrial-production personnel).....	2.2	1.6	1.7	1.8	1.2	1.2	1.2	1.3	(⁴)	(⁴)
2. Services.....	.6	.3	.2	.2	.1	.1	.2	.2	(⁴)	(⁴)
C. Independent artisans.....	.8	.3	.3	.2	.2	.2	.2	.2	.2	.2
II. Agriculture ¹²	60.7	53.8	49.9	49.9	49.7	48.3	47.2	45.0	42.8	40.8
A. Workers and employees.....	6.3	8.1	8.3	8.7	8.5	10.0	10.4	10.2	11.9	(n.a.)
1. Socialized sector.....	3.8	4.9	5.1	5.3	5.2	6.1	6.5	6.6	7.8	8.6
a. State farms, etc.....	2.2	3.0	3.1	3.2	3.2	4.3	4.9	5.3	6.6	7.6
b. Machine tractor stations and repair-technical stations.....	.7	.9	1.1	1.3	1.2	1.1	.8	.5	.4	.1
c. Forestry.....	.4	.6	.5	.4	.4	.4	.4	.4	.4	.4
d. Agricultural activities not specifically identified.....	.5	.4	.4	.3	.3	.3	.4	.4	.5	.5
2. Private sector (in conventional man-year equivalents).....	2.6	3.2	3.2	3.4	3.3	3.9	3.9	3.6	4.1	(⁴)

See footnotes at end of table, p 623.

TABLE 7.—*Civilian employment, by socio-economic category, U.S.S.R.: Selected years, 1940-61—Continued*

[Absolute figures are annual averages and are in thousands. Leaders indicate data not applicable; (n.a.) indicates data not available and no estimate made]

Socio-economic category	1940	1950	1953	1955	1956	1957	1958	1959	1960	1961 (preliminary)
II. Agriculture—Continued										
B. Collective farmers in collective farm economy	46.9	44.3	41.4	41.0	41.0	38.1	36.7	34.7	30.8	(n.a.)
1. Socialized sector—total.....	35.3	34.3	31.5	30.5	30.5	28.3	27.1	26.0	23.3	20.5
a. Nonagricultural collective farms.....	.6	.6	.5	.6	.6	.6	.3	.4	.6	(n.a.)
b. Agricultural collective farms.....	34.7	33.7	31.1	29.9	29.9	27.6	26.7	25.5	22.7	(n.a.)
(1) Agricultural activities.....	31.3	30.4	28.2	27.3	27.2	25.1	23.9	22.7	21.0	18.4
(2) Nonagricultural activities.....	3.4	3.3	2.9	2.6	2.7	2.5	2.9	2.9	1.7	(n.a.)
(a) Industry (in conventional man-year equivalents).....	.8	.8	.5	.7	.7	.7	.7	.7	(n.a.)	(n.a.)
(b) Construction (in conventional man-year equivalents).....	.9	1.2	1.2	1.2	1.2	1.3	1.2	1.2	(n.a.)	(¹)
2. Private sector (in conventional man-year equivalents).....	11.6	10.0	9.9	10.5	10.5	9.9	9.6	8.8	7.5	(¹)
C. Individual peasants	7.5	1.4	.2	.2	.2	.1	.1	.1	.1	(¹)
INDEX OF CHANGE (1940=100)										
Total	100.0	100.7	103.7	110.7	114.3	115.8	118.7	119.4	121.1	123.6
I. Nonagricultural branches	100.0	118.6	132.3	141.2	146.5	152.6	159.6	167.3	176.4	186.3
A. Workers and employees	100.0	124.1	139.0	148.3	156.1	163.0	170.3	178.3	⁴ 193.3	⁴ 204.2
1. Industry.....	100.0	129.0	148.3	158.4	168.7	174.6	179.4	184.3	203.3	212.9
2. Construction.....	100.0	164.4	181.9	204.1	227.1	255.9	282.9	307.1	328.6	339.7
3. Transportation and communications.....	100.0	118.5	137.1	144.8	149.6	153.6	162.2	170.0	179.8	188.2
4. Trade and public dining.....	100.0	100.7	104.8	112.8	115.8	121.6	126.9	132.9	141.5	153.3
5. Public health and education.....	100.0	134.2	150.4	167.9	175.1	184.3	193.7	204.7	221.3	238.3
6. Other.....	100.0	108.2	113.5	108.8	111.5	113.2	117.8	126.2	136.7	145.8
B. Members of producers' cooperatives	100.0	68.2	72.7	81.8	54.5	54.5	59.1	63.6	(¹)	(¹)
1. Industry (industrial production personnel).....	100.0	76.5	82.4	94.1	64.7	64.7	64.7	70.6	(¹)	(¹)
2. Services.....	100.0	40.0	40.0	40.0	20.0	20.0	40.0	40.0	(¹)	(¹)
C. Independent artisans	100.0	43.7	35.4	27.2	32.3	24.0	25.8	28.8	28.8	28.8
II. Agriculture	100.0	89.2	85.2	91.0	93.5	92.1	92.3	88.5	85.4	83.0
A. Workers and employees	100.0	128.1	135.8	152.2	153.0	182.4	193.7	191.6	227.0	(n.a.)
1. Socialized sector.....	100.0	130.4	141.6	155.5	156.7	188.3	203.7	209.0	251.6	281.6
a. State farms, etc.....	100.0	137.8	145.0	160.9	166.2	225.1	262.2	281.6	359.3	420.5
b. Machine tractor stations and repair-technical stations.....	100.0	127.9	167.7	216.4	199.6	186.6	135.7	88.5	65.7	13.2
c. Forestry.....	100.0	159.1	149.1	139.4	139.8	135.1	131.5	126.2	128.7	135.8
d. Agricultural activities not specifically identified.....	100.0	82.1	87.5	63.9	71.3	68.3	88.9	101.2	112.5	130.2

2. Private sector (in conventional man-year equivalents).....	100.0	124.7	127.5	147.3	147.0	173.7	179.2	167.6	190.9	(4)
B. Collective farmers in collective farm economy.....	100.0	95.2	91.6	96.8	100.0	94.3	93.0	88.5	79.7	(n.a.)
1. Socialized sector—total.....	100.0	97.8	92.6	95.8	98.6	92.7	91.0	87.8	79.9	71.7
a. Nonagricultural collective farms.....	100.0	100.0	74.2	104.0	108.4	117.0	65.0	79.8	113.4	(n.a.)
b. Agricultural collective farms.....	100.0	97.8	92.9	95.6	98.5	92.3	91.5	88.0	79.3	(n.a.)
(1) Agricultural activities.....	100.0	98.0	93.5	96.8	99.6	93.1	90.7	86.6	81.4	72.9
(2) Nonagricultural activities.....	100.0	96.3	88.9	85.2	88.9	85.2	100.0	100.0	59.3	(n.a.)
(a) Industry (in conventional man-year equivalents).....	100.0	97.6	67.2	100.3	108.1	107.2	102.0	107.0	(n.a.)	(n.a.)
(b) Construction (in conventional man-year equivalents).....	100.0	138.7	140.5	148.2	150.1	168.4	160.4	166.9	(n.a.)	(4)
2. Private sector (in conventional man-year equivalents).....	100.0	86.9	88.6	100.1	104.1	99.0	99.1	90.4	79.0	(4)
C. Individual peasants.....	100.0	19.4	3.0	3.1	2.8	2.2	2.1	1.5	1.3	(4)

¹ Sum of the components.

² Excludes workers and employees hired by collective farms; the additional employment of workers and employees having more than one job in State establishments and/or performing tasks for private individuals; domestics, day laborers, etc.; (probably) people working full time for the Communist Party; (probably) civilians working in military establishments; and unpaid labor "volunteered" by "social" organizations, such as the Komsomol, in order to plant trees, construct barns on State farms, collect scrap metal, etc.

³ Includes workers and employees, members of producers' cooperatives, and independent artisans who are engaged in economic activities other than those of agriculture and forestry. Workers and employees engaged in normally nonagricultural-type activities of sovkhosy, machine tractor stations, and other State agricultural establishments (industry, construction, health and education, etc.) are included in agricultural employment. All collective farm members are included in agricultural employment.

⁴ The system of producers' cooperatives was abolished in October 1960. Employment for this sector is now included in the workers and employees category.

⁵ Table A2.

⁶ Table A4.

⁷ Table A4. Includes housing-communal economy, administrative organs, credit and insurance organizations, and undistributed residual.

⁸ TsSU pri Sovete ministrov SSSR, Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1960, A Statistical Yearbook), Moscow, Gosstatizdat, 1961, p. 633 (cited hereafter as Nar. khoz. v 1960).

⁹ By year:

1940: Estimated as 2.2 percent (of total employment of 79,019,000) reported in TsSU pri Sovete ministrov SSSR, Narodnoye khozyaystvo SSSR v 1956 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1956, A Statistical Yearbook), Moscow, Gosstatizdat, 1957, p. 202 (cited hereafter as Nar. khoz. v 1956). It should be noted that the 2.2 percent covers all material production branches. Industry, however, is the largest component.

1950: Estimated by assuming the same relationship between the total membership and that employed in industry as in 1953 (87.5 percent).

1953: S. A. Gorelik, Statistika (Statistics), Part II, [Leningrad], KOIZ, 1956, p. 97.

1955: TsSU pri Sovete ministrov SSSR, Narodnoye khozyaystvo SSSR, statisti-

cheskiy sbornik (The National Economy of the U.S.S.R., A Statistical Compilation), Moscow, Gosstatizdat, 1956, p. 44.

1956: Nar. khoz. v 1956, p. 50. Between 1955 and 1956 a number of enterprises employing 600,000 members in the producers' cooperatives system were transferred to the state sector. Of this number 500,000 were in industry.

1957: Estimated. The figure of 900,000 for wage workers in industry (members of producers' cooperatives) reported in TsSU pri Sovete ministrov SSSR, SSSR v isfrakh, statisticheskiy sbornik (The U.S.S.R. in Figures, A Statistical Compilation), Moscow, Gosstatizdat, 1958, p. 59, was expanded by 17 percent (rounded) to cover the entire industrial-production personnel. The expansion factor was derived on the basis of the reported 1960 relationship between wage workers and total industrial-production employment in industry of producers' cooperatives (1,000,000 and 1,200,000, respectively). Nar. khoz. v 1960, pp. 216-217.

1958: TsSU pri Sovete ministrov SSSR, Narodnoye khozyaystvo SSSR v 1958 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1958, A Statistical Yearbook), Moscow, Gosstatizdat, 1959, p. 131.

1959: Narodnoye khozyaystvo SSSR v 1959 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1959, A Statistical Yearbook), Moscow, Gosstatizdat, 1960, p. 138.

¹⁰ Residual.

¹¹ 1940, 1950, 1955-58: Approximations derived as follows (in thousands):

Categories	1940	1950	1955	1956	1957	1958
Nonsocialized personnel *.....	7,604	1,619	350	362	277	281
Individual peasants (line II, C, table 7).....	^b 7,000	^b 1,355	186	167	132	125
Independent artisans (residual).....	604	264	164	195	145	156

* U.S. Bureau of the Census, The Magnitude and Distribution of Civilian

Employment in the U.S.S.R.: 1928-50, by Murray S. Weitzman and Andrew Elias. International Population Reports, Series P-95, No. 58, Washington, D.C., Foreign Manpower Research Office, Bureau of the Census, April 1961, table 2A, p. 59 (cited hereafter as Weitzman and Elias).

^b The unadjusted value for the individual peasants (see note 22) was subtracted from the total number of nonsocialized personnel. This was done in the belief that the Soviet Union did not use an annual average measurement standard for individual peasant employment but more likely a demographic count.

1953: The average of the 1950 and 1955 estimates.

1959: Census figure from TsSU pri Sovete ministrov SSSR, "On the Distribution of the U.S.S.R. Population by Social Group, Branch of the National Economy, and Occupation and On the Educational Level of Persons Performing Physical and Mental Labor," Vestnik statistiki (Statistical Herald), No. 12, December 1960, pp. 4-5.

1960 and 1961: In the absence of necessary information, assumed to be the same as for 1959.

¹² Agricultural employment differs slightly in concept from nonagricultural employment in that agricultural employment, in addition to the annual average employment of persons by branch of agricultural economy, also includes a synthetic employment figure for kolkhoz industry, construction, and the work performed on the private agricultural plots of collective farmers and of workers and employees and their families. The figure for employment relating to private agricultural plots is derived, mainly, on the basis of labor input requirements for the care and the cultivation of private agricultural holdings, and represents a man-year equivalent employment concept based on 280 man-days per man-year.

¹³ Table A4. In 1958, machine tractor stations were reorganized into repair-technical stations and many of the tractors and other agricultural machines were sold to collective farms.

For purposes of consistency with pre-1953 and post-1958 data, the figures for 1953-58 were adjusted to remove collective farmers transferred to the employment rolls of machine tractor stations from collective farms following the October 1953 resolutions of the Communist Party and U.S.S.R. Government. These employment adjustments totaled 229,000 for 1953, 1,918,000 for 1955, 1,822,000 for 1956, 1,565,000 for 1957, and 500,000 for 1958. The values for 1955 and 1956 are believed to be somewhat overstated by the lack of additional information does not permit further refinement. See Weitzman and Elias, p. 134. The 1953-58 estimates of collective farmers transferred to the rolls of machine tractor stations are included in this table in the estimate of average annual employment in the socialized sector of the collective farm economy. It should be noted that these adjustments of Soviet data were not made in table A4.

¹⁴ Table A5.

¹⁵ Estimated as a combined total of 11,470,000 (combination of II.A.2+II.B.1.b.(2). (b) +II.B.2 + II.C).

¹⁶ 1940 and 1950: Sum of the components.

1953, 1955, 1958-60: Nar. khoz. v 1960, p. 521, adjusted for the years 1953-58 for the transfers described in note 13.

1956-57: TsSU pri Sovete ministrov SSSR, Sel'skoye khozyaystvo SSSR, statisticheskiy sbornik (Agriculture of the U.S.S.R., A Statistical Compilation), Moscow, Gosstatizdat, 1960, p. 450 (cited hereafter as Sel'. khoz.).

1961: Estimated arbitrarily.

¹⁷ C consists essentially of hunting and fishing.

1940 and 1950: Weitzman and Elias, table 2, p. 57.

1953-60: Difference between total employment in the socialized sector of collective farms and that in agricultural kolkhozy.

¹⁸ 1940 and 1950: Table A8, col. (6).

1953, 1955, 1958-60: Table A8, col. (6).

1956, 1957: Sel'. khoz., p. 459.

¹⁹ 1940 and 1950: Table A8, column (6a), adjusted for agricultural employment in nonagricultural kolkhozy.

1953, 1955-59: *Ibid.*, p. 450, adjusted for the transfers described in note 13 and for the agricultural employment in nonagricultural kolkhozy. The latter adjustment was made on the basis of the assumption that agriculture comprises only a small part of the economic activities on nonagricultural collective farms, arbitrarily set at 20 percent of total employment.

1960: Nar. khoz. v 1960, p. 521. See note immediately above.

1961: Estimated arbitrarily on the basis of preliminary information of total gross value of agricultural output in collective farms and implied advances in productivity of this sector. There is the probability of an internal reclassification in 1960 which may have artificially increased the size of the employment in agricultural activities of the agricultural kolkhozy. Thus, on a comparable basis, this value would be expected to be lower by about 500,000.

²⁰ The difference between total employment on agricultural collective farms and their agricultural employment (line II.B.1.b-II.B.1.b.(1)). Rounded.

²¹ Table A9.

²² 1940 and 1950: In estimating annual average employment of individual peasants for 1940 and 1950, it was assumed that their participation in peasant agriculture per household was approximately equivalent to the number of labor force participants in collective farming per collective farm household. A second assumption involved the use of a constant peak month employment factor of 85 percent, which is taken to represent the proportion of individual peasants who participated at some time during the year in individual peasant agriculture.

1959: Nar. khoz. v 1960, p. 26.

1953, 1955-58, 1960: In estimating employment for years other than 1959, the 1959 census estimate of 92,000 was moved by the computed annual percent change in conventional man-year equivalent employment for individual peasants and other categories of population given in table A5.

The civilian employment series in table 7 represents an extension and revision of estimates first published in table 2 of the U.S. Bureau of the Census publication entitled "The Magnitude and Distribution of Civilian Employment in the U.S.S.R.: 1928-59." The principal revisions pertain to employment in private subsidiary agriculture of workers and employees and collective farmers, in industrial establishments of collective farms, and in workshops of independent artisans. Beginning in 1960, the absence of previously reported Soviet percentage distributions of total civilian employment, which had been used in conjunction with the reported and nonreported partial employment figures to estimate the total amount of U.S.S.R. civilian employment, required different procedures to obtain employment totals as well as some of the components. Additional impetus to revise the employment estimates arose from the uncertainty as to the precise employment measurement standard used for private subsidiary agricultural employment in connection with the percentage distributions of Soviet employment. The current estimates of employment in private subsidiary agriculture were derived from an analysis of the private agricultural holdings of land and animals by workers and employees and collective farmers, and the associated labor-input requirements converted to conventional man-year equivalents of 280 man-days per man-year.

Total civilian employment in the U.S.S.R. has expanded from 79 million in 1940 to 95.7 million in 1960. Preliminary figures for 1961 place employment at 97.6 million. Employment data on a socio-economic basis reflect Soviet policy of lavishing the greatest amount of attention on state-owned enterprises in sharp contrast to the treatment accorded other types of economic ownership. The elimination of independent peasants and artisans through economic harassment and other means is almost complete. Members of producers' co-operatives have been absorbed into the state sector, and the process of converting collective farms to state farms and collective farmers to a worker status is continuing. In 1940, workers and employees in the socialized sector comprised 39.5 percent of total employment and in 1960, 64.9 percent. Employment of collective farmers in the socialized sector declined from 27.9 million in 1940, or 35.3 percent of total employment, to 20 million (preliminary figure) in 1961, or 20.5 percent of total employment.

The trend toward the industrialization of the Soviet economy is reflected in the changing composition of Soviet employment during the last 20 years. Employment increases during the period have occurred consistently in the nonagricultural branches of the economy. In agriculture, employment levels have fluctuated, but estimates for the last 3 years show a definite decline. Agricultural employment in 1958, the last outstanding year for Soviet agricultural output, was 44.3 million. For 1960 and 1961, agricultural employment totaled 41.0 million and 39.8 million, respectively. Whereas in 1940 approximately 60 percent of employment was in agriculture, by 1961 it was only about 40 percent. In 1953 for the first times employment in nonagricultural activities surpassed that in agriculture.

Presentation of employment series by branch of the national economy even when based on Soviet reported figures, have to be viewed with caution because of the various factors that can affect their historical comparability. Comparability problems which are

associated with "forced" labor, completeness of coverage for paid labor, and "voluntary" labor are discussed in chapter 1. There are other more specific comparability problems that relate to specific branches of the economy.¹⁵ Among these are changes in branch definitions, and transfers of personnel from one branch to another without change in branch definitions or adjustments to prior employment measuring procedures. An example of changes of this type is to be found for machine tractor stations. Beginning in October 1953, collective farmers who were engaged in tractor brigade work were transferred from the collective farm employment rolls to those of the machine tractor stations and employment in machine tractor stations increased sharply. In March 1958, the machine tractor stations were dissolved and replaced by repair-technical stations with considerably reduced functions. Accordingly, employment for repair technical stations declined considerably as compared with that recorded for machine tractor stations.¹⁶

In presenting some of the more significant employment trends for the nonagricultural branches of the national economy, nonagricultural employment on collective farms is omitted from the discussion. Annual average employment for nonagricultural branches expanded from 31.0 million in 1940 to 57.8 million in 1961, an increase of 86 percent. All nonagricultural branches have shared in this growth in employment. Larger than average increases were scored by construction, transport and communications, and public health and education. Nonagricultural branches with smaller than average increases include industry (state and cooperative sectors), trade and public dining, and "other," a composite branch including such branches as credit and insurance institutions, public administration, and housing-communal economy. Construction, in recording an employment increase of 240 percent from 1940 to 1961, has led all other nonagricultural branches. Since employment in industry in 1961 comprised 40 percent of all nonagricultural employment, it is not surprising that the increase in industry employment from 1940 to 1961 approximated the average for all nonagricultural branches. Industry employment grew by 84.3 percent compared with 86.3 percent for all nonagricultural branches.

There is a strong tendency in the U.S.S.R. to create subeconomies within the national economy as a matter of practical necessity. Subeconomies are designed to eliminate the dependency of production units upon unreliable sources of supply in a short-supply economy where errors in planning can create havoc with production goals. Subeconomies are an important feature in Soviet agriculture and accordingly Soviet employment in agriculture relates to more than the usual activities defined within agriculture. Agricultural units in the U.S.S.R. engage in the repair of agricultural equipment, construction, subsidiary industrial activities, and other nonagricultural activities such as education, culture, public health, and trade. Collective farm employment in all of these activities and separately for industry and construction is shown in table 7.

The employment series for agriculture reflects the agricultural policy of the Soviet Government and the problems that this policy has

¹⁵ Weitzman and Elias, *passim*; and U.S. Bureau of the Census, *Comparisons of U.S. and U.S.S.R. Employment in Industry: 1939-1958*, by Murray S. Weitzman. International Population Reports, series P-95, No. 60, Washington, D.C., Foreign Demographic Analysis Division, Bureau of the Census, in press.

¹⁶ Weitzman and Elias, *app. B*, pp. 133-140.

created. This series shows the nearly complete obliteration of the independent peasant which began with the repression of the kulaks in the early thirties and the collectivization of the others who were less well-to-do. Soviet policy to reduce the importance of collective farms in preference to state farms is clearly indicated in the employment figures for state and collective farms for 1957 forward. The continuance of substantial employment in private subsidiary agriculture is eloquent testimony to the inability of the Soviet Government to solve adequately its agricultural requirements by means of socialized agricultural units and to the persistence of the Soviet farmer in his attachment to his own land and the fruits of his own labor.

III. LABOR RESOURCES AND THE 7-YEAR PLAN, 1959-65

One of the striking implications emerging from the population and employment situation in 1959 is the apparent paucity of Soviet manpower reserves on the eve of the ambitious 7-year plan. Among males, the labor pool was apparently exhausted, as there were only an estimated 1.5 million in the able-bodied ages outside the labor force. Among women, the conditions were, of course, more favorable. The household economy (not including private subsidiary agriculture) still harbored 11.4 million dependents in the able-bodied ages, although only a little over half of them could be considered as reasonably employable in the sense that their children, if any, were at least 7 years old. Moreover, before the expiration of the 7-year plan period, the manpower situation in the Soviet Union will be further weakened by the entry in the prime working ages of war-depressed birth cohorts:

Number reaching age 16

[In thousands]

Year:	Year—Continued	Year—Continued
1955----- 4, 803	1959----- 2, 387	1963----- 3, 458
1956----- 4, 453	1960----- 1, 537	1964----- 3, 520
1957----- 4, 070	1961----- 1, 689	1965----- 4, 028
1958----- 3, 790	1962----- 2, 828	

The implications of these developments invite some further evaluation of the Soviet manpower situation, and a discussion of the measures at the Government's disposal to insure a sufficient and uninterrupted flow of labor. This, again, has to be prefaced by an observation that census materials (lacking even a minimal indication of the degree of labor utilization among persons listed as being already in the labor force) is not an exact indicator of the country's labor situation. The large difference between census employment figures and current estimates is to a considerable degree due to the inclusion in the former of persons marginally employed. These persons comprise an unknown but undoubtedly significant quantity of manpower reserves. The fullest mobilization and utilization of available resources for "socially useful labor" became, as a matter of fact, one of the objectives of the 7-year plan. Further specifications limit such labor to the socialized sector of the economy (including the armed forces and academic training), as the private subsidiary sector is largely tolerated as a "temporary" economic necessity.

The most fruitful approach is to limit the discussion to the sources of manpower for the state sector of the economy, as this segment alone

is marked for continued expansion. By 1965, the number of workers and employees is to amount to about 77 million persons, on an annual average basis, as compared with 54.6 million at the beginning of the 7-year plan period.

The inauguration of the 7-year plan carried no official elaboration of any new labor policies. This was due to the fact that there has never been any public admission of labor difficulties. Occasional mention of possible manpower squeezes has been limited to a matter-of-fact acknowledgment of the consequences of the wartime birth deficit and the grossly uneven geographical (to a certain extent, interbranch as well) distribution of the country's labor resources, aggravated by an alarming turnover of labor.

The country's forthcoming "strained" labor situation was, however, reflected in the original and revised estimates of the increases in the number of workers and employees for the 7-year plan. Over 90 percent of the planned increase in aggregate social product and national income was to be achieved through increases in productivity rather than employment. The original estimates called for a 12 million net increase in workers and employees over the 7-year period. This figure represented a considerably lower rate of annual increase (2.9 percent) than during the preceding 7-year period (4.3 percent) although well exceeding the expected average rate of increase in primary manpower resources of 0.5 percent per year. The year-to-year changes in the size of the above-bodied group during this 7-year period are quite erratic. In 1959 the net addition fell to about one-seventh of the preceding year; in 1960 and 1961 the population in outgoing ages (gradually increasing) exceeded the size of the incoming 16-year-old group by an average of about half a million persons. Beginning with 1962 the influence of wartime conditions diminish and the number in the incoming group exceeds the number in the outgoing group for able-bodied ages:

Change in the able-bodied population over preceding year

[In thousands]			
Year:	Year—Continued		
1958.....	1, 611.....	1962.....	646
1959.....	256.....	1963.....	1, 203
1960.....	-646.....	1964.....	1, 167
1961.....	-447.....	1965.....	1, 573

By 1961 (more likely 1960) the original 7-year plan estimate for the increase in the number of workers and employees from 1959 to 1965 proved to be considerably understated; in an article published in *Ekonomicheskaya gazeta* the figure was revised from 12 to 22 million.¹⁷ Considering that a 22 million net increase entails a gross addition of roughly 33.5 million persons,¹⁸ the question naturally arises as to where all these people are to come from. Since the able-bodied population is expected to grow by only 5.1 million between January 1, 1959, and January 1, 1966, additional sources of labor will have to be found. The four primary sources for tapping additional labor considered below include the educational system and the attendant impact of the 1958 school reform, the private subsidiary agricultural economy,

¹⁷ G. Zelenko, "Professional-Technical Education in the Period of the Construction of Communism," *Ekonomicheskaya gazeta* (Economic Gazette), Oct. 23, 1961, p. 28. Earlier, in February of 1961, V. Moskalenko, in an article entitled, "The Seven-Year Plan and Labor Resources" (*ibid.*, Feb. 7, 1961, p. 2) indicated that the actual increase in the number of workers and employees would be considerably larger.

¹⁸ To allow for attrition due to retirement, disability, deaths, etc.

the household economy, and the collective farms. The actual procedures and organizations at the disposal of the Government to implement the plan by management of the labor force are discussed in chapter 3.

A. *The school reform*

The measure looming largest in the minds of many Western observers is the 1958 school reform. This reform provided for the gradual reorganization of the basic educational structure from a tripartite division, i.e., elementary, intermediate, and secondary divisions, to a two-division system, i.e., elementary and secondary. The total number of years of education prior to the reform was generally limited to 10 years, of which 4 years were for elementary, 3 years for intermediate, and 3 years for secondary education. Under the 1958 school reform, compulsory universal education was extended from 7 to 8 years. The duration of secondary education remained as before at 3 years, i.e., 9th through 11th grades. Accompanying the school reform was a fundamental change in the relationship between formal education and "socially useful labor." Compulsory production training was introduced into all curriculums of the regular secondary schools, and in the existing network of part-time schools for working urban and rural youth such training was marked for substantial expansion. Most indicative of the basic purpose of the reform was the reorganization of the professional-technical schools. Under the new arrangement these schools which previously required a 4th grade education for admission now required an 8th grade education. The revised curricula of the professional-technical schools are heavily production-oriented.

An intensified emphasis on part-time education in grades 9 to 11 through heavier enrollment in schools for working urban and rural youth (rather than full-time polytechnical schools where labor training obligations are fulfilled on a 2-day-a-week basis), a channeling of part of the 8th grade graduates into professional-technical schools, and a decline in the proportion of persons enrolling in secondary general education schools, were expected by many Western observers to contribute to the rise of the available labor reserves.

The long-range benefits of the restrictive policies on full-time enrollment in secondary schools are indeed expected to include a considerable decline in the proportion of students acquiring their education on a full-time basis. These changes could not, however, counteract substantially the immediate problem of obtaining additional manpower created by the wartime birth deficit. To begin with, the reorganization had no major effect on the 1959-60 school enrollment. In the 1960-61 academic year the enrollment in 8th to 10th grades (excluding schools of working and rural youth) in fact comprised the highest proportion of the original enrollment in grades 5 to 7 than in any preceding year (table 8). The delay of entries into the labor market, evidenced by the higher proportion of students enrolled in grades 8 to 10 in 1960-61 is expected to continue during the transitional period of conversion to an 11-grade system. This trend (mainly in regard to enrollment in grade 8) is expected to continue through 1962-63 when the 7th grade graduates are expected for the first time to be promoted in toto into the 8th grade thus depriving the economy of regular 7th grade dropouts entering the labor market.

By 1963-64 the number of 10th grade graduates who would enter the market is expected to diminish for similar reasons, i.e., continuation to the 11th grade. Thus, it appears that the reform, as elaborate and far-reaching as it was, was not instituted directly as a compensation for the depressed size of currently maturing age groups. It seems quite unlikely that any benefits to the labor force involving secondary school students are much more than a byproduct of the Government's attempt to smooth the transition from classrooms to production of persons remaining after the admission quotas of the universities are filled.

TABLE 8.—Enrollment in grades 8-10 as a proportion of the original enrollment in grades 5-7, U.S.S.R.: 1948-60

School year	Percent enrolled in grades 8-10 of the original grade 5-7 cohort	School year	Percent enrolled in grades 8-10 of the original grade 5-7 cohort
1948-49	19.7	1955-56	37.3
1949-50	23.3	1956-57	37.3
1950-51	30.2	1957-58	37.4
1951-52	35.1	1958-59	36.6
1952-53	35.9	1959-60	37.7
1953-54	37.3	1960-61	45.6
1954-55	38.0		

Source: TsSU pri Sovete ministrov SSSR, *Narodnoye khozyaystvo SSSR v 1960 godu*, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1960, A Statistical Yearbook), Moscow, Gosstatizdat, 1961, p. 754; —, *Narodnoye khozyaystvo SSSR v 1959 godu*, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1959, A Statistical Yearbook), Moscow, Gosstatizdat, 1960, p. 730; —, *Narodnoye khozyaystvo SSSR v 1958 godu*, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1958, A Statistical Yearbook), Moscow, Gosstatizdat, 1959, pp. 814-815; and —, *Kul'turnoye stroitel'stvo SSSR*, statisticheskiy sbornik (Cultural Construction of the U.S.S.R., A Statistical Compilation), Moscow, Gosstatizdat, 1956, p. 122.

B. Private subsidiary economy

Starovskiy, in a recent article on problems of labor resources places the private subsidiary economy second only to the female population as a source of additional labor.¹⁹ On closer examination, however, this sector and especially its collective farmer component seems rather limited as a direct source of labor supply for other sectors. Persons engaged in this activity are among the least mobile of all categories of the employed population. On collective farms, over half of those employed exclusively in the private subsidiary sector in 1959 were persons over 60 years of age.²⁰ Partial or even complete elimination of this sector could be expected to benefit the economy only indirectly—through possibly more intensified participation of collective farmers in the work of the socialized sector of the kolkhoz economy which could release the youthful and more productive element from collective farms to the state sector.

At this point, however, barring any administrative decrees,²¹ the future of the private subsidiary sector seems more secure than it did following the 21st Party Congress in 1958. Undeniably, there are

¹⁹ V. N. Starovskiy, "The Productivity of Socialized Labor and Population Problems," *Vestnik Akademii nauk SSSR* (Herald of the Academy of Sciences of the U.S.S.R.), No. 5, May 1962, pp. 46-47.

²⁰ V. Rozdyalovskaya, "The Occupations of Citizens of the U.S.S.R. According to Data of the 1959 Population Census," *Vestnik statistiki* (Statistical Herald), No. 3, March 1961, p. 4.

²¹ For example, it has been reported that the Georgian Council of Ministers recently prohibited the export from the republic of fruits, potatoes, and vegetables by collective farmers and other groups of the population. It has been noted, in this connection, that private producers leave their places of work to transport home-grown produce and thus cause a shortage of labor in their regular work. Reportedly, there is some speculation involved in the marketing operations.

several factors currently operating to undermine its existence. Recent changes in the collective farm wage system, for example, have increased the proportion of cash income from the socialized sector. Furthermore, Khrushchev's innovations in regard to fodder crops may impose limitations on the free use of kolkhoz grazing areas by the collective farmers thus forcing them to rely more on privately cultivated fodder crops or payment in fodder for work on the kolkhoz. Not to be disregarded in its unfavorable consequences is the locally exerted pressure of the kolkhoz and rayon organizations to limit, and even abolish, private economic activities of individual households. But, while the importance of kolkhoz market sales as a source of cash income may have been somewhat reduced by the increasing proportion of monetary payment to the collective farmers for work in the socialized sector, the increased need for purchased products for household consumption has opened up additional market possibilities for private agricultural produce. There is no statistical evidence to substantiate this point as it applies to the private subsidiary sector,²² but there is increasing evidence of brisk intravillage commercial activities by the collective farms. The 1962 price increase of agricultural products²³ became an added inducement to produce more not only for the socialized agricultural units but for the private sector as well. Present developments within the private sector are expected to hold an important clue to the future of this economic unit.

C. Household economy

The most reliable indication of the future employment pattern among the female population lies in a careful consideration of a number of basic factors. These include an assessment of the continued importance of women to Soviet economic progress, the degree to which the Soviet economy has already utilized the womanpower potential in terms of numbers as well as placement, and the social conditions and consequences of the large-scale employment of women, the latter especially in regard to its effect on fertility.

Since the war, the Soviet Government has been singularly successful in overcoming any opposition to the employment of women on the part of both the employer and the employee.²⁴ The pressing needs of the economy for more and more people has also enabled the Soviet Government to live up to its ideological commitments of equal economic opportunities for women. There seems to be little doubt that from the Government's point of view the need for more female workers not only persists²⁵ but is becoming more urgent—notwithstanding the rise in the sex ratio in the prime working ages²⁶ and automation.

²² Sales of agricultural produce by the private subsidiary sector do not lend themselves well to measurement. Available statistics are restricted to "external marketing," or specifically, to commercial transactions of farmers with the state and cooperative enterprises, and the sales on the collective farm markets (including home deliveries by the collective farmers in urban areas). Direct dealings between the producer and consumer on a household-to-household (or kolkhoz-to-kolkhoz, for that matter) basis are not reported. Consequently, the importance of the private sector in agricultural produce cannot be fully assessed on the basis of published statistics.

²³ Effective June 1, 1962, retail prices of meat and meat products rose by 30 percent and butter by 25 percent, on the average.

²⁴ Unlike the problem of hiring persons under 18 which is met with occasional opposition from management.

²⁵ The Government was successful, as usual, in mobilizing public opinion against women who may consider their primary responsibility to their families, rather than "building communism." *Pravda*, March 23, 1962, p. 3.

²⁶ Male/female sex ratio of the able-bodied population 16-59 (54) years of age:

Year:	Ratio	Year—Continued	Ratio
1959	85.1	1963	89.2
1960	86.0	1964	90.4
1961	86.9	1965	91.6
1962	88.0		

The accelerated rates of growth envisaged in the Soviet plans for the branches of economy already dominated by women,²⁷ and the opening of new employment possibilities for female workers through greater mechanization of strenuous jobs, will undeniably both increase their opportunities and raise the economy's needs for increasingly larger numbers of women among workers and employers.

Soviet women already have one of the highest labor participation ratios in the world. Moreover, estimates constructed on the basis of the 1959 census data on marital status indicate that at the time of the enumeration the overwhelming majority of single women in able bodied ages were either working or in school (unless hospitalized or otherwise incapacitated). It is the married women,²⁸ then, most likely urban who comprise additional labor reserves.

The transfer of some of the housewives from homes into the labor force, however, has to be preceded by certain preparatory measures requiring considerably greater expansion in the production of labor-saving devices,²⁹ in the commercialization of household services (including public dining facilities),³⁰ and in the network of preschool institutions for the care of children.³¹ There are ample indications that a yearly contingent of about a quarter of a million such persons can be drawn into the labor force.³² The Soviet economy is now being geared for a continued inflow of people from the household economy. Sooner or later, however, the Government's policy in regard to the employment of women will have to be reexamined in relation to the country's birth rate which has been falling steadily since 1955, except for 1957. The little statistical information available on the subject points to lower fertility among Soviet working women than among non-working women. This is not to suggest that the principal solution to a sharply declining birth rate is a mass release of married women from the labor force, but it is safe to assume that married female dependents in childbearing ages will remain at the bottom of the labor reserve lists.

D. Collective farms

Prospects for deriving substantial amounts of additional labor as a result of the school reform measures, and from the private subsidiary agricultural and household economies, do not appear to be overly promising. It must be concluded, then, that at least for the time being, the collective farms will retain their historical role as the most important manpower source for industry and other nonagricultural branches of the economy. Rapid growth in the past of the Soviet

²⁷ The number of workers in nonproductive sphere is to increase at a much faster rate than in branches of material production where production gains are to come mainly from increases in productivity.

²⁸ Their labor participation level in 1959 can be estimated at about 70 percent.

²⁹ Some indications of the active interest in the problems of the household economy are found in the surveys of the time spent on domestic chores. V. Moskalenko, "The Main Productive Force of the Society," *Ekonomicheskaya gazeta* (Economic Gazette), March 26, 1962, p. 4, reports a consumption of "tens of billions of man-hours a year for running a house," with an average of 3 hours spent for preparation of dinner.

³⁰ The volume of public dining is supposed to triple by 1970. (Ibid.)

³¹ The ratio of children under 7 years of age to women in the childbearing ages (16-44) is estimated to have increased from 0.506 in 1958 to a high of 0.544 in 1962, after which it is expected to decline to a low of 0.528 in 1965.

Recent sources reported that only 10 percent of preschool children are accommodated by nurseries and kindergartens. Sample studies of the nonworking population report the unavailability of child care institutions among the principal reasons for not working. (M. Ya. Sonin, *Vospriizvodstvo rabochey sily v SSSR. I balans truda* [Reproduction of the Labor Force in the U.S.S.R. and the Balance of Labor], Moscow, Gosplanizdat, 1959, p. 112.) A new step in this direction was the recent institution of extended schools in urban and rural localities. This is a system under which children remain on school premises all day, thus relieving the parents of the burden. By the end of 1961 the children covered by this service to primarily working parents were supposed to number 745,000. (Ye. A. Rovinsky et al., *Sovetskoye finansovoye prave* [Soviet Financial Law], Moscow, Gosfinizdat, 1961, p. 281.)

³² Moskalenko, loc. cit., reports that by 1980 about 5-6 million persons will be drawn from the household economy into social production (250,000-300,000 a year).

urban population and, by the same token, urban employment, was achieved mainly through mass transfers of rural population to already existing urban places and the conversion of rural populated places to urban localities in response to the changing structure of their economies. These two sources provided 82 percent of urban growth between 1926 and 1939. In the following 20 years the proportion declined to 80 percent, but in terms of absolute numbers of people involved, the number rose from 24.5 to 31.5 million.³³ It must be kept in mind, however, that the migration of rural inhabitants affected not only the size of the rural population but also its structure; the relative proportion of persons in the working ages is much lower in regard to their respective totals in the rural areas than in urban places (51.6 and 60.8 percent, respectively). Within this group the proportion of persons in the 16 to 34 age group is also higher in urban areas. This is a significant factor which can be expected to affect, in the long run, the role of the collective farms as a supplier of manpower for the remaining branches of the economy. Thus, it will be the availability of young people who could be retrained for specialized tasks in industry and construction that will determine the level of kolkhoz resources for export to nonagricultural sectors.

CHAPTER 3. MANAGEMENT OF THE LABOR SUPPLY

As in any complex economy, the efficient allocation of labor in the U.S.S.R. is an important factor in meeting the multiple political, economic, and social goals of the country. The task of maximizing the use of manpower resources and appropriately distributing the available labor supply in terms of numbers, skills, time, and place of work is carried out in the Soviet Union by means of general management and planning of labor, labor market operations of individual economic units, and specifically created or general-type organizations with responsibility for the recruitment and direction of labor to designated assignments. This chapter is limited to a discussion of Soviet labor accounts relating to their construction and use in planning; the efforts of individual employers to satisfy their labor requirements by direct hiring and training when necessary; the more official and compulsory procedures that characterize labor assignments by government instrumentalities; and the special features of "social mobilization." Passing reference is also made to the pervasive problem of the impact of mechanization and automation on the management of the labor supply.

I. GENERAL LABOR PLANNING

The general analysis and appraisal of the manpower situation in the U.S.S.R. is carried out by the state planning agency, Gosplan, with the aid of a series of labor accounts collected and compiled by

³³ Sontin, *op. cit.*, p. 144.

the Central Statistical Administration (TsSU).³⁴ The most comprehensive of these TsSU accounts on the current utilization of the labor force includes the annual manpower account, the labor turnover account, and the labor force time utilization account. Each of these accounts provides Gosplan with specific information on total manpower resources, their utilization, and available manpower reserves; past sources of labor accessions and separations and changes in status by category; and labor time inputs, losses, and reserves of worktime.

The basic information contained in the TsSU labor "record" accounts is also used by Gosplan to assess the additional manpower resources that are expected to be available for the entire nation during specific planning periods. In this connection Gosplan estimates in detail the volume of accessions and separations of the population employed in the national economy. These estimates of changes in the employment status of the population are constructed from a series of partial accounts and are presented in the "Summary Balance of Labor Resources of the U.S.S.R." Estimates contained in the labor balance, which take into consideration capital investment, production, labor productivity, and wage plans, provide the basis for formulating operational labor plans. Among the operational plans are those for the redistribution of labor resources through the resettlement and organized recruitment systems, for the labor participation of youths, for the social mobilization of youths, and for average wages insofar as they create incentives for shifts in the occupational, branch, and territorial distribution of employment.

The labor balance table includes an estimate for total manpower or labor resources, a deduction for those employed in various branches of the national economy, including full-time students, and a residual for manpower or labor reserves. For the manpower resource category, the core is the able-bodied population, excluding military personnel, nonworking invalids of the I and II groups,³⁵ persons on special pensions, and chronically ill females. In addition, working youths under 16 years of age, and working overaged persons (males 60 years and over, females 55 years and over) are included as manpower resources. Within the rubric of the employed population, the distribution is shown among the various branches of the national economy in material production and in the nonproductive sphere.³⁶ The employed population is also classified by social composition—"workers and employees" (i.e., the state sector); collective farmers (who are shown as the number working during the period of peak agricultural employment, in contrast to the annual average estimates used for all other cate-

³⁴ See, U.S. Bureau of the Census, *The Soviet Statistical System: Labor Force Recordkeeping and Reporting*, by Murray Feshbach. International Population Statistics Reports, Series P-90, No. 12, Washington, D.C., U.S. Government Printing Office, 1960, pp. 75-85 (cited hereafter as Feshbach); *Nauchno-issledovatel'skii institut truda Gosudarstvennogo komiteta Soveta ministrov SSSR po voprosam truda i zarobotnoy platy, Trudovyye resursy SSSR (Problemy raspredeleniya i ispol'zovaniya) (Labor Resources of the U.S.S.R. (Problems of Distribution and Utilization))*, edited by N. I. Shishkin, Moscow, *Ekonomizdat*, 1961, pp. 225-244 (cited hereafter as Shishkin); A. S. Kudryavtsev (ed.), *Ekonomika truda v SSSR (Labor Economics in the U.S.S.R.)*, second revised edition, Moscow, *Profizdat*, 1961, pp. 496-501, 513-517, 520-526, and 550-570; M. Ya. Sonin, *Vosproizvodstvo rabochey sily v SSSR i balans truda (Reproduction of the Labor Force in the U.S.S.R. and the Balance of Labor)*, Moscow, *Gosplanizdat*, 1959, pp. 306-358 and N. N. Zabelin et al., *Planirovaniye podgotovki i raspredeleniya rabochikh kadrov v SSSR (Planning the Training and Distribution of Wage Workers Cadres in the U.S.S.R.)*, Moscow, *Gosplanizdat*, 1960, pp. 26-66, 75-92, and 117-132.

³⁵ Group I invalids are defined as those persons requiring constant care, aid or observation whereas group II invalids do not require similar full time attention. See, A. Ya. Usikov (compiler), *Gosudarstvennoye sotsial'noye strakhovaniye, Sbornik ofitsial'nykh materialov (State Social Insurance, A Compilation of Official Documents)*, Moscow, *Profizdat*, 1959, pp. 211-212.

³⁶ Employment in branches of material production is based essentially on production and labor productivity plans, and in branches of the nonproductive sphere on work standards and the growth of services.

gories); members of producers' cooperatives (until their abolition in October 1960); independent artisans; and individual peasants. Full-time students, 16 years of age and older, are treated as part of the employed population for purposes of the labor balance. As a residual, the able-bodied population in the household and private subsidiary economies constitute the labor reserve.³⁷ The entire account also is broken down into an urban-rural distribution.

Among the many partial labor "plan" accounts that contribute to the final summary labor balance, the description here is limited to four of the more important ones. The purpose of the "Summary Balance of the Labor Resources" for a republic, kray, or oblast is to determine the distribution of labor during the initial and terminal periods of the plan, the number of persons available for interregional transfers, and all sources of additional labor that are expected to be forthcoming. Those expectations are tabulated by branch of the national economy and cross-classified by economic administrative subordination. The "Balance of Collective Farm Labor Resources" is used not only to calculate the number of farmers needed at the period of peak agricultural work, but also to reveal the presence of surplus labor available for transfer to permanent or seasonal work in the state sector. The "Balance Estimate of Youths To Be Attached to Vocational Training and To Be Directed to Work" covers the number of youths available for work in the given locality or elsewhere after estimating the number of those who will continue in school. The fourth account, the "Balance of Qualified Cadres," comprises both a "Balance of Specialist Cadres" and a "Balance of Qualified Wage Worker Cadres." In these last accounts on-hand numbers of such personnel and their distribution are compared for both the initial and terminal periods in order to establish the gross number of persons required to satisfy the demand for the terminal period, by occupation, and specialty, for each branch of the national economy, and the sources of supply—the educational system, on-the-job training, or other methods, such as the resettlement and organized recruitment system.

II. LABOR FORCE MANAGEMENT IN ENTERPRISES

Despite the many planning features of the Soviet economy, there is a wide area of opportunity afforded individual participants to conclude their own hiring agreements. Voluntary quitting without punitive action has been permitted since the legal repeal on April 25, 1956, of the June 26, 1940, law tying people to their jobs. However, this freedom to choose jobs is not unconditional. Most graduates of all levels of the educational system are given job assignments and are subject to control for the next 3 or 4 years. Collective farmers must receive permission to leave if they wish to retain their membership in the farm. Despite these and other controls, the overwhelming majority of new hires are made directly between the employer and employee. In 1958, for example, direct hires constituted 84.1 percent of all accessions of industrial establishments subordinate to regional economic councils (sovnarkhozy).³⁸

³⁷ For a discussion of their availability for work in the socialized economy during the 7-year plan, see ch. 2, sec. III.

³⁸ Sonin, *op. cit.*, p. 177.

A. Direct hires

Direct hiring by individual employers from among the local labor supply includes bidding personnel away from employment in other establishments by offering substantial monetary and other inducements, e.g., improved housing accommodations. A significant turnover rate is to be expected. Unfortunately, detailed national turnover rates by branch or occupation are not available. Information indicative of substantial turnover rates is obtainable in the form of percentage distributions of workers and employees by length of continuous service, by branch of the national economy, and by branch of industry as of April 1, 1957.³⁹ The proportion of workers and employees with continuous service⁴⁰ up to 1 year as of April 1, 1957, was 21 percent for the total national economy, and ranged for listed branches of the national economy from 14 percent for credit and insurance institutions to 36 percent for construction. It is to be noted that these estimates greatly understate turnover rates since they include those persons hired from April 1, 1956, to April 1, 1957, who were still on the establishment rolls as of April 1, 1957, and therefore do not include those who were separated or who were hired and separated from establishments during the year. The adverse effect of high turnover rates on an establishment's cost of production, retraining expenditures, and decreased labor productivity is unknown, but it must be substantial.

B. On-the-job training

On-the-job training is discussed here insofar as it represents an effort on the part of individual establishments to insure a labor force possessing needed skills. About 75 percent of all wage workers with specific occupations have undergone this type of training.⁴¹ There are three on-the-job training programs for newly hired personnel without any skill or with low-level skills and for wage workers who need to be requalified because of changes in the production process. These are individual training, brigade or group training, and course study with and without separation from production. On-the-job training programs cannot exceed a period of 6 months.

Individual training involves the assignment of one or two trainees to a skilled worker for instruction, observation, and practice at the job. Since at least 1951, individual training has accounted for approximately 50 percent of all on-the-job training of wage workers. Brigade or group training is conducted by several skilled workers for groups of usually not less than 10 trainees. Brigade or group training tends to be used most in places where the production process is conducive to this method, such as in construction, repair work, assembly shops, and coal mining. Course study without separation from production is given in order to train skilled wage workers, as well as brigadiers, foremen, and norm setters. In study courses with separation from production more complex skills are taught, more attention

³⁹ TsSU pri Sovete ministrov SSSR, Narodnoye khozyaystvo SSSR v 1958 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1958, A Statistical Yearbook), Moscow, Gosstatizdat, 1959, pp. 669-671.

⁴⁰ Includes service in more than one establishment when transfers were not effected at the convenience of the individual.

⁴¹ Zabelin, op. cit., p. 100. The following discussion is based on *ibid.*, pp. 109-114; Sonin, op. cit., pp. 273-282; Kudryavtsev, op. cit., pp. 506-512; P. A. Litvinenko, Organizatsiya proizvodstvenno-tekhnicheskogo obucheniya rabochikh (Organization of Production-Technical Training of Wage Workers), Moscow, Metallurgizdat, 1960, 134 pp.; and TsSU pri Sovete ministrov SSSR, Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1960, A Statistical Yearbook), Moscow, Gosstatizdat, 1961, pp. 668-669.

is paid to theory, and training is provided for skills that the student cannot readily acquire at his place of work.

C. Training for increasing skills

Individual establishments also conduct extensive training program among their personnel for increasing skills. Program areas include professional-technical courses, studies in leading work methods, instruction in second occupations, and special purpose courses. During 1960, 6.8 million workers and employees, including 5.4 million wage workers, were enrolled under this program.

Since 1951, about 40 percent of the wage workers who have undergone training for increasing skills have pursued professional-technical courses. These courses usually last 6 to 8 months with two 2-hour sessions during the workweek. Courses are geared to the general educational attainment of the student. Wage workers with not less than 8 or 10 years of general education follow a more advanced course covering theoretical study and production practice than do those with less formal education. "Schools for the study of leading work methods" offer instruction in the latest production methods in courses which last no longer than 8 weeks with a maximum of 50 hours of training. Students in these schools are reported to be primarily those who usually do not fulfill their output norms, who have an improper attitude toward work, or who turn out poor quality work. In 1960, 14 percent of the wage workers in the overall training program were instructed in leading work methods.

Among wage workers who have received training to raise their skill levels, the proportion learning a second occupation through formal in-plant training has been increasing—from an average of only 6 percent for the years 1951–55 to 14 percent in 1960. This type of training tends to enhance job mobility.

Special purpose courses are conducted primarily to raise or change cadre qualifications necessitated by changes in technology or product mix, or a need to reduce production costs. These courses are given without separation from production for a period ranging from 1 to 3 months. In 1960, wage workers in special purpose courses comprised 18 percent of the total number undergoing training for increasing skills.

III. ORGANIZATIONS IN LABOR MANAGEMENT

As has been noted, more formal arrangements exist in the U.S.S.R. for the management of the labor supply than through direct hires by economic units. Specific and general-type organizations participate in implementing the Government's manpower programs. School systems receive very specific directives from higher level educational organizations as to the number of students who are to pursue specific types of courses and to study specific subjects. Special Government commissions working in close cooperation with the schools receive referrals of students for job placement. These are organizations for the organized recruitment of labor and for the resettlement of the population in different regions of the U.S.S.R. The Soviet Government continuously utilizes the Young Communist League (Komsomol), labor unions, and other organizations in its innumerable social mobilization campaigns to round up "volunteers" for both long-term and short-term work projects; this is treated separately in section IV of this chapter.

A. Schools and Counterpart Labor Commissions

Each of the four basic divisions in the Soviet educational system has its counterpart special commission that assigns its students to jobs: for general educational schools, the Commissions for the Labor Participation (*trudoustroystvo*) of Youths of the local Soviets of Workers' Deputies; for professional-technical (vocational training) schools, the State Committee for Professional-Technical Education; and for secondary specialized and for higher educational institutions, the Commissions for the Personal Distribution of Young Specialist.

The Commissions for the Labor Participation of Youths operate a virtual labor exchange.⁴² Their functions include the determination of labor requirements of local industrial, construction, and other organizations, the maintenance of information on youths who have completed general educational schools and do not have a job and are not enrolled full time in more advanced educational institutions, and the arrangement for assignment of these youths to work or to professional-technical schools. The commissions' activities also involve youths who do not have a complete secondary education. For these persons, a job may be secured or an assignment made to a construction, trade, or apprenticeship school. The commissions have encountered employer resistance to the hiring of youths under 18 years of age because such persons are entitled to a shorter working day with no reduction in pay. This situation was recognized by the Central Committee of the Communist Party of the Soviet Union and the Council of Ministers of the U.S.S.R. in a directive dated September 12, 1957, entitled "On the Drawing in of Youths Who Have Completed Secondary General Educational Schools to Industry and Agriculture." In order to facilitate the placement of youths, employers are now required to hire them according to quotas prescribed by the Commissions for the Labor Participation of Youths of the local soviets.

Persons from professional-technical schools are assigned jobs by the "State Committee for Professional-Technical Education."⁴³ Such

⁴² Zabelin, *op. cit.*, pp. 86-90; Kudryavtsev, *op. cit.*, pp. 496-497; A. Orlov, "Some Problems of the Rational Utilization of Labor Resources of an Administrative Economic Region," *Nauchnyye doklady vysshey shkoly, Ekonomicheskiye nauki* (Scientific Reports of Higher Schools, Economic Sciences), No. 1, 1962, p. 89; "From Secondary Education—To Production," *Partiynaya zhizn*, (Party Life), No. 18, September 1957, p. 59; I. A. Lyasnikov, *Planirovaniye truda v narodnom khozyaystve SSSR* (Labor Planning in the U.S.S.R. National Economy), Moscow, Gosplanizdat, 1959, p. 48; "On the Occupational Training and Labor Participation of Young Persons Who Have Completed Secondary General Educational Schools in 1962 and of Youths who did not Receive Secondary Education," decision of the Executive Committee of the Moscow City Soviet of Workers' Deputies, dated May 23, 1962, No. 17/35, *Byulleten' Ispolnitel'nogo komiteta Moskovskogo gorodskogo Soveta deputatov trud'yashchikhsya* (Bulletin of the Executive Committee of the Moscow City Soviet of Workers' Deputies), No. 13, July 1962, pp. 7-9; and "On the Drawing in of Young Persons Who Have Completed Secondary General Educational Schools to Industrial and Agricultural Production," *Soznanie postanovleniy pravitel'stva Soyuza sovetsskikh sotsialisticheskikh respublik* (Collection of Decrees of the Government of the Union of Soviet Socialist Republics), No. 13, Moscow, Gosyurizdat, 1957, article 123, pp. 435-437.

⁴³ Formerly the Chief Administration (earlier the Ministry) of Labor Reserves. See, directive "On the Improvement of the Management of Professional-Technical Education in the U.S.S.R.," dated July 11, 1959, in I. M. Sakharova et al. (compilers), *Sbornik zakonodatel'nykh aktov o trude* (Handbook on Labor Legislation), third revised and enlarged edition, Moscow, Gosyurizdat, 1969, pp. 109-111, and the "Directive on the State Committee of the Council of Ministers of the U.S.S.R. for Professional-Technical Education," in P. S. Romashkin et al. (Eds.), *Zakonodatel'nyye akty po voprosam narodnogo khozyaystva SSSR* (Legislation on Questions of the U.S.S.R. National Economy), volume I, Moscow, Gosyurizdat, 1961, pp. 78-81. Also, *TSSU pri Sovete ministrov SSSR, Zhenshechiny i deti v SSSR*, statisticheskiy sbornik (Women and Children in the U.S.S.R., A Statistical Compilation), Moscow, Gosstatizdat, 1961, p. 183-188; F. M. Volkov, *Rasshirennoye vosproizvodstvo kvalifitsirovannoy rabochey sily v SSSR* (Expanded Reproduction of the Qualified Labor Force in the U.S.S.R.), Moscow, Sotsekgiz, 1961, p. 69; A. Ordukhano, "Some Data on the Raising of the Cultural-Technical Level of the Working Class of the U.S.S.R.," *Vestnik statistiki* (Statistical Herald), No. 9, September 1961, pp. 37-38; A. S. Pashkov, *Pravovyye formy obespecheniya proizvodstva kadrami v SSSR* (Legal Forms of Supplying Production With Cadres in the U.S.S.R.), Moscow, Gosyurizdat, 1961, pp. 125-126 and 131; N. G. Aleksandrov, *Sovetskoye trudovoye pravo* (Soviet Labor Law), second revised and enlarged edition, Moscow, Gosyurizdat, 1959, p. 187; and V. S. Andreyev and Yu. P. Orlovskiy, *Pravovyye polozheniye lits sovmeshchayushchikh obucheniy s proizvoditel'nyim trudom* (Legal Status of Persons Combining Training With Productive Labor), Moscow, Izdatel'stvo Akademii nauk SSSR, 1961, p. 32.

assignments are for a period of 2, 3, or 4 years (depending on the type of school attended) with the committee verifying proper fulfillment of assignments. In 1960, 689,000 persons were trained in about 800 specialties in the professional-technical schools, of which 340,000 were assigned to agriculture, 172,000 to industry, 119,000 to construction, 40,000 to transport and communications, and 18,000 to other branches of the national economy.

Secondary specialized educational institutions are expected to graduate over 3.7 million persons during the 7-year plan period. If present procedures are retained during this period, each graduate will be assigned to a specific place of work for a period of not less than 3 years by the Commissions for the Personal Distribution of Young Specialists. During this period, assigned specialists are to be used only in direct production work in accordance with their training; they are not to be used in plant administration or work outside their field.⁴⁴ The proper fulfillment of the assignment is checked by the "Chief Administrations for Resettlement and Organized Recruitment of Wage Workers of the Councils of Ministers of the Union Republics."⁴⁵

The organizations, procedures, and terms for the assignment and the utilization of graduates of higher educational institutions are identical with those involved in the control of graduates of secondary specialized educational institutions. About 2.3 million graduates from higher educational institutions are expected during the 7-year plan period.

B. Organized recruitment and resettlement administrations

In 1931, the Soviet Union instituted an organized recruitment (orgnabor) program for wage workers in order to channel persons to priority economic sectors. Since 1957, the organization responsible for the program has been combined in most union republics with the resettlement administration under its respective council of ministers.⁴⁶

⁴⁴ Ministerstvo vysshego obrazovaniya SSSR, Vysshaya shkola, Osnovnyye postanovleniya, prikazy i instruktsii (Higher School, Basic Decrees, Orders and Instructions), edited by L. I. Karpov and V. A. Severtsev, Moscow, "Sovetskaya nauka," 1957, pp. 205-210; V. Ye. Komarov, *Planirovaniye podgotovki i raspredeleniya spetsialistov v SSSR* (Planning the Training and Distribution of Specialists in the U.S.S.R.), Moscow, Ekonomizdat, 1961, p. 26; V. G. Varentsova, *Trudovoye prava uchashchikhsya vuzov i tekhnikumov i molodykh spetsialistov* (Labor Law on Students of Higher Educational Institutions and Tekhnikums and on Young Specialists), Moscow, Gosyurizdat, 1961, pp. 44-45; "On Improving the Utilization of Young Specialists With Higher and Secondary Specialized Education," Decision of the Executive Committee of the Moscow Oblast Soviet of Workers' Deputies, dated February 13, 1959, No. 153, *Byulleten' Ispolnitel'nogo komiteta Moskovskogo oblastnogo Soveta deputatov trudyashchikhsya* (Bulletin of the Executive Committee of the Moscow Oblast Soviet of Workers' Deputies), No. 3, February 1959, p. 5; N. DeWitt, *Education and Professional Employment in the U.S.S.R.*, National Science Foundation Report No. NSF 61-40, Washington, D.C., U.S. Government Printing Office, 1961, pp. 204 and 361; Pashkov, op. cit., pp. 120-125, 133-134; Aleksandrov, op. cit., p. 89; Sakharov, op. cit., p. 114ff; and Kudryavtsev, op. cit., p. 527. A listing of the specialties acquired in secondary specialized and higher educational institutions is given in Komarov, op. cit., pp. 82-105.

⁴⁵ Varentsova (op. cit., p. 46) indicates that this is the procedure in all republics where a Chief Administration is organized, but Sonin (op. cit., p. 178) states that only in the R.S.F.S.R. is this the practice. For the R.S.F.S.R., at least, the control has been exercised since the second half of 1958. This also is not to say that the system is perfect. In 1961, for example, the R.S.F.S.R. program for distribution of young specialists was fulfilled by 96.8 percent. According to this source (Polyakov), the number of young specialists who did not go to their organizational assignment "significantly decreased." M. Polyakov, "Plants, Construction Sites, Collective Farms, and State Farms Await Them," *Pravda*, July 20, 1962, p. 3. Some graduates are given the opportunity to find work on their own. Pashkov, op. cit., p. 17.

⁴⁶ Sonin, op. cit., pp. 180-182, 184, 186, 189-207, and 212-221; Zabelin, op. cit., p. 135; Pashkov, op. cit., pp. 137-143; V. S. Andreyev and P. A. Gureyev, *Organizovannyi nabor rabochikh v SSSR* (Organized Recruitment of Wage Workers in the U.S.S.R.), Moscow, Gosyurizdat, 1960, 80 pp.; A. I. Volkov and I. V. Pavlov, *Pravoye regulirovaniye sel'skokhozyaystvennogo pereseleniya v SSSR* (Legal Regulation of Agricultural Resettlement in the U.S.S.R.), Moscow, Gosyurizdat, 1959, p. 61 ff.; I. Korzinkin et al., "On the Redistribution and Attachment of Cadres in the Regions of the U.S.S.R. Newly Being Mastered," *Sotsialisticheskiy trud* (Socialist Labor), no. 6, June 1961, p. 23; J. Sškora, "The Administrative and Organizational System for Labor Force Recruitment and Resettlement in the Soviet Union," *Pracovní styly* (Labor Force) (in Czech), no. 2, February 1957, pp. 19-21; and *Glavnoye upravleniye pereseleniya i organizovannogo nabora pri Sovete ministrov RSFSR, Pereseleniya i organizovannyi nabor rabochikh k 40-y godovshchine Oktyabrya* (Resettlement and Organized Recruitment in the Moscow City Resettlement and Organized Recruitment Department are given in *Byulleten' Ispolnitel'nogo komiteta Moskovskogo gorodskogo Soveta deputatov trudyashchikhsya*, no. 11, June 1962, pp. 18-20.

National recruitment quotas established in the state economic plan are broken down into individual rayon (roughly equivalent to a county in the United States) quotas and a nationwide network of recruiters are engaged in attempting to meet the plan. Acting as agents for particular industrial,⁴⁷ construction, or transport organizations, and, more recently, for particular collective farms, recruiters conclude contracts with individuals, except for seasonal workers,⁴⁸ for periods of 1 to 3 years. Incentives offered include grants, wage bonuses, transportation to and from the place of work, and housing accommodations. The flow of persons is generally from the more densely populated European part of the U.S.S.R. to both the northern areas of the country and to areas east of the Urals. Regional recruitment can be delineated in terms of the supply and demand for labor: recruitment in the Ukraine is primarily for the Archangel, Komi, and other northern regions; in Belorussia for Karelia; in the R.S.F.S.R. and other republics for Kazakhstan; etc.

The changing labor needs of the country have brought about corresponding changes in the activities of *orgnabor*. In the thirties, *orgnabor* was mainly engaged in moving massive numbers of people from rural areas and rural occupations to urban areas and urban occupations in order to fill all kinds of unskilled jobs and to enable workers to acquire skills needed in the industrialization drive. Currently, the emphasis is on skilled workers without reference to rural or urban area. Before the Second World War, an average of almost 2.9 million persons were recruited annually. Collective farmers constituted more than 85 percent of the total number recruited in rural areas. In the postwar period both the volume of persons recruited and the rural proportion have declined. Organized recruitment averaged about 770,000 annually for the period 1945 to 1956, and 500,000 annually from 1957 to 1959. In 1952, the rural component was 66 percent and in 1956, 38 percent. In the latter year, collective farmers made up only 40 percent of the recruited rural population.

Soviet criticism of postwar *orgnabor* operations centers largely on insufficient skill levels of the recruits and shortcomings in their personalities. While the demand for recruitment of seasonal workers for construction, logging, peat, coal, iron ore, and fishing industries has dropped because of more permanent cadres, the demand for skilled workers has increased. The difficulty of providing enterprises with properly qualified workers makes the *orgnabor* task more difficult and understandably increases the likelihood of employer disappointment. Apparently many of the persons hired through *orgnabor* are floaters who do not possess proper work habits. A substantial part of the turnover of personnel hired through *orgnabor* also has been due to the predominance of single persons or persons who leave their families at home until the end of the contract period.

Agricultural resettlement under Government auspices has existed since 1925 in the U.S.S.R.⁴⁹ The Resettlement Administration, cur-

⁴⁷ In 1958, *orgnabor* contributed about 6 percent of all wage worker accessions to industrial establishments of the *sovnarkhozy*. Sonin, op. cit., p. 177 and Zabelin, loc. cit.

⁴⁸ About 200,000 persons per year also are recruited for periods of one to six months to work in such seasonal industries as sugar refining; canning; fishing; fruit, vegetable, and tea picking; peat extraction; and logging. Sonin, op. cit., p. 186; Andrejev and Gurejev, op. cit., p. 4; and A. S. Kudryavtsev (Ed.), *Ekonomika truda, Uchebnoye posobiye* (Economics of Labor, A Textbook), Moscow Profizdat, 1957, pp. 465-467.

⁴⁹ See Sonin, op. cit., p. 254; Volkov and Pavlov, op. cit., p. 53; P. P. Litvyakov and N. K. Tyapkin, *Obshchestvennyy trud i yego proizvoditel'nost'* (Socialized Labor and Its Productivity), Moscow, *Sotsekgiz*, 1961, p. 94; I. G. Mishchenko and Ye. A. Ur'yev, *Rol' Sibiri v ekonomike sel'skogo khozyaystva strany* (Siberia's Role in the Country's Agricultural Economy), Moscow, *Ekonomizdat*, 1961, p. 193; A. A. Tverdov, *L'goty dlya pereselentsev* (Privileges for Resettlers), Moscow, *Gosyurizdat*, 1961, p. 10; and P. A. Gurejev, *Tselinnyye zemlizovut* (The Virgin Lands Call), Moscow, *Voyenizdat*, 1960, p. 74.

rently combined with *orgnabor*, transports entire families and even collectives to collective and state farms that are usually located in sparsely populated areas. Resettlement agencies also arrange for transfers of population in the path of new damsites and for resettlement of veterans. Resettlement agents are permitted to recruit soon to be demobilized military personnel at their duty stations, with certain exceptions, and at separation centers.

Paralleling *orgnabor* techniques, monetary and other incentives are used to attract volunteers for resettlement. The supply of labor stemming from agricultural resettlement is considered to be more stable than from the *orgnabor* program since it deals almost exclusively with family and community groups. Eligibility for resettlement is restricted to families with not less than 2 able-bodied members between the ages of 16 to 54 years for males and 16 to 50 years for females. From 1958 to 1960, between 8,000 and 10,000 families were moved each year to Siberia.

C. Regional economic councils

The regional economic councils (*sovnarkhozy*) can authorize personnel transfers to and from establishments over which they exercise administrative responsibility.⁵⁰ They can reallocate personnel in cases of reductions in staff, for temporary assignment of less than a month (as when a plant is idle for more than 5 days), to staff new establishments and organizations, and during off-season periods. Of the total number of able-bodied persons formally reassigned in 1960 in the R.S.F.S.R., and from the R.S.F.S.R. to Kazakhstan, 5 percent were reassigned by *sovnarkhozy*.⁵¹

IV. "SOCIAL MOBILIZATION"

"Social mobilization" of the population is based on the premise that every Soviet person is duty bound to participate in building communism. Volunteers are gathered for both long-term employment and short-term projects. Long-term assignments may be on a paid or unpaid basis; short-term assignments usually are unpaid. Long-term paid volunteers are generally included and unpaid ones omitted from the regularly compiled employment statistics.

A. Long-term "volunteers"

The Young Communist League (*Komsomol*) has rounded up large groups of young volunteers to do agricultural work in the Virgin Lands, build industrial plants and residential structures, construct railroad lines in the eastern part of the U.S.S.R., mine coal in the Donbas, etc.⁵² After the first appeal in the spring of 1954 for volunteers to cultivate the new lands in Kazakhstan, as well as the Altay, Siberia, Urals, and Volga areas, the *Komsomol* selected and issued travel orders to more than 150,000 persons. In 1955, 180,000 persons were transferred to permanent agricultural work, and more than 220,000 students and young workers were sent to help gather the harvest. In 1958 and again in 1959, over 100,000 young people were dispatched to help construct new plants for the chemical, petroleum,

⁵⁰ Pashkov, *op. cit.*, pp. 148-153; and Aleksandrov, *op. cit.*, p. 196.

⁵¹ Formal reassignment here comprehends that of *sovnarkhozy*, *orgnabor*, agricultural resettlement, and demobilized military personnel. Shishkin, p. 170.

⁵² Sonin, *op. cit.*, pp. 231-249; Pashkov, *op. cit.*, pp. 143-144; and *Sputnik komsomol'skogo aktivista, zapismaya knizhka* (A *Komsomol* Activist's Companion, Notebook), Moscow, "Molodaya gvardiya," 1960, pp. 98 and 102. (Cited hereafter *Sput. koms. akt.*)

and gas industries. During the early years of the 7-year plan, about 1 million youths were to be sent by the Komsomol to Siberia, the north, far east, and Kazakhstan to construct new installations and to develop natural resources. Over the entire course of the plan, more than 1 million Komsomol members and other youths are to be given work assignments in animal husbandry.

The Komsomol primarily recruits males between 18 and 22 years of age. In addition to demobilized military personnel and general educational school graduates, the main body of recruits comprises youths working in industrial establishments and other organizations. Short-comings in obtaining properly qualified personnel require that hiring organizations give on-the-job training courses.

There are very large numbers of long-term unpaid volunteers engaged in a long list of activities who are not recorded in Soviet employment statistics.⁵³ Use of pensioners and others in unpaid and unrecorded employment probably had contributed to the almost continuous decline since 1955 in employment in state and economic administrative organs and public organizations. These unpaid or nonstaff workers are attached to nonstaff organizations which consist entirely of these unpaid workers and to organizations which have both paid and unpaid workers. Organizations with nonstaff workers include the paramilitary Voluntary Society for Assistance to the Army, Air, Force, and Navy (DOSAAF),⁵⁴ public house committees, street committees, public control committees, store committees, volunteer people's guards (*druzhinniki*), comrades courts, volunteer fire guards, party departments and instructors, statistical auditors, nonstaff departments of local executive committees of Soviets of Workers' Deputies, and many others. Fragmentary information indicates that there are 8 million active participants in DOSAAF activities, more than 1 million volunteer people's guards at the beginning of 1960, about 90,000 nonstaff members of Communist Party organizations and more than 80,000 nonstaff party instructors at the beginning of 1962, over 16,000 persons working in nonstaff positions of local statistical agencies at the beginning of 1962, et cetera.

B. Short-term "volunteers"

Social mobilization for short-term work assignments is still another example of the Soviet authorities' demands for nothing less than the total commitment of the population to work in the economy. During their "free" time after work, or on Saturdays and Sundays, short-term "volunteers" build and repair roads and houses, plant trees, gather the harvest, collect scrap metal, etc.⁵⁵ As an example of the large numbers involved, in Moscow about 1.2 million volunteers participated in civic improvement work on Sundays during the first 11 months of 1961. Also, under Komsomol leadership, over 3 million tons of scrap metal were expected to be collected during 1959.

⁵³ See, among others, D. S. Karev (ed.), *Yuridicheskiy spravochnik deputata mestnogo soveta* (Juridical Handbook for a Deputy of a Local Soviet), Moscow, *Izdatel'stvo Moskovskogo universiteta*, 1960, pp. 88-119; *Sbornik postanovleniy prezidiuma i sekretariata VT'sSFS, 1960 goda, yanvar'-sentyabr'* (Compilation of Decrees of the Presidium and Secretariat of the All-Union Central Council of Trade Unions, January-September 1960), Moscow, *Profizdat*, 1961, p. 37; P. Figalev, "Communal Principles in the Work of Party Organs," *Kommunist (Communist)*, No. 7, 1962, pp. 60-69, especially pp. 61 and 64; and S. Kunin, "More Widely Draw Upon the Public for the Improvement of Recordkeeping and Reporting," *Vestnik statistiki*, No. 2, February 1962, p. 16.

⁵⁴ DOSAAF functions include military and civil defense training, evening vocational training in military-associated occupations, conducting sports events and training, and staffing USO-type services. I. Zubkov and V. Sysoyev, "The New Tasks Before the Defense Society," *Partiynaya zhizn'*, No. 15, August 1962, pp. 16-21, especially pp. 17 and 20.

⁵⁵ Sonin, op. cit., pp. 231-232; *Sput. koms. akt.*, p. 99; "On the Results of Socialist Competition of the Public House Committees During 1961," Decision of the Executive Committee of the Moscow City Soviet

V. MECHANIZATION AND AUTOMATION

Increasing emphasis is being placed in the U.S.S.R. on the rationalization of production processes and relationships among production units. Efforts in this field are expected to have a significant impact on the distribution of labor by branches of the national economy and industry and by types of required skills. Mechanization and automation are being relied on heavily for increasing economic efficiency and raising labor productivity. Particular attention is being paid to the mechanization of high labor-consuming auxiliary activities⁶⁶ of industrial establishments. For example, according to plans, mechanized freight handling in Soviet industry will increase from 4 billion tons in 1960 to 8 billion tons in 1965. However, freight handling will still remain predominantly a manual operation. In 1960, 71 percent of the 14 billion tons of materials handled in industry was moved manually; by 1965 it is planned that 69 percent of the 27 billion tons of freight will be moved in this manner.⁶⁷ A Soviet economist, S. A. Kheyman, estimates that in 1958 auxiliary wage workers in Soviet industry totaled about 8 million persons, or about one-half of all wage workers, and in U.S. industry, 4 million persons, or less than one-third of all workers.⁶⁸

Mechanized and automated production is expected to result in substantial transfers of personnel from their current activities.⁶⁹ It is anticipated that automation in the food industry will release about 430,000 persons and mechanization of data-processing operations will release some 300,000 recordkeeping personnel. By the end of 1965, 113,000 wage workers in the coal industry are to be displaced from their present work. In the textile industry, 30,000 to 35,000 workers were scheduled to be transferred between 1959 and 1962 from auxiliary to basic work.

In connection with the program for mechanizing and automating production, the Ministry of Higher and Secondary Specialized Education of the U.S.S.R. issued an order in 1960 for an increase in the number of specialists in automation and telemechanics, mathematical and computing instruments, devices, and systems, industrial elec-

of Workers' Deputies and the Presidium of the Moscow City Trade Union Council, dated Jan. 25, 1962, No. 3/35, *Byulleten' Ispolnitel'nogo komiteta Moskovskogo gorodskogo Soveta deputatov trudyashchikhaya*, No. 2, January 1962, p. 13. Also see the very informative article, "On the Requests of Some Union Republics for the Assignment of City Workers and Employees for Agricultural Work in Collective and State Farms," Decree of the Central Committee of the Communist Party of the Soviet Union and Council of Ministers U.S.S.R., dated July 12, 1962 (*Pravda*, July 14, 1962, p. 1), condemning the prevalence of the use of non-farmers in gathering the harvest and other agricultural work. The blame for the need of such persons, according to the article, is laid primarily upon the inefficiency of many farm managers.

⁶⁶ Auxiliary activities include intraplant transport, freight handling, warehousing, repair services, tool-making, quality control, power production, crating, scrap reclamation, and so forth. See, S. A. Kheyman, *Organizatsiya proizvodstva i proizvoditel'nost' truda v promyshlennosti SSSR* (Na primere mashinostroyeniya i chernoy metallurgii) (Organization of Production and Labor Productivity in U.S.S.R. Industry [By the Example of Machine-Building and Ferrous Metallurgy]), Moscow, Gosplanizdat, 1961, pp. 45-47; S. A. Kheyman, *Ekonomicheskiye problemy organizatsii promyshlennogo proizvodstva* (Economic Problems in the Organization of Industrial Production), Moscow, Gospolitizdat, 1961, p. 168 ff.; and Feshbach, p. 129. Attesting to Soviet concern over the need for better organization and rationalization of labor engaged in auxiliary activities is the unusual issue of the journal *Sotsialisticheskiy trud* (Socialist Labor), No. 9, September 1962, which is devoted entirely to this problem.

⁶⁷ O. S. Sitnikov, *Ekonomicheskaya effektivnost' mekhanizatsii i avtomatizatsii vspomogatel'nykh protsessov v mashinostroyenii* (Economic Effectiveness of the Mechanization and Automation of Auxiliary Processes in Machine-Building), Minsk, Izdatel'stvo Akademii nauk SSSR, 1961, p. 24.

⁶⁸ Kheyman, *Organizatsiya proizvodstva i proizvoditel'nost' truda* * * * op. cit., pp. 5 and 74.

⁶⁹ Orlov, op. cit., p. 85; A. S. Minevich and Z. Ye. Al'tshuller, "Economic Effectiveness of Automation in Coal Mines," *Mekhanizatsiya i avtomatizatsiya proizvodstva* (Mechanization and Automation of Production), No. 6, June 1960, p. 51; N. M. Golubev, "Complex Mechanization and Automation in the Textile Industry," *ibid.*, No. 5, May 1961, p. 61; and U.S. Bureau of the Census, *The Soviet Statistical System: Labor Force Recordkeeping and Reporting Since 1957*, by Murray Feshbach. International Population Statistics Reports, Series P-90, No. 17, Washington, D.C., U.S. Government Printing Office, 1962, p. 84.

tronics, and so forth.⁶⁰ It also directed six higher educational institutions to organize facilities in the fields of automation and computing techniques.

CHAPTER 4. U.S.S.R. AND UNITED STATES EMPLOYMENT COMPARISONS

For whatever reasons employment information is compiled in individual economies, international comparisons is not one of them. Therefore, there are no specific United States and U.S.S.R. employment series available at the present time which uniquely and completely satisfy requirements for making comparisons between the two countries. Employment data within and between the two countries differ in terms of scope or definition of the areas of economic activity, specific employment categories included within the defined areas of economic activity, kinds of economic units covered, and measurement standards used. They also differ because of institutional factors, particularly as they affect branch employment. The purpose of this chapter is to present, discuss, and compare total U.S. employment estimates based on population and establishment enumerations which most nearly approximate those for the U.S.S.R., and United States and U.S.S.R. industry employment for selected years, from 1940 to 1958.

I. WORK STATUS COMPARISONS BASED ON POPULATION ENUMERATION

The United States conducts two statistical programs that provide important data on the demographic, social, and economic characteristics of the population. For both programs the Bureau of the Census gathers similar general and detailed information. The Current Population Survey, covering a nationwide sample of about 35,000 households each month, and the Decennial Census of Population both report labor force, and unemployment and employment data for the noninstitutional population aged 14 years and over for specific months and also for those who worked at any time during the previous year. Data on the labor force and its components are tabulated by the Bureau of the Census from the monthly survey and published in monthly and annual reports by the Bureau of Labor Statistics which is responsible since July 1, 1959, for analysis of the information. A special current report based on the February survey is prepared each year for the civilian noninstitutional population aged 14 years and over with work experience in the previous year. Comparable Decennial Census labor force and work experience information are published as part of the census results.

Of the two U.S. measures of the employment status of the population, the one on work experience rather than the one on labor force appears to more nearly approximate the employment concept used in the U.S.S.R. All-Union Population Census of January 15, 1959. The annual labor force estimate is an average of the number of persons who were working or looking for work and refers to very definite and limited time periods, that is, 12 monthly observations relating to

⁶⁰ "On Raising the Quality and Augmenting the Graduations of Specialists for the Branches of New Techniques." Order of the Ministry of Higher and Secondary Specialized Education of the U.S.S.R., No. 585, dated Nov. 17, 1960, *Byulleten' Ministerstva vysshego i srednogo spetsial'nogo obrazovaniya SSSR* (Bulletin of the Ministry of Higher and Secondary Specialized Education of the U.S.S.R.), No. 1, January 1961, pp. 2-5.

the week in each month which contains the 12th day, while work experience is a more encompassing measure representing all persons who worked at any time during the year. Soviet figures for the employed population represent on the whole the number of people who were usually engaged in economic activities.⁶¹ Neither the actual employment status of the respondent at the time of enumeration nor for any specific time period was used as a criterion to classify the respondent as employed. Instructions specified that persons who were not actually working at the time of the census because they were not employed during the winter or were changing jobs were to be reported as employed. These instructions applied most directly to the population in the prime or able-bodied ages (males 16-59 years, females 16-54 years) who were neither disabled nor pensioned. Persons receiving pensions were to be counted as employed only if they had a permanent job or were engaged in private subsidiary agriculture. However, some of the pensioners with temporary jobs reported themselves as employed contrary to instructions. Full-time students were to be counted as employed only if they worked during the specific periods that school was in session.

At the beginning of 1959, the total population of the U.S.S.R. was 208.8 million (January) and the United States, 175.8 million (February). The population aged 14 years and over comprised approximately 70 percent of the total population for both countries; there were 148.6 million in the U.S.S.R. and 122.8⁶² million in the United States. Within this segment of population from which nearly all employed persons in both countries are drawn, the U.S.S.R. had relatively more persons in the able-bodied age group and less in the underaged and overaged groups. For the U.S.S.R., the population in the able-bodied age group amounted to 119.8 million and represented 80.6 percent of the population aged 14 years and over, for the United States, the comparable figures were 91.3 million and 74.3 percent, respectively. The larger percentage of the Soviet population in the able-bodied age group was due to the female component since for males the percentages were nearly the same—37.1 percent for the U.S.S.R. and 38.3 percent for the United States.

A comparison of reported employment in the 1959 Soviet census and U.S. work experience for 1958 in relation to the civilian population aged 14 years and over shows substantially higher employment for the U.S.S.R. than for the United States. The U.S.S.R. reported civilian employment at 105.4 million, or 72.7 percent of the civilian population of 145 million aged 14 years and over. The United States had 77.1 million with work experience in 1958, or 64.1 percent of the civilian noninstitutional population of 120.2 million (table 9). A comparison of population and employment components indicates some very substantial differences in work status for the two countries. For the underaged group (14 and 15 years), work status for the U.S.S.R. is 19 percent and for the United States 33 percent. For males aged 16-59 years, work status is again higher in the United States (93 percent) than in the U.S.S.R. (87 percent), excluding the armed forces. The major reason for such differences is attributable

⁶¹ See ch. 2, sec. 1.

⁶² This U.S. estimate relates to the civilian noninstitutional population and does not include 1.4 million in sanitoriums, homes for the aged, and other institutions.

TABLE 9.—Comparison of population and work status: U.S.S.R., January 1959; United States, February 1959

[In millions. Percentage figures are independently rounded and may not add to totals. Leaders indicate not applicable.]

Country and selected components	Total population			Civilian population aged 14 years and over with work status			Participation ratio for work status col. (4) col. (1)	Adjustment of U.S. data in col. (4) to U.S.S.R. population census concepts and instructions			
	Number	Percent distribution		Number	Percent distribution			Civilian population aged 14 years and over with work status			Participation ratio for work status col. (4a)
		Total	Population aged 14 years and over		Civilian population	Work status		Number	Percent distribution		
									Civilian population	Work status	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(4a)	(5a)	(6a)	(7a)	
U.S.S.R.											
Population.....	208.8	100.0		145.0	100.0						
Armed forces.....	3.6	1.7									
Persons with work status.....				105.4	72.7	100.0					
Population aged 14 years and over.....	148.6	71.2	100.0								
Underaged group.....	3.2	1.5	2.2	.6	.4	.6	0.1875				
Males aged 14 to 15 years.....	1.6	.8	1.1	.3	.2	.3	.1875				
Females aged 14 to 15 years.....	1.6	.8	1.1	.3	.2	.3	.1875				
Able-bodied age group.....	119.8	57.4	80.6	94.1	64.9	89.3	1.8098				
Males aged 16 to 59 years.....	55.1	26.4	37.1	44.9	31.0	42.6	1.8718				
Females aged 16 to 54 years.....	64.7	31.0	43.5	49.2	33.9	46.7	.7604				
Overaged group.....	25.5	12.2	17.2	10.7	7.4	10.2	.4196				
Males aged 60 years and over....	6.6	3.2	4.4	3.6	2.5	3.4	.5455				
Females aged 55 years and over..	18.9	9.1	12.7	7.1	4.9	6.7	.3757				
UNITED STATES											
Population.....	175.8	100.0		120.2	100.0			121.6	100.0		
Armed Forces.....	2.6	1.5									
Persons with work status.....				77.1	64.1	100.0		71.4	58.7	100.0	

Population aged 14 years and over.....	122.8	69.9	100.0								
Underaged group.....	5.5	3.1	4.5	1.8	1.5	2.3	.3273	.2	.2	.3	0.0364
Males aged 14 to 15 years.....	2.8	1.6	2.3	1.1	.9	1.4	.3929	.1	.1	.1	.0357
Females aged 14 to 15 years.....	2.7	1.5	2.2	.7	.6	.9	.2593	.1	.1	.1	.0370
Able-bodied age group.....	91.3	51.9	74.3	64.8	53.9	84.0	1.7306	61.4	50.5	86.0	1.6922
Males aged 16 to 59 years.....	47.0	26.7	38.3	41.4	34.4	53.7	1.9324	39.0	32.1	54.6	1.8784
Females aged 16 to 54 years.....	44.3	25.2	36.1	23.4	19.5	30.4	.5282	22.4	18.4	31.4	.5656
Overaged group.....	26.0	14.8	21.2	10.4	8.7	13.5	.4000	9.8	8.1	13.7	.3769
Males aged 60 years and over.....	10.1	5.7	8.2	5.8	4.8	7.5	.5743	5.5	4.5	7.7	.5446
Females aged 55 years and over.....	15.9	9.1	13.0	4.6	3.8	6.0	.2893	4.3	3.5	6.0	.2704

¹ Computed after excluding armed forces from the population estimate.

Source:

U.S.S.R.:

Col. (1): Official results of the 1959 Census of Population. (TsSU pri Sovete ministrov SSSR, Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy yezhegodnik [The National Economy of the U.S.S.R. in 1960, A Statistical Yearbook], Moscow, Gosstatizdat, 1961, pp. 11, 12; TsSU pri Sovete ministrov SSSR, Zhenshchiny i deti v SSSR, statisticheskiy sbornik [Women and Children in the U.S.S.R., A Statistical Compilation], Moscow, Gosstatizdat, 1961, p. 57.) Age groups estimated by the Foreign Demographic Analysis Division, U.S. Bureau of the Census.

Col. (4): Table 1.

United States:

Col. (1): Total population of the United States for Feb. 1, 1959, excluding Alaska and Hawaii, but including Armed Forces overseas, from U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Population Estimates, series P-25, No. 200, May 12, 1959, p. 1. The population estimate and also the work experience estimates employed in this table were based on the total population count from the 1950 Census of Population. A comparable population estimate for Feb. 1, 1959, based on the 1950 Census of Population, is 176,000,000. (Ibid., No. 250, July 3, 1962, tables 2 and 4, pp. 6 and 7.)

Armed Forces estimate from U.S. Department of Labor, Bureau of Labor Statistics, Labor Force and Employment in 1959, by Joseph S. Zelsel, Special Labor Force Reports, No. 4, table A-1, p. A-7.

Population aged 14 years and over refers only to U.S. noninstitutional population excluding Alaska and Hawaii but including the Armed Forces as of Feb. 1, 1959 (ibid.).

Distribution of noninstitutional population aged 14 years and over assembled from data in ibid., tables B-1 and B-3, pp. A-12 and A-14.

Col. (4) Persons with work status are referred to in the U.S. series as persons with work experience. The term "work status" is used here for comparisons with U.S.S.R. material. Estimates of persons aged 14 years and over with work experience in 1958 are based on supplementary questions in the February 1959 monthly survey of the labor force (U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Work Experience of the Population in 1958, series P-50, No. 91, June 30, 1959, table 1, p. 12). Estimates for age groups 14-15 and 16-17 were tabulated but not published.

Col. (4a) Population aged 14 years and over includes the comparable institutional population which was approximately 1,400,000 in 1959 (U.S. Department of Commerce, Bureau of the Census, Statistical Abstract, 1960, table 16, p. 22; and U.S. Department of Labor, loc. cit.).

Adjustments to United States data for U.S.S.R. Census of Population concepts and instructions included a reduction of 5,000,000 for full-time students in age groups 14-34, and 600,000 for part-time workers in the overaged group. Approximately 6,500,000 students in 1958 had work experience in the United States. This estimate was derived by subtracting from student enrollment as of October 1958 (U.S. Department of Commerce, Bureau of the Census, Current Population Reports, School Enrollment: October 1958, series P-20, No. 93, Mar. 27, 1959, table 1, p. 8) the number of students who attended school in 1958 but had no work experience (Current Population Reports, Work Experience of the Population in 1958, op. cit., table 24, p. 28). Given the age distribution of students with work experience, 4,900,000 out of 6,500,000 were between 14 and 19 years of age, the maximum number who possibly would have qualified under the U.S.S.R. population concepts would be 1,500,000. The reduction in work status for the overaged group, 600,000, represents the estimated number who worked at part time jobs 13 weeks or less in 1958. By comparison with instructions for the U.S.S.R. Census of Population that pensioners with temporary jobs were not to be classified as employed, the estimation procedure used here to reduce the work status of the U.S. overaged is minimal.

to the treatment of students in the U.S.S.R. and United States statistics and not "because child labor is very cheap and it is advantageous for the capitalists to use it."⁶³ For the U.S. work experience statistics all students who worked at any time during 1958 were included while for the Soviet Union most full-time students were not counted as employed, employment status being limited primarily to part-time evening students who also worked. Adjustment of United States data to U.S.S.R. instructions for full-time students appears to require a minimum reduction in U.S. work experience estimates of 5 million, of which 1.6 million was for the underaged group (14 and 15 years of age), and 3.4 million for the able-bodied age group.

To further increase employment comparability for U.S. work experience data with that of the U.S.S.R. Census of Population, an additional adjustment to U.S. data must be made for the overaged group engaged in part-time work. As an approximation to U.S.S.R. instructions that pensioners without permanent employment be excluded from employment status and indications in Soviet reports that respondents did not always comply with the instructions, U.S. work experience data for the overaged group were reduced for those in the group who worked 13 weeks or less at part-time jobs during 1958. This amounted to 0.3 million for males and 0.3 million for females.

The significant difference between work status for the U.S.S.R. and U.S. populations aged 14 years and over is due to the greater work participation of women in the U.S.S.R. Whereas, in the U.S.S.R., work participation for females aged 16 to 54 years was 76 percent, in the United States it was only 51 percent. This difference may be attributable to the absence to a greater degree of a male breadwinner, the inability of the male family head to earn an adequate income, and the massive utilization of females required to meet the Soviet Union's comparatively modest per capita agricultural requirements.

Although at the beginning of 1959 the U.S.S.R. had 33 million more persons than the United States, the number of persons with no civilian work status was not very different. Thus, in terms of the dependency ratio, each 100 employed persons in the U.S.S.R. supported an additional 98 persons, whereas in the United States each 100 employed persons supported an additional 146 persons.

II. EMPLOYMENT COMPARISONS

Figures on total employment, and employment in the agricultural and nonagricultural sectors, for the U.S.S.R. and the United States, on as comparable a basis as possible, are presented in table 10. For the United States, two employment series are presented, one representing employment data obtained from household interviews and the other a construction of employment material from several sources (see table A7). Both the U.S.S.R. and the constructed United States employment series represent combinations of employment estimates derived from establishment reports and from materials relating to the economic activities of the population—mainly the agricultural component. For the U.S.S.R., information about the population was used mainly to estimate man-year equivalent employment in private subsidiary agriculture of both collective farmers and workers and

⁶³ P. G. Pod'yachikh, "Labor Resources of the U.S.S.R.," *Sotsialisticheskiy trud* (Socialist Labor), No. 2, February 1961, p. 15.

TABLE 10.—U.S.S.R. and U.S. employment, by nonagricultural and agricultural sectors: Selected years, 1940-61

[Absolute figures in thousands; (n.a.) indicates data not available and no estimate made]

Year	U.S.S.R.			United States					
	Total, excluding domestics, day laborers, etc.	Non-agricultural sector	Agricultural sector	Constructed series			Household interview series		
				Total, excluding employment in private households	Non-agricultural sector	Agricultural sector	Total, excluding employment in private households	Non-agricultural sector	Agricultural sector
1940	79,019	35,129	43,890	47,434	37,894	9,540	45,320	35,780	9,540
1950	79,593	41,100	38,493	58,995	51,488	7,507	57,962	50,455	7,507
1953	81,942	45,334	36,608	63,427	56,865	6,562	60,231	53,689	6,562
1955	87,476	48,250	39,226	64,324	57,594	6,730	60,978	54,248	6,730
1956	90,313	49,929	40,384	66,101	59,516	6,585	62,620	56,035	6,585
1957	91,512	51,757	39,755	68,333	60,111	6,222	62,683	56,461	6,222
1958	93,790	53,845	39,945	64,432	58,588	5,844	61,510	55,666	5,844
1959	94,352	56,133	38,219	66,564	60,728	5,836	63,061	57,225	5,836
1960	95,692	57,878	37,814	¹ 67,438	61,715	5,723	¹ 64,192	58,469	5,723
1961	97,644	(n.a.)	(n.a.)	¹ 66,948	61,485	5,463	¹ 64,202	58,739	5,463
PERCENT DISTRIBUTION									
1940	100.0	44.5	55.5	100.0	79.9	20.1	100.0	78.9	21.1
1950	100.0	51.6	48.4	100.0	87.3	12.7	100.0	87.0	13.0
1953	100.0	55.3	44.7	100.0	89.7	10.3	100.0	89.1	10.9
1955	100.0	55.2	44.8	100.0	89.5	10.5	100.0	89.0	11.0
1956	100.0	55.3	44.7	100.0	90.0	10.0	100.0	89.5	10.5
1957	100.0	56.6	43.4	100.0	90.6	9.4	100.0	90.1	9.9
1958	100.0	57.4	42.6	100.0	90.9	9.1	100.0	90.5	9.5
1959	100.0	59.5	40.5	100.0	91.2	8.8	100.0	90.7	9.3
1960	100.0	60.5	39.5	100.0	91.5	8.5	100.0	91.1	8.9
1961	100.0	(n.a.)	(n.a.)	100.0	91.8	8.2	100.0	91.5	8.5
INDEX, 1940=100									
1940	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1950	100.7	117.0	87.7	124.4	135.9	78.7	127.9	141.0	78.7
1953	103.7	129.1	83.4	133.7	150.1	68.8	132.9	150.0	68.8
1955	110.7	137.4	89.4	135.6	152.0	70.5	134.5	151.6	70.5
1956	114.3	142.1	92.0	139.4	157.1	69.0	138.2	156.6	69.0
1957	115.8	147.3	90.6	139.8	158.6	65.2	138.3	157.8	65.2
1958	118.7	153.3	91.0	135.8	154.6	61.3	135.7	155.6	61.3
1959	119.4	159.8	87.1	140.3	160.3	61.2	139.1	159.9	61.2
1960	121.1	164.8	86.2	142.2	162.9	60.0	141.6	163.4	60.0
1961	123.6	(n.a.)	(n.a.)	141.1	162.3	57.3	141.7	164.2	57.3

¹ Beginning in 1960, all U.S. data include Alaska and Hawaii. For 1959, only the Bureau of Labor Statistics component data, based on establishment payroll records, include Alaska and Hawaii. See table A7.

Source: U.S.S.R.: Table 7. Nonagricultural and agricultural employment as shown in table 7 was adjusted in order to achieve greater comparability for U.S.S.R.-United States comparisons. Employment in U.S.S.R. agriculture for such activities as repair of machinery and equipment, and industrial and construction activities was transferred to the nonagricultural sector. Detailed numerical adjustments are shown in table A6. United States: No adjustments were made to transfer from agricultural employment such farm activities as the repair of machinery and equipment, and logging operations of farmers. A Soviet economist, Ya. Ioffe, contends that United States agricultural employment statistics omit women who cook for hired laborers on farms, whereas in the U.S.S.R. employment of cooks in field camps is included. (Ya. Ioffe, "The Level of Labor Productivity in the U.S.S.R. and the U.S.A.," *Planovoye khozyaystvo* [Planned Economy], No. 3, March 1960, p. 51.) Constructed series: Table A7. Household interview series: For all years except 1940, the subtraction of employment in private households from total employment and the nonagricultural sector is based on data given in the annual reports for this series. The 1940 estimate for employment in private households, 2,200,000, is based on national income data (U.S. Department of Commerce, Office of Business Economics, National Income, 1954 Edition, A Supplement to the Survey of Current Business, 1954, table 25, pp. 196 and 197). 1940: U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States, 1960, 1960, table 263, p. 205. 1950: U.S. Department of Commerce, Bureau of the Census, Annual Report on the Labor Force, 1950, Series P-50, No. 31, March 1951, table 9, p. 23. 1953: U.S. Department of Commerce, Bureau of the Census, Annual Report on the Labor Force, 1954, Series P-50, No. 59, April 1955, table C-9. 1955: U.S. Department of Commerce, Bureau of the Census, Annual Report on the Labor Force, 1955, Series P-50, No. 67, March 1956, table 12, p. 28. 1956: U.S. Department of Commerce, Bureau of the Census, Annual Report on the Labor Force, 1956, Series P-50, No. 72, March 1957, table 12, p. 28. 1957-60: U.S. Department of Labor, Labor Force and Employment in 1960, by Robert L. Stein and Herman Travis, Special Labor Force Report, No. 14, table C-4, p. A-21. 1961: U.S. Department of Labor, Labor Force and Employment in 1961, by Carol Kalish, Frazer Kellogg, and Matthew Kessler, Special Labor Force Report, No. 23, table C-4, p. A-20.

employees. For the United States, the employment estimates reported from the Current Population Survey program, based on household interviews, are used for total agricultural employment and also for unpaid nonagricultural family workers.⁶⁴

Both the United States and the U.S.S.R. recorded substantial gains in employment between 1940 and 1960.⁶⁵ Employment in the United States expanded faster than in the U.S.S.R., both in absolute and relative terms, although the population aged 16 years and over registered a 1.1 million larger increase in the U.S.S.R. than in the United States. Employment grew by about 20 million in the United States and 16.5 million in the U.S.S.R. Over the 20-year period, employment in both countries increased only in the nonagricultural sector; the agricultural sector declined. Nonagricultural employment in the U.S.S.R. expanded from 35.1 million in 1940 to 57.9 million in 1960, an increase of 64.8 percent. In the United States there was a rise from 37.9 to 61.7 million, an increase of 62.9 percent. For the agricultural sector, Soviet employment fell 13.8 percent, from 43.9 million in 1940 to 37.8 million in 1960. During the same period, U.S. agricultural employment dropped 40 percent, from 9.5 to 5.7 million.

Whereas total employment in the United States increased in each of the two decades from 1940 to 1960, total employment growth in the U.S.S.R. was limited to the second decade. From 1950 to 1960, the population aged 16 years and over in the U.S.S.R. increased by 23.3 million, and employment by 16.1 million. Between the same two dates, the population aged 16 years and over in the United States grew by 13.3 million and employment by 8.4 million according to the constructed employment series and 6.2 million according to the household interview series. For the nonagricultural sector, employment rose from 41.1 million in 1950 to 57.9 million in 1960 in the U.S.S.R. and from 51.5 to 61.7 million in the United States. After a 5.4 million reduction between 1940 and 1950 in agricultural employment, the Soviet Union has had no significant success in the following 10 years in further reducing employment in this sector. Agricultural employment reached a low of 36.6 million in 1953 and a high of 40.4 million in 1956. The 1960 estimate is 37.8 million. In the United States, agricultural employment declined from 7.5 million in 1950 to 5.7 million in 1960, a drop of 24 percent.

⁶⁴ Information on U.S. employment estimates as well as a discussion of differences in the United States between employment estimates collected from establishment reports and from household interviews are carried each month in an explanatory notes section of Employment and Earnings issued by the U.S. Department of Labor, Bureau of Labor Statistics.

For purposes of preparing more detailed U.S.S.R. and United States employment comparisons by branches of the national economy, the constructed employment series for the United States is preferable to the reported employment series based on household interviews. The constructed series is backed up with considerably more of the kind of detailed information required for the adjustment of United States data to U.S.S.R. definitions than the reported series.

⁶⁵ Although employment estimates for 1961 are included in this paper, the following discussion is primarily in terms of the initial years of the decades of the forties, fifties, and sixties.

III. U.S.S.R. AND U.S. EMPLOYMENT IN "INDUSTRY"⁶⁶

Soviet spokesmen and analysts have chosen to concentrate their comparative U.S.S.R. and U.S. economic studies on areas in which they have made their greatest efforts and have recorded their most significant achievements. There are numerous Soviet articles and studies comparing industrial production, employment, and productivity between the two countries. In preparing "industry" employment comparisons, Soviet economists have usually adjusted Soviet employment data to those of the United States,⁶⁷ with industry in the United States as comprising mining, manufacturing, and electric and gas utilities. Since the Soviet Union has not released sufficient information to permit the construction of employment comparisons in this form, comparisons are shown here in terms of U.S. employment adjusted to Soviet concepts with one exception—U.S.S.R. wage workers and their equivalents, *rabochiye*, were expanded to include estimates for minor service personnel, guards, and apprentices for comparability with U.S. production and related workers.

Four main areas of potential incomparability were analyzed in constructing U.S.S.R. and U.S. industry employment comparisons. These included differences in industry scope or definition, in specific coverage of industry units, in composition of employment included under industry, and in measurement standards used in each country to compile industry employment comparisons. Significant incomparabilities were found to exist for each of the first three listed categories and adjustments to U.S. data were carried out wherever possible. One type of major adjustment consisted of including employment in various U.S. economic units, such as drycleaning establishments and repair shops of railroads, which do not come under mining, manufacturing, or electric and gas utilities, but which are included in U.S.S.R. industry.

Comparability of industry employment between the U.S.S.R. and the United States tends to be increased when employment estimates are on an activity or wherever-carried-on basis rather than obtained from establishment reports. Both these bases have been used in the past in the U.S.S.R. to estimate industry employment. The U.S.S.R. industry employment series based on establishment reports is limited primarily to state establishments classified as "industrial" and covers all industrial-production personnel, of which wage workers are the most important component. The series based on industrial activity covers all kinds of economic units but is limited to the employment of wageworkers and their equivalents. The first series termed "labor section" employment after the Labor and Wage Statistics Department of the Central Statistical Administration of the U.S.S.R.

⁶⁶ This section is based on a forthcoming report of the U.S. Bureau of the Census, *Comparison of U.S. and U.S.S.R. Employment in Industry, 1939-58*, by Murray S. Weitzman. International Population Reports, Series P-95, No. 60, Washington, D.C. Cited hereafter as Weitzman.

⁶⁷ See, for example, S. A. Kheyman, *Organizatsiya proizvodstva i proizvoditel'nost' truda v promyshlennosti SSSR (Na primere mashinostroyeniya i chernoy metallurgii)* (Organization of Production and Labor Productivity in U.S.S.R. Industry [By the Example of Machine-Building and Ferrous Metallurgy]). Moscow, Gosplanizdat, 1961, pp. 23-33 and 73-77.

(TsSU) responsible for its collection was used to expand Soviet employment in industry to an activity basis. Absolute employment estimates based on work of the Industrial Statistics Administration of TsSU have not been published since 1936. They have had to be estimated for one set of comparisons for U.S.S.R. and U.S. employment in industry.

The transition from an establishment to an activity basis in comparing U.S.S.R. and U.S. employment in industry for selected years is shown in table 11 by the use of three alternative comparisons, A, B, and C. The frequently cited comparisons are identified as "alternative A." For the U.S.S.R., alternative A relates to labor-section data for workers and employees in state industry. For the United States, it generally covers all employees in mining, manufacturing, and public utilities (except local utilities not elsewhere classified) as reported by the U.S. Bureau of Labor Statistics.

The intermediate employment comparisons presented as alternative B represent an effort to expand and adjust U.S. employment data, as shown in alternative A, to the U.S.S.R. industry definition. U.S. employment data were expanded first to cover the more inclusive U.S.S.R. definition of industry, which includes in addition to the usual industrial activities such areas as fishing, waterworks, refrigerated warehousing, repair activities, etc., and second to include the employment of proprietors. Conversely, U.S. employment estimates for certain kinds of economic activities were removed in order to conform to the U.S.S.R. industry definition. These U.S. economic activities include publishing, oil well drilling, rig building and exploration work, part of the activities of central administrative offices attached to mining and manufacturing establishments, and employment in industry in those occupations which the U.S.S.R. excludes from industry employment, such as doctors, nurses, teachers, cafeteria employees, and force account construction workers (i.e., those engaged in construction of major additions or alterations to the plant and who are utilized as a separate work force). For the U.S.S.R., employment under alternative B consists of labor-section data for industry plus members of industrial cooperatives and independent artisans.

The alternative C employment standard is more encompassing than the other two in that industry coverage is extended from essentially an establishment basis to one which attempts to include industry activities wherever carried on. Employment estimates were prepared for U.S. industry activities performed in establishments which are not included under alternative A or B. (For example, many industry-type activities are associated with retail trade establishments, such as the repair of motor vehicles at new car dealers' facilities and gasoline service stations.) For the U.S.S.R., industry-section employment estimates, including all socialized personnel and independent artisans, were substituted for labor-section estimates.

Although from 1940 to 1958 employment in U.S.S.R. industry increased more rapidly than that in the United States, substantially different conclusions can be reached depending upon which employment standard is used. As shown in table 11, the alternative A employment standard indicates much faster Soviet growth in comparison with the United States than do the other two standards. Under alternative A, employment in the U.S.S.R. grew 30 percent faster

than in the United States in the period 1940-58, i.e., 79 percent for the U.S.S.R. and 38 percent for the United States, but under alternatives B and C the comparable growth differential was only 9 percent. Particularly striking is the impact of the 1958 recession in the United States on these employment comparisons. Estimates under alternative B and C standards show that U.S. employment in industry from 1940 to 1956 had increased faster than in the U.S.S.R. However, industry employment in the United States declined by 1½ million between 1956 and 1958 under the alternative C standard whereas comparable employment in the U.S.S.R. increased by 1 million.

The long-run U.S.S.R. policy of increasing the importance of the state sector as an instrument of economic power in preference to, and at the expense of, the cooperative and private sectors is responsible in large part for the more rapid growth of employment under alternative A than under the other two standards. The alternative A standard consists almost entirely of state wageworkers and employees whereas the other two standards include members of cooperatives and independent artisans. From 1940 to 1958, the number of independent artisans declined drastically and many of the members of industrial cooperatives were transferred to the state sector. One such transfer involving 500,000 members of industrial cooperatives took place in 1956. In 1960, this sector was eliminated and its 1.2 million members engaged in industry became state wageworkers and employees.

TABLE 11.—*Summary of alternative comparisons of U.S.S.R. and U.S. employment in industry—selected years, 1939–58*

[In thousands. (n.a.) indicates data not available and no estimate made]

Type of comparison	1939	1940	1950	1956	1958
Alternative A (frequently cited scope and coverage):					
U.S.S.R. estimates: Labor-section data, workers and employees.....	10,324	10,967	14,144	18,500	19,675
U.S. estimates: Bureau of Labor Statistics data, all employees.....	11,346	12,139	16,382	18,279	16,768
Alternative B (U.S. estimates adjusted to U.S.S.R. labor-section concept, including members of industrial cooperatives and independent artisans):					
U.S.S.R. estimates.....	(n.a.)	13,804	15,822	19,785	20,916
Labor-section data, workers and employees.....	10,324	10,967	14,144	18,500	19,675
Members of industrial cooperatives.....	(n.a.)	1,761	1,214	1,100	1,100
Independent artisans.....	(n.a.)	1,076	464	185	141
U.S. estimates.....	12,327	13,157	17,834	19,832	18,299
Bureau of Labor Statistics data, all employees.....	11,346	12,139	16,382	18,279	16,768
Additional U.S. employment in U.S.S.R. industry scope and coverage.....	1,581	1,618	2,227	2,403	2,381
Less: U.S. employment out of U.S.S.R. industry scope and coverage.....	600	600	775	850	850
Alternative C (U.S. estimates adjusted to U.S.S.R. industry-section concept, including all socialized personnel and independent artisans):					
U.S.S.R. estimates.....	(n.a.)	15,729	18,234	22,818	23,892
Industry-section estimates, wage workers and equivalents ¹	(n.a.)	11,524	14,459	18,775	19,918
State sector, wage workers.....	(n.a.)	9,300	12,687	17,035	18,178
Cooperative sector.....	(n.a.)	2,224	1,772	1,740	1,740
Members of industrial cooperatives.....	(n.a.)	1,557	1,121	990	990
Members of collective farms.....	(n.a.)	667	651	750	750
Other socialized categories ²	(n.a.)	3,129	3,311	3,858	3,833
Independent artisans.....	(n.a.)	1,076	464	185	141
U.S. estimates.....	12,819	13,678	18,484	20,587	19,074
Bureau of Labor Statistics data, all employees.....	11,346	12,139	16,382	18,279	16,768
Additional U.S. employment in U.S.S.R. industry scope and coverage.....	1,581	1,618	2,227	2,403	2,381
Employment in given sectors which are partially in U.S.S.R. industry scope but not in coverage.....	492	521	650	755	775
Less: U.S. employment out of U.S.S.R. industry scope and coverage.....	600	600	775	850	850

¹ Equivalents of workers in industrial cooperatives and collective farm industry.² Administrative and technical overhead, apprentices, minor service personnel, and guard.

NOTE.—Employment estimates for members of industrial cooperatives, independent artisans, and collective farm industry in the U.S.S.R. are slightly different from the figures shown in table 7.

Source: U.S. Bureau of the Census, "Comparison of U.S. and U.S.S.R. Employment in Industry, 1939–58," by Murray S. Weitzman. International Population Reports, Series P-95, No. 60. Washington, D.C., table II (in press).

Other factors tending to increase U.S.S.R. employment faster under alternative A are changes in personnel standards used to qualify Soviet economic units as large-scale industry and the administrative reorganization of Soviet industry. Since labor-section industry employment data that comprise alternative A are based primarily on large-scale industry, the trend toward a looser definition of the classes of industrial-production personnel required to qualify an economic unit as large-scale industry contributes to the statistical growth of alternative A. The employment standard qualifying an establishment under large-scale industry of 16 or 30 persons, depending on the presence or absence of mechanized motive power, apparently related originally to wageworkers; in 1938, it included apprentices and minor service personnel; currently, it relates to all industrial-production personnel. Also included under large-scale industry are those industrial units which do not meet the above standard if they are directly subordinated to regional economic councils (sovnarkhozy) or to industrial ministries. Since the creation of the regional economic councils at the time of the mid-1957 reorganization of Soviet industrial administration, establishments coming under the control of these councils have increased and also presumably employment for labor-section industry.

U.S. and U.S.S.R. employment comparisons are often developed for the purpose of comparing labor productivity. Much of the work done in both countries on labor productivity is based on employment of production workers who are more directly involved in production activities than are other personnel. Also, because of institutional differences, comparisons based on this category are considered to be less distorted than those based on all personnel. Comparable figures on production workers, in terms of the alternative C standard, are summarized in table 12. The U.S.S.R. production worker component was adjusted to the U.S. definition by adding to wageworkers and their equivalents, estimates for minor service personnel, guards, and apprentices. No attempt was made, however, to adjust U.S.S.R. employment data for working foremen. These persons are included in the engineering-technical personnel category in the U.S.S.R. and in the "production and related workers" category in the United States.

UNITED STATES										
Total.....	100.0	85.0	100.0	85.2	100.0	85.2	100.0	81.3	100.0	79.2
Frequently cited U.S. employment in U.S.S.R. industry scope and coverage.....	100.0	82.3	100.0	82.7	100.0	82.9	100.0	78.7	100.0	76.0
Additional U.S. employment in U.S.S.R. industry scope and coverage.....	100.0	76.3	100.0	76.2	100.0	76.2	100.0	74.6	100.0	73.9
U.S. employment partially in U.S.S.R. industry scope but not in coverage.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less: U.S. employment out of U.S.S.R. industry scope and coverage.....	100.0	24.3	100.0	24.3	100.0	25.0	100.0	22.1	100.0	21.3

¹ Production workers and equivalents are in accord with the U.S. definition: U.S.S.R.: Wage workers and equivalents (members of industrial cooperatives and collective farmers directly engaged in industry production) plus apprentices, minor service personnel, and guards.
United States: Wage and salary workers in the production worker category or in its equivalent, and proprietors directly engaged in industry production.

NOTE.—Employment estimates for members of industrial cooperatives, independent artisans, and collective farm industry in the U.S.S.R. are slightly different from the figures shown in table 7.

Source: U.S. Bureau of the Census. Comparison of U.S. and U.S.S.R. Employment in Industry, 1939-58, by Murray S. Weltzman. International Population Reports, Series P-95, No. 60. Washington, D.C., table III (in press).

For the period 1940 to 1958, the composition of employment classes within industry has not followed a similar trend in both countries. For 1940 and 1950, the proportion of production workers and equivalents in each country was approximately constant. For the United States it was 85.2 percent in both years, and for the U.S.S.R. it was 87.4 in 1940 and 87.8 percent in 1950. Since 1950 the proportion of production workers and equivalents in U.S. industry has declined to 81.3 percent in 1956 and to 79.2 percent in 1958, but has held relatively constant in the U.S.S.R.—87.4 percent in 1956 and 87.9 percent in 1958. Part of the U.S. decline in 1958 may be attributed to the recession during which employment of production workers declined faster than for other workers in industry.

TABLE A-1.—*Workers and employees, by branch of the national economy, U.S.S.R.: selected years, 1928-61*

[Employment figures are annual averages and are in thousands. (n.a.) indicates data not available and no estimate made]

Year	Total	Nonagri- cultural branches	Agricultural branches ¹
1928.....	10,790	9,055	1,735
1932.....	22,601	19,553	3,048
1937.....	26,744	23,887	2,857
1940.....	31,192	28,216	2,976
1945.....	27,263	(n.a.)	(n.a.)
1950.....	38,895	35,014	3,881
1953.....	43,660	39,218	4,442
1954.....	47,300	(n.a.)	(n.a.)
1955.....	48,880	41,834	6,546
1956.....	50,537	44,052	6,485
1957.....	53,148	45,978	7,170
1958.....	54,605	48,043	6,562
1959.....	56,509	50,319	6,190
1960.....	62,032	54,543	7,489
1961.....	66,000	57,621	8,379

¹ No adjustment has been made for transfers of some of the collective farmers to the rolls of machine tractor stations between 1953-58, as was done in table 7. Includes forestry.

Source: Unless otherwise indicated, tables A-1 to A-4 are based principally on the following:

1928-58: U.S. Bureau of the Census, "The Magnitude and Distribution of Civilian Employment in the U.S.S.R.: 1928-59," by Murray S. Weitzman and Andrew Elias. International Population Reports, series P-95, No. 58, Washington, D.C., Foreign Manpower Research Office. Bureau of the Census, April 1961, 193 pages especially pp. 55-68.

1959: TsSU pri Sovete ministrov SSSR, Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1960, A Statistical Yearbook), Moscow, Gosstatizdat, 1961, pp. 216-217, 312, 626, 636-637, 708.

1960-61: —, SSSR v tsifrakh v 1961 godu, kratkiy statisticheskiy sbornik (The U.S.S.R. in Figures in 1961. A Short Statistical Compilation), Moscow, Gosstatizdat, 1962, pp. 311-312. Figures shown for 1961 are preliminary.

TABLE A-2.—Workers and employees in industry and construction, by class of worker, U.S.S.R.: Selected years, 1928-61

[Employment figures are annual averages and are in thousands. Figures in parentheses are estimated; (n.a.) indicates data not available and no estimate made]

Year	Total	Wage workers	Salaried employees	Engineering-technical personnel	Minor service personnel (including guards)	Apprentices
Industry:¹						
1928.....	3, 773	3, 124	(227)	119	(151)	(152)
1932.....	8, 000	6, 007	700	420	313	560
1937.....	10, 112	7, 924	649	722	482	335
1940.....	10, 967	8, 290	768	932	626	351
1945.....	9, 508	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)
1950.....	14, 144	11, 308	710	1, 197	609	320
1953.....	16, 261	(13, 131)	(813)	(1, 463)	567	(287)
1954.....	17, 016	13, 818	818	1, 530	(510)	(340)
1955.....	17, 367	14, 281	753	1, 545	461	327
1956.....	18, 500	15, 226	797	1, 637	503	337
1957.....	19, 144	15, 760	810	1, 689	536	349
1958.....	19, 675	16, 279	808	1, 745	490	353
1959.....	20, 207	16, 793	804	1, 803	466	341
1960.....	22, 291	18, 574	897	2, 008	473	339
1961.....	23, 350	19, 420	(n.a.)	(n.a.)	(n.a.)	(n.a.)
Construction:²						
1928.....	723	630	28	23		42
1932.....	2, 289	1, 891	168	114		116
1937.....	1, 576	(n.a.)	(n.a.)	(n.a.)		(n.a.)
1940.....	1, 563	1, 278	81	108		96
1945.....	1, 515	1, 291	(n.a.)	93		(n.a.)
1950.....	2, 569	2, 259	85	156		69
1953.....	2, 843	(n.a.)	(n.a.)	(n.a.)		(n.a.)
1954.....	3, 179	2, 787	109	212		71
1955.....	3, 190	2, 794	104	221		73
1956.....	3, 550	3, 120	110	247		73
1957.....	4, 000	3, 510	122	230		88
1958.....	4, 421	3, 900	128	311		82
1959.....	4, 800	4, 238	136	355		71
1960.....	5, 136	4, 529	140	402		65
1961.....	5, 310	4, 657	(n.a.)	(n.a.)		(n.a.)

¹ Industrial-production personnel.

² Construction-installation personnel.

Source: See source note to table A-1.

TABLE A-3.—Wage workers in selected branches of industry, U.S.S.R.—selected years, 1940-61

[Employment figures are annual averages and are in thousands, and (n.a.) indicates data not available and no estimate made]

Year	Total industry (industrial-production personnel)	Of which, wage workers	Of which in—						
			Machine building and metal-working	Coal industry	Oil industry	Ferrous metallurgy industry	Light industry	Food industry	Construction materials industry
1940.....	10, 967	8, 290	2, 395	436	45	405	1, 489	1, 049	252
1945.....	9, 508	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)
1950.....	14, 144	11, 308	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)
1955.....	17, 367	14, 281	4, 256	897	122	742	2, 158	1, 478	830
1956.....	18, 500	15, 226	4, 539	968	125	¹ 751	2, 385	² 1, 579	(n.a.)
1957.....	19, 144	15, 760	4, 736	1, 021	128	¹ 764	2, 467	² 1, 645	(n.a.)
1958.....	19, 675	16, 279	4, 932	1, 071	138	812	2, 515	1, 662	1, 072
1959.....	20, 207	16, 793	5, 149	1, 074	140	841	2, 579	1, 688	1, 162
1960.....	22, 291	18, 574	5, 655	1, 031	145	886	3, 371	1, 743	1, 310
1961.....	23, 350	19, 420	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)

¹ Adjusted to correspond to the most recent classification on the basis of observed relationship for years for which both sets of data are available. (Percent increase between new and old classifications: 1940, 122 percent; 1958, 120 percent; 1959, 119 percent.) A 20-percent correction factor was applied in the case of the 1956 and 1957 employment.

² Adjusted by 1 percent. (Percent increase between new and old classifications: 1940, 101.9 percent; 1958, 100.8 percent; 1959, 100 percent.) See note above.

Source: See source note to table A-1.

TABLE A-4.—Workers and employees in selected branches of the national economy, U.S.S.R.—Selected years, 1928-61

[Employment figures are annual averages and are in thousands; figures in parentheses are estimated; and (n.a.) indicates data not available and no estimate made; and ... indicate inapplicable]

	1928	1932	1937	1940	1945	1950	1953	1954	1955	1956	1957	1958	1959	1960	1961
Agriculture.....	1,735	3,048	2,857	2,976	(n.a.)	3,881	4,442	(n.a.)	6,546	6,485	7,170	6,562	6,190	7,489	8,379
Sovkhoz and other state agricultural establishments.....	345	2,259	1,748	1,760	2,147	2,425	2,552	2,639	2,832	2,925	3,961	4,614	4,957	6,324	7,400
MTS/RTS ¹	144	566	530	385	678	1,118	(2,966)	3,065	2,880	2,554	1,210	469	348	70	
Unspecified agricultural establishments ²	1,315	545	295	407	(n.a.)	334	356	(n.a.)	260	290	278	362	412	458	530
Forestry.....	75	100	248	279	(n.a.)	444	416	(n.a.)	389	390	377	367	352	359	379
Transport and communications.....	1,365	2,241	3,026	3,903	3,537	4,624	5,352	(n.a.)	5,650	5,840	5,996	6,332	6,663	7,017	7,344
Transport.....	1,270	2,017	2,651	3,425	3,111	4,082	4,770	(n.a.)	5,039	5,216	5,355	5,668	5,972	6,279	6,553
Railroad transport.....	971	1,297	1,512	1,752	1,841	2,068	2,275	2,321	2,302	2,307	2,323	2,330	2,338	2,348	2,322
Water transport.....	104	146	180	203	190	222	260	(n.a.)	285	300	317	320	317	322	335
Motor vehicle, urban electrical and other transport; and freight handling.....	195	574	959	1,470	1,080	1,792	2,235	(n.a.)	2,452	2,609	2,715	3,018	3,317	3,609	3,896
Communications.....	95	224	375	478	426	542	582	(595)	611	624	641	664	691	738	791
Trade, procurement, and material-technical supply and public dining.....	(583)	(2,184)	(2,509)	3,303	2,462	3,325	3,463	(3,668)	3,725	3,826	4,017	4,190	4,389	4,675	5,064
Trade, procurement, and material-technical supply.....	³ (528)	³ (1,551)	³ (2,038)	2,519	1,747	2,666	2,698	2,848	2,869	2,935	3,089	3,231	3,398	3,606	3,902
Of which, retail trade.....	(n.a.)	855	1,264	1,382	(n.a.)	1,308	1,404	1,519	1,634	1,666	1,739	1,888	2,050	2,226	(n.a.)
Public dining.....	55	633	471	784	715	659	765	820	856	891	928	959	991	1,069	1,162
Public health and education.....	1,206	2,106	3,495	4,531	(n.a.)	6,080	6,815	(n.a.)	7,607	7,933	8,350	8,775	9,275	10,027	10,797
Public health.....	399	669	1,127	1,507	1,419	2,051	2,308	(n.a.)	2,627	2,736	2,892	3,059	3,245	3,461	3,686
Education.....	807	1,437	2,368	3,024	(n.a.)	4,029	4,507	(n.a.)	4,980	5,197	5,458	5,716	6,030	6,566	7,111
Educational institutions.....	725	1,292	2,089	2,663	} 2,561	{ 3,315	714	(n.a.)	3,988	4,103	4,250	4,378	4,556	4,803	5,085
Science.....	82	145	279	361												860	(n.a.)	982	1,094	1,208	1,338	1,474	1,763	2,026
Of which—															
Geological prospecting.....	10	23	30	70	(n.a.)	245	320	(n.a.)	356	379	382	398	(n.a.)	(n.a.)	(n.a.)
Hydrometeorological services.....	8	12	15	24	(n.a.)	32	39	(n.a.)	42	42	45	47	(n.a.)	(n.a.)	(n.a.)

"Other branches".....	1,405	2,733	3,169	3,949	(n.a.)	4,272	4,484	(n.a.)	4,295	4,403	4,471	4,650	4,985	5,397	5,756
Housing-communal economy.....	147	661	1,023	1,221	(n.a.)	1,210	1,345	(n.a.)	1,400	1,503	1,679	1,632	1,713	1,920	2,039
Administrative organs.....	1,010	1,650	1,488	1,825	1,645	1,831	1,726	(n.a.)	1,361	1,342	1,294	1,294	1,273	1,245	1,275
Credit and insurance organizations.....	95	128	193	262	197	264	263	(n.a.)	265	266	261	260	260	265	276
Residual (capital repair, drilling, and other unidentified).....	153	294	465	641	(n.a.)	967	1,150	(n.a.)	1,269	1,292	1,337	1,464	1,739	1,967	2,166

¹ No adjustment has been made for transfers of some of the collective farmers to the rolls of machine tractor stations between 1953 and 1958, as was done in table 7.

² Includes veterinary services, artificial insemination stations, research stations, etc.

³ Adjusted for reclassification of the personnel engaged in collection of secondary raw materials. The adjustment involved transferring the following number of persons from the "Trade, procurement, and material-technical supply" category to the "Other"

category: 1928, 4,000; 1932, 13,000; and 1937, 16,000 (0.8 percent of total, based on the 1940 relationship:

$$\frac{2,519}{2,539} = 99.2 \text{ percent}.$$

Source: See source note to table A-1.

TABLE A-5.—*Employment in the private agricultural economy, by subsector, U.S.S.R.: Selected years, 1940-61*

[Absolute figures are 280 day man-year equivalents and are in thousands; percentage figures are independently rounded and may not add to totals; and (n.a.) indicates data not available and no estimate made]

Year	Total	Collective farmers	Workers and employees	Individual peasants and other categories of population
Conventional man-year equivalents: ¹				
1940.....	(n.a.)	9,133.7	2,038.6	(n.a.)
1950.....	(n.a.)	7,939.0	2,542.6	(n.a.)
1953.....	10,737.1	8,090.3	2,599.1	47.7
1955.....	12,196.0	9,143.2	3,003.3	49.5
1956.....	12,558.6	9,505.1	3,009.0	44.5
1957.....	12,622.8	9,045.4	3,542.2	35.2
1958.....	12,736.6	9,049.8	3,653.5	33.3
1959.....	11,701.3	8,259.0	3,417.8	24.5
1960.....	11,130.8	7,217.8	3,893.0	20.0
1961.....	² 11,470.0	(n.a.)	(n.a.)	(n.a.)
Percent distribution:				
1953.....	100.0	75.3	24.2	.4
1955.....	100.0	75.0	24.6	.4
1956.....	100.0	75.7	24.0	.4
1957.....	100.0	71.7	28.1	.3
1958.....	100.0	71.1	28.7	.3
1959.....	100.0	70.6	29.2	.2
1960.....	100.0	64.8	35.0	.2
1961.....	(n.a.)	(n.a.)	(n.a.)	(n.a.)
Index (1953=100):				
1953.....	100.0	100.0	100.0	100.0
1955.....	113.6	113.0	115.6	103.8
1956.....	117.0	117.5	115.8	93.3
1957.....	117.6	111.8	136.3	73.8
1958.....	118.6	111.9	140.6	69.8
1959.....	109.0	102.1	131.5	51.4
1960.....	103.7	89.2	149.8	41.9
1961.....	² 106.8	(n.a.)	(n.a.)	(n.a.)

¹ Estimated on the basis of the labor-input requirements to cultivate and care for the agricultural holdings in private ownership.

² Preliminary figure.

Source: TsSU pri Sovete ministrov SSSR, Narodnoye khozyaystvo S.S.S.R. v 1956 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1956, A Statistical Yearbook), Moscow, Gosstatizdat, 1957, pp. 114-115; ———, Sel'skoye khozyaystvo S.S.S.R. statisticheskiy sbornik (Agriculture of the U.S.S.R., A Statistical Compilation), Moscow, Gosstatizdat, 1960, pp. 123-129, 266-267; ———, Narodnoye khozyaystvo S.S.S.R. v 1960 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1960, A Statistical Yearbook), Moscow, Gosstatizdat, 1961, pp. 389-391; and A. Gol'tsov, "Utilization of Labor Resources in Collective Farms," Nauchnyye doklady vysshey shkoly, Ekonomicheskoye nauki (Scientific Reports of Higher Schools, Economic Sciences), No. 1, 1961, pp. 46-47.

TABLE A-6.—Adjustment of U.S.S.R. civilian employment to correspond to United States nonagricultural and agricultural sectors

[In thousands. (n.a.) indicates data not available and no estimate made; leaders indicate not applicable; and figure in parentheses is estimated]

Employment category	1940	1950	1953	1955	1956	1957	1958	1959	1950	1961
Total civilian employment	79,019	79,593	81,942	87,476	90,313	91,512	93,700	94,352	95,092	97,644
Nonagricultural branches	35,129	41,100	45,334	48,250	49,929	51,757	53,845	56,133	57,878	
Workers and employees (excluding agricultural establishments and forestry)	28,216	35,014	39,218	41,834	44,052	45,978	48,043	50,319	54,543	57,621
Members of producers' cooperatives	2,200	1,500	1,600	1,800	1,200	1,200	1,300	1,400	1,400	174
Independent artisans	604	254	214	164	195	145	156	174	174	(?)
Collective farms	3,100	3,000	2,697	2,716	2,834	2,768	2,960	3,019	2,054	(?)
Agricultural	2,700	2,600	2,400	2,300	2,400	2,300	2,700	2,700	1,600	(?)
Nonagricultural ¹	400	400	297	416	434	468	260	319	454	(?)
State agricultural establishments	730	878	1,189	1,347	1,258	1,289	1,019	869	748	(?)
State farms and subsidiary state agricultural establishments	200	200	300	200	200	300	300	400	(400)	(?)
Machine tractor stations (repair-technical stations)	530	678	889	1,147	1,058	989	719	469	348	70
Forestry	279	444	416	389	390	377	367	352	359	379
Agricultural branches	43,890	38,493	36,608	39,226	40,384	39,755	39,945	38,219	37,814	(?)
Workers and employees	4,006	5,102	5,207	5,895	6,024	7,481	8,330	8,387	10,275	(?)
State farms and subsidiary state agricultural establishments	1,560	2,225	2,252	2,632	2,725	3,661	4,314	4,557	5,924	(?)
Agricultural activities not specifically identified	407	334	356	260	290	278	362	412	458	530
Private subsidiary economy	2,039	2,543	2,599	3,003	3,009	3,542	3,654	3,418	3,893	(?)
Collective farms	33,934	32,239	31,264	33,147	34,213	32,162	31,515	29,739	27,431	(?)
Agricultural	24,700	24,200	23,100	23,900	24,600	23,000	22,400	21,400	20,100	18,000
Nonagricultural ¹	100	100	74	104	108	117	65	80	113	(?)
Private subsidiary economy	9,134	7,939	8,090	9,143	9,505	9,045	9,050	8,259	7,218	(?)
Individual peasants	5,950	1,152	179	186	167	132	125	92	75	(?)
Correction for rounding	0	0	-42	-2	-20	-20	-25	+1	+33	

¹ 80 percent of all employment in nonagricultural collective farms has been allocated to the nonagricultural branches and 20 percent to agricultural branches.

² Not available.

³ Estimated as a total of 11,470,000 (including construction activities of agricultural collective farms).

Source: Table 7.

TABLE A-7.—*Civilian employment in the United States, by major employment categories: Selected years, 1940-61*

[In thousands]

Source of information and major employment category ¹	1940	1950	1953	1955	1956	1957	1958	1959	1960 ²	1961 ³
Total civilian employment, excluding private household workers ⁴	47,434	58,995	63,427	64,324	66,101	66,333	64,432	66,564	67,438	66,948
BLS data based on establishment payroll records— wage and salary employment ⁴	32,377	45,222	50,233	50,675	52,408	52,904	51,423	*53,390	54,347	54,076
Mining.....	925	901	866	792	822	828	751	731	709	666
Contract construction.....	1,294	2,333	2,623	2,802	2,999	2,923	2,778	2,955	2,882	2,760
Manufacturing.....	10,985	15,241	17,549	16,882	17,243	17,174	15,945	16,667	16,762	16,267
Transportation, communications, and public utilities.....	3,038	4,034	4,290	4,141	4,244	4,241	3,976	4,010	4,017	3,923
Wholesale and retail trade.....	6,750	9,386	10,247	10,535	10,858	10,886	10,750	11,125	11,412	11,368
Finance, insurance, and real estate.....	1,502	1,919	2,146	2,335	2,429	2,477	2,519	2,597	2,684	2,748
Services and miscellaneous.....	3,681	5,382	5,867	6,274	6,536	6,749	6,811	7,105	7,361	7,518
Government.....	4,202	6,026	6,645	6,914	7,277	7,626	7,893	8,190	8,520	8,828
BLS-Census data based on household interviews— wage and salary, self-employed, and unpaid family employment ⁵	10,060	7,911	6,985	7,254	7,166	6,848	6,449	6,433	6,338	6,125
Agriculture.....	9,540	7,507	6,562	6,730	6,585	6,222	5,844	5,836	5,723	5,463
Unpaid family employment (nonagricultural).....	520	404	423	524	581	626	605	597	615	662
NID data—self-employed (nonagricultural) ⁶	4,997	5,862	6,209	6,395	6,527	6,581	6,560	6,751	6,753	6,747

¹ BLS refers to the U.S. Department of Labor, Bureau of Labor Statistics; Census refers to the U.S. Department of Commerce, Bureau of the Census; NID refers to the U.S. Department of Commerce, Office of Business Economics, National Income Division.

² Beginning in 1960, all data include Alaska and Hawaii. For 1959, only BLS data based on establishment payroll records include Alaska and Hawaii.

³ Employment excludes that for private household workers since no employment estimates are available for the U.S.S.R. for domestics, day laborers, etc. Employment estimates for private household workers are reported in the former series of Annual Reports on the Labor Force, issued by the U.S. Department of Commerce, Bureau of the Census, and now in the Special Labor Reports, prepared by the U.S. Department of Labor, Bureau of Labor Statistics. A similar series for workers in private households is presented in the various National Income editions of the Survey of Current Business. In 1961, employment for private household workers was 2,594,000 (U.S. Department of Labor, Labor Force and Employment in 1961, by Carol Kalish, Frazier Kellogg, and Matthew Kessler, Special Labor Force Report, No. 23, table C-4, p. A-20). In the National Income series, 1960 employment for full-time and part-time employees in private households is 2,662,000 (U.S. Department of Commerce, Office of Business Economics, Survey of Current Business, July 1961, table 53, p. 29). Employment also excludes that for prisoners. For the United States, there are no recent employment data for prisoners. A study of Federal and State prisons by the Bureau of Labor Statistics for fiscal year 1940 reported 191,776 prisoners, of whom: employed, 83,515; engaged in prison duties, 68,894; attended school, 11,868; sick or otherwise unavailable, 16,519; and idle, 10,980 (U.S. Department of Labor, Bureau of Labor Statistics, Prison Labor in the United States, 1940, by Richard F. Jones, Jr., Bulletin No. 698, 1941, table 5, p. 11). The reported population in Federal and State prisons at the end of 1960 was 213,142 (U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States, 1962, table 209, p. 160).

⁴ U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, Annual Supplement Issue, vol. 8, No. 12, June 1962, table B-1, p. 11.

⁵ 1940: Agriculture: Figure is reported in U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States, 1960, 1960, table 263, p. 205. Unpaid family employment (nonagricultural): Unpublished estimate from U.S. Department of Labor, Bureau of Labor Statistics. 1950: U.S. Department of Commerce, Bureau of the Census, Annual Report on the Labor Force, 1950, Series P-50, No. 31, March 1951, table 9, p. 23. 1953: U.S. Department of Commerce, Bureau of the Census, Annual Report on the Labor Force, 1954, Series P-50, No. 59, April 1955, table C-9, p. 49. 1955: U.S. Department of Commerce, Bureau of the Census, Annual Report on the Labor Force, 1955, Series P-50, No. 67, March 1956, table 12, p. 28. 1956: U.S. Department of Commerce, Bureau of the Census, Annual Report on the Labor Force, 1956, Series P-50, No. 72, March 1957, table 12, p. 28. 1957-1960: U.S. Department of Labor, Labor Force and Employment in 1960, by Robert L. Stein and Herman Travis, Special Labor Force Report, No. 14, table C-4, p. A-21. 1961: U.S. Department of Labor, Labor Force and Employment in 1961, by Carol Kalish, Frazier Kellogg, and Matthew Kessler, Special Labor Force Report, No. 23, table C-4, p. A-20.

⁶ Computed from various national income publications of the U.S. Department of Commerce, Office of Business Economics. The reported number of full-time equivalent employees, by industry, less those for farms, were subtracted from the number of persons engaged in production, by industry, less those for farms. 1940: U.S. Department of Commerce, Office of Business Economics, National Income, 1954 Edition, A Supplement to the Survey of Current Business, 1954, table 25, pp. 196 and 197, and table 28, pp. 202 and 203. 1950, 1953, 1955: U.S. Department of Commerce, Office of Business Economics, U.S. Income and Output, A Supplement to the Survey of Current Business, 1958, table VI-13, p. 211, and table VI-16, p. 214. 1956-1958: U.S. Department of Commerce, Office of Business Economics, Survey of Current Business, July 1960, tables 52 and 55, p. 29. 1959-61: U.S. Department of Commerce, Office of Business Economics, Survey of Current Business, July 1962, tables 52 and 55, p. 29.

TABLE A-8.—*Estimated employment of collective farmers in the socialized sector of collective farms based on information in agriculture of the U.S.S.R.: Selected years, 1940-59*

[Employment figures are annual averages and are in thousands in cols. 5 and 6 and in millions in cols. (5a) and (6a). Figures in parentheses are estimated. ----- indicates data not available and no estimate made]

Year	Index of gross value of output, 1940=100	Index of labor productivity, 1940=100	Index of employment change		Reported employment		Estimated employment	
			Col. (1) Col. (2) × 100	1953=100	Total	Agriculture (adjusted)	Total (Col. (4) × reported 1953 employment, col. (5))	Agriculture (Col. (4) × reported 1953 employment, col. (5a))
	(1)	(2)	(3)	(4)	(5)	(5a)	(6)	(6a)
1940-----	100.0	100.0	100.0	107.5	-----	-----	1 27,367	24.8
1950-----	97.0	99.0	98.0	105.4	-----	-----	1 26,833	24.3
1953-----	107.0	115.0	93.0	100.0	25,458	(23.1)	25,458	23.1
1954-----	-----	121.0	-----	-----	-----	-----	-----	-----
1955-----	-----	136.0	-----	-----	26,198	-----	-----	-----
1956-----	146.0	146.0	100.0	107.5	26,980	(24.6)	27,367	24.8
1957-----	142.0	152.0	93.4	100.4	25,280	(23.0)	25,560	23.2
1958-----	157.0	172.0	91.3	98.2	25,075	(22.4)	25,000	22.7
1959-----	156.0	177.0	88.1	94.7	24,109	21.4	24,109	21.9

¹ The 1940 and 1950 data thus derived were used in table 7, line II.B.1.b in lieu of the reported figures (TsSU pri Sovete ministrov SSSR, Sel'skoye khozyaystvo SSSR, statisticheskiy sbornik [Agriculture of the U.S.S.R., A Statistical Compilation], Moscow, Gosstatizdat, 1960, p. 450) because of the uncertainty in regard to the composition of the figures, and particularly those referring to nonagricultural activities.

Source:

Col. (1): Ibid., pp. 60-61.

Col. (2): Ibid., p. 439.

Col. (4): Col. (3) × 1.0753, the factor required to transfer base year 1940 to 1953.

Col. (5): Ibid., p. 450.

Col. (5a): Table 7, line II.B.1.b.(1).

TABLE A-9.—Estimated conventional man-year employment of collective farmers in industrial and construction establishments of collective farms: Selected years, 1940-59

[Labor-days earned are in millions. Employment figures are in terms of 280-day man-year equivalents and are in thousands; (n.a.) indicates data not available and no estimate made]

Component	1940	1950	1953	1955	1956	1957	1958 ¹	1959 ¹
1. Labor-days earned:								
2. Industry.....	234	204	192	322	360	368	358	(n.a.)
3. Construction.....	283	350	455	540	567	655	638	(n.a.)
4. Average number of labor-days per man-day.....	1.30	1.16	1.45	1.63	1.69	1.74	1.78	(n.a.)
5. Employment:								
6. Industry (line 2 plus line 4 plus 280 man-days).....	643	628	473	707	761	755	718	(n.a.)
7. Construction (line 3 plus line 4 plus 280 man-days).....	777	1,078	1,121	1,183	1,198	1,344	1,280	(n.a.)
8. Adjustment factors for higher number of labor-days earned in industry and construction than the average for all activities:								
9. Industry.....	1.046	1.046	1.145	1.145	1.145	1.145	1.145	(n.a.)
10. Construction.....	1.115	1.115	1.145	1.145	1.145	1.145	1.145	(n.a.)
11. Adjusted employment:								
12. Industry (line 6 plus line 9).....	615	600	413	617	665	659	627	² 658
13. Construction (line 7 plus line 10).....	697	967	979	1,033	1,046	1,174	1,118	² 1,163

¹ There is a break in the series between 1958 and 1959 resulting from the reporting of labor input on the collective farms directly in terms of man-days rather than labor-days, as was the case between 1940 and 1958. Thus, there may not necessarily be a great deal of significance in the relative changes of the industrial and construction employment between 1958 and 1959.

² There are reasons to suspect a major reclassification in 1959 and subsequent years of the agricultural statistics by which part of the industrial activities previously reported under "subsidiary enterprises" are now included in agriculture proper. This may partly explain the drop in the percentage that the man-days earned in subsidiary industrial enterprises are of total number of man-days earned: In 1958, 3.2 percent; in 1959, 1.7 percent. A reclassification is also evident in the changes occurring in the 1961 release of agricultural statistics as compared with those published earlier. These data show employment in collective farm agriculture (in millions) as follows:

	1953	1955	1958	1959
Reported in 1960*	22.9	22.1	22.0	21.5
Reported in 1961**	23.3	22.5	22.5	22.1

*TsSU pri Sovete ministrov SSSR, Sel'skoye khozyaystvo SSSR, statisticheskiy sbornik (Agriculture of the U.S.S.R., A Statistical Compilation), Moscow, Gosstatizdat, 1960, p. 450.

**Narodnoye khozyaystvo SSSR v 1960 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1960. A Statistical Yearbook), Moscow, Gosstatizdat, 1961, p. 521.

For purposes of this presentation the original series appearing in 1960 has been retained. The figures in the table represent 3 percent of 6,144.6 million man-days for industry and 5.3 percent of 6,144.6 million man-days for construction. Nauchno-issledovatel'skiy institut truda Gosudarstvennogo instituta Soveta ministrov SSSR po voprosam truda i zarabotnoy platy, Trudovyye resursy (Problemy raspredeleniya i ispol'zovaniya) (Labor Resources of the U.S.S.R. [Problems of Distribution and Utilization]), edited by N. I. Shishkin, Moscow, Ekonomizdat, 1961, pp. 101 and 112. The 3 percent for industry was based on the assumption that the 1958-59 changes in industrial employment were more or less similar, proportionately, to those in construction. Thus, the 3.2 percent reported for industrial employment on collective farms in 1958 (ibid., p. 101) was reduced by about 7 percent to 3 in 1959.

Source: Line 2: 1940, 1950, 1953, 1955, and 1956: TsSU pri Sovete ministrov SSSR, Narodnoye khozyaystvo SSSR v 1956 godu, statisticheskiy yezhegodnik (The National Economy of the U.S.S.R. in 1956. A Statistical Yearbook). Moscow, Gosstatizdat, 1957, p. 141 (cited hereafter as Nar. khoz. v 1956). 1957: 3.2 percent (Nauchno-issledovatel'skiy institut truda Gosudarstvennogo komiteta Soveta ministrov SSSR, Trudovyye resursy SSSR [Problemy raspredeleniya i ispol'zovaniya] [Labor Resources of the U.S.S.R. (Problems of Distribution and Utilization)]. Edited by N. I. Shishkin. Moscow, Ekonomizdat, 1961, p. 101) of 11,495 million labor-days (estimated) (cited hereafter as Shishkin). 1958: 3.2 percent (ibid.) of 11,193 million labor-days (estimated).

Line 3: 1940, 1950, 1953, 1955, and 1956: Nar. khoz. v 1956, loc. cit. 1957: 5.7 percent (Shishkin, loc. cit.) of 11,495 million labor-days (estimated). 1958: 5.7 percent (ibid.) of 11,193 million labor-days (estimated). Line 4: 1940, 1950, 1953: I. S. Kuvshinov et al., Ekonomika sotsialisticheskogo sel'skogo khozyaystva (Economics of Socialist Agriculture). Moscow, Sel'khozgiz, 1957, p. 78. 1955-58: A. A. Ivanchenko and P. S. Minakov, Voprosy metodiki planirovaniya proizvoditel'nosti truda v sel'skom khozyaystve (Problems in the Method of Planning Labor Productive in Agriculture). Moscow, Gosplanizdat, 1960, p. 28.

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87th Congress }
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JOINT COMMITTEE PRINT

**DIMENSIONS OF
SOVIET ECONOMIC POWER**

STUDIES PREPARED FOR THE
**JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES**

Part IX
**A SELECTED BIBLIOGRAPHY OF
CURRENT RUSSIAN MONOGRAPHS
AND
STATISTICAL APPENDIX**



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A SELECTED BIBLIOGRAPHY OF RECENT
SOVIET MONOGRAPHS

BY

MURRAY FESHBACH

A SELECTED BIBLIOGRAPHY OF RECENT SOVIET MONOGRAPHS

This bibliography is limited primarily to monographs which have been examined in the course of this compiler's pursuits in the fields of Soviet economics, labor force, and population. With several exceptions, the selection is restricted to those monographs which have appeared since 1959. Relatively few purely technical books are included, and statistical handbooks are omitted entirely.

The bibliography is arranged according to subject and branch of the national economy. The subject listing is in alphabetical order, whereas the branch listing approximates the sequence used in Soviet statistical handbooks. Each entry appears only once in either the subject or branch classification.

SUBJECT LISTING

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110. ———, ———, ———, *Lesnoye khozyaystvo i lesnaya promyshlennost' (Forestry and Timber Industry)*. 240 pp.
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112. ———, ———, ———, *Obshchiye voprosy razvitiya proizvoditel'nykh sil (General Questions in the Development of Productive Forces)*. 172 pp.
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I. Population and Labor

TABLE 1.—U.S.S.R.: Total employment in the national economy for selected years 1913-61

[In millions]

Year	Wage and salary earners ¹	Industrial cooperative members	Year	Wage and salary earners ¹	Industrial cooperative members
1913	² 12.9	-----	1953	43.7	1.6
-----	³ 11.4	-----	1954	47.3	1.7
1928	10.8	-----	1955	48.4	1.8
1932	22.6	-----	1956	50.5	1.2
1937	26.7	-----	1957	53.1	1.2
1940	31.2	2.2	1958	54.6	1.3
1945	27.3	1.3	1959	56.5	1.4
1950	38.9	1.5	1960	62.0	-----
1951	40.7	1.6	1961	65.9	-----
1952	42.2	1.6	-----	-----	-----

¹ Excludes industrial cooperative members.

² On basis of present boundaries.

³ On basis of boundaries effective until Sept. 17, 1939.

⁴ Includes 600,000 former industrial cooperative members who were transferred to various sectors of the state enterprises in 1956.

⁵ Includes 1,400,000 former industrial cooperative members who were transferred to various sectors of the state enterprises in 1960.

Source: Moscow, Central Statistical Office, Narodnoe khoziaistvo SSSR v 1961 godu (The National Economy of the U.S.S.R. in 1961), p. 566.

TABLE 2.—U.S.S.R.: Total employment in the national economy by economic sector, for selected years, 1928-61

[In thousands]

Economic sector	1928	1940	1958	1959	1960 ¹	1961
All sectors	10,790	31,192	54,605	56,509	62,032	65,861
Industry (industrial-productive personnel)	3,773	10,967	19,675	20,207	22,291	² 23,475
Construction	723	1,563	4,421	4,800	5,143	5,270
Agriculture	1,660	2,697	6,195	5,838	7,123	7,879
State farms and auxiliary farms of enterprises	345	1,760	4,614	4,957	6,324	7,407
Machine and tractor and repairing stations	-----	530	³ 1,219	469	348	3
Lumber	75	279	367	352	359	378
Transportation	1,270	3,425	5,668	5,972	6,279	6,518
Railroad	971	1,752	2,330	2,338	2,348	2,311
Water	104	203	320	317	322	327
Truck, electric railroad, and other	195	1,470	3,018	3,317	3,609	3,880
Communications	95	478	664	691	738	790
Trade, supplies, restaurants	587	3,303	4,190	4,389	4,675	5,010
Housing maintenance services	147	1,221	1,632	1,713	1,920	2,030
Health	399	1,507	3,059	3,245	3,461	3,677
Education (schools and cultural centers)	725	2,663	4,378	4,556	4,803	5,165
Scientific work	82	361	1,338	1,474	1,763	1,970
Credit and insurance establishments	95	262	260	260	265	277
Administration (state and cooperative organizations)	1,010	1,825	1,294	1,273	1,245	1,295
Other (maintenance, mining, research)	149	641	1,464	1,739	1,967	2,127

¹ Includes 1,400,000 members of former industrial cooperatives who were transferred into state enterprises, 1,200,000 of them into industry, 100,000 into housing maintenance services, and 100,000 into construction, transportation, and elsewhere.

² Includes 400,000 persons who worked on auxiliary farms operated by enterprises in the construction industry.

³ The machine and tractor stations were reorganized into technical and repair stations in 1953 and most of their workers went to work on collective farms.

Source: Moscow, Central Statistical Office, Narodnoe khoziaistvo SSSR v 1961 godu (The National Economy of the U.S.S.R. in 1961), pp. 567-568.

TABLE 3.—U.S.S.R.: Percent of women employed in the national economy, by economic sector, 1929, 1940, 1958, and 1961

Economic sector	1929	1940	1958	1961
All sectors	27	38	47	48
Industry	28	41	45	45
Construction	7	23	30	29
Agriculture	28	26	36	42
State and auxiliary farms of enterprises	28	34	41	43
Transportation	9	21	27	25
Communications	28	48	63	64
Trade and supplies	19	44	67	70
Restaurants	46	67	84	86
Health	65	76	85	86
Education	54	58	69	70
Scientific work	19	41	42	43
Credit and insurance establishments				
Administrative work	34	49	66	68
			49	51

Source: Moscow, Central Statistical Office, "Narodnoe knozialstvo SSSR v 1961 godu" (The National Economy of the U.S.S.R. in 1961), p. 574.

TABLE 4.—U.S.S.R.: Distribution of total employment by major work categories in state-controlled industry for selected years, 1932-61

Work category	Average number in thousands						
	1932	1940	1956 ¹	1958	1959	1960 ²	1961
Total	8,000	10,967	18,500	19,675	20,207	22,291	23,475
Wage earners	6,007	8,290	15,226	16,279	16,793	18,574	19,548
Apprentices	560	351	337	353	341	339	346
Engineering and technical workers	420	932	1,637	1,745	1,803	2,008	2,168
Salaried workers	700	768	797	808	804	897	930
Undistributed ³	313	626	503	490	466	473	483
Percentage distribution							
Total	100	100.0	100	100	100	100	100
Wage earners	75	76.0	82	83	83	83	83
Engineering and technical workers	5	8.5	9	9	9	9	9
Salaried workers	9	7.0	4	4	4	4	4
Undistributed ³	11	8.5	5	4	4	4	4

¹ Includes 500,000 former industrial cooperative members who were transferred to state industrial enterprises in 1956.

² Includes 1,200,000 former industrial cooperative members who were transferred to state industrial enterprises in 1960.

³ Represents difference between the reported total and the addition of the individual categories presented in the source tabulation.

Source: Moscow, Central Statistical Office, Narodnoe khoziaistvo SSSR v 1961 godu (The National Economy of the U.S.S.R. in 1961), p. 181.

TABLE 5.—U.S.S.R.: Distribution of wage earners in state controlled industry, by major economic sectors, in selected years, 1915-61

[In thousands]

Major economic sector	1913	1940	1958	1959	1960 ¹	1961
Total.....	3,536	8,290	16,279	16,793	18,574	19,548
Ferrous metallurgy.....	307	405	812	841	886	923
Coal.....	196	436	1,071	1,074	1,031	1,005
Oil (including refining).....	51	45	138	140	145	154
Machine construction and metalworking.....	510	2,395	4,932	5,149	5,655	6,207
Construction materials.....	-----	252	1,072	1,162	1,310	1,375
Light industry.....	1,133	1,489	2,515	2,579	3,371	3,472
Food industry.....	735	1,049	1,662	1,688	1,743	1,827

¹ Includes about a million members of former industrial cooperatives who were transferred into state enterprises, 600,000 of them into light industry, 100,000 to machine construction and metalworking, and 300,000 into other branches of industry.

² On the basis of boundaries effective until Sept. 17, 1939.

Source: Moscow, Central Statistical Office, Narodnoe khoziaistvo SSSR v 1961 godu (The National Economy of the U.S.S.R. in 1961), p. 182.

II. Agriculture

COMPARISON OF AGRICULTURE IN THE UNITED STATES AND U.S.S.R.

I. Agricultural resources

Item	Year	Unit	United States	Soviet Union ¹	U.S.S.R. as percent of United States
Population.....	January 1962.....	Millions.....	185	219	118
Do.....	January 1959.....	do.....	173	209	121
Labor force.....	1959.....	do.....	269.4	108.4	153
Farm labor force.....	1959.....	do.....	7.4	48.3	653
Percent farm of total labor force.....	1959.....	Percent.....	10.7	45.4	-----
Sown cropland.....	1961.....	Million acres.....	310	505	163
Sown cropland per capita.....	1961.....	Acres.....	1.7	2.3	135
Tractors on farms.....	1961.....	Thousands.....	4,700	1,168	25
Motortrucks on farms.....	1961.....	do.....	2,850	790	28
Grain combines on farms.....	1961.....	do.....	1,035	503	48
Agricultural consumption of electricity.....	1959.....	Billion kilowatt-hours.....	26.9	8.4	31
Primary commercial fertilizer consumption in terms of available plant nutrients.....	1959.....	1,000 tons.....	7,400	2,600	35

¹ Official Soviet figures.

² U.S. Department of Labor figure.

³ Includes members of collective farm households and other workers families engaged in individual and subsidiary production.

⁴ "Changes in Farm Production and Efficiency, a Summary Report," USDA, 1962, p. 35. Tractors include: Wheel, including homemade 4,495,000; and crawler, 205,000; excludes garden tractors, 468,000. Truck series for previous years reduced on basis of 1960 census.

⁵ Electric Utilities and Industry Statistical Bulletin, Edison Electric Institute.

II. Farm numbers and size

Farm numbers 1960:

All U.S. farms ¹	3,700,000
U.S. commercial farms ²	2,400,000
Soviet collective farms.....	³ 53,400
Soviet state farms.....	⁴ 6,500

Farm size, average in 1960:

Land area per U.S. farm.....	Acres	302
Sown area per U.S. farm.....		89
Land area per U.S. commercial farm.....		409
Sown area per U.S. commercial farm.....	(⁵)	
Sown area per Soviet collective farm.....	⁶ 6,785	
Sown area per Soviet state farm.....	⁷ 22,485	

Workers per U.S. farm.....

Workers per U.S. commercial farm.....	Number	1 1/2
Households per Soviet collective farm.....	(⁸)	
Workers per Soviet state farm.....	⁹ 386	
		⁹ 753

¹ According to the definition of a farm used in the 1959 census of agriculture.

² Includes all farms with value of farm products sold totaling \$2,500 or more and also farms with sales of \$50 to \$2,499 provided that the operator was under 65 years of age and he did not work off the farm 100 days or more and the income of the operator and members of his household from nonfarm sources was less than the total value of farm products sold.

³ On Jan. 1, 1962, there were 41,300 collective farms.

⁴ On Jan. 1, 1962, there were 8,300 state farms.

⁵ Not available.

⁶ In 1961 the sown area per Soviet collective farm was 6,617 acres.

⁷ In 1961 the sown area per Soviet state farm was 23,884 acres.

⁸ In 1961 there were 400 households per Soviet collective farm.

⁹ In 1961 there were 785 workers per Soviet state farm.

III. Crop acreages

Crop	Year	United States ¹	Soviet Union ²	U.S.S.R. as percent of United States
		Thousands of acres	Thousands of acres	
Corn for grain.....	1961	58,691	17,791	30
Wheat.....	1961	51,620	156,000	302
Rye.....	1961	1,542	42,000	2,723
Oats.....	1961	24,077	24,400	101
Barley.....	1961	12,969	33,100	255
Grain sorghum.....	1961	11,026	(³)	
Rice.....	1961	1,589	247	15
Cotton.....	1961	15,686	5,757	36
Soybeans for beans.....	1961	27,340	(³)	
Do.....	1959	22,631	1,124	5
Sunflowers.....	1961	(³)	10,403	
Peanuts picked and threshed.....	1961	1,429	(³)	
Flaxseed.....	1961	2,514	4,003	159
Hemp.....	1960	(³)	864	
Subarbeets.....	1961	1,088	7,709	708
Sugarcane, all.....	1961	359	(³)	
Tobacco.....	1961	1,174	4,255	21
Makhorka.....	1961	(³)	4,115	
Potatoes.....	1961	1,488	21,991	1,477
Sweetpotatoes.....	1961	194	(³)	
Vegetables.....	1961	3,472	3,459	99
Citrus.....	1959	778		
Other fruits and berries.....	1959	⁴ 1,796	⁴ 4,537	253
Tea.....	1960	(⁵)	159	
Hay.....	1961	67,085	(⁵)	

¹ U.S.D.A. figures.

² Official Soviet data.

³ Not available.

⁴ U.S.D.A. estimates.

⁵ Bearing acreage.

IV. Yields per acre of major crops

Crop	Year	Unit per acre	United States	Soviet Union	U.S.S.R. as percent of United States
Corn for grain.....	1961	Bushel.....	61.8	1 29.0	47
Wheat.....	1961	do.....	23.9	1 12.3	51
Rye.....	1961	do.....	17.7	1 14.6	82
Oats.....	1961	do.....	42.1	1 22.1	52
Barley.....	1961	do.....	30.3	1 18.3	60
Grain sorghum.....	1961	do.....	43.8	(?)	-----
Rice.....	1961	Pound.....	3,376	1 1,837	54
Cotton, lint ¹	1961	do.....	438	1 597	136
Soybeans for grain.....	1961	Bushel.....	25.3	(?)	-----
Soybeans for grain.....	1959	do.....	23.7	1 7.3	37
Sunflower seeds.....	1961	Pound.....	(?)	890	-----
Flaxseed.....	1961	Bushel.....	8.7	1 3.9	45
Sugarbeets.....	1961	Ton.....	16.5	1 7.14	43
Tobacco.....	1961	Pound.....	1,723	1 939	54
Makhorka.....	1961	do.....	(?)	1 1,260	-----
Potatoes.....	1961	Hundredweight.....	195.5	1 84.7	43

¹ U.S.D.A. estimates of Soviet yields.
² Not available.
³ Official Soviet figures.
⁴ All cotton in the U.S.S.R. is grown on irrigated land while only 25 to 30 percent of all U.S. cotton is irrigated.

V. Crop production

Crop	Year	Unit	United States	Soviet Union	U.S.S.R. as percent of United States
Corn for grain.....	1961	1,000 bushels.....	3,624,313	1 500,000	14
Wheat.....	1961	do.....	1,234,705	1 1,918,000	155
Rye.....	1961	do.....	27,262	1 600,000	2,200
Oats.....	1961	do.....	1,012,855	1 600,000	59
Barley.....	1961	do.....	393,384	1 610,000	155
Grain sorghum.....	1961	do.....	482,615	(?)	-----
Rice.....	1961	1,000 tons.....	2,686	264	10
Cotton, lint.....	1961	1,000 bales.....	14,304	1 7,100	49
Cotton, seed.....	1960	1,000 tons.....	10,353	3,265	32
Soybeans.....	1959	1,000 bushels.....	533,175	8,230	2
Sunflower seed.....	1961	1,000 tons.....	(?)	4,200	-----
Peanuts, picked and threshed.....	1961	do.....	881	(?)	-----
Flaxseed.....	1959	1,000 bushels.....	31,101	15,550	50
Hempseed.....	1959	1,000 tons.....	(?)	34	-----
Sugarbeets.....	1961	do.....	17,966	55,776	310
Sugarcane.....	1961	do.....	9,387	(?)	-----
Sugar production.....	(1960-61)	do.....	1 (5,259)	1 (7,259)	(138)
Tobacco.....	1961	1,000 pounds.....	2,022,831	1 239,500	12
Makhorka.....	1961	do.....	(?)	1 145,500	-----
Fiber flax.....	1961	1,000 tons.....	(?)	518	-----
Hemp fiber.....	1959	do.....	(?)	133	-----
Potatoes.....	1961	1,000 hundred-weight.....	290,939	1 851,864	636
Sweet potatoes.....	1961	do.....	5,083	(?)	-----
Vegetables.....	1961	1,000 tons.....	1 18,732	17,195	92
Citrus.....	1960	do.....	6,500	(?)	-----
Other fruits and berries, including grapes.....	1960	do.....	1 8,900	5,408	60
Grapes.....	1960	do.....	2,997	2,062	69
Total fruits (including citrus, grapes, and berries).....	1959	do.....	18,133	5,722	32
Tree nuts.....	1961	do.....	355	(?)	-----
Tea.....	1960	do.....	(?)	180	-----
Hay, all kinds.....	1959	do.....	113,650	88,674	78

¹ USDA estimates.
² Not available.
³ Centrifugal sugar (raw value) of which 47 percent from continental beet, 12 percent continental cane, 21 percent Hawaiian cane, 20 percent Puerto Rican cane, and a small amount of cane from Virgin Islands of the United States.
⁴ Centrifugal sugar (raw value), all beet.
⁵ U.S. commercial vegetable production only.
⁶ U.S. total fruits only, exclusive of berries.

Sources: Official Soviet and USDA sources unless otherwise specified.

VI. Livestock numbers

Kind	Year ¹	United States	U.S.S.R. ²	U.S.S.R. as percent of United States
		<i>Millions</i>	<i>Millions</i>	
All cattle.....	1962	99.5	82.1	82.5
Cows ³	1962	4 19.2	36.3	
Hogs.....	1962	57.0	67.6	117
Sheep.....	1962	31.4	137.4	437
Horses.....	1961	3.1	9.9	330
Poultry.....	1961	364.7	515.8	

¹ Beginning of year.² Official Soviet figure.³ Included in all cattle.⁴ Milk cows only.⁵ All cows.⁶ Chickens and turkeys.⁷ All poultry.

VII. Production of livestock commodities

Commodities	Year	Unit	United States	Soviet Union	U.S.S.R. as percent of United States
Beef and veal.....	1961	Million pounds...	16,341	1 5,090	31
Pork.....	1961	do.....	11,412	1 6,370	56
Mutton, lamb, and goat.....	1961	do.....	832	1 2,040	245
Poultry meat.....	1961	do.....	7,338	1 1,984	27
Horse meat.....	1959	do.....		2 430	
Lard.....	1960	do.....	2,568	4 1,170	46
Margarine and shortening.....	(1959)	(Million pounds)...	(3,861)	2 (996)	(26)
Tallow and grease.....	1960	Million pounds...	3,827	410	11
Milk (cows).....	1960	do.....	122,920	1 112,500	92
Butter.....	1960	do.....	1,479	2 1,870	128
Eggs.....	1961	Billions.....	63.7	2 29	45
Wool.....	1960	Million pounds...	300	776	259

¹ USDA estimates of U.S.S.R. meat production.² Includes chicken, 5,830; and turkey, 1,508.³ U.S.S.R. official figure.⁴ Includes unrendered pork fat in terms of lard; calculated from pork production.⁵ Greasy basis.

III. Education

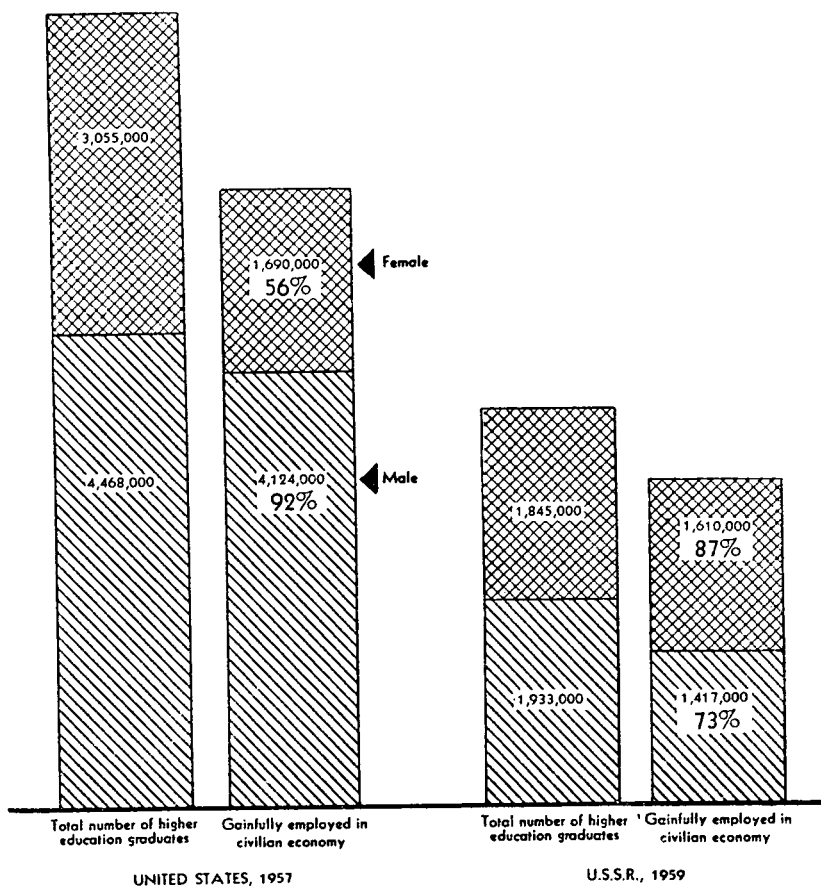
Comparison of educational attainment levels in the U.S.S.R. and the United States, 1959

	Soviet Union (January 1959)		United States (March 1959)		
	Thou- sands	Per- cent	Per- cent	Thou- sands	
Population aged 15 and older.....	148,186	100.0	100.0	122,819	Population aged 14 and older.
Educational attainment:					Educational attainment:
None, elementary, 4 years or less, and unspecified.....	76,978	51.7	3.5	4,217	None and unspecified.
5 to partial 7.....	12,500	8.4	4.9	6,051	1 to 4 years of school.
Completed 7 to partial 10.....	35,386	23.9	11.8	14,486	5 to 7 years.
Completed 10-year education.....	9,936		38.5	47,216	8 to 11 years.
Completed semiprofessional or equivalent.....	7,870				
Subtotal, completed secondary education.....	17,806	12.0	26.4	32,442	Completed secondary (12 years).
Partial higher education.....	1,738	1.5	8.1	10,084	Partial higher education (1-3 years of college).
Completed higher education.....	3,778	2.5	6.8	8,323	Completed higher education (4 or more years of college).

Comparison of U.S.S.R.-United States levels of educational attainment, in relation to population, total and by sex, 1959

	Soviet Union			United States		
	Total	Male	Female	Total	Male	Female
Population (millions).....	208.8	90.0	114.8	175.4	86.7	89.7
Persons with partial or completed secondary education (millions).....	53.2	24.9	28.3	79.7	36.3	43.4
Per 1,000 population.....	255.0	277.0	246.0	455.0	420.0	484.0
Persons with partial higher education (1 to 3 years) (millions).....	1.7	.8	.9	10.1	4.9	5.2
Per 1,000 population.....	8.0	9.0	7.0	58.0	57.0	58.0
Persons with completed higher education (4 or more years) (millions).....	3.7	1.9	1.8	8.3	5.1	3.2
Per 1,000 population.....	18.0	21.0	16.0	47.0	59.0	36.0

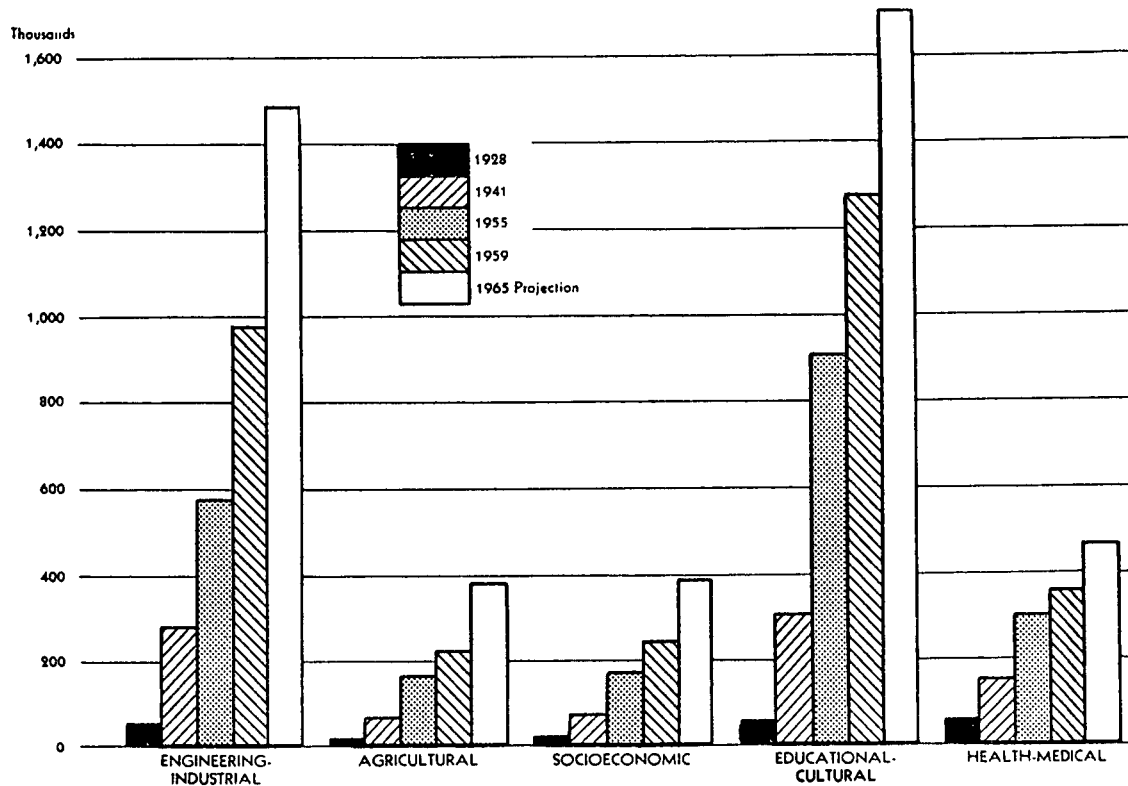
TOTAL POPULATION OF AND GAINFUL EMPLOYMENT BY SEX OF HIGHER EDUCATION GRADUATES IN THE UNITED STATES AND THE U.S.S.R.



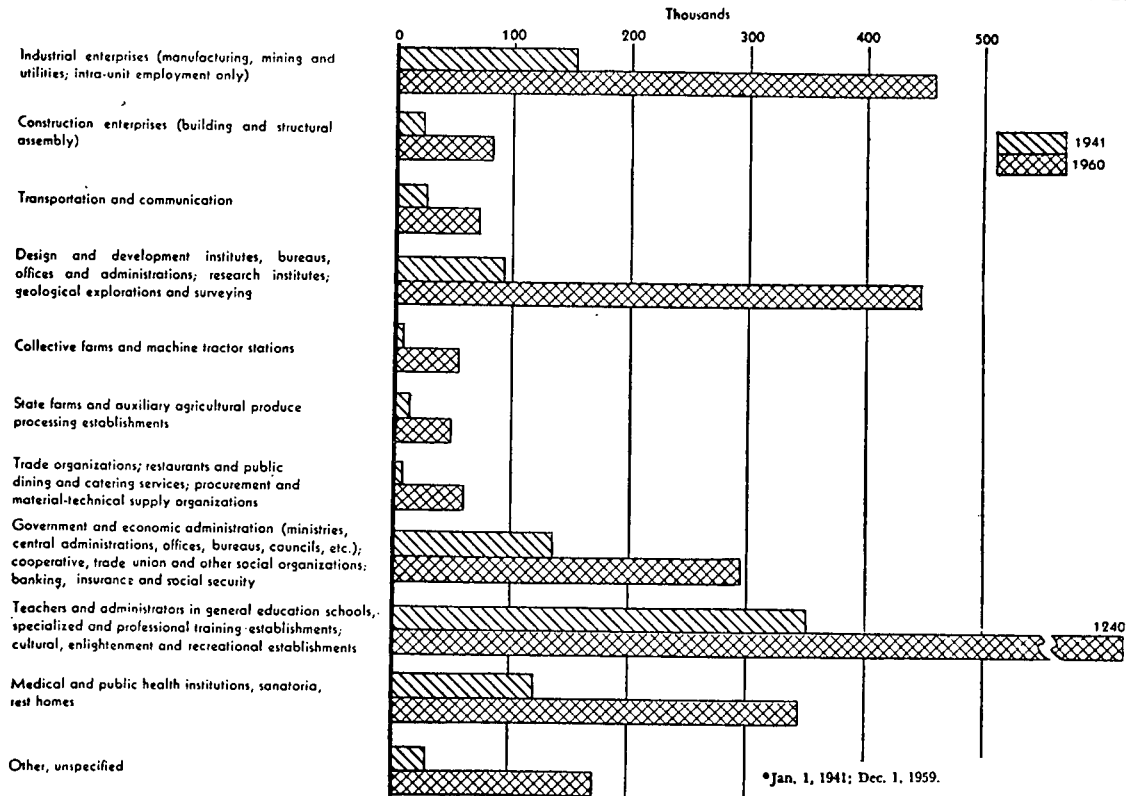
Professional graduates with completed higher education in the U.S.S.R. and college graduates in the United States

Field	U.S.S.R. (1928-59)	United States (1926-58)	Comparison and notes
Engineering.....	1, 117, 800	620, 300	U.S.S.R. trained 1.8-fold as many as United States. Soviet reporting is inflated, in comparison with U.S. figure, by about 15 percent by inclusion of some other science fields (about 10 percent) and graduates in economics (about 5 percent) normally reported elsewhere in U.S. practice.
Medical doctors.....	420, 000	181, 700	U.S.S.R. trained 2.4-fold as many as United States. Physicians only (M.D. equivalent) were included in U.S.S.R.'s figure.
Agricultural specialists.....	389, 200	166, 400	U.S.S.R. trained 2.4-fold as many as United States.
Science majors, total.....	430, 000	704, 400	United States trained 1.6-fold as many as U.S.S.R. The category includes chemistry, physical sciences, and mathematics, earth sciences (geology, etc.), and biology. In the U.S.S.R. some of the majors in these fields are also found among engineering specialties above.
From universities.....	180, 000	-----	
From pedagogical institutes.	250, 000	-----	
Total, engineering, applied and theoretical science fields.	2, 357, 000	1, 672, 800	U.S.S.R. trained 1.4-fold as many as United States.
All other fields (humanities, social sciences, teacher training in nonscientific fields, arts, etc.).	1, 772, 300	5, 198, 600	United States trained 2.9-fold as many as U.S.S.R. There was greater diversity of training in the United States, with heavy emphasis on business and commerce, social sciences, and jurisprudence.
Grand total.....	4, 129, 300	6, 871, 400	United States trained 1.7-fold as many as U.S.S.R.

GROWTH IN THE STOCK OF SOVIET PROFESSIONAL MANPOWER, BY FIELD, 1928-59 AND 1965 PROJECTION



COMPARISON OF EMPLOYMENT OF SOVIET HIGHER EDUCATION GRADUATES BY BRANCH AS OF 1941 AND 1960*



*Source of above 6 tables and charts: N. DeWitt, Education and Professional Employment in the U.S.S.R. National Science Foundation, Washington, 1961, pp. 440-469.

IV. Industry

POWER CAPABILITY AND ENERGY PRODUCTION—UNITED STATES AND SOVIET UNION

Generating capability

UNITED STATES		SOVIET UNION	
Actual:	1960—191.7 million kilowatts	Actual:	1960—66.7 million kilowatts ¹
Forecast:	1970—326 million kilowatts	Goal:	1970—190-220 million kilowatts ¹

Net generation

Actual:	1960—844.6 billion kilowatt-hours	Actual:	1960—277 billion kilowatt-hours
Forecast:	1970—1,573 billion kilowatt-hours	Goal:	1970—846-940 billion kilowatt-hours ¹

¹ From I. T. Novikov, U.S.S.R. Minister of Powerplant Construction, in Pravda, Oct. 28, 1961. Generation figures adjusted from gross figures given as 900-1,000 billion kilowatt-hours for 1970.

The United States has almost three times the power capability of the Soviet Union.

During 1961, more than 13 million kilowatts were added to the generating capability of the United States. Mr. Novikov in October 1961, said that the Soviet increase "in the first 2 years of the 7-year plan amounted to 13 million kilowatts." This means that at this time the Soviet Union is adding about half as much new generating capability as is being added in the United States.

In 1960, the estimated use of electricity per capita in the United States was 4,718 kilowatt-hours—more than three times the Russian figure of 1,350. In terms of residential use in 1960, the American home used an average of 3,854 kilowatt-hours—nearly eight times the 500 kilowatt-hours used in the Russian home.

In the Soviet Union, the price of residential electricity is the equivalent of a flat 4 cents a kilowatt-hour. In the United States, sliding-scale rates offer a lower average price for all increased use, and the price per kilowatt-hour averages slightly over half the price in Russia.

In the United States, 80 percent of the electric power supply is provided by the investor-owned electric utility companies. Under this Nation's free enterprise system, world leadership in power supply has been established and is being continued for the United States. The investor-owned companies can finance in the free market all the facilities needed to meet future power needs in the United States.

There is no indication that the Soviet Union, the prime example of centralized government control, will pass the United States in electric power in the foreseeable future.

Hydro vs. steam generation

UNITED STATES		SOVIET UNION	
Thermal:	695.1 billion kilowatt-hours	Thermal:	226.5 billion kilowatt-hours
	82 percent of total		82 percent of total
Hydro:	149.5 billion kilowatt-hours	Hydro:	50.5 billion kilowatt-hours
	18 percent of total		18 percent of total

Source: World Power Data 1960, Federal Power Commission.

The United States produces about three times the amount of electricity generated by the Soviet Union, and, as the table indicates, U.S. hydroproduction is triple that of the U.S.S.R. The ratio of steam to hydroproduction in both nations is the same, with more than four times as much electricity being produced by steamplants than by hydroplants.

Although the Soviet Union has the largest hydroelectric plant in the world (Bratsk), the Russian leaders are putting more and more emphasis on steam because they have found it takes less time and less money to build steamplants.

A recent paper in *Teplenergetika* by Z. F. Chukhanov, corresponding member of the U.S.S.R. Academy of Sciences, is very critical of Russia's large hydro-

installations. A leading U.S. utility authority, Philip Sporn, former president of American Electric Power Co., studied the Chukhanov paper, and his findings appear in *Electrical World* of August 20, 1962. Some excerpts follow:

"Russia is taking a second look at the costs of its electric power development program and is beginning to suspect that the national emphasis on hydrodevelopment may well have been a mistaken and wasteful allocation of resources. The possibility of an embarrassing error is not yet making headlines within the Soviet Union, nor is there firm evidence that hydro spending is being sharply cut back. But a paper by Academician Z. F. Chukhanov indicates that the cost of this embarrassing error may well be in the billions of rubles.

"Cause of the mistake seems to have been the failure of Russian planners to consider capital costs in their economic studies. Just looking at the operating costs, their emphasis on hydrodevelopment was justified. But now the Russians are beginning to think that despite Marxist doctrine, capital costs are real costs, not to be overlooked even in their country. And when they figure in the heavy interest costs on money tied up in the construction of hydroprojects—the freezing of capital—hydrodevelopment becomes prohibitively expensive. * * *

"This harsh criticism of the Soviet power program is an especially significant and wry commentary, coming as it does at a time when a number of individuals and groups in the United States are pressing for more intensive hydroelectric development in this country. Far from indicating that the Russian approach ought to be imitated, the Chukhanov paper indicates the extent to which faulty Russian planning has wasted the people's assets.

"The major source of error, according to Chukhanov, has been the failure, when comparing the alternatives of hydroelectric and thermal powerplant construction, to include in the computation of costs the annual investment cost required to provide for the growth in generating plant capacity. In choosing among alternatives, the cost applied in each case must accurately and fully reflect the actual total cost to the economy—which the author refers to as 'total social expenditures'—of each of the alternatives * * *

"He concludes that in the period 1952-58 no hydroelectric power capacity should have been built and that during this period the Soviet economy lost almost 4 billion rubles because of the improper proportion of hydro to thermal stations growth. Based on the Ministry of Power Stations Construction program outline, Chukhanov concludes that the results for the current 7-year program and the program for the next 20 years are likely to be even worse than in the 1952-58 period, again because of the incorrectly chosen ratio of new hydro and thermal stations * * *.

"* * * Chukhanov concludes that thermal power generation costs will be less than the cheapest power from even the very best Siberian hydro stations. Inescapably, Chukhanov is critical of the decision to construct those hydro stations which have been cited by some Americans as the outstanding examples of Soviet progress in electric power development which we must make every effort to copy. These include the famous hydro stations on the Angara and Yenisey, and the very highly publicized Krasnoyorsk and Bratsk stations. Based on the estimate of the Ministry of Power Stations Construction that in 1980 the Soviet Union will generate over 400-billion kilowatt-hours of hydropower in Siberia, the economic losses for 1980 from these Siberian hydro stations will, according to Chukhanov, be 600 million rubles and for the full 20 years 1961-80 the loss will be nearly 6 billion rubles. Similarly, the remaining hydro stations, those on the Volga and Dnieper Rivers, and so forth, will also result in a considerable loss to the Soviet economy equaling 1.2 billion rubles in 1980 and for the 20-year period 1961-80, over 10 billion rubles. The total loss for the period combining all the hydrodevelopment will amount to 16 billion rubles.

"Chukhanov concludes his paper by emphasizing that the losses suffered by the Soviet economy as a result of the misallocation of effort between hydro and thermal stations would be adequate to finance the construction of thermal stations with a total capacity of about 130 million kilowatts or almost three times the total U.S.S.R. 1958 power-generating capacity and that, with the same initial resources for capital investment in power generation, the Soviets can insure the generation of 20 to 30 percent more power by 1980 than would be possible by following the plan of the Ministry of Power Stations Construction. 'There is no need,' he says, 'to prove how important it is not to allow unnecessary losses of the people's assets, or any delays in the development of power generation and of the whole national economy.'"

Nikita Khrushchev had this to say about the Bratsk plant on January 17, 1961: "Take the Bratsk Hydroelectric Station, for instance. It will be completed soon, but so far we do not have local consumers for the electric power that this station will generate."

The superiority of steam to hydro is not a new theme to Premier Khrushchev. At a meeting of builders of Vladimir Ilyich Lenin Volga Hydroelectric Station (Pravda, Aug. 11, 1958), Premier Khrushchev said in part:

"The following example can be cited (as to why more steam power should be built). According to the construction plan, the 1 million kilowatt Saratov Hydroelectric Station will cost more than 4 billion rubles and take approximately 4 years to build. Scientists and engineers working on designs for thermal plants propose that thermal plants of equal capacity be built to operate on the natural gas in that area. Then the cost will not be 4 billion rubles, the estimated cost of the hydroelectric station, but about 1 billion rubles, or one-fourth as much. * * *"

Transmission and interconnection

UNITED STATES	SOVIET UNION
Area: 3,022, 387 square miles.	Area: 8,607,553 square miles.
1960: 312,000 miles of transmission lines (35,000 volts and above).	1960: 71,000 miles of transmission lines (35,000 volts and above).

The Soviet Union, with about three times the area of the United States, has only about one-fourth the miles of transmission lines.

In this country, nearly all the electric power systems east of the Rockies are interconnected. West of the Rockies, interconnected operation has been a fact for several years—both in the Pacific Northwest and the Pacific Southwest. Six interconnected groups of electric power systems now supply 97 percent of our Nation's total electric energy requirements. The central grid extends from the Rocky Mountains to the Atlantic coast and from Canada to the Gulf of Mexico. This one interconnected systems group, covering more than 30 States, has a combined load of more than 65 million kilowatts—almost equal to the entire power supply of the Soviet Union in 1960.

During the decade of the sixties, these six principal interconnected groups will become capable of operating together on an interconnected basis. The major role in this achievement is that of the investor-owned electric companies, which are spending some \$8 billion during the 1960-70 period on transmission, about doubling their 1960 investment in transmission, and adding 100,000 miles of line.

The practically complete coverage of the United States contrasts sharply with the Soviet Union, where power networks cover only about one-fifth of the populated area of the country.

On the subject of Russian electrification, Premier Khrushchev had this to say in Pravda, July 30, 1962:

"This passion for building small plants has had a great influence on the fact that the power transmitting and distributing networks have been weakly developed. As a result the power grids at present cover only 20 percent of the country's populated territory."

The nationwide power system of the United States has grown over the years since the early 1900's through an evolutionary approach to building transmission lines, interconnected systems, and power pools. The networks have grown where growth was needed, kept power supply ahead of the demands of the Nation, and avoided economic waste.

Recognition of this evolutionary concept was given in a recent United Nations report titled "The Situation and Prospects of Europe's Electric Power Supply Industry in 1960-61." This report stated:

"During the early stages of interconnection it used to be thought that a European supergrid would be required in order to integrate movements of energy between European countries satisfactorily. Instead, events have proved that the gradual linking up can be achieved on a more rational basis by the gradual construction of cross-frontier links between countries in different regions in response to the evolution of felt needs."

This is precisely the manner in which interconnections have developed in the United States.

Voltages being used in the United States reach as high as 460,000 volts and transmission lines of 500,000 volts are being built. Experiments are being conducted which have achieved voltages as high as 775,000 volts.

In planning transmission networks and the location of powerplants, many factors are weighted. For example, a recent study of the U.S. Department of Interior shows that coal can be moved by pipeline or by rail to produce electric power at load centers more cheaply than if the electric power is produced at mine-mouth plants and delivered to the load centers by transmission lines.

Source: Edison Electric Institute, Sept. 6, 1962.

DISTRIBUTION OF ECONOMIC ACTIVITY IN THE U.S.S.R. BY REPUBLIC AND ECONOMIC REGION

TABLE 1.—*Russian S.F.S.R.*

[Economic regions: Northwest, Central, Volgo-Vyatka, Central Black Earth, Volga, North Caucasus, West Siberia, East Siberia, Far East]

[Regional councils of the national economy: 68]

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	6,593,000	76.21
Population (1961).....	120,554,000	55.77
Industry, general (1960):		
Labor force.....	15,139,000	67.91
Capital investment in billions.....	\$10.4	65.36
Value of output in billions.....	\$108.9	63.28
Total capital stock in billions (1960).....	\$22.0	64.38
Principal industrial centers: Moskva (6,208,000), Leningrad (2,997,000), Gorki (1,003,000), Novosibirsk (963,000), Kuybyshev (863,000), Sverdlovsk (832,000), Chelyabinsk (632,000), Omsk (630,000), Saratov (622,000), an Ufa (588,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	21,588	46.17
Steel in 1,000 metric tons.....	36,588	56.03
Fuels and electric power:		
Coal in 1,000 metric tons.....	298,086	58.08
Petroleum in 1,000 metric tons.....	118,861	80.39
Natural and manufactured gas in million cubic meters.....	25,861	54.77
Electric power production in million kilowatt-hours.....	196,988	67.40
Machine building and metal working:		
Metal-cutting tools.....	95,690	61.51
Forge and pressing machines.....	20,874	69.81
Chemical equipment in thousands.....	\$155,800	62.15
Construction materials:		
Cement in 1,000 metric tons.....	29,474	64.75
Bricks in million pieces.....	22,694	54.69
Commercial lumber in 1,000 cubic meters.....	239,340	91.56
Consumer goods:		
Cotton fabrics in million square meters.....	5,547	86.82
Wool fabrics in 1,000 square meters.....	271,804	79.52
Leather shoes in 1,000 pairs.....	244,701	58.36
Food products:		
Meat products in 1,000 metric tons.....	2,435	55.26
Fish products in 1,000 metric tons.....	2,449	69.15
Canned goods in million cans.....	2,118	43.58
Milk in 1,000 metric tons.....	3,450	55.94

TABLE 2.—Northwest economic region, R.S.F.S.R.

Regional Councils of the National Economy: Arkhangelskiy, Kaliningradskiy, Karelskiy, Komi, Leningradskiy, Murmanskii, Vologodskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	648,000	7.49
Population (1961).....	11,743,000	5.43
Industry general (1960):	1,910,000	8.57
Labor force.....	\$15.1	8.75
Value of output in billions.....	\$2.5	7.28
Total capital investment in billions (1960):		
Principal industrial centers: Leningrad (2,997,000), Arkhangelsk (271,000), Murmansk (237,000), Kaliningrad (226,000), Vologda (148,000), Petrozavodsk (139,000), Cherepovets (113,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	Negligible	Negligible
Steel in 1,000 metric tons.....	c. 1,200	c. 1.88
Fuels and electric power:		
Coals in 1,000 metric tons.....	18,075	3.52
Petroleum in 1,000 metric tons.....	Negligible	Negligible
Natural and manufactured gas in million cubic meters.....	1,620	3.43
Electric power production in million kilowatt-hours.....	17,872	6.11
Machine building and metalworking:		
Metal-cutting tools.....	6,870	4.42
Forge and pressing machines.....	2,830	9.46
Chemical equipment in thousands.....	\$24,800	9.89
Construction materials:		
Cement in 1,000 metric tons.....	1,625	3.57
Bricks in million pieces.....	2,038	4.90
Commercial lumber in 1,000 cubic meters.....	69,461	26.56
Consumer goods:		
Cotton fabrics in million square meters.....	240	3.75
Wool fabrics in 1,000 square meters.....	16,233	4.75
Leather shoes in 1,000 pairs.....	42,200	10.06
Food products:		
Meat products in 1,000 metric tons.....	209	4.74
Fish products in 1,000 metric tons.....	c. 1,062	c. 30.00
Canned goods in million cans.....	159	3.28
Milk in 1,000 metric tons.....	297	4.81

TABLE 3.—Central economic region, R.S.F.S.R.

[Regional councils of the national economy: Bryanskiy, Ivanovskiy, Kalininskiy, Kaluzhskiy, Kostromskiy, Moskva (City), Moskovskiy (Oblast), Ryazanskiy, Smolenskii, Tul'skiy, Vladimirskiy, Yaroslavl'skiy. All Russian]

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	178,000	2.06
Population (1961).....	25,073,000	11.60
Industry general (1960):		
Labor force.....	4,291,000	19.25
Value of output in billions.....	\$33.8	19.62
Total capital investment in billions (1960).....	\$4.6	13.34
Principal industrial centers: Moskva (6,208,000), Yaroslavl (433,000), Ivanovo (352,000), Tula (333,000), Kalinin (279,000), Ryazan (240,000), Bryansk (231,000), Rybinsk (192,000), Kostroma (184,000), Vladimir (167,000), Smolensk (159,000), Kaluga (145,000), Podolsk (139,000), Kolonna (124,000), Novomoskovsk (112,000), Orekovo-Zuyevo (112,000), Serpukhov (111,000), Mytishchi (104,000), Kovrov (103,000), Elektrostal (102,000), Lyubertsy (100,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	(¹)	(¹)
Steel in 1,000 metric tons.....	(¹)	(¹)
Fuels and electric power:		
Coal in 1,000 metric tons.....	42,838	8.35
Petroleum in 1,000 metric tons.....	(¹)	(¹)
Natural and manufactured gas in millions of cubic meters.....	829	1.76
Electric power production in millions of kilowatt-hours.....	30,507	10.44
Machine building and metalworking:		
Metal-cutting tools.....	31,480	20.24
Forge and pressing machines.....	3,387	11.33
Chemical equipment in thousands.....	\$18,900	7.54
Construction materials:		
Cement in 1,000 metric tons.....	5,291	11.62
Bricks in million pieces.....	5,715	13.75
Commercial lumber in 1,000 cubic meters.....	19,571	7.49
Consumer goods:		
Cotton fabrics in millions of square meters.....	4,946	77.41
Wool fabrics in 1,000 square meters.....	194,330	56.86
Leather shoes in 1,000 pairs.....	68,973	16.46
Food products:		
Meat products in 1,000 metric tons.....	421	9.57
Fish products in 1,000 metric tons.....	(²)	(²)
Canned goods in millions of cans.....	152	3.13
Milk in 1,000 metric tons.....	622	10.09

¹ Not available.

² Negligible.

TABLE 4.—*Volgo-Vyatka economic region, R.S.F.S.R.*

[Regional councils of the national economy: Chuvashskiy, Gorkovskiy, Kirovskiy, Mariyskiy, Mordovskiy]

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	102,000	1.17
Population (1961).....	8,302,000	3.84
Industry general (1960):		
Labor force.....	1,018,000	4.57
Value of output in billions.....	\$6.0	3.46
Total capital investment in billions (1960).....	\$0.9	2.70
Principal industrial centers: Gorkiy (1,003,000), Kirov (269,000), Dzherzhinsk (176,000), Cheboksary (123,000), Saransk (108,000), Yoshkar-Ola (103,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	(¹)	(¹)
Steel in 1,000 metric tons.....	(¹)	(¹)
Fuels and electric power:		
Coal in 1,000 metric tons.....		
Petroleum in 1,000 metric tons.....	(¹)	(¹)
Natural and manufactured gas in millions.....		
Electric power production in million kilowatt-hours.....	8,274	2.83
Machine building and metalworking:		
Metal cutting tools.....	7,417	4.78
Forge and pressing machines.....	123	.41
Chemical equipment in thousands.....	\$16,300	6.50
Construction materials:		
Cement in 1,000 metric tons.....	892	1.96
Bricks in million pieces.....	1,519	3.65
Commercial lumber in 1,000 cubic meters.....	25,891	9.91
Consumer goods:		
Cotton fabrics in million square meters.....	94	1.47
Wool fabrics in 1,000 square meters.....	1,550	.45
Leather shoes in 1,000 pairs.....	17,579	4.19
Food products:		
Meat products in 1,000 metric tons.....	138	3.13
Fish products in 1,000 metric tons.....	Negligible	Negligible
Canned goods in million cans.....	42	.86
Milk in 1,000 metric tons.....	251	4.07

¹ Not available.

TABLE 5.—*Central Black Earth economic region, R.S.F.S.R.*

[Regional councils of the national economy: Belgorodskiy, Kurskiy, Lipetskiy, Orlovskiy, Tambovskiy, Voronezhskiy]

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	74,000	0.86
Population (1961).....	8,811,000	4.08
Industry general (1960):		
Labor force.....	570,000	2.56
Value of output in billions.....	\$3.0	1.76
Total capital investment in billions (1960).....	\$0.9	2.70
Principal industrial centers: Voronezh (496,000), Kursk (222,000), Tambov (186,000), Lipetsk (183,000), Orel (167,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	(1)	(1)
Steel in 1,000 metric tons.....	(1)	(1)
Fuels and electric power:		
Coal in 1,000 metric tons.....		
Petroleum in 1,000 metric tons.....	(1)	(1)
Natural and manufactured gas in million cubic meters.....		
Electric power production in million kilowatt-hours.....	5,186	1.77
Machine building and metalworking:		
Metal-cutting tools.....	3,215	2.07
Forge and pressing machines.....	2,897	9.69
Chemical equipment in thousands.....	\$25,200	10.05
Construction materials:		
Cement in 1,000 metric tons.....	2,113	4.64
Bricks in million pieces.....	1,516	3.65
Commercial lumber in 1,000 cubic meters.....	992	.38
Consumer goods:		
Cotton fabrics in million square meters.....	1	.06
Wool fabrics in 1,000 square meters.....	12,068	3.53
Leather shoes in 1,000 pairs.....	8,442	2.01
Food products:		
Meat products in 1,000 metric tons.....	189	4.29
Fish products in 1,000 metric tons.....	Negligible	Negligible
Canned goods in million cans.....	179	3.68
Milk in 1,000 metric tons.....	365	5.91

1 Not available.

TABLE 6.—*Volga economic region, R.S.F.S.R.*

Regional councils of the national economy: Astrakhanskiy, Kuybyshevskiy, Penzenskiy, Saratovskiy, Tatarskiy, Ulyanovskiy, and Volgogradskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	178,000	2.02
Population (1961).....	12,846,000	5.94
Industry general (1960):		
Labor force.....	1,397,000	6.27
Value of output in billions.....	\$9.4	5.46
Total capital investment in billions.....	\$0.9	2.69
Principal industrial centers: Kuybyshev (862,000), Kazan (693,000), Volgograd (632,000), Saratov (622,000), Astrakhan (313,000), Penza (277,000), Ulyanovsk (226,000), Syzran (157,000), and Engels (102,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	(1)	(1)
Steel in 1,000 metric tons.....	(1)	(1)
Fuels and electric power:		
Coal in 1,000 metric tons.....	c. 67,000	c. 45.00
Petroleum in 1,000 metric tons.....	7,556	16.00
Natural and manufactured gas in million cubic meters.....	27,270	9.33
Electric power production in million kilowatt-hours.....		
Machine building and metal working:		
Metal-cutting tools.....	14,289	9.19
Forge and pressing machines.....	463	1.55
Chemical equipment in thousands.....	\$24,900	9.93
Construction materials:		
Cement in 1,000 metric tons.....	4,174	9.17
Bricks in million pieces.....	2,759	6.64
Commercial lumber in 1,000 cubic meters.....	4,034	1.54
Consumer goods:		
Cotton fabrics in million square meters.....	47	.74
Wool fabrics in 1,000 square meters.....	26,189	7.66
Leather shoes in 1,000 pairs.....	24,978	5.96
Food products:		
Meat products in 1,000 metric tons.....	295	6.70
Fish products in 1,000 metric tons.....	c. 531	c. 10.00
Canned goods in million cans.....	276	5.67
Milk in 1,000 metric tons.....	393	6.37

1 Not available.

TABLE 7.—North Caucasian economic region, R.S.F.S.R.

Regional councils of the national economy: Checheno-Ingushskiy, Dagestanskiy, Kabardino-Balkarskiy, Krasnodarskiy, Rostovskiy, Severo-Osetinskiy, Stavropol'skiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	166,000	1.02
Population (1961).....	12,432,000	5.75
Industry general (1960):		
Labor force.....	963,000	4.32
Value of output in billions.....	\$3.1	4.73
Total capital investment in billions (1960).....	\$1.7	4.98
Principal industrial centers: Fostov (645,000), Krasnodar (343,000), Groznyy (270,000), Taganrog (214,000), Shakhty (201,000), Orzhonikidze (175,000), Makhachkala (129,000), Stavropol (121,000), Armavir (120,000), Novoshakhtinsk (108,000), Novorossiysk (101,000), Sochi (101,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....	c. 1,300	c. 1.94
Fuels and electric power:		
Coal in 1,000 metric tons.....	32,350	6.30
Petroleum in 1,000 metric tons.....	(1)	(1)
Natural and manufactured gas in million cubic meters.....	13,695	29.01
Electric power production in million kilowatt-hours.....	9,638	3.30
Machine building and metalworking:		
Metal-cutting tools.....	5,929	3.81
Forge and pressing machines.....	3,441	11.51
Chemical equipment in thousands.....	\$6,100	2.43
Construction materials:		
Cement in 1,000 metric tons.....	2,806	6.16
Bricks in million pieces.....	2,485	5.98
Commercial lumber in 1,000 cubic meters.....	3,176	1.22
Consumer goods:		
Cotton fabrics in million square meters.....	16	.25
Wool fabrics in 1,000 square meters.....	12,241	3.58
Leather shoes in 1,000 pairs.....	26,170	6.24
Food products:		
Meat products in 1,000 metric tons.....	378	8.58
Fish products in 1,000 metric tons.....	(1)	(1)
Canned goods in million cans.....	824	16.95
Milk in 1,000 metric tons.....	341	5.52

1 Not available.

TABLE 8.—*Urals economic region, R.S.F.S.R.*

Regional councils of the national economy: Bashkirskiy, Chelyabinskiy, Kurganskiy, Orenburgskiy, Perm'skiy, Sverdlovskiy, Tyumenskii, Udmurtskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	872,000	10.08
Population (1961).....	19,188,000	8.89
Industry general (1960):		
Labor force.....	2,585,000	11.58
Value of output in billions.....	\$17.8	10.35
Total capital investment in billions (1960).....	\$3.5	10.33
Principal industrial centers: Sverdlovsk (832,000), Chelyabinsk (733,000), Perm (678,000), Ufa (588,000), Nizhniy Tagil (355,000), Magnitogorsk (328,000), Izhevsk (312,000), Orenburg (282,000), Orsk (195,000), Tyumen (168,000), Kopyeysk (168,000), Zlatoust (166,000), Kurgan (164,000), Kamensk-Uralskiy (151,000), Sterlitamak (125,000), Berezniki (117,000), Miass (107,000), Serov (102,000), Pervouralsk (101,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	c. 15,760	c. 33.69
Steel in 1,000 metric tons.....	c. 22,400	c. 34.24
Fuels and electric power:		
Coal in 1,000 metric tons.....	62,056	12.09
Petroleum in 1,000 metric tons.....	c. 44,000	c. 30.00
Natural and manufactured gas in million cubic meters.....	1,825	3.87
Electric power production in million kilowatt-hours.....	55,885	19.12
Machine building and metalworking:		
Metal-cutting tools.....	19,922	12.81
Forge and pressing machines.....	4,793	16.03
Chemical equipment in one thousand.....	\$31,400	12.54
Construction materials:		
Cement in 1,000 metric tons.....	6,485	14.25
Bricks in million pieces.....	3,055	7.35
Commercial lumber in 1,000 cubic meters.....	53,248	20.37
Consumer goods:		
Cotton fabrics in million square meters.....	15	.23
Wool fabrics in 1,000 square meters.....	5,627	1.65
Leather shoes in 1,000 pairs.....	36,301	8.66
Food products:		
Meat products in 1,000 metric tons.....	358	8.13
Fish products in 1,000 metric tons.....	Negligible	Negligible
Canned goods in million cans.....	149	3.06
Milk in 1,000 metric tons.....	545	8.83

TABLE 9.—*West Siberian economic region, R.S.F.S.R.*

Regional councils of the national economy: Altayskiy, Kemerovskiy, Novosibirskiy, Omskiy, Tomskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....		
Population (1961).....	383,000	4.43
Industry general (1960):	10,497,000	4.86
Labor force.....		
Value of output in billions.....	1,145,000	5.14
Total capital investment in billions (1960).....	\$7.3	4.26
Principal industrial centers: Novosibirsk (963,000), Omsk (630,000), Novokuznetsk (405,000), Barnaul (338,000), Kemerovo (298,000), Fro- kopyevsk (292,000), Tomsk (269,000), Biysk (162,000), Kiselevsk (141,000), Leninsk-Kuznetskiy (138,000), Rubtsovsk (123,000), Anzhero-Sudensk (119,000), Belovo (115,000).	\$2.1	6.13
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	c. 3,180	c. 6.81
Steel in 1,000 metric tons.....	c. 5,300	c. 8.06
Fuels and electric power:		
Coal in 1,000 metric tons.....	84,055	16.38
Petroleum in 1,000 metric tons.....	(¹)	(¹)
Natural and manufactured gas in million cubic meters.....		
Electric power production in million kilowatt-hours.....	22,167	7.58
Machine building and metalworking:		
Metal-cutting tools.....	5,166	3.32
Forge and pressing machines.....	1,614	5.40
Chemical equipment in thousands.....	\$6,100	2.43
Construction materials:		
Cement in 1,000 metric tons.....	2,432	5.34
Bricks in million pieces.....	1,978	4.76
Commercial lumber in 1,000 cubic meters.....	12,706	4.86
Consumer goods:		
Cotton fabrics in million square meters.....	98	1.53
Wool fabrics in 1,000 square meters.....	2,221	.65
Leather shoes in 1,000 pairs.....	12,335	2.94
Food products:		
Meat products in 1,000 metric tons.....	245	5.56
Fish products in 1,000 metric tons.....	Negligible	Negligible
Canned goods in million cans.....	94	1.93
Milk in 1,000 metric tons.....	380	6.15

¹ Not available.

TABLE 10.—*East Siberian economic region, R.S.F.S.R.*

Regional councils of the national economy: Buryatskiy, Chitinskiy, Irkutskiy, Krasnoyarskiy, and Yakutskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961)	2,790,000	32.25
Population (1961)	7,258,000	3.35
Industry general (1960):		
Labor force	734,000	3.29
Value of output in billions	\$4.7	2.71
Total capital investment in billions (1960)	\$2.1	6.19
Principal industrial centers: Krasnoyarsk (468,000), Irkutsk (380,000), Ulan-Ude (188,000), Chita (182,000), Angarsk (154,000), Cheremkovo (122,000), and Norilsk (109,000).		
Industrial products (1960):		
Ferroalloy:		
Iron in 1,000 metric tons	c. 500	c. .077
Steel in 1,000 metric tons		
Fuels and electric power:		
Coal in 1,000 metric tons	36,873	7.18
Petroleum in 1,000 metric tons	Negligible	Negligible
Natural and manufactured gas in million cubic meters		
Electric power production in million kilowatt-hours	15,228	5.21
Machine building and metal working:		
Metal-cutting tools	981	.63
Forge and pressing machines	174	.58
Chemical equipment in thousands	\$2,100	.84
Construction materials:		
Cement in 1,000 metric tons	2,088	4.59
Bricks in million pieces	982	2.36
Commercial lumber in 1,000 cubic meters	37,159	14.22
Consumer goods:		
Cotton fabrics in million square meters	81	1.27
Wool fabrics in million square meters	1,345	.39
Leather shoes in 1,000 pairs	6,671	1.59
Food products:		
Meat products in 1,000 metric tons	(1) 167	(1) 3.79
Fish products in 1,000 metric tons	80	1.64
Canned goods in million cans	188	3.04
Milk in 1,000 metric tons		

1 Not available.

TABLE 11.—*Far Eastern economic region, R.S.F.S.R.*

[Regional councils of the national economy: Amurskiy, Khabarovskiy, Magadanskiy, Primorskiy, and Sakhalinskiy]

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....		
Population (1961).....	1,202,000	13.89
Industry general (1960):	4,404,000	2.03
Labor force.....		
Value of output in billions.....	526,000	2.36
Total capital investment in billions (1960).....	\$3.7	2.18
Principal industrial centers: Khabarovsk (349,000), Vladivostok (317,000), Komsomolsk-na-Amure (189,000), and Ussuriysk (111,000).	\$1.3	3.81
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....	c. 300	c. .52
Fuels and electric power:		
Coal in 1,000 metric tons.....	21,839	4.26
Petroleum in 1,000 metric tons.....	(¹)	(¹)
Natural and manufactured gas in million cubic meters.....	336	.71
Electric power production in million kilowatt-hours.....	4,991	1.71
Machine building and metal working:		
Metal-cutting tools.....	421	.27
Forge and pressing machines.....	1,152	3.85
Chemical equipment in thousands.....		
Construction materials:		
Cement in 1,000 metric tons.....	1,569	3.45
Bricks in million pieces.....	647	1.55
Commercial lumber in 1,000 cubic meters.....	13,102	5.01
Consumer goods:		
Cotton fabrics in million square meters.....	7	.11
Wool fabrics in 1,000 square meters.....		
Leather shoes in 1,000 pairs.....	1,052	.25
Food products:		
Meat products in 1,000 metric tons.....	34	.77
Fish products in 1,000 metric tons.....	c. 650	c. 24.00
Canned goods in million cans.....	164	3.38
Milk in 1,000 metric tons.....	71	1.15

¹ Negligible.

TABLE 12.—*Ukrainskaya S.S.R.*

[Economic regions: Donetsk-Dneper, Southwest, South]

[Regional councils of the national economy: 15]

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	232,000	2.68
Population (1961).....	43,091,000	19.93
Industry general (1960):		
Labor force.....	4,028,000	18.07
Capital investment in billions.....	\$2.8	17.56
Value of output in billions.....	\$36.8	21.38
Total capital investment in billions (1960).....	\$5.5	16.02
Principal industrial centers: Kiyev (1,174,000), Kharkov (976,000), Donetsk (749,000), Dnepropetrovsk (707,000), Odessa (696,000), Zapo- rozhye (475,000), Lvov (436,000), Krivoy Rog (436,000), Makeyevka (381,000), Zhdanov (310,000), Goriovka (307,000,, and Lugansk (300,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	24,173	51.70
Steel in 1,000 metric tons.....	2,155	40.05
Fuels and electric power:		
Coal in 1,000 metric tons.....	172,109	33.54
Petroleum in 1,000 metric tons.....	2,159	1.46
Natural and manufactured gas in million cubic meters.....	14,299	30.29
Electric power production in million kilowatt-hours.....	53,926	18.45
Machine building and metal working:		
Metal-cutting tools.....	20,467	13.16
Forge and pressing machines.....	Substantial	Substantial
Chemical equipment in thousands.....	Substantial	Substantial
Construction materials:		
Cement in 1,000 metric tons.....	8,082	17.76
Bricks in million pieces.....	9,533	22.93
Commercial lumber in 1,000 cubic meters.....	10,153	3.89
Consumer goods:		
Cotton fabrics in million square meters.....	96	1.50
Wool fabrics in 1,000 square meters.....	19,068	5.58
Leather shoes in 1,000 pairs.....	76,849	18.33
Food products:		
Meat products in 1,000 metric tons.....	911	20.67
Fish products in 1,000 metric tons.....	536	15.13
Canned goods in million cans.....	1,157	23.81
Milk in 1,000 metric tons.....	1,400	22.68

TABLE 13.—*Donetsko-Dneper economic region, Ukrainskaya S.S.R.*

[Regional councils of the national economy: Dnepropetrovskiy, Donetsk, Kharkovskiy, Lugansk, Poltavskiy, and Zaporozhskiy]

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	76,000	0.88
Population (1961).....	17,148,000	7.93
Industry general (1960):		
Labor force.....	2,420,000	10.86
Value of output in billions.....	\$20.2	11.74
Total capital investment in billions (1960).....	\$3.0	8.88
Principal industrial centers: Kharkov (976,000), Donetsk (749,000), Dnepropetrovsk (707,000), Zaporozhye (475,000), Krivoy Rog (436,000), Makeyevka (381,000), Zhdanov (310,000), Gorlovka (307,000), Lugansk (300,000), Dneprodzerzhinsk (203,000), Kadiyevka (191,000), Poltava (150,000), Kramatorsk (123,000), Sumy (108,000), Voroshilovsk (107,000), Mejitopol (102,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	Substantial	Substantial
Steel in 1,000 metric tons.....	Substantial	Substantial
Fuels and electric power:		
Coal in 1,000 metric tons.....	c. 156,877	c. 30.57
Petroleum in 1,000 metric tons.....	c. 12	c. 0.03
Natural and manufactured gas in million cubic meters.....	Substantial	Substantial
Electric power production in million kilowatt-hours.....	Substantial	Substantial
Machine building and metal working:		
Metal-cutting tools.....	Substantial	Substantial
Forge and pressing machines.....	Substantial	Substantial
Chemical equipment in thousands.....	Substantial	Substantial
Construction materials:		
Cement in 1,000 metric tons.....	5,998	13.18
Bricks in million pieces.....	3,893	9.37
Commercial lumber in 1,000 cubic meters.....	538	.21
Consumer goods:		
Cotton fabrics in million square meters.....	13	.20
Wool fabrics in 1,000 square meters.....	10,801	3.16
Leather shoes in 1,000 pairs.....	26,440	6.31
Food products:		
Meat products in 1,000 metric tons.....	418	9.49
Fish products in 1,000 metric tons.....	Negligible	Negligible
Canned goods in million cans.....	205	4.22
Milk in 1,000 metric tons.....	457	7.41

TABLE 14.—*Southwestern economic region, Ukrainskaya S.S.R.*

Regional councils of the national economy: Cherkasskiy, Kiyevskiy, Lvovskiy, Stanislavskiy, Vinnitskiy, All-Ukhtlaniza

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	113,000	1.31
Population (1961).....	20,690,000	9.57
Industry general (1960):		
Labor force.....	1,206,000	5.41
Value of output in billions.....	\$13.3	7.74
Total capital investment in billions (1960).....	\$1.7	4.80
Principal industrial centers: Kiyev (1,174,000), Lvov (436,000), Kirovograd (134,000), Vinnitsa (131,000), Zhitomir (114,000), Chernigov (101,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	(1)	(1)
Steel in 1,000 metric tons.....	(1)	(1)
Fuels and electric power:		
Coal in 1,000 metric tons.....	c. 15,232	c. 2.97
Petroleum in 1,000 metric tons.....	2,159	1.46
Natural and manufactured gas in million cubic meters.....	c. 14,287	c. 30.28
Electric power production in million kilowatt-hours.....	(1)	(1)
Machine building and metalworking:		
Metal-cutting tools.....	(1)	(1)
Forge and pressing machines.....	(1)	(1)
Chemical equipment in thousands.....	(1)	(1)
Construction materials:		
Cement in 1,000 metric tons.....	2,012	4.42
Bricks in million pieces.....	3,444	8.28
Commercial lumber in 1,000 cubic meters.....	9,536	3.65
Consumer goods:		
Cotton fabrics in million square meters.....	38	.60
Wool fabrics in 1,000 square meters.....	4,864	1.42
Leather shoes in 1,000 pairs.....	38,973	9.30
Food products:		
Meat products in 1,000 metric tons.....	362	8.21
Fish products in 1,000 metric tons.....	Negligible	Negligible
Canned goods in million cans.....	442	9.09
Milk in 1,000 metric tons.....	742	12.03

¹ Not available.

TABLE 15.—*Southern economic region, Ukrainskaya S.S.R.*

[Regional councils of the national economy: Khersonskiy, Krymskiy, Odesskiy]

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	43, 000	0. 49
Population (1961).....	5, 253, 000	2. 43
Industry general (1960):		
Labor force.....	402, 000	1. 80
Value of output in billion.....	\$3. 3	1. 90
Total capital investment in billion (1960).....	\$0. 8	2. 34
Principal industrial centers: Odessa (696,000), Nikolayev (242,000), Simferopol (198,000), Kherson (174,000), Sevastopol (183,000), Kerch (104,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	(1)	(1)
Steel in 1,000 metric tons.....	(1)	(1)
Fuels and electric power:		
Coal in 1,000 metric tons.....		
Petroleum in 1,000 metric tons.....		
Natural and manufactured gas in million cubic meters.....		
Electric power production in million kilowatt-hour.....	(1)	(1)
Machine building and metalworking:		
Metal-cutting tools.....	(1)	(1)
Forge and pressing machines.....	(1)	(1)
Chemical equipment in thousands.....	(1)	(1)
Construction materials:		
Cement in 1,000 metric tons.....	72	0. 16
Bricks in million pieces.....	2, 196	5. 28
Commercial lumber in 1,000 cubic meters.....	79	0. 03
Consumer goods:		
Cotton fabrics in million square meters.....	45	0. 70
Wool fabrics in 1,000 square meters.....	3, 403	1. 00
Leather shoes in 1,000 pairs.....	11, 436	2. 72
Food products:		
Meat products in 1,000 metric tons.....	131	2. 97
Fish products in 1,000 metric tons.....	Substantial	Substantial
Canned goods in million cans.....	510	10. 50
Milk in 1,000 metric tons.....	200	3. 24

TABLE 16.—*Western economic region*

[Regional councils of the national economy: Estonskiy, Latvliyskiy, Litovskiy]

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	67,000	0.78
Population (1961).....	6,167,000	2.85
Industry general (1960):		
Labor force.....	643,000	2.88
Capital investment in billions of dollars.....	\$0.3	2.05
Value of output in billions of dollars.....	\$5.1	2.97
Total capital investment in billions (1960).....	\$0.8	2.36
Principal industrial centers: Riga (607,000), Tallin (298,000), Vilnyus (255,000), Kaunas (232,000), and Klaypeda (100,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....	98	0.15
Fuels and electric power:		
Coal in 1,000 metric tons.....		
Petroleum in 1,000 metric tons.....	451	0.96
Natural and manufactured gas in million cubic meters.....	4,744	1.62
Electric power production in million kilowatt-hours.....		
Machine building and metal working:		
Metal-cutting tools.....	9,685	6.23
Forge and pressing machines.....	(¹)	(¹)
Chemical equipment in thousands.....	(¹)	(¹)
Construction materials:		
Cement in 1,000 metric tons.....	1,029	2.28
Bricks in million pieces.....	1,252	3.01
Commercial lumber in 1,000 cubic meters.....	4,655	1.78
Consumer goods:		
Cotton fabrics in million square meters.....	189	2.96
Wool fabrics in 1,000 square meters.....	18,893	5.53
Leather shoes in 1,000 pairs.....	18,132	4.32
Food products:		
Meat products in 1,000 metric tons.....	250	5.67
Fish products in 1,000 metric tons.....	344	9.71
Canned goods in million cans.....	253	5.21
Milk in 1,000 metric tons.....	408	6.60

¹ Not available.

DIMENSIONS OF SOVIET ECONOMIC POWER

TABLE 17.—*Estonskaya S.S.R., Western economic region*

[Regional councils of the national economy: Estonskiy]

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	17,000	0.20
Population (1961).....	1,221,000	.56
Industry general (1960):		
Labor force.....	161,000	.72
Capital investment in billions.....	\$0.1	.65
Value of output in billions.....	\$1.3	.78
Total capital investment in billions (1960).....	\$0.2	.67
Principal industrial center: Tallin (298,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....	5	.01
Fuels and electric power:		
Coal in 1,000 metric tons.....		
Petroleum in 1,000 metric tons.....		
Natural and manufactured gas in million cubic meters.....		
Electric power production in million kilowatt-hours.....	433	.92
Machine building and metalworking:	1,950	.67
Metal-cutting tools.....		
Forge and pressing machines.....	(1)	(1)
Chemical equipment in thousands.....	(1)	(1)
Construction materials:		
Cement in 1,000 metric tons.....	101	.22
Bricks in million pieces.....	320	.77
Commercial lumber in 1,000 cubic meters.....	1,279	.49
Consumer goods:		
Cotton fabrics in million square meters.....	122	1.01
Wool fabrics in 1,000 square meters.....	3,362	.98
Leather shoes in 1,000 pairs.....	3,855	.91
Food products:		
Meat products in 1,000 metric tons.....	55	1.25
Fish products in 1,000 metric tons.....	82	2.31
Canned goods in million cans.....	62	1.27
Milk in 1,000 metric tons.....	86	1.39

1 Not available.

TABLE 18.—*Latviyskaya S.S.R., Western economic region*

[Regional councils of the national economy: Latviyskiy]

	Total	Percent of U.S.S.R.
Territory in square miles (1961)-----	25,000	0.28
Population (1961)-----	2,142,000	.99
Industry, general (1960):		
Labor force-----	272,000	1.22
Capital investment in billions-----	\$0.1	.69
Value of output in billions-----	\$2.2	1.28
Total capital investment in billions (1960)-----	\$0.3	.86
Principal industrial centers: Riga (607,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons-----		
Steel in 1,000 metric tons-----	91	.14
Fuels and electric power:		
Coal in 1,000 metric tons-----		
Petroleum in 1,000 metric tons-----	18	.04
Natural and manufactured gas in million cubic meters-----	1,672	.57
Electric power production in million kilowatt-hours-----		
Machine building and metalworking:		
Metal-cutting tools-----	726	.47
Forge and pressing machines-----	(1)	(1)
Chemical equipment in thousands-----	(1)	(1)
Construction materials:		
Cement in 1,000 metric tons-----	460	1.01
Bricks in million pieces-----	416	1.00
Commercial lumber in 1,000 cubic meters-----	2,465	.94
Consumer goods:		
Cotton fabrics in million square meters-----	50	.78
Wool fabrics in 1,000 square meters-----	8,719	2.55
Leather shoes in 1,000 pairs-----	7,446	1.78
Food products:		
Meat products in 1,000 metric tons-----	80	1.82
Fish products in 1,000 metric tons-----	143	4.04
Canned goods in million cans-----	114	2.34
Milk in 1,000 metric tons-----	147	2.38

1 Not available.

DIMENSIONS OF SOVIET ECONOMIC POWER

TABLE 19.—*Litovskaya S.S.R., Western economic region*[Regional councils of the national economy: *Litovskiy*]

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	25,000	0.30
Population (1961).....	2,804,000	1.30
Industry, general (1960):		
Labor force.....	210,000	.94
Capital investment in billions.....	\$0.1	.71
Value of output in billions.....	\$1.6	.91
Total capital investment in billions (1960).....	\$0.3	.82
Principal industrial centers: Vilnyus (255,000), Kaunas (232,000), and Klaypeda (100,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....	2	Negligible
Fuels and electric power:		
Coal in 1,000 metric tons.....		
Petroleum in 1,000 metric tons.....		
Natural and manufactured gas in million cubic meters.....		
Electric power production in million kilowatt hours.....	1,122	.38
Machine building and metal working:		
Metal-cutting tools.....	8,959	5.76
Forge and pressing machines.....	(1)	(1)
Chemical equipment in thousands.....	(1)	(1)
Construction materials:		
Cement in 1,000 metric tons.....	468	1.03
Bricks in million pieces.....	516	1.24
Commercial lumber in 1,000 cubic meters.....	911	.35
Consumer goods:		
Cotton fabrics in million square meters.....	17	.27
Wool fabrics in 1,000 square meters.....	6,812	2.00
Leather shoes in 1,000 pairs.....	6,831	1.63
Food products:		
Meat products in 1,000 metric tons.....	115	2.60
Fish products in 1,000 metric tons.....	119	3.36
Canned goods in million cans.....	78	1.60
Milk in 1,000 metric tons.....	175	2.83

1 Not available.

TABLE 20.—*Transcaucasian economic region*

Regional councils of the national economy: Armyanskiy, Azerbaydzhanskiy, and Gruzinskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	72,000	0.83
Population (1961).....	10,066,000	4.66
Industry, general (1960):		
Labor force.....	631,000	3.83
Capital investment in billions.....	\$0.6	3.58
Value of output in billions.....	\$5.6	3.25
Total capital investment in billions (1960).....	\$1.2	3.41
Principal industrial centers: Tbilisi (724,000), Baku (671,000), and Yerevan (558,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	721	1.54
Steel in 1,000 metric tons.....	1,730	2.65
Fuels and electric power:		
Coal in 1,000 metric tons.....	2,850	.56
Petroleum in 1,000 metric tons.....	17,867	12.08
Natural and manufactured gas in million cubic meters.....	5,841	12.37
Electric power production in million kilowatt-hours.....	13,039	4.46
Machine building and metalworking:		
Metal-cutting tools.....	7,710	4.96
Forge and pressing machines.....	(1)	(1)
Chemical equipment in thousands.....	(1)	(1)
Construction materials:		
Cement in 1,000 metric tons.....	2,584	5.68
Bricks in million pieces.....	2,169	5.22
Commercial lumber in 1,000 cubic meters.....	863	.33
Consumer goods:		
Cotton fabrics in million square meters.....	219	3.43
Wool fabrics in 1,000 square meters.....	10,908	3.18
Leather shoes in 1,000 pairs.....	23,307	5.57
Food products:		
Meat products in 1,000 metric tons.....	88	2.00
Fish products in 1,000 metric tons.....	57	1.60
Canned goods in million cans.....	313	6.43
Milk in 1,000 metric tons.....	123	1.99

1 Not available.

TABLE 21.—*Armyanskaya S.S.R., Transcaucasian economic region*
Regional Councils of the National Economy: Armyanskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	12,000	0.13
Population (1961).....	1,893,000	.88
Industry general (1960):		
Labor force.....	142,000	.64
Capital investment in billions.....	\$0.1	.68
Value of output in billions.....	\$1.2	.68
Total capital investment in billions (1960).....	\$0.2	.67
Principal industrial centers: Yerevan (568,000), Leninakan (113,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....	0.2	Negligible
Fuels and electric power:		
Coal in 1,000 metric tons.....		
Petroleum in 1,000 metric tons.....		
Natural and manufactured gas in million cubic meters.....		
Electric power production in million kilowatt-hours.....	2,747	.94
Machine building and metalworking:		
Metal-cutting tools.....	3,824	2.46
Forge and pressing machines.....	(¹)	(¹)
Chemical equipment in thousands.....	(¹)	(¹)
Construction materials:		
Cement in 1,000 metric tons.....	389	.86
Bricks in million pieces.....	786	1.89
Commercial lumber in 1,000 cubic meters.....	84	.03
Consumer goods:		
Cotton fabrics in million square meters.....	66	1.03
Wool fabrics in 1,000 square meters.....	3,858	1.13
Leather shoes in 1,000 pairs.....	5,335	1.27
Food products:		
Meat products in 1,000 metric tons.....	18	.41
Fish products in 1,000 metric tons.....	1	.03
Canned goods in million cans.....	95	1.96
Milk in 1,000 metric tons.....	32	.51

¹ Not available.

TABLE 22.—*Azerbaydzhanskiy S.S.R., Transcaucasian economic region*
[Regional councils of the national economy: Azerbaydzhanskiy]

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	33,000	0.39
Population (1961).....	3,973,000	1.84
Industry general (1960):		
Labor force.....	219,000	1.98
Capital investment in billions.....	\$0.3	1.79
Value of output in billions.....	\$2.0	1.19
Total capital investment in billions (1960).....	\$0.5	1.63
Principal industrial centers: Baku (671,000), Kirovobad (123,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....	599	.92
Fuels and electric power:		
Coal in 1,000 metric tons.....		
Petroleum in 1,000 metric tons.....	17,833	12.06
Natural and manufactured gas in million cubic meters.....	5,841	12.37
Electric power production in million kilowatt-hours.....	6,590	2.25
Machine building and metalworking:		
Metal-cutting tools.....	50	.03
Forge and pressing machines.....	(¹)	(¹)
Chemical equipment in thousands.....	(¹)	(¹)
Construction materials:		
Cement in 1,000 metric tons.....	939	2.06
Bricks in million pieces.....	988	2.38
Commercial lumber in 1,000 cubic meters.....	73	.03
Consumer goods:		
Cotton fabrics in million square meters.....	103	1.62
Wool fabrics in 1,000 square meters.....	2,147	.62
Leather shoes in 1,000 pairs.....	7,219	1.73
Food products:		
Meat products in 1,000 metric tons.....	36	.82
Fish products in 1,000 metric tons.....	49	1.38
Canned goods in million cans.....	98	2.01
Milk in 1,000 metric tons.....	43	.69

¹ Not available.

TABLE 23.—*Gruzinskaya S.S.R., Transcaucasian economic region*

Regional councils of the national economy: Gruzinskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	27,000	0.31
Population (1961).....	4,200,000	1.94
Industry general (1960):		
Labor force.....	270,000	1.21
Capital investment in billions.....	\$0.2	1.11
Value of output in billions.....	\$2.4	1.38
Total capital investment in billions (1960).....	\$0.4	1.19
Principal industrial centers: Tbilisi (724,000), Kutaisi (137,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	721	1.54
Steel in 1,000 metric tons.....	1,131	1.73
Fuels and electric power:		
Coal in 1,000 metric tons.....	2,850	.56
Petroleum in 1,000 metric tons.....	34	.02
Natural and manufactured gas in millions of cubic meters.....		
Electric power production in millions of kilowatt-hours.....	3,702	1.27
Machine building and metalworking:		
Metal-cutting tools.....	3,836	2.47
Forge and pressing machines.....	(¹)	(¹)
Chemical equipment in thousands.....	(¹)	(¹)
Construction materials:		
Cement in 1,000 metric tons.....	1,256	2.76
Bricks in million pieces.....	395	.95
Commercial lumber in 1,000 cubic meters.....	706	.27
Consumer goods:		
Cotton fabrics in millions of square meters.....	50	.78
Wool fabrics in 1,000 square meters.....	4,903	1.43
Leather shoes in 1,000 pairs.....	10,753	2.57
Food products:		
Meat products in 1,000 metric tons.....	34	.77
Fish products in 1,000 metric tons.....	7	.19
Canned goods in millions of cans.....	120	2.46
Milk in 1,000 metric tons.....	49	.79

¹ Not available.

TABLE 20.—*Transcaucasian economic region*

Regional councils of the national economy: Armyanskly, Azerbaydzhansky, and Gruzinskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	72,000	0.83
Population (1961).....	10,066,000	4.66
Industry, general (1960):		
Labor force.....	631,000	3.83
Capital investment in billions.....	\$0.6	3.58
Value of output in billions.....	\$5.6	3.25
Total capital investment in billions (1960).....	\$1.2	3.41
Principal industrial centers: Tbilisi (724,000), Baku (671,000), and Yerevan (558,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	721	1.54
Steel in 1,000 metric tons.....	1,730	2.65
Fuels and electric power:		
Coal in 1,000 metric tons.....	2,850	.56
Petroleum in 1,000 metric tons.....	17,867	12.08
Natural and manufactured gas in million cubic meters.....	5,841	12.37
Electric power production in million kilowatt-hours.....	13,039	4.46
Machine building and metalworking:	7,710	4.96
Metal-cutting tools.....		
Forge and pressing machines.....	(1)	(1)
Chemical equipment in thousands.....	(1)	(1)
Construction materials:		
Cement in 1,000 metric tons.....	2,584	5.68
Bricks in million pieces.....	2,169	5.22
Commercial lumber in 1,000 cubic meters.....	863	.33
Consumer goods:		
Cotton fabrics in million square meters.....	219	3.43
Wool fabrics in 1,000 square meters.....	10,908	3.18
Leather shoes in 1,000 pairs.....	23,307	6.57
Food products:		
Meat products in 1,000 metric tons.....	88	2.00
Fish products in 1,000 metric tons.....	57	1.60
Canned goods in million cans.....	313	6.43
Milk in 1,000 metric tons.....	123	1.99

¹ Not available.

TABLE 21.—*Armyanskaya S.S.R., Transcaucasian economic region*
Regional Councils of the National Economy: Armyanskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....		
Population (1961).....	12,000	0.13
Industry general (1960):	1,893,000	.88
Labor force.....		
Capital investment in billions.....	142,000	.64
Value of output in billions.....	\$0.1	.68
Total capital investment in billions (1960).....	\$1.2	.68
Principal industrial centers: Yerevan (558,000), Leninakan (113,000).	\$0.2	.67
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....		
Fuels and electric power:	0.2	Negligible
Coal in 1,000 metric tons.....		
Petroleum in 1,000 metric tons.....		
Natural and manufactured gas in million cubic meters.....		
Electric power production in million kilowatt-hours.....	2,747	.94
Machine building and metalworking:		
Metal-cutting tools.....		
Forge and pressing machines.....	3,824	2.46
Chemical equipment in thousands.....	(¹)	(¹)
Construction materials:	(¹)	(¹)
Cement in 1,000 metric tons.....	389	.86
Bricks in million pieces.....	786	1.89
Commercial lumber in 1,000 cubic meters.....	84	.03
Consumer goods:		
Cotton fabrics in million square meters.....	66	1.03
Wool fabrics in 1,000 square meters.....	3,858	1.13
Leather shoes in 1,000 pairs.....	5,335	1.27
Food products:		
Meat products in 1,000 metric tons.....	18	.41
Fish products in 1,000 metric tons.....	1	.03
Canned goods in million cans.....	95	1.96
Milk in 1,000 metric tons.....	32	.51

¹ Not available.

TABLE 22.—*Azerbaydzhanskiy S.S.R., Transcaucasian economic region*
[Regional councils of the national economy: Azerbaydzhanskiy]

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....		
Population (1961).....	33,000	0.39
Industry general (1960):	3,973,000	1.84
Labor force.....		
Capital investment in billions.....	219,000	1.98
Value of output in billions.....	\$0.3	1.79
Total capital investment in billions (1960).....	\$2.0	1.19
Principal industrial centers: Baku (671,000), Kirovobad (123,000).	\$0.5	1.53
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....		
Fuels and electric power:	599	.92
Coal in 1,000 metric tons.....		
Petroleum in 1,000 metric tons.....		
Natural and manufactured gas in million cubic meters.....	17,833	12.06
Electric power production in million kilowatt-hours.....	5,841	12.37
Machine building and metalworking:		
Metal-cutting tools.....		
Forge and pressing machines.....	50	.03
Chemical equipment in thousands.....	(¹)	(¹)
Construction materials:	(¹)	(¹)
Cement in 1,000 metric tons.....	939	2.06
Bricks in million pieces.....	988	2.38
Commercial lumber in 1,000 cubic meters.....	73	.03
Consumer goods:		
Cotton fabrics in million square meters.....	103	1.62
Wool fabrics in 1,000 square meters.....	2,147	.62
Leather shoes in 1,000 pairs.....	7,219	1.73
Food products:		
Meat products in 1,000 metric tons.....	36	.82
Fish products in 1,000 metric tons.....	49	1.38
Canned goods in million cans.....	98	2.01
Milk in 1,000 metric tons.....	43	.69

¹ Not available.

TABLE 23.—*Gruzinskaya S.S.R., Transcaucasian economic region*

Regional councils of the national economy: Gruzinskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	27,000	0.31
Population (1961).....	4,200,000	1.94
Industry general (1960):		
Labor force.....	270,000	1.21
Capital investment in billions.....	\$0.2	1.11
Value of output in billions.....	\$2.4	1.38
Total capital investment in billions (1960).....	\$0.4	1.19
Principal industrial centers: Tbilisi (724,000), Kutaisi (137,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	721	1.54
Steel in 1,000 metric tons.....	1,131	1.73
Fuels and electric power:		
Coal in 1,000 metric tons.....	2,850	.56
Petroleum in 1,000 metric tons.....	34	.02
Natural and manufactured gas in millions of cubic meters.....		
Electric power production in millions of kilowatt-hours.....	3,702	1.27
Machine building and metalworking:		
Metal-cutting tools.....	3,836	2.47
Forge and pressing machines.....	(1)	(1)
Chemical equipment in thousands.....	(1)	(1)
Construction materials:		
Cement in 1,000 metric tons.....	1,256	2.76
Bricks in million pieces.....	395	.95
Commercial lumber in 1,000 cubic meters.....	706	.27
Consumer goods:		
Cotton fabrics in millions of square meters.....	50	.78
Wool fabrics in 1,000 square meters.....	4,903	1.43
Leather shoes in 1,000 pairs.....	10,753	2.57
Food products:		
Meat products in 1,000 metric tons.....	34	.77
Fish products in 1,000 metric tons.....	7	.19
Canned goods in millions of cans.....	120	2.46
Milk in 1,000 metric tons.....	49	.79

1 Not available.

TABLE 24.—*Central Asian economic region*

Regional Councils of the National Economy: Kirgizskiy, Tadzhikskiy, Turkmenkiy, Uzbekskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	478,000	5.58
Population (1961).....	14,620,000	6.76
Industry general (1960):		
Labor force.....	612,000	2.75
Capital investment in billions.....	\$0.6	3.82
Value of output in billions.....	\$5.7	3.34
Total capital investment in billions (1960).....	\$1.4	4.32
Principal industrial centers: Tashkent (971,000), Frunze (252,000), Dushanbe (248,000), Samarkand (209,000), Ashkhabad (187,000), Andizhan (141,000), Namangan (134,000), Kokand (113,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....	297	.46
Fuels and electric power:		
Coal in 1,000 metric tons.....	7,766	1.51
Petroleum in 1,000 metric tons.....	7,362	4.98
Natural and manufactured gas in million cubic meters.....	722	1.53
Electric power production in million kilowatt-hours.....	8,765	3.00
Machine building and metalworking:		
Metal-cutting tools.....	3,460	2.22
Forge and pressing machines.....	(1)	(1)
Chemical equipment in thousands.....	(1)	(1)
Construction materials:		
Cement in 1,000 metric tons.....	1,484	3.26
Bricks in million pieces.....	2,213	5.32
Commercial lumber in 1,000 cubic meters.....	50	.02
Consumer goods:		
Cotton fabrics in million square meters.....	313	4.89
Wool fabrics in 1,000 square meters.....	1,538	.45
Leather shoes in 1,000 pairs.....	18,971	4.52
Food products:		
Meat products in 1,000 metric tons.....	206	4.68
Fish products in 1,000 metric tons.....	45	1.26
Canned goods in million cans.....	285	5.86
Milk in 1,000 metric tons.....	158	2.56

1 Not available.

TABLE 25.—*Kirgizskaya S.S.R., Central Asian economic region*

Regional Councils of the National Economy: Kirgizskiy

	Total	Percent of U. S. S. R.
Territory in square miles (1961).....	77,000	0.89
Population (1961).....	2,225,000	1.03
Industry general (1960):		
Labor force.....	107,000	.48
Capital investment in billions.....	\$0.1	.47
Value of output in billions.....	\$0.9	.50
Total capital investment in billions (1960).....	\$0.2	.64
Principal industrial center: Frunze (252,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....	0.6	Negligible
Fuels and electric power:		
Coal in 1,000 metric tons.....	3,502	.68
Petroleum in 1,000 metric tons.....	464	.31
Natural and manufactured gas in million cubic meters.....	41	.09
Electric power production in million kilowatt-hours.....	872	.30
Machine building and metalworking:		
Metal-cutting tools.....	2,816	1.81
Forge and pressing machines.....	(1)	(1)
Chemical equipment in thousands.....	(1)	(1)
Construction materials:		
Cement in 1,000 metric tons.....	28	.06
Bricks in million pieces.....	388	.93
Commercial lumber in 1,000 cubic meters.....	35	.01
Consumer goods:		
Cotton fabrics in million square meters.....	2	.03
Wool fabrics in 1,000 square meters.....	1,089	.32
Leather shoes in 1,000 pairs.....	3,087	.74
Food products:		
Meat products in 1,000 metric tons.....	60	1.36
Fish products in 1,000 metric tons.....	1	.03
Canned goods in million cans.....	43	.89
Milk in 1,000 metric tons.....	40	.85

1 Not available.

TABLE 26.—*Tadzhikskaya S.S.R., Central Asian economic region*

Regional councils of the national economy: Tadzhikskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	55,000	0.64
Population (1961).....	2,104,000	.97
Industry, general (1960):		
Labor force.....	74,000	.33
Capital investment in billions.....	\$0.1	.68
Value of output in billions.....	\$0.8	.45
Total capital investment in billions (1960).....	\$0.2	.74
Principal industrial center: Dushanbe (248,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....		
Fuels and electric power:		
Coal in 1,000 metric tons.....	854	.17
Petroleum in 1,000 metric tons.....	17	.01
Natural and manufactured gas in million cubic meters.....		
Electric power production in million kilowatt-hours.....	1,288	.44
Machine building and metal working:		
Metal-cutting tools.....		
Forge and pressing machines.....	(¹)	(¹)
Chemical equipment in thousands.....	(¹)	(¹)
Construction materials:		
Cement in 1,000 metric tons.....	134	.29
Bricks in million pieces.....	239	.57
Commercial lumber in 1,000 cubic meters.....		
Consumer goods:		
Cotton fabrics in million square meters.....	52	.81
Wool fabrics in 1,000 square meters.....		
Leather shoes in 1,000 pairs.....	3,119	.74
Food products:		
Meat products in 1,000 metric tons.....	29	.66
Fish products in 1,000 metric tons.....	Negligible	Negligible
Canned goods in million cans.....	61	1.26
Milk in 1,000 metric tons.....	20	.33

¹ Not available.TABLE 27.—*Turkmenkaya S.S.R., Central Asian economic region*

Regional councils of the national economy: Turkmenkiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	188,000	2.18
Population (1961).....	1,628,000	.75
Industry general (1960):		
Labor force.....	67,000	.30
Capital investment in billions.....	\$0.1	.68
Value of output in billions.....	\$0.6	.39
Total capital investment in billions (1960).....	\$0.2	.74
Principal industrial center: Ashkhabad (187,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....		
Fuels and electric power:		
Coal in 1,000 metric tons.....		
Petroleum in 1,000 metric tons.....	5,278	3.58
Natural and manufactured gas in million cubic meters.....	234	.50
Electric power production in million kilowatt-hours.....	752	.28
Machine building and metalworking:		
Metal-cutting tools.....		
Forge and pressing machines.....	(¹)	(¹)
Chemical equipment in thousands.....	(¹)	(¹)
Construction materials:		
Cement in 1,000 metric tons.....	132	.29
Bricks in million pieces.....	367	.88
Commercial lumber in 1,000 cubic meters.....		
Consumer goods:		
Cotton fabrics in million square meters.....	24	.38
Wool fabrics in 1,000 square meters.....	449	.13
Leather shoes in 1,000 pairs.....	1,397	.33
Food products:		
Meat products in 1,000 metric tons.....	20	.46
Fish products in 1,000 metric tons.....	20	.57
Canned goods in million cans.....	2	.05
Milk in 1,000 metric tons.....	13	.20

¹ Not available.

TABLE 28.—*Uzbekskaya S.S.R., Central Asian economic region*

Regional councils of the national economy: Uzbekskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	158,000	1.82
Population (1961).....	8,665,000	4.01
Industry general (1960):		
Labor force.....	364,000	1.64
Capital investment in billions.....	\$0.3	2.11
Value of output in billions.....	\$3.4	2.10
Total capital investment in billions (1960).....	\$0.8	2.23
Principal industrial centers: Tashkent (971,000), Samarkand (209,000), Andizhan (141,000), Namangan (134,000), Kokand (113,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	297	.46
Steel in 1,000 metric tons.....		
Fuels and electric power:		
Coal in 1,000 metric tons.....	3,410	.66
Petroleum in 1,000 metric tons.....	1,603	1.08
Natural and manufactured gas in million cubic meters.....	447	.95
Electric power production in million kilowatt-hours.....	5,853	2.00
Machine building and metalworking:		
Metal-cutting tools.....	644	.41
Forge and pressing machines.....	(1)	(1)
Chemical equipment in thousands.....	(1)	(1)
Construction materials:		
Cement in 1,000 metric tons.....	1,190	2.62
Bricks in million pieces.....	1,220	2.94
Commercial lumber in 1,000 cubic meters.....	15	.01
Consumer goods:		
Cotton fabrics in million square meters.....	235	3.67
Wool fabrics in 1,000 square meters.....		
Leather shoes in 1,000 pairs.....	11,368	2.71
Food products:		
Meat products in 1,000 metric tons.....	97	2.20
Fish products in 1,000 metric tons.....	23	.66
Canned goods in million cans.....	178	3.66
Milk in 1,000 metric tons.....	85	1.38

1 Not available.

TABLE 29.—*Kazakhskaya S.S.R.*

Regional councils of the national economy Alma-Atinskiy, Karagandinskiy, Semipalatinskiy, Tselinny, Vostochno-Kazakhstanskiy, Yuzhno-Kazakhstanskiy, Zapadnov, Kazakhstanskiy, and All-Kazakh

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....		
Population (1961).....	1,064,000	12.30
Industry general (1960):.....	10,387,000	4.81
Labor force.....		
Capital investment in billions.....	563,000	2.53
Value of output in billions.....	\$0.9	5.41
Total capital investment in billions.....	\$4.5	2.62
Principal industrial centers Alma-Ata (508,000), Karaganda (441,000), Semipalatinsk (177,000), Ust-Kamenogorsk (173,000), Chimkent (171,000), Petropavlovsk (140,000), Dzhambul (131,000), Tselinograd (114,000), Temirtau (113,000), Uralsk (111,000), Pavlodar (107,000), and Aktyubinsk (107,000).....	\$2.4	6.91
Industrial products (1960):.....		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....	274	.59
Steel in 1,000 metric tons.....	305	.47
Fuels and electric power:		
Coal in 1,000 metric tons.....	32,383	6.31
Petroleum in 1,000 metric tons.....	1,610	1.09
Natural and manufactured gas in million cubic meters.....	39	.08
Electric power production in million kilowatt-hours.....	10,500	3.59
Machine building and metalworking:		
Metal-cutting tools.....	880	.57
Forge and pressing machines.....	(1)	(1)
Chemical equipment in thousands.....	(1)	(1)
Construction materials:		
Cement in 1,000 metric tons.....	2,173	4.77
Bricks in million pieces.....	1,370	3.30
Commercial lumber in 1,000 cubic meters.....	1,196	.46
Consumer goods:		
Cotton fabrics in million square meters.....	20	.31
Wool fabrics in 1,000 square meters.....	4,061	1.19
Leather shoes in 1,000 pairs.....	12,338	2.94
Food products:		
Meat products in 1,000 metric tons.....	278	6.30
Fish products in 1,000 metric tons.....	105	2.97
Canned goods in million cans.....	159	3.28
Milk in 1,000 metric tons.....	248	4.02

* Not available.

TABLE 30.—*Belorusskaya S.S.R.*

Regional councils of the national economy: Belorusskiy

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	80,000	0.93
Population (1961).....	8,226,000	3.81
Industry general (1960):		
Labor force.....	553,000	2.48
Capital investment in billions.....	\$0.3	1.68
Value of output in billions.....	\$4.1	2.38
Total capital investment in billions (1960).....	\$0.7	2.09
Principal industrial centers: Minsk (570,000), Gomel (184,000), Mogilev (184,000), and Bobruysk (104,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....	120	.18
Fuels and electric power:		
Coal in 1,000 metric tons.....		
Petroleum in 1,000 metric tons.....		
Natural and manufactured gas in million cubic meters.....		
Electric power production in million kilowatt-hours.....	3,636	1.24
Machine building and metal working:		
Metal-cutting tools.....	16,607	10.68
Forge and pressing machines.....	(¹)	(¹)
Chemical equipment in thousands.....	(¹)	(¹)
Construction materials:		
Cement in 1,000 metric tons.....	694	1.52
Bricks in million pieces.....	1,439	3.46
Commercial lumber in 1,000 cubic meters.....	5,022	1.92
Consumer goods:		
Cotton fabrics in million square meters.....	5	.08
Wool fabrics in 1,000 square meters.....	15,205	4.45
Leather shoes in 1,000 pairs.....	19,412	4.63
Food products:		
Meat products in 1,000 metric tons.....	168	3.80
Fish products in 1,000 metric tons.....	5	.14
Canned goods in million cans.....	176	3.62
Milk in 1,000 metric tons.....	322	5.22

¹ Not available.

TABLE 31.—*Moldavskaya S.S.R.*

[Regional councils of the national economy: Moldavskiy]

	Total	Percent of U.S.S.R.
Territory in square miles (1961).....	13,000	0.15
Population (1961).....	3,040,000	1.41
Industry general (1960):		
Labor force.....	122,000	0.55
Capital investment in billions.....	\$0.1	0.54
Value of output in billions.....	\$1.3	0.78
Total capital investment in billions (1960).....	\$0.2	0.60
Principal industrial center: Kishinev (236,000).		
Industrial products (1960):		
Ferrous metallurgy:		
Iron in 1,000 metric tons.....		
Steel in 1,000 metric tons.....		
Fuels and electric power:		
Coal in 1,000 metric tons.....		
Petroleum in 1,000 metric tons.....		
Natural and manufactured gas in million cubic meters.....	2	Negligible
Electric power production in million kilowatt-hours.....	677	0.23
Machine building and metalworking:		
Metal-cutting tools.....	1,065	0.68
Forge and pressing machines.....	(¹)	(¹)
Chemical equipment in thousands.....	(¹)	(¹)
Construction materials:		
Cement in 1,000 metric tons.....	498	1.20
Bricks in million pieces.....	93	0.04
Commercial lumber in 1,000 cubic meters.....		
Consumer goods:		
Cotton fabrics in million square miles.....	1	0.01
Wool fabrics in 1,000 square meters.....	344	0.10
Leather shoes in 1,000 pairs.....	5,569	1.33
Food products:		
Meat products in 1,000 metric tons.....	72	1.62
Fish products in 1,000 metric tons.....	1	0.04
Canned goods in million cans.....	394	8.11
Milk in 1,000 metric tons.....	62	0.99

¹ Not available.

SOURCES USED IN THE PREPARATION OF THE REGIONAL STATISTICAL TABLES

Territory, Population, and Industrial Labor Force: Tsentralnoye Statisticheskoye Upravlenie pri Sovete Ministrov SSSR, Narodnoye Khozyaystvo SSSR v 1960; Statisticheskii sbornik (Moskva, 1961), pp. 52-56, 164-65, hereafter cited as NK SSSR v 1960.

Industrial capital investment: Tsentralnoye Statisticheskoye Upravlenie pri Sovete Ministrov SSSR, Kapitalnoye stroitelstvo v SSSR: Statisticheskii sbornik (Moskva, 1961) pp. 145-46; hereafter cited as Kstroj. Total capital investments: Kstroj, pp. 151-52. Dollar values calculated at official ruble/dollar exchange rate.

Value of Output: percentages calculated on basis of widely reported ruble values and estimated relationships of smaller to larger entities for certain years with results checked by matrix analysis using reported territorial gross industrial production growth rates. It should be noted that the results are based on the Soviet concept of "gross industrial production," not the Western concept of "value added." The Soviet concept overvalues areas which produce end products requiring several processing stages, the cost of all steps being included in the value attributed to end product production areas. Dollar values calculated at official ruble/dollar exchange rate, and are not comparable to other value figures in the table.

Iron: For union republics, NK SSSR v 1960, p. 244; RSFSR economic regions based on proportional distribution for 1955, Tsentralnoye Statisticheskoye Upravlenie pri Sovete Ministrov SSSR, Promyshlennost SSSR: Statisticheskii sbornik (Moskva, 1956), p. 112, hereafter cited as Prom SSSR.

Steel: For union republics, NK SSSR v 1960, p. 245, RSFSR economic regions based on proportional distribution for 1955, Prom SSSR, p. 113.

Coal: For union republics, NK SSSR v 1960, p. 256; RSFSR economic regions, Tsentralnoye Statisticheskoye Upravlenie pri Sovete Ministrov RSFSR, Narodnoye Khozyaystvo RSFSR v 1960; Statisticheskoy sbornik (Moskva, 1961), p. 99, hereafter cited as NK RSFSR v 1960; and Ukrainian economic regions based on proportional distribution for 1959, Tsentralne Statistichne Upravlinnye pri Rodi

Ministrov Ukrainy RFSFR, Narodne Gospodarstvo Ukraynskoy RFSFR v 1959: Statistichnii zhebornik (Kiyev, 1960), p. 81, hereafter cited as NG Uk v 1959.

Petroleum: NK SSSR v 1960, p. 264.

Natural and manufactured gas: For union republics, NK SSSR in 1960, p. 267; Russian economic regions, NK RFSFR v 1960, p. 102; and Ukrainian economic regions based on proportional distribution for 1959 reported in NG Uk v 1959, p. 84.

Electric power production: For union republics NK SSSR v 1960, p. 272; RFSFR economic regions, Tsentralnoye Statisticheskoye Upravleniye pri Sovete Ministrov RFSFR, Promyshlennost RFSFR; Statisticheskii sbornik (Moskva, 1961) p. 108, hereafter cited as Prom RFSFR.

Metal-cutting tools: For union republics, NK SSSR v 1960, p. 288; RFSFR economic regions, Prom RFSFR, p. 136.

Forge and pressing machines: For USSR, NK SSSR v 1960, p. 288; RFSFR economic regions, Prom RFSFR, p. 137.

Chemical equipment: For USSR, NK SSSR v 1960, p. 289; RFSFR economic regions, Prom RFSFR, p. 141. Dollar values calculated at official ruble/dollar exchange rate.

Cement: NK SSSR v 1960, p. 308.

Bricks: NK SSSR v 1960, pp. 311, 312, and 314.

Commercial lumber: NK SSSR v 1960, pp. 298-99.

Cotton fabrics: NK SSSR v 1960, p. 325.

Wool fabrics: NK SSSR v 1960, p. 326.

Leather shoes: NK SSSR v 1960, p. 339.

Meat products: NK SSSR v 1960, p. 167.

Fish products: NK SSSR v 1960, p. 350.

Canned goods: For union republics, NK SSSR v 1960, p. 355; RFSFR economic regions, Prom RFSFR, pp. 313-14; Ukrainian economic regions based on proportional distribution for 1959, NG UK v 1959, p. 139.

Milk: NK SSSR v 1960, p. 467.

V. Foreign Trade

TABLE 11.—*Geographic distribution of Soviet foreign trade, 1955-61*

[Million U.S. dollars]

Year	Total foreign trade	Total	Sino-Soviet bloc			Free world			
			European satellites	Communist China	Other Asian satellites	Total	Industrial west	Underdeveloped countries	Other countries
1955:									
Exports.....	3,426.6	2,706.5	1,792.1	748.3	166.1	720.1	543.7	128.4	48.0
Imports.....	3,060.5	2,400.9	1,662.8	643.5	94.6	659.6	430.6	225.7	3.3
1956:									
Exports.....	3,615.0	2,660.2	1,767.7	733.0	159.5	954.8	597.2	248.6	109.0
Imports.....	3,612.6	2,686.1	1,815.0	764.2	106.8	926.5	578.8	346.2	1.5
1957:									
Exports.....	4,381.4	3,231.4	2,549.9	544.1	137.4	1,150.0	690.1	355.9	104.0
Imports.....	3,937.8	2,768.8	1,914.8	738.1	115.9	1,169.0	672.5	492.2	4.3
1958:									
Exports.....	4,297.5	3,085.2	2,320.2	634.0	131.0	1,212.3	669.6	439.6	103.1
Imports.....	4,349.5	3,191.1	2,205.7	881.2	104.2	1,158.4	622.2	531.9	4.3
1959:									
Exports.....	5,440.7	4,077.7	2,950.5	954.5	172.7	1,363.0	855.5	389.3	118.2
Imports.....	5,073.2	3,736.4	2,519.3	1,100.3	116.8	1,336.8	756.5	575.2	5.1
1960:									
Exports.....	5,561.6	4,081.6	3,117.7	817.1	146.8	1,480.0	971.8	471.7	36.5
Imports.....	5,628.9	3,821.6	2,819.4	848.1	154.1	1,807.3	1,069.5	731.9	5.9
1961:									
Exports.....	5,998.2	3,998.2	3,420.1	367.3	210.8	2,000.0	1,060.0	819.2	120.8
Imports.....	5,832.3	3,780.3	3,065.9	551.4	163.0	2,052.0	1,092.2	950.7	9.1

TABLE 12.—Commodity composition of Soviet exports, 1955-61

[Million U.S. dollars and percent of total]

	1955		1956		1957		1958		1959		1960		1961	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total exports ¹	3,426.6	100.0	3,615.0	100.0	4,381.4	100.0	4,297.5	100.0	5,440.7	100.0	5,561.6	100.0	5,998.2	100.0
Machinery and equipment.....	599.0	17.5	624.4	17.3	652.1	14.9	794.8	18.5	1,168.1	21.5	1,141.2	20.5	964.6	16.1
Complete plants.....	276.8	8.1	299.6	8.3	321.9	7.3	339.9	7.9	569.1	10.5	568.5	10.2	355.8	6.9
Fuels, lubricants, and related materials.....	329.0	9.6	428.2	11.8	648.3	14.8	651.2	15.2	797.8	14.7	902.5	16.2	1,046.1	17.4
Coal and coke.....	97.8	2.9	142.8	4.0	249.5	5.7	219.8	5.1	229.1	4.2	242.1	4.4	284.9	4.7
Petroleum and petroleum products.....	230.1	6.7	284.4	7.9	397.6	9.1	429.9	10.0	567.0	10.4	657.9	11.8	757.8	12.6
Ores and concentrates.....	115.4	3.4	130.0	3.6	183.9	4.2	190.0	4.4	215.8	4.0	242.9	4.4	252.6	4.2
Iron ore.....	81.6	2.4	86.5	2.4	124.9	2.8	137.4	3.2	154.3	2.8	175.0	3.1	187.8	3.1
Base metals and manufactures.....	431.8	12.6	543.0	15.0	642.5	14.7	692.1	16.1	743.1	13.7	837.2	15.1	922.4	15.4
Ferrous metals.....	321.0	9.4	385.7	10.7	439.6	10.0	494.5	11.5	547.2	10.1	642.3	11.5	711.7	11.9
Rolled ferrous metals.....	192.2	5.6	233.6	6.5	267.9	6.1	329.9	7.7	366.2	6.7	428.8	7.7	478.2	8.0
Nonferrous metals.....	110.7	3.2	157.3	4.4	202.9	4.6	197.6	4.6	195.9	3.6	194.9	3.5	211.1	3.5
Aluminum.....	19.4	.6	31.8	.9	43.8	1.0	56.6	1.3	38.7	.7	44.7	.6	58.2	1.0
Tin.....	6.2	.2	7.1	.2	37.6	.8	44.5	1.0	38.4	.7	24.6	.4	12.2	.2
Chemicals.....	72.4	2.1	82.1	2.3	97.6	2.2	113.8	2.6	122.3	2.2	139.0	2.5	163.5	2.7
Wood and wood products.....	174.5	5.1	161.7	4.5	231.1	5.3	240.9	5.6	259.9	4.8	305.1	5.5	361.7	6.0
Lumber.....	94.3	2.8	86.0	2.4	135.1	3.1	136.9	3.2	150.4	2.8	182.8	3.3	206.5	3.4
Textile raw materials and semimanufactures.....	346.7	10.1	329.2	9.1	305.0	7.0	293.8	6.8	308.0	5.7	358.6	6.4	364.9	6.1
Cotton.....	297.9	8.7	272.4	7.5	255.5	5.8	238.6	5.6	248.1	4.6	288.7	5.2	283.8	4.7
Consumer goods.....	497.8	14.5	476.8	13.2	917.7	20.9	665.4	15.5	953.5	17.5	902.2	16.2	1,006.5	16.8
Food.....	386.4	11.2	369.2	10.2	773.6	17.6	507.7	11.8	795.9	14.6	699.0	12.6	790.4	13.2
Grain.....	283.5	8.3	226.7	6.3	566.0	12.9	358.8	8.3	487.2	9.0	467.8	8.4	473.8	7.9
Other consumer goods.....	111.4	3.3	107.6	3.0	144.1	3.3	157.7	3.7	157.7	2.9	203.2	3.7	216.1	3.6
Other merchandise.....	164.8	4.8	179.3	5.0	178.5	4.1	177.2	4.1	224.7	4.1	204.4	3.7	219.2	3.7
Unspecified.....	695.4	20.3	660.2	18.3	524.5	12.0	478.4	11.2	647.4	11.9	528.5	9.5	696.2	11.6

¹ Because of rounding, components may not add to the totals shown.

TABLE 13.—Commodity composition of Soviet imports, 1955-61

[Million U.S. dollars and percent of total]

	1955		1956		1957		1958		1959		1960		1961	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total imports ¹	3,060.5	100.0	3,612.6	100.0	3,937.8	100.0	4,349.5	100.0	5,073.2	100.0	5,628.9	100.0	5,832.3	100.0
Machinery and equipment.....	925.3	30.2	895.3	24.8	940.4	23.9	1,064.6	24.5	1,351.9	26.6	1,675.2	29.8	1,739.0	29.8
Transportation equipment.....	386.3	12.5	424.2	11.6	407.3	10.3	427.2	9.8	542.4	10.7	658.1	11.7	534.3	9.2
Fuels, lubricants, and related materials.....	250.0	8.2	256.4	7.1	208.1	5.3	212.2	4.9	231.3	4.6	237.3	4.2	217.0	3.7
Coal and coke.....	126.9	4.1	118.8	3.3	88.7	2.3	77.0	1.8	85.7	1.7	93.5	1.7	93.6	1.6
Petroleum and petroleum products.....	123.1	4.0	137.5	3.8	119.4	3.0	135.2	3.1	145.6	2.9	143.7	2.6	123.4	2.1
Ores and concentrates.....	251.3	8.2	374.6	10.4	453.3	11.5	403.5	9.3	331.0	6.5	314.0	5.6	280.2	4.8
Base metals and manufactures.....	204.1	6.7	288.3	8.0	291.1	7.4	316.5	7.3	435.0	8.6	545.9	9.7	505.5	8.7
Ferrous metals.....	71.0	2.3	145.2	4.0	163.5	4.2	183.4	4.2	265.2	5.2	373.0	6.6	342.0	5.9
Rolled ferrous metals.....	16.1	.5	88.4	2.4	119.5	3.0	127.8	2.9	122.0	2.4	178.8	3.2	160.4	2.8
Nonferrous metals.....	133.1	4.3	143.1	4.0	127.6	3.2	133.1	3.1	169.9	3.3	172.0	3.1	163.5	2.8
Tin.....	47.9	1.6	32.4	.9	45.5	1.2	39.5	.9	41.8	.8	34.8	.6	22.5	.4
Copper.....	43.5	1.4	46.2	1.3	44.2	1.1	54.5	1.3	74.3	1.5	71.9	1.3	53.0	.9
Chemicals.....	52.1	1.7	77.1	2.1	76.5	1.9	99.8	2.3	110.3	2.2	141.3	2.5	137.7	2.4
Rubber and rubber products.....	41.4	1.4	124.8	3.5	127.7	3.2	182.2	4.2	195.5	3.9	196.2	3.5	273.5	4.7
Wood and wood products.....	92.9	3.0	107.7	3.0	120.2	3.1	104.8	2.4	94.0	1.9	104.8	1.9	124.3	2.1
Textile raw materials and semifinances.....	166.4	5.4	216.3	6.0	317.8	8.1	309.3	7.1	329.7	6.5	36.44	6.5	303.4	5.2
Cotton.....	20.1	.7	54.0	1.5	122.9	3.1	135.2	3.1	163.9	3.2	179.9	3.2	130.1	2.2
Wool.....	89.7	2.9	90.0	2.5	127.7	3.2	107.7	2.5	100.8	2.0	118.0	2.1	103.8	1.8
Consumer goods.....	661.9	21.6	824.3	22.8	913.9	23.2	1,161.3	26.7	1,436.5	28.3	1,577.3	28.0	1,782.6	30.6
Food.....	517.1	16.9	487.5	13.5	480.4	12.2	559.9	12.9	542.7	10.7	611.8	10.9	776.0	13.3
Other consumer goods.....	144.8	4.7	336.8	9.3	433.5	11.0	601.5	13.8	893.8	17.6	965.6	17.2	1,006.6	17.3
Other merchandise.....	308.6	10.1	365.8	10.1	399.5	10.1	397.6	9.1	450.7	8.9	378.8	6.7	341.3	5.9
Unspecified.....	106.5	3.4	81.9	2.3	89.4	2.3	97.7	2.2	107.2	2.1	93.7	1.7	127.8	2.2

¹ Because of rounding, components may not add to the totals shown.

TABLE 14.—Commodity composition of Soviet exports to European satellites, 1955-61

[Million U.S. dollars and percent of total]

	1955		1956		1957		1958		1959		1960		1961	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total exports ¹	1,792.1	100.0	1,767.7	100.0	2,549.9	100.0	2,320.2	100.0	2,950.5	100.0	3,117.7	100.0	3,420.1	100.0
Machinery and equipment.....	304.4	17.0	218.1	12.3	220.5	8.6	248.4	10.7	368.5	12.5	414.2	13.3	459.2	13.4
Complete plants.....	129.7	7.2	65.4	3.7	50.4	2.0	51.5	2.2	87.5	3.0	108.6	3.5	111.3	3.3
Fuels, lubricants, and related materials.....	120.4	6.7	163.9	9.3	313.7	12.3	301.8	13.0	351.3	11.9	413.7	13.3	486.4	14.2
Coal and coke.....	64.3	3.6	90.1	5.1	176.8	6.9	153.9	6.6	162.5	5.5	171.2	5.5	204.2	6.0
Petroleum and petroleum products.....	55.1	3.1	72.8	4.1	135.6	5.3	146.3	6.3	187.1	6.3	240.7	7.7	280.2	8.2
Ores and concentrates.....	102.3	5.7	106.7	6.0	153.2	6.0	163.9	7.1	187.0	6.3	206.6	6.6	218.4	6.4
Iron ore.....	81.6	4.6	86.5	4.9	124.9	4.9	135.2	5.8	151.3	5.1	170.8	5.5	184.1	5.4
Base metals and manufactures.....	249.6	13.9	302.2	17.1	415.2	16.3	455.2	19.6	520.5	17.6	584.1	18.7	655.4	19.2
Ferrous metals.....	164.3	9.2	193.0	10.9	273.4	10.7	245.8	14.9	392.3	13.3	451.7	14.5	509.7	14.9
Rolled ferrous metals.....	97.0	5.4	118.2	6.7	173.1	6.8	239.7	10.3	280.8	9.5	328.2	10.5	375.2	11.0
Nonferrous metals.....	85.3	4.8	109.2	6.2	141.9	5.6	100.4	4.7	128.2	4.3	132.4	4.2	145.7	4.3
Aluminum.....	13.3	.7	13.7	.8	25.0	1.0	24.4	1.1	21.7	.7	30.6	1.0	45.7	1.3
Tin.....	5.9	.3	4.5	.3	13.5	.5	8.1	.3	8.8	.3	6.3	.2	7.8	.2
Chemicals.....	36.1	2.0	39.7	2.2	48.1	1.9	52.8	2.3	58.3	2.0	63.2	2.0	73.6	2.2
Wood and wood products.....	20.5	1.1	35.6	2.0	84.6	3.3	82.9	3.6	87.7	3.0	98.7	3.2	117.0	3.4
Lumber.....	4.0	.2	14.3	.8	43.9	1.7	46.7	2.0	49.6	1.7	58.6	1.9	68.8	2.0
Textile raw materials and semimanufactures.....	264.3	14.7	262.2	14.8	248.7	9.8	243.9	10.5	241.8	8.2	283.2	9.1	293.3	8.6
Cotton.....	233.8	13.0	229.7	13.0	215.0	8.4	208.3	9.0	204.1	6.9	234.0	7.5	231.4	6.8
Consumer goods.....	285.7	15.9	241.2	13.6	667.9	26.2	423.8	18.3	660.2	22.4	575.7	18.5	513.3	15.0
Food.....	262.3	14.6	207.1	11.7	597.6	23.4	349.2	15.1	586.4	19.9	497.7	16.0	428.6	12.5
Grain.....	230.4	12.9	121.9	6.9	457.0	17.9	269.8	11.6	353.7	12.0	352.6	11.3	279.0	8.2
Other consumer goods.....	23.4	1.3	34.1	1.9	70.2	2.8	74.7	3.2	73.8	2.5	78.0	2.5	84.8	2.5
Other merchandise.....	68.0	3.8	82.1	4.6	81.1	3.2	66.1	2.8	87.0	2.9	94.4	3.0	113.7	3.3
Unspecified.....	340.9	19.0	316.0	17.9	316.8	12.4	281.3	12.1	388.2	13.2	383.9	12.3	480.8	14.3

¹ Because of rounding, components may not add to the totals shown.

TABLE 15.—Commodity composition of Soviet imports from European satellites, 1955-61

[Million U.S. dollars and percent of total]

	1955		1956		1957		1958		1959		1960		1961	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total imports ¹	1,662.8	100.0	1,815.0	100.0	1,914.8	100.0	2,205.7	100.0	2,519.3	100.0	2,819.4	100.0	3,065.9	100.0
Machinery and equipment.....	733.6	44.1	655.9	36.1	713.9	37.3	861.6	39.1	1,040.0	41.3	1,208.6	42.9	1,245.2	40.6
Transportation equipment.....	274.6	16.5	269.3	14.8	302.8	15.8	339.7	15.4	422.3	16.8	532.2	18.9	455.2	14.8
Fuels, lubricants, and related materials.....	233.9	14.1	227.8	12.6	184.6	9.6	190.1	8.6	209.0	8.3	215.7	7.7	198.1	6.5
Coal and coke.....	121.4	7.3	116.6	6.4	86.4	4.5	74.1	3.4	83.0	3.3	90.9	3.2	91.2	3.0
Petroleum and petroleum products.....	112.6	6.8	111.2	6.1	98.1	5.1	116.0	5.3	126.1	5.0	124.8	4.4	106.9	3.5
Ores and concentrates.....	152.9	9.2	152.5	8.4	140.7	7.3	160.8	7.3	122.0	4.8	102.4	3.6	91.9	3.0
Base metals and manufactures.....	37.2	2.2	39.6	2.2	30.4	1.6	35.1	1.6	56.2	2.2	94.8	3.4	126.3	4.1
Ferrous metals.....	11.0	.7	13.2	.7	17.4	.9	25.6	1.2	44.8	1.8	80.3	2.8	109.7	3.6
Rolled ferrous metals.....	4.8	.3	5.9	.3	11.2	.6	10.1	.5	9.6	.4	21.8	.8	35.2	1.1
Nonferrous metals.....	26.3	1.6	26.4	1.5	13.0	.7	9.4	.4	11.4	.5	14.6	.5	16.5	.5
Copper.....	.3	(²)	.2	(²)	.1	(²)	.2	(²)	.2	(²)	.1	(²)	.1	(²)
Chemicals.....	36.7	2.2	40.5	2.2	34.8	1.8	41.8	1.9	52.8	2.1	69.8	2.5	83.8	2.7
Rubber and rubber products.....	14.5	.9	14.9	.8	17.4	.9	19.6	.9	19.6	.8	21.9	.8	24.2	.8
Wood and wood products.....	36.2	2.2	39.5	2.2	37.5	2.0	35.9	1.6	37.0	1.5	45.2	1.6	50.0	1.6
Textile raw materials and semimanufactures.....	6.5	.4	12.5	.7	11.0	.6	9.5	.4	7.0	.3	8.3	.3	10.4	.3
Cotton.....			.4	(²)	.3	(²)								
Consumer goods.....	185.8	11.2	299.7	16.5	325.4	17.0	445.0	20.2	541.2	21.5	668.5	23.7	820.3	26.8
Food.....	111.6	6.7	85.1	4.7	77.7	4.1	122.5	5.6	122.4	4.9	169.8	6.0	251.8	8.2
Other consumer goods.....	74.2	4.5	214.6	11.8	247.7	12.9	322.5	14.6	418.8	16.6	498.7	17.7	568.6	18.5
Other merchandise.....	83.3	5.3	110.0	6.1	110.4	5.8	111.9	5.1	134.6	5.3	127.0	4.5	134.5	4.4
Unspecified.....	137.2	8.2	222.1	12.2	308.7	16.1	294.4	13.3	299.9	11.9	257.2	9.1	281.2	9.2

¹ Because of rounding, components may not add to the totals shown.² Negligible.

TABLE 16.—Commodity composition of Soviet exports to Communist China, 1955-61

[Million U.S. dollars and percent of total]

	1955		1956		1957		1958		1959		1960		1961	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total exports ¹	748.3	100.0	733.0	100.0	544.1	100.0	634.0	100.0	954.5	100.0	817.1	100.0	367.3	100.0
Machinery and equipment.....	229.6	30.7	304.7	41.6	271.6	49.9	318.0	50.2	597.5	62.6	503.9	61.7	108.1	29.4
Complete plants.....	141.5	18.9	216.9	29.6	209.0	38.4	166.2	26.2	399.8	41.9	373.8	45.7	78.9	21.5
Fuels, lubricants, and related materials.....	79.0	10.6	86.0	11.7	90.4	16.6	92.4	14.6	117.7	12.3	113.1	13.8	120.7	32.9
Petroleum and petroleum products.....	79.0	10.6	86.0	11.7	90.4	16.6	92.4	14.6	117.7	12.3	113.1	13.8	120.7	32.9
Ores and concentrates.....	.2	(?)	.2	(?)	.2	(?)	1.2	.2	1.3	.1	1.2	.1	-----	-----
Base metals and manufactures.....	88.5	11.8	78.4	10.7	40.8	7.5	76.7	12.1	54.5	5.7	69.8	8.5	41.2	11.2
Ferrous metals.....	75.7		60.5	8.3	32.4	6.0	60.9	9.6	48.0	5.0	59.3	7.3	34.7	9.4
Rolled ferrous metals.....	53.7	7.2	43.7	6.0	21.4	3.9	36.8	5.8	29.4	3.1	39.2	4.8	19.3	5.3
Nonferrous metals.....	12.8	1.7	17.9	2.4	8.4	1.5	15.8	2.5	6.4	.7	10.5	1.3	6.5	1.8
Aluminum.....	.1	(?)	.1	(?)	(?)	(?)	9.2	1.5	.2	(?)	2.6	.3	1.6	.4
Chemicals.....	4.8	.6	2.1	.3	3.2	.6	3.9	.6	3.9	.4	9.7	1.2	5.7	1.6
Wood and wood products.....	12.2	1.6	10.8	1.5	6.0	1.1	.5	.1	.6	.1	.8	.1	2.9	.8
Consumer goods.....	6.3	.8	6.0	.8	7.7	1.4	9.2	1.5	6.6	.7	4.7	.6	67.6	18.4
Food.....	1.0	.1	.7	.1	.9	.2	1.1	.2	.5	.1	(?)	(?)	63.8	17.4
Other consumer goods.....	5.3	.7	5.3	.7	6.8	1.2	8.1	1.3	6.1	.6	4.7	.6	3.8	1.0
Other merchandise.....	5.3	.7	5.7	.8	3.6	.7	11.2	1.8	6.9	.7	6.9	.8	2.0	.5
Unspecified.....	322.4	43.1	239.1	32.6	120.6	22.2	120.9	19.1	165.5	17.3	107.0	13.1	19.1	5.2

¹ Because of rounding, components may not add to the totals shown.² Negligible.

TABLE 17.—Commodity composition of Soviet imports from Communist China, 1955-61

[Million U.S. dollars and percent of total]

	1955		1956		1957		1958		1959		1960		1961	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total imports ¹	643.5	100.0	764.2	100.0	738.1	100.0	881.2	100.0	1,100.3	100.0	848.1	100.0	551.4	100.0
Machinery and equipment.....	10.3	1.6	9.2	1.2	6.4	.9	4.3	.5	12.4	1.1	.7	(?)	.3	(?)
Transportation equipment.....	10.3	1.6	9.2	1.2	6.4	.9	4.3	.5	12.1	1.1				
Fuels, lubricants, and related materials.....	5.0	.8	2.1	.3	1.9	.3	3.0	.3	2.8	.3	2.6	.3	2.5	.5
Coal and coke.....	5.0	.8	2.1	.3	1.9	.3	2.8	.3	2.7	.2	2.6	.3	2.5	.5
Petroleum and petroleum products.....			(?)	(?)			.2	(?)	.1	(?)				
Ores and concentrates.....	62.2	9.7	75.5	9.9	89.9	12.2	74.0	8.4	73.3	6.7	61.2	7.2	48.3	8.8
Base metals and manufactures.....	82.5	12.8	77.7	10.2	58.5	7.9	68.1	7.7	62.5	5.7	61.7	7.3	42.9	7.8
Ferrous metals.....	26.3	4.1	27.3	3.6	6.8	.9	19.2	2.2	7.6	.7	12.8	1.5	8.7	1.6
Rolled ferrous metals.....			4.7	.6	2.1	.3	8.3	.9	.3	(?)				
Nonferrous metals.....	56.2	8.7	50.4	6.6	51.7	7.0	48.9	5.5	54.9	5.0	48.9	5.8	34.2	6.2
Tin.....	47.9	7.4	32.4	4.2	45.5	6.2	39.3	4.5	41.7	3.8	34.8	4.1	22.4	4.1
Chemicals.....	7.7	1.2	20.5	2.7	14.0	1.9	17.3	2.0	10.5	1.0	13.0	1.5	6.6	1.2
Wood and wood products.....	.4	(?)	.3	(?)	.5	(?)	1.0	.1	1.0	.1	1.0	.1	.3	.1
Rubber and rubber products.....	.7	.1	12.9	1.7	37.2	5.0	28.1	3.2	23.1	2.1	11.6	1.4	3.4	.6
Textile raw materials and semimanufactures.....	59.5	9.2	58.6	7.7	49.0	6.6	37.5	4.3	91.6	8.3	65.3	7.7	22.9	4.2
Cotton.....									52.3	4.8	33.9	4.0	8.0	1.5
Wool.....	23.6	3.7	21.4	3.8	23.9	3.2	21.2	2.4	21.9	2.0	19.4	2.3	10.4	1.9
Consumer goods.....	245.0	38.1	316.5	41.4	294.8	39.9	481.3	54.6	643.1	58.4	516.9	60.9	361.2	65.5
Food.....	183.5	28.5	209.5	27.4	137.9	18.7	230.1	26.1	219.1	19.9	127.9	15.1	17.4	3.2
Other consumer goods.....	61.5	9.6	107.0	14.0	156.9	21.3	251.2	28.5	424.0	38.5	389.0	45.9	343.8	62.4
Other merchandise.....	170.1	26.4	190.8	25.0	184.3	25.0	162.5	18.4	172.9	15.7	97.3	11.5	31.3	5.7
Unspecified.....	.1	(?)	.1	(?)	1.6	.2	4.1	.5	7.1	.6	16.8	2.0	31.7	5.7

¹ Because of rounding, components may not add to the total as shown.

² Negligible.

TABLE 18.—Commodity composition of Soviet exports to industrial West, 1955-61

[Million U.S. dollars and percent of total]

	1955		1956		1957		1958		1959		1960		1961	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total exports ¹	543.7	100.0	597.2	100.0	690.1	100.0	669.6	100.0	855.5	100.0	971.8	100.0	1,060.0	100.0
Fuels, lubricants, and related materials.....	72.3	13.3	101.8	17.0	145.1	21.0	143.7	21.5	207.7	24.3	245.8	25.3	279.3	26.3
Coal and coke.....	27.2	5.0	39.0	6.5	49.1	7.1	53.3	8.0	55.0	6.4	57.1	5.9	65.1	6.1
Petroleum and petroleum products.....	45.1	8.3	62.8	10.6	9.0	13.9	90.4	13.5	152.7	17.9	188.7	19.4	214.0	20.2
Ores and concentrates.....	12.8	2.4	22.4	3.8	28.6	4.1	23.9	3.6	25.6	3.0	33.1	3.4	31.4	3.0
Manganese ore.....	7.7	1.4	16.2	2.7	21.7	3.1	16.2	2.4	14.6	1.7	14.9	1.5	13.3	1.3
Base metals and manufactures.....	52.2	9.6	90.4	15.1	112.9	16.4	95.3	14.2	95.5	11.2	111.3	11.5	118.6	11.2
Ferrous metals.....	42.2	7.8	63.9	11.7	65.8	9.5	33.1	4.9	47.0	5.5	70.9	7.3	80.9	7.6
Pig iron.....	24.8	4.6	34.7	5.8	30.3	4.4	12.4	1.9	23.8	2.8	34.7	3.6	40.6	3.8
Rolled ferrous metals.....	7.9	1.5	13.4	2.2	17.8	2.6	10.3	1.5	11.8	1.4	18.9	1.9	24.0	2.3
Nonferrous metals.....	10.0	1.8	26.5	4.4	47.1	6.8	62.3	9.3	48.5	5.7	40.3	4.1	37.7	3.6
Tin.....			1.0	.2	21.9	3.2	32.2	4.8	23.7	2.8	13.1	1.3	1.8	.2
Aluminum.....	2.8	.5	17.2	2.9	14.5	2.1	20.8	3.1	15.2	1.8	7.3	.8	6.6	.6
Wood and wood products.....	112.4	20.7	95.3	16.0	115.8	16.8	122.9	18.4	129.4	15.1	157.2	16.2	177.3	16.7
Lumber.....	73.2	13.5	63.7	10.7	79.5	11.5	75.1	11.2	83.8	9.8	99.0	10.2	106.7	10.1
Textile raw materials and semimanufactures.....	65.4	12.0	58.7	9.8	42.0	6.1	39.3	5.9	60.5	7.1	70.1	7.2	52.1	4.9
Cotton fibers.....	47.4	8.7	34.5	5.8	26.6	3.9	22.0	3.3	39.2	4.6	50.3	5.2	34.7	3.3
Consumer goods.....	107.8	19.8	117.0	19.6	135.9	19.7	123.4	18.4	171.7	20.1	169.1	17.4	207.3	19.6
Food.....	70.0	12.9	77.4	13.0	96.1	13.9	85.0	12.7	126.4	14.8	117.2	12.1	158.1	14.9
Grain.....	47.5	8.8	54.1	9.1	68.2	9.9	63.1	9.4	99.1	11.6	85.3	8.8	128.2	12.1
Other consumer goods.....	37.8	7.0	39.6	6.7	39.8	5.8	38.4	5.7	45.3	5.3	51.9	5.3	49.2	4.6
Furs and pelts.....	35.6	6.6	36.2	6.1	35.7	5.2	34.1	5.1	39.9	4.7	44.2	4.5	41.4	3.9
Other merchandise.....	68.4	12.6	75.8	12.7	83.1	12.0	93.4	13.9	120.1	14.0	146.1	15.0	128.4	12.1
Unspecified.....	52.4	9.7	35.8	6.0	26.9	3.9	27.6	4.1	45.2	5.3	39.1	4.0	65.6	6.2

¹ Because of rounding, components may not add to the totals shown.

TABLE 19.—Commodity composition of Soviet imports from the industrial West, 1955-61

[Million U.S. dollars and percent of total]

	1955		1956		1957		1958		1959		1960		1961	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total imports ¹	430.7	100.0	578.8	100.0	672.5	100.0	622.2	100.0	756.5	100.0	1,069.5	100.0	1,092.2	100.0
Machinery and equipment.....	181.5	42.2	229.2	39.6	217.3	32.3	194.1	31.2	293.9	38.8	456.4	42.7	474.4	43.4
Chemical equipment.....			.3	.1	7.4	1.1	19.5	3.1	77.8	10.3	135.4	12.7	131.9	12.1
Transport equipment.....	101.4	23.5	145.7	25.2	97.3	14.5	76.7	12.3	91.6	12.1	121.1	11.3	66.1	6.1
Base metals and manufactures.....	53.4	12.4	123.0	21.3	146.3	21.8	161.9	26.0	219.1	29.0	297.2	27.8	241.8	22.1
Ferrous metals.....	12.3	2.9	74.0	12.8	104.2	15.5	106.3	17.1	175.9	23.3	252.1	23.6	186.5	17.1
Rolled ferrous metals.....	8.1	1.9	65.9	11.4	88.8	13.2	97.6	15.7	94.4	12.5	135.7	12.7	96.5	8.8
Pipes.....	1.3	.3	2.6	.4	5.3	.8	1.1	.2	68.9	9.1	101.9	9.5	80.8	7.4
Nonferrous metals.....	41.1	9.5	49.1	8.5	42.1	6.3	55.6	8.9	43.3	5.7	45.1	4.2	55.3	5.1
Copper.....	40.2	9.3	45.9	7.9	40.5	6.0	54.1	8.7	35.7	4.7	38.2	3.6	32.0	2.9
Wood and wood products.....	48.9	11.4	63.5	11.0	77.4	11.5	63.4	10.2	49.2	6.5	52.2	4.9	69.3	6.3
Textile raw materials and semimanufactures.....	29.6	6.9	40.7	7.0	61.2	9.1	60.7	8.1	43.3	5.7	79.5	7.4	81.4	7.5
Wool fibers.....	18.4	4.3	20.2	3.5	34.4	5.1	17.1	2.7	10.2	1.3	48.1	4.5	37.1	3.4
Synthetic fibers.....	7.3	1.7	15.4	2.7	15.0	2.2	18.9	3.0	20.1	2.7	12.9	1.2	26.3	2.4
Consumer goods.....	43.1	10.0	64.3	11.1	64.6	9.6	71.5	11.5	56.8	7.5	46.0	4.3	73.5	6.7
Other merchandise.....	28.7	6.7	54.2	9.4	67.9	10.1	70.0	11.3	85.4	11.3	115.2	10.8	118.6	10.9
Unspecified.....	45.5	10.7	3.9	.7	37.8	5.6	10.6	1.7	8.8	1.2	23.0	2.2	33.2	3.0

¹ Because of rounding, components may not add to the totals shown.

TABLE 20.—*Commodity composition of Soviet exports to underdeveloped countries, 1955-61*

[Million U.S. dollars and percent of total]

	1955		1956		1957		1958		1959		1960		1961	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total exports ¹	128.4	100.0	248.6	100.0	355.9	100.0	439.6	100.0	389.3	100.0	471.7	100.0	819.2	100.0
Machinery and equipment.....	5.4	4.2	26.3	10.6	103.5	29.1	171.9	39.1	118.2	30.4	147.0	31.2	301.5	36.8
Complete plants.....	1.1	.9	7.6	3.1	47.2	13.3	112.3	25.5	69.3	17.8	68.6	14.6	140.9	17.2
Petroleum and petroleum products.....	36.2	28.2	45.7	18.4	58.7	16.5	85.6	19.5	88.3	22.7	97.6	20.7	119.8	14.6
Rolled ferrous metals.....	16.2	12.6	43.1	17.3	48.7	13.7	36.9	8.4	31.5	8.1	35.9	7.6	49.4	6.0
Wood and wood products.....	16.1	12.5	16.7	6.7	21.0	5.9	31.0	7.1	30.7	7.9	42.9	9.1	58.8	7.2
Food.....	11.4	8.9	58.5	23.5	50.0	14.0	51.7	11.8	52.8	13.6	51.3	10.9	83.6	10.2
Other merchandise.....	38.7	30.1	56.2	22.6	69.2	19.4	59.3	13.5	62.5	16.0	82.9	17.6	138.5	16.9
Unspecified.....	4.4	3.4	2.1	.8	4.8	1.3	3.3	.8	5.3	1.4	14.1	3.0	67.6	8.3

¹ Because of rounding, components may not add to the totals shown.

TABLE 21.—Commodity composition of Soviet imports from the underdeveloped countries, 1955-61

[Million U.S. dollars and percent of total]

	1955		1956		1957		1958		1959		1960		1961	
	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent	Value	Percent
Total imports ¹	225.7	100.0	346.2	100.0	492.2	100.0	531.9	100.0	575.2	100.0	731.9	100.0	950.7	100.0
Cotton.....	18.9	8.4	53.5	15.5	122.6	24.9	135.2	25.4	111.6	19.4	139.4	19.0	122.0	12.8
Natural rubber.....	25.5	11.3	96.8	28.0	67.6	13.7	131.4	24.7	144.0	25.0	151.8	20.7	224.8	23.6
Food.....	103.4	45.8	91.2	26.3	153.2	31.1	103.6	19.5	115.0	20.0	232.4	31.8	403.2	42.4
Nonferrous metals.....	.2	neg	2.1	.6	2.6	.5	9.1	1.7	49.5	8.6	45.8	6.3	30.0	3.2
Other merchandise.....	57.7	25.6	91.7	26.5	130.8	26.6	143.7	27.0	145.4	25.3	160.1	21.9	153.1	16.1
Unspecified.....	20.0	8.9	10.9	3.1	15.4	3.1	8.8	1.7	9.7	1.7	2.4	.3	17.6	1.9

¹ Because of rounding, components may not add to the totals shown.

TABLE 22.—Trends in foreign trade between the U.S.S.R. and selected free world countries, 1955-61

[Millions U.S. dollars]

	1955	1956	1957	1958	1959	1960	1961
Free world, total.....	1,379.7	1,881.3	2,319.0	2,370.7	2,699.8	3,287.3	4,052.0
Industrial West.....	974.3	1,176.0	1,362.6	1,291.8	1,612.0	2,041.3	2,152.2
Finland.....	234.0	261.0	315.7	254.4	286.6	293.4	282.7
United Kingdom.....	240.3	222.6	288.2	218.5	256.6	300.6	355.0
West Germany.....	53.1	109.9	133.2	137.7	209.4	318.0	298.1
France.....	95.8	120.2	114.5	167.7	188.3	203.7	199.9
Italy.....	33.8	59.9	74.5	73.9	130.8	193.0	226.2
Sweden.....	45.5	60.7	56.6	58.3	86.0	99.6	103.2
Belgium.....	39.3	61.3	58.8	39.2	37.0	51.4	67.6
Netherlands.....	66.3	51.8	65.7	74.7	79.8	69.9	75.9
United States.....	24.4	32.0	26.1	30.9	43.5	84.6	75.0
Underdeveloped countries...	354.1	594.8	848.1	971.5	964.5	1,203.6	1,769.9
Cuba.....	35.7	14.6	47.2	15.5	7.4	174.6	587.8
Egypt.....	26.4	88.8	193.1	194.7	180.6	191.1	204.9
India.....	11.7	58.7	126.7	180.9	128.5	115.6	162.3
Malaya.....	21.8	84.3	49.4	118.0	127.6	113.7	171.6
Yugoslavia.....	33.9	118.8	129.9	102.0	99.4	108.2	90.6
Afghanistan.....	24.5	33.4	38.8	35.7	44.0	48.9	59.1
Argentina.....	52.1	32.1	25.5	33.2	44.7	35.7	30.4
Iran.....	41.6	34.4	50.2	53.9	36.7	37.0	36.4
Indonesia.....	3.8	13.1	25.5	38.8	26.8	47.7	65.2
Other countries.....	51.3	110.5	108.3	107.4	123.3	42.4	129.9

