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ALLOCATION OF RESOURCES IN THE SOVIET UNION AND CHINA—1986

HEARINGS

BEFORE THE

SUBCOMMITTEE ON NATIONAL SECURITY ECONOMICS

OF THE

JOINT ECONOMIC COMMITTEE CONGRESS OF THE UNITED STATES

ONE HUNDREDTH CONGRESS

FIRST SESSION

PART 12

EXECUTIVE SESSIONS

MARCH 19 AND AUGUST 3, 1987

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ALLOCATION OF RESOURCES IN THE SOVIET UNION AND CHINA—1986

THURSDAY, MARCH 19, 1987

CONGRESS OF THE UNITED STATES,
SUBCOMMITTEE ON NATIONAL SECURITY ECONOMICS
OF THE JOINT ECONOMIC COMMITTEE,
Washington, DC.

The subcommittee met, pursuant to notice, at 10 a.m., in room SD-628, Dirksen Senate Office Building, Hon. William Proxmire (chairman of the subcommittee) presiding.

Present: Senators Proxmire, Melcher, and Bingaman; and Representatives Scheuer and McMillan.

Also present: Richard F Kaufman, general counsel.

OPENING STATEMENT OF SENATOR PROXMIRE, CHAIRMAN

Senator PROXMIRE. For this year's hearings, I have asked that we devote the first section to the Soviet Union. Hopefully, we will deal with China on other occasions; however, there have been so many changes and substantive developments in the Soviet Union that there will hardly be time to cover the topics in this area in one morning.

In my letter to the CIA and the DIA requesting testimony for this hearing, I have asked that the focus be on several important issues.

First, I asked for an assessment of Gorbachev's modernization program, the effects his policies have had on economic performance so far and prospects for the future. I asked that the testimony cover the competing demands for military and civilian modernization and the effects efforts to modernize the economy might have on arms control. In that regard, I hope to get the estimates of potential savings from arms and potential agreements such as those discussed at Reykjavik. I asked for a more cohesive and detailed discussion of the Soviet defense sector than we have been getting in the past several years.

The key issue in defense concerns the effects of modernization on the Soviet defense sector and the implications for the West of Soviet success or failure in the modernization program.

Finally, I would like to have a full discussion of Soviet external relations, including the recent trade initiatives and the effect of changes in Soviet-Chinese relations.

I want to thank again both Agencies, the CIA and the DIA. I think you've done a superlative job over the years. There's been a great deal of interest expressed in this by the press and by the

people in general, by Members of Congress. It's the one kind of insight that we've had consistently for a number of years now into the economy of the Soviet Union, as well as China. Of course, we all know that has enormous implications, fundamental implications for the military capability.

We also, of course, have got an insight into that on a very frank and helpful basis.

I want to thank you so much for your frankness. I would hope that you would do your best, as you have in the past to sanitize the hearings, so we can make them available as soon as possible and discuss them with our colleagues and the public.

Mr. McMillan.

Representative MCMILLAN. I have no opening statement.

Senator PROXMIRE. Senator Bingaman.

Senator BINGAMAN. I have no statement.

Senator PROXMIRE. The distinguished Senator from Montana, John Melcher is now entering. I will ask him if he has an opening statement.

Senator MELCHER. No, I haven't, Mr. Chairman.

Senator PROXMIRE. Mr. MacEachin, go ahead.

Mr. MACEACHIN. Senator Proxmire, let me introduce myself for those who don't know me. My name is Douglas MacEachin, Director of Soviet Analysis for the CIA. I will introduce my colleagues. Mr. Jim Noren, who has appeared before this committee on several occasions. He is the head of our Defense Economics Group. Mr. Abbott, here on your right, who is the Chief of our Defense Economics Division, and who has also done a good deal of work on Soviet internal political issues on previous assignments, and Mr. Whitehouse, who is Chief of our Economic Performance Division, and finally, Mr. Schleifer, who is a branch chief in the Defense Economics Division, and who gets much of the credit for the work on drafting and coordinating the paper which was submitted to the committee.

If my colleague, Admiral Schmitt, could introduce his team, please.

Admiral SCHMITT. I am Admiral Schmitt, Deputy Director of the Defense Intelligence Agency, and with me today are Mr. Dennis Nagy, who heads up our Defense Intelligence Section. He is supported by Mr. Jerome Weinstein, who has been up before this committee many times in the past, who is our senior expert on the Soviet military economy. He is assisted by Mr. Michael Berry and Mr. John Gorson.

Mr. MACEACHIN. Senator——

Senator PROXMIRE. I might say to both you gentlemen that I have your joint prepared statement. Mr. MacEachin, if you would like to abbreviate your statement, we would appreciate that. Then we can move right ahead into questions. I realize it is an excellent statement, but is is rather long, and it would be helpful if you could abbreviate it, and we would move ahead to questions right away.

STATEMENT OF DOUGLAS MacEACHIN, DIRECTOR, SOVIET ANALYSIS, CENTRAL INTELLIGENCE AGENCY, ACCOMPANIED BY JAMES NOREN, CHIEF, DEFENSE AND ECONOMICS ISSUES GROUP, OFFICE OF SOVIET ANALYSIS; MR. ABBOTT, CHIEF, DEFENSE ECONOMICS DIVISION; MR. WHITEHOUSE, CHIEF, ECONOMIC PERFORMANCE DIVISION; AND MR. SCHLEIFER, BRANCH CHIEF, DEFENSE ECONOMICS DIVISION

SOVIET UNION

Mr. MACEACHIN. Yes, sir, Senator Proxmire. That was my intention. I would like to just hit what I think are some very critical issues in the entire setting of the Soviet economic problem and leave as much time for answering questions as possible. In so doing, I will try to outline the issues as sharply as possible, with some risk of oversimplification.

GORBACHEV'S REFORMS

There had developed, it is now clear, even before Gorbachev assumed the position of General Secretary, a consensus among a sizable portion of the Soviet political elite that the need to revitalize their economy was reaching a critical stage. The Soviets had a consensus on what they thought they needed to do. As is now clear, however, there was no agreement on a single plan of how to do it or how fast to go. The plan that was submitted under the Gorbachev leadership, essentially, did not change or envisage any change in the fundamentals of the Soviet system.

Indeed, it is clear that Gorbachev thought he could accomplish his economic goals by using the traditional levers of the Soviet system—coercion—and working within the system through a central plan which would somehow solve their problems.

When I say "coercion," that is the term we could use to look at his first approach, which was to deal with the human factors. Gorbachev dealt with corruption, drunkenness, discipline, moving the large body of human resources in the Soviet Union through sheer force. This is not a new tactic for the Soviet leadership. It has taken various forms under various Soviet leaders, and he achieved some results from this. We would think that much of the improved economic performance in the last year or so is attributable to the increased productivity he achieved through his human factors campaign.

For the longer term, his fundamental plan called for modernization of the Soviet industrial base. In effect, he was going to increase productivity, first, through this human factors campaign and for the longer term through massive doses of investment in machine building. We foresaw major problems for him. First, it was our view that the system that he thought he could exercise to this end would, in effect, stymie him, block him. He had used coercion on the human factors, but he still had not dealt with what I would call positive incentives. That is, the incentives to overcome the cynicism of a population that believed it had seen this before and a managerial system which had strong disincentives for creativity, enterprise, and initiative. And finally, he also had to con-

tend with a large number of sinecures, which had grown up over the last 18 years under the Brezhnev leadership.

A second major area of problems we saw was that he was going to face competing demands for a limited pie of investment. His machinery plan essentially called for massive doses of investment to develop new civilian machinery, which was to increase the productivity of the industrial base. His original plan, in fact, as outlined in some public statements, appeared to attempt or envisage holding investment nearly constant in most other areas, although when it finally appeared allowed for some growth in investment in energy and agriculture. It was still, at the risk of oversimplification, a single channel concentrated investment scheme.

Well, in our view, he can't do this for very long. He faces some demands for this investment pie from a number of sources, including the military and the energy sector. Let me address those two in order first.

DEFENSE INVESTMENT

In the case of the military, the Soviet Union is now living off a massive investment in defense industry that took place in the late 1970's and the early 1980's. Virtually all the weapons systems that we would envisage being delivered in the field to the forces between now and about 1990 can be produced in plants and with machine tools which have already been put in place, but there will come a time in the next year or so we think: when the question of cutting tools for the next generation of weapons systems will be a serious issue, and when the debates begin on the next Five Year Plan. It is clear that the military is going to have to be dealt with, insofar as its share of investments is concerned.

ENERGY

In energy, I can give one example, and we can go into it in more detail later, but our calculations show that the present levels of investment are not going to enable the Soviets to maintain production of oil, certainly not at the 12 million barrels per day that the plan calls for, and I think it is even short of what is required to keep production from falling below 11 million barrels per day.

AGRICULTURE

In agriculture, the plan calls for another record year, although the U.S.S.R. just had a very good year in which it had very good weather, good luck. Down the road, there is going to be a demand from agriculture for increased investment.

And finally, the consumer is going to have to see some results from this plan if he is going to have the kind of positive incentives needed to sustain the commitment to the program that Gorbachev needs.

Finally, of course, as this committee is well aware, the Soviets have encountered a serious decline in their hard currency earnings from the principal export, oil, in the last few years and have been forced to compensate for this, so far, largely through gold sales.

In sum, Mr. Chairman, we see some very tough decisions coming up within the next year or two, decisions which will be politically difficult and will address very serious economic issues.

OBSTACLES TO REFORM

Gorbachev appears now to have recognized that he is, indeed, running into the kinds of systemic problems that we anticipated. If we asked him, he would not describe himself as having started out as a reformer, and he probably would not describe himself now as reforming a system. We think he would be more likely to describe himself as a true Leninist trying to make the system work the way it was supposed to work. Nonetheless, facing resistance and blockage to his plans, he has taken the first steps toward challenging some fundamental aspects of the system.

If I could use the metaphor of "boxing," he has not landed many heavy blows, as yet, but he is clearly jabbing at some very sensitive issues, as was most recently seen in the statements he made at the recent Party plenum. This has created a great deal of political tension in the Soviet Union, and it now raises the question of success or failure of his plan to a level of political decisionmaking. We think, in fact, that he may also recognize that he has these very difficult decisions ahead, and he is going to need a firmer grip on the political instruments of implementation. So far, he has concentrated and has had the most success in getting the lineups he needs at the Politburo level, but the vast bureaucracy of both party and state and the regional Party apparatuses are what is going to determine the success or failure of the implementation of his plan.

So far, these have been the principal areas of resistance.

In sum, Mr. Chairman, I think it is going to be a tumultuous year ahead, politically, in the Soviet Union.

CONSEQUENCES OF SUCCESSFUL REFORM

The question specifically asked, what if he succeeds?

Asked in the abstract, that is a very difficult question for us to answer. Certainly, if he makes the present system become more effective and is able to limit his changes to the system to the minimum necessary, we could be facing an opponent, whose opposition to our security interests remain, but who is more effective.

On the other hand, if there is, accompanying this program, changes in the basic social instruments in the Soviet Union, an opening up to a greater exchange of ideas, greater democratization, it certainly will not look like anything that we would describe as liberal democracy in the West, but it could move the system.

So in that regard, we can say that the glass could be half empty or half full, depending on the extent to which he undertakes those kinds of changes.

I think I will stop there and let the Admiral speak.

Senator PROXMIRE. Thank you very much. Admiral Schmitt, go right ahead.

STATEMENT OF REAR ADM. ROBERT SCHMITT, DEPUTY DIRECTOR, DEFENSE INTELLIGENCE AGENCY, ACCOMPANIED BY DENNIS NAGY, CHIEF, DEFENSE INTELLIGENCE SECTION; JEROME WEINSTEIN, SENIOR EXPERT, SOVIET MILITARY ECONOMY; MICHAEL BERRY; AND JOHN GORSON

SOVIET DEFENSE BURDEN

Admiral SCHMITT. I also would like to add to the statement I have for the record and concentrate just on a few points.

As you know, we, in DIA, concentrate on the defense burden side of the Soviet economy.

I would like to address, first off, the arms control issue.

Incentives for arms control appear to exist. Because of the growing burden of defense in the U.S.S.R., since at least 1970, the growth of defense spending has outpaced economic growth in the Soviet Union, and as a result, the share of gross national product devoted to defense has grown from 12 to 14 percent in 1970 to 15 to 17 percent by the mid-1980's. We have seen no change in the past year on that score.

The priority to defense has been at the expense of other sectors of the economy, and that is a major factor behind the insufficient attention given to the Soviet industrial base, which Gorbachev's modernization program seeks to address.

While the military requirements will continue to be the primary determinants of Soviet policies on arms control, Gorbachev's economic modernization program has created an additional incentive to define those requirements so as to minimize the immediate need for significant growth in military costs.

What the Soviets appear to want are agreements that allow them to complete their program for economic and technological development, while they continue to strive to meet near-term defense requirements within the bounds of the current spending constraints.

Furthermore, while the military sector has been called upon to assist the civil sector, and this may be occurring at the margin, the arms control agreements during the next few years is just as likely, in DIA's view, to result in resources being transferred to other military programs. The goals of the modernization program set forth by Gorbachev are directed at redressing past neglect of important sectors of the economy to ensure a strong economic base that will, among other things, support future military requirements for more sophisticated military systems.

INDUSTRIAL MODERNIZATION PROGRAM

The industrial modernization program seeks to raise the technological level of the machinery and equipment manufacturing sector, which is ultimately the source of Soviet and military super power might. Key areas within that sector that will, with military support, receive priority investments and undergo rapid growth are electronics, computers, robotics, machine tools, and instruments.

For the short-term outlook, the rest of the 1980's, military procurement during this time will continue to show some growth.

Considerable momentum exists in the weapons procurement process. The current generation of weapons systems are being produced on already built production lines that have resulted in high levels of investment in the military of the 1970's.

If modernization does not proceed as rapidly as planned, hard resource allocation decisions could lie ahead in the 1990's, when the resources will be needed for the next generation of systems.

WEAPONS PROCUREMENT

I have included for the committee, tables on the production of major weapons systems of the Soviet armed forces in the years 1975 to 1986. These data represent the latest results of the annual review by DIA and CIA on Soviet weapons production estimates. The trends and the quantities of these weapons have generally been fairly level or somewhat downward.

It is important to bear in mind that in most categories the weapons being produced today are much more sophisticated and technologically complex and capable than those produced in prior years. This additional technology in each weapon usually drives the unit costs higher than its predecessors. The higher unit costs can and, in fact, most often do offset the decreases in quantities.

Since the early 1980's, there has been consistent growth in the cost of all major categories of weapons, except missiles. Most dynamic have been the increases in spacecraft, although this is only a small share of the total. In 1986, our estimate of major procurement growth was led by aircraft and space systems, primarily Blackjack aircraft, the space plane and the new convoy transport aircraft.

We expect a trend toward more advanced weapons to continue. Moderate increases are anticipated in strategic missiles, tactical aircraft, and at least certain types of naval ships, including submarines.

One of the main reasons we expect to see little change over the next few years in weapons procurement is the trends in both the output and labor force in the machinery producing sector. This sector, which is the main producer of the nation's military hardware, investment goods and consumer durables, is divided into 9 military and 11 civilian ministries. Because some military production takes place in the civilian ministries and vice versa, the output of the nine military ministries cannot be equated to the value of military procurement, but the growth of this portion of the machinery sector, which is used for the nation's weapons requirements, can be used as a proxy for procurement.

The results of this analysis are reflected in the prepared table and shows that output and employment in defense industries have grown faster than their counterpart civil ministries, with the result that the defense ministries' share of both indicators had increased over time, now accounting for some 60 percent of the entire machinery sector.

The long-term direction of the growth has been consistent. Trends such as these are extremely difficult to reverse, especially in the near term. Therefore, for the next few years, we expect the military ministry to continue to predominate.

Our anlaysis of the military ministries is based largely on Soviet published statistics. These data need interpretation. We believe them to be reasonably accurate and reliable. In fact, we know that Soviet economists and planners themselves use the same data. Rather than distort or misstate information which they consider secretive—secret or sensitive, the Soviets simply do not publish some statistics.

LONG-TERM GOALS

In summary, let me stress that continued near-term alternations should not be considered as a barometer of change for the Soviet Union's overall long-term goals. The Soviets continue to pursue their global ambitions. They seek to modernize their military and to expand the influence of the Soviet Union and international socialism.

DIA does not believe that the real intent of Gorbachev's reforms is to create an open society, rather we believe he seeks economic efficiency and modernization of the Soviet system without giving up any Communist Party control and to establish a more enlightened dictatorship, if you will. Gorbachev knows he cannot retain the U.S.S.R.'s super power status based solely on military might with a stagnated economy and an unengaged populace. He needs a growing effective economy to support Soviet military power in the 1990's and beyond.

Whether or not the economic and technological modernization programs are successful and the arms control agreements are achieved, we, in the United States, will continue to be challenged by the Soviet Union's growing military power into the next decade. Whether the reforms succeed or fail will determine the nature of the challenge faced by us.

Should the reforms be successful, a stonger Soviet Union would result in greater self-confidence of their leadership and a more aggressive Soviet posture in world affairs, in our view.

Should the reforms fail, the return to orthodox communist rigidity would result in a transition period of instability and the calculations of their outgoing leadership lose their objectivity, and they become more willing to take higher risks.

Military confrontations on the global scene would be heightened in this period of transition, in our view. That completes my statement.

[The joint prepared statement of Mr. MacEachin and Admiral Schmitt follows:]

JOINT PREPARED STATEMENT OF DOUGLAS MacEACHIN AND

REAR ADM. ROBERT SCHMITT

Gorbachev's Modernization Program: A Status Report

19 March 1987

A paper presented by the Central Intelligence Agency
and the Defense Intelligence Agency for Submission to
the Subcommittee on National Security Economics
of the Joint Economic Committee,
Congress of the United States

Gorbachev's Modernization Program: A Status Report

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Introduction

Since coming to power in March 1985, Mikhail Gorbachev has put forward the most ambitious program for economic, political, and social change since Nikita Khrushchev, often linking the USSR's ability to maintain its status as a military "superpower" to the success of his efforts. This joint CIA-DIA report provides an initial evaluation of Gorbachev's program. It begins by describing Gorbachev's policies and assessing their impact on the economy's performance in 1986. The paper then analyzes the future direction of his economic modernization program in light of the 1987 Plan and the demands for continued military force development. Finally, the paper addresses Soviet economic prospects over the longer term, highlighting problems the USSR will face if Gorbachev's program fails to bring about the intended acceleration in economic growth.

Gorbachev's Challenge: Accelerate Growth, Upgrade Technology

At the time Gorbachev took over, the Soviet economy was in the midst of a decade long slump, averaging just over two percent GNP growth per year in 1976-85. Of the other major industrialized countries, only the United Kingdom had a lower average growth rate during this ten-year period. Although Soviet economic growth after 1980 was as good or better than that of most other major industrialized nations except for the United States and Japan, this was more a reflection of a slide in economic growth in Western nations than a recovery of the Soviet economy (see table 1). Indeed, it was clear at the time Gorbachev became General Secretary that overall GNP growth during the 1981-85 Five-Year Plan (FYP) was going to be the smallest percentage increase of any FYP period. In fact, GNP had increased by less than 1.5 percent in 1984, and during the first quarter of 1985--just before Gorbachev took over--production was essentially flat.

Table 1

Average Annual Growth Rates of Real GNP
(percent)

	1961-65	1966-70	1971-75	1976-80	1981-85
USSR	5.0	5.3	3.4	2.3	1.9
US	4.7	3.0	2.5	3.4	2.4
Japan	10.0	11.0	4.3	4.0	3.9
France	5.8	5.4	4.0	3.3	1.2[1]
West Germany	4.8	4.2	2.1	3.3	1.2
Italy	5.2	6.2	2.4	3.8	0.8[1]
UK	3.2	2.5	2.1	1.6	1.7[1]

[1]Data are for gross domestic product (GDP). The difference between GNP and GDP, net factor income from abroad, is small.

Note: Growth rates are measured in national currencies.

Sources: USSR: CIA estimates
Western countries: 1961-80, OECD, National Accounts
1981-85, IMF, International Financial Statistics

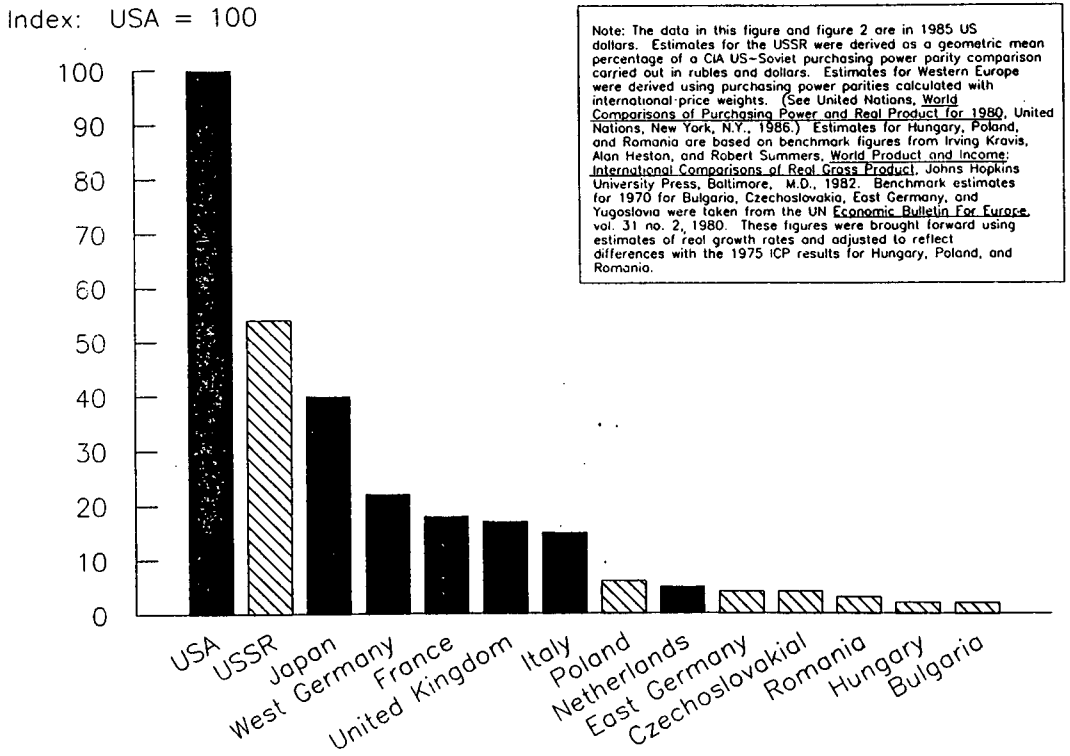
Growth rates by themselves do not reflect the scope of the USSR's problem. Low growth in the Soviet Union was occurring in an economy that did not compare favorably in size or technological level with that of the United States. Soviet GNP in 1960 was roughly half that of the United States. After narrowing the gap during the 1960s and 1970s and peaking in the early 1980s, Soviet GNP as a percent of US GNP fell to about 55 percent in 1985 (see figure 1). Even more striking, both the USSR and its East European allies continued to lag far behind major Western countries in terms of per capita GNP (see figure 2).

One reason for the economy's comparatively poor showing is the USSR's relatively antiquated industrial base. According to one estimate, for example, the average length of service of Soviet industrial equipment is about 20 years, compared with average use times of 10 years in France, West Germany, and Italy, and 12 years in the United States. In contrast to the West, where the rapid introduction of advanced manufacturing technologies has sustained productivity growth, the combined productivity of labor and fixed capital in the USSR has declined in absolute terms over the past decade.

We believe Soviet leaders worried about the implications of these trends for the USSR's future military strength. By dint of two decades of a sustained, costly military buildup, the USSR has secured its position as a military superpower whose global interests were increasingly recognized. In the past ten years alone (1977-86), more than 22,000 tanks, 21,000 infantry fighting vehicles, and 27,000 armored personnel carriers and like vehicles have been delivered to the Soviet ground forces. Soviet strategic forces received over 3,200 strategic missiles and about 20 new and converted ballistic missile submarines, and Soviet air power was augmented with over 7,100 new fighter aircraft and almost 4,600 helicopters.

Figure 1

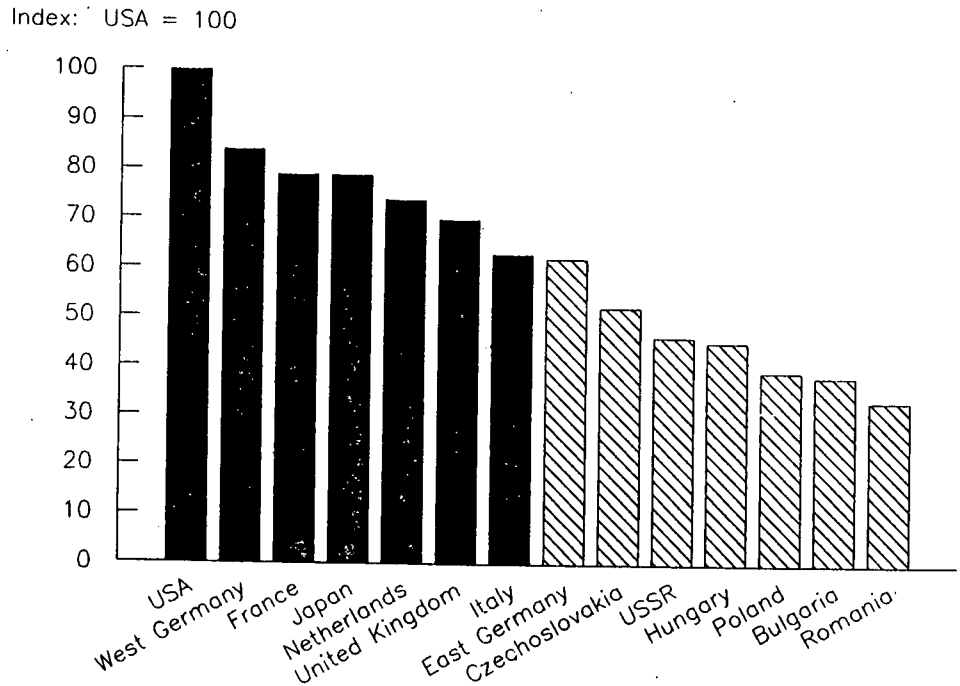
Gross National Product, 1985



Note: The data in this figure and figure 2 are in 1985 US dollars. Estimates for the USSR were derived as a geometric mean percentage of a CIA US-Soviet purchasing power parity comparison carried out in rubles and dollars. Estimates for Western Europe were derived using purchasing power parities calculated with international price weights. (See United Nations, World Comparisons of Purchasing Power and Real Product for 1980, United Nations, New York, N.Y., 1986.) Estimates for Hungary, Poland, and Romania are based on benchmark figures from Irving Kravis, Alan Heston, and Robert Summers, World Product and Income: International Comparisons of Real Gross Product, Johns Hopkins University Press, Baltimore, M.D., 1982. Benchmark estimates for 1970 for Bulgaria, Czechoslovakia, East Germany, and Yugoslavia were taken from the UN Economic Bulletin For Europe, vol. 31 no. 2, 1980. These figures were brought forward using estimates of real growth rates and adjusted to reflect differences with the 1975 ICP results for Hungary, Poland, and Romania.

Figure 2

Per Capita GNP, 1985[a]



[a] See footnote on Figure 1.

Even before the US Strategic Defense Initiative (SDI) became an issue, however, Soviet military authorities had expressed concern that the level of technology embedded in such US programs as the D-5 sea-launched ballistic missile, the Stealth bomber, "smart" conventional weapons, and cruise missiles would offset the numerical superiority that the USSR had achieved in most classes of weapons and thus threaten some of their hard-fought military gains. The USSR has made significant advances in many weapon systems technologies, cutting into the US technology lead in deployed systems in some areas. But the leadership recognized that in most advanced manufacturing technologies the USSR remains years behind the United States (see figure 3). Moreover, SDI, by concentrating competition in those high tech areas where Moscow is weakest, has clearly been viewed by the Soviets as a new and even greater threat.

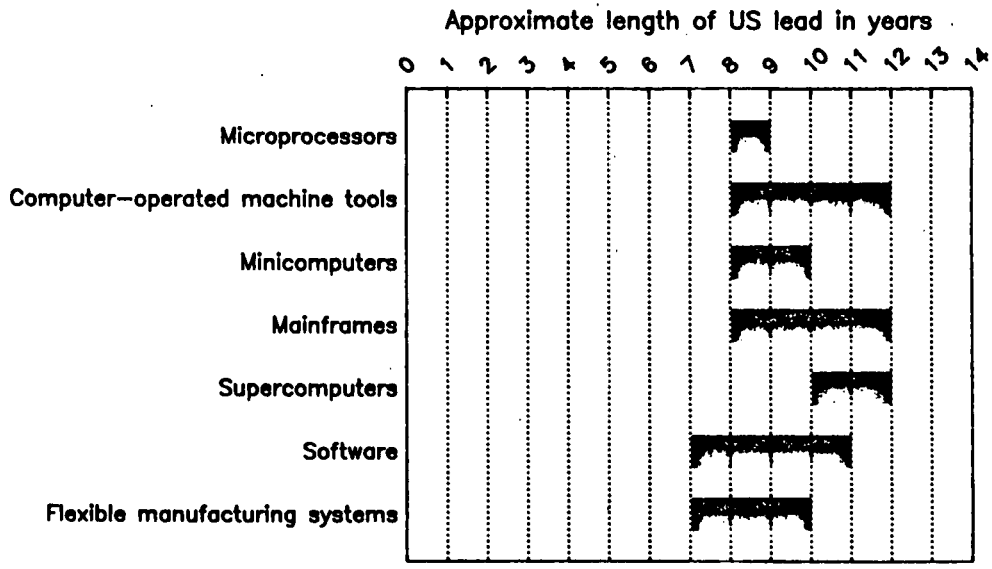
Gorbachev's Economic Agenda

Gorbachev's commitment to revitalizing the country's economic base--and hence to underwriting future military modernization--has been evident since before he became General Secretary. Even when he assumed power, however, Gorbachev may not have fully grasped the scope of the country's economic problems and the magnitude of the effort needed to attack them. In fact, despite his frenetic efforts over the past two years, we still do not see a viable, integrated plan for modernization; rather, we see many individual programs being put forth, each dealing with one facet of the economy.

Essentially, Gorbachev has set out a two-step approach. Initially, he is relying on a combination of measures to strengthen party control, improve worker attitudes, and weed out incompetents --what he refers to as "human factor" gains. The most visible part of these efforts has been his campaigns

Figure 3

Selected Advanced Manufacturing Technologies: The United States Versus the USSR



US lead is based on projections of length of time required for Soviets to achieve series production of levels of each technology similar to those in US series production today.

for discipline and against corruption and alcoholism. These measures--which do not call for structural change--have had a positive impact for the most part.

Over the longer term, Gorbachev is counting on achieving major productivity gains as a result of organizational changes, reform initiatives, and, most importantly, an ambitious modernization program to upgrade the country's stock of plant and equipment (see box insert). To this end, the current five-year plan (1986-90) calls for doubling retirement rates for fixed capital, replacing up to one third of the country's plant and equipment by 1990, and increasing the level of investment in the civilian machine-building and metalworking ministries (MBMW) by 80 percent during 1986-90 over the level achieved during 1981-85. Gorbachev has also instituted an ambitious new program to improve quality control in industry. Known as State Acceptance (Gospriyemka), the program establishes permanent quality control by state employees at the plant level, a program not unlike that used by the military to ensure the quality of defense goods. At present, it encompasses 1500 enterprises which produce an estimated 15 percent of all industrial products and nearly one-third of the output of the critical machine-building sector.

Through these actions, Gorbachev has indicated that he wants to upgrade the country's technological base so as to put the country on a higher, self-sustaining growth plane. Soviet plan targets imply an average annual GNP growth rate of about 4 percent during 1986-90, which is to accelerate to a 5-percent average annual rate during the 1991-2000 period.

Although many of the specific policies Gorbachev has adopted are not new, the intensity Gorbachev has brought to his efforts and his apparent commitment

Box Insert

Defining Modernization

The phrase "modernization program" often has been used by Western observers as an umbrella term to describe any policy instituted by Gorbachev for dealing with the country's economic problems. As Gorbachev has used it, however, the term has a more limited meaning and refers to his efforts to upgrade the country's stock of plant and equipment. Basically, it involves substantially increasing the productive capacity of the machine building sector, the primary source of manufacturing technology and equipment. As part of the efforts to modernize the USSR's industrial base, Gorbachev's plan calls for:

-- Improving the quality of machinery that embodies existing levels of technology by manufacturing it under a stricter system of quality control.

-- Replacing existing machinery with machinery embodying a higher level of technology, what Soviet planners sometimes refer to as "world standards."

End Box Insert

to finding long-term solutions are attributes that his immediate predecessors lacked. Nonetheless, Gorbachev's program appears too ambitious on a number of counts:

-- Meeting output targets for many key commodities would require unrealistic gains in productivity, given planned investment targets.

-- Even if output targets can be achieved, high growth rates and improved quality are not readily compatible objectives. The industrial output targets for 1986-90, for example, appear too high to allow for a slowdown in production to install new, more technologically advanced equipment.

-- Finally, despite considerable rhetoric, none of the proposals so far would greatly change the system of economic incentives that has discouraged management innovation and technological change.

1986 Economic Performance

1986 marked the initial year of the 1986-90 FYP and the first full year of Gorbachev's stewardship. Partly as the result of his leadership, partly as a result of some changes instituted by his predecessors, and partly as a result of some good luck, 1986 turned out to be a very good year for the economy (see table 2). On the strength of record farm output and reduced loss of work time, Soviet GNP grew by more than 4 percent, the highest rate in a decade. Industry, the focus of Gorbachev's modernization efforts, also did well, recording its best growth in a decade. Nonetheless, a number of problems surfaced during the year that could spell trouble for Gorbachev's economic program over the longer term. For example, the first significant resistance to specific policies, although not overall goals, surfaced in both the massive government and party bureaucracy, particularly among many enterprise managers who complained that they were being asked to carry out conflicting goals--such as to raise quality standards and output targets simultaneously.

Table 2

USSR: GNP by Sector of Origin[1]

Annual Percentage Growth

	1981-85	1981	1982	1983	1984	1985	1986[2]
GNP	1.9	1.4	2.6	3.2	1.4	1.1	4.2
Agriculture[3]	1.9	-0.7	7.2	6.0	-0.7	-1.7	7.3
Other Sectors	2.1	2.2	1.2	2.6	2.3	2.3	3.2
of which:							
Industry	2.0	1.3	0.7	2.7	2.6	2.7	3.6

[1]CIA estimate calculated in 1982 rubles at factor cost.
[2]Preliminary.
[3]This measure for agricultural output excludes intra-agricultural use of farm products but does not make an adjustment for purchases by agriculture from other sectors. Value added in agriculture grew by 8.6 percent in 1986 and at an annual average rate of 1 percent in 1981-85 as a whole.

Growth Good, but Some Problems

Record farm output led the surge in GNP. Production of potatoes and vegetables increased substantially over depressed 1985 levels, and new highs were established for production of all major livestock products. Meanwhile, a 210-million-ton grain harvest----the highest since 1978--helped Moscow reduce grain imports and contributed to a 5-percent increase in net livestock production. Overall, net farm output increased by 7.3 percent. (see Appendix A for a more detailed description of Soviet economic performance in 1986.)

While not growing as rapidly as agriculture, industry also turned in a respectable showing. Production targets for the majority of the most important items produced in the machinery sector--including metal-cutting machine tools and computer equipment--were exceeded. The energy branches, despite problems caused by the Chernobyl' nuclear power accident, exhibited healthy growth, with the output goals for coal and natural gas being exceeded. Similarly, those branches producing industrial materials, shortages of which have caused bottlenecks in the past, did well. Several ambitious plan targets for the year were met or exceeded.

Underlying industry's improved performance was an improvement in productivity. After decades of steady decline, overall factor productivity in industry nearly stabilized in 1986. Faster growth in labor productivity substantially offset a continuing though slowing decline in capital productivity. Much of the improvement in labor productivity appears to have come from reduced loss of worktime through increased discipline, less drunkenness on the job, and more effective management. The room for such reduction is substantial. According to a Soviet economist, on an average

* Factor productivity measures the difference between the growth of gross national product and the growth of weighted sum of inputs of land, labor, and capital.

workday 18 percent of the work force does not show up because they are on vacation or sick leave, and those who do show up "waste," on the average, 20 percent of their time.

Although the leadership could take comfort in tne overall figures on growth and productivity, several serious problems cropped up during tne year. While not unexpected given all that Gorbachev was tryiny to accomplish, they will have to be corrected or offset if his modernization program is to proceed on track. The most serious of these problems are associated with the regime's efforts to improve the quality, reliability, and technological level of Soviet manufactured machinery and equipment over a short period. Soviet planners have established lofty targets for raising product quality during the 12th FYP--85 to 90 percent of all machinery is to meet what they call "world standards" by 1990. To date, however, progress in meeting this goal has been poor.

Leadership statements describe the problems encountered:

-- At the 27th Party Congress (March 1986), several speakers pointedly referred to continued problems in the quality of machinery, noting that some of the machinery installed during reconstruction was still grossly outmoded, while "new machinery" scarcely exceeded older models in terms of productivity.

-- At a special conference in September 1986, Politburo member Lev Zaykov criticized the recent performance of civilian machine-builders, indicating that targets for improving the quality of machinery were not being met and that poor quality machinery was being turned out even in showcase factories.

-- A recent TASS report of a Council of Ministers' evaluation of the 1986 plan results noted that there was enterprise resistance to the new state system of quality control and stated that the machine-building and other ministries "did not achieve a decisive breakthrough in ... raising the technical level and quality of output."

A sharp decline in the Soviets' real import capacity in 1986--the result of falling oil prices and the depreciation of the dollar--also does not bode well for Gorbachev's modernization program over the longer term. While the ultimate success of that program hinges largely on internal factors, its goals imply that some highly specialized imports from the West for such sectors as energy, machine tools, microelectronics, and telecommunications must be continued, if not increased. Moscow was able to cope fairly well with a difficult situation in 1986 by remaining an active borrower, increasing gold sales, and reducing imports, especially of agricultural products. Such adjustments may not be as easy in the future, however, unless Moscow is willing to increase sharply its debt to the West.

Finally, bureaucratic foot-dragging and outright opposition appear to have threatened some of Gorbachev's policies. Gorbachev apparently has become convinced that success in revitalizing the Soviet economy will depend on introducing major political and social as well as economic reforms. These reforms, particularly his campaign for greater "openness" and "democratization" of political life, have met with resistance within the party and government bureaucracy. A party plenum scheduled for December 1986 was, by Gorbachev's own admission, postponed three times. We believe the delay was the result of difficulties in gaining support within the Central Committee for the reforms that he wished to introduce.

Trends in Resource Allocation

While economic growth was picking up, Gorbachev tried to lay the ground work for future gains through his resource allocation policies. In line with the goals laid out in the FYP, investment growth surged, with the greatest attention being given to renovating and reequipping those facilities that produce machinery critical to the modernization effort (see table 3). According to Soviet statistics:

-- Total new fixed capital investment increased by 7.5 percent in 1986, the highest increase in over a decade and slightly above the 1986 plan.

-- State productive capital investment channeled into the reconstruction and retooling of existing enterprises increased by a hefty 17 percent, a good beginning to a plan that calls for about an 11-percent annual increase in renovation expenditures during 1986-90.

-- On a negative note, the overall amount of new capacity brought on stream was far less than planned--6.4 percent growth compared with a 1986 plan target of 14.1 percent. This suggests that Moscow's plans to reduce new construction and concentrate on finishing uncompleted projects were not realized.

Table 3

USSR: Selected Indicators of Capital Formation

Average Annual Rates of Growth in Percent

	1976-80	1981-85	1986	Plan 1986-90
New fixed capital investment	3.3	3.5	7.5	4.9
State productive capital investment in the reconstruction and retooling of existing enterprises	NA	7.0	17.0	11.0
Commissionings of new fixed capital	4.4	3.0	6.4	NA

[a] State capital investment is equal to total investment less investment by cooperatives, kolkhozes, and individuals (in housing). State productive capital investment further excludes investment by the government for services and housing.

Although there were a few surprises, the investment priorities laid out in the 12th FYP appear to have been adhered to in 1986. Within industry, the eleven civilian machine-building ministries apparently received the biggest boost. No yearend data were released, but based on nine-month results, investment in this sector increased by 17 percent. Similarly, plan goals and press commentary on the 1986 results suggest that investment in the energy industries rose sharply, although again no figures were released. Somewhat unexpectedly, investment in the agro-industrial complex (established in May 1982) increased by almost 10 percent in 1986--far more than the 3-percent average annual rate recorded during 1982-85. The largest gains were in the nonfarm sector--industries that supply inputs to agriculture and process farm products. While the increase seems somewhat high, the structure of agro-industrial investment appears consistent with Gorbachev's emphasis on providing more resources to agricultural support sectors.

In contrast to the rapid growth in investment, the consumer did not fare nearly as well from the economy's strong showing in 1986. Per capita consumption grew by less than 1 percent in 1986, in part because legal sales of alcohol--a major component of consumer expenditures--fell by 37 percent as a result of the anti-alcohol campaign. Nonetheless, gains in key components of consumption--food (excluding alcohol) and housing--may have earned Gorbachev some points with the populace and helped underscore his commitment to improving worker incentives. Food supplies--one of the main indicators by which citizens judge their well-being--improved in 1986. Fruit and vegetable production in particular rebounded from depressed 1985 levels. Construction of housing reached 118 million square meters, up 4.4 percent from 1985 and the largest increment to the housing stock in 20 years.

Despite improved supplies in some areas, unsatisfied consumer demand is reflected in continued queuing in state stores (with fixed prices) and rising prices in collective farm markets. Continued growth in wages, coupled with the drop in alcohol sales, resulted in a large increase in the amount of cash held by the consumer. One indication of the regime's concern over the lack of goods to buy was its failure to publish a figure on the addition to household savings in 1986.

While our information on defense spending in 1986 is less solid than that for consumption and investment, our preliminary estimate is that overall defense expenditures in constant prices increased by about 3 percent (see box insert for a discussion of Soviet defense spending in current prices). Although somewhat above the rate of recent years, it does not appear that this growth represents any change in defense spending policy since Gorbachev's arrival. Rather, it was largely driven by the start-up or acceleration of production of several new weapon systems that were under development before Gorbachev took office. In 1985 and 1986 at least, these programs helped raise procurement growth to about 3 percent per year.

Box Insert

Measuring Soviet Defense Spending in Current Prices

In Western estimates of defense spending, constant prices are used to measure the real growth in defense--that is changes in military manpower, the volume of procurement and construction, and the scale of RDT&E and operations and maintenance excluding the effects of inflation. The Soviets, however, do not use Western-style constant prices. Rather, most references in Soviet literature to defense spending are in terms of current prices, and presumably the leadership uses this measure, along with various physical indicators, to assess trends.

Because current prices show higher rates of growth, the leadership might have a different sense of defense spending trends than constant price estimates would suggest. Indeed, CIA and DIA agree that defense's share of Soviet GNP rose from about 12-14 percent in 1970 to about 15-17 percent in 1982. Although the real growth in defense activities and overall economic output was roughly the same in this period, defense's share of Soviet GNP increased when measured in current prices because costs and prices of defense-related goods and services increased more rapidly than those of nondefense goods and services. Our estimate of defense's claim on the output from individual sectors of the economy supports this view of a rising defense burden when measured in current prices. These shares generally grew between 1972 and 1982.

This notion of a rising defense burden is also consistent with leadership statements over the past decade. Although Soviet leaders have always made passing references to the high costs of defense from the late Brezhnev period onward, they have increasingly linked the USSR's inability to provide more rapid gains in consumer welfare and generate high economic growth to the high costs of its defense efforts. Gorbachev has been particularly vocal on this topic. In February, for example, Gorbachev said that defense spending was "a load on the economy... because it diverts enormous resources that could be redirected" to other problems.

End Box Insert

The largest jump in expenditures in 1985 was in aircraft procurement. The initial stages of production of the new Blackjack bomber--whose development dates back to the early 1970s--and Moscow's continued emphasis on fighter production helped drive up aircraft expenditures, while increases in both tactical and strategic missile procurement--led by outlays for the SA-10 and SA-12 air defense systems--also raised missile procurement in 1985 and 1986 following a cyclical decline in the early 1980s.

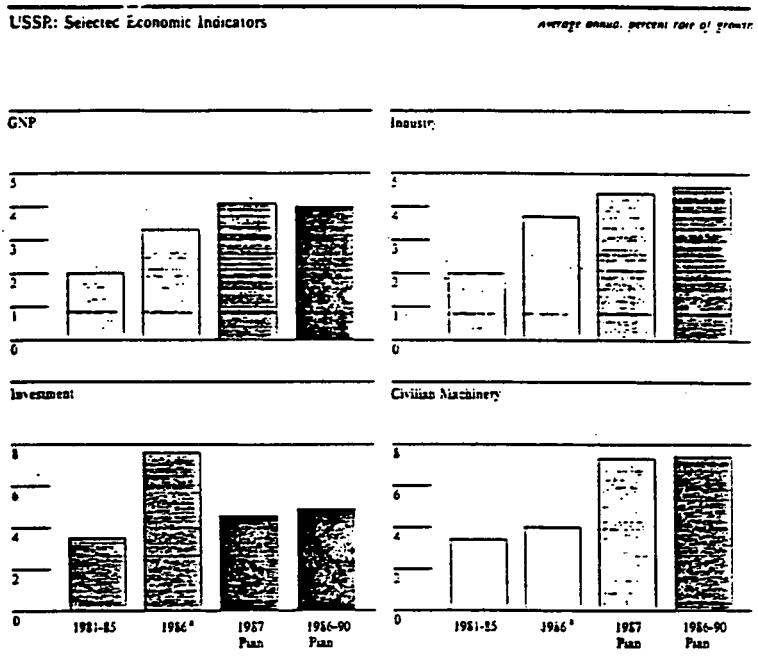
At the same time, we believe Gorbachev has told military leaders that--like their civilian counterparts--they will have to use resources more effectively. One apparent manifestation of this has been a great emphasis on conservation and less costly training practices. For example, at a major naval conference in December 1985 attended by new appointed Commander of the Soviet Navy Admiral Chernavin, it was reported that some commanders had failed to understand the need for "an intensification of combat training" during 1985 and instead had "decided on an unnecessary increase in the number of sea exercises, which leads to overuse of engine capacity, overconsumption of fuel, and premature aging of equipment."

The 1987 Plan: Full Speed Ahead

Building on a fast 1986 start, the 1987 Plan shows no letup in Gorbachev's drive to revive the economy by modernizing the industrial base, improving management, and motivating worker effort. The goals for overall economic and industrial growth are high--both over 4 percent--but appear consistent with the targets originally laid out in 12th FYP (see figure 4).

The industrial plan focuses on producing more and better machinery for modernization and more goods for the consumer. The Soviets are apparently banking on the sharp rise in investment in civil machine building in 1986 to

Figure 4



[a] Preliminary

spur an acceleration in output this year. Machinery output--after increasing by 4.4 percent last year--is slated to jump by 7.3 percent in 1987, a pace not achieved since the early 1970s. Machine builders are to concentrate their efforts on high-technology products for investment and durables for the consumer. The output of advanced machine tools, instrumentation equipment, and computers is to grow almost 50 percent faster than production of machinery as a whole. Machinery quality also is to improve substantially, with the share of equipment corresponding to "world standards" to rise to 60 percent in 1987.

Moscow's plans for some critical sectors remain unclear. A number of important agricultural targets have not been released, although grain production is to rise to 232 million tons. Similarly, targets for other consumer-related sectors have not been released, nor has information on production goals for such commodities as cement and other construction materials. The plan does make clear, however, that growth in steel output is to be achieved primarily from efficiency gains, not increases in production of inputs such as coke and pig iron.

Priority for Investment

In line with Gorbachev's modernization program, investment once again seems to have been given priority. Total new fixed capital investment in 1987 is slated to grow at 4.6 percent--faster than overall economic growth--and apparently somewhat above the rate originally called for in the 1986-90 Plan. The central role of the machinery sector in the modernization program and the need to invest more in the energy sectors, partly as a result of the Chernobyl' accident, may have resulted in these sectors getting higher allocations. In a speech outlining the Plan for 1987, State Planning Chairman Talyzin suggested that more investment than was originally planned would also

go to sectors serving the consumer. Based on the ambitious target for construction, housing is apparently scheduled for a particularly sharp rise.

As usual, no meaningful information was released on Soviet plans for defense spending in 1987. Given the defense industrial capacity already in place, the overall priority afforded the military, and Soviet concern about ongoing Western defense programs, we would expect allocations to remain at levels high enough to allow for continued modernization of the USSR's strategic and conventional forces. Major weapon systems such as the SS-25 ICBM, SA-10 surface-to-air missile, the T-80 tank, and the Bear Bomber should continue to enter the inventory at a steady pace, adding to Moscow's strategic and conventional capabilities.

Maintaining Momentum

Gorbachev is apparently counting on payoffs from past investments and continued returns from his "human factors" campaign--particularly his efforts to increase labor productivity through increased material incentives--to meet the ambitious 1987 targets. To this end, average wages are scheduled to increase by 3 percent in 1987, with the increases distributed in favor of good performers and technical personnel. The goals for wages, consumer durables, housing, and paid services exceed the targets called for in the 1986-90 Plan. As a further incentive to improved worker effort, Gorbachev also has enacted legislation--scheduled to take effect in mid 1987--that will allow some expansion of private production of consumer goods and services.

One dilemma Gorbachev faces in this regard is the circular loop of material incentives and productivity. Pay raises will not provide meaningful worker incentives without corresponding improvements in the quality and availability of food, housing, and consumer goods and services. Yet, higher productivity is needed to increase the supply of such incentives. Workers

will have to be persuaded to change their fundamental attitudes toward work based on the expectation of improved consumer welfare in the future.

Besides trying to improve worker incentives, Gorbachev probably is hoping that some of the numerous economic reforms and organizational changes that have been promulgated since he took over will begin to bear fruit. Most of the changes in these areas are just beginning to take effect, however, and Gorbachev probably realizes that, whatever the benefits to be reaped, they will materialize over the longer term. (See box insert for a discussion of economic reform under Gorbachev.)

Prospects for Modernization Over the Longer Term

While counting on the human factors campaign in the short run, Gorbachev is depending mainly on the proliferation of more technologically advanced equipment to improve productivity across the economy over the longer term. He has repeatedly said that the USSR must replicate the ongoing Western technological revolution in which advanced machine tools, robots, microelectronics devices, computers, and telecommunication systems are making operations more flexible, thereby raising quality and cutting costs. At the same time, Gorbachev is hoping that as a result of a series of organizational and administrative measures enterprises will have more incentives to demand and use the best equipment available.

Box Insert

Economic Reform Under Gorbachev

Gorbachev has repeatedly stressed that major structural changes are needed in the Soviet economy if a real breakthrough in performance is to be achieved. His efforts have focused primarily on four areas: streamlining the bureaucracy, increasing enterprise autonomy, improving workers' ncentives and encouraging personal initiative. None of the measures adopted so far, however, could be classified as the "radical reform" that Gorbachev said was needed at the 27th Party Congress. Moreover, many of these measures have been only partially implemented and all are encountering the kinds of problems endemic to changing old institutions and creating new ones.

Reorganizing the Bureaucracy--The cornerstone of Gorbachev's reform program has been his efforts to reorganize and streamline the bureaucracy. According to his own statements, these policies are designed to achieve more effective centralized control over the main direction of the economy, while at the same time leaving more of the day to day management to lower levels. His insistence that the bureaucracy shift its focus to strategic planning has been reflected in a number of organizational changes. New superagencies answering directly to the Council of Ministers have been created to oversee key economic sectors. Such coordinating bodies have been set up for machine building, the agro-industrial complex, energy, construction, foreign trade, and social development. (See Chart) Most of these bodies are not yet fully operational, however, and progress in achieving intended sharp cutbacks in personnel has been spotty.

Increasing Enterprise Autonomy--An impressive number of new initiatives attempt to increase the authority and responsibility of the enterprise and to motivate them through "economic" rather than "administrative" levers.

-- A new enterprise law codifies enterprise rights (including election of enterprise managers) and attemts to give them legal protection from bureaucractic meddling.

-- The so-called five-ministry experiment, which makes contract fulfillment the major measure of enterprise success and expands enterpise control over investment and incentive funds, is being extended industrywide during 1987.

-- The self-financing experiments in Sumy and Tolyatti will be expanded to additional ministries this year.

-- Selected enterprises are given the right to trade directly with foreign firms.

Improving Workers' Incentives--Gorbachev's chief accomplishment in this area has been the passage of a wage reform designed to reverse the leveling trend of the Brezhnev years and to create a closer relationship between workers' pay and their performance. Although this reform calls for a pay

increase for many categories of workers, no state funds have been set aside for it.

Encouraging Personal Initiative--Gorbachev's promise to provide greater scope for individual initiative has brought new legislation sanctioning expanded business opportunities outside the state sector for individuals and small businesses, especially in consumer goods and services. Permissible action is greatly circumscribed, however, and the impact these actions will have remains to be seen.

End Box Insert

Major Reorganizations Since Gorbachev Took Over

Sector	Date Established	Action Taken	Current Status
Machine Building	Oct 85	Machine Building Bureau established to oversee 11 civilian machine building ministries. Bureau to carry out "unified technical policy." Given authority to redistribute resources of ministries but no line operational authority over enterprises. Management structure to be reduced.	In February 1987 Soviet press charged ministries were circumventing the order to streamline management and sharply reduce central staffs.
Agriculture	Nov 85	USSR State Agro-Industrial Committee (Gosagroprom) established by merging five ministries, one state committee, and elements of three other ministries. Similar reorganizations carried out at regional levels. Central staff reportedly reduced by 47 percent. Rights and responsibilities of regional and farm officials enhanced.	Thus far, the only "superministry" to be created. Some Soviet officials claim it has paid off in greater efficiency, but numerous press complaints suggest Gosagroprom still in state of confusion.
Fuel and Energy Complex	Mar 86	Fuel and Energy Bureau created to coordinate energy policy and carry out unified conservation and technological policies. Given authority over budgetary allocations within broad parameters set by Gosplan, but no operational authority over enterprises.	Still apparently in initial phase of organization with its responsibilities yet to be decided.
Nuclear Energy	Jul 87	Separate All-Union Ministry of Nuclear Poser Industry of the USSR was created following the Chernobyl' incident.	
Construction	Aug 86	Four existing construction ministries reorganized into regionally-focused ministries. Four specialized construction ministries unchanged. Reorganized to State Construction Committee and given enhanced authority over all construction ministries.	First serious attempt in over 20 years to bring some order into chaotic construction sector. Reorganization aimed at strengthening centralized direction while allowing regional authorities more control over local projects.

Sector	Date Established	Action Taken	Current Status
Foreign Trade	Sep 86	Foreign Economic Commission established to formulate and coordinate foreign trade policy, but does not have management authority of Gosagroprom and Gosstroy. Commission members include heads or deputy heads of all ministries or agencies concerned with foreign trade. 21 ministries and 70 enterprises given right to engage directly in export and import trade.	Too soon to assess. Reorganization ends Ministry of Trade's long-standing monopoly over foreign trade. Should give end-users more say in contract negotiations. Enterprise right to buy foreign goods limited to foreign exchange they are able to generate through sale abroad of above-plan production. Should help facilitate establishment of joint ventures.
Social Welfare	Nov 86	Bureau for Social Development. Responsibilities have not yet been defined and may be still undecided. Gosplan Chief implied in November 1986 speech that the bureau would have broad oversight over various ministries and institutions concerned with consumer goods and services, health education and and social policy.	Still being formed.

Emphasis on Supply

Unlike in the West where modernization has been driven by both supply and demand factors--with interaction between the two stimulating self-sustaining growth--Gorbachev's modernization program has concentrated primarily on increasing the supply of more technologically advanced equipment. To this end:

- Production of computer equipment is slated to grow by 18 percent annually through 1990. By that time, the Soviets plan to produce 1.1 million personal computers annually, compared with almost none until the mid-1980s.
- Output of the main producer of instrumentation equipment is slated to grow by 11 percent per year in the 1986-90 period, up from 6 percent in the previous five-year period.
- Production of robots in the 1986-90 period is to increase by 120 percent, numerically controlled machine tools by 90 percent, and machining centers by 330 percent compared with 1981-85 production.

While the Soviets probably will not meet all of these targets, they have already taken a number of major steps to provide more and better machinery in each of these areas. Most significantly, as indicated above, investment in the eleven civilian machine building ministries is to increase by a massive 80 percent during 1986-90 compared with the 1981-85 period. Meanwhile, funding for "science"--a rough indicator of the resources committed to R&D--is also to increase sharply. The USSR has created interbranch scientific and technical complexes to expedite development and incorporation of new technologies into the machine-building production base. Finally, foreign support is to fill in the gaps that cannot be met domestically. Moscow probably plans to increase

the imports of capital equipment from both Eastern Europe and the developed West. Large, cooperative R & D programs have also been established with Eastern Europe in key manufacturing technologies.

In contrast, the Soviets have put far fewer mechanisms into place on the demand side to promote the innovation and diffusion of the appropriate technologies into machine building and the rest of the economy. They have yet to change the system of plan targets and incentives sufficiently to make it generally advantageous for managers to favor innovation over maintaining the status quo. Instead, they have tinkered with established programs--like the enterprise production development funds--to give factory managers greater authority and ability to procure new machinery and equipment. This won't work if managers are penalized for stopping production to accommodate modernization or cannot induce machinery suppliers to produce the right equipment and provide reliable installation and maintenance support. These are still likely obstacles confronting the innovation-minded manager.

The Soviets also continue to rely on administrative measures to regulate effective demand for new technology. They have attempted to improve quality by establishing independent quality-control inspectors in selected enterprises. They also have directed the State Committee for Science and Technology and the Academy of Sciences to act as proxies for machinery customers to determine just what technologies are suited for industrial users. But this is imposition from the top down and assumes that these agencies will make the right choice.

In short, given what we know of Gorbachev's modernization plans--and the results we have seen so far--we believe that the Soviet focus on supply-side factors will certainly result in the machine-building sector producing higher volumes of more modern equipment. It is not at all clear, however, whether

the sector will be able to transform itself or the rest of the economy unless managers throughout the economy demand, and are given the opportunity to select, the correct products.

Growth Through 1990

Judging the success of Gorbachev's modernization program will not be easy. Even approaching some of the technology goals or output targets for key items such as computers or numerically controlled machine tools would be quite an achievement. Since the beginning of the Brezhnev era in the mid-1960s, the Soviets have generally missed the major FYP targets, and this plan is likely to be no different. Gorbachev probably realizes this. While talking tough and saying that no excuses will be brooked, he has also acknowleged that the targets for 1986-90 were set at the upper limit and that their attainment will be difficult.

Gorbachev, however, is probably counting on a reasonable degree of success. At a minimum, he would like to reverse the decline in the rate of growth that has occurred in nearly all sectors of the economy over the last decade. While the measure of acceptable performance is somewhat arbitrary, Soviet leaders would probably give Gorbachev good grades if national income (the Marxist measure of overall production) and industrial growth increased by one percentage point per year over the depressed levels of the 11th FYP (1981-85).

We believe that Gorbachev probably will have some success for the following reasons:

-- The full potential of the "human factors" campaign--particularly the discipline and the anti-alcohol program, as well as his efforts to increase managerial and worker incentives--has yet to be tapped.

-- Similarly, there should be some improvement in higher-level planning and management. Gorbachev has promoted a number of younger officials, many of whom appear more willing to consider new approaches to solving economic problems. His efforts to improve incentives for enterprise managers and workers and to reorganize the machinery, trade, and agricultural bureaucracies could also pay some dividends, although how much is impossible to say.

-- Finally, for the reasons just given, the massive jump in investment in the civilian machine-building sector should yield some dividends in higher output growth and improved quality, even if the needs of major industrial users are not fully taken into account.

It would be misleading, however, for US and Soviet leaders to look at only aggregate measures of GNP and industrial growth. Gorbachev is interested not only in raising their rate of growth over the next few years, but also in changing the structure of the economy so that even higher rates can be achieved during the 1990s. In this context, observations of a number of other variables will give us a better handle on how modernization is proceeding. These include:

-- The Rate of Capital Renewal - Gorbachev has decreed that by 1990 more than one-third of the country's capital stock will be replaced. Of all the major goals Gorbachev has established, achieving this particular one will probably be the least difficult. Our calculations show that even with no increase in retirement rates, this goal will be achieved as long as the current target for overall investment is met.

-- The Level of Technology Embodied in New Equipment - Measuring this will be extremely difficult. Machine builders will be under intense

pressure to declare major quality improvements whether they are warranted or not, and we are likely to be bombarded by a host of statistics--some positive, some negative. A good surrogate measure of the USSR's ability to produce world-class machinery will be its success in increasing hard currency sales of manufactured goods--the test of the market place.

-- Factor Productivity Trends - Success in meeting the first two goals should be reflected here. Of all the variables to watch, this is the most critical because--unless the positive results achieved in 1986 can be sustained--there is little hope of accelerating growth during the 1990s.

Our overall assessment is that, while we expect some improvement in Soviet economic performance over the next few years, we doubt that sufficient progress can be achieved in improving the level of technology and reversing productivity trends to permit substantially faster growth in the 1990s. More concretely, we believe that the Soviets will fall well short of their implied goal of 4-percent average annual GNP growth during 1986-90. Similarly, the 5-percent target for 1991-2000 appears to be out of reach.

The regime's implicit goal of 4-percent average annual GNP growth during 1986-90 is questionable because of the huge gains in productivity it would require. According to Gorbachev, "human factor" gains are to account for one-third of the increase in productivity, and modernization the remaining two-thirds. Using an econometric model to project what this implies, the elasticity of output with respect to capital--the model's measure of the percentage change in output resulting from a one-percent increase in fixed capital would have to increase by nearly 26 percent compared with the 1981-85

period, and workers would have to be, on average, 7 percent more productive than they were in 1981-85.*

This much improvement in either factor seems implausible. In the late 1960s and early 1970s, output-capital elasticities of this magnitude were approached, but the relative cost of material inputs--fuels, ores, minerals--was much less. Material input costs since then have risen dramatically and are likely to continue to do so in the years ahead, making the required gains from capital expansion difficult to achieve. As for "human factors," while we still look for some improvements, there are limits to the gains that can be expected. Absenteeism, for instance, can only be reduced so much, and the slow growth in the supply of consumer goods and services is likely to rule out any significant increases in worker incentives in the years ahead.

Based on what we believe are more realistic assumptions about productivity, we project growth of GNP at an annual average rate of 2 to 3 percent during 1987-90. This assumes a substantial improvement in capital productivity over the 1981-85 period, but less than half of what would be required to meet plan.

* CIA's macroeconomic model of the Soviet economy, SOVSIM, was modified for use in evaluating Gorbachev's plans. Features were built into the model to assess the regime's efforts to modernize the capital stock. (An example would be the assimilation of more modern, domestically produced automation facilities or imported technology.) This was done by assigning higher returns to new capital than to old capital. In addition, the model was modified to allow for productivity gains originating from "human factors"--policies intended to increase the work effort--the other major element of Gorbachev's economic strategy. Model results suggest that without these initiatives the best the Soviets would be able to do in the 1986-90 Plan would be about 2-percent growth in GNP. Some gains from capital modernization and human factors will be realized, however, and growth rates approaching 3 percent may even be possible.

Coping with Shortfalls

We believe growth in the neighborhood of 2 to 3 percent, while better than that in the recent past, would still be insufficient to solve all the country's economic problems and could eventually lead to:

-- More severe battles over resource allocation,

-- Greater reliance on foreign economic ties, and, depending on Gorbachev's political standing,

-- A push for more ambitious economic reforms.

Battles Over Resource Allocation

The severity of Moscow's resource allocation bind during the current FYP will depend primarily on its ability to sustain the recent economic upturn. If, in fact, the economy's strong showing in 1986 proves transitory, then increasingly difficult resource allocation decisions will have to be made between competing civilian and defense interests, as well as among competing interests within the civilian and defense sectors themselves.

Over the next few years, the toughest decisions are likely to be in the investment arena. Despite the high investment growth targets for those branches of industry key to the modernization program, we believe achieving output targets in critical areas like the machine-building and the energy sectors will require further increases in investment above those currently planned for 1987-90. Investment is already being given priority, however, and finding additional resources will not be easy. A major part of Gorbachev's human factors campaign depends on increasing workers' incentives and, as noted earlier, the leadership has already deemed it necessary to boost investment in consumer-related areas in 1987. Further increases will probably be needed if momentum is to be maintained.

Soviet defense industries also will require substantial investment over the next few years. Analysis of Soviet requirements and programs under way indicates that the Soviets will maintain their historic level of weapons development--about 150-200 major new and modernized systems--into the 1990s. Our evidence shows that new programs are in progress to update or replace older systems with improved models in every mission area, with many likely to begin series production in the mid-1990s. The Soviets commit investment resources to prepare for weapons production roughly during the 10 years prior to initiation of series production, with the largest expenditures, including those to put in place most of the machinery and equipment, occurring in the last half of this period. This suggests that they will be allocating substantial investment resources in the late 1980s and early 1990s to prepare for systems entering production during the last half of the 1990s. At least some of these funds, however, would have already been included in the budget allocations for this FYP and the Soviet military would undoubtedly resist any efforts to renege on these commitments. Indeed, depending on the pace of major US defense programs--particularly SDI--the military might argue that their requirements have increased and press for additional funding.

We do not know how Gorbachev will respond to these pressures, but the state of the economy, Moscow's perception of the military threat, and Gorbachev's domestic political standing would all come into play. Even if economic growth has not picked up, however, Gorbachev would be unlikely to push modernization to the point whereby key military requirements would not be met.

While we believe that Gorbachev will face difficult decisions in the investment sphere over the next few years, we don't expect his focus on the civilian economy to have a major impact on military production at least

through 1990. As last year's joint CIA-DIA assessment argued, the defense establishment is well positioned to accomodate the shifts in machinery demands implied by the industrial modernization program.* Most of the weapons we expect to be delivered to Soviet forces through 1990 will be manufactured in plants already built, equipped, and operating. Although competition could be stiff for some basic materials and intermediate goods needed for both industrial modernization and weapons production--and might result in the delay or scaling back of some weapons systems--most major programs should go forward as planned.

As a result, we anticipate little change from the picture we presented in last year's assessment. Even with little growth in procurement over the next few years, the absolute magnitude will remain high enough to permit substantial upgrades of Soviet strategic and conventional forces. New generations of land- and sea-based ballistic and cruise missiles recently have entered or will soon enter production, which should result in a comprehensive modernization of the USSR's strategic offensive forces by the early 1990s. Strategic defense force improvements, although less substantial, also will permit sustained improvements in capabilities.

Conventional forces will undergo a similar upgrade. Two late generation fighters, the Mig-29 and Su-27, are entering the inventory, while new submarines and warships, including the USSR's first full-size aircraft carrier, are improving naval capabilities. Meanwhile, a variety of improved land arms (most notably new artillery weapons and the T-80 tank) are being deployed to the ground forces.

* See the Soviet Economy Under a New Leader, a joint CIA/DIA report published by DIA as DDB-1900-122-86, July 1986.

While this analysis suggests that the overall level of spending on weapons procurement need not be a major source of contention in this FYP, the picture would change if the military and some influential leaders wanted to undertake large new initiatives in either the USSR's conventional or strategic forces. In this case, the leadership would have to decide whether to reduce spending on other types of forces or increase the resources allocated to defense at the expense of civilian programs. Marginal increases at the expense of conventional forces might be possible, for example, if the Soviets decided to boost spending on strategic forces in reaction to SDI. Any large cuts, however, would almost certainly generate strong protests from those service elements being cut. The same would be true, of course, if the Soviets decided to raise spending sharply on conventional forces, as some elements in the military are currently arguing. The alternative, however, would be to shift resources from the civilian economy at the expense of industrial modernization.

Seeking Foreign Economic Support

Besides complicating resource allocation, failure of the modernization program to supply industry with the necessary machinery and equipment to sustain higher growth levels probably would also lead Moscow to make adjustments in its trade relations.

Eastern Europe. In the first instance, we would expect Moscow to increase demands on Eastern Europe. Gorbachev has pushed for greater CEMA integration since becoming General Secretary and demanded more and better quality goods from Eastern Europe. Existing trade protocols for 1986-90 probably call for tne East Europeans to increase exports to run trade surpluses and pay back outstanding debts owed Moscow.

A serious shortfall in the modernization program is likely to lead Moscow to demand even more capital goods from the region. Such demands, however, would be resisted. The USSR already absorbs a large share of East European production in most high-tech industries, and even in those countries best able to meet Soviet requests--most notably East Germany and Czechoslovakia--there is a tremendous need for advanced machinery for domestic investment.

Eastern Europe, moreover, finds itself in a better position to oppose Moscow's demands because of its improving terms of trade. The value of Soviet energy deliveries to Eastern Europe--which comprise the bulk of exports to the region--will decline over the next few years as the CEMA pricing mechanism incorporates the drop in world oil prices. Without adjustments to current trade plans, the USSR could begin to run large trade deficits with its East European allies. Moscow would then have to rely on these countries to finance large trade credits if it wishes them to maintain or increase the net flow of resources to the Soviet Union.

Developed Countries. Faced with a precipitous drop in its hard currency earnings as a result of falling oil prices, the Soviet leadership has said that it hopes to increase machinery exports to the West. In fact, one of the rationales Gorbachev has used to sell his modernization program has been the need to produce machinery that will be competitive on world markets.

Failure of the modernization program to raise the technological level of new equipment substantially would seriously hinder any sharp increase in machinery sales, which now account for roughly 5 percent of Soviet hard currency exports. Even with the recent Soviet moves to reorganize the foreign trade sector and to promote joint ventures with Western firms, we believe that unless Moscow abandons its conservative borrowing strategy, the USSR's hard currency imports could fall even further over the next few years (see box insert for a discussion of Moscow's recent initiatives in the international trade area).

Box Insert

Recent Soviet Initiatives in the World Economy

Over the past year the Soviet Union has embarked on a far-reaching campaign to increase its role in world economic affairs. Soviet moves include restructuring the foreign trade apparatus, permitting the establishment of joint ventures with Western firms, and seeking greater participation in international economic organizations. Moscow's major objective is to raise both the quality and technical level of its domestic output, partly as a means to expand exports of manufactured goods. The leadership believes it must reduce its reliance on sales of energy and other raw materials and, instead, create a trade structure more suited to a large industrial nation.

Foreign Trade Reorganization

In September 1986 the Soviets announced a major overhaul of the foreign trade apparatus aimed at breaking the Ministry of Foreign Trade's monopoly over foreign trade. As of 1 January 1987, more than 20 ministries and 70 large associations and enterprises had been granted the authority to conduct trade directly with foreign partners. At present, the Ministry of Foreign Trade has retained control of trade in raw materials, food, and about 60 percent of machinery imports, although additional ministries and enterprises could eventually also be given the power to conduct trade transactions. Moscow also created the State Foreign Economic Commission composed of the heads of the major ministries and departments involved with foreign trade. This new body appears to have limited power over resources, however, with its function limited largely to giving guidance on trade matters.

Joint Ventures with the West

A second major initiative was the establishment of guidelines in early 1987 that permit formation of joint ventures with Western trading partners. The new resolution allows up to 49-percent foreign equity, repatriation of profits, and Western participation in management, although Soviets must occupy the positions of chairman of the board and director-general. In addition, Soviet law will apply to the wages, work hours, and vacations of Soviet citizens. The current joint venture resolution is somewhat vague on many key points of interest to Western firms, and further details are likely to be spelled out as the Soviets begin setting up these projects.

Soviet interest in joint ventures is widespread, with proposals sought on everything from the light and food industries to machine-building, petrochemicals, electronics, and communications. Indeed, Moscow is probably looking to joint ventures as a means of acquiring Western technology with little to no up-front hard currency expenditures. Moreover, the Soviets may also believe that joint ventures will allow for an easier transfer of technology and management skills than has been the case with traditional purchase of machinery and equipment.

Other Measures

The Soviet leadership has also explored expanding relations with international economic institutions such as the European Community and the General Agreement on Trade and Tariffs. Some interest in the International Monetary Fund has also surfaced, but Moscow does not appear to be as serious about this organization, at least at this time. Political motives may partly explain Moscow's actions, as the USSR may feel that its world power status requires that it be a player with major world bodies. But the Soviets have said that they are counting on the association with important economic institutions to open up new trade opportunities, especially through tariff reductions.

In conjunction with recent trade activity, Moscow has also broadened the scope of its financial dealings. For example, Soviet or Soviet-owned banks in the West have stepped up the use of acceptance facilities and some of the newer financial instruments. Last year the USSR invested in an international bond issue for the first time and reached a settlement with the British on outstanding Tsarist bonds, prompting speculation that the Soviets may soon issue their own bonds. These actions not only help diversify Moscow's sources of funds but also cut borrowing costs.

Outlook

Although Moscow will continue with its recent trade-related endeavors, it will proceed cautiously. Moreover, continued hard currency shortages act as a further constraint on the USSR's ability to become a major player in international trade circles anytime soon. The reorganization of the trade apparatus is noteworthy, but most trade still remains dominated by central planners. In fact, many systemic weaknesses--such as distorted prices and the lack of incentives--remain and will continue to thwart the qualitative improvement of Soviet-manufactured exports. Some joint ventures will be established, but most Western firms appear unenthusiastic so far, especially considering the problems they have encountered with joint ventures in other socialist countries. Finally, the foreign trade sector does not operate in a vacuum, and rapid expansion in the international arena is unlikely until numerous shortcomings in the domestic economy are corrected.

End Box Insert

Regardless of the trends in Soviet hard currency earnings, we expect Moscow to continue its massive efforts to steal Western technology. In numerous instances, illegal acquisition of technology has reduced development time and/or allowed Moscow to field a weapon system more capable than otherwise would have been the case. On occasions this technology has also benefited the civilian economy. Diversion of advanced manufacturing technology--for example, microelectronic processing know-how and equipment--has raised the quality and performance of devices used in both military and civilian products. Indeed, this probably will be even more the case in the future. Many of the products needed for Gorbachev's modernization program in the areas of information processing, computers, and micro-electronics also have military applications.

Prospects For Economic Reform

Ultimately, under the pressure of hard decisions on resource allocation and insufficient foreign support for his modernization program, Gorbachev may decide to put more teeth into his calls for "radical reform." Adopting some of the bolder proposals that have been put forward--such as a major decentralization of price setting or real competition among state enterprises (see box for a discussion of reforms being talked about)-- would be aimed at stimulating production and innovation, and would certainly be consistent with the direction in which Gorbachev is already heading. Still, he would have to overcome stubborn political and bureaucratic opposition, which could be expected to intensify if his programs were faltering.

-- A broad spectrum of the apparat would probably oppose moving too far in this direction on the grounds that economic decentralization would threaten a loss of political control.

-- A major decentralization would threaten the jobs, status, power, and privileges of thousands of officials now running the economy.

Box Insert

Reforms Under Discussion

Some reform-minded economists in the USSR have taken advantage of the more open environment under Gorbachev to advocate bold measures that could transform the economy. Some of the more far-reaching ideas now being discussed include:

-- Increased competition among state enterprises. Abel Aganbegyan, an economic adviser to Gorbachev, has indicated that inefficient enterprises should be allowed to fail.

-- A major decentralization of the price formation and supply systems. Articles in the Soviet press have called for allowing suppliers to deal directly with their customers and set prices by negotiation, bypassing the central supply system.

-- The use of "family contracts" for agriculture production and long-term leases of land and machinery by small groups of farmers. Such measures have been used successfully on an experimental basis, and their broad introduction is being promoted by some Soviet economists.

End Box Insert

-- The specter of unemployment, inflation, and widening class divisions within society would undermine what Soviet citizens and leaders consider to be some of the principal advantages of socialism.

Indeed, there has been significant opposition to some of Gorbachev's political reform efforts in 1986, and Gorbachev certainly recognizes the threat posed to his programs. Many of the actions he has taken since coming to power can be explained as an effort to trim the bloated party and government bureaucracies so that they will be more receptive to his policies. Since taking over, he has made sweeping personnel changes, replacing about half of the government ministers and over one-third of the provincial party leaders. Substantial changes have taken place at the mid- and-lower levels of the bureaucracy as well.

Just how far Gorbachev will go on reform is impossible to say, although we should have a clearer idea over the next year or so. During the major party plenum dedicated to the economy scheduled for June 1987, issues of economic reform almost certainly will be debated. At the recently completed Party Plenum in January 1987, Gorbachev also called for an All-Union Party Conference to be held in 1988. Second only to a Party Congress in expressing the official "will of the Party," the All-Union Party Conference, said Gorbachev, should address changes in the political system--changes that might lay the groundwork for more substantial reform. The fact that Party Plenum did not endorse his call for an All Union Party Conference, however, shows just how hard changes in these areas are likely to be.

Gorbachev's Political Standing

Despite the opposition shown to some of his policies, Gorbachev is likely to benefit politically from his modernization program over the next few

years. As long as the economy shows some improvement over the record posted in the recent past--which seems probable--Gorbachev will be in a position to declare his program a "success."

Over the longer term, how Gorbachev fares politically is much more open to question. Under a favorable scenario, if:

-- the economy continues to show some progress (even if the FYP goals are not met),

-- the military environment appears less threatening either because of an arms control agreement, a slower Western defense buildup, or other factors, and

-- external factors (e.g. weather, oil prices) are favorable,

then Gorbachev could emerge at the end of the decade in a much stronger position politically.

But the course Gorbachev is pursuing is inherently risky, and things could just as easily go wrong. Although he may be able to claim some success in the immediate future, his repeated attacks on those slowing the process of reconstruction and the strenuous nature of his goals suggest that he is by no means confident of the future. The decisions he will have to reach over the next few years in areas ranging from resource allocation to political and economic reform will be controversial and could well solidify opposing interests in the Party and Government.

Appendix A: 1986 Economic Performance: A Good Showing

The 12th FYP got off to a fast start in 1986. Record farm output and a relatively solid performance in industry helped propel GNP growth to more than 4 percent, the highest in nearly a decade. On the strength of a strong showing in the livestock sector and a good grain crop, agriculture rebounded from a poor performance last year and increased by a hefty 7.3 percent. Industry, meanwhile, also did well, growing by over 3.5 percent with all major branches doing as well or better than last year.

Despite the strong start, a number of problems cropped up during the year that were not captured in the aggregate growth figures. In particular, the machine-building sector--the key to longer term growth--attracted repeated criticism from the leadership for its failure to meet goals for output -- quality, product mix, and deliveries. Meanwhile, shifting terms of trade resulted in a decline in hard currency imports and led Moscow to cancel a number of important projects scheduled for the 12th FYP.

Industry

Industrial output increased by about 3.6 percent in 1986 (see table A-1), the best in nearly a decade and only slightly below plan. Growth slowed during the year, however. Industrial growth during the first quarter of 1986 was up by nearly 6 percent compared with the first quarter of 1985, reflecting the very poor industrial performance during the winter of 1984-85 when severe cold and heavy snows hampered production and transportation. During the last three quarters of 1986, industry grew at an annual rate of about 3 percent.

Table A-1

USSR: Growth of Industrial Production by Branch[1]

Annual Percentage Growth Rate

	1981-85	1981	1982	1983	1984	1985	1986
Industry	2.0	1.3	0.7	2.7	2.6	2.7	3.6
Machinery	1.7	0.2	-0.2	1.8	2.7	4.2	4.4
Industrial materials	2.2	1.6	0.5	3.8	2.4	2.8	3.9
Ferrous metals	1.2	-0.3	-0.4	3.0	0.9	2.8	2.8
Nonferrous metals	2.0	0.3	0.8	3.0	3.0	3.0	3.0
Chemicals	3.8	3.8	2.0	5.8	3.4	4.3	4.4
Wood products	2.1	2.0	0.6	3.0	2.8	2.1	5.4
Construction materials	1.5	1.5	-0.9	3.5	1.7	1.5	3.2
Energy	2.3	1.8	2.3	2.4	2.8	2.0	3.7
Fuels	1.2	1.3	1.7	1.3	0.9	0.7	3.9
Electric power	3.6	2.5	3.1	3.7	5.2	3.5	3.6
Consumer nondurables	1.7	2.2	1.3	2.4	2.4	0.2	1.1
Soft goods	1.6	1.8	-0.5	1.2	2.8	2.4	1.5
Processed foods	1.8	2.5	2.9	3.4	2.1	-1.6	0.7

[1]Value added at 1982 factor cost. Based on CIA's index of Soviet industrial production.

Machinery. While substantially better than the 1.7-percent average annual growth rate achieved during 1981-85, the performance of the machinery sector was probably somewhat of a disappointment to the leadership. Output grew by 4.4 percent, below plan. One of the reasons for the below-plan output may have been that the very heavy investment in the civil machinery sector last year--the 1986 plan called for a 30-percent increase--increased the amount of downtime in enterprises as they installed new equipment or renovated their facilities. Whatever the reason, targets were not met for a number of important types of equipment, including industrial robots, electric motors, chemical equipment, forging and pressing machines, and petroleum equipment. Production targets were exceeded, however, for the majority of items--including metal-cutting machines and computer equipment.

In addition to failing to meet plan targets for some key items, machinery producers also had trouble getting their products to their customers. As indicated in figure A-1, 10 of the 11 civilian machine-building ministries were criticized during the course of the year for not meeting contractual deliveries. In most machine-building ministries, fulfillment of contractual commitments deteriorated compared with 1985. According to the Central Statistical Administration's report on 1986 plan fulfillment, "violations of contract discipline were committed by one in four enterprises."

Industrial Materials. Output of industrial materials (ferrous and nonferrous metals, chemicals, construction materials, and forest products) grew by 3.9 percent in 1986, reflecting in part poor performance in 1985. Most individual sectors performed well, exceeding 1985 growth targets. Shortages of industrial materials caused bottlenecks throughout the economy during the late 1970s and early 1980s. Continued strong showing by these branches is needed if Gorbachev's modernization program is to stay on track:

Figure A-1

Civilian Machine-Building Ministries Criticized for not Meeting Delivery Goals, January-December 1986

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Power Machine Building		●									●	
Heavy and Transport Machine Building		●				●	●	●	●		●	●
Electrical Equipment Industry	●	●							●		●	●
Chemical and Petroleum Machine Building					●	●	●	●	●		●	
Machine Tool and Tool Building Industry					●	●	●	●	●			
Instrument Making, Automation Equipment, and Control Systems												
Automotive Industry		●										
Tractor and Agricultural Machine Building												●
Machine Building for Animal Husbandry and Feed Production				●			●		●			●
Construction, Road, and Municipal Machine Building												●
Machine Building for Light and Food Industry and Household Appliances						●			●		●	●

Source: Central Statistical Administration plan fulfillment reports. Ten of the 11 civilian machinery ministries have been criticized. These criticisms take several forms: "contractual obligations not met," "contractual deliveries not met," "contract discipline breaches," and "output delivery shortfalls."

-- Production of ferrous metals increased by 2.8 percent from the previous year, led by healthy increases in crude steel and rolled products. Output plans were not met, however, for specialty steels, a key product in the modernization program.
-- Helped by Gorbachev's "chemicalization" drive, the chemical industry registered healthy production increases.
-- Timber output, while exhibiting the sharpest growth for basic materials, still did not reach the 1975 level. Rapid growth was fueled by the opening of new timber tracts along the Baikal-Amur Mainline railroad (BAM) corridor.
-- Construction materials were able to shake off the lingering effects of the 1985 harsh winter and posted a rebound in growth to 3.2 percent.
-- Light industry continued its slow, but steady progress, with the largest gains in textiles and knit goods.

Developments over the past three years--the modernization and expansion of capital stock, administrative reforms, personnel reshuffling, and better transport--built a strong foundation for the 1986 acceleration in output. Expanded use of contract fulfillment indicators, while not without problems, improved the flow of raw materials. Meanwhile, managers--feeling the heat from new ministers in the ferrous metal and construction materials branches--apparently succeeded in finding hidden caches of labor, materials, and equipment. Finally, several key industrial facilities initiated a second work shift under an intensification program.

Energy. The energy industries recorded a strong performance in 1986. Targets for coal and natural gas were exceeded, oil production recovered most

of the ground lost over the past two years, and the electric power industry coped well with the disruptions caused by the Chernobyl' nuclear power accident and by reduced hydroelectric output. The price of that success was a large fuel bill, however, another setback in Moscow's drive to conserve energy.

Reversing a two-year decline in output, oil production in 1986 rose to 12.3 million barrels per day (b/d), 400,000 b/d above the 1985 level. All of the increase resulted from growth in West Siberian output, based largely on the return of idle wells to production and a sharp increase in the pace of drilling and well completions. The cost of raising output was apparently high. Although figures on investment have not been released so far, it was slated to rise by 31 percent in 1986.

Natural gas output grew by 6.7 percent to 686 billion cubic meters last year, once again outstripping growth in other energy industries. The increase was, however, smaller than the record 56 billion cubic meters posted in 1985. Production at Urengoy supplied most of last year's increment. Yamburg, the USSR's second largest field, did not begin producing until the final quarter.

Coal production in 1986 soared to 751 million tons, an increase of 25 million tons above the 1985 level and one of the largest gains since World War II. Improvements in labor productivity (possibly through lengthening work hours in selected mining activities), as well as higher output from surface mines located east of the Urals, accounted for most of the production gains. Because most of the coal from the Eastern basins is much lower in heat value than that produced elsewhere in the USSR, the net addition to energy output was probably less than the amount implied by the reported production.

Electricity output was only slightly below plan, despite a troubled year for the power industry--the loss of capacity in the Chernobyl' nuclear accident and drought-reduced hydroelectric production. Electricity output grew by 3.6 percent to 1,599 billion kilowatt hours. A strong performance from fossil-fuel power plants--electricity from this source grew by 5 percent during the year--boosted total output enough to assure an adequate power supply to most of the USSR. (For a discussion of the economic impact of Chernobyl', see the box insert).

Agriculture

Farm production reached a new high in 1986. Continued growth in the livestock sector combined with substantially increased production of important crops such as grain, potatoes, and vegetables resulted in a 7.3-percent increase in farm output (net of feed, seed, and waste)--nearly 5 percentage points above the previous record in 1983.

A 210-million-ton grain crop--the largest grain harvest since the record crop of 237 million tons in 1978--helped Moscow reduce grain imports and contributed to a 5-percent increase in net livestock production. Probably most welcome from the consumers' view, meat production rose by 3.5 percent to 17.7 million tons, exceeding planned output by a surprising margin of 400,000 tons. Meanwhile, potato production reached the highest level since 1979, increasing by nearly 15 million tons from the depressed 1985 level, and vegetable production was up by nearly 2 million tons.

Box Insert

Economic Impact of the Chernobyl' Accident

Analysis of the Chernobyl' accident indicates that the ultimate cost to the economy and in human lives will be high, even though the direct damage to agriculture, industrial facilities, and the environment last year was limited to a fairly small area.

The biggest economic cost so far has been the loss of electricity generated by the Chernobyl' reactors and the resultant increase in fossil fuel used by replacement power plants. We estimate that an additional 15 million barrels of fuel oil (40,000 b/d), 3 billion cubic meters of natural gas, and 5 million tons of coals were used in 1986. In addition, Eastern Europe, particularly Hungary, may have been asked to bear the burden of some electricity cuts during the 1986-87 winter period of peak demand.

Longer term consequences for the Soviet civilian nuclear industry include the investment writeoffs of one or more Chernobyl' reactors and the costs of modifications to improve safety at other reactors. A rough total of these capital costs shows them to be equivalent to 1 to 3 years' investment in the industry. Nevertheless, we expect that the Soviets will strive to minimize the impact of the Chernobyl' accident on their long-term plans for nuclear power and will continue to expand the role of this energy source.

In contrast, Chernobyl's impact on agriculture was small. According to the Soviet press, the area contaminated by radioactive fallout is largely restricted to about 1,000 square kilometers, implying a radius of 18 kilometers, and a few outlying pockets. Over half of the contaminated area consists of forest and swampland. Soviet data show that the region accounts for a minuscule share of total Ukrainian farm output. Damage to farming regions beyond the Chernobyl' area was probably minimal.

In addition to the economic costs, human costs will be substantial. The initial casualties--reportedly 29 people died of acute radiation sickness--will probably account for only a part of the ultimate human toll of the Chernobyl' disaster. Many thousands of persons were exposed to radiation, increasing their long-term cancer risk. Theoretical calculations indicate that over the next 70 years radiation exposure from Chernobyl' could result in an additional 500 deaths from cancer among the 135,000 people evacuated. This would increase cancer risk from the natural population incidence of 12.5 percent to 12.7 percent. The potential death rate due to radiation-induced cancer among those involved in the cleanup is double that of the evacuees. This cancer threat poses unique medical and psychological problems, even though the over statistical increase in cancer rates will be minimal.

End Box Insert

Most of the growth in agricultural output was the result of productivity gains according to the Soviet press. Milk yields increased markedly, as did average slaughter weights, and the period of time required to raise animals to marketable size--nearly twice as long as in the United States--was reduced. After a one-year hiatus, feed efficiency also appeared to improve somewhat.

Transportation

Helping to support industry's and agriculture's strong showing was the improved performance of the transport sector. Better weather in 1986 spurred the general recovery of major industrial customers and increased the demand for transport services, particularly rail freight. This traffic rose by 4.8 percent and rail passenger turnover by 3.8 percent--both well ahead of planned rates. A good year for agriculture also increased shipments on rail and highway carriers, and the increase in oil production during 1986 raised the overall growth rate for freight traffic by reversing last year's fall in oil pipeline traffic.

The railroads squeezed an extra 2.8 percent more tonnage on the mainlines and met the increased demands of industry and agriculture by increasing train weights and reducing turnaround times for freight cars. In addition, as part of their overall campaign to increase efficency and control rising costs, the railroads began trimming excess labor last year. As a result, labor productivity soared by 7.5 percent last year.

Meanwhile, the volume of traffic moved by highway carriers increased by 5.2 percent last year, reversing a three-year decline. We suspect that the turnaround in performance reflects the adjustments of carriers to policies in the early 1980s--notably higher fuel prices, an increased emphasis on conservation, and a crackdown on padding trucking statistics.

Trade

The USSR's trade sector was battered for the second consecutive year, although the Soviets coped fairly well with a difficult situation. The collapse of world oil prices coupled with a sharp drop in the dollar relative to other major Western currencies resulted in an estimated 15-20 percent deterioration in the USSR's hard currency terms of trade. The dollar value of hard currency exports in 1986 dropped by 8 percent, based on Soviet trade data for January-September 1986. Despite Soviet attempts to mitigate the effects of the falling oil price by boosting sales, the value of oil exports to the West fell by an estimated 35 percent. While Moscow increased the dollar value of arms exports to the Third World by roughly 15 percent, the beleaguered position of many of Moscow's principal arms customers probably has limited the Soviets' ability to increase hard currency receipts from these sales.

Reduced hard currency earnings contributed to an estimated 9-percent decline in the dollar value of hard currency imports in 1986, with real purchases dropping more. The largest decline in imports was registered in grain, as improved domestic agricultural performance and lower world grain prices allowed reduced foreign expenditures without jeopardizing consumption goals. Deliveries of machinery and equipment last year increased slightly in dollar terms, but dropped in real terms. The Soviets were able to limit the extent of import cuts, however, by selling markedly more gold at higher prices last year, as well as by borrowing actively in world financial markets. Moreover, Moscow sought to expand its financial horizons by tapping new sources of credit outside of traditional syndicated loans and export financing.

In contrast to trade with the West, Soviet trade with the Communist world grew slightly, increasing to about two-thirds of total trade compared with about 61 percent a year earlier. Moscow's terms of trade with its Communist trading partners improved slightly last year because the large drop in world oil prices has not yet been factored into the CEMA oil pricing formula. One outcome was an increase in the USSR's trade surplus with its East European partners, despite Moscow's repeated calls for more balanced trade.

Appendix B: Tables on Soviet Economic Performance

Table 1

USSR: GNP by Sector of Origin at Factor Cost
(billion 1982 rubles)

	1955	1960	1965	1970	1975	1980	1981	1982	1983	1984	1985	Preliminary 1986
GNP*	248.9	327.3	415.3	531.5	616.8	691.6	701.4	719.7	742.8	753.2	761.1	793.4
Industry	59.3	86.1	118.1	159.8	208.3	237.8	240.8	242.5	249.0	255.4	262.2	271.6
Agriculture	91.1	110.5	127.2	149.8	133.1	135.4	132.6	144.1	152.3	149.2	143.2	155.4
Construction	14.0	22.6	28.4	36.9	46.0	53.1	55.5	56.9	58.7	59.9	61.4	63.7
Transportation	10.6	18.8	30.5	43.0	59.1	70.6	73.5	74.4	76.5	77.7	79.3	82.4
Communications	1.4	1.9	2.8	4.2	5.7	7.2	7.5	7.7	7.9	8.3	8.7	9.1
Trade	11.6	17.1	21.8	31.0	38.6	44.2	45.1	45.1	46.3	47.4	47.8	48.8
Services	49.1	60.0	74.8	92.4	109.8	125.8	128.9	131.0	134.0	137.2	140.5	143.9
Other (including military personnel)	11.9	10.3	11.7	14.3	16.0	17.5	17.6	17.9	18.1	18.2	18.2	18.4

* Components may not add exactly to total because of rounding.

Table 2

USSR: Value Added in Industry at Factor Cost
(billion 1982 rubles)

	1955	1960	1965	1970	1975	1980	1981	1982	1983	1984	1985	Preliminary 1986
Industry*	59.3	86.1	118.1	159.8	208.3	237.8	240.8	242.5	249.0	255.4	262.2	271.6
Ferrous metals	4.8	7.0	10.0	12.9	15.9	16.5	16.5	16.4	16.9	17.0	17.5	18.0
Nonferrous metals	2.1	2.8	4.1	6.0	7.9	8.5	8.6	8.6	8.9	9.1	9.4	9.7
Fuel	5.4	8.6	12.1	15.8	20.6	24.3	24.6	25.0	25.4	25.6	25.8	26.8
Electric power	2.5	4.2	7.3	10.6	15.0	18.6	19.1	19.7	20.4	21.5	22.2	23.0
Machine building & metal working	17.6	23.7	33.0	46.1	64.0	77.3	77.5	77.3	78.7	80.9	84.3	88.0
Chemicals	2.2	3.9	6.9	10.5	15.6	18.1	18.7	19.1	20.2	20.9	21.8	22.8
Wood, pulp, and paper	7.5	9.9	11.3	12.9	14.6	14.1	14.4	14.5	14.9	15.4	15.7	16.5
Construction materials	2.9	5.8	7.6	10.3	13.2	14.1	14.3	14.2	14.7	14.9	15.2	15.6
Light industry	6.6	8.8	10.0	13.7	15.5	17.5	17.8	17.7	18.0	18.5	18.9	19.2
Food industry	5.5	8.2	11.4	15.1	18.5	19.8	20.3	20.9	21.6	22.0	21.7	21.8
Other industry	2.2	3.2	4.4	6.0	7.8	8.9	9.0	9.1	9.3	9.5	9.8	10.2

* Components may not add exactly to total because of rounding.

Table 3

USSR: Average Annual Growth of Per-Capita Consumption

(1982 established prices)

	1956-60	1961-65	1966-70	1971-75	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Preliminary 1986
Total consumption	3.9	2.6	5.2	2.8	1.7	2.0	0.9	2.5	2.6	1.3	-1.1	1.1	1.8	-0.5	0.8
Food	3.1	2.0	4.5	1.8	0.1	1.1	-0.5	2.1	1.7	-0.2	-1.5	1.2	0.8	-4.5	-1.3
Soft goods	5.6	2.2	7.2	2.7	3.4	2.5	1.9	3.0	3.3	2.1	-1.5	0.6	2.4	3.2	1.4
Durables	10.4	3.9	9.5	9.7	5.4	7.9	3.3	3.6	6.7	6.3	-2.6	1.7	4.6	5.2	5.0
Services	3.3	4.6	4.2	2.9	2.4	0.9	2.3	2.3	2.2	1.4	1.4	1.3	1.8	1.8	2.1
Housing	3.1	2.5	2.1	1.7	1.4	1.4	1.4	1.2	1.2	1.3	2.0	1.9	1.6	1.6	1.5
Utilities	4.7	7.8	5.4	5.3	5.0	3.0	3.8	3.3	3.7	2.7	3.1	3.2	4.1	3.3	2.9
Transportation	9.3	9.0	8.2	6.4	5.2	-3.9	2.4	4.1	3.5	3.2	1.1	1.4	1.6	1.4	2.7
Communications	5.4	5.7	7.6	5.4	4.2	3.6	3.4	3.9	3.9	3.5	1.3	2.5	3.7	3.7	4.0
Repair and Personal care	3.7	5.0	6.4	4.4	4.0	3.2	4.8	4.2	4.4	3.4	2.1	3.5	3.1	3.5	4.8
Recreation	5.3	3.6	2.6	4.1	-3.2	-2.1	1.3	2.4	3.8	-1.8	-0.6	-0.5	-1.0	1.1	1.0
Health	3.5	2.3	3.3	1.5	1.0	0.8	1.8	1.0	-0.2	-0.0	0.9	0.6	1.0	0.3	0.8
Education	1.5	5.3	3.0	1.5	1.7	1.2	1.3	1.4	1.5	-0.1	0.9	-0.2	1.0	1.4	1.0

[a] Preliminary.

Table 4

USSR: Growth of GNP and Factor Productivity
(average annual percentage change)

	1966-70[a]	1971-75[a]	1976-80[a]	1981	1982	1983	1984	1985	Preliminary 1986
Gross national product[b]	5.1	3.0	2.3	1.4	2.6	3.2	1.4	1.1	4.2
Combined inputs[c]	4.1	4.2	3.4	3.0	3.1	2.9	2.8	2.5	2.5
Workhours	2.0	1.7	1.2	0.9	1.0	0.7	0.5	0.4	0.6
Capital	7.4	8.0	6.9	6.4	6.3	6.3	6.3	5.8	5.5
Land	0.0	0.1	-0.1	-0.1	-0.1	0.1	-0.1	-0.7	0.0
Total factor productivity	0.9	-1.1	-1.1	-1.6	-0.4	0.3	-1.3	-1.4	1.7
Workhour productivity	3.0	1.3	1.1	0.5	1.6	2.5	0.9	0.7	3.6
Capital productivity	-2.2	-4.6	-4.3	-4.7	-3.4	-2.9	-4.6	-4.5	-1.2
Land productivity	5.0	2.9	2.5	1.5	2.7	3.1	1.5	1.8	4.2

[a]For computing average annual rates of growth, the base year is the year prior to the stated period.

[b]Based on indexes of GNP (1982 rubles) by sector of origin at factor cost.

[c]Inputs of workhours capital, and land are combined using weights of 56.5 percent, 40.5 percent, 3.0 percent, respectively in a Cobb-Douglas (linear homogeneous) production function. These weights represent the distribution of labor costs (wages, social insurance deductions, and other income), capital costs (depreciation and a calculated capital charge), and land rent in 1982, the base year for all indexes underlying the growth rate calculations.

Table 5

USSR: Growth of Industrial Output and Factor Productivity
(average annual percentage change)

	1966-70[a]	1971-75[a]	1976-80[a]	1981	1982	1983	1984	1985	Preliminary 1986
Industrial production	6.2	5.5	2.7	1.3	0.8	2.7	2.6	2.7	3.6
Combined inputs[b]	6.0	5.2	4.7	4.4	4.0	3.8	3.8	3.7	3.4
Workhours	3.1	1.6	1.4	0.7	0.8	0.4	0.5	0.4	0.4
Capital	8.8	8.7	7.7	7.8	7.0	6.9	6.8	6.6	6.1
Total factor productivity	-0.2	-0.2	-1.9	-3.0	-3.2	-1.1	-1.1	-0.9	-0.2
Workhour productivity	3.1	3.9	1.3	0.6	0.0	2.2	2.1	2.2	3.1
Capital productivity	-2.3	-3.0	-4.7	-6.1	-5.9	-4.0	-3.9	-3.7	-2.4

[a]For computing the average annual rates of growth, the base year is the year prior to the stated period.

[b]Inputs of workhours and capital are combined using weights of 47.4 percent and 52.6 percent, respectively, in a Cobb-Douglas (linear homogeneous) production function. These weights represent the distribution of labor costs (wages, social insurance deductions, and other income) and capital costs (depreciation and a capital charge) in 1982, the base year for all indexes underlying the growth rate calculations.

Table 6

USSR: Gross Fixed Capital Investment

(billion rubles, 1984 prices)

	1965	1970	1975	1980	1981	1982	1983	1984	1985
Total Investment	64.2	92.2	128.5	150.9	156.5	161.9	171.0	174.3	179.5
By source:									
State	55.3	79.4	111.8	133.1	138.5	143.2	150.7	153.7	157.9
Collective farms	5.5	8.6	12.2	13.3	13.4	13.9	14.8	14.7	15.4
Cooperative enterprises and organizations	1.7	2.6	2.7	2.9	2.9	3.1	3.5	3.6	3.7
Private housing and apartments	1.7	1.6	1.8	1.6	1.7	1.7	2.0	2.3	2.5
By sector:									
Industry	23.6	32.5	44.9	53.3	55.4	57.0	60.1	62.7	65.5
Agriculture	10.6	16.0	26.1	29.8	30.5	31.0	32.1	31.1	31.5
Transportation and communications	6.4	9.0	14.4	18.1	18.9	19.9	21.4	22.3	21.9
Construction	1.6	3.3	4.8	6.0	5.8	6.3	6.3	5.8	6.1
Housing	11.2	15.8	19.2	21.1	22.4	24.0	25.9	27.3	28.1
Trade and services	10.8	15.6	19.1	22.6	23.5	23.7	25.2	25.1	26.4

*Source: Narodnoe Khozlastvo v SSSR, 1985.

Table 7

USSR: Estimated Hard Currency Balance of Payments

(Million Current US Dollars)

	1970	1975	1980	1981	1982	1983	1984	1985	1986[a]
Current account balance	114	-4,624	-1,904	-175	4,333	4,663	4,484	317	220
Merchandise trade balance	-306	-4,814	1,714	200	4,433	4,713	4,434	517	700
Exports, f.o.b.	2,405	9,443	27,784	27,978	31,977	32,428	31,726	26,370	24,200
Imports, f.o.b.	2,711	14,257	26,070	27,778	27,544	27,715	27,292	25,853	23,500
Net interest	-80	-570	-700	-1,375	-1,200	-1,150	-1,050	-1,300	-1,580
Other invisibles and transfers	500	760	890	1,000	1,100	1,100	1,100	1,100	1,100
Capital account balance	265	6,520	1,630	5,840	-1,340	1,650	500	5,800	9,200
Net foreign borrowings[b]	290	5,400	-185	3,000	-865	500	-100	6,000	6,400
Net change in assets held in Western banks[c]	25	-395	-235	-140	1,575	-400	400	2,000	1,000
Gold sales	negl.	725	1,580	2,700	1,100	750	1,000	1,800	3,800
Net errors and omissions[d]	-379	-1,896	-3,534	-5,665	-2,993	-6,313	-4,984	-6,117	-9,420

[a] Preliminary.

[b] Including additions to short-term debt.

[c] A minus sign signifies a decline in the value of assets.

[d] Includes hard currency assistance to and trade with Communist countries, credits to the LDCs under military and economic aid programs, credits to developed Western countries to finance sales of oil and other commodities, as well as errors and omissions in other line items of the accounts. Among the omissions is an adjustment for fluctuations in the US dollars vis-a-vis other Western currencies.

Table 8

USSR: Total Trade, 1981-85[a]

(Billions of Current US Dollars)

	Annual Average 1981-85	1981	1982	1983	1984	1985	1986[b]
USSR: Exports by region							
Total	87.3	79.4	87.2	91.7	91.5	86.9	94.7
Communist	49.3	43.4	47.1	51.0	51.9	53.2	63.1
Developed countries	25.2	24.4	26.2	26.7	26.4	22.5	19.2
Less developed countries	12.7	11.6	13.8	13.9	13.2	11.2	12.4
USSR: Imports by region							
Total	78.3	73.2	77.8	80.5	80.3	82.9	90.2
Communist	44.3	37.2	42.5	45.5	47.0	50.6	59.0
Developed countries	24.6	25.4	26.2	25.4	24.2	23.3	23.2
Less developed countries	9.4	10.6	9.1	9.6	9.1	9.0	8.0

[a]Includes both hard currency trade and trade conducted with soft currency partners on a clearing account basis.

[b]Preliminary.

Table 9

USSR: Selected Indicators of Agricultural Output

	1955	1960	1965	1970	1975	1980	1981	1982	1983	1984	1985	1986
Value of output[a] (billion rubles)	63.8	78.8	94.0	112.5	109.4	114.6	113.7	121.9	129.3	128.3	126.2	135.3
Commodity production (million metric tons)												
Grain[b]	103.7	125.5	121.1	186.8	140.1	189.1	158.2	186.8	192.2	172.6	191.7	210.1
Potatoes	71.8	84.4	88.7	96.8	88.7	67.0	72.1	78.2	82.9	85.5	73.0	87.2
Sugar beets	31.0	57.7	72.3	78.9	66.3	81.0	60.8	71.4	81.8	85.4	82.1	79.3
Sunflower seed	3.80	3.97	5.45	6.14	4.99	4.62	4.68	5.34	5.06	4.53	5.23	5.3
Cotton	3.88	4.29	5.66	6.89	7.86	9.96	9.64	9.28	9.21	8.62	8.75	8.23
Vegetables	14.1	16.6	17.6	21.2	23.4	27.3	27.1	30.0	29.5	31.5	28.1	29.7
Meat	6.3	8.7	10.0	12.3	15.0	15.1	15.2	15.4	16.4	17.0	17.1	17.7
Milk	43.0	61.7	72.6	83.0	90.8	90.9	88.9	91.0	96.5	97.9	98.6	101.1
Wool	.256	.357	.357	.419	.467	.461	.460	.452	.462	.465	.447	.465
Eggs (billion)	18.5	27.5	29.1	40.7	57.4	67.9	70.9	72.4	75.1	76.5	77.3	80.3

[a]Net of feed, seed, and waste, in constant 1982 prices.

[b]Bunker weight. To be comparable to Western measures, an average reduction of 11 percent is required.

ECONOMIC PERFORMANCE IN 1986

Senator PROXMIRE. Thank you very much, gentlemen. I appreciate very much this excellent presentation you have made here.

I am going to ask you first, Director MacEachin, about the remarkable improvement you are reporting in gross national product and in overall economic statistics.

In table 4 of the paper on Gorbachev's modernization program which you submitted to the committee a few days ago, you showed toward the end the gross national product in 1986 is growing at a 4.2 percent rate. That is four times what it grew in 1985. It is far higher than it grew in any year since 1980, and in 1971 to 1975, the growth only averaged 3 percent; 1976 to 1980, it only averaged 2.3 percent.

So this is remarkably good performance for the Soviet Union.

Now you project a growth of only 2 percent over the next several years, and I think most experts felt that last year we wouldn't get that kind of growth they got.

The CIA was at one time projecting no more than 1 to 2 percent growth for the Soviet economy.

Are you saying that Gorbachev's policies, while they have succeeded spectacularly last year will fail over the coming years?

PROJECTIONS

Mr. MACEACHIN. Senator Proxmire, we are projecting a 2 to 3 percent growth throughout the remainder of this decade, and yes, we would say that one aspect of the past year which you can't count on in the coming years is his success on agriculture and luck with the weather. Not only did they get the highest crop since 1978, but the improved weather also facilitated transportation and limited many of the bottlenecks that have characterized performance in the past.

Second, we would agree that his policies on the human factors did have an effect. The extent of alcoholism, corruption, and lack of discipline in the labor and management force that existed before then is indicated in an obverse way by the amount of success and increased productivity he was able to achieve just by reducing, not eliminating, those factors.

Our projections are higher than they have been in the past, in part because of the programs which Gorbachev has laid out, but we don't anticipate that he can count on a very strong performance in agriculture, which really led this 4.2 percent growth.

PRODUCTIVITY

Senator PROXMIRE. When you break down the gross national product into combined inputs and total factor productivity, you see some very interesting figures. The combined inputs in 1986 were about the same or even less than they were in preceding years. The work hours were a little lower than average. The capital productivity was down. Land productivity, meaning agriculture, I take it, there was no change. Total factor productivity, however, was up spectacularly. The hours were down, but the work hour productivity was up.

Am I reading too much into these figures? Are these things that just go back and forth, that are volatile and have little significance for the future? Or does this suggest that they probably are becoming more efficient and productive?

Mr. NOREN. Sir, these figures have been just as volatile in the past. What we are saying is that the human factors' campaign that Gorbachev has launched has had enough of an impact on the quality of work supplied by the labor force that you have a higher level of labor productivity. We think, however, that the kinds of increases in labor productivity that he has managed to obtain during the last 2 years will be very difficult to sustain for very many years. We are not saying that all the impetus for the human factors campaign has been lost, but the rate of growth of labor productivity over the next few years is likely to tail off.

Senator PROXMIRE. Thank you very much.

OUTPUT OF CIVILIAN AND DEFENSE MINISTRIES

Now I would like to get into—in your presentation, Admiral Schmitt, you show, toward the end of the table, level of output of defense and civil machinery indexes. It is fascinating, and it disagrees with the CIA. That always makes it interesting for the committee, when we do expert witnesses, who feel there is a difference here.

In your table, you show that the total civilian output for the Civil Machinery Ministry, and I stress machinery—this isn't the whole of the economy, just the machinery—has gone down for civilian percentage of shares from 56 to 44 percent.

Admiral, you show that defense has gone up from 44 to 56. In other words, a spectacular change and quite a steady change, since 1970. I understand that means that about 60 percent of the output of the Soviet machinery industries goes for military procurement, while the CIA estimates the figure at about 40 percent. There is also a disagreement about how much of the growth of machinery goes to defense.

So can each of you discuss your views of the trends and their significance, in terms of the capital productivity problem.

First, Admiral, you go ahead, since you had this basic table.

Mr. WEINSTEIN. The first point I would like to make is that the measures that we have here——

Senator PROXMIRE. Would you identify yourself again, sir.

Mr. WEINSTEIN. Mr. Weinstein. The measures that we have here are for the total civilian and defense industrial ministries that produce the machinery. As we point out in this chart, much of the output of the defense ministries, part of it is civilian goods. Some of the output of the civilian ministries is defense goods. So that the measure of output of these defense industrial ministries is not military procurement. It is merely that which those nine ministries produce in toto. Therefore, we do not equate the output of the nondefense industrial ministries to military procurement; however, we do believe that because these nine defense ministries are the primary producers of military equipment, that it is the military that is the real driver, in terms of growth. So that what is of more inter-

est to us is the growth of these nine ministries, not so much the absolute level of output.

Senator PROXMIRE. Very good. Thank you, sir. Now, Director MacEachin.

SHARES OF MACHINERY PRODUCTION

Mr. MACEACHIN. Mr. Jim Noren has the response on this.

Mr. NOREN. Yes, sir. We do it differently. In order to obtain the share of military machinery and total machinery production, we basically take our best estimates of the total production of military hardware, estimates of the machinery component of fixed investment, machinery component of capital repair, exports, and so forth, and simply add them up and get a percentage distribution. When we do that, we get a share for defense machinery in total machinery of about 40 percent. That share, I believe, has increased a bit over time in current prices, but not that much.

Perhaps from about 35 percent in 1972 to about 40 percent now. We have some problems. We have discussed this with DIA, extensively. The alternative approach of using ministerial data, as Mr. Weinstein notes, there is a problem of coverage. There is a great deal of civilian machinery that is produced in the so-called defense industrial ministries. The Ministry of Electronics and the Ministry of Communications Equipment, for example, are producing practically all of the electronics and the communications equipment for the civilian economy as well.

DEFENSE BURDEN

Senator PROXMIRE. Could I ask you, Admiral, are you giving us—do I understand you to say that a disproportionate share of the Soviet machinery is going into defense? In the long run, this is going to have an adverse effect on the Soviet economy, because they are taking it from their civilian sector.

Admiral SCHMITT. I would answer that, sir, that the trend has been toward a greater concentration of that capability into the military sector. If the modernization program is to have its full effect, there is going to have to be some lessening of that in the future. That would be a reverse of that trend. That reversal will not come quickly.

Senator PROXMIRE. But does this mean that the Soviet burden is diminishing the productivity, overall productivity of the Soviet economy? And in the long run, this is going to be—going to make it harder for them to provide, in the future, the kind of military technology and military procurement that they would like to have.

Admiral SCHMITT. Yes, sir. I think that is a contributing factor.

Senator PROXMIRE. Do you agree with that, Mr. MacEachin?

Mr. MACEACHIN. I would say, sir, that our figure of 40 percent is a disproportionate burden on the Soviet machine building industry.

Senator PROXMIRE. Now to put that into perspective, how will that compare with the United States? What proportion of our machinery goes into defense and what proportion goes into the private sector? Do you have any figures on that?

Mr. NOREN. We don't have any figures, Senator.

Senator PROXMIRE. It would be very helpful, if you get that for us, because it would be also much easier to appraise. And also, if you can do it, because I don't want to put you to too much trouble, if you could give us the figure on one or two other countries, so we would have some kind of a benchmark, some kind of comparison.

Do you have anything on that that you could add, Admiral?

Admiral SCHMITT. No, I don't.

Mr. MACEACHIN. To go back to my sense of the question, as I said, we would say that, however the percentages may vary, we certainly agree that a disproportionate amount of the machine building industries' output is oriented to defense. This has, in some measure, contributed to the condition of the Soviet economy today, therefore constraining growth in that burden is going to be important for the Gorbachev plan to succeed. We think his plan at present counts on a heavy dose of machinery output going to the civilian economy in the near term in order to raise productivity; this should enable him then to meet the military demands in the longer term without having to cut back.

Senator PROXMIRE. Thank you very much. I am going to have to go make a statement on the floor, briefly, and then come back. I am going to ask Senator Melcher to chair while I am gone, and Congressman McMillan is recognized for questions.

COMPARISONS WITH OTHER COUNTRIES

Representative MCMILLAN. Thank you, Senator. I would like to follow on some of the questioning having to do with the allocation of machinery production resources. It is interesting to see the trends, regardless of the basis which you present them on, but it is very difficult to make evaluations in the absence of comparable data for our own economy. So I would reiterate I think the importance of trying to get a comparable figure for the United States and taking another angle, it would seem also very interesting to develop those figures for NATO countries. Japan, although perhaps that is insignificant. And Warsaw Pact countries, because it seems maybe out of line on this. The Soviet Union might be faced with a situation not unlike we're faced with, and that is the issue of cost sharing in matters of national and international security. The United States spending in the range of 6.7, 6.8 of its GNP on national security, in contrast to the NATO countries significantly below that and Japan even more so.

To what degree is Gorbachev in the Soviet Union is he today and is he likely in the future to try to shift some of the burden for allocating resources to production of defense material to Warsaw Pact countries?

EASTERN EUROPE AND WARSAW PACT DEFENSE

Mr. MACEACHIN. Sir, the Soviets, even before Gorbachev, have been making fairly stringent efforts to persuade their allies to increase their contribution to the Warsaw Pact defense effort. They have met with little success. The East European economies are not in the condition to make a major contribution. The East European members of the Warsaw Pact actually have, I believe, a substantially smaller work force than the Western members of NATO. In

fact, while there are some instances where the East European members of the Warsaw Pact produce certain items of equipment, for the most part, we see a real lag in those countries. They are falling further and further behind the Soviet Union in their ability to produce advanced weaponry, and this, in fact, is a gap which we know concerns the Soviets.

Aircraft are a good example, as are armored vehicles. We can remember when Czechoslovakia was a very powerful producer of armored combat vehicles and tanks, but because of the economic situation in the last few years and the Soviet dominance of the whole military alliance, a gap is growing, and most of the military hardware now of any degree of modernity that is in the alliance is produced in the Soviet Union.

DEFENSE BURDEN IN EASTERN EUROPE

Representative McMILLAN. Given the fact that the Soviet Union may be, in the last year, spending 17 to 18 percent of its GNP, do we have any sort of benchmarks on other Warsaw Pact countries?

Mr. NOREN. It varies from country to country, but it is in the range of 4 to 6 percent of GNP for the non-Soviet members.

Representative McMILLAN. It may be a few percentage points larger participation than most of the NATO countries, but they have achieved that, if my understanding of history is correct, in that their defense industries were largely split following World War II and the machinery taken to the Soviet Union out of most of the occupied nations of Eastern Europe; isn't that true?

Mr. NOREN. That is true.

Representative McMILLAN. And what they have recovered has probably been built largely from scratch.

Mr. NOREN. They do have some defense industry. The Poles, for example, produce tanks, and there is a considerable production of helicopters which are delivered to Soviet forces.

Representative McMILLAN. It would be my impression, I don't have the statistics to base this upon, just the general impression. I would be interested in your remarks that most of the Eastern European countries are economically much more vibrant than the Soviet Union. Is that a fair statement, particularly with respect to Czechoslovakia, Hungary?

Mr. NOREN. Poland, I would say, would be the exception to that rule, and Rumania. The GDR and Czechoslovakia, to some extent, are doing better in terms of productivity, but all of those countries, or most of the countries, except for the GDR, have had severe balance-of-payments problems from the late 1970's into the early 1980's. The Soviets tried to force military modernization programs on them. They were not successful, as has been said. They are trying to do that again, but those countries still have the same economic problems.

Admiral SCHMITT. I would like to add one item here.

Representative SCHEUER. Excuse me. The security people have turned off the sound system, so we are relying on the human voice. So if you could forget the sound and try to speak up, I would appreciate it.

Admiral SCHMITT. I would like to make one point. While the Bloc is not a major contributor to the Soviet military power, it is an important contributor, in that they produce a lot of components in that part of the world, and part of the Soviet military complex, in a way, will probably be in the modernization as it progresses, a more important element, and that would be faster moving. The things that we are talking about are the computer systems, the robotics and things like that. They have a better prospect of developing that quicker than the Soviets. The Soviets will selectively take that technology and incorporate it into their system. So the components that are coming into the Soviet system will probably be more advanced than those produced in the Soviet Union.

Representative MCMILLAN. It is also true, is it not, that they also could contribute perhaps proportionately, relative to their economy, higher percentage of personnel, in terms of active duty military personnel. Would that be true?

Mr. NAGY. Higher than the Western Europeans, say, for example, in terms of standing forces, sir?

Representative MCMILLAN. Yes.

Mr. NAGY. The answer to that, I believe, is yes. A higher share in terms of standing forces than is the case with the Western European members of NATO; that's true.

ALLOCATION OF CAPITAL

Representative MCMILLAN. This kind of leads into another question, which is more economic, and I suppose, socialist economics. It is the table here, table 2, in the CIA report, having to do with measuring fixed investments, using capital as the measure of that.

In a system like the Soviet system, when you start making decisions about the allocation of capital, aren't, in fact, you also making decisions about the allocation of human resources as much as anything else?

Mr. NOREN. To give an example, in Soviet industry, their plans for growth under this Five-Year Plan call for all of the growth to be obtained by increased labor productivity. In other words, they don't plan on adding any additional people to Soviet industry. At the same time, there's going to be a very large increment of capital stock. So in that sense, a lot of what they are trying to do is to substitute capital for labor. So instead of directing people where the capital is going, they are displacing labor by moving capital.

Mr. MACEACHIN. Representative McMillan, if I understand your question now, when one makes decisions between allocating capital, such as between civilian machine building versus military production, it has an impact upon the demands for labor. If that is the sense of the question, I would say that there is a certain amount of inherent competition for skilled labor that is generated by Gorbachev's leadership effort to concentrate on high technology machine building, in terms of an impact on the military. We would have to acknowledge that even though the plant and equipment is in place for a great deal, if not most of the military systems that are expected to be delivered through the rest of this decade, there will be some competition for certain scarce resources, one of which is skilled labor in the Soviet Union. This could affect perhaps the

rates at which some of these things are introduced in the force, but we don't believe that that competition in the foreseeable future is going to have a material impact on what ultimately gets fielded, if that is my understanding of your question, sir.

Representative McMILLAN. I think I have overstepped my time. I may be able to come back to this and ask the question maybe in a different way.

GRAIN PRODUCTION ESTIMATES

Senator MELCHER [presiding]. Mr. MacEachin, these papers, I guess they're your testimony, put Soviet grain production at 210 million tons.

Mr. MACEACHIN. In 1986; yes, sir.

Senator MELCHER.Where do you get these figures?

Mr. WHITEHOUSE. The Soviets have announced that figure, sir, but in addition to that, we monitor Soviet grain production, beginning with the crop year through the harvest from a variety of sources, some highly classified and some totally open.

Mr. MACEACHIN. It is true that our monitoring indicates that the Soviet figure was generally correct.

Mr. WHITEHOUSE. We estimated that the grain crop would be somewhat lower, but the 210 million tons was within our range of error.

Senator MELCHER. How does the Department of Agriculture get their figures?

Mr. WHITEHOUSE. Essentially, they collaborate with us, to some extent, but they follow open source materials and they have on-site inspectors, as well, throughout the year. Their AG attaché in Moscow takes a trip through the grain growing regions during the summer months.

Senator MELCHER. When do the USDA and the CIA reconcile their figures?

Mr. WHITEHOUSE. We don't reconcile them, sir. They are independent estimates, but we do talk to one another.

Senator MELCHER. What did they say in October of 1986?

Mr. WHITEHOUSE. As of early October 1986, the USDA estimated that the 1986 Soviet grain crop would be 180 million tons, an increase of 5 million tons from the Department's early September estimate. (The USDA is mandated to publish estimates of world grain production on or about the 10th of each month.) Based on assessment of Soviet open press reporting, U.S. Embassy Moscow reporting, and intelligence sources, CIA estimates at roughly the same time that the crop would be substantially higher.

Later in October both agencies received the U.S.S.R.'s 1985 statistical abstract. For the first time since 1980, the book included statistics on Soviet grain production, area, and yield for the 1981–85 period. Analysis of these data and of revised preliminary 1986 grain-area data also published by the U.S.S.R. in October led to an upward revision of the USDA and CIA estimates. In early November, the USDA published a revised estimate of 195 million tons, and CIA's revised estimate at that time was about the same.

Both USDA and CIA estimates are subject to statistical uncertainty. The final Soviet grain production figure of 210 million tons,

reported in Soviet media as preliminary in November and confirmed in December, fell within the 99-percent confidence interval of our forecast. USDA and CIA accept the official Soviet grain production figure.

Senator MELCHER. Now you measure eggs, I see, Doctor. Egg production is up in 1986 in the Soviet Union.

Mr. MACEACHIN. Yes. Eggs?

Senator MELCHER. You measure the number of eggs. You tally the number of eggs. And egg production, you say, was up in 1986.

Mr. WHITEHOUSE. The Soviets report egg production. They report milk production. They report meat production. All this is open source material.

Senator MELCHER. I assume it is open. I don't see much that is very secret about any of this testimony, but they report it, and you accept it.

Mr. MACEACHIN. No, sir, well, for egg production, we don't have an independent means to count eggs, as you know.

Senator MELCHER. It is all right with me to accept their figures. I am not quarreling with accepting. After all, if we can accept USDA figures, I guess we can accept pronouncements out of the Soviets.

Now their egg production is up and their milk production is up, and their meat production is up; is that right?

Mr. MACEACHIN. It was up in 1986; that's true.

Senator MELCHER. What did that mean, in terms of the total amount of grain produced in the Soviet Union, in terms of how much more they needed. If all this egg, meat, and milk production is up, I assume that it takes grain to do that; is that correct?

Mr. WHITEHOUSE. Yes, sir; that's correct.

The Soviets have made some gains in agricultural technology over the last few years that have helped them.

GRAIN IMPORT REQUIREMENTS

Senator MELCHER. My point is this. I am not trying to be rude, but my point is this. So I want you to be talking to this point.

As they produce, they produce 210 million metric tons of grain; and their milk and eggs and meat production is up. Naturally, a lot of this grain goes into the production of this added amount of milk, meat and eggs.

My point is, is this a big crop or not? Do they still have to import a lot of grain, simply because they don't have enough? They put a lot more into the poultry and into the hogs and cattle and the dairy cows.

Mr. WHITEHOUSE. There are two important points to make here. Yes, they do need more grain. Roughly speaking, we estimate they need between 235 million and 240 million tons of grain a year.

Senator MELCHER. And there's every reason to believe that the milk, meat, and poultry production is—or dairy production. Milk, meat, and poultry production is going to continue to ascend in the Soviet Union?

Mr. WHITEHOUSE. Yes, sir, but that will not, in turn, raise the demand for grain, proportionately, for the following reason; the Soviets have changed the mix of feed for animals in such a way that it makes feed per unit of output from the animal more efficient.

They have also made considerable gains in biotechnology in single cell protein and so forth, so that their livestock raising now is more productive than it had been, and they get better use from the grain crop, that portion of it that they use for animal feed than they had in the past. So just because meat, milk, and eggs are up doesn't necessarily mean that grain requirements are going up proportionately. They do go up, but over the last 5 or 6 years, it's been less than proportionate, because the Soviets are reaping the benefits of some gains in agricultural technology.

Senator MELCHER. I guess the point of my question then is this. Are those increases in milk, meat, and poultry of enough significance to require greater amounts of grain each year in order to sustain the same level of improvement?

Mr. MACEACHIN. I think, Senator, the point here is that the Soviets have a certain requirement for grain, in order to meet their minimum agricultural production requirements. If they have a very good crop, obviously, they can reduce their import requirement. That is the amount they need to import to fill that gap. The gains you have described in those particular dairy products, for meat that they have achieved recently, have not come about, because more grain has been made available, but because they have made better use of what they have.

If they are going to grow, to continue to grow, they will either have to have, obviously, continued improvements in their effective use of the resources and/or more grain. I think the direct linkage of the increased poultry output to the higher crop is a bit misleading. It is more, is it not, a case of improvements in the agricultural production industry.

Senator MELCHER. Thank you. From that, you have surmised that the demand or whatever they allow to be increased in production of milk, meat, and poultry is not going to require additional amounts of grain.

Mr. MACEACHIN. Certainly not in proportion we don't expect, no. About 240 million metric tons is what they have been working with.

Senator MELCHER. Now wait a minute.

Mr. WHITEHOUSE. That is total need.

Senator MELCHER. So they are still going to have to import 30 of that 210.

Mr. MACEACHIN. Exactly. If they have a bad crop year next year, say a real disaster, it could throw them out into the market to try and fill the shortfall, and in effect, it will have them pressing to sustain the gains they have made in the poultry, meat, and dairy products and meat production that they achieved this year.

Senator MELCHER. I am only going to make one observation, and that is this, that based on reports of people returning from the Soviet, that it is still extremely difficult to purchase meat and perhaps dairy, but I will just say meat, that the demand apparently isn't even close to being met.

Mr. MACEACHIN. Yes, sir.

Senator MELCHER. Since that is the case, if it is the object of the Soviets to increase that, I don't care how good they are, even though they get to be as good as we are, it is still going to take them 4 to 6 pounds of grain to produce 1 pound of pork or beef, and

that is a huge—with that growth, that gobbles up a tremendous amount of grain.

Mr. WHITEHOUSE. Yes, sir. You're absolutely right. Indeed, if you're thinking of demand for meeting the needs of the population and meeting the goals of increasing the standards of living, that is a difficult matter. Absolutely, the grain requirement will go up, as will the requirement for meat, milk, and eggs. Indeed, if the Soviets were to make the same kind of gains in meat, milk, and eggs, in percentage terms, year in and year out for the next several years as they did last year, they would require more grain, because obviously the technology is not going to improve that fast.

Senator MELCHER. Thank you very much.

Senator PROXMIRE [presiding]. Congressman Scheuer.

QUESTIONS FOR GORBACHEV

Representative SCHEUER. Thank you, Mr. Chairman. I have a couple of questions, but before I ask questions about your testimony, I would like to ask you a separate question. I am going to be going to Moscow with the Speaker, Jim Wright, on the 10th of April and will be seeing a number of high officials and probably seeing Mr. Gorbachev.

If you were sitting in that meeting, can you suggest any questions that you would like to ask Mr. Gorbachev?

Senator PROXMIRE. I hope you can talk him into greater democracy over there. By having on the basis of one answer, we got more McDonald's.

Representative SCHEUER. More McDonald's? Yes. Well, that's a kind of an assault of one kind or another. You know, I have met several Japanese—it is a little bit off the subject, but not too much, who are little bit rueful. They say, we've given you sushi, we've given you sashimi. We've given you the most incredible delicious Japanese food, all of which is good for your health, low in cholesterol, low in sugar, low in animal fat, and what have you given us in return? Burger King and McDonald's. Is that fair, they ask. And I am hard-put to answer that question, Mr. Chairman.

Senator PROXMIRE. Well, you should be.

DEMOCRATIZATION

Representative SCHEUER. Well, I will just say a word about these so-called "secret elections." Secret elections, as between designees of the party organization. It is not as if the people out there are being given an opportunity to have some grassroots candidates for high public office.

Mr. MACEACHIN. Yes, sir. That's quite true. Again, as I mentioned at the outset, democratization, as it comes out of the mouths of the Soviet leadership, bears very little resemblance to democracy as we define it. But if you were in one of these party sinecures, and someone talks about not just having a candidate who can run against you, but you won't be able to review the lists of who voted for whom, and the voters know that their ballot will be secret, that really strikes at the heart of the system of coercion which has existed up until now.

Representative SCHEUER. It may be a small but significant step, and we hope that it is.

Mr. MACEACHIN. The party did not support that in its resolution.

Representative SCHEUER. Thank you very much. Thank you, Mr. Chairman.

SOVIET TECHNOLOGY LAGS

Senator PROXMIRE. Thank you, Congressman Scheuer.

Director MacEachin, the report states that the Soviets have been concerned for years about the U.S. leads in military and civilian manufacturing technologies. In figure 3, it shows selected comparisons of manufacturing technologies. The chart shows U.S. leads of 7 to 12 years in seven categories, including microprocessors, computer-operated machine tools, mainframes, supercomputers, and software.

My question is, have the Soviet lags been getting worse and what is their significance in terms of the representativeness of these categories and their effects on economic performance?

Mr. MACEACHIN. Sir, I am going to ask, in a moment, Mr. Whitehouse, to answer this in detail. It is my understanding, from all the information we have, that in the recent years, the gap has been growing, not shrinking, and these are the very areas in which Gorbachev has placed much of the emphasis for modernizing the Soviet economy. It is the Western advantage in leadtime in these very areas which has the military concerned and, in fact, the former Chief of the General Staff has addressed these very points and has indicated that it is modernization of industry in these areas which is absolutely necessary to enable the Soviets to hold on to the military achievements they have made in the last couple of decades.

I might give you one empirical data point. As you may recall, in October 1985, after the Geneva summit, when Gorbachev gave his press conference, one of the reporters asked him if he was worried about the President's SDI program, because he lagged in the technology. It is not normal for Soviet leaders to indicate they lag anybody anywhere in the world in any department. Gorbachev's response, as best I recollect it was, no, I am not worried. We are very capable in technology. There are a few areas, such as communications technology—I think that is precisely the word he used—in which the West has some lead.

So that was an acknowledgment. And by "communications technology," he was talking about much of these areas here, and he has definitely identified these as areas to concentrate in closing the gap, in terms of his industrial production base.

Mr. WHITEHOUSE. Let me just add, Senator. The fact that the Soviets are concentrating very heavily on these areas means that they will produce individual items, perhaps very many individual items, but the fact that they are so behind and have not had the experience of using and developing these things from scratch, means that they won't be able to bolt them to the factory floor in ways that effectively interface with the rest of their facilities. They do not have the process technologies necessary to make things like advanced robots and advanced machine tools work in tandem with

one another in an effective way. They are very much behind, and we feel they will continue to fall behind.

Senator PROXMIRE. It seems to me that this has very, very serious military implications, too.

DEFENSE PRODUCTION TECHNOLOGY LAGS

Isn't it correct that the seven areas of manufacturing technologies that do have military, as well as civilian applications in the United States-Soviet relative standing demonstrate that they also lag behind us in defense production technologies?

Mr. MACEACHIN. Yes, sir.

Mr. WHITEHOUSE. Indeed.

Mr. MACEACHIN. So their own military have addressed this question. We would not say that they see themselves in danger at present. Our understanding is, they are quite happy with what they have achieved, but there is no question that they are concerned for the long term. We have ample evidence that they discuss, amongst themselves, the trend in these kinds of technologies, and we suspect, strongly, that it is because they recognize that the need to close the gap on these technologies, that there has not been more vocal and stringent resistance to the investment plan laid out initially by Gorbachev. How long that arrangement and agreement will sustain itself, of course, is another matter.

Again, we would say that when the machine tooling for the next generation of weapons systems becomes a live issue, that is when the tensions between the military and civilian program will get tighter.

Senator PROXMIRE. Admiral Schmitt, you say that the Soviet military agrees that military requirements have moved into the area of high technology and, therefore, a strong technologically advanced industrial base is essential to produce the complex weaponry of the 1990's.

Do you agree that the Soviets now lag behind the United States in defense manufacturing technologies, and do you see any realistic prospects that they can catch up in the foreseeable future?

Admiral SCHMITT. To answer the second part of the question first, sir, we in DIA think that if the Soviets are going to catch up, they are going to have to use Western technology, and we have to look at things like joint venture operations, as one of the mechanisms, and probably the foremost mechanism where they will try to capitalize on our technology.

In and of itself, Soviet industry, left to its own devices, we do not see them catching up.

MILITARY TECHNOLOGY STANDING

Senator PROXMIRE. I think one of the most striking differences is that the Secretary of Defense for Research and Technology reported to Congress last year that, of the 20 most important military technology areas, the United States leads in 14. We are tied—roughly tied in six. The Soviet leads in none, zero.

It seems to me that gives us a decisive military advantage, as far as technology is concerned. They have more numbers, of course, in

tanks and planes and so forth, but in technology, it seems clear, decisive, and I take it there is no question about that.

Do you have any question about that?

Admiral SCHMITT. I have made the observation, sir, that sometimes technologically advanced weapons are your downfall, rather than a benefit to you, and that is particularly when you are outnumbered by many.

If you look at the battlefield in Iran, Iraq, today, we have sophisticatedly equipped Iraq, which is losing territory to a very poorly equipped, but very tenacious Iranian force, and that is a case of technology versus old-fashioned fire power.

Senator PROXMIRE. You would not say, we would be better off if our technology were behind?

Admiral SCHMITT. It depends on the scenario of the war you are fighting, sir. I am just giving you an example of a case, where it would be better, were the Iranians equipped higher technology weapons, but they are making do with less sophisticated systems and being successful, to a degree.

Senator PROXMIRE. That is not the kind of war that we are going to fight, if we fight a war, heaven forbid, with the Soviet Union.

Admiral SCHMITT. We will fight World War I all over again, sir.

Senator PROXMIRE. If you fight a war with the Soviet Union, it is very likely to be a nuclear war, sir, a very short war, and an overwhelmingly devastating war.

Admiral SCHMITT. The Soviets are not planning on what you just said, sir.

Senator PROXMIRE. I am sure they are not, but that is the great deterrent. In my view, that it is the thing that has kept the peace for 40 years. Both sides would lose.

The President has said that. I think the President was right when he said it.

Do you agree with that?

Admiral SCHMITT. Yes, sir.

Mr. NAGY. Senator, if I could add to the answer to the question about the technology, the relative status of technology between the two nations. One does have to be careful when you look at comparisons of that sort, of course. Because you are looking not always at the deployed technology but at technological capability. So you must add to such comparisons, the degree to which those technologies are in the field, the relative modernity.

Senator PROXMIRE. That was reported too by the Secretary of Defense for Research and Development. That is deployed technologies, comparing the two, and you're right. The advantage isn't that clear, but nevertheless, the advantage is on our side.

Mr. NAGY. That is correct.

DEFENSE GROWTH RATES

Senator PROXMIRE. Not in numbers, but in deployed technologies.

Admiral Schmitt, as I understand defense performance, you estimate that both overall defense and procurement growth are 3 percent for each of the years, 1985 and 1986, somewhat faster growth than over the previous period; however, your view is that the in-

crease was driven by the procurement cycle and does not indicate change in Gorbachev's defense spending policies since his arrival.

Does that mean the DIA and CIA believe that the trend in slower growth since 1975 remains the same? In other words, that the recent good showing by the Soviet Union from their standpoint in defense in the last year is simply a cyclical reflection and not an indication of likely a permanent situation?

Admiral SCHMITT. In looking at Soviet defense growth from the early 1980's on, it has been rather steady growth, 2 to 3 percent per year. We don't see that as having fluctuated up and down, and we look, for the next year or two, to continue that trend.

Senator PROXMIRE. We got a report last year from both the DIA and the CIA that indicated the defense growth had slowed down a great deal below what they thought it was and had been over the last 10 years, the defense growth was 2 percent. Procurement was barely 1 percent. In fact, it was a little less than 1 percent. A correction over what had been given to us before. That was the most spectacular part of the testimony, which I understand, both the CIA and the DIA agreed to.

Mr. MACEACHIN. I think that is correct. We saw a slowdown beginning about 1976 from the very high annual growth rates that had been achieved with overall defense spending from 1964. Spending has grown on average about 2 to 3 percent since the mid-1970's, with about 1 to 2 percent in procurement.

SPENDING IN AFGHANISTAN

Senator PROXMIRE. That was particularly impressive in view of the fact that the Soviet Union, for the last 7 years has been fighting a war. Now it is not an all-out war, but it is a war against Afghanistan that absorbs a great deal of military effort.

We had a war with Vietnam, also a country much smaller and weaker than we were, that resulted in increasing our defense spending overall very greatly. They didn't increase theirs. So I presume that keeping other things the same, in other words, leaving out of account the military effort in Afghanistan, they probably, if anything, had a decline in military spending. How about that?

Mr. MACEACHIN. First of all, if I can finish my other statement, the figures that we gave you, 3 percent, 1985–86, come at the end of that trend we discussed last year.

Now as regards Afghanistan, we could give you some comparative statistics and take that question for the record, but that war is much smaller in terms, of force commitment, numbers of forces and hardware consumption than was the war that we fought in Vietnam.

For example, the maximum number of Soviet troops, by my recollection, we have estimated in Afghanistan, is about 120,000. And the intensity levels of the war are much lower, it is more of a hit-and-run skirmish. The opposition that the Soviets face does not have anywhere near the kinds of sophisticated weaponry that we faced in Vietnam.

A great expense to the U.S. Government in Vietnam were the number of aircraft we lost over North Vietnam. So I think that

those kinds of comparisons, that those two things really don't compare.

Senator PROXMIRE. I am not saying, of course, as I understand it, there were about 150,000 troops, as you have just told us by the Soviet Union in Afghanistan and maybe twice that many, maybe three times that many American troops in Vietnam.

The point is, however, no matter how limited the military engagement, it does absorb military spending. There is some attrition, the personnel it costs, and so forth. That should have been reflected. It hasn't been, in view of the statistics we got last year. The fact is, that there was a diminution in the rate of increase in military spending overall by the Soviet Union over the last 10 years.

Mr. MACEACHIN. Yes, sir. The flattening or the leveling off occurred about, say, 1976, the Soviets invaded Afghanistan in December 1979.

During that period our figures—correct me, someone, if I am wrong—show that about 1 or 2 percent of the total military budget has been accounted for by the expenditures of the war in Afghanistan.

We would say that is a figure which we have estimated toward the high side.

Senator PROXMIRE. I hope you will go back and look it over. I think 1 or 2 percent, I would think that would be a little low, in fact, very low. I can remember the people—we got a briefing, many economists and some defense people, about the great surplus we were going to have and what we were going to do with the end-of-the-war dividend, when we stopped the fighting in Vietnam. This was supposed to make a tremendous difference in military spending. It did, for a while, we cut back, and then went way up. We had gone way up at the time of Vietnam.

I can't believe it is 1 or 2 percent, but you are in a position to know. I wish you would give us some figures to try to corroborate that.

Mr. MACEACHIN. We'll give you those figures, yes, sir. As I said, we took maximizing assumptions. For example, we costed the equipment losses at the purchased price rather than at the depreciated price. We used fairly liberal interpretation of aircraft losses. One other aspect of this contest, in addition to the fact that it is almost a pure guerrilla war, is that it is fought across the border from the Soviet Union and does not require the expense of transporting them across the Pacific Ocean.

Senator PROXMIRE. That is why it is amazing, they have done so badly. Congressman McMillan.

Representative MCMILLAN. Just to follow on that a little bit, I have raised that question myself, not specifically with respect to Afghanistan, but in terms of total Soviet foreign military and economic assistance relative to the degree that the United States does the same thing and the degree to which that is a burden on their society, that if, in fact, they are dealing with scarce resources, which is the way I described it, and a reallocation of scarce resources, what are they likely to do in terms of the level of commitment worldwide. That would strike me as perhaps even greater than we have.

Mr. MACEACHIN. Senator, that reminds me of one other aspect of this thing, and that is, when we consider the high absolute level which the Soviet military budget had reached by 1979, to say that 1 or 2 percent of that budget is going into Afghanistan, the 1 or 2 may be misleading. That is 1 or 2 percent of an immense military budget.

SOVIET COMMITMENTS WORLDWIDE

Insofar as worldwide commitments, our evidence on this is sketchy, but what it does tell us about is as follows: that in those areas where they already have a heavy commitment, both of materiel and prestige—Afghanistan, Angola, Cuba, and the Middle East in Syria, and certainly Vietnam, they are going to sustain themselves. And if they see a need to match some problem with an increment to their aid, so far, the evidence is, they will do so.

And we know they have done so in one or two cases. There does, however, seem to be some general guidelines from the leadership which suggest that they will be more cautious in their venture capital, that is, before they start attempting to move into new areas and take advantage of situations. They are going to be more careful to assure that it is to their advantage before they make the commitment rather than be caught in some areas where they have to make large expenditures, and they are not rather confident of the results they can receive from that.

NICARAGUA

Representative MCMILLAN. I was in Nicaragua back in January. I met with their Finance Minister, who informed me that their defense expenditures were in excess of 30 percent of their GNP. I don't know whether that is an accurate figure or not. I said, does that include the Soviet Military assistance that you receive? And he said, no.

Now in the debate on aid to the contras, I have heard that described all the way from $300 million to $600 million per year. You may have an estimate of that, which would be interesting, but it would seem to me that in the environment that we are faced with or that the Soviets are faced with, that that has got to be maybe a marginal decision with them. In other words, I am not naive enough to think that they are going to withdraw their commitment, but given the level of their commitments worldwide, the pressures they've got at home in an environment of scarce resources, that one of the places where they might be willing to give is in an area such as Nicaragua, in terms of a reduction of the intensity of their commitment.

OPPORTUNITY TO REDUCE TENSIONS

It strikes me that if one of the things we are trying to do here is to make an assessment of what is driving the change of attitude in the Soviet Union and what do we want to do about it, one of the things we should be looking for are areas in which we, by our actions, can serve as a catalyst that encourages them to move in a direction that we would like them to move, a lessening of tension or a lessening of commitment in areas that are in our interest. And

it strikes me that we are on the threshold of an opportunity here, and the better we understand the situation, the more likely we are going to make decisions that don't compromise but accommodate a very practical need for changes in the Soviet Union. I don't think it is ideological; I think it is practical.

I would just be interested in perhaps your comments along those lines, particularly with respect to who are Gorbachev's allies in the Soviet Union. He is not going home at night in making notes and coming up with new ideas to be presenting. Somebody else has got to be in support of what he is trying to do.

What are some of the major obstacles to the changes that he is seeking to bring about and to what degree is it driven by pressure from the Soviet public, or is it driven by strictly a bureaucratic shifting of attitude? I asked a lot of questions.

NICARAGUA

Mr. MACEACHIN. Sir, I'll address a lot of those questions in the next few minutes.

First, on the issue of the economic cost as incentives to perhaps draw back, I would say that when we measure the proportion of their economic output—I mean, of the military output that goes into Nicaragua, it is lost in the rounding. The economic aid issue might, and I think probably would figure.

For example, in a country which produces thousands of helicopters, the couple of dozen rented to Nicaragua is not a major incentive.

ACCESS TO WESTERN TECHNOLOGY

I do agree with you, however, that he has incentives related to his economic efforts, which provide opportunities, if he wants to have access to Western technology through commercial arrangements. This is a strong incentive for him to make the kind of political actions which we can require him to make, if they are going to join the community of nations in this regard.

Frankly, the same is true with regard to human rights.

AFGHANISTAN

So I think that in terms of pressures, probably the area which involves the greatest potential pressure on his internal agenda is Afghanistan. There is a certain consciousness in the population, but the Soviet system is well-equipped to contain this kind of thing. So he does not face what we faced in the United States in the 1960's, but there is some incentive.

There was also some incentive because, while its profile has been reduced in the outlook of other nations, Afghanistan and the Soviet involvement there is, nonetheless, a political problem for Moscow and its dealings with many other nations, not the least of which are the moderate Arab countries.

MOSCOW'S POLITICAL LEADERSHIP

To look at the second half of your question, I think I could describe the political alliance in Moscow about as follows:

If we look at the top leadership, perhaps specifically picking the Politburo, we could break it into about three groups. The two smallest groups of this breakdown would be those whom we would see as pure Gorbachev proteges. The people who owe their political position today to him and who are firmly and clearly identified with him.

If we look at the Politburo and the candidate members, some may differ on a name or two, but we would see Shevardnadze as probably the only full member that would fit that category, and perhaps Yeltsi and Yakovlev, the candidate members.

If we looked at the other extreme—that is what I will call the "Old Guard," the Brezhnevites, the Brezhnev holdovers, people who, frankly, believe that the old system is just fine and who don't want to see any change in it, we could count maybe two full members—Cherbitsky, perhaps Gromyko—although his position is a little more ambiguous. And of the candidate members, probably Sokolov.

Representative MCMILLAN. He is a survivor.

Mr. MACEACHIN. Now if we look at the rest, we would define them as people whose political life or political freedom of choice is generally independent of Gorbachev. They don't owe him their position. They have some allegiance to him, particularly on the fundamental issues of what they want to try to accomplish, but on each of the steps that he attempts to take, he can't just get this group to say yes. He has to convince them that it is the right thing to do.

And as I described earlier, I think that recently, he's begun to probe at some areas where that middle group, the most important of which, in the Politburo, again, I would say, well, certainly Ligachev, the Second Secretary, Ryzhkoy, the head of the government, perhaps Chebrikov, the head of the KGB, and Lev Zaikov, who has the defense industrial sector. Two of the four are senior secretaries, in the sense that they also hold powerful positions in the Secretariat. And he needs their support. He can get it politically, but it is also at the desk, for example, of Ligachev, that complaints will come from various of these satrapies that make up the party, about moving too fast.

Regarding his advisers, I am not certain we can identify certain individuals that we would say are his idea men. We know that Yakovlev has had a fair amount of influence. He is a candidate member.

SUPPORT FOR REFORMS

We know others have claimed to, but they are perhaps exaggerating their influence. So it does seem that much of the support we are looking at came from the original consensus that the outlook for the Soviet economy was bleak and not just measured in terms of GNP growth per year. That is a misleading figure. Not only was that causing the total GNP differential between the United States and the Soviet Union to begin to open again, after it had been closing for a number of years, but it was the whole matter of the industrial technological base. And it is not just pure technology, that is laboratory science, but it is the ability to apply this to produc-

tion, which are the things that make a modern society. The party elite clearly did develop a consensus that they had to modernize, but we are at a stage now, 2 years down the road, in which there definitely appear to be some disagreements on how to do it and how fast to proceed.

If I had to make a guess, I am going to say that we are going to see that tension grow over the next 12 months, unless Gorbachev, in effect, pulls back, and frankly, everything he has done so far suggests that he has no intention or no inclination to do so.

Representative McMILLAN. Thank you. I have used up my 10 minutes.

Senator PROXMIRE. Why don't you go ahead if you have any more questions.

RESOURCE ALLOCATION AND SCARCITY

Representative McMILLAN. I think that pretty well answers it, I didn't get a chance to go back to my original question, but I think that from the way that you have described him, what he is faced with, unlike we are faced with in our society, where I think we are dealing with problems of abundance and an allocation of resources in an atmosphere of abundance, and our problem in, let's say maintaining national security, is restraining consumption, where his problem is entirely different. It is at the opposite end of the pole. He is dealing with scarce resources, and perhaps they could print capital if they chose to, but that is not his problem. His problems are limitations of raw materials and people.

Isn't that at the root of the problem?

Mr. MACEACHIN. I don't think his limitation is raw material, in that sense. It is limitations on those things which have contributed to the resurgence of the economic performance of so many Western countries. That resurgence in the West has been led, to a large measure, by the application of technology, not technology that was created in the 1980's, but the technology which, in the early 1980's, the Western industrial countries applied. In the Soviet Union, those are the very things, those are the resources which are scarce. Labor skills and the advanced technology and the ability to apply that to the industrial process to turn out a consistent high quality product.

In fact, many of the products, as we know now, that are coming out of the machinery industries are not meeting the standards.

STEEL AND PETROCHEMICAL INDUSTRIES

Mr. WHITEHOUSE. Congressman McMillan, let me follow up on that just a little bit, because I think we can illustrate this basic problem very poignantly, if you look at, for example, the steel industry and the petrochemical industry. These are two critical areas for Gorbachev. Without modernization in these areas, he won't be able to successfully meet his modernization goals for machine building, because they provide such critical input.

Now the petrochemical industry was developed very rapidly in the 1960's and 1970's, and relied almost exclusively on Western technology. As a result, they let their chemical engineering and R&D facilities wane during that period of time. Now those sectors

are ill prepared to carry the petrochemical industry to a higher level of technology.

So in order to improve technology in the petrochemical industry and modernize that industry, he would have to rely again on Western equipment. So he is going to be playing catch-up ball.

The same is true—not the same, but a similar situation is true in the steel industry. Gorbachev will make some gains in, for example, the share of steel produced by continuous casting, which is a modern method by Soviet standards. However, even these gains will not be sufficient to keep pace with advances that are currently taking place in the West. The West European countries, Japan, and the United States are now engaged in developing steel technologies that will change the whole way that steel is made in the 1990's.

Again, although the Soviets will make some gains, they will be playing catch-up ball, and they will remain behind technologically. In addition, because Gorbachev doesn't have a cadre of managerial people and technical workers who have been accustomed to an environment of innovation, risk-taking, and the like, successful accomplishment of his modernization program will be hampered.

Mr. MACEACHIN. There, Mr. McMillan, you see the nub of his political problem, because he has to go out and create that in a structure in which it is exactly what they don't want. They want their sinecures, their protection, the guarantee that goes with stagnation. And when he begins to attack that structure, it creates the kind of political tension which we are seeing now.

Representative MCMILLAN. Thank you.

SDI AND DEFENSE SPENDING

Senator PROXMIRE. Thank you very much, Congressman.

Mr. MacEachin, you are forecasting only modest growth in the Soviet defense procurement over the next several years, a range of 2 percent annually.

You say in your testimony that pressure for larger defense allocations could develop, depending on the pace of major U.S. programs, especially SDI.

Are you saying that a U.S. decision to go forward with SDI could, in effect, force the Soviets to increase their defense spending?

Mr. MACEACHIN. I think that it certainly is going to complicate Soviet defense planning for the longer term; yes, sir. For the short term, I would say that the problems facing the Soviets in designing defense outlays will be as follows. The first issue will probably be in the investment area in the defense industry. I would expect that that issue could very well come to a head in the next 12 to 24 months, because they do have to start designing the next Five Year Plan.

Clearly, it poses an immense challenge to Soviet technology. Our problem in forecasting Soviet defense spending is that none of us is sure what the future is on strategic defense, and I use the term generically, and what kinds of forms it will take and how the Soviets will react.

We do feel that we have to put down a marker that says most of our projections on Soviet defense outlays have to be caveated, with

the acknowledgment that we are not sure how SDI is going to play out.

SOVIET STRATEGIC DEFENSE EXPENDITURE

Senator PROXMIRE. Let me ask both of you gentlemen—the hour is late, and I don't want to hold you up or the committee up any longer than necessary, so make your responses as concise as you can.

Robert Gates, who has been the No. 2 man at the CIA, has been quoted as saying the Soviets have spent $150 billion in strategic defense over the past 10 years, 15 times the amount spent by the United States.

Can you explain the breakdown of Soviet strategic defense spending for strategic air defense, upgrading the Moscow ABM system and any other categories, and is it correct that most of the spending for strategic defense is not the SDI concept of defending against U.S. ICBM's, but has been in the area of air defense in the Moscow ABM?

Mr. NOREN. I have some figures here, Senator. It is our estimate that in 1984 dollars, the Soviet Union spent $144 billion on strategic defense activities from 1976 to 1985. The bulk of that was spent—well, $43 billion for interceptor aircraft, $38 billion for surface-to-air missiles.

Senator PROXMIRE. That is pretty much air defense. That is not to shoot down incoming missiles.

Mr. NOREN. Only $6 billion for antiballistic missile systems and $56 billion for a combination of support and command and control.

Mr. MACEACHIN. I have to ask, does that include any R&D?

Mr. NOREN. That does not include any R&D.

Senator PROXMIRE. What does the R&D show?

Mr. NOREN. We are not able to separate expenditures on R&D for strategic defense from total R&D expenditures.

Senator PROXMIRE. So that $150 billion figure is misleading, really.

I think a lot of people have the notion they are spending 15 times as much on the ABM system and trying to counter ballistic missiles as we are. Not true.

Mr. NOREN. Well, I think, in the speech, as he gave it, he said $150 billion for strategic defense, not for defense against ballistic missiles specifically.

RESPONSES TO SDI

Senator PROXMIRE. There are several ways that the Soviets can attempt to counter SDI in costs that will be far less than matching.

Can you discuss briefly the possible counteractions and whether it would be feasible and logical on military and economic grounds for the Soviets to take that course? Mr. MacEachin.

Mr. MACEACHIN. I am trying to think of a list of where to start. One—the one most often discussed for the short term—is proliferation of attack systems; that is, offensive systems.

Senator PROXMIRE. Will they build cruise missiles, and of course, it is pretty hard to defend against cruise missiles.

Mr. MACEACHIN. I will defer to Admiral Schmitt to examine the military feasibility of those items.

From my standpoint, already it has caused the Soviet Union to have to examine the whole range of its military procurement options over the next two decades and is already causing them to take a different approach or perhaps a somewhat different outlook on the question of sustaining an offensive arms race, which has been brought about by a rekindling of interest in strategic defense, but as far as military efficacy goes, I will leave that to the military.

Senator PROXMIRE. Admiral Schmitt.

Admiral SCHMITT. I would answer that by saying that it depends on what you mean by defeating the SDI. If the Soviets cannot be assured of a kill capability with their offensive system, a plan kill capability, and we have enough systems up there to call that into question, they are going to be deterred.

Now they have to have the capability, from a planning point of view, assuring that they had a very high credibility of their systems getting through, whatever system they devised, and I am sure they are actively researching right now the various options on that, but it has to have a very, very high reliability figure for the way they plan their nuclear strikes.

Senator PROXMIRE. Gentlemen, the National Academy of Sciences was recently polled by the physicists, engineers, and mathematicians who were most expert in the field of SDI. These are the elite of the scientific world. They were recently polled by Cornell University, and 34 percent of them responded. It was an astonishing response. They indicated in their response just overwhelming conviction that SDI wouldn't work.

Something like 4 percent said that SDI could be successful sometime in the next 25 years; 80 percent said it would not be.

Now the reason I point that out is, is there any indication in discussions by the Soviet leadership or other evidence that they would like to see the United States go forward with SDI, because Gorbachev's outstanding scientists are probably telling him the same thing. In other words, we are going to divert a trillion dollars, according to the testimony we have had before the Appropriations Committee by the former Defense Secretaries, into researching, deploying, manufacturing the SDI. And former Secretary Brown, who probably knows more about this than almost anybody who has been in the Defense Department, who is the head of the lab at Livermore, tells us that it would cost between $100 billion and $200 billion every year in perpetuity to maintain, operate, and modernize SDI.

So it would seem to me that from the standpoint of the Soviet Union, nothing could be better than for us to divert what would be $100 billion a year, half of our defense effort into something that would be a turkey.

Admiral SCHMITT. Mr. MacEachin earlier alluded to the fact that the Soviet military leadership was content with the situation as of today, with their military power. There was concern about the future, if the SDI program were to be funded and go forward. And if it were to fail, or if it were to become a money sump pump, the Soviet military leadership would be concerned, that the technology spawned by the research and the development could be converted

into other weapons systems to make them more effective. And they would then have to modernize against that kind of threat.

Mr. NAGY. If I might add to that, sir——

Senator PROXMIRE. Whereas the scientists say that it wouldn't work, but go ahead.

Mr. NAGY. All signs, and we have done a great deal of research in DIA on just this point, in terms of the validity of what we see the Soviets say publicly and privately and what we see them doing themselves with regard to this issue, all indications are that they take the potential, the technical potential of SDI very seriously from a military planning standpoint. There appears to be—not that we can tell the reaction that you cite.

Senator PROXMIRE. The reason I cite that is that whenever I argue with my colleagues in the Senate Cloakroom on this, they are for SDI, and of course, I am very skeptical about it, the only argument they ever come down with is, yes, but Gorbachev's against it, therefore, it must be good. You know. And if I were in Gorbachev's position, and I wanted us to waste a trillion dollars and diminish our conventional strength and the rest of our strategic strength, I would do exactly what he is doing. Nothing in the world is more likely to make us go ahead than his opposition.

Mr. NAGY. I understand that. We have examined it from that standpoint as to whether or not this is subterfuge on his part, in order to—well, a briar patch sort of commentary on his part. We don't believe that is the case, sir. We believe that from a military requirements standpoint, they are very serious in their planning with regard to how to deal with this threat and want very much for the United States not to go forward.

SOVIET ABM SYSTEM

Senator PROXMIRE. Admiral Schmitt, an article in the March 16 Washington Post, it maintains that the DIA is supporting the administration's misuse of intelligence to portray the Soviet military threat in ways to expedite SDI. It says that the administration and the Pentagon assert that the Soviets are in the process of constructing an ABM defense for their own territory.

Do they have the components for a national antiballistic missile system?

Admiral SCHMITT. Our position on that is that the Soviets are right now building an ABM system around Moscow. They also have in some of their mobile systems the capability of expanding out of that and making it nationwide.

Senator PROXMIRE. They are permitted under the ABM treaty, of course, to go ahead with one ABM system, and we are too, but we decided it wouldn't be worth it, so they went ahead, and we didn't.

Admiral SCHMITT. That is 1 site up to 100 missiles. They are modernizing that system. It is really a second generation of ABM system.

ABM TREATY VIOLATION

Senator PROXMIRE. Are they violating the ABM treaty in doing so?

Admiral SCHMITT. Yes, sir.

Senator PROXMIRE. You think they are. Do you agree?

Mr. NAGY. An aspect of what they have done with regard to the radar at Krasnoyarsk, for example, we believe that is a violation. Of course, the administration, sir, has just delivered, I believe, on the 10th of this month, its viewpoints with regard to the violations.

Senator PROXMIRE. The CIA has just told us they are only spending $6 billion in that area in the past 10 years.

Mr. NAGY. Exclusive of R&D, yes, sir.

Senator PROXMIRE. Isn't it correct that the only modern battle management and early warning system that they are building at the Moscow ABM site is permitted by the ABM treaty?

Mr. NAGY. I believe if I might, sir, I believe there are some differences of view, not all of them having to do with technical capability as to the large phased array radars, which we see ringing the Soviet Union as to their capability for battle management. I say not all of them technical, because some of them technical, because some of the issues turn on their vulnerability to attack, not on their technical capacity to provide battle management information for ABM's.

So we are dealing not just with technical capacity. The answer, sir, is in DIA's view, certainly, the Moscow radar is a battle management radar. We believe the large radars around the peripheral also have the potential to provide hands off data for an ABM system more broadly deployed.

SOVIET-CHINESE RELATIONS

Senator PROXMIRE. I just have one or two more questions and they don't relate to the Soviets, they relate to China.

I would like to ask each of you gentlemen to respond as precisely as you can. Although we hoped to discuss China separately, I would like each of you to state your views on the change in the Soviet-Chinese relations, how it might influence Soviet defense forces in the Far East and what changes have occurred in the force levels and structures in that area. Director MacEachin.

Mr. MACEACHIN. Let me start with that one. We see the pace of that relationship being modulated more by the People's Republic of China than by the Soviet Union. By that, I mean that there is little doubt in our mind that the Soviets would like to create some kind of a rapprochement, both for its own benefit and as a means of affecting the balance, the global balance, the political strategic balance.

The Chinese, however, are less anxious, and are ultimately the ones who determine the extent to which that will succeed.

There have been some openings in the economic area, which we could mention in a moment, but the Chinese are still insistent that the Soviets must deal with the three obstacles. The Chinese—and I only am quoting our China people—have a great deal of incentive to maintain the relationship with the West and Soviet responses to this so far have been minimal.

For example, the minor, in many ways sham, withdrawal of troops from Afghanistan. The Chinese are fully aware that was not a real reduction in the military commitment.

So while we see the Soviets continue to make efforts at the political level, so far, we don't think that has moved very far. It has not, for example, resulted in the reopening of party-to-party relations. We think that the People's Republic in Beijing will really control the pace of that.

Admiral SCHMITT. I will just say, sir, on the military development side, on this withdrawal from Mongolia, all the elements are there for another sham occurrence to occur. There will be a token withdrawal, but the net result will be an increase in Soviet capability in that country.

We are looking for that to happen.

SOVIET FORCES IN THE FAR EAST

On what the Soviets have been doing around the periphery of China, there's been a steady increase. They have increased the capabilities of the ground forces on the border area. The Far Eastern fleet is still being upgraded. The use and operational capability of Cam Ranh Bay is improving, so we just see incremental military developments around them, and the Chinese are on their guard.

Senator PROXMIRE. Can you give us some figures on these regional increases in the overall proportion of the spending that the Soviet Union is devoting, the overall proportion of their forces they are devoting to the Chinese front and other parts of China?

Admiral SCHMITT. Yes, sir.

Senator PROXMIRE. It would certainly be a dramatic situation, bad for us, if those two Communist countries should once again work together.

Admiral SCHMITT. I don't want to mislead you. The main Soviet interest is still toward Europe by a large margin.

Senator PROXMIRE. Oh, sure, of course.

Admiral SCHMITT. Relative to the Far East, there has been improvement.

Senator PROXMIRE. It is 20 percent less.

Admiral SCHMITT. Roughly, 25 percent.

Senator PROXMIRE. That is a big commitment, and, of course, it is also a fact of life that we face one huge nuclear potential adversary. The Soviet Union faces the United States, the United Kingdom, France, and China, all of which have nuclear capability of one sort or another.

The United Kingdom and France, probably China, are building up their nuclear capabilities, to some extent. These days, I have read some estimates that both the United Kingdom and France, if they retaliated or launched an attack, it could have a devastating effect on the Soviet Union.

So they are facing four nuclear powers; we're facing one.

Thank you, gentlemen, very, very much. You have been most helpful.

We deeply appreciate it, and I want to thank Congressman McMillan, who's been so good in his attendance here.

I would like also to ask you to respond to questions we may submit for the record.

[The followiing questions and answers were subsequently supplied for the record:]

RESPONSE OF THE CENTRAL INTELLIGENCE AGENCY
TO ADDITIONAL WRITTEN QUESTIONS POSED BY
SENATOR PROXMIRE

Congress of the United States
JOINT ECONOMIC COMMITTEE
(CREATED PURSUANT TO SEC. 5(a) OF PUBLIC LAW 304, 79TH CONGRESS)
Washington, DC 20510

April 1, 1987

Mr. Douglas MacEachin
Director of Soviet Analysis
Central Intelligence Agency
Washington, D.C. 20505

Dear Mr. MacEachin:

The following are questions and requests for information I would like you to respond to for the record of the March 19, 1987, hearings. I would like the responses to be as complete as possible and in unclassified form:

1. The Soviet Union's energy performance in 1986 is interesting because oil production increased to 12.3 million barrels a day. Does the CIA still believe the Soviets are likely to become net oil importers, and if so, when? Is energy likely to be a constraint on growth? Is it likely to impede the modernization program?

2. Why have oil and coal production increased? Does the increase have long-term implications?

3. Are the Soviets able to sell more oil and expect the oil price to rise?

4. Have they contracted all the gas sales they want? What are they doing to increase sales?

5. What impact will the new gas pipeline and possible competition of Norway and Algeria have on Soviet sales in Europe in the 1990's?

6. In view of the fact that the pace of technological advances has quickened in the West, it seems reasonable to assume that, while the Soviets are trying to catch up in the areas they now lag, we will be pressing ahead in other technologies and the Soviets will fall further behind. Do you agree? Or is Gorbachev's modernization program likely to be so successful they will leap ahead of us?

7. The weapons production tables show that CIA's estimates for 1985 and 1986 are lower than DIA's in several areas, including ICBM's, IRBM's, helicopters, and tanks. If the CIA's production estimates are used, does Soviet procurement still grow by 3 percent annually for 1985 and 1986, or does it grow by a slower rate? How do you explain the differences in the CIA and DIA estimates?

8. Is it correct that you project only modest growth in Soviet defense procurement and overall defense spending over the next several years in the range of 2 percent annually?

9. What are the implications for the modernization program of increased procurement? Could modernization succeed if military procurement increases substantially during 1987-1990?

10. We understand that the demographic trends would not support both continuation of the past level of military manpower and new increments to the labor force. Has the draft been scaled down? Have military builders been available for civilian activities?

11. With the economic slowdown in East Europe, there must be pressure within the Warsaw Pact to reduce burden sharing. Has this occurred?

12. Some suggest that the burden of strategic programs is small because of low ruble totals. However, previous testimony on the trade-offs between military and civilian sectors for access to skilled manpower and unique facilities suggests significant opportunity costs. How do you view these costs?

13. Your assessment of Gorbachev's industrial mobilization program seems to be that it properly addresses the central problem of low capital productivity, but that it will not succeed. Can you briefly summarize the reasons you believe the program will fail?

14. The Soviets have set ambitious objectives for their modernization program. Even if they fall short, isn't it possible that they will make substantial improvements which could raise their rates of growth to the 3 or 4 percent range, and might they not succeed in that sense? In other words, couldn't they successfully modernize their domestic economy without penetrating foreign markets for advanced technology goods?

15. How many plants are being renovated under the current plan? Specifically, what does this mean: are the plants closed for extended periods of time, all equipment removed and replaced, or what?

16. How do the renovated plants correlate with the enterprises that have been permitted direct relations with Western and CMEA enterprises? Are they identical?

17. Gorbachev, in his January plenum speech, indicated that the machine-building industry came up for discussion several times at Politburo meetings. What were the issues?

18. You emphasize the effects of the Soviet defense burden on civilian technology. The statement in your testimony is that the military's priority claim on the nation's most productive and valuable resources has deprived the civilian side of the economy of the key inputs needed for technological development. Is that conclusion based on studies that have been performed, and can you explain how defense spending could have had such a damaging effect on industrial development?

19. You indicate that the defense share of GNP increased quite substantially from 1970 to 1982. Has it increased since 1975, the year they began to slow the growth of defense, and has it increased since 1982?

20. Do you agree that the defense burden slowed civilian technological development? Is there any way to demonstrate the effects of the burden on capital productivity?

21. We used to get much more information on U.S.-Soviet defense comparisons before the downward revision in the Soviet estimates several years ago. How much was Soviet defense spending for total defense and for procurement in 1985 and 1986 as a percentage of U.S. spending, in dollars and in rubles? Please provide a table with that breakdown for each of the past five years?

22. In Secretary Weinberger's posture statement, there are tables comparing the dollar costs of U.S. and Soviet strategic forces and strategic defense forces. The strategic force comparison shows us about equal. The strategic defense comparison shows the Soviets spending much more. Of course, they have a very expensive strategic air defense program which we do not have. Are the figures in the tables accurate?

23. If we can publish strategic comparisons, there should be no objections to provide unclassified comparisons of the rest of the force structure -- tactical air, ground forces, surface ships, and the like. Please provide those comparisons.

24. Please provide a table showing Soviet foreign deliveries of military equipment in constant dollars for each of the past 10 years. I want to emphasize the fact that annual figures are being requested, not five-year aggregations. I would also like a breakdown showing deliveries to Nicaragua. If these figures cannot be provided in unclassified form, explain why.

25. Has Glosnost-Gorbachev's policy of "openness" been applied to economic data? What are your views about the problems of hidden inflation and misreporting and distortions in Soviet statistics?

I am grateful for your cooperation.

Sincerely,

William Proxmire
Chairman
Subcommittee on National Security Economics

WP:rkt

CENTRAL INTELLIGENCE AGENCY RESPONSE

QUESTION 1: Does the CIA believe the Soviets are likely to become net oil importers, and if so, when? Is energy likely to be a constraint on growth? Is it likely to impede the modernization program?

ANSWER: The USSR is not likely to become a net oil importer in the foreseeable future. With continued large allocations of manpower and investment, Soviet oil production is likely to stay above 11 million b/d through 1990. Domestic oil consumption is likely to remain near the present level of roughly 8.8 to 9.0 million b/d, reflecting the influences of economic growth on the one hand and energy conservation and inter-fuel substitution on the other hand.

The investment costs for increasing energy production, however, are soaring. During 1986-90, Moscow plans to invest roughly 180-190 billion rubles in the fuel and energy complex, (including gas pipeline construction), compared with about 135 billion rubles during 1981-85. Moscow's current energy strategy--while stressing the importance of other fuels and conservation for the future--is heavily committed to continuing the policy of "big oil and gas" in the near term. Sharply rising investment requirements for these industries now account for most of the planned increment in energy investment.

As long as Moscow continues to underwrite these costs, the availability of energy is not likely to directly constrain economic activity and impede the modernization program. Nonetheless, the funding of the increasingly costly energy program--which is scheduled to account for roughly 20 percent of total investment during 1986-90--draws away investment needed by other industries. This competition for investment is likely to intensify later in this decade. The struggle between the energy sector and the industrial modernization program for access to scarce supplies of high-quality steel products, equipment, instrumentation, and imports of Western equipment will be part of this competition.

QUESTION 2: Why have oil and coal production increased? Does the increase have long-term implications?

ANSWER: Oil Production in 1986 rose about 400,000 b/d, roughly 3 percent above the 1985 level, primarily as the result of increased West Siberian output realized through a dramatic boost in investment and labor committed to that area. Gorbachev had visited the West Siberian oil fields in September 1985 and learned at first hand the extent and nature of problems affecting oil production. After this visit the Soviets took the following steps:

- o Over the following winter, most of the oil-industry management in West Siberia was replaced, and oil-industry investment was scheduled to increase by 31 percent in 1986. Most of the growth was to be allocated to West Siberia.
- o Deliveries of machinery and equipment to the oil industry climbed sharply in 1986, making stepped-up oilfield activity possible. In particular, they contributed to expanded gas-lift operations at two of West Siberia's best fields, Samotlor and Federovo.
- o Development drilling in West Siberia increased substantially over the 1985 level.
- o A large number of idle wells (at least 1,000) were returned to production. This was made possible by the dispatch of a large number of well-repair crews from other regions to West Siberia.
- o Twenty-six new oilfields were reportedly brought into production during January-August 1986, compared with a total of 23 fields commissioned during 1981-85.

Simply put, Moscow made an enormous commitment to increasing West Siberia's oil output in 1986.

With the percentage of wells idle in West Siberia at what may be considered a normal level and the total number of wells in the region increasing rapidly, the burden of maintaining the region's oil production will fall almost entirely on new-well completions. With average well-depths increasing and new-well flows declining, the Soviets must continue to accelerate drilling rates in order to bring on line the same volume of capacity. Without the commitment of substantial additional investment and labor resources, production in West Siberia would level off and possibly begin to decline by the end of 1987.

If growth in West Siberia output fails to offset the decline in other regions, total Soviet production also would resume its decline by the end of 1987. Oil output in January and February was below the level reached in late 1986, suggesting that Moscow is indeed having difficulty in maintaining oil output at such a high level.

Coal production increased to 751 million tons in 1986, 25 million tons above the 1985 level and one of the largest jumps in output since World War II. Soviet production statistics show that almost 70 percent of the increase came from surface mines in the eastern USSR. More surprisingly, coal production in the Donets Basin, which had been falling since the late

1970s, rose by 3 million tons in 1986. Soviet statistics also indicate that the productivity of miners increased by about 2 tons per man-month in 1986.

Although we are not certain, we believe that Moscow realized those gains through:

- Better discipline. Soviet mining operations are inefficient and ample slack probably existed for a quick jump in productivity.
- More aggressive mining practices. The Soviet press has reported a recent deterioration in the quality of coal delivered to power plants, suggesting shoddier mining operations and an increase in the rock content of raw coal.
- Lengthening of work hours for selecting mining activities. The Soviet press has suggested that the work hours for preparing sections for longwall mining may have been increased to reduce idle time for machinery.

Although investment in the coal industry was slated for a large increase in 1986, the amount actually realized is not known. Some of this investment (for example, new mining equipment) would have a near-term impact on production. Other investment (mine construction, expansion, or renovation) would probably not lead to a major increase in output for at least a few years.

The current improvement in the coal industry's performance may be of short duration. Sustained increases in coal production will require not only increased investment for mine renovation and development but also development of technologies to facilitate the use and transport of coal-based energy from basins in the eastern USSR to the industrialized centers west of the Urals.

QUESTION 3: Are the Soviets able to sell more oil and do they expect the oil price to rise?

ANSWER: The level of Soviet oil exports depends, to a large extent, on the level of Soviet oil production rather than the world price of oil. For example, the 300,000 barrels-per-day fall in Soviet oil production in 1985 brought about a drop in Moscow's oil exports of roughly the same amount. Similarly, increased Soviet oil production last year was matched by a corresponding increase in Soviet oil exports. With no further increase expected in Soviet oil production, we do not expect oil exports to climb any higher than last year's level of roughly 3.6 million barrels per day. Should Soviet oil output begin falling, we believe that Moscow will again let exports take the brunt of the production decline.

There is no indication that Moscow expects a substantial rise in the price of oil in the near term. On the contrary, Moscow has not been able to maintain its fixed price of $18.30 originally proposed for February through June deliveries; as of April 22, the price of Soviet oil on the spot market was $17.40. Over the longer term, the sharp decline in Soviet orders of machinery and equipment and the cancellation of several large projects in 1986 suggest that Moscow probably is not counting on an upsurge in revenues from an upturn in oil prices for the rest of the decade.

QUESTION 4: Have they contracted all the gas sales they want? What are they doing to increase sales?

ANSWER: The Soviets want to increase gas exports both to Western Europe--to obtain more hard currency--and to Eastern Europe to reduce the amount of oil that they would otherwise supply there. To increase sales, they are continuing to expand production of gas, building corresponding pipeline capacity, and offering gas for export at competitive prices.

The Soviets are sophisticated players in the West European gas market. They are patient, do their homework thoroughly, and are usually in a position to deliver incremental quantities of gas on short notice. They have demonstrated flexibility in pricing in the recent buyers' market for gas in Western Europe that has resulted from slack economic activity, declining energy prices (especially for oil), comparatively warm weather, positive results from energy conservation efforts, stiffer competition among gas exporters, and growing interfuel competition (especially from coal and French nuclear power).

The Soviets are rapidly expanding their gas production capacity and their gas transmission pipeline network. They seek to have the gas export capacity available to be able to maintain their reputation among West European buyers as a reliable supplier and to follow pragmatic pricing practices.

Soviet ability to satisfy additional demand led to emergence of a "spot" market for gas in 1983. When gas prices are soft because of low seasonal demand or factors such as the fall of world oil prices, buyers can reduce gas offtake to contractual minimums and buy spot gas at discounted prices. Thus, by shaving prices, the Soviets can from time to time achieve marginal increases in their market share.

QUESTION 5: What impact will the new gas pipeline and possible competition of Norway and Algeria have on Soviet sales in Europe in the 1990s?

ANSWER: This question must be viewed in the perspective of the vast expansion underway in the Soviet gas transmission pipeline system. During 1981-90, for example, the Soviets will have built roughly 65,000 miles of new gas transmission pipeline--and about 27,000 miles of this will be 56 inches in diameter. The dozen or more 56-inch pipelines include the Siberia-to-Western Europe pipeline (which was the subject of controversy in the West in 1981-82) and a line now under construction primarily for supply of gas to Eastern Europe (the so-called "Progress" pipeline).

The "Progress" pipeline will not be fully utilized by the additional gas flow to Eastern Europe in the period under discussion. It will thus provide additional excess capacity to the Soviet gas delivery system, offering the potential for further sales of gas to major Western buyers (France, Italy, and West Germany).The additional delivery potential amounts to about 50 percent more than their expected incremental needs in the 1990s.

Neither Norway nor Algeria can undersell the Soviet Union, which is the world's lowest-cost producer of gas. Moreover, Norwegian supplies are considered by some observers in the industry to be subject to interruption because of labor strife. Algeria is considered only marginally better in this respect, but is becoming more realistic and sophisticated in its gas marketing operations. In Western Europe, strategic and political considerations are the major restraint on expansion of Soviet gas exports. These countries strive to limit their imports of gas from the Soviet Union to 15 to 30 percent of their respective gas supplies and no more than 12 to 17 percent of primary energy supplies.

QUESTION 6: In view of the fact that the pace of technological advances has quickened in the West, it seems reasonable to assume that, while the Soviets are trying to catch up in the areas they now lag, we will be pressing ahead in other technologies and the Soviets will fall further behind. Do you agree? Or is Gorbachev's modernization program likely to be so successful they will leap ahead of us?

ANSWER: Gorbachev's modernization program does not yet suggest fundamental reform of some of the key features of the economy that have limited the USSR's ability to keep pace technologically with the West. In light of accelerating technological progress in the West, and the proliferation of linkages among the pacing technologies, the chronic barriers to innovation and diffusion in the USSR are likely to be even more important in the future. These barriers include:

- o Inadequate incentives for risk-taking.
- o Uneven or deficient ancillary support.
- o A sluggish centralized planning system.
- o Limited mobility of scarce high technology resources.
- o Centralized and hierarchical industrial management.
- o Performance measures largely insensitive to manufacturing efficiency or product utility.
- o Poorly developed communications and information management capabilites.
- o Inadequate access to global scientific and technical developments.

The Soviets probably will continue to forge ahead along a narrow front of technologies, primarily military, and in some cases may narrow the gap with the West. More generally, however, we do not believe the Soviets will systematically close the gap in the broad technology areas Gorbachev deems crucial to the modernization program--microelectronics, computers, telecommunications, advanced structural materials, biotechnology, robotics, and advanced machine tools.

Even in some of the basic industries, such as steelmaking and petrochemicals, the gains that the USSR will probably make over the next 5-10 years are likely to be evolutionary rather than revolutionary. For example, the Soviets will probably increase the share of steel produced by the modern continuous casting method, but are unlikely to keep up with the research and development now underway in the West which will fundamentally change the way steel is made in the 1990s. Moreover, the Soviets are ill-prepared to modernize industries, like petrochemicals, whose development was based almost exclusively on Western equipment and technology. As a result of neglect, Soviet chemical engineering and R&D have been slow to move the industry to a higher level of technology. Thus, whatever modernization occurs, it will probably come mainly through additional acquisitions of Western equipment and technology.

(The response to question No. 7 is classified.)

QUESTION 8: Is it correct that you project only modest growth in Soviet defense procurement and overall defense spending over the next several years in the range of 2 percent annually?

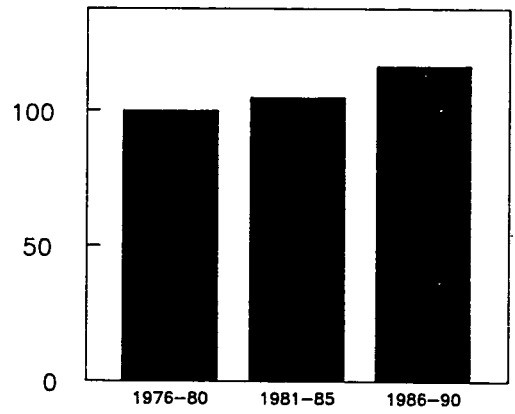
ANSWER: We believe that during the 12th Five-Year Plan (1986-90), when measured in constant 1982 prices, Soviet defense spending will continue to grow at approximately the same rate as in the past decade--2 percent per year on average. We also believe that during this same time period, cumulative Soviet expenditures on military procurement will be about 10 percent higher than during the 11th FYP (1981-85), resulting in average growth of 1-2 percent per year, and slightly exceed the record cumulative procurement spending total of the 1976-80 FYP. The high levels of spending for weapons and military equipment will enable the Soviets to proceed with a broad range of programs to modernize their strategic and theater forces.

Estimated Soviet Defense and Procurement Spending, 1976-1990

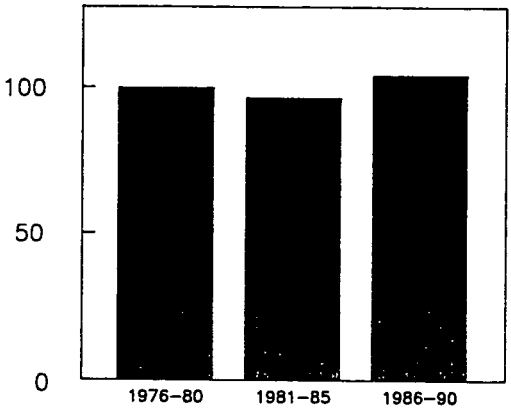
(Index: 1976-80 = 100)

These charts calculated from data in constant 1982 rubles.

Total Defense



Total Procurement



9. QUESTION: "What are the implications for the modernization program of increased procurement? Could modernization succeed if military procurement increases substantially during 1987-1990?"

ANSWER: Even with slow growth in procurement, we do not anticipate that the Soviets will meet their ambitious industrial modernization goals. The industrial modernization program relies heavily on achieving a rapid expansion of the machine-building and metalworking (MBMW) sector, particularly in the early years of the 1986-90 plan. So far, the Soviets have fallen short of their MBMW production targets. We estimate that in 1986 MBMW grew by about 4.5 percent, only slightly better than 1985 and well below the planned 6.6 percent target. Furthermore, machinery producers were criticized for failing to meet delivery schedules and targets for quality and product assortment as well. Early 1987 results were extremely poor and, despite a marked improvement in March, MBMW output for the first quarter of this year was nearly 5 percent below the output of first quarter 1986. The industrial modernization program is a cumulative program--machinery output in each year depends in part upon the machines produced and installed in the earlier years of the program. Thus, MBMW problems encountered so far could strain Gorbachev's longer-term plans.

Procurement competes with the industrial modernization program for machine tools and other MBMW output as well as for many inputs such as microelectronics, high-quality metals, and skilled labor. Any substantial increases in procurement during the next few years will exacerbate difficulties in the MBMW sector and certainly slow civilian industrial modernization. We expect that the defense-civilian modernization competition for resources will intensify by 1990, as Soviet defense plants begin to retool for producing new generations of weapons in the 1990s.

QUESTION 10: We understand that the demographic trends would not support both continuation of the past level of military manpower and new increments to the labor force. Has the draft been scaled down? Have military builders been available for civilian activities?

ANSWER: The decreasing number of Soviets turning 18-years old in each of the last eight years since 1979 has brought about increasing competition for new entrants into the labor force. From 1979 to 1987 total labor force growth has averaged 0.77 percent annually. During the Twelfth Five Year Plan (1986-1990), average annual growth in the labor force is projected to be only 0.55 percent. In 1982 the Soviets eliminated most educational deferments in an effort to meet military requirements for manpower. In addition they have tightened up on deferments granted for other reasons such as health.

Beginning in 1988, however, the number of Soviet males annually reaching age eighteen will again turn upward. This trend will continue throughout the 1990s and should reduce competition between the military and civilian sectors for the 18-year-old population.

Soviet construction troops have frequently been used to assist in, or carry out on their own, a large amount of civilian construction. They usually build housing, industrial installations and schools, stores, libraries etc. In addition, they have participated in disaster relief including work in the aftermath of the Chernobyl' disaster. All evidence indicates they continue to be available for civilian activities.

QUESTION 11: With the economic slowdown in Eastern Europe, there must be pressure within the Warsaw Pact to reduce burden sharing. Has this occurred?

ANSWER: Although the Soviets have been pressuring the East Europeans to put more emphasis on defense, they have had little success in getting them to pick up a greater share of the defense burden. Our estimates show negligible growth in non-Soviet Warsaw Pact (NSWP) defense activities, as measured in dollars, through 1985 for the region as a whole; only East Germany and Bulgaria have appreciable annual growth during the last decade. Moreover, the shares of GNP devoted to defense by NSWP countries over the last 15 years or so have ranged from about five to eight percent--much less than the estimated 15-17 percent of GNP that the Soviets allocate to defense. The dominant constraint on East European defense modernization since the mid-1970s has been the poor economic performance of the NSWP countries. Economic growth slowed sharply in most countries after 1975 and showed an absolute decline in the early 1980s.

The result of these trends has been that the NSWP military forces have fallen steadily behind the Soviet forces in Eastern Europe in holdings of modern equipment. This took place even though Soviet pressure to do more intensified after NATO's 1978 decision to raise its defense spending by three percent per year.

As for the future, even if NSWP economic prospects brighten, these countries are unlikely to increase the share of their national resources devoted to defense. Military spending might increase along with economic growth, but East European leaders must find resources to deal with obsolescent industrial bases and stagnant living standards. Some also face chronic foreign debt problems which would be worsened by an increase in military purchases from the USSR. Addressing these problems will probably dominate their priorities for the next several years.

QUESTION 12: Some suggest that the burden of strategic programs is small because of low ruble totals. However, previous testimony on the trade-offs between military and civilian sectors for access to skilled manpower and unique facilities suggests significant opportunity costs. How do you view these costs?

ANSWER: It is true that spending for strategic programs accounts for only about one-sixth of estimated total defense spending and one-quarter of Soviet defense investment and operating expenditures. Even if all of the material, equipment, facilities, and personnel involved in the production and operation of strategic forces were completely and quickly transferable to civilian economic uses, they would not have a substantial impact on aggregate Soviet economic growth. The resources devoted to Soviet strategic programs, moreover, are often highly specialized, and converting them to civilian uses would entail considerable time and expense.

Nonetheless, we believe that the Soviets could derive important benefits from reducing their future commitment of resources to strategic programs. Although other military programs could prove to be the major beneficiaries of a reduced commitment of resources to strategic programs, the Soviet leadership would also have the option of allocating some scarce productive resources such as computers, robotics, and highly educated manpower to the civilian sector, thereby easing bottlenecks in particular sectors and advancing Gorbachev's campaign to modernize the civilian economy.

QUESTION 13: Your assessment of Gorbachev's industrial modernization program seems to be that it properly addresses the central problem of low capital productivity, but that it will not succeed. Can you briefly summarize the reasons you believe the program will fail?

ANSWER: We believe that Gorbachev has correctly identified the lagging quality and technological level of Soviet machine building as leading causes of low capital productivity. However, his prescription for solving this problem--to invest more heavily in the machine-building sector to speed reequipping--does not come to grips with the basic problem, namely the failure of the Soviet system to foster sufficient innovation and risk-taking. Producing more high-technology machinery and equipment (e.g. robots, computers, microelectronics) will not be an effective solution if plant managers are not given the time, training, and incentive to install these items and learn how to use them efficiently. Moreover, Gorbachev's demand for an immediate acceleration in economic growth, together with his inability or unwillingness to alter the basic economic system of central control of resources and rewards, will reinforce the reluctance of enterprise managers to introduce new machinery and technology.

QUESTION # 14: The Soviets have set ambitious objectives for their modernization program. Even if they fall short, isn't it possible that they will make substantial improvements which could raise their rates of growth to the 3 or 4 percent range, and might they not succeed in that sense? In other words, couldn't they successfully modernize their domestic economy without penetrating foreign markets for advanced technology goods?

ANSWER: Gorbachev's aim is to give the Soviet economy an immediate boost through increased discipline, temperance, new personnel and greater work effort overall. These "human factors" and good weather are largely responsible for the 4-percent growth of the economy in 1986. Given any luck with the weather, these "human factors" should continue to improve the functioning of the Soviet economy in the near term, as pressure and personnel changes generate higher labor productivity and higher quality products. In this sense, the Soviet Union is clearly better off under Gorbachev's policies than it would have been under a continuation of the policies of his predecessors.

At the same time, the Soviet economy is unlikely to meet the ambitious targets set by Gorbachev for the 12th Five-Year Plan (1986-90). Although Gorbachev is emphasizing the right industrial technologies, the retooling associated with the planned renovation of the capital stock is likely to jeopardize the fulfillment of industrial production targets. The leadtimes involved in producing and assimilating new and more efficient equipment are long and machinebuilders--given their track record--are probably not up to the task. Moreover, the introduction of new quality control procedures appears to be disrupting current production.

Industrial modernization is also likely to be threatened by the Soviets' inability to drastically raise the technological level of Soviet machinery. With the modernization program straining domestic industry to the limit, Gorbachev will probably look to the West for technology and equipment in selected sectors--for example, energy, microelectronics, and telecommunications--where no good domestic or East European alternative exists. Significant help for modernization from imports, however, is doubtful because of hard currency constraints and problems in assimilating and diffusing foreign technology. Moreover, while these obstacles to Soviet use of advanced foreign technologies will indeed hamper progress, they are probably not the greatest problem confronting the Soviets. We believe systemic disincentives present a far more serious challenge to Soviet industrial modernization.

Question 15. How many plants are being renovated under the current plan? Specifically, what does this mean: are the plants closed for extended periods of time, all equipment removed and replaced, or what?

ANSWER: We do not know how many plants are being renovated under the 12th Five-Year Plan, but leadership statements indicate that approximately 50 percent of planned investment for 1986-90 will be devoted to retooling and reconstruction of existing facilities. In the case of many plants, renovation will probably not mean complete overhaul, but rather piecemeal introduction of new lines or equipment. The approach to renovation highlighted in the Soviet media in the case of showcase projects is probably typical: only a segment of the existing tooling and fixtures is usually removed and replaced at a time, thereby closing down only a portion of plant operations.

QUESTION 16: How do the renovated plants correlate with the enterprises that have been permitted direct relations with Western and CEMA enterprises? Are they identical?

ANSWER: We do not have a complete list of plants in either category. We do know from the Soviet press, however, that those plants that enjoy priority status in receiving equipment and supplies by virtue of the importance of their production for the economy are generally also among the first to be renovated. In the ministries and selected enterprises which have been permitted to conduct direct relations with the West and with Eastern Europe, there are many plants whose importance to the modernization program gives them such priority status. Therefore, we assume there is some overlap. The number of plants undergoing renovation, however, far exceeds those permitted direct trade or investment relations with foreign firms. Defense-related enterprises, for instance, probably would receive priority in terms of renovation, but are not among those being permitted the relative independence of direct relations.

QUESTION 17. Gorbachev, in his January plenum speech, indicated that the machine-building industry came up for discussion several times at Politburo meetings. What were the issues?

ANSWER: Press reports indicate that machinebuilding-related issues were discussed at a number of Politburo meetings. Specific topics noted include:

-- Production/delivery shortfalls in 1986.

-- Poor quality of goods produced.

-- Negative effects of "storming" (producing a disproportionately high share of the quota in the last few days of the reporting period).

-- Shortfalls in the renovation program.

-- Personnel shifts.

18. QUESTION: "You emphasize the effects of the Soviet defense burden on civilian technology. The statement in your testimony is that the military's priority claim on the nation's most productive and valuable resources has deprived the civilian side of the economy of the key inputs needed for technological development. Is that conclusion based on studies that have been performed, and can you explain how defense spending could have had such a damaging effect on industrial development?"

ANSWER: This conclusion is based on a variety of evidence from various sources rather than on one or two studies that have been performed. Our analysis regarding the effect of defense on industrial development essentially rests on the following circumstances:

a) We estimate that Soviet defense has steadily claimed high shares of the output of products critical to the production of high quality, high technology machinery and equipment. For example, while we estimate that Soviet defense takes roughly 40 percent of MBMW output and about 30 percent of metals production, these shares are even higher for the advanced components of these key sectors--high-quality microelectronics, titanium and other critical nonferrous metals, and high-strength steel. The same problem exists in the case of skilled workers in areas such as computer programming and high technology branches of the machine building industry. Had these resources been available to the civilian industrial sector, we believe that the problem of low capital productivity would have been less severe than has been the case.

b) In addition, as noted in our testimony, one reason for the Soviet economy's comparatively poor showing is the USSR's relatively antiquated industrial base, where the average length of service of Soviet industrial equipment is about 20 years. A more rapid turnover of civilian technology would have required a greater R&D effort in this area. Research and development activities--laboratories, equipment, and skilled personnel--represent scarce resources in a country that is trying to modernize its existing industrial base and prepare for future technological advances in the civilian and military fields, and the USSR concentrates a high percentage of its R&D resources on defense-related objectives. Moreover, unlike in the United States, where innovations in the defense sector have often created technological spinoffs in civilian sectors, the isolation of the Soviet defense sector generally restricts opportunities for quick civilian benefits from technological breakthroughs in defense areas.

c) Numerous references in the Soviet press refer to shortages and bottlenecks throughout the production and distribution system that constrain economic output. To the extent that a major element of the economy--defense--has a priority claim on scarce supplies of skilled labor and high-quality materials, the bottlenecks and problems of the civilian economy are worse than they would otherwise be.

QUESTION 19: You indicate that the defense share of GNP increased quite substantially from 1970 to 1982. Has it increased since 1975, the year they began to slow the growth of defense, and has it increased since 1982?

ANSWER: As measured in current prices, defense's share of Soviet GNP has risen from about 12-14 percent in 1970 to 15-17 percent in 1982. Although real growth in defense spending paralleled that of the economy, the price levels of defense goods and services increasec faster than those of non-defense products, thereby increasing defense's share of GNP. While the available data allow us to make current price estimates only for 1970 and 1982, we believe that the share grew fairly evenly during the whole time period. It is more difficult to determine what has happened to defense's share of GNP after 1982. We estimate that real growth has been about the same for both military spending and GNP. However, we are less certain about the effect that price reforms may have had on the relationship between military and civilian prices. Therefore, we cannot yet determine whether defense's share of GNP, as measured in current prices, has continued to rise since 1982.

QUESTION 20. Do you agree that the defense burden slowed civilian technological development? Is there any way to demonstrate the effects of the burden on capital productivity?

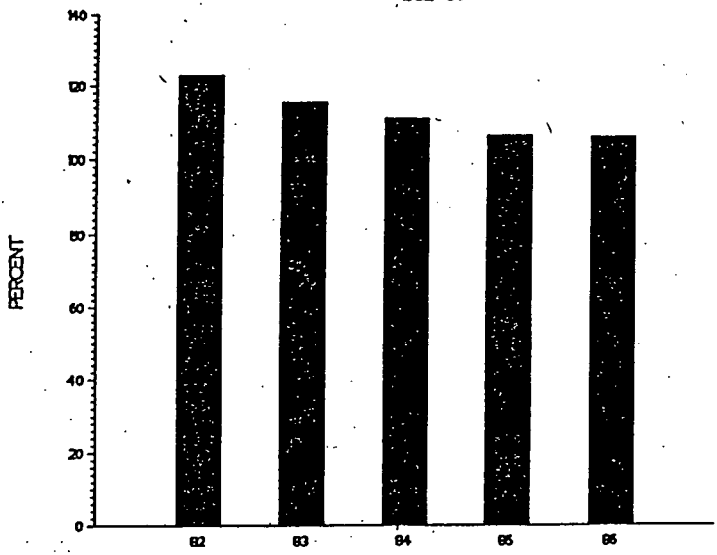
ANSWER: Defense has had both negative and positive effects on the development of civilian technology. On the one hand, as an effective and demanding customer, defense has "pulled" technology forward and--although the diffusion of technology from the defense to the civilian sector is much more limited than in the United States--provided some spin-offs to the civilian sector (for example, the advanced machine tools provided to the civilian sector by the Ministry of Aviation Industry). On the other hand, the civilian sector has clearly been the "poor cousin" in terms of resources and in acquisition of Western technology (the energy sector is an exception in the latter category).

Overall, sustained maintenance of defense's priority claim to scarce resources and the resulting high defense burden almost certainly slowed civilian technological development compared with what could have been achieved under radically different circumstances. It is impossible to isolate the impact of defense on capital productivity. Nevertheless, defense has likely had some negative impact. We believe, for instance, that high levels of military procurement coupled with unexpectedly slow growth in the output of the machine-building, energy, metallurgy and chemical sectors were responsible for the serious industrial bottlenecks that lowered capital productivity in the late 1970s.

QUESTION 21: We used to get much more information on U.S.-Soviet defense comparisons before the downward revision in the Soviet estimates several years ago. How much was Soviet defense spending for total defense and for procurement in 1985 and 1986 as a percentage of U.S. spending, in dollars and in rubles? Please provide a table with that breakdown for each of the past five years?

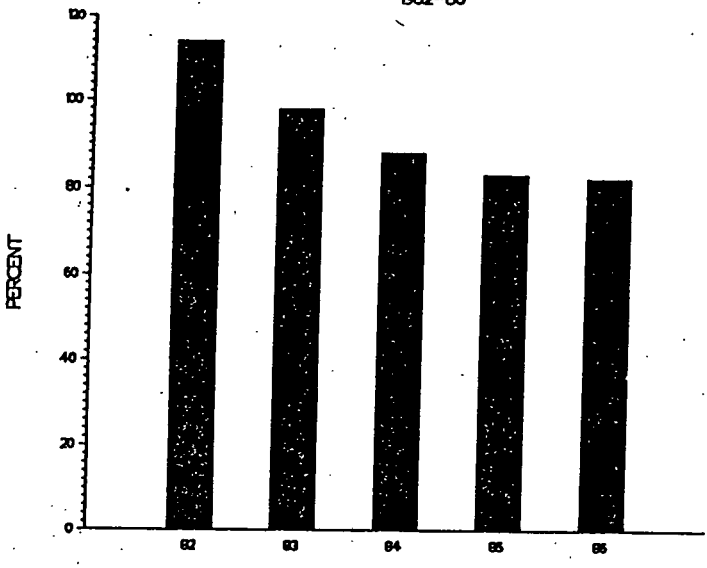
ANSWER: Attached are charts that show the estimated dollar cost of total Soviet defense activities and Soviet defense procurement expressed as a percent of US defense spending. The percentages were calculated using 1985 calendar-year dollar cost estimates for the USSR, and 1985 calendar year outlays for the US. The ruble estimate of US and USSR military activities is much more uncertain than the dollar estimate because of the difficulties in valuing US activities in rubles. Nonetheless, total military activities for the USSR as a percentage of the US total are about the same when calculated in rubles as when calculated in dollars, although the percentages for individual resource categories vary by 10-20 percent, depending on the year.

ESTIMATED SOVIET DEFENSE COSTS AS A PERCENT OF US DEFENSE OUTLAYS
1982–86



The percentages were calculated using constant 1985 dollars. The dollar value of Soviet defense activities measures what it would cost the United States, at prevailing prices and wages and using US technology, to develop, deploy and maintain a military force of the same size and with the same weapons as that of the USSR and to operate that force as the Soviets do.

ESTIMATED SOVIET PROCUREMENT COST AS A PERCENT OF US PROCUREMENT OUTLAYS
1982-86



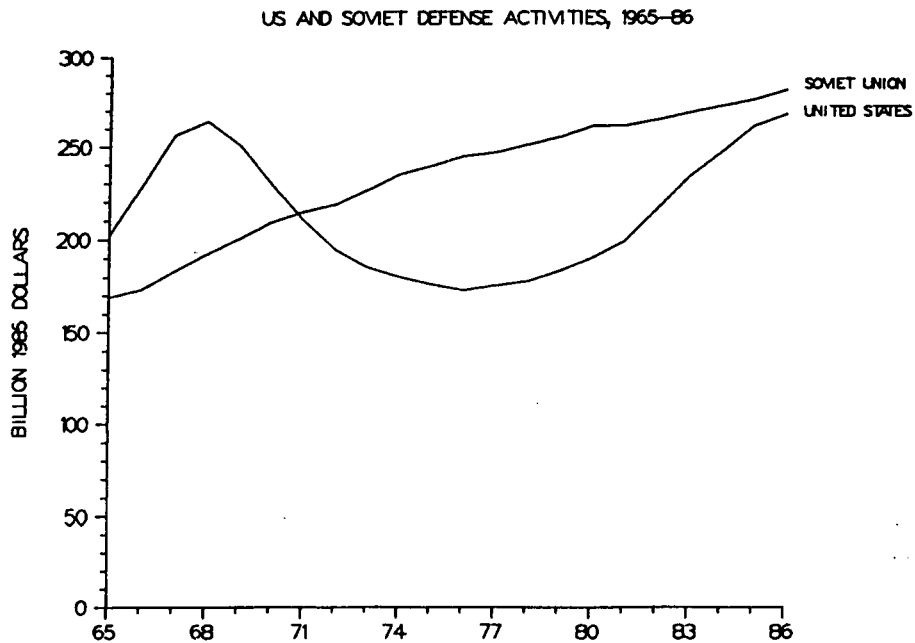
The percentages were calculated using constant 1985 dollars. The dollar value of Soviet defense activities measures what it would cost the United States, at prevailing prices and wages and using US technology, to develop, deploy and maintain a military force of the same size and with the same weapons as that of the USSR and to operate that force as the Soviets do.

QUESTION 22: In Secretary Weinberger's posture statement, there are tables comparing the dollar costs of U.S. and Soviet strategic forces and strategic defense forces. The strategic force comparison shows us about equal. The strategic defense comparison shows the Soviets spending much more. Of course, they have a very expensive strategic air defense program which we do not have. Are the figures in the tables accurate?

ANSWER: The figures in Secretary Weinberger's Report to Congress which compare the dollar costs of US and Soviet strategic forces and strategic defense forces procurement are correct. Those data are presented in fiscal year 1988 dollars, whereas data used in our testimony to your subcommittee are in calendar year 1985 dollars. Although the use of fiscal year 1988 dollars has the effect of raising the level of US and Soviet expenditure lines in the posture statement, the general trends remain the same.

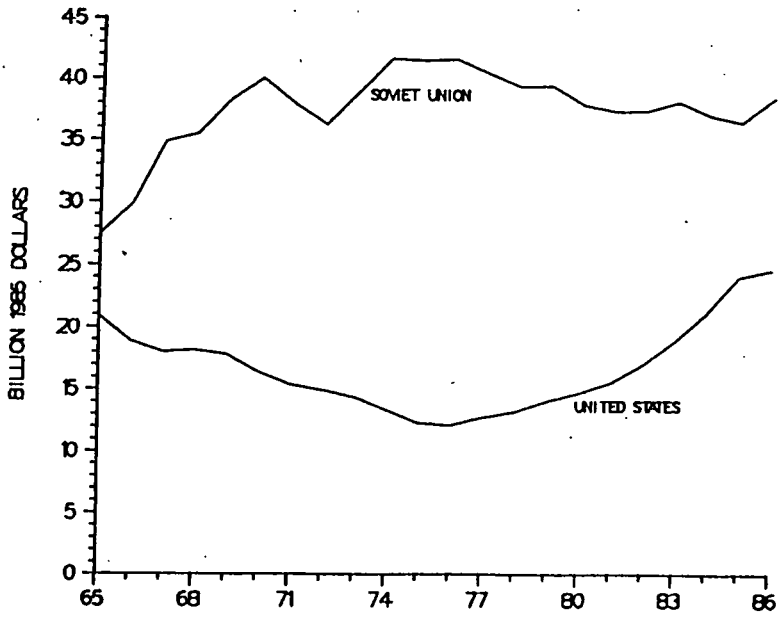
QUESTION 23: If we can publish strategic comparisons, there should be no objections to provide unclassified comparisons of the rest of the force structure -- tactical air, ground forces, surface ships, and the like. Please provide those comparisons.

ANSWER: The following charts present US outlays and the estimated dollar value of Soviet military programs for the 1965-86 period. The graphics are presented by mission and are in calendar year 1985 dollars. Unlike the data provided for the Secretary of Defense's Report to Congress, these data include costs for military retirement. This change reflects our judgment that pensions are a direct cost of maintaining the military forces of both countries.



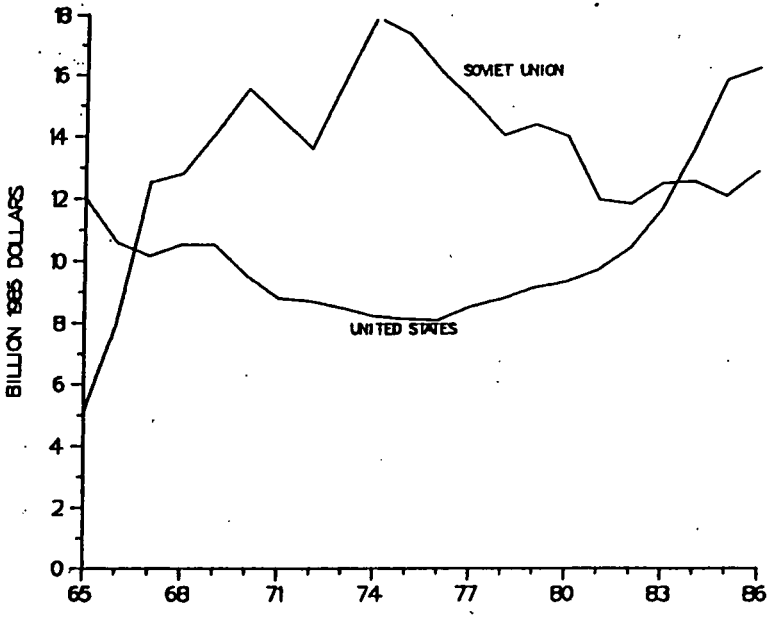
Data are expressed in constant 1985 dollars. The dollar value of Soviet defense activities measures what it would cost the United States, at prevailing prices and wages and using US technology, to develop, deploy and maintain a military force of the same size and with the same weapons as that of the USSR and to operate that force as the Soviets do.

COSTS OF US AND SOVIET STRATEGIC ATTACK FORCES, 1965-86



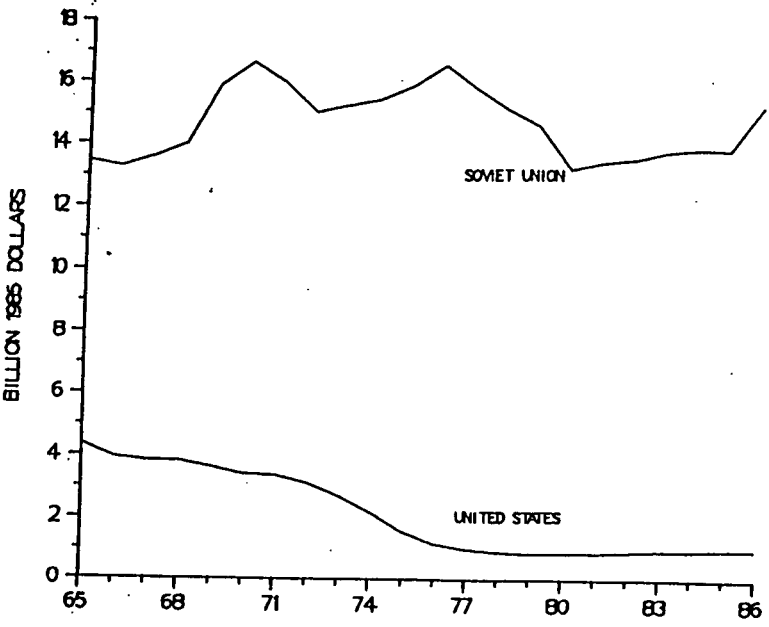
Data are expressed in constant 1985 dollars. The dollar value of Soviet defense activities measures what it would cost the United States, at prevailing prices and wages and using US technology, to develop, deploy and maintain a military force of the same size and with the same weapons as that of the USSR and to operate that force as the Soviets do.

COSTS OF US AND SOVIET INTERCONTINENTAL ATTACK FORCES, 1965-86

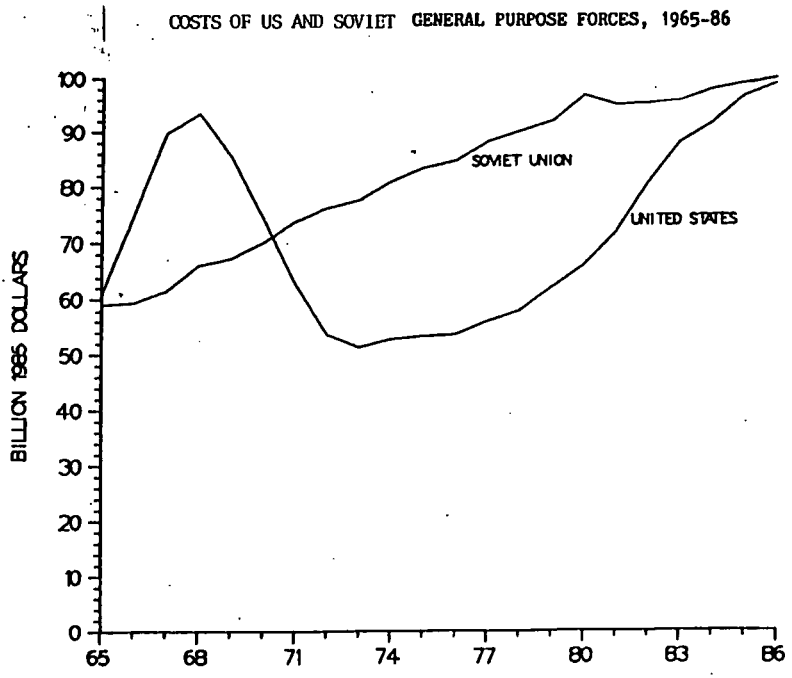


Data are expressed in constant 1985 dollars. The dollar value of Soviet defense activities measures what it would cost the United States, at prevailing prices and wages and using US technology, to develop, deploy and maintain a military force of the same size and with the same weapons as that of the USSR and to operate that force as the Soviets do.

COSTS OF US AND SOVIET STRATEGIC DEFENSE FORCES, 1965-86

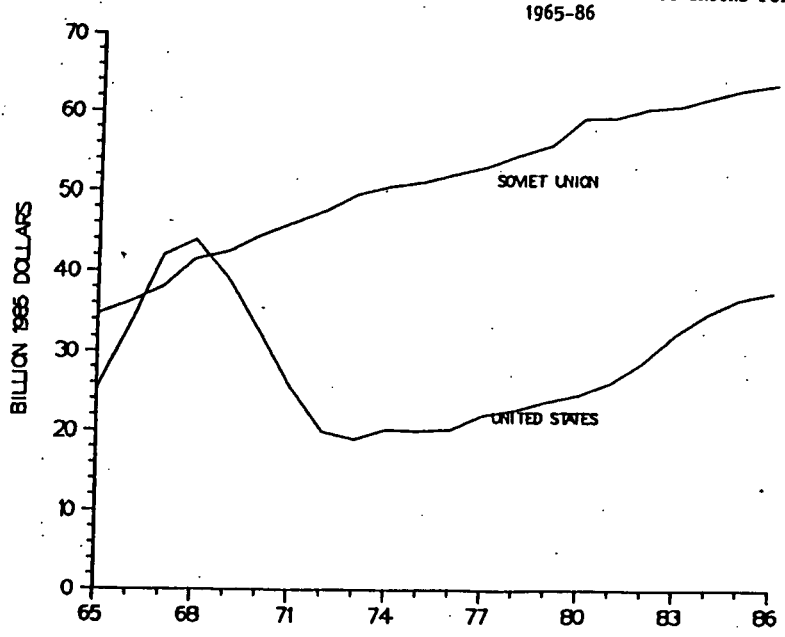


* Data are expressed in constant 1985 dollars. The dollar value of Soviet defense activities measures what it would cost the United States, at prevailing prices and wages and using US technology, to develop, deploy and maintain a military force of the same size and with the same weapons as that of the USSR and to operate that force as the Soviets do.



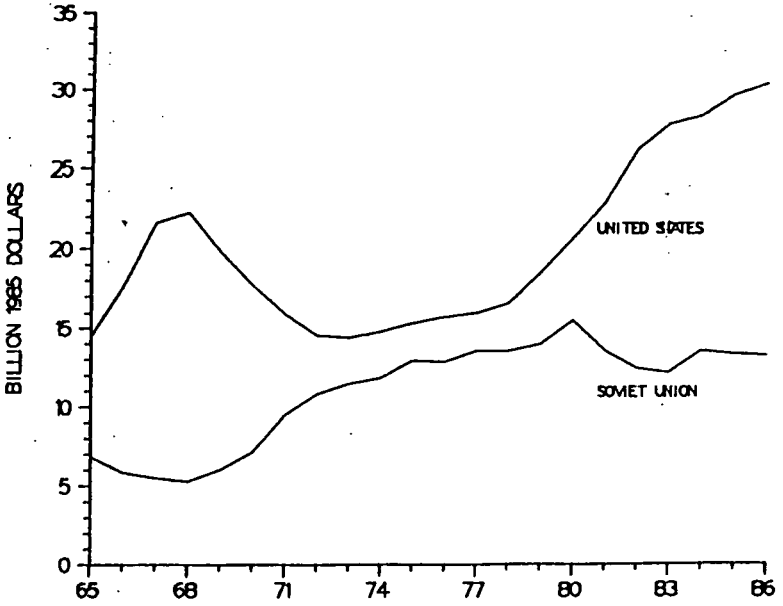
Data are expressed in constant 1985 dollars. The dollar value of Soviet defense activities measures what it would cost the United States, at prevailing prices and wages and using US technology, to develop, deploy and maintain a military force of the same size and with the same weapons as that of the USSR and to operate that force as the Soviets do.

COSTS OF US AND SOVIET GENERAL PURPOSE GROUND FORCES, 1965-86



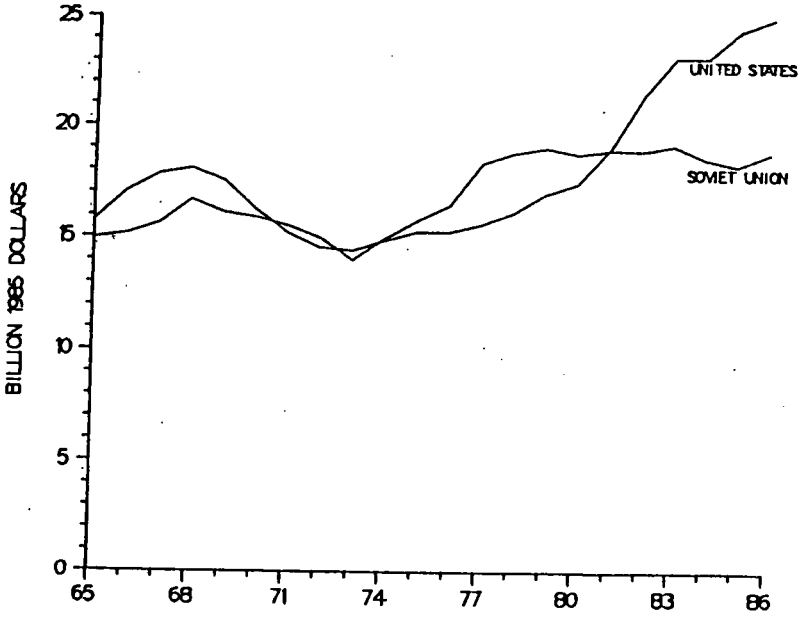
Data are expressed in constant 1985 dollars. The dollar value of Soviet defense activities measures what it would cost the United States, at prevailing prices and wages and using US technology, to develop, deploy and maintain a military force of the same size and with the same weapons as that of the USSR and to operate that force as the Soviets do.

COSTS OF US AND SOVIET GENERAL PURPOSE AIR FORCES, 1965-86



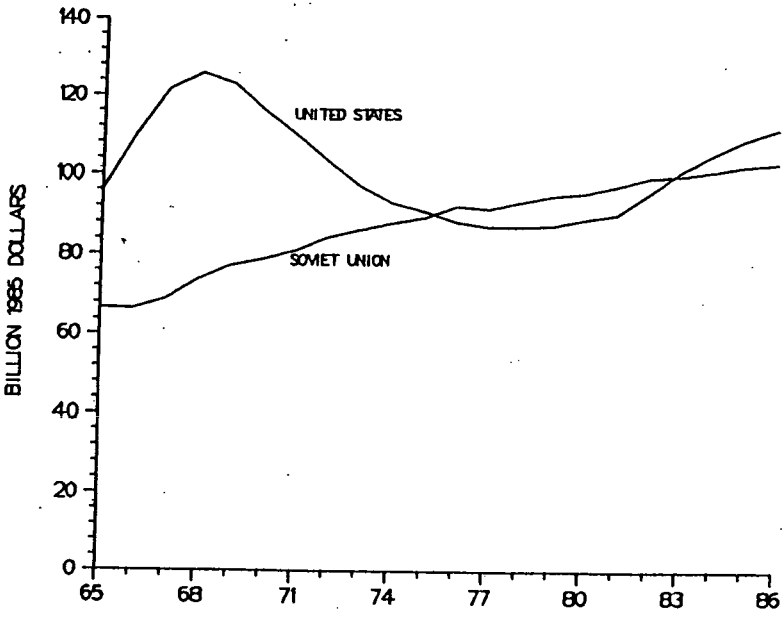
Data are expressed in constant 1985 dollars. The dollar value of Soviet defense activities measures what it would cost the United States, at prevailing prices and wages and using US technology, to develop, deploy and maintain a military force of the same size and with the same weapons as that of the USSR and to operate that force as the Soviets do.

COSTS OF US AND SOVIET GENERAL PURPOSE NAVAL FORCES, 1965-86



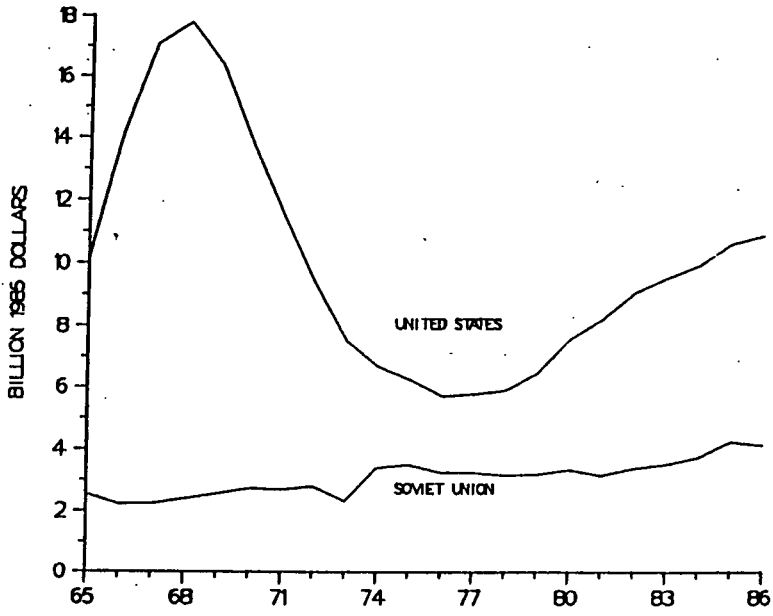
Data are expressed in constant 1985 dollars. The dollar value of Soviet defense activities measures what it would cost the United States, at prevailing prices and wages and using US technology, to develop, deploy and maintain a military force of the same size and with the same weapons as that of the USSR and to operate that force as the Soviets do.

COSTS OF US AND SOVIET SUPPORT FORCES, 1965-86



Data are expressed in constant 1985 dollars. The dollar value of Soviet defense activities measures what it would cost the United States, at prevailing prices and wages and using US technology, to develop, deploy and maintain a military force of the same size and with the same weapons as that of the USSR and to operate that force as the Soviets do.

COSTS OF US AND SOVIET MOBILITY FORCES, 1965-86



Data are expressed in constant 1985 dollars. The dollar value of Soviet defense activities measures what it would cost the United States, at prevailing prices and wages and using US technology, to develop, deploy and maintain a military force of the same size and with the same weapons as that of the USSR and to operate that force as the Soviets do.

UNCLASSIFIED

(RESPONSE TO QUESTION NO. 24)

USSR and Non-Soviet Warsaw Pact Arms Deliveries to the Third World by Region

1981-86

billions of constant 1986 dollars

	1981	1982	1983	1984	1985	1986
ASIA	4.1	5.5	4.4	4.3	6.2	5.5
LATIN AMERICA	2.5	2.3	2.2	2.2	3.2	2.4
MIDDLE EAST	13.6	14.1	13.5	12.9	8.1	7.7
SUB-SAHARAN AFRICA	1.9	2.3	3.3	4.3	2.7	1.7

USSR and Non-Soviet Warsaw Pact Arms Deliveries to Nicaragua, 1981-86

millions of constant 1986 dollars

	1981	1982	1983	1984	1985	1986
NICARAGUA	205	185	305	430	330	585

QUESTION 25. Has glasnost-Gorbachev's policy of 'openness' been applied to economic data? What are your views about the problems of hidden inflation and misreporting and distortions in Soviet statistics?

ANSWER: Gorbachev, like Khrushchev and Brezhnev before him, has begun his tenure in office with the release of additional economic statistics. Gorbachev's policy of glasnost has reversed a 15-year trend toward reducing the amount of economic data officially released to the public. For example, several previously discontinued data series reappeared in the 1985 statistical yearbook--most notably data on the production and sales of grain and alcohol and statistics on life expectancy. In addition, the 1986 annual plan report also was expanded slightly--especially in areas measuring progress in capital construction and in the technical level of industrial production, and a few new statistical series have been released in the economic journals. Economic problems also have been more frankly discussed in public speeches, the national press, and economic journals.

The purpose of this tactic appears partly to document the poor past performance of the economy in order to discredit political adversaries associated with the previous regime and to help Gorbachev consolidate his power. In addition, he is using glasnost to bring public criticism to bear on managers and party officials who fail to meet plan targets. The limits to openness, however, are gradually becoming apparent. Gorbachev is not, for example, using this policy to publicize bad news for the consumer or to release defense-related information. Thus, information on changes in personal savings was omitted from the annual report on plan fulfillment in 1986, suggesting that the new leadership is sensitive to the problem of excess purchasing power that was aggravated by cutbacks in sales of alcoholic beverages. Soviet authorities also continue to withhold data that indicate current economic performance is poor. Production data for a number of industrial products has been dropped from monthly plan fulfillment reports this year, for example, probably because Gorbachev's economic programs have hampered production in these areas.

Official Soviet statistics on economic performance are believed by many Western and some Soviet analysts to include some upward bias due to unacknowledged inflation, double-counting and the overstatement of production by enterprises. These underlying problems are not new; however, the degree of attention given to them in the Soviet press is increasing. Several recent articles have called attention to sources of likely overstatement in official Soviet statistics on economic growth. The Soviet articles have been concerned mainly with the impact of disguised inflation on official statistics on the value of output in supposedly constant prices--especially in the machinery and construction sectors.<1> (U)

<1> See V. Selyunin and G. Khanin, "Cunning Figures," Novyy mir (No. 2, 1987, pp. 181-201) and A. Sergeyev, "The Prestige of the Honest Ruble,"

We agree with the general thesis of these articles that official Soviet claims of economic growth have historically been overstated because of disguised inflation. However, because insufficient information is available on the methods and data that the Soviet authors used to derive their estimates of disguised inflation, we are unable to assess the specific conclusions they reached. Nevertheless, official Soviet statistics, alleged to represent economic growth in constant prices, show consistently higher growth than CIA estimates. Some of this discrepancy is undoubtedly due to inadequate adjustment for inflation in Soviet statistics--hidden inflation.

Recent articles by Western scholars also have suggested that Gorbachev's tenure has witnessed the appearance of anomalies and inconsistencies in aggregate Soviet measures of economic performance that are unrelated to the disguised inflation problems and that may have been deliberately designed to deceive.<2> The apparent reason for the discrepancies in the statistics is that the Soviets are having difficulty taking into account the decline in production and sales of alcoholic beverages resulting from the antialcohol program. National aggregates, including those for national income and retail trade, are valued in established prices that reflect large amounts of indirect taxes and subsidies. Indirect taxes on alcohol (85-90 percent of the total retail price) are an important component of these statistics. Thus, sales of alcohol accounted for 16 percent of total retail trade in 1984 and about one-third of food and beverage sales. The volume of legal sales of alcoholic beverages dropped by 15 percent in 1985 and by 37 percent in 1986. When legal production and sales of an important component decline so drastically, aggregate measures would be expected to decline as well in the absence of any offsetting changes. This, however, is not the case in recent Soviet statistics.

How the Soviets have handled the alcohol-related data in their national income accounts is still unclear. It could involve such changes in procedures as exclusion of alcohol from the index used to deflate retail sales or inclusion of alcohol in the index at a price that does not include

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Sovetskaya Rossiya (18 Mar. 1987).

<2> See Jan Vanous, "Soviet Economic Performance in 1986: Modest Improvement Clouded by the Release of Key Aggregate Economic Indicators Conflicting With Each Other," PlanEcon Report (4 Feb. 1987); and "The Dark Side of 'Glasnost': Unbelievable National Income Statistics in the Gorbachev Era," PlanEcon Report (13 Feb. 1987). Also see Philip Hanson, "Puzzles in the 1985 Statistics," Radio Liberty Research Bulletin, RL 439/86 (20 Nov. 1986); and "The Plan Fulfillment Report for 1986: A Sideways Look at the Statistics," Radio Liberty Research Bulletin, RL 76/87 (Feb. 26, 1987).

turnover tax--nearly 90-percent of its total retail price. In any event, official Soviet statistics show growth of national income and retail trade--in constant prices--that is high compared with growth in current prices and inconsistent with the slow growth shown in other Soviet data series--in constant prices. The comparisons imply price reductions that are not consistent with published information about changes in Soviet prices in those years.

These recent discrepancies in the official statistics do not affect CIA estimates. Our GNP accounts use Soviet data that are disaggregated and, whenever possible, expressed in physical rather than value terms. These "synthetic measures" are designed to guard against unexplained changes in price procedures and to adjust for hidden inflation and for distortions resulting from the unequal incidence of subsidies and taxes in established prices.

RESPONSE OF THE DEFENSE INTELLIGENCE AGENCY TO ADDITIONAL WRITTEN QUESTIONS POSED BY SENATOR PROXMIRE

Congress of the United States
JOINT ECONOMIC COMMITTEE
(CREATED PURSUANT TO SEC. 5(a) OF PUBLIC LAW 304, 79TH CONGRESS)
Washington, DC 20510

April 1, 1987

RADM Robert Schmitt
Deputy Director
Defense Intelligence Agency
The Pentagon
Washington, D.C. 20301-6111

Dear Admiral Schmitt:

The following are questions and requests for information which I would like you to respond to for the record of the March 19, 1987, hearing. Your responses should be as complete as possible and in unclassified form:

1. In your testimony, you say that, if national security related activities, such as civil defense, military aid, and investment in defense industry, were included in the definition of Soviet defense, the share of GNP would be several percentage points higher. How much higher would the U.S. defense burden be if those activities were included in the definition of U.S. defense?

2. Until this year, the Under Secretary of Defense, Research & Engineering, provided information in his posture statement about relative U.S./U.S.S.R. standing in basic technology areas and in technology levels in deployed military systems. Under the new Defense Department reorganization, that posture statement has been discontinued. Can you provide us with updates of the relative technology standings?

3. The U.S./Soviet comparisons in the Under Secretary's posture statements covered a wide range of issues from technology to defense spending and related issues. As the Under Secretary's posture statements have been discontinued and the office has no present plans to make similar reports, I would like you to provide updates of last year's tables and charts.

4. Previous posture statements of the Defense Secretary included comparisons of NATO and Warsaw Pact defense spending and they showed NATO defense spending much higher. That comparison is not in this year's posture statement. I would like you to provide an update of that table.

RADM Robert Schmitt
April 1, 1987
Page Two

5. How do you explain the fact that changes to defense industry floor space have not been tracked in the past several years when you emphasized it so strongly in the past?

6. The classified version of your testimony contains a series of tables showing breakdown of Soviet military production for 1975-1986. Provide the same tables in unclassified form.

Thank you for your cooperation.

Sincerely,

William Proxmire
Chairman
Subcommittee on National Security
Economics

WP:rkt

DEFENSE INTELLIGENCE AGENCY
WASHINGTON, D.C. 20301-6111

U-232/DI-3

22 APR 1987

Honorable William Proxmire
Chairman, Subcommittee on National
Security Economics
Joint Economic Committee
United States Senate
Washington, DC 20510

Dear Senator Proxmire:

Reference your letter of 1 April 1987. At the enclosures are the Defense Intelligence Agency's responses to questions 5 and 6 of your letter. As we informed Mr. Richard Kaufman of your staff on 13 April, the other questions are being forwarded to the Secretary of Defense for appropriate replies.

Sincerely,

R. W. SCHMITT
Rear Admiral, USN
Deputy Director

2 Enclosures a/s

Question 5

How do you explain the fact that changes to defense industry floor space have not been tracked in the past several years when you emphasized it so strongly in the past?

Floorspace growth is not as valid an indicator of military-industrial expansion as it has been in the past. The Soviets now concentrate their efforts on upgrading, reequipping, and otherwise modernizing the equipment in their production facilities. Such activities often do not require the additional floorspace needed when Soviet industrial expansion was primarily achieved by increases in work force. Major upgrades in factories can and have taken place without appreciable new construction, and this will become even more common in the future.

DIA/DB-4
10 Apr 87

Question 6

The classified version of your testimony contains a series of tables showing breakdown of Soviet military production for 1975-1986. Provide the same tables in unclassified form.

The unclassified data are attached. In some cases, weapon types have been combined to permit declassification.

PRODUCTION FOR THE SOVIET MILITARY 1975-1986

GENERAL TYPE	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	CUMULATIVE 1975-1986
ICBMs	250	300	300	225	225	200	200	125	150	75	100	125	2,275
IRBMs	25	50	75	100	100	100	125	125	125	125	100	25	1,075
SLBMs	200	150	175	200	175	150	150	100	100	50	75	100	1,625
SHORT-RANGE BALLISTIC MISSILES	800	800	800	700	600	400	250	250	250	250	250	250	5,600
CRUISE MISSILES	1,200	1,300	1,350	1,350	1,300	1,200	1,150	1,150	1,100	1,150	1,250	1,350	14,850
SAMS	30,000	25,000	30,000	25,000	25,000	20,000	20,000	15,000	15,000	20,000	20,000	25,000	270,000
SPACE LAUNCH VEHICLES	100	100	100	100	100	100	100	110	110	110	110	110	1,250
SPACECRAFT	90	90	80	80	80	80	80	90	90	90	80	90	1,020
BOMBERS	20	25	30	30	30	30	35	35	35	50	50	50	420
ASW-RECONNAISSANCE	5	6	6	7	8	8	7	4	2	2	2	2	59
FIGHTERS/FIGHTER-BOMBERS	950	950	900	900	900	900	850	700	525	450	500	525	9,050
TRANSPORTS, OTHERS	75	100	100	100	100	75	100	125	100	75	75	75	1,100
HELICOPTERS	900	900	600	400	400	450	450	500	500	500	400	450	6,450
SSBNs	6	6	5	2	2	2	2	1	1	2	2	1	32

PRODUCTION FOR THE SOVIET MILITARY 1975-1986 (Continued)

GENERAL TYPE	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	CUMULATIVE 1975-1986
OTHER SUBMARINES	4	3	5	9	9	10	8	6	8	6	4	6	78
MAJOR SURFACE COMBATANTS	12	11	10	10	8	10	7	6	9	7	6	8	104
MINOR SURFACE COMBATANTS	35	30	25	25	30	35	35	30	20	20	20	25	330
AUXILIARIES	25	25	30	30	20	25	15	25	30	15	15	20	275
TANKS	1,700	2,300	2,400	2,300	2,200	2,800	1,700	2,400	2,400	3,000	2,600	2,600	28,400
OTHER ARMORED VEHICLES	4,000	3,800	4,200	4,400	4,700	5,100	4,000	3,500	3,800	4,000	3,100	3,300	47,900
FIELD ARTILLERY	1,600	1,600	1,700	1,800	1,900	2,000	2,000	2,100	2,100	2,100	2,000	1,900	22,800
RADAR	1,100	800	550	700	600	700	700	700	750	800	850	900	9,150

RESPONSE OF THE DEPARTMENT OF DEFENSE TO ADDITIONAL WRITTEN QUESTIONS POSED BY SENATOR PROXMIRE

Congress of the United States
JOINT ECONOMIC COMMITTEE
(CREATED PURSUANT TO SEC. 5(a) OF PUBLIC LAW 304, 79TH CONGRESS)
Washington, DC 20510

May 1, 1987

Mrs. Margo Carlisle
Assistant Secretary of Defense
For Legislative Affairs
Department of Defense
Room 3E966
The Pentagon
Washington, D.C. 20301

Dear Mrs. Carlisle:

On April 1, 1987, I addressed a number of questions and requests for information to RADM Robert Schmitt, Deputy Director of the Defense Intelligence Agency, in order to complete the record of hearings conducted on March 19, 1987. Some of the questions concern information previously provided in the Annual Report of the Under Secretary of Defense, Research and Engineering, and relate to comparisons of the United States and the Soviet Union. One of the questions concern estimates of the U.S. defense burden.

RADM Schmitt informs me that these questions have been referred to the Office of the Secretary of Defense. I am further advised that it is necessary for me to reiterate my requests in writing.

The questions are as follows:

1. In RADM Schmitt's testimony, he said that, if national security related activities, such as civil defense, military aid, and investment in defense industry, were included in the definition of Soviet defense, the share of GNP would be several percentage points higher. How much higher would the U.S. defense burden be if those activities were included in the definition of U.S. defense?

2. Until this year, the Under Secretary of Defense, Research & Engineering, provided information in his posture statement about relative U.S./U.S.S.R. standing in basic technology areas and in technology levels in deployed military systems. Under the new Defense Department reorganization, that posture statement has been discontinued. Can you provide us with updates of the relative technology standings?

3. The U.S./Soviet comparisons in the Under Secretary's posture statements covered a wide range of issues from technology to defense spending and related issues. As the Under Secretary's posture statements have been discontinued and the office has no present plans to make similar reports, I would like you to provide updates of last year's tables and charts.

4. Previous posture statements of the Defense Secretary included comparisons of NATO and Warsaw Pact defense spending and they showed NATO defense spending much higher. That comparison is not in this year's posture statement. I would like you to provide an update of that table.

In addition, I would like a full explanation of why the annual posture statement of the Under Secretary of Defense, Research and Engineering, has been discontinued, and whether there are any plans for resuming the data series previously contained in that report, particularly those concerning comparisons of the United States and the U.S.S.R.

I would appreciate having responses to my request for information no later than close of business Monday, May 18, 1987.

Sincerely,

William Proxmire
Chairman
Subcommittee on National Security
Economics

WP:rkt

OFFICE OF THE SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

DIRECTOR OF NET ASSESSMENT

15 May 1987

In return reply to
I-11490/87

Honorable William Proxmire
Chairman, Subcommittee
on National Security Economics
Joint Economic Committee
Congress of the United States
Washington, D.C. 20510

Dear Senator Proxmire:

Mrs. Margo Carlisle, Assistant Secretary of Defense for Legislative Affairs, has asked me to respond to one of the questions you raised in your letter of May 1, 1987.

The question referred to RADM Schmitt's testimony that the Soviet defense burden as a share of GNP would be several percentage points higher than the standard estimates if certain additional activities were included: civil defense; military aid; investment in defense industry; premilitary training; priority access to the highest skilled workers and the most productive equipment; and priority allocation of resources. The question is what comparable U.S. activities would add to the U.S. defense share of GNP.

For almost all the items RADM Schmitt mentioned, the analogous U.S. activity is already included in the budget category "National Defense." When it buys weapons, the Department of Defense pays the full cost, at market prices, of the skilled workers, equipment, and resources used for their production. This contrasts with a Soviet system that permits valuable assets to be directed to military purposes by means of "command" rather than price. In particular, market prices, but not Soviet accounting, would charge a high price for a timely supply of scarce resources. Another example of off-budget military activities not mentioned by RADM Schmitt is the fact that Soviet civilian aircraft, trucks, and ships are designed to meet military specifications so that they will be available for mobilization. Again, the comparable U.S. CRAF program for aircraft is paid for out of the U.S. defense budget.

With respect to civil defense, the U.S. programs directed by the Federal Emergency Management Agency are included in the U.S. Government Budget as "defense-related activities," i.e., they are included in the budget category "National Defense" even though they are not funded by DOD. This "National Defense" category is usually used to calculate the defense share of GNP.

U.S. military assistance programs are the only item comparable to those RADM Schmitt mentioned that fall outside the National Defense budget figure. If both credit and aid programs are included, the total comes to around three tenths of a percentage point of GNP.

Sincerely,

A. W. Marshall

LEGISLATIVE AFFAIRS

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D C 20301

June 8, 1987

MEMORANDUM FOR THE UNDER SECRETARY OF DEFENSE FOR ACQUISITION

SUBJECT: Response to letter from Senator William Proxmire

In a letter dated May 1, 1987, Senator Proxmire asked Secretary Weinberger four questions related to U.S.-Soviet military expenditures (see attached). The Director of Net Assessment answered question number one, the other three questions remained unanswered. Since your office absorbed the functions of DDR&E, and the latter had previously answered questions of the type asked in Senator Proxmire's letter, questions two through four would seem appropriate for OUSD/A to answer.

Your reply to Senator Proxmire in care of Mr. Richard Kaufman of the Joint Economic Committee (Room G-03 Dirksen Senate Office Building) would be appreciated.

Douglas R. Graham
Deputy Assistant Secretary of Defense
Senate Affairs

Attachment

OFFICE OF THE UNDER SECRETARY OF DEFENSE

WASHINGTON, DC 20301

ACQUISITION

June 19, 1987

Honorable William Proxmire
Chairman, Subcommittee
on National Security Economics
Joint Economic Committee
Congress of the United States
Washington, DC 20510

Dear Senator Proxmire:

Your letter of May 1, 1987, to the Assistant Secretary of Defense for Legislative Affairs, posed four questions dealing with comparisons of US-Soviet military expenditures and technologies and related issues. On May 15, 1987, Mr. Andrew Marshall responded to the first question on the issue of estimates of the defense burden. This letter addresses the remaining three questions raised in your correspondence.

A decision was made last fall to discontinue publication of the USDR&E Annual Statement. This decision was based on several considerations, including the turbulence associated with the reorganization of certain staff functions in the Office of the Under Secretary of Defense for Acquisition. In addition, we deemed this decision to be in compliance with Congressional guidance aimed at cutting down on the number of reports being produced, especially where the information could be obtained through alternative sources. In addition, some of the data was considered to be of marginal utility and value in light of the costs of data collection and associated activities. As a result, almost none of the information you have requested, particularly updates to the charts, tables, and figures in the USDR&E Annual Statement, is readily available. However, the information on relative US/USSR standing in the twenty most important basic technology areas can be found on page 10 of the FY 1988 US Posture Statement prepared by the Joint Staff, a copy of which is enclosed.

While we have no plans at present to publish the USDR&E Annual Statement, we have undertaken efforts to update selected tables and charts as requested in your letter. Specifically, we are developing the remaining relative technology comparisons between the US/USSR for deployed military systems, updates to several production rate and summary charts, and spending pattern data.

We anticipate the required collection, analysis, and coordination activities associated with the preparation and release of the data will be completed in about 90 to 120 days. As soon as the data becomes available, we will provide the information to your staff.

Sincerely,

Thomas P Christie

Thomas P. Christie
Deputy Assistant Secretary
(Plans and Resources)

Enclosure

OFFICE OF THE UNDER SECRETARY OF DEFENSE

WASHINGTON, DC 20301

ACQUISITION

November 19, 1987

Honorable William Proxmire
Chairman, Subcommittee on
National Security Economics
Joint Economic Committee
Congress of the United States
Washington, DC 20510

Dear Senator Proxmire:

My June 19, 1987 reply to you indicated that the Department of Defense would undertake efforts to update selected tables and charts on US/USSR technology, production and military expenditure comparisons which you had requested earlier.

Attached at TAB 1 is a table on the relative US/USSR standing in twenty basic technology areas as well as a table for deployed military systems. Also, at TAB 2 are figures and tables depicting production data. These tables are titled and marked to correspond with similar tables found in the FY 1987 USDR&E Annual Statement. Finally, data relating to US/USSR spending comparisons is being prepared by the Central Intelligence Agency and will be forwarded to you when we receive it.

Attachments

Thomas P. Christie
Deputy Assistant Secretary of
Defense for Plans and Resources

RELATIVE U.S./USSR STANDING IN THE 20 MOST IMPORTANT BASIC TECHNOLOGY AREAS* (U)

BASIC TECHNOLOGIES	U.S. SUPERIOR	U.S./USSR EQUAL	USSR SUPERIOR
1. Aerodynamics/Fluid Dynamics	X		
2. Computer & Software	X		
3. Conventional Warhead (Including all Chemical Explosives)		X→	
4. Directed Energy		X→	
5. Electro-Optical Sensor (Including IR)	X→		
6. Guidance & Navigation	X		
7. Life Sciences (Human Factors, Bio-Technology)	X→		
8. Materials (Lt Wt, High Strength, High Temperature)	X→		
9. Micro-Electronic Materials & Integrated Circuit Manufacturing	X		
10. Nuclear Warheads		X	
11. Optics		X→	
12. Power Sources (Mobile) (Includes Energy Storage)		X	
13. Production/Manufacturing (Includes Automated Control)	X→		
14. Propulsion (Aerospace and Ground Vehicles)	X→		
15. Radar Sensor	X→		
16. Robotics & Machine Intelligence	X		
17. Signal Processing	X		
18. Signature Reduction	X→		
19. Submarine Detection	X→		
20. Telecommunications (Includes Fiber Optics)	X		

*1. The list is limited to 20 technologies, which were selected with the objective of providing a valid base for comparing overall U.S. and USSR basic technology. The list is in alphabetical order. These technologies are "on the shelf" and available for application. (The technologies are not intended to compare technology level in currently deployed military systems.)
2. The technologies selected have the potential for significantly changing military capability in the next 10 to 20 years. The technologies are not static; they are improving or have the potential for significant improvements, new technologies may appear on future lists.
3. The arrows denote that the relative technology level is changing significantly in the direction indicated.
4. Relative comparisons of technology levels shown depict overall average standing only; countries may be superior, equal or inferior in subcategories of a given technology.
5. These average assessments can incorporate a significant variance when the individual components of a technology are considered.

TABLE I

As Of: 17 November 1987

RELATIVE U.S./USSR TECHNOLOGY LEVEL IN DEPLOYED MILITARY SYSTEMS* (U)

DEPLOYED SYSTEM	U.S. SUPERIOR	U.S./USSR EQUAL	USSR SUPERIOR
Strategic			
ICBM		X	
SSBN	X		
SLBM	X→		
Bomber	X		
SAMs			X
Ballistic Missile Defense			X
Anti-Satellite			X
Cruise Missile		←X	
Tactical			
Land Forces			
SAMs (Including Naval)		X→	
Tanks		X→	
Artillery		X	
Infantry Combat Vehicles		X	
Anti-Tank Guided Missiles		X→	
Attack Helicopters	X→		
Chemical Warfare			X
Biological Warfare			X
Tactical Ballistic Missiles	X→		
Air Forces			
Fighter/Attack & Interceptor Aircraft	X→		
Air-toAir Missiles	X→		
Air-to-Surface Munitions	X→		
Airlift Aircraft	X→		
Naval Forces			
SSNs	X→		
Torpedoes		X	
Sea Based Aircraft	X		
Surface Combatants	X→		
Naval Cruise Missile		X→	
Mines			X
C3I			
Communications		X	
Electronic Countermeasures/ ECCM	X→		
Early Warning	X		
Surveillance & Reconnaissance	X→		
Training Simulators	X		

*1. These are comparisons of system technology level only, and are not necessarily a measure of effectiveness. The Comparisons are not dependent on scenario, tactics, quantity, training or other operational factors. Systems farther than 1 year from IOC are not considered.
2. The arrows denote that the relative technology level is changing significantly in the direction indicated.
3. Relative comparisons of deployed technology levels shown depict overall average standing; countries may be superior, equal or inferior in subsystems of a specific technology in a deployed military system.

TABLE II

As Of: 17 November 1987

Figures II-6 and 7. Production Ratios of Selected Weapons for NATO and Warsaw Pact Forces, 1982-1986*

Category/Weapon		Production By: Soviet to U.S. Ratio	Production By: Warsaw Pact to NATO Ratio	Production For: Soviet to U.S. Ratio	Production For: Warsaw Pact to NATO Ratio
Intercontinental Attack and Non-Strategic Nuclear Weapons	ICBMs	52:1	52:1	52:1	52:1
	SLBMs	1.2:1	1.1:1	1.2:1	1.0:1
	SSBNs	1.0:1	0.9:1	1.0:1	0.9:1
	Non-Strategic BMs	9.4:1	8.4:1	8.9:1	8.8:1
	Long Range Bombers (Includes Backfires)	7.6:1	7.6:1	7.6:1	7.6:1
Ground Warfare	Tanks	3.0:1	2.2:1	3.4:1	2.3:1
	APCs & Fighting Vehicles	3.1:1	1.9:1	4.5:1	2.5:1
	Arty/Guns/Mort/MRLs (100mm and over)	3.4:1	2.5:1	6.8:1	6.5:1
	Anti-Aircraft Artillery	9.4:1	3.4:1	4.7:1	1.7:1
Naval Warfare	Major Surf Combatants (over 900 tons)	1.0:1	0.5:1	0.8:1	0.6:1
	Attack Submarines	2.0:1	1.0:1	1.3:1	1.2:1
	Amphibious Ships	0.5:1	1.3:1	5.0:1	2.5:1
Air Warfare	Tac Cbt Acft and Strat Interceptors	2.2:1	1.3:1	2.2:1	1.2:1
	Military Helicopters	2.2:1	1.5:1	2.7:1	1.5:1

* Production "By" includes exports, excludes imports;
Production "For" includes imports, excludes exports; i.e.,
[illegible] "By" + Imports - Exports

28 October 1987

Table I-1. Production Ratios of Selected Weapons for NATO and Warsaw Pact Armed Forces, 1982-1986

Category/ Weapon	1982-86 Production Ratio USSR/U.S.	1982-86 Production Ratio WP/NATO	1986 Production Ratio USSR/U.S.	1986 Production Ratio WP/NATO
Strategic				
ICBMs	52/1	52/1	11/1	11/1
SLBMs	1.2/1	1.0/1	1.9/1	1.6/1
SSBNs	1.0/1	0.9/1	1.0/1	1.0/1
Ground Combat				
Tanks	3.4/1	2.3/1	3.4/1	2.8/1
Arty/Guns/Mort/MRLs (100mm and over)	6.8/1	6.5/1	3.7/1	4.3/1
Ships				
Major Surface Combatants (over 900 tons)	0.8/1	0.6/1	1.6/1	1.0/1
Attack Submarines	1.3/1	1.2/1	3.5/1	3.0/1
Aircraft				
Tac Cbt Acft & Strat Interceptors	2.2/1	1.2/1	2.0/1	1.4/1
Military Helicopters	2.7/1	1.5/1	1.7/1	1.4/1

28 October 1987

Table III-2. Production Summary of Intercontinental Attack Weapons for U.S. and USSR, 1977-1986

Category	1977-1986 10-Year Total		1986		10-Year Trend *	
	U.S.	USSR	U.S.	USSR	U.S.	USSR
ICBMs	95	1,720	11	120	↓	↓
SLBMs	620	1,180	50	100	-	↓
SSBNs	8	20	1	1	↑	↓
Long Range Bombers (Includes Backfires)	29	375	26	50	↑	↑

* These represent a general trend based on a subjective assessment of production data for the last 10 year period.

Table IV-2. Production Summary of Selected Land Force Systems for NATO and Warsaw Pact Forces, 1977-1986

Category	1977-1986 Annual Average				1986				10-Year Trend *	
	U.S.	USSR	NATO	Warsaw Pact	U.S.	USSR	NATO	Warsaw Pact	U.S.	USSR
Tanks	730	2,440	1,180	2,890	750	2,600	1,150	3,200	↑	↑
APCs & Fighting Vehicles	920	4,920	1,870	5,720	1,420	3,500	2,620	4,000	↑	-
Artillery, Guns, Mortars & MRLs (100mm and over)	300	2,630	510	3,230	560	2,100	680	2,950	↑	↑
Anti-Aircraft Artillery	7	80	360	260	0	100	100	320	-	↓

* These represent a general trend based on a subjective assessment of production data for the last 10 year period.

Table IV-4. Production Summary of Naval Vessels for NATO and Warsaw Pact Forces, 1977-1986

Category	1977-1986 10-Year Total				1986				10-Year Trend *	
	U.S.	USSR	NATO	Warsaw Pact	U.S.	USSR	NATO	Warsaw Pact	U.S.	USSR
Major Surface Combatants (over 900 tons)	95	80	190	100	5	8	10	10	-	↓
Amphibious Ships	6	17	8	25	1	2	1	2	↓	-
Attack Submarines	34	70	65	75	2	7	3	9	↑	↑

* These represent a general trend based on a subjective assessment of production data for the last 10 year period.

28 October 1987

Table IV-5. Production Summary of Selected Tactical Aircraft for NATO and Warsaw Pact Forces, 1977-1986

Category	1977-1986 Annual Average				1986				10-Year Trend *	
	U.S.	USSR	NATO	Warsaw Pact	U.S.	USSR	NATO	Warsaw Pact	U.S.	USSR
Tactical Combat Aircraft and Strategic Interceptors	350	820	640	940	350	700	600	820	-	↓
Military Helicopters	180	470	390	530	260	450	360	510	↑	↓

* These represent a general trend based on a subjective assessment of production data for the last 10 year period.

OFFICE OF THE UNDER SECRETARY OF DEFENSE
WASHINGTON, DC 20301

ACQUISITION

April 1, 1988

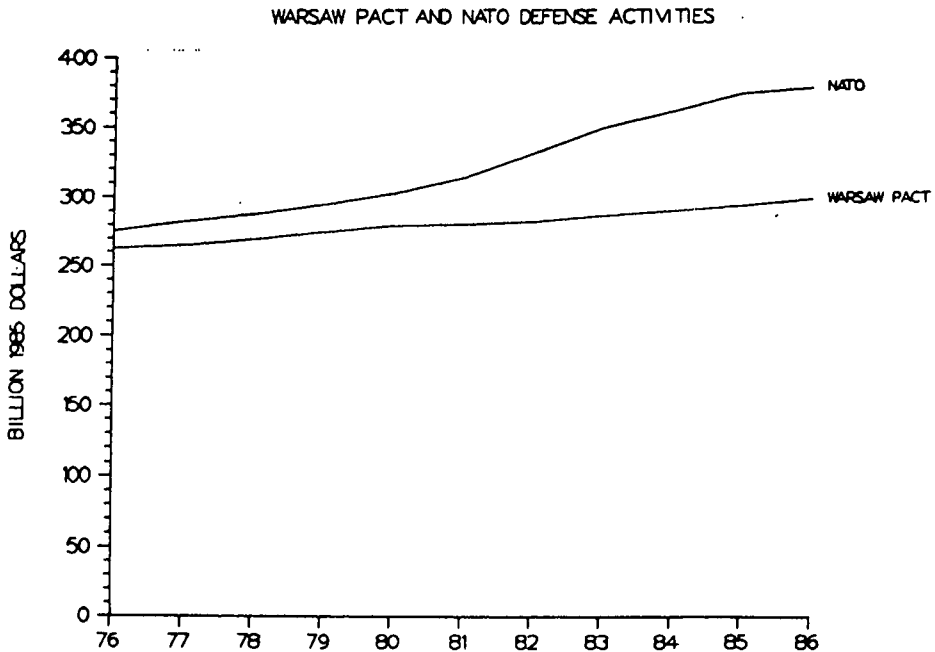
Honorable William Proxmire
Chairman, Subcommittee on
National Security Economics
Joint Economic Committee
Congress of the United States
Washington, DC 20510

Dear Senator Proxmire:

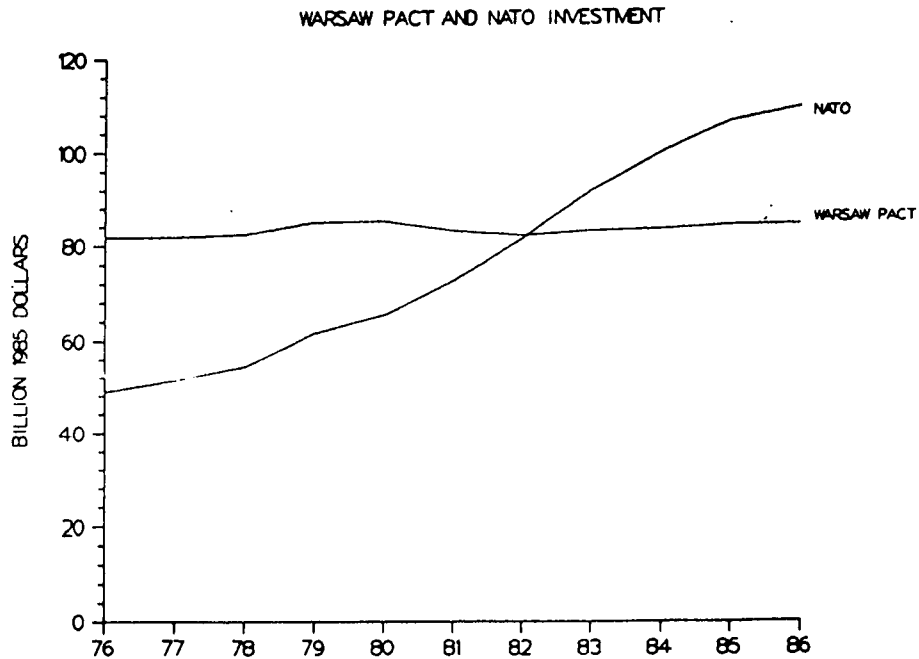
My November 19, 1987 reply to you indicated that data relating to spending comparisons would be forwarded once it was available. Accordingly, attached are charts on comparisons of estimated Warsaw Pact and NATO defense costs which you had originally requested.

Attachments

Thomas P. Christie
Director, Program Integration



Data are expressed in constant 1985 dollars. The dollar value of Soviet, non-Soviet Warsaw Pact (NSWP), and non-US NATO defense activities measures what it would cost at prevailing US prices and wages and using US technology, to develop, deploy, and maintain military forces of the same size and with the same weapons as those countries and to operate those forces as they do.



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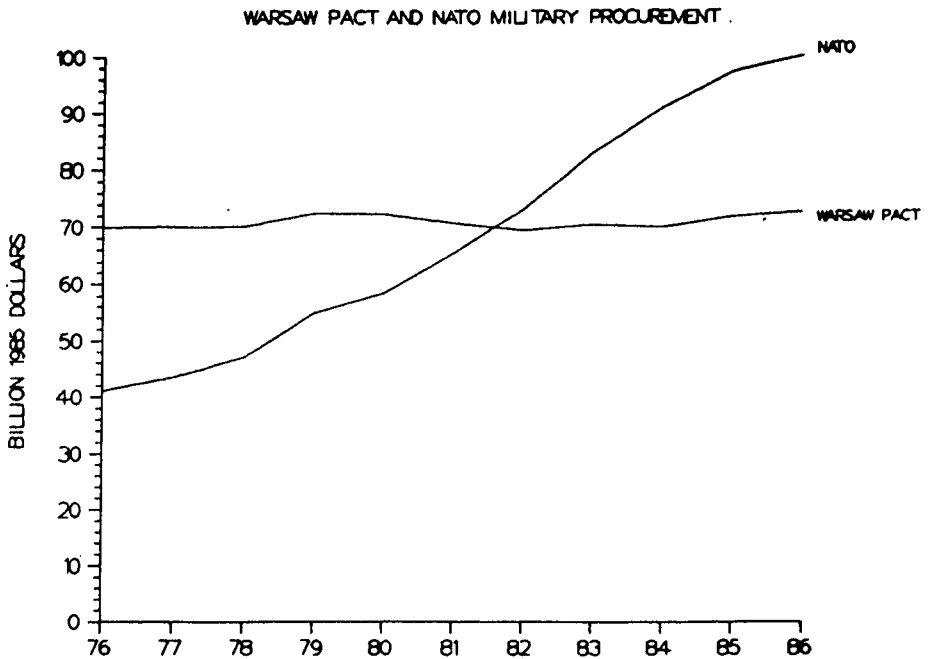

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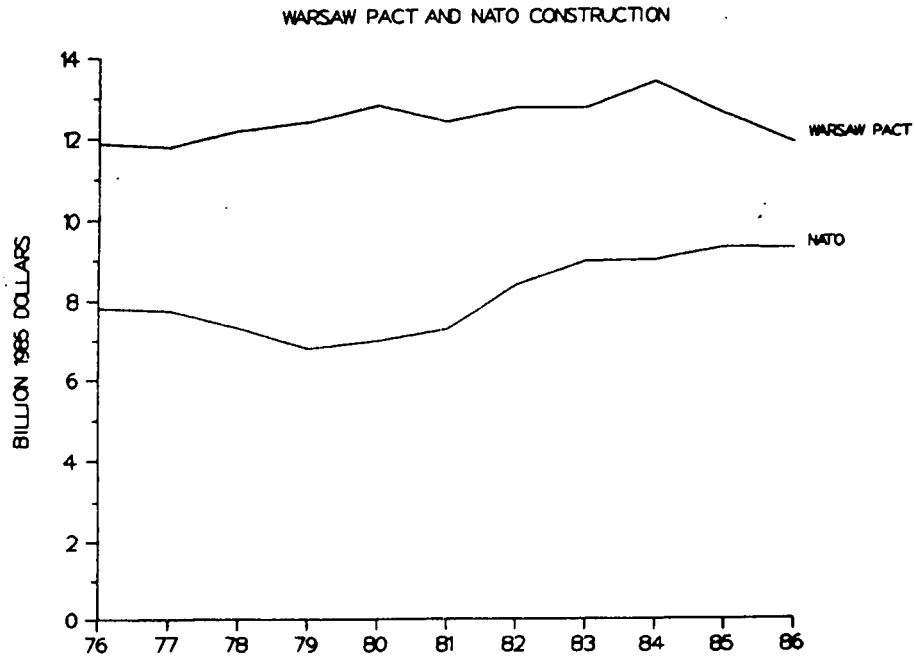

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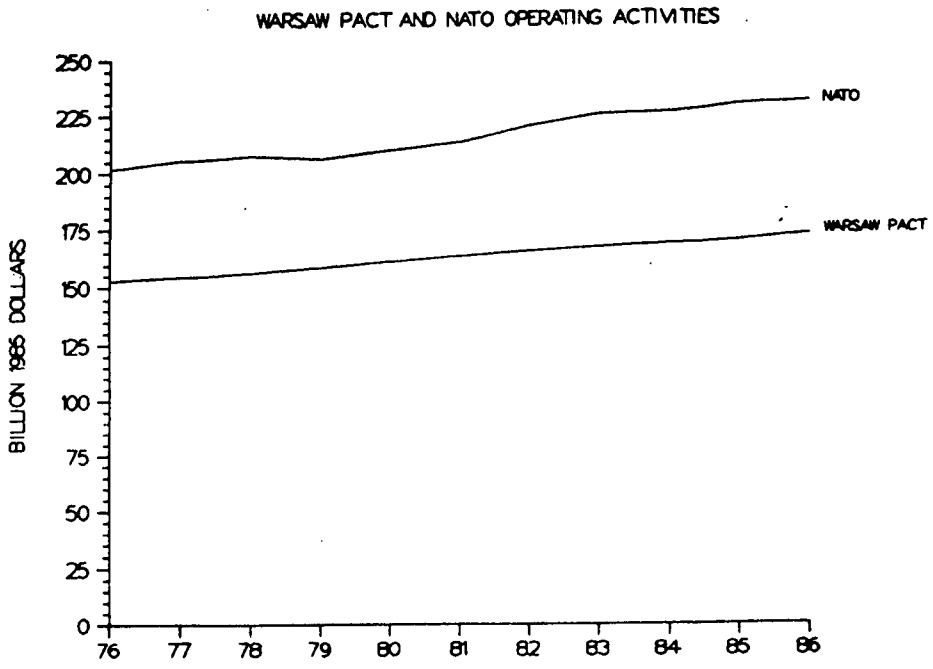

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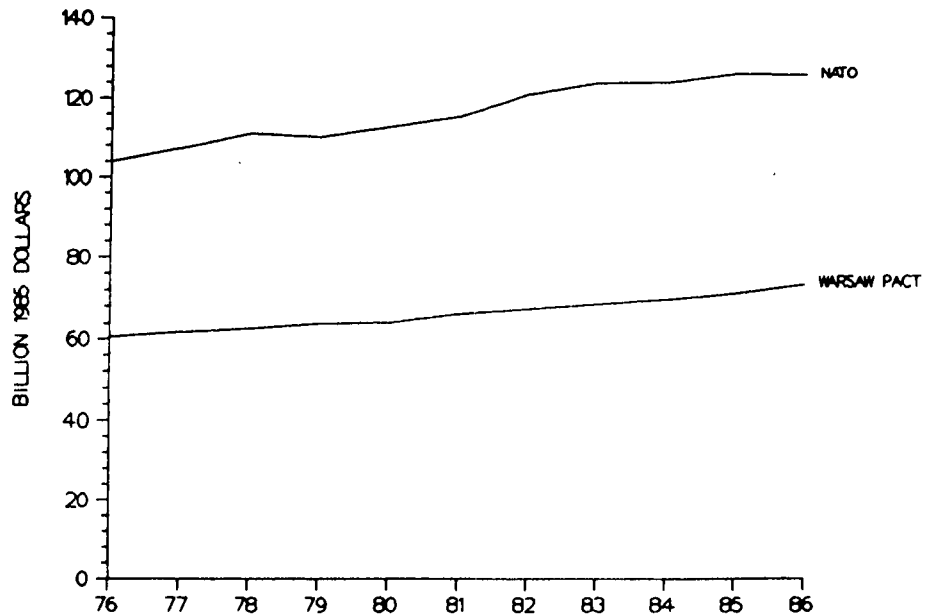
WARSAW PACT AND NATO OPERATIONS AND MAINTENANCE



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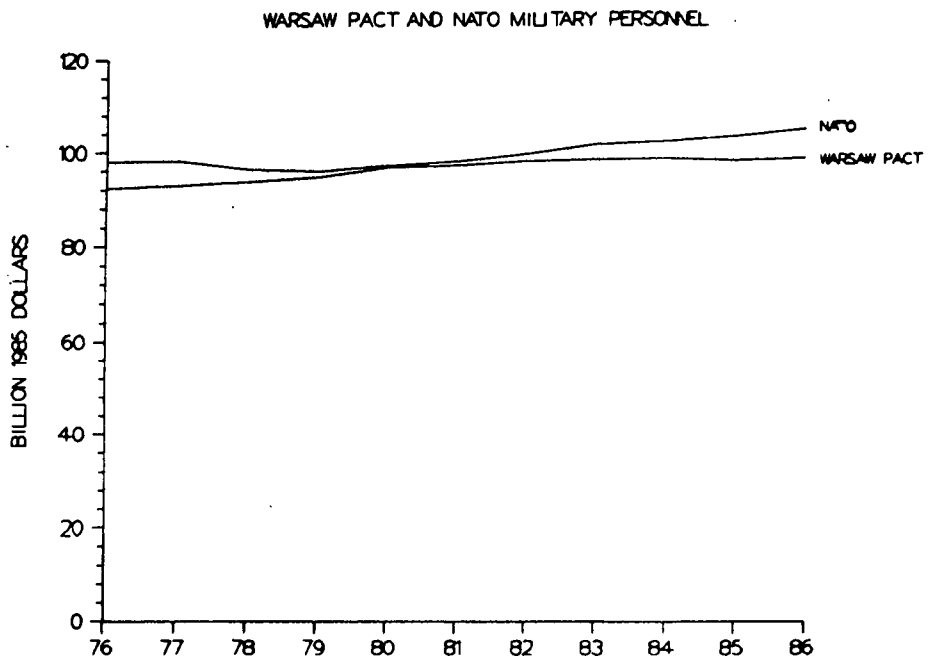

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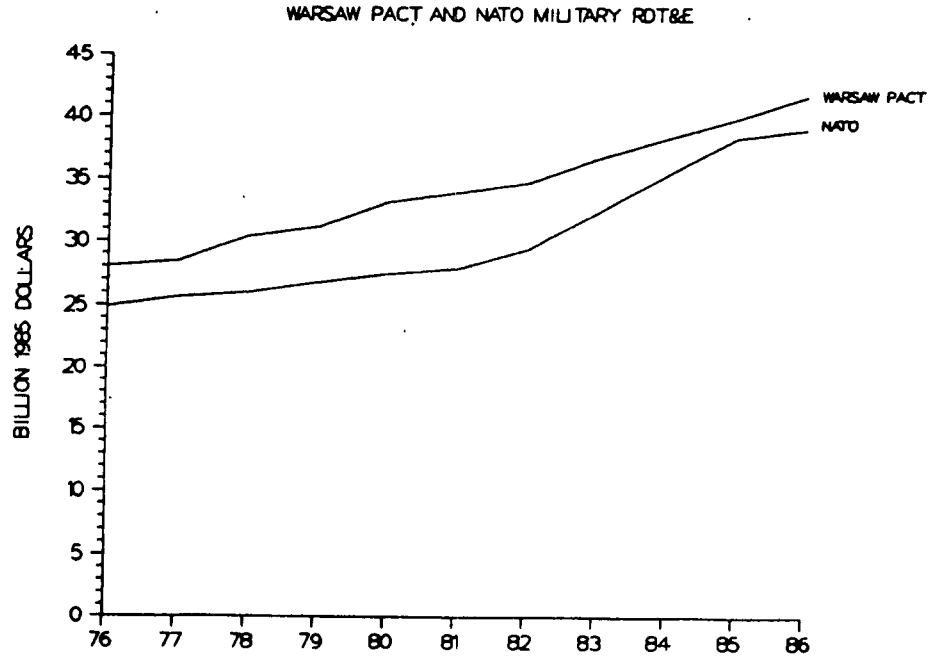

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Senator PROXMIRE. The subcommittee will stand adjourned.

[Whereupon, the subcommittee adjourned, subject to the call of the Chair.]

ALLOCATION OF RESOURCES IN THE SOVIET UNION AND CHINA—1986

MONDAY, AUGUST 3, 1987

CONGRESS OF THE UNITED STATES,
SUBCOMMITTEE ON NATIONAL SECURITY ECONOMICS
OF THE JOINT ECONOMIC COMMITTEE,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:05 a.m., in room SD-628, Dirksen Senate Office Building, Hon. William Proxmire (chairman of the subcommittee) presiding.

Present: Senators Proxmire and Symms; and Representative McMillan.

Also present: Richard F Kaufman, general counsel.

OPENING STATEMENT OF SENATOR PROXMIRE, CHAIRMAN

Senator PROXMIRE. The subcommittee will come to order.

Today's testimony will complete testimony begun earlier this year on the allocation of resources in the Soviet Union and China.

In March, we received testimony on the Soviet Union. Today we will explore the recent economic developments and the prospects in China.

In general, economic trends in China have been positive and other developments have been perceived favorably in the United States and the West.

There have been major improvements in United States-Chinese economic and political relations.

There are some areas of concern, however. One such area relates to the political repression that took place following the public demonstrations of December 1986. These were accompanied by a suspension in the movement toward economic reform, which had slowed down considerably in early 1986.

A second cause of concern is the continued improvement of Chinese and Soviet relations and the implications for technology transfer.

To what extent should the United States worry that technology transfer to China will find its way into Soviet hands? A related issue involves Chinese military and exports to other countries including Iran.

We are very pleased to have before us spokespersons for the Central Intelligence Agency. Please proceed.

STATEMENT OF CAROL HART, DEPUTY DIRECTOR, OFFICE OF EAST ASIAN ANALYSIS, CENTRAL INTELLIGENCE AGENCY, ACCOMPANIED BY MARTIN PETERSEN, CHIEF, CHINA DIVISION; AND LEE ZINSER, ECONOMIC ANALYST

CHINA

Ms. HART. Good morning, Mr. Chairman. I would like to start. I am Carol Hart, Deputy Director of the Agency's Office of East Asian Analysis.

Senator PROXMIRE. I beg your pardon. What is your first name again?

Ms. HART. Carol.

Senator PROXMIRE. And you're?

Ms. HART. Deputy Director of the Office of East Asian Analysis.

Senator PROXMIRE. Go right ahead.

Ms. HART. Thank you. It is a pleasure for me, personally, and for my colleagues, to be with you this morning for what is the first session in some time devoted entirely to China.

With me today are Martin Petersen, Chief of our China Division and Lee Zinser, the Senior Economic Analyst for the China Division.

ECONOMIC REFORMS—AN IMPORTANT JUNCTURE

As you are aware, I am sure, for almost a decade now China has been attempting to reform its economic system, and has made significant progress. With this has gone an opening to the outside world, and the West in particular, and a more active international role. Yet despite all the changes taking place in China, it remains a closed society, one that is imperfectly understood by those who follow developments there.

We at the Agency continue to devote considerable resources to the analysis of China's policies, performance, and role in the international community, in an effort to improve our understanding of the implications for U.S. interests.

The theme of this year's presentation is that reform efforts in China are at another important juncture. Chinese leaders are meeting now, planning the 13th party congress which this fall will make some basic decisions about the course of future reforms.

Senator PROXMIRE. Ms. Hart, I want to be sure we have this under control. We have limited time. You have a very detailed prepared statement.

How long is your oral statement?

Ms. HART. I am concluding it right now.

I am just going to introduce Mr. Petersen.

Senator PROXMIRE. I apologize for interrupting, but Mr. Petersen, how long will your oral statement be?

Mr. PETERSEN. Approximately 10 minutes, Mr. Chairman.

[Security deletion.]

Senator PROXMIRE. And how long is your statement, Mr. Zinser.

Mr. ZINSER. I will just respond to any questions you have, sir.

Senator PROXMIRE. I am sorry, Ms. Hart. Go right ahead.

Ms. HART. I will let Mr. Petersen proceed right now.

Senator PROXMIRE. Okay. Thank you.

Mr. PETERSEN. Thank you, Mr. Chairman.

I consider it a pleasure to be here today to discuss recent developments in China before this subcommittee.

REFORMS IN 1986

In 1986, the stop and go nature of China's economic reform program was evident again. Last year Beijing slowed its economy from the breakneck pace registered in 1986 and made progress in reducing some of the economic problems we dicussed in our testimony here last year. Beijing boosted grain output, reduced inflation, slowed the growth of investment spending, and narrowed its trade deficit.

Although other economic indicators worsened, the overall improvement in China's economy allowed reformers to press ahead with their reform program, even though they had stated earlier that 1986 would be a year for consolidating past reforms rather than introducing new measures. In 1986, Beijing approved a contract labor system for state enterprises in which new workers will be hired under fixed term contracts rather than for life, as was the case in the past.

Beijing also approved, but has not yet implemented national bankruptcy regulations. Beijing decontrolled the prices of a few consumer durables, such as bicycles and refrigerators, and China's Central Bank set up interbank money markets in several cities, and Beijing allowed a few cities to open bond markets. Beijing intended these financial experiments to be precursors of full-fledged money markets.

To generate new reform ideas, Beijing also encouraged China's economists last year to openly debate how Western economic concepts could be used in China's development process. Beijing even allowed major party newspapers to print articles that advocated turning state enterprises into joint stock operations owned by individuals, managers, and the Government.

STUDENT DEMONSTRATIONS

These reform policies, although experimental and limited in scope, appeared to set the stage for major steps forward in 1987. Events at the end of 1986, however, brought this reform momentum to a quick halt. The Chinese leaders were caught off guard by a series of demonstrations by Chinese students in several major cities last December. The protests were sparked by local grievances such as student inability to select their own representatives and poor living conditions on campuses. As the demonstrations spread, their tone changed, and students increasingly expressed concern at the slow pace of reform in China and demanded greater participation in the political process.

Beijing initially appeared to take a permissive attitude toward these protests, but as they grew in number and size, Beijing cracked down swiftly, and without bloodshed, put an end to the demonstrations.

RESIGNATION OF HU YAOBANG

Two weeks after the student demonstrations subsided, Hu Yaobang was forced to resign as General Secretary of the Chinese Communist party. The demonstrations were the immediate pretext for Hu's dismissal, but his fall probably was the result of a convergence of factors. That judgment was borne out by party documents that leaked to the foreign press and a candid interview that a senior Chinese official gave to foreign reporters in April 1987. Hu apparently alienated many senior party officials, including Deng Xiaoping, by failing to consult with them on important decisions, by pushing them to retire from office, and by tolerating a wide range of intellectual dissent. Hu's departure probably was hastened because Chinese officials believed he reacted too mildly to the student demonstrations. Even though Hu was a strong advocate of reform, by late 1986, other reformers, including Deng Xiaoping, had apparently decided that he had to step down.

REFORMS IN 1987

Hu's departure weakened the reform coalition, and orthodox party officials took advantage of the situation to press their own economic agenda, which emphasizes greater reliance on planning and administrative measures, and, therefore, a slower pace and a narrower scope for reform.

Moreover, in the aftermath of the student demonstrations, Chinese leaders were probably reluctant to introduce any new economic policies that might provoke consumer concern and prompt workers to stage similar protests. Consequently, the Chinese media this spring featured senior officials asserting the role of the party in economic decisionmaking and advocating increased emphasis on ideological, as opposed to material, incentives for Chinese workers. In May, however, reform proponents went back on the offensive in this debate. Articles have recently appeared in the Chinese press that criticized party traditionalists for trying to use Marxist ideology to block new economic experiments. And, the Chinese media this summer is again advocating an accelerated pace for reform.

China has scheduled its 13th party congress for October. China's top officials are now meeting to hammer out agreements on personnel and policy decisions to be ratified at that congress and are probably once again debating the pace and scope of economic reform in China.

In the past, reformers have overcome the objections of more ideologically orthodox party officials by insisting that reforms be evaluated only on the basis of whether or not they work. This pragmatic approach, implementing policies on a trial basis and then evaluating the results, has caused the reform program to go through cycles of advance and retrenchment, because some policies have worked quickly, while others have had unintended side effects.

OBSTACLES TO CONTINUED REFORM

Therefore, reform leaders probably face two important tasks in their deliberations this summer. First, they must convince orthodox party officials that the potential benefits from new reforms outweigh the risks involved. Many of the economic experiments

that Beijing conducted last year were limited to selected cities and enterprises, but if they were widely implemented, they would do much to attack the waste and inefficiency inherent in China's planned economy. Policies that reduce lifetime guarantees for workers and move a significant share of capital and resources outside the plan however, could, if mishandled, cause sharp fluctuations in inflation and unemployment.

ECONOMIC PERFORMANCE IN 1987

Second, Beijing must decide whether Chinese economic performance so far this year can support an expanded reform program. The record through the first half of 1987 has been mixed. The best news for Beijing was on the trade front. Because of a rapid growth of exports, China slashed its trade deficit by 70 percent. If the trend continues, Beijing may record only a small current account deficit for 1987. Although China's summer harvest was down slightly from last year, it was one of the best on record. Moreover, because a majority of the grain crop is harvested in the fall, with good weather total grain production could be up this year by 2 to 3 percent.

There are indicators, however, that demand pressures are building once again in China. China's industrial output grew at a 15 percent annual rate in the first half of 1987, much faster than planned. Capital construction and wage payments also grew more rapidly than Beijing wanted. Moreover, losses by state-owned enterprises have increased this year and government budget revenues were down almost 2 percent compared to the first 6 months of 1986.

TRANSITIONAL PHASE

We believe that part of the reason that China's economic performance has been mixed in the past few years is because China is in a transitional phase, going from a planned economy to a system that mixes planning and market mechanisms. At this stage, relaxed, central controls have allowed output to increase rapidly, but reforms have not progressed far enough to enable the economy to react well to monetary and fiscal policies. For example, when Beijing raises interest rates, it does not deter enterprise borrowing, because managers are convinced the Government will continue to bail them out if they cannot repay their loans.

Part of the debate going on in China this summer probably involves the mixed economic performance. Orthodox officials may claim that mounting enterprise losses prove that reforms have not worked, but reformers probably will counter that efficiency remains low because reforms have not gone far enough.

Going into the fall congress, the issue that China faces, therefore, is whether or not to attack remaining economic problems with a much broader economic reform program or to adopt a more cautious program, settle for what has already been achieved through reform, and try to straighten out existing problems before moving on.

DEFENSE SPENDING

Before I conclude my remarks, Mr. Chairman, I would like to speak briefly about three aspects of China's defense policies—defense spending, arms sales, and China's strategic missile force.

China has announced that defense expenditures increased 5 percent in nominal terms in 1986. This year, they are budgeted to increase 1.3 percent to 20.4 billion yuan or approximately $5.5 billion. We estimate that the published figures may understate actual defense spending by as much as one-half. Total defense spending in 1987, therefore, may be closer to $11 billion. Nevertheless, we believe that the published figures, which show defense spending falling from 16 percent of the Chinese Government expenditures in 1980 to about 8 percent of budgeted expenditures in 1987, accurately reflect the lower priority assigned to the defense sector under the economic reform program.

ARMS SALES

One way Beijing has been able to compensate for holding the line on budgeted funds for China's military is by exporting arms and military equipment. [Security deletion.]

The Chinese military probably has been allowed to keep a sizable portion of the profits from arms sales and has used the foreign exchange to buy Western technology and equipment. [Security deletion.]

MISSILE FORCES

Although China's military has received a lower priority in Government funds, we expect China will make steady progress during the next 10 years in developing their missile forces. China currently has a few full-range ICBM's, an additional small number of limited range ICBM's, and several score shorter range nuclear missiles that can strike targets in Asia. We expect the size of China's nuclear arsenal will double in the next 10 years.

Nonetheless, Beijing's missile force will remain small, compared to the 1,000-plus missile launchers of the United States and the Soviet Union.

That concludes my statement, Mr. Chairman.

Senator PROXMIRE. Thank you, Mr. Petersen.

[The prepared statement of Ms. Hart follows:]

PREPARED STATEMENT OF CAROL HART

China: Economic Performance in 1986

Summary

China has reached a new decision point in its economic reform program. Relaxed central controls have allowed China's gross national product to increase at an average annual rate of almost 10 percent since 1983. But in the past two years, growth in agricultural output has slowed from its rapid pace of the early 1980s and initial efforts at using market levers to attack pervasive waste and inefficiency in its state-run industrial sector have produced mixed results. China's leaders are debating whether to broaden the use of market mechanisms in their economy

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This paper was prepared by the Central Intelligence Agency for submission to the Subcommittee on International Trade, Finance, and Security Economics of the Joint Economic Committee, Congress of the United States.

This report will be released to the public following the appearance of the Deputy Director of the Office of East Asian Analysis, Directorate of Intelligence, CIA.

significantly--and thereby risk increased fluctuations in inflation and unemployment and, perhaps, increased consumer resentment. The alternative is to chart a politically safer course of slower economic liberalization and greater emphasis on combining past reforms with an improved planning system.

Last year Beijing intentionally slowed its economy from the breakneck pace registered in 1985. Inflation fell, growth in investment spending eased, and the trade deficit narrowed. However, some indicators, such as the budget deficit, clearly worsened. And the highly charged political atmosphere that followed student demonstrations in many Chinese cities in December 1986 and the ouster of party General Secretary Hu Yaobang in mid-January 1987 altered the policies Beijing adopted in response to perceived economic shortcomings. In January, Beijing announced publicly that price reform would be on hold in 1987, shelved many of its other controversial reforms, and resurrected economic slogans from the 1950s to encourage workers and managers to boost productivity.

Deng Xiaoping and his key supporters, including Acting General Secretary and Premier Zhao Ziyang, continue to maintain that the benefits China has received from higher standards of living outweigh the costs of economic dislocations stemming from reforms. Thus they have indicated that economic reforms will be reaffirmed at an important party congress scheduled for October 1987. But as Chinese leaders meet this summer to hammer out a compromise on reform strategy, Deng not only faces

resistance from ideologically orthodox party elders, but must draw advice on reform from economists who are split over the pace and sequence of new policies.

Economic Performance in 1986

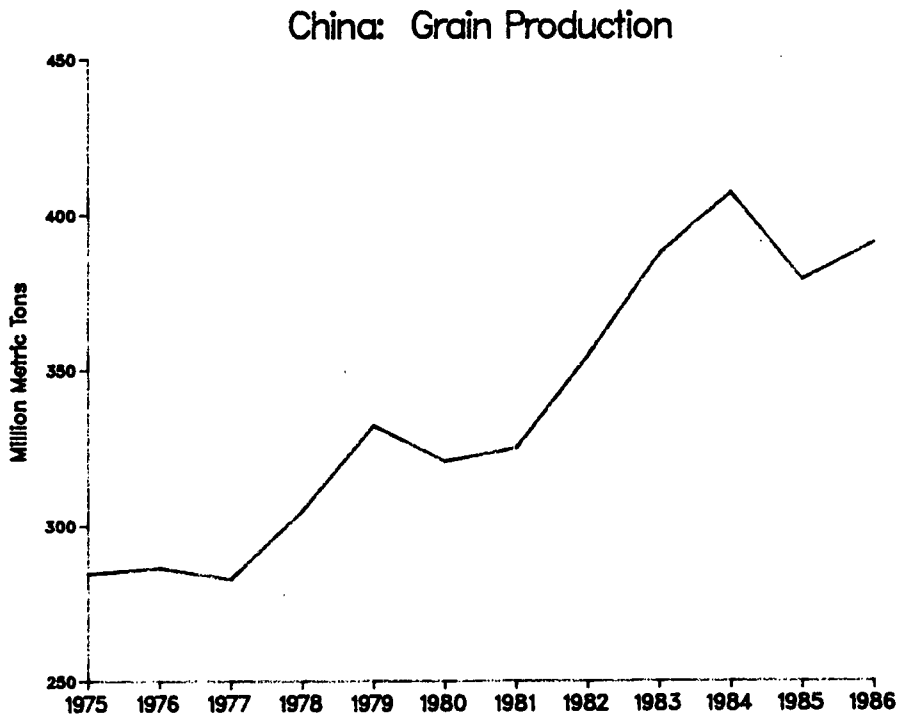
Real GNP rose by about 7 percent in 1986, down from the double digit rates of the previous two years. Beijing deliberately slowed the economy because it believed that China's weak infrastructure could not support higher growth rates for long, and that key shortages would intensify, driving up prices on goods produced outside the plan and eventually bringing growth to a quick halt.

The slowdown was brought about by market and administrative measures to restrain demand. Beijing tightened credit, particularly during the second and third quarters of 1985, and clamped down on capital construction. The rate of growth of investment spending by state-owned enterprises dropped from 42 percent in 1985 to 15 percent last year. By reducing demand pressures somewhat, Beijing cut its inflation rate by almost one-third, to 6 percent, according to State Statistical Bureau estimates.

Agriculture and Rural Industry

According to Beijing's figures, agricultural output grew slightly faster than in 1985. Grain output recovered in 1986 after falling in 1985 for the first time in five years (see figure 1). Grain production totaled 391 million metric tons, up by more than 3 percent from 1985, but well below the record harvest of 407 million tons in 1984. The gains in grain production were caused by increased acreage planted, somewhat better weather, and moderate improvements in economic incentives--such as increases in the

Figure 1.



Source: Official Chinese statistics.

state purchase price of corn and soybeans in three northeastern provinces. Thus for the second year in a row, China was a net grain exporter, with foreign sales of 9.4 million metric tons and imports of 7.7 million tons, according to Chinese trade statistics.

Because of policies Beijing has implemented since 1979 that raised state procurement prices and allowed rural households increased autonomy over production decisions, grain output increased at an average annual rate of more than 6 percent from 1980 to 1984. The fact that grain production has leveled out in the past two years probably indicates that the immediate gains from dismantling the rural commune system have been realized. This leveling out also is attributable to the success of recent policies promoting diversified rural production. In 1985, Beijing relaxed state controls over the prices of nonstaples, and Chinese peasants responded by increasing production of vegetables, fruit, and meat. Chinese press reports also indicate that in the past several years almost 100 million peasants have left farming for rural industry--making it the fastest growing sector of the Chinese economy.

Despite the notable achievements realized in China's countryside, efforts by reformers to further commercialize the rural sector have drawn fire from more ideologically orthodox party officials who fear that without strict production quotas, peasants may switch too much land into cash crops, possibly causing a shortfall in grain output sufficiently serious to spark social instability. So far, reformers have stood by their policies while boosting state investment in agricultural infrastructure and increasing economic incentives for growing grain--moderately increasing state procurement prices of some crops and offering subsidized supplies of fertilizer and diesel fuel to peasants who sign state contracts to grow grain.

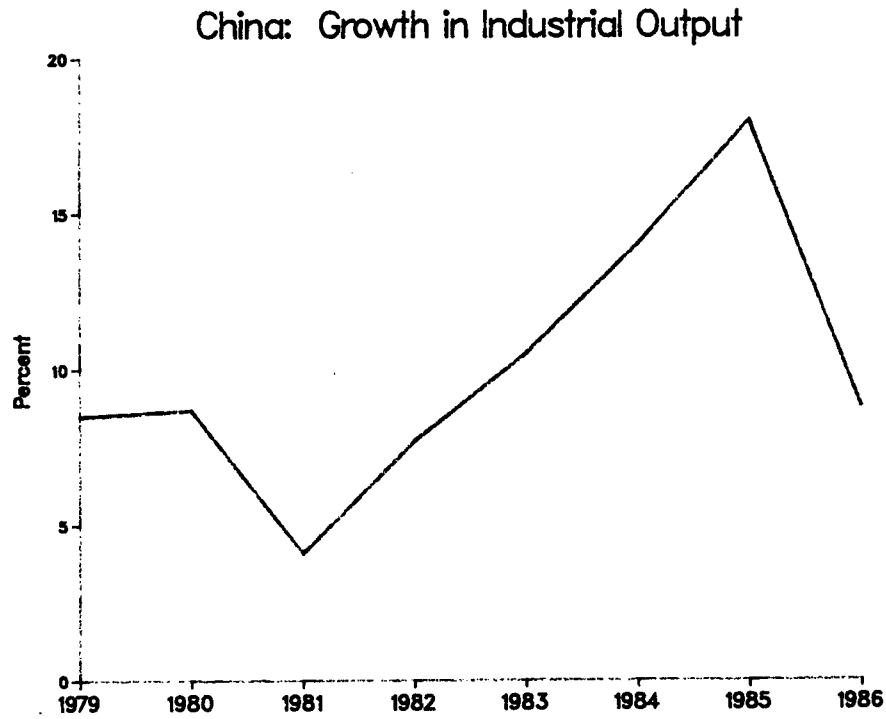
Industrial Performance

Beijing's macroeconomic tightening fell primarily on its industrial sector, with growth there slowing from the excessive 18-percent rate experienced in 1985 to 9 percent in 1986 (see figure 2). Despite the slowdown, particular industrial sectors achieved notable results. Output of steel, pig iron, cement, power generating equipment, and several consumer durables--such as household refrigerators--grew at double-digit rates. Reforms giving state enterprises increased autonomy over production decisions--particularly those policies allowing factories to retain a larger share of revenues and granting them the right to market above-quota output at negotiated prices--have strongly contributed to China's rapid industrial growth.

Energy Production. Following solid growth across the board in China's energy sector in 1985, production of coal and oil grew much more slowly last year. Rapid growth in coal production in recent years--stemming from increasing the use of piece-rate wages in state mines and allowing locally-controlled mines to sell coal at market prices--appears to be leveling out. Timely investment in large-scale mines will be required for Beijing to boost production from 870 million metric tons to 1.2 billion tons by 1990, as called for in its five-year plan. Although it only exported about 1 percent of output in 1986, Beijing is using Japanese and World Bank loans to improve coal processing and delivery in an effort to raise exports to 30 million tons by 1990.

China produced 2.6 million barrels of oil per day last year--sixth largest in the world--and exported about 20 percent of the total. Slow growth in oil production and lower international prices prompted Beijing to divert more of its oil to meet rapid

Figure 2.



Source: Official Chinese statistics.

increases in internal demand, so oil exports leveled off in 1986. Oil production may continue to increase for the next few years, but growing domestic demand and expected declines in output at older fields will force Beijing to develop new sources of supply. Potential new fields in the remote northwest part of China will cost billions of dollars to develop, and China may seek Western cooperation in exploration and transportation to bring these fields into service quickly.

Production of electricity grew at an 8.5 percent clip in 1986, fast enough to support Beijing's industrial output target but not enough to ease the chronic shortages that idle many factories for one to two days a week. To meet demand, China is accelerating construction of coal-fired power plants, including many imported from the United States, Japan, and the Soviet Union. However, because of cost concerns, Beijing has scaled back its nuclear program and remains committed to building only two plants--one imported from France and Britain, and one built domestically using components from Japan, West Germany, and Sweden.

Efficiency. In general, Beijing has been better at boosting output in its industrial sector than in improving efficiency. The Chinese press reported that losses by state-run industrial enterprises rose steeply during 1986. By the end of the year, 20 percent of all state-run enterprises were in the red, nearly double the share in 1985. While poor management played a role, losses also mounted because reforms have caused factories to buy larger amounts of inputs at free-market prices outside the state plan, while price controls have prohibited some enterprises from passing along these higher costs. Also, in response to worker pressure, factory managers have taken advantage of increased decisionmaking autonomy to boost wages and bonuses faster than gains in labor productivity. Overall, profits of state enterprises dropped by 9 percent last year.

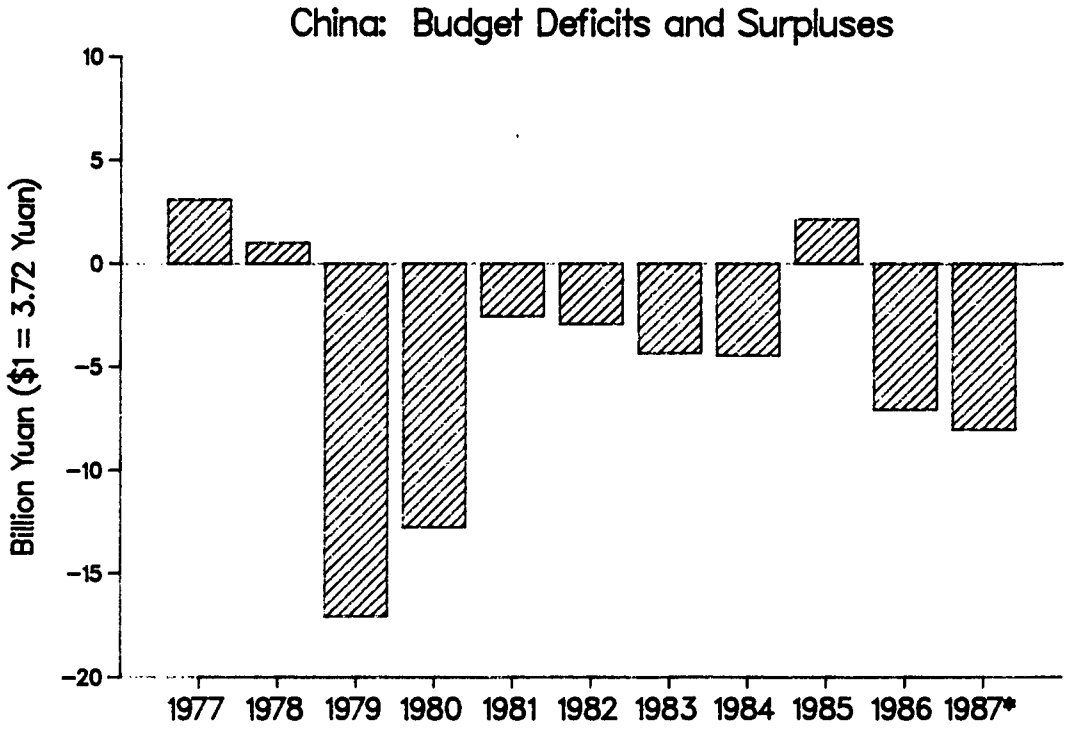
Government Budget

Because of larger than expected expenditures for state investment projects and increased subsidies to unprofitable enterprises, China's state budget slid into the red again in 1986 (see figure 3). Beijing announced that its deficit was 7 billion yuan ($1.9 billion) last year. Because of its accounting procedures, however, receipts from domestic bond sales and central government borrowing from foreign sources are recorded as government revenues. As measured by Western standards, China's deficit was thus twice as high as claimed, equaling 7 percent of government revenue. Beijing expects this percentage to increase slightly because of an anticipated increase in subsidy payments in 1987, and plans to cover part of the increase by doubling foreign borrowing this year.

Defense Spending. After increasing by 5 percent in 1986, the defense budget is to grow only 1.3 percent in nominal terms in 1987 to 20.4 billion yuan, or $5.5 billion (see figure 4). Spending for national defense is presented as a single line item in China's state budget and Beijing has not explained which military programs the expenditures cover. Since 1979, announced Chinese defense spending has declined as a percent of total budget expenditures, reflecting the secondary priority Beijing has given the defense sector under the economic reform program. If expenditures increase as budgeted, defense spending will account for about 8 percent of state expenditures in 1987 (see figure 5).

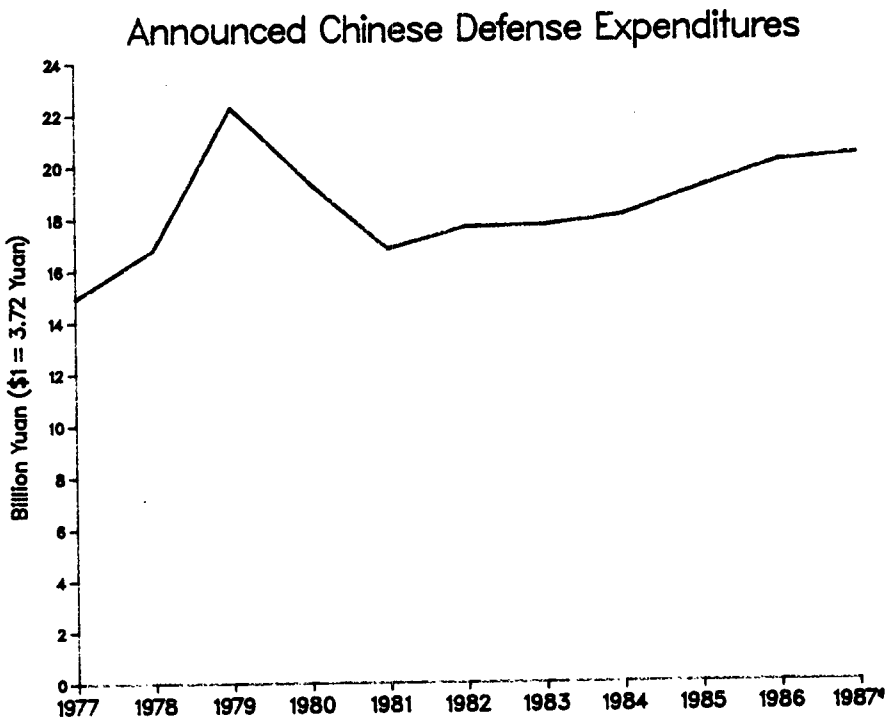
One way Beijing hopes to hold the line on defense expenditures is by demobilizing one million troops from its military. When the cuts were announced in

Figure 3.



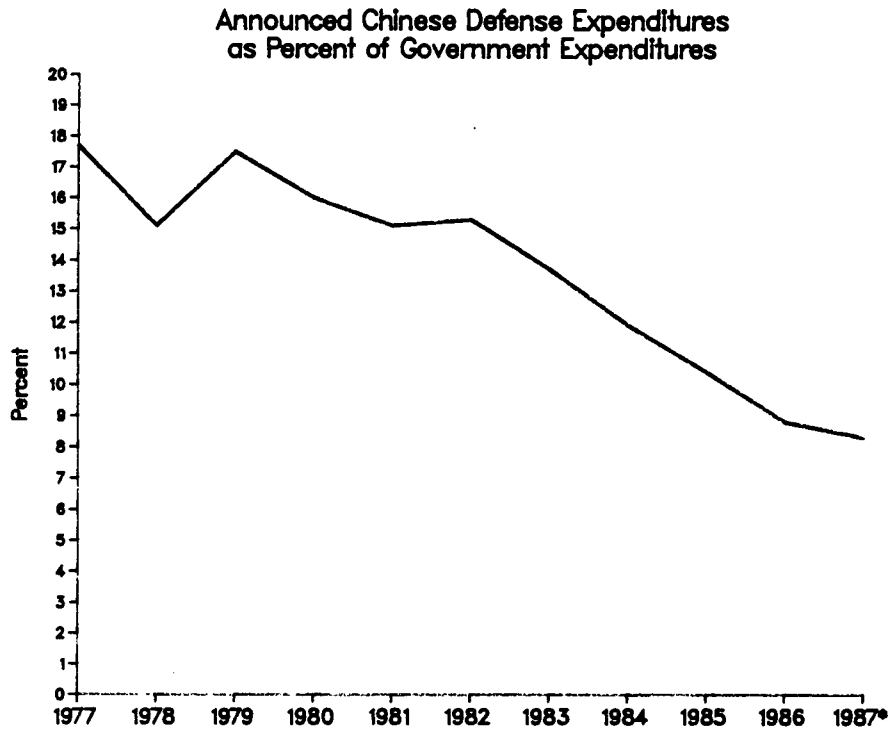
* Budgeted.
Source: Official Chinese statistics.

Figure 4.



* Budgeted.
Source: Official Chinese statistics.

Figure 5.



* Budgeted
Source: Official Chinese statistics.

1985 the completion date was set for the end of 1986, but the force reduction apparently is running behind schedule with perhaps only half of the total actually reassigned. The majority of the cuts are to be borne by the General Logistics Department and the General Political Department, which traditionally have been filled with superannuated officers who are unlikely to play a combat role.

Eventually the troop cuts should free up an increased share of the defense budget for new weapons, but the short run costs of demobilization probably have been substantial. The first cuts primarily were achieved through decreasing the number of enlisted men inducted during recruitment drives, but Beijing must make the remaining force reductions by releasing officers--some of whom wield considerable political clout. To ease older officers out, Beijing has allowed them to remain in current residences on military installations with full base privileges. As a result, the military is continuing to bear the cost of thousands of demobilized men and their families at military facilities. Moreover, the military is facing foot dragging from civilian authorities and factory managers who are reluctant to offer employment to older, less educated demobilized personnel. Although China may not realize any cost savings from the force reductions for the next few years, the demobilization allows a streamlining of the military structure and allows younger, better educated officers to move into positions of authority.

International Trade and Investment

Efforts to promote exports by, among other things, offering priority funding to exporters, allowing enterprises to retain a portion of their foreign exchange earnings, and devaluing the Chinese currency 13.5 percent against the US dollar at midyear 1985,

paid off in 1986 as exports increased 13 percent to $30.9 billion. Because of tighter administrative controls, imports grew only slightly to $42.9 billion, and China's trade deficit shrank by almost 20 percent, according to Chinese customs statistics.

Statistics released by China's Ministry of Foreign Economic Relations and Trade indicate that Beijing's improved foreign trade performance occurred despite a sharp decrease in oil export earnings. Textile exports increased by more than $1 billion, offsetting a large part of the drop in oil revenues. China also became the second largest cotton-exporting country--after the United States--with sales at $500 million. Chinese exports of handicrafts, light industrial products, and animal byproducts also increased sharply.

However, in 1986 Beijing reported the first major decline in new foreign investment in China since it opened its doors to Western firms in 1979. Chinese statistics show that although paid-in direct investment rose modestly in 1986, the value of new joint venture contracts signed totaled only about $3 billion, 50 percent less than in 1985.

Public statements by Western businessmen indicate that investors are concerned about lack of access to the local market and about the difficulty of getting foreign exchange from Chinese organizations to remit profits and to support their operations. Other complaints aired by investors involve rising costs of doing business in China, difficulty cutting through the red tape in China's bureaucracies, poor transportation, communication, and power supplies, the scarcity of skilled labor, and inadequate commercial laws.

Sino-US Trade. Beijing's effort to increase exports and restrict imports was reflected in Sino-US trade statistics. According to US Department of Commerce figures, US sales to China fell 19 percent in 1986, while US purchases from China grew 24 percent (see figure 6). As a result, total bilateral trade increased slightly to $7.9 billion, and the US deficit widened to $1.7 billion (see figure 7).

On the basis of its own trade statistics, Beijing claims that it recorded a deficit of almost $2.1 billion in trade with the United States. China's practice of recording transshipments of exports through Hong Kong as exports to the territory, rather than to the final destination, probably accounts for much of the discrepancy--which was equivalent to almost one-half of the total value of bilateral trade.

The trends in trade between China and the United States reflect the progress of economic reform in China. China's exports to the United States have grown at an average annual rate of almost 29 percent since 1980, with exports of clothing and textile yarns and fibers leading the way. In 1986 Chinese clothing exports shot up by almost 80 percent to reach $1.7 billion--equal to 10 percent of total US clothing imports for the year. Exports of other light industrial products, such as sporting goods and toys, have also grown. Because of the fall in world oil prices, however, Chinese sales of crude oil and petroleum products in the United States fell by more than one-third in 1986 (see table 1).

China's modernization drive has boosted its demand for capital equipment to upgrade its industries. Consequently, US sales of machinery and transport equipment have increased sharply in the past few years, and they accounted for over one-half of

Figure 6.

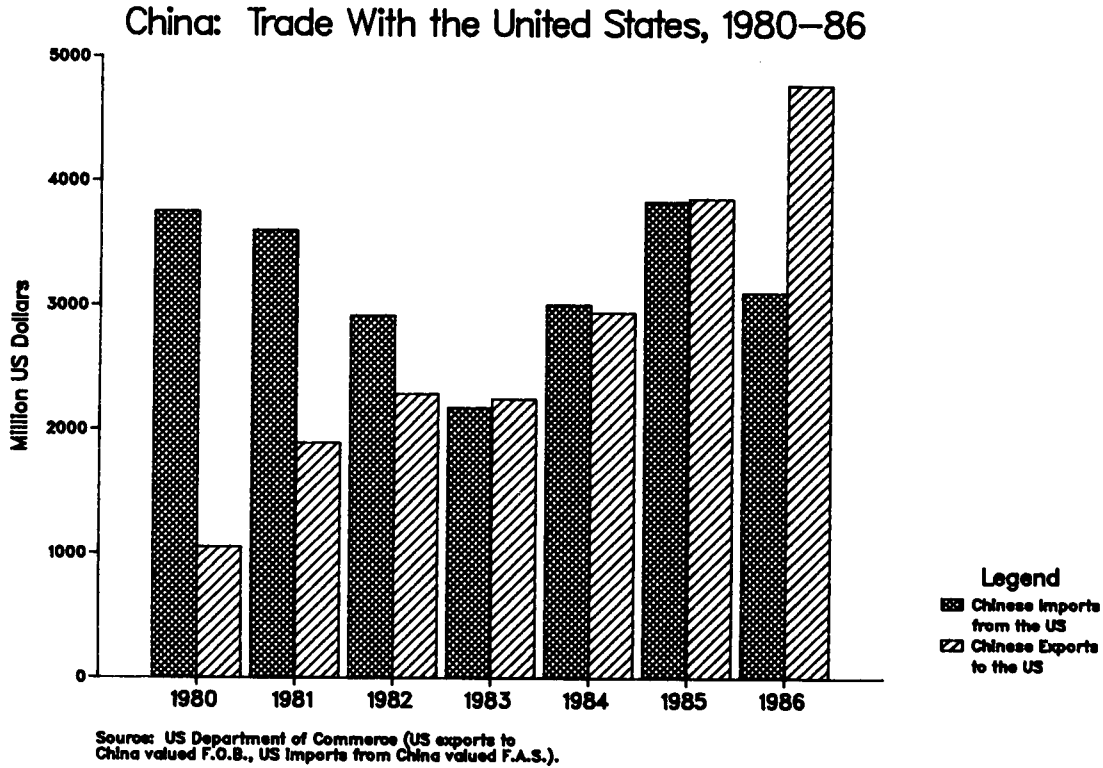
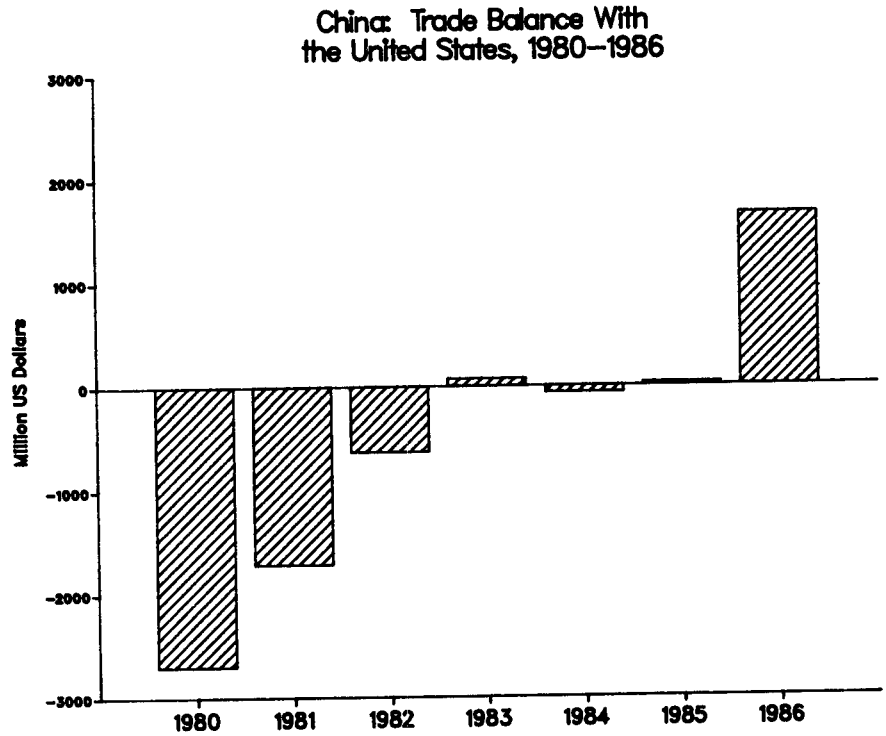

China: Trade With the United States, 1980–86
Million US Dollars
5000
4000
3000
2000
1000
0
1980
1981
1982
1983
1984
1985
1986
Legend
Chinese Imports from the US
Chinese Exports to the US
Source: US Department of Commerce (US exports to China valued F.O.B., US imports from China valued F.A.S.).

Figure 7.



Source: US Department of Commerce (US exports to China valued F.O.B., US imports from China valued F.A.S.).

Table 1. Selected US Exports to China (Million US $).

	1985	1986
Railway stock, aircraft and parts	732.4	465.8
Specialized machinery (including mining equipment)	482.4	339.2
Professional, scientific, and controlling instruments	282.5	257.0
Office machines and ADP equipment	190.3	244.3
Plastics	228.4	193.8
Wood and lumber	328.3	179.7
General industrial machinery and equipment (including pumps and heating and cooling equipment)	153.0	159.1
Metalworking machinery	55.3	133.9
Electrical machinery	100.6	124.8
(Total US exports to China)	(3,835.8)	(3,105.5)

Source: US Department of Commerce (exports valued F.O.B.).

US exports to China in 1986 (see table 2). The success of rural reforms, however, has reduced China's demand for grain imports. Although they accounted for more than one-third of total US sales to China during the early 1980s, grain exports made up less than 1 percent of US exports in 1986 (see figure 8). According to US Department of Commerce statistics, US sales of food and live animals to China totaled less than $21 million last year. Although China has contracted for almost 1 million metric tons of wheat--through the US export enhancement program--and a slightly larger amount of corn so far this year, US grain sales probably will continue to be a relatively small portion of total US exports to China in the near term.

Sino-Soviet Trade. Economic ties between China and the Soviet Union continued to grow rapidly in 1986. According to Chinese customs statistics, bilateral trade increased by one-third to $2.6 billion last year--equivalent to 30 percent of the Sino-US total. The jump in trade in 1986 followed similar rapid growth in 1985, and, on the basis of Chinese figures, the Soviet Union is now its fifth most important trade partner after Japan, Hong Kong, the United States, and West Germany. The high growth rates are somewhat misleading, however, because they reflect increases from a low base. Trade with the Soviet Union accounted for less than 4 percent of China's total trade last year, and probably will average about $3 billion annually until 1990 under their five-year trade accord.

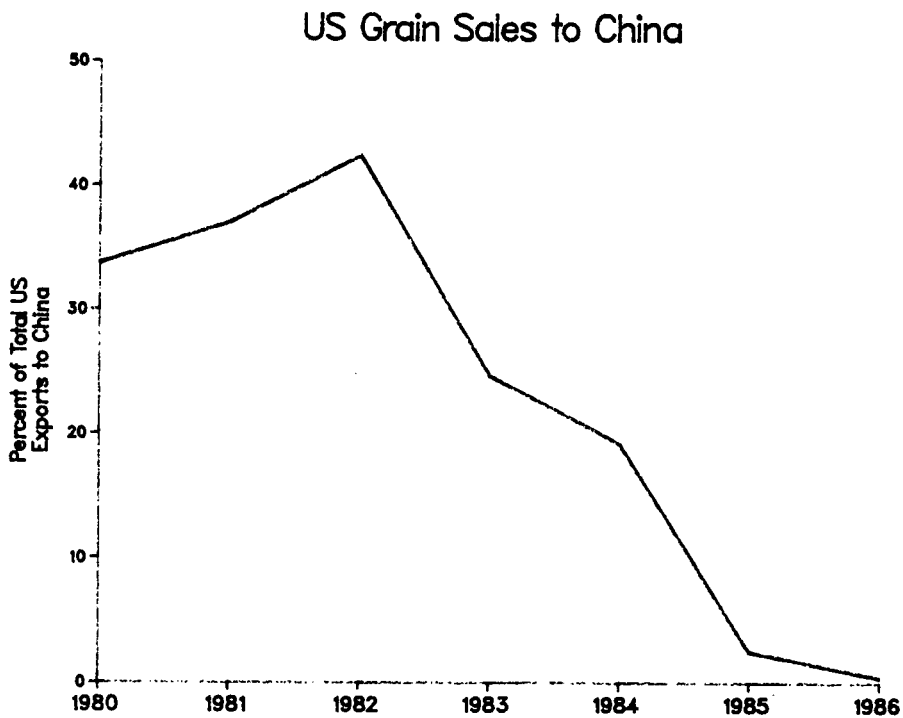
China's scientific and technical contacts with the Soviet Union are also increasing, although less rapidly than trade. In 1986 the Soviets agreed to renovate 17 Chinese factories and construct seven new facilities. Beijing probably will seek greater Soviet assistance during the next few years, particularly in the energy and

Table 2. Selected US Imports from China (Million US $).

	1985	1986
Clothing	967.1	1,709.9
Miscellaneous manufactured articles (including toys, games, and sporting goods)	467.9	676.1
Oil and petroleum products	985.3	639.6
Textile yarn and fabrics	374.2	474.9
(Total US imports from China)	(3,861.1)	(4,770.7)

Source: US Department of Commerce (imports valued F.A.S.).

Figure 8.



Source: US Department of Commerce.

heavy-industry sectors where Soviet technology is often on par with that available from the West. Nevertheless, Beijing apparently continues to view the West as the best source of foreign trade, investment, and technology needed for China's modernization program.

Economic Reforms in 1986

China's reform leaders are attempting to create a mixed economic system that combines market mechanisms and elements of a planned economy. Apparently they want to create an economy in which the state controls the production and distribution of key industrial products, while managers of state enterprises make most operational decisions, including appointing subordinates, hiring and firing workers, purchasing raw materials, and directly marketing a significant share of output. In this mixed economy, some firms producing exports would be allowed to contact foreign purchasers directly. Unprofitable enterprises would be shut down, and laid-off workers would seek employment with other state enterprises or join the service sector--and would be protected by unemployment insurance until they found a new job. Overall economic activity would be regulated by monetary and fiscal policies and, if necessary, by administrative means.

Although reform leaders undoubtedly differ on how to achieve a mixed economy, they recognize that for such an economy to work, enterprises must be responsive to market signals--and have equal access to labor, capital, and raw materials. Although Beijing announced early in 1986 that slowing the economy and consolidating past reforms would be key goals for the year, by last fall reformers were moving aggressively to lay the foundation for far-reaching new reforms.

- Beijing established guidelines for hiring new workers under fixed-term contracts which, if followed, would end lifetime job guarantees for employees in state enterprises.
- Beijing sanctioned the establishment of a few localized markets for key raw materials such as steel.
- China's central bank set up interbank loan markets in several cities, and Beijing allowed a few cities to open tightly controlled, rudimentary bond markets. Although the political significance far outweighed its economic impact, Beijing reopened the Shanghai stock market, allowing shares from two local collectively-owned enterprises to be traded.
- Several cities were allowed to experiment with new ownership systems for industry--leasing small state factories to individuals and allowing a few enterprises to issue shares to their workers.
- Beijing also approved a trial bankruptcy law, which, when implemented, will allow the government to close unprofitable state enterprises and sell factory assets to repay creditors.
- Beijing decontrolled the prices of bicycles, black-and-white television sets, refrigerators, washing machines, radio cassette recorders, and cotton yarns and certain fabrics.
- Reform leaders also sanctioned an open debate over the relevance of Western economic concepts to China's development strategy. Beijing even allowed party newspapers to print articles that advocated turning state enterprises into joint-stock operations owned by individuals, managers, and the government.

Change in the Climate for Reforms

Reform policies in 1986--although experimental and limited in scope--appeared to set the stage for major steps forward in 1987. Continuing concerns about economic performance--including mounting enterprise losses, the growing budget deficit, Beijing's inability to completely hold the line on investment spending, and indications late in the year that the economy might again be overheating--could have caused some rethinking about the reform agenda for 1987. But the student demonstrations that erupted in December 1986 and the subsequent ouster of party General Secretary Hu Yaobang in mid-January 1987 brought reform momentum to a halt.

Student Demonstrations

Last winter the scale and rapid spread of a series of demonstrations by university students in several of China's major cities threw Chinese leaders off balance. Major demonstrations occurred in at least seven cities, including Beijing and Nanjing, and minor protests occurred in many more. At their height in late December, more than 30,000 students marched through the streets of Shanghai.

The demonstrations were fueled by local grievances ranging from poor food and living conditions on campuses to rising costs of tuition and the inability to elect student representatives. As the demonstrations spread, however, protesters vocally expressed frustration with the slow pace of political and economic reform in China and demanded wider participation in the political process.

After some initial temporizing, authorities quickly brought the demonstrations to an end without bloodshed by alternately using persuasion and blunt warnings to

students to stay on campus. Some foreign observers attributed Beijing's sharp reaction to the demonstrations to leadership fears that workers might join the students--sparking large confrontations with the government similar to those that occurred in Poland several years ago.

Leadership Fallout

Two weeks after the student demonstrations subsided, Hu Yaobang was forced to resign as General Secretary of the Chinese Communist Party. Although the demonstrations were the immediate pretext for Hu's dismissal, his fall probably was the result of a convergence of factors. According to purported Chinese party documents leaked to the foreign press, Hu alienated many powerful party elders:

- By failing to consult them on major decisions.
- By pushing them to retire.
- By appointing his proteges to party posts while keeping his opponents from getting a portion of the patronage jobs.
- By tolerating a wide range of intellectual dissent and downplaying the importance of Marxism as a guide to action in the 1980s.
- And by committing a number of verbal gaffes in the presence of foreign reporters and officials.

A senior Chinese official in an interview with Hong Kong reporters in April implied that by January 1987 most party elders--possibly including some of Deng Xiaoping's closest friends and advisers--had become implacably opposed to Hu. This probably caused even Deng to question Hu's ability to lead China after Deng's death. Moreover,

although Hu strongly supported reform, he also may have weakened Deng's support for his leadership by suggesting on at least one occasion that Deng should retire and leave Hu and his proteges in charge. Finally, Hu probably hastened his departure by reacting too mildly to the student protests.

Reform in 1987

Orthodox party officials took advantage of disarray within the reform coalition following Hu's ouster to press their own economic policy agenda. Whereas months earlier Beijing had propose comparatively far-reaching bankruptcy legislation and price reform as a means of spurring improved enterprise performance, concern for social stability and the conservative drift in economic policy caused Beijing to shelve these and other controversial reforms. The Chinese media this spring featured party traditionalists emphasizing the importance of mandatory planning, asserting the role of the party in economic decision making, and advocating increased emphasis on ideological, as opposed to material, incentives to motivate China's workers. To spur improvements in industrial production, Beijing trumpeted slogans from the 1950s.

Since May 1987, Deng and his fellow reformers have regained the propaganda initiative--criticizing party traditionalists for advocating a narrow definition of socialism that precludes certain economic experiments, and arguing for stepped up reform measures.

As China's top officials meet this summer to reach agreement on policy and personnel decisions to be announced at the party congress in October, it appears that the scope and pace of Beijing's economic reform program will be part of the

deliberations. In 1986 Beijing conducted limited experiments with policies that, if widely implemented, would directly attack the waste and inefficiency inherent in China's economic structure. These policies, by reducing lifetime job security for workers and moving a significant share of capital and resources outside the plan, probably would also make China's economy more subject to economic cycles, including bouts of inflation and unemployment, and thereby might spark increased worker complaints.

Many party traditionalists probably believe that reforms have gone far enough, and that new measures would jeopardize past gains. Thus reformers not only must convince these orthodox officials that the potential benefits outweigh the risks, but must decide whether inflationary pressures have been reduced enough to allow Beijing to proceed further with economic decentralization.

Reform leaders must also sift through contradictory advice offered by Chinese economists over the proper sequence and timing of reforms. Because of Beijing's increased tolerance for ideologically unencumbered debate over economic theories, the diversity of opinions among economic advisers has never been greater. Some Chinese economists, for instance, advocate rapid implementation of price reform, while others believe than stability can be maintained only if price reforms are carefully eased in over a long period of time. Still other economists downplay the importance of price reform, arguing instead that China will not realize large gains in efficiency unless the ownership of state enterprises is first reformed.

COMPARISON OF CHINESE AND SOVIET REFORMS

Senator PROXMIRE. Ms. Hart, this is the Joint Economic Committee, and of course, we are interested, very interested in what you have told us. You both made excellent opening statements, but we are especially concerned about the Chinese economy, how the Chinese economy is functioning. We have a hearing scheduled, they will be open hearings, with respect to the radical changes that Gorbachev has announced, that they hope to achieve in the Soviet economy in freeing the economy and decentralizing the economy all the way through Mr. Gorbachev's rhetoric.

I would like to see if I could put what has happened in China over the last few years in perspective with what is happening or what may happen in the Soviet Union over the next 5 or 10 years.

Gorbachev announced a radical decentralization in which 200,000 prices were being locally determined instead of determined by the bureaucracy of the politburo in Moscow. He also indicated that 80 percent of the manufacturing enterprises in the Soviet Union would be operated on the basis of local decisions with respect to production volume and with respect to the number of people who would be working there and quality control. All that kind of thing.

Is there anything of that kind going on in China?

Mr. PETERSEN. Yes, there is, Mr. Chairman.

I think I will let Mr. Zinser address that.

Mr. ZINSER. Yes. In 1984, China announced that it would implement a sweeping series of industrial reforms, many of which are similar to the sorts of reforms that Gorbachev has been talking about. I think that is natural, because in a planned economy, leaders are going to face very similar sorts of problems: problems of overcentralization of economic decisionmaking, excessive government interference in the economy, and deliberate distortion of the pricing system.

So given that there are similar problems in both economies, I think it is natural that leaders in the two countries have also turned to the same sort of corrective mechanisms. For instance, both countries are trying to decentralize economic decisionmaking. Both countries are trying to increase managerial autonomy and introduce or improve sanctions for poor economic performance.

Senator PROXMIRE. Is there a possibility that the tremendous success that the Chinese enjoyed in the very rapid and spectacular increase in industrial production, probably the most of any developed country in the world, between 1981 and 1985, influenced the Soviet Union in this regard?

Mr. ZINSER. I think it probably did. The Soviets definitely have been following developments in China. Under Gorbachev, there has been an increasing amount of press attention to Chinese economic reforms. Not only has the volume increased, but the tone has been somewhat more favorable in reporting on Chinese economic reforms than it was under previous leaders.

CHINA'S BROADENING REFORMS

Senator PROXMIRE. I was under, perhaps, a misapprehension that most of the Chinese so-called "modernization" was very small scale. I think that the Central Intelligence Agency and the DIA

both testified that the changes were marginal, they were slight and they were confined primarily to permitting farmers, for example, to grow crops in their spare time and sell on the market for whatever they could get for it, but that it wasn't a very significant change. This was a couple of years ago. Now maybe we have readjusted our judgment.

Is this the case?

Mr. ZINSER. There has been a continuing broadening of economic reforms in China, particularly in the countryside.

PRICE CONTROLS

Senator PROXMIRE. Have they decentralized price determinations the way Gorbachev intends to do so or says he intends to do so?

Mr. ZINSER. In 1985, Beijing relaxed price controls on many nonstaple goods. The Chinese also have been gradually easing price controls on minor consumer items.

Beijing also has decontrolled the prices of several consumer durables. However, the state maintains price controls on key industrial products—such as steel, coal, and chemicals—and grain.

1986 GROWTH SLOWDOWN

Senator PROXMIRE. In figure 2 of the prepared statement, you have a spectacular increase between 1981 from about 5 percent growth in industrial output, a steady increase in 1982, 1983, 1984, 1985, up to about an 18 percent growth in that year, which is phenomenal; however, in 1986, it plunges all the way down to about 8 percent or so. And while 8 percent is tremendous growth, the base, undoubtedly, is bigger. It is still quite a spectacular drop.

What is the reason for that? Did they plan to do that, or was that just a result of running out of opportunities, to effect that kind of growth?

Mr. ZINSER. The slowdown in industrial growth was a deliberate attempt to reduce demand pressures in the economy. So they were quite satisfied to see the growth of industrial output decrease to an 8 percent rate.

Senator PROXMIRE. What did you say increased 15 percent earlier?

Mr. ZINSER. I said that the Chinese were very satisfied to see industrial output reduced to an 8 percent growth rate in 1986. This was a deliberate policy to ease demand pressures that were building up in the economy. Also, it eased the strain on a number of bottlenecks in the economy.

Senator PROXMIRE. I understood Mr. Petersen said there was a 15-percent increase in the first half of this year.

Mr. ZINSER. Yes. That is right. Industrial output has been increasing at a 15-percent rate through the first half of this year.

Senator PROXMIRE. So if this chart—there might be another upswing?

Mr. ZINSER. That is correct.

DEFENSE EXPENDITURES

Senator PROXMIRE. Putting that in perspective, you told us about Chinese defense expenditures. That was very interesting.

I notice, however, in the charts that you have here, defense expenditures have increased really very little in billions of yuan, from 16 and a fraction up to 19 and a fraction over a period of years.

Then in the following chart, figure 5 in the prepared statement, you see that because the Chinese economy has grown the way it has, there are much smaller percentages of government expenditures. I think, even in China's economy, government expenditures aren't the total GNP. Maybe they are. Are they?

Mr. ZINSER. No, sir.

Senator PROXMIRE. So the drop is down to about 15 percent in 1982, which was below what it was in 1979, down to about 8 percent. That is a spectacular drop. As a percent of GNP, it is far less than the Soviet Union is spending, which is around 14 or 15 percent. That may be comparable to what we are spending, because as you say, government expenditures are not the total GNP.

Mr. ZINSER. That is correct. We estimate that Chinese defense expenditures account for about 5 percent of GNP.

Senator PROXMIRE. That is less than we spend.

Mr. ZINSER. That is correct.

Senator PROXMIRE. That is quite a startling figure. Is that classified?

Mr. ZINSER. We can make that available.

Senator PROXMIRE. That would be very interesting for the committee.

I have some other questions that I am very anxious to ask you, but I don't want to exceed my time.

UNITED STATES-CHINA TRADE

I've got a few minutes left? OK. On figure 6 of the prepared statement, you show, for the first time in 1986, a substantial improvement in China's trade with us and a sharp drop in our trade with them. In other words, they have a favorable balance of trade. The size of the trade went up for the first time in some time. The size of the trade seemed to be spectacular. Then you see a trade balance in the next chart, figure 2, that's really remarkable. It goes up to about $1½ billion compared to unfavorable in 1980, 1981, 1982 and then about even-steven in the following 2 years.

Is that because of some change in grain shipments or what is it?

Mr. ZINSER. Changing grain shipments really didn't account for very much of the change in the overall bilateral trade balance last year. The change in the trade balance was due to two factors, first a deliberate effort on the Chinese part to restrict imports, particularly to preserve their foreign exchange reserves for development projects they have planned under their seventh 5-year plan.

The other reason that the trade balance has gone in China's favor so strongly is because of a deliberate attempt by the Chinese Government to boost exports, not just to the United States, but worldwide.

Senator PROXMIRE. My time is about up, and I will be back with some more questions I would like to ask.

Congressman McMillan.

CHINA'S GNP

Representative McMILLAN. Thank you.

Some of the figures that you have given out on gross national product and defense expenditures by China are really astounding.

I guess, officially, they have spent $5.5 billion, but in real terms, you think it is probably twice that, some $11 billion?

Mr. ZINSER. $11 billion.

Representative McMILLAN. That is 5 percent of their GNP?

Mr. ZINSER. That is correct.

Representative McMILLAN. Their total gross national product, then, is roughly half that of the United States?

Mr. ZINSER. Their total gross national product is about $235 to $250 billion.

Representative McMILLAN. So that is one-eighth.

Senator PROXMIRE. Our GNP is about what, $4 trillion?

Representative McMILLAN. Do you believe those figures? How does that translate in per capita terms, say, versus the United States versus the Soviet Union?

Mr. ZINSER. In per capita terms, roughly $230 to $240 per person.

Representative McMILLAN. Whereas our gross national product would be what? $20,000 per person?

Mr. ZINSER. I am not sure, but I think our current per capita income is almost $20,000.

Representative McMILLAN. I think it would be something like $20,000.

Senator PROXMIRE. Would the gentleman yield for a minute.

It seems to me that I am told the fact book indicates that China's GNP was about $350 billion the last time we measured it. It is probably $400 billion, because it was growing so fast, rather than $250 billion.

Mr. ZINSER. The explanation there is that the figures for the fact book are based on a constant price, constant exchange rate series for the Chinese GNP that uses a 1983 exchange rate.

Since 1983, China has devalued its currency considerably against the dollar. The figure that I just gave is a revised figure, based on the current exchange rate.

Senator PROXMIRE. I am sorry, Congressman.

DEFENSE EXPENDITURES

Representative McMILLAN. Historically, that $11 billion figure, if you go back to a period of intensive Chinese military engagement such as support for the Korean war, and so forth, do we have a historical measure of what it might have been in times past? What has the trend been over a couple of decades?

Mr. PETERSEN. I think if you look at the chart on defense expenditures, the peak that you see in 1979 is the conflict with Vietnam. So there is a big blip at that point, but Congressman, to be frank, our estimates are very rough. We really are too dependent on Chinese statistics, and we are not really sure what goes into these statistics. For instance, it is very hard to estimate research and development, which is probably not included in the $5.5 billion figure, and other costs that we would normally include in defense expenditures. [Security deletion.] What we are reasonably confident of is

that the trend that you see in these numbers is accurate. The numbers themselves may not be. Under Deng's reform program, the Chinese feel quite clearly that they have a "window of security," if you will, in which to carry out their economic and political reform program. They feel that they are under no great threat from the Soviet Union in the near term; as Gorbachev begins his own reforms within the Soviet Union. Beijing calculates that the Soviets will seek a fairly stable international environment, and China, therefore, can safely reduce its own defense expenditures and take those resources and devote them to improving living standards and promoting the economic development. That is one reason why you see the drop in defense expenditures.

So the $11 billion is a best guess, a ballpark figure, if you will, but we believe that trend reflected in the charts is fairly accurate.

Representative McMILLAN. Is our estimate that that results, in large part, from the improved relationship with the United States?

Mr. PETERSEN. That is a critical factor in Chinese calculations.

Representative McMILLAN. And they perceive that as even more important?

Mr. PETERSEN. Yes. And, they still maintain their strategic force, which is small, but they believe is capable of withstanding a first strike from the Soviet Union and functioning as a deterrent.

SOVIET THREAT TO CHINA

Representative McMILLAN. I suppose their thinking on that might well be influenced, if we are successful with the intermediate range weapons in Asia as well as Europe would presumably lessen even further the threat to China from the Soviet Union.

Mr. PETERSEN. Except that the Soviets would still retain a tremendous nuclear capability against the Chinese; including tactical nuclear weapons and ICBM's.

Basically, the judgment on China's part is a political one. They still see a long-term Soviet threat to China. They see no fundamental change in Soviet policy as yet toward China, although they are very intrigued by what Gorbachev is saying and doing. They are still trying to figure out exactly what it does mean for China, but the political judgment is that they perceive no immediate Soviet military threat to China in the near term. Within that period, they have a window in which they can concentrate on economic development.

Representative McMILLAN. I guess we don't normally think of ourselves spending at a rate of $208 or $209 billion on defense. I think we acknowledge that we bear an inordinate share of the cost of supporting alliances like NATO and providing security for the Japanese. This is another example of the United States security umbrella extending to the Communist nation, which has been able to then redirect resources to other pursuits that may ultimately prove competitive to the United States, in terms of trade, which I think is interesting.

MILITARY MODERNIZATION

Mr. PETERSEN. Let me add one other point. Even though the defense expenditure as a percentage of GNP, and as a percent of gov-

ernment expenditures, is going down, I want to make it very clear that China is making considerable improvements to its military capability. A lot of new weapons systems are being developed. They are gaining efficiency by reducing manpower and by improving tactics and training procedures.

So there is a fair amount of investment going into their military, and I certainly wouldn't want to leave the impression that they are not doing anything or they are standing still, because they really are doing quite a bit. Mr. Zinser, can you add something?

Mr. ZINSER. If I could add just one more thing. One of the ways the Chinese leadership has gotten the military to go along with this decline in percentage of defense expenditures in the GNP is by promising them, that after the economic reforms work, that after they experience the rapid growth in industrial output that they expect, then China can devote a bigger share of its resources to military modernization. In a sense, they have asked them to postpone expenditures during what Mr. Petersen has referred to as the window of security for them. But then they fully expect, at the turn of the century or thereabouts, to step up spending and develop a much more modern capable military force.

TRADE IN AGRICULTURAL PRODUCTS

Representative MCMILLAN. They have probably been impressed by the Japanese, who have built kind of a world economy or the strength in the world economy that they have by spending about the same amount on defense as the Chinese, about $10 billion is my recollection of that figure.

Let me shift just a minute, if I have a little bit of time, to the trade issue. The Senator points out the contradictory trends of decreasing imports from the United States and increasing exports. If you look over these categories of trade, most of it falls into the—seem to fall into the technological and machinery area, very little in the way of commodities.

It would be my presumption that in the past, a major chunk of our exports to China were in agricultural products. Is that true? Which are almost insignificant now.

Mr. ZINSER. That is correct, sir.

Representative MCMILLAN. Is that largely a result of policy on their part or a change in their own domestic agricultural production, or is it a result of the rising value of the dollar, which previously made our exports noncompetitive?

Mr. ZINSER. I would attribute it mainly to the rapid increase in agricultural production they have been able to achieve through economic reforms in the countryside. In 1980 to 1982, U.S. grain exports accounted for about 30 to 40 percent of our total exports to China. As China's grain output increased domestically, they sharply reduced the amount of grain that they purchased from us until, as you said, it accounts for a very small fraction of trade right now.

UNITED STATES-CHINA TRADE

Representative MCMILLAN. Does the declining value of the dollar have any impact on the competitiveness of United States exports in this respect or Chinese imports, or is that a strictly managed ex-

change rate, insofar as they are concerned? And therefore, not necessarily responsive to the declining value of the dollar?

Mr. ZINSER. With respect to Chinese exports to the United States?

Representative MCMILLAN. Really, either way. But I am more concerned about the decline of our own exports than the increase in their exports to the United States.

Mr. ZINSER. The Chinese currency has devalued relative to the dollar; and it has also devalued relative to the West European and Japanese currencies. The decline in the dollar relative to the yen and West European currencies has not really given us a significant boost, in terms of our sales to China, because the Chinese restrict imports through a series of licensing agreements. Price factors are not the only considerations in our ability to sell there.

Representative MCMILLAN. I guess really the bottom line of my question—if I am running out of time, I will come back to this—would be, is China pursuing industrial and trade policies, development and trade policies that may ultimately be on a collision course with U.S. economic interests. I think that has happened in the case of other nations, where powerful sections of the world market develop industry, and I think that is going on today in textiles in China. I guess the general questions I would have would be, are our policies in working with the Chinese on their development, their trade development contrary to what ultimately is going to prove to be a U.S. domestic national interest.

Mr. ZINSER. I think the more likely impact of continued Chinese development would be on countries at roughly their same level of economic development that are trying to export the same types of commodities as the Chinese are exporting. Total Chinese-United States trade accounts for only 1.3 percent of overall U.S. trade with the world. There have been particular cases, such as clothing exports to the United States, where China has been able to acquire a market share of about 10 percent. But apart from several product lines, their sales here have not had a very big impact on us. However, I think the impact on other countries will be significant when they are competing with those countries for sales of textiles, light industrial goods, handicrafts, and similar sorts of products.

Representative MCMILLAN. Thank you. I believe my time is up.

GOVERNMENT CRACKDOWN ON DEMONSTRATIONS

Senator PROXMIRE. Since the public demonstrations in December 1986, the Chinese Government reduced some of the liberties that it allowed. It cracked down on demonstrators, cracked down on academic freedoms, suspended new economic reforms.

How far reaching were these political reactions, in terms of individual rights and liberties? What has happened in this regard since the first part of the year?

Mr. PETERSEN. The Chinese leadership did a number of things to put an end to the demonstrations, Mr. Chairman. For instance, they made it very clear to authorities on campuses that if demonstrations continued, students would suffer in terms of job opportunities after graduation. And, parents were cautioned about the be-

havior of their children. There were very few arrests that we were aware of. There was no bloodshed.

The Chinese prefer, when they can, to use informal family and peer pressure that involves talking to parents, supervisors, and respected authority figures to bring people into line. That is what they did in this instance.

The fear the Chinese leadership had, more than anything else, was that workers would join these demonstrations. To the best of our knowledge, workers were kept in plants away from the demonstrations, and they did not join in the demonstrations.

In the aftermath of these student demonstrations Beijing targeted people that they thought were most responsible for encouraging the demonstrations. Some liberal academics on major Chinese college campuses and also some reporters for Chinese Communist newspapers who had a reputation for muckraking and doing exposé journalism were criticized by authorities. Three officials were expelled from the party. These people, however, continued, to the best of our knowledge, to work, although they have lost some of the rights and privileges and perks that go with being a Communist Party member.

The leadership has gone to great lengths to attempt to convince outsiders, particularly Western countries, that this crackdown, would not spread outside the party. That it would not affect great numbers of people; that it would not lead to some sort of anti-rightist campaign like those witnessed in the past. So far it has not.

Without a doubt, however, there was a real chilling of the political atmosphere between the November, December, and January period and about May of this year. As I noted in my brief presentation, the more orthodox, more conservative officials saw this as an opportunity to press their case on the whole range of issues that they have expressed concern about for sometime, including the pace of reform, the more open intellectual atmosphere, and the differences in living standards.

REFORM GROUP ON OFFENSIVE

Since May, however, the reform group, and I would include both Acting General Secretary Zhao Ziyand and Deng Xiaoping, have gone back on the offensive, and we are beginning to see more articles in the Chinese press about the need for a more open intellectual environment albeit within certain bounds. The principal one being thou shall not question the right of the Communist Party of China and thou shall use care when questioning its wisdom in governing.

COMPARISON OF CHINESE AND SOVIET FREEDOMS

Senator PROXMIRE. So on the one hand, you have the Chinese, who are moving in the direction of less liberalization and the Soviet Union, which seems to be moving in the direction of at least a little more liberalization.

In your view, which of the two governments permit more individual liberties and which is more oppressive?

Mr. PETERSEN. I can speak knowledgeably only on China, but from what I know of the Soviet Union, I would say that the openness of debate and the degree of individual liberty is greater in China. Currently, the Chinese are attempting to encourage some open debate on the options before the leadership. Deng Xiaoping himself says he wants political reform back on the agenda for the 13th party congress. By that, he is talking about a party and government more responsive to popular concerns, and more democracy within the party itself, as well as the right to present views and not to suffer for it if your view isn't held up later.

Senator PROXMIRE. So you seem to indicate that in China there is more freedom, at least more movement in that direction than in the Soviet Union.

How about the economic reforms? What is the state of reforms in China today as compared to the Soviet Union?

Mr. PETERSEN. I am going to ask Mr. Zinser to respond to that.

Mr. ZINSER. First, compared to the Soviet Union, the Chinese have been at it longer, and I think it is a little early to assess just how far the Soviet Union is prepared to go in implementing the sort of policies that Moscow has been talking about recently.

Of course, that has also been the case in China, where the reform rhetoric has often exceeded the actual changes happening in China's industrial structure.

At the moment, Chinese leaders are at a new decision point. They have seen agricultural production increase very rapidly over the past few years but then level off. In the past few years, they have seen industrial growth rates, as we talked about earlier, increase very rapidly. They have seen their standards of living increase, but yet they also are saddled with inefficient state enterprises whose losses are mounting. They really have to make a decision at this point. Is there going to be a significant broadening of economic reforms in China, or are they going to be satisfied with what they already have attained and spend more energy on ironing out the problems rather than really pushing the frontiers of reform forward?

REACTION BY WESTERN BUSINESSES

Senator PROXMIRE. Would you say that the political actions and the slowdown in economic reforms have caused concerns in Western nations, including the United States, that undermine the willingness of business persons to invest in China?

Mr. ZINSER. I think foreign investors have looked at the Chinese political and economic developments over the past winter very carefully. All businessmen have to make an assessment of political stability and expected profitability, and I think that the things that happened in the winter have had an impact there. It is difficult to gauge just how significant an impact, because there were already concerns by some foreign investors regarding costs of operating in China, regarding difficulty remitting profits regarding limited access to China's domestic market.

So there were already economic factors that investors were weighing very carefully, in addition to the political developments you mentioned.

CHINA'S RAPID GROWTH

Senator PROXMIRE. We have this spectacular improvement in Chinese economic performance in the last couple of years. You have indicated, although they dropped to 8 percent, that would be spectacular in this country; in 1985, we grew about 6 percent, and we threw our hat in the air. It was the best growth in 30 years. Now we are down to 2½ percent. They are down to 8 percent last year. Now they are up to 15 percent again.

Aside from the fact that they had a very low base, and of course, that is important, can you explain how China can continue to grow in this way, compared to what is being achieved in the West?

Mr. ZINSER. As you mentioned, they had a low base to start with. They also were saddled with very significant waste and inefficiency in the Chinese industrial structure. China's energy usage, for instance, may be less than one-half as efficient as energy usage by countries at the same level of economic development as China.

They have been able to achieve rapid gains, in part, because they decentralized decisionmaking authority and increased the use of material incentives. For example, they've gotten very good gains in coal production by turning more coal over to local miners, rather than state-run mines. They've also gotten gains in coal production by allowing state mines to sell over quota production at "negotiated," or free market prices.

So they have gotten some very sharp gains in energy production by decentralizing control. This is one way they have been able to achieve fairly rapid growth.

Senator PROXMIRE. I've got time for just one more quick question and a quick answer.

OCTOBER PARTY CONGRESS

How important is the party congress scheduled for October and what do you expect to come out of it?

Mr. PETERSEN. I think it is a very important meeting, Mr. Chairman. They've got to make a number of critical decisions in two basic areas.

First, personnel. They are going to appoint a new central committee and a new politburo. We expect to see some changes in the top leadership.

The second thing on the agenda is where they are going to go with the reform program from here on out. They are drafting a document right now, which will probably provide guidelines about where to go next.

There are really two different sets of divisions on the reform program in China. One is between the reform group and the more orthodox set of party officials that we have been speaking about, and there is a second division that is less well understood within the reform camp itself, over where to go next and how to proceed. The Chinese reformers are really in unchartered territory, and there is a lot of disagreement among them over what steps they ought to take next.

So at that fall meeting, we would expect to see a leadership emerge that will direct this next critical stage of economic reform, and we would also expect to see a party document and some policy

guidance come out of the congress that will chart a course for the reforms over the next few years.

Senator PROXMIRE. Senator Symms.

HONG KONG'S FUTURE

Senator SYMMS. Thank you very much, Mr. Chairman and members of the panel. What do you expect—maybe it is premature, but what date is it that they are scheduled to take over control of Hong Kong?

Mr. PETERSEN. It is 1997.

Senator SYMMS. It is 10 years out.

Don't they need Hong Kong?

Mr. PETERSEN. They need Hong Kong very much, and they are working hard at maitaining both the political and economic stability of Hong Kong, so that it remains viable and healthy after 1997.

Senator SYMMS. Do you think they will be able to make enough overtures, not only overtures, but the demonstration of enough confidence to Hong Kong, that there won't be a flight of capital out of Hong Kong?

Mr. PETERSEN. I don't think we know at this point. I think we are probably several years away from the critical point. The conventional wisdom is that one of the key dates is 1992, approximately 5 years from the reversion. At that point, we will be able to sense the mood more accurately perhaps.

CHINA'S RELATIONSHIP WITH TAIWAN

Senator SYMMS. What kind of relationship, economically, if any, do they have with Taiwan?

Mr. PETERSEN. Excuse me. The PRC?

Senator SYMMS. Yes.

Mr. PETERSEN. Maybe you can address that a little more fully than I can, Mr. Zinser.

Mr. ZINSER. Officially, China encourages trade with Taiwan.

Senator SYMMS. Officially.

Mr. ZINSER. Officially. They do unofficially too, but officially, they encourage trade with Taiwan. Some trade is direct trade between Fujian Province and Taiwan. The bulk of the trade, though, is conducted through Hong Kong merchants.

Their total bilateral trade probably was somewhat over $1 billion last year, with most of that being through Hong Kong.

Senator SYMMS. It appears to me that they both need Hong Kong and Taiwan to help guide them in the direction they have obviously started going and making improvements.

Isn't it true that there would be more incentives. I am sorry. I missed the first part, but there would be added incentives into the economy as to what is causing it to grow; isn't that correct?

Mr. ZINSER. That is correct.

DEBATE ABOUT REFORM

Senator SYMMS. Where is the resistance you talk about? Who is resisting going in that direction with the economy?

Mr. PETERSEN. I think you have to look at it in a couple of ways. One, there are a group of traditional Marxist officials still in high

positions in China that argue that many of the reforms are just not Marxist, that this is not the way to achieve communism.

Then there are other officials that argue that some reform is necessary, and the debate is over how fast and how far to go. Some of them argue that China has reached the extent of appropriate reform. Also, these same officials worry that if they liberalize the economic environment too much it will have political consequences as well. They worry that pressures for political liberalization will accompany economic liberalization. So they are very concerned about inflation rates, disparities in standards of living, all the potentially destabilizing things that may start to happen when they modernize and reform the old system.

So it is not a black and white issue. A lot of the debate in China is over the scope and pace of reform, as it has been from the start. What we have seen since the late 1970's is this debate shift on the spectrum from where they were debating whether to moderately adjust the planning mechanism to arguments over a much more liberal interpretation of the proper role of market forces. The debate has shifted signficantly. So reform is an ongoing process, and as we mentioned earlier, China is really in uncharted territory.

DEFENSE EXPENDITURES

Senator SYMMS. Just one more question from my point of view, Mr. Chairman.

How much of their economy do they allocate to the military, their GNP?

Mr. ZINSER. We estimate that approximately $11 billion will be spent in 1987 on military expenditures, which is roughly equivalent to 5 percent of their GNP.

Senator SYMMS. Their GNP is $55 billion?

Mr. ZINSER. Their GNP is roughly $235 to $250 billion.

Senator SYMMS. Oh, I see. And they are going to spend $11 billion on defense?

Mr. ZINSER. That is correct.

Senator SYMMS. So their economy, then, compared, say, with Japan, is very—at the current time, I mean it is really a small economy?

Mr. ZINSER. That is correct.

Senator SYMMS. What is the economy on Taiwan?

Mr. ZINSER. The GNP on Taiwan is on the order of $70 billion. So it is significantly smaller than China's GNP.

Senator SYMMS. But of course, there's a billion people in China.

Mr. ZINSER. About 1.06 billion people in China versus about 19 million people on Taiwan.

BIRTH RATE

Senator SYMMS. How's the birth rate in China now?

Mr. PETERSEN. I will have to get back to you with our estimate of what the actual rate is. As you know, they do have a vigorous birth control campaign. One of the side effects of the economic reforms are one that they never really foresaw, was that in the countryside, it somewhat undermined their birth control campaign, because it

became very profitable for families to put additional labor on the land. As incomes went up, they could afford more children and didn't have to rely on the state for grain rations and that sort of thing.

[The following information was subsequently supplied for the record:]

According to Chinese statistics, the birthrate in 1986 was 20.8 per thousand, up from 17.8 per thousand in 1985.

Senator SYMMS. Didn't they have a point here where a couple of years ago they actually were performing sex selection and abortions. I read something about that. In other words, they wanted the young male children.

Mr. PETERSEN. There were instances reported in the Chinese press of female infanticide and other abuses of government policy. The problem, one of the problems, in China is lack of uniform implementation of its birth control program. The problems with the birth control program are fairly typical, I think, of any major policy coming out of Beijing. There is a central policy, but the country is so vast, so large, that the implementation goes down to local level officials and what you see are great variations in how that policy is implemented.

Senator SYMMS. Thank you very much. Thank you, Mr. Chairman.

Senator PROXMIRE. Congressman McMillan.

POTENTIAL FOR GROWTH

Representative MCMILLAN. Getting back just a minute to the growth rate. I am under the impression that the Chinese have tremendous resources, skills, energy, intelligence, that aren't reflected in the pattern of their economy in recent years. So to the degree they succeed in unleashing those or tapping those resources, which I think their reform movement is attempting to do, I wouldn't be at all surprised to see extraordinary jumps in economic growth.

Would you agree with that sort of general perception?

Mr. ZINSER. I think your perception is correct. They have a vast labor force, though I might add that at this point it is not a highly skilled labor force. They've also got vast resources of coal, oil, and other raw materials.

The problem they face under their planning system is a grossly inefficient, wasteful use of those resources.

If they can straighten out those problems by introducing incentives and continuing to broaden the use of market mechanisms, I think the potential is there is for fairly rapid economic growth. But, in my opinion, they have to continue implementing market oriented reforms to get those growth rates.

HISTORY OF CHANGE

Representative MCMILLAN. One other general impression I have had is that the Chinese have perhaps had a long history, a long pattern of almost absorbing whoever is trying to govern them. So that it sort of takes on its own momentum, unlike the Soviet Union which seems to be the opposite. It never seems to be able to over-

come its own political leadership to do what it otherwise might have the capability of doing.

Maybe that is instructive, in terms of what's going on. I don't know whether this is accurate information or not, but I have even heard that when the Chinese nationalized some basic industries back in the early 1950's or late 1940's, that they even issued bonds on the acquisition or the takeover of those enterprises, often retained some of the management of those enterprises to run them and have honored the repayment of that indebtedness.

Is that accurate?

Mr. PETERSEN. Some of that is accurate.

Representative MCMILLAN. But there are plenty of examples of their not doing that.

Mr. PETERSEN. Yes. In the middle 1950's with the Great Leap Forward and when Mao entered his phase that culminated in the cultural revolution, a lot of those early plans and policies which were fairly sound, were swept aside. Indeed, we were talking a little bit earlier about different groups within the leadership. The more orthodox group that we talked about tends to look back to those plans of the early 1950's as the kinds of policies that ought to be implemented now.

The stronger advocates of reform are arguing that those were fine for the 1950's, but what is needed is a new set of policies for the 1980's and 1990's.

CHINESE ENTREPRENEURS

Representative MCMILLAN. I am also under the impression and having had some direct experience with it, that following the Chinese revolution, a lot of Chinese entrepreneurs' skills spread themselves all over Southeast Asia, so that a lot of the entrepreneurship in countries like Malaysia or Singapore, and we could go on, is a result of basically, Chinese nationals, or what were then Chinese nationals operating in that environment.

To what degree do you see that kind of relationship to other nations of Southeast Asia are significant in the entrepreneurial life of that community, as having an impact on what is taking place in China today, in terms of their looking to that group, perhaps as sources of a return of entrepreneurship or return of investment capital into China to achieve what they seek to achieve?

Mr. PETERSEN. That is true. The Chinese Government has courted ethnic Chinese in Southeast Asia, Hong Kong, and elsewhere to invest in China and has made quite an effort to attract investment from these groups.

FOREIGN INVESTMENT IN CHINA

Representative MCMILLAN. Do we have any accurate information on outside sources of investment in Mainland China today and to what degree it's coming from that type of pool of capital?

Mr. ZINSER. The preponderance of foreign direct investment going into China is from Hong Kong, perhaps 70 to 80 percent.

Representative MCMILLAN. By that, you mean, it's coming from most anywhere, but I think the Senator raised the question about Hong Kong.

Would it be accurate to say that Hong Kong is almost in existence there at the pleasure of the Chinese for the last 20 years?

I mean, at any time, if they physically wanted to violate the lease agreement and control Hong Kong, they could have done so. They perceived it was in their interest not to do so.

Mr. PETERSEN. That is correct.

Representative MCMILLAN. Maybe it is the principle that they are now exploring the possibility of expanding further in other places than China.

Would that be an accurate—maybe not with the degree of independence, but to achieve some of the same results?

SPECIAL ECONOMIC ZONES

Mr. PETERSEN. Mr. Zinser, maybe you can talk a little bit about the special economic zones.

Mr. ZINSER. One way China has tried to encourage, to attract foreign investment is by establishing four special economic zones, as they are referred to. They offer special incentives to foreign investors, tax cuts, duty free imports, much greater flexibility on the part of foreign managers to manage enterprises in the zones. Beijing has tried to use the zones as showcases to attract foreign investment from other sources, not just Hong Kong.

One example of how Beijing has used ethnic Chinese to help to attract foreign investment, is that they asked a senior economic official from the Singapore Government to come to China and advise them on foreign investment policies and special economic zone policies. This individual went to China and worked with senior officials helping to devise guidelines to bring in the sort of investment you are talking about.

CHINA AND THE UNITED STATES

Representative MCMILLAN. Just one final comment.

We may be prepared to go into this further today or it may be worth, it seems to me, more careful consideration. That has to do with the question I raised earlier, to what degree Chinese development policy, its trade strategies are, let's say, confluent with the strategy of the United States, to the degree that we define what our trade strategies are, which I have some real doubts about, because I think—and that is a potential point of conflict and maybe it has been a point of conflict. It may become even greater as China is successful in developing its own industry for export and as it impacts imports.

I think that kind of understanding of what their expectations are, what their targets are, both in terms of exports and imports, should be something that Congress is aware of, not only this Congress, but those who are going to negotiate trade agreements on behalf of the United States with China and other nations, because I think one of the reasons we have a trade problem in this country today is that the U.S. market has been the primary target and that some of our trading partners have managed to close their markets to others such as the Chinese, and part of our negotiation strategy should be to encourage other nations to absorb any success that the Chinese have in building their exports, not just the United States.

So if you would give that more thought, I think that is an area of inquiry that would be extremely interesting to me and should be to the Congress, I think.

[Security deletion.]

TECHNOLOGY TRANSFER BETWEEN CHINA AND THE U.S.S.R.

Senator PROXMIRE. Now obviously, there is some degree of technology transfer between China and the Soviet Union, as well as between China and the East European countries.

How extensive is this technology transfer. How much concern should we have that the U.S. and Western technology given to China will find its way to East Germany and the Soviet Union?

We have had this problem with Japan, Norway, and it was a shocking scandal, this heartbreaking action, that not only cost us billions of dollars, but also set us back militarily very severely.

My question is, how sensitive is the technology transfer with respect to China?

Mr. ZINSER. Our best estimate is that there is relatively little transfer of hardware. If there is technology transfer, it would probably be in the information area, coming out of formal scientific and technical exchanges between Soviet and East bloc scientists and Chinese scientists. But China sees the Soviet Union as its key strategic threat, and the Chinese are, in no way, interested in increasing that threat by passing sophisticated technology to the Soviets.

Senator PROXMIRE. Of course, we also had that view of Japan. Japan, after all, my heavens, if there is any country that is vulnerable to the Soviet Union, it seems to me, it should be Japan. They are so close to them, and they are practically defenseless. They rely on us entirely, and yet they got involved in a transfer to make a buck or two.

Mr. ZINSER. The other point is that China is very aware that under the COCOM arrangements, if technology is passed, they stand to lose considerable access to things they see as key to modernization.

Senator PROXMIRE. I am going to ask Mr. Kaufman to ask a question.

TECHNOLOGY TRANSFER TO THIRD COUNTRIES

Mr. KAUFMAN. Does the United States have any assurances that technology transferred by the United States to China will not be transferred to the Soviet Union or to other countries such as Iran and Iraq?

Mr. ZINSER. I don't have specific information on the precise wording of the agreements. I think there is a stipulation in our sales of technology. We can check that for the record, if you would like.

[The following information was subsequently supplied for the record:]

China has agreed to provide end-user certificates for controlled technologies valued above $5,000 that are purchased from the United States. These certificates state that China will not transfer licensed items to any third country.

SOVIET TROOP REDUCTIONS IN MONGOLIA

Senator PROXMIRE. What had been the effects on China of Soviet troop reductions in Mongolia on the Chinese border?

Mr. PETERSEN. Little or none at all.

The Chinese saw them for what they were, as a gesture [security deletion], and they certainly do very little, if anything, to reduce the overall threat that China faces along the border.

Senator PROXMIRE. Our time is just about up. I am going to have to leave in a few minutes.

Senator SYMMS. Just one more question, Mr. Chairman.

I will yield back to you.

CHINA'S PERCEPTION OF TAIWAN'S MILITARY

What is the perception that you have in your intelligence reports that the Chinese Communists have toward the Taiwan, militarily?

Mr. PETERSEN. Toward Taiwan, militarily?

Senator SYMMS. What is their perception of Taiwan? Do they view Taiwan as any kind of an aggressive threat, No. 1. And No. 2, do they have any kind of perception that someday they plan to take over Taiwan by any means other than just sheer economic——

Mr. PETERSEN. As you know, the Chinese have repeatedly stated that they reserve the right to use force against Taiwan in certain circumstances. The ones that they most frequently raise are severe internal disorder on Taiwan or the rise of something like a Taiwan independence movement, but basically, the Chinese position at present—and again, these things are always subject to change and reevaluation down the road—is that they are looking for a political dialogue, increased contact between China and Taiwan, and some sort of an arrangement like they have with Hong Kong, that they claim would preserve Taiwan's independence, if you will, in all but name.

That is what they are looking for now. Indeed, they realize that any kind of provocative act against Taiwan would have very severe political and economic repercussions for China, and in particular, their access to Western markets, which is very important to them, as well as Western technology, the political relationship with the United States, and a whole range of other things.

So they very much want reunification, and they want it on their terms, and that is the means they were pursuing at present.

Senator PROXMIRE. Congressman McMillan.

CHINA'S OIL SUPPLY

Representative MCMILLAN. A couple of final questions. What is the source of oil for China?

Mr. ZINSER. China is the sixth largest producer of oil in the world, and it exports about one-fifth of all that it produces.

Representative MCMILLAN. Where is the production located? Manchuria?

Mr. ZINSER. A large portion is produced in the northeast part of China.

CHINA AND VIETNAM

Representative McMILLAN. The other question had to do with the ongoing friction between Vietnam and China, which apparently is sort of a constant friction, but it never expands much beyond border conflict, but it is fairly persistent.

What is the Chinese strategy with respect to Vietnam?

Mr. PETERSEN. Sino-Vietnamese military confrontation along their common border tends to increase coincident with the annual Vietnamese dry season campaigns against Chinese-supported resistance forces in Cambodia. But it is difficult to ascertain which side initiates the skirmishes as the fighting is largely confined to remote, mountainous regions where the border is ill defined. The level of conflict—since the 1979 border war—has remained limited to artillery barrages and small-unit infantry clashes.

Representative McMILLAN. But the likelihood of that expanding into anything more major is very remote, I would think.

Mr. PETERSEN. Very little chance of it expanding.

Representative McMILLAN. Thank you.

Senator PROXMIRE. Thank you very much. This has been very enlightening. I have a number of other questions I would like you to respond to for the record in writing.

Will you do so?

Mr. PETERSEN. Fine.

[The following questions and answers were subsequently supplied for the record:]

RESPONSE OF THE CENTRAL INTELLIGENCE AGENCY TO ADDITIONAL WRITTEN QUESTIONS POSED BY SENATOR PROXMIRE

Congress of the United States

JOINT ECONOMIC COMMITTEE
(CREATED PURSUANT TO SEC. 5(a) OF PUBLIC LAW 304, 79TH CONGRESS)

Washington, DC 20510

August 10, 1987

Mr. William H. Webster
Director of Central Intelligence
Central Intelligence Agency
Washington, D.C. 20505

Dear Mr. Webster:

I mentioned at the close of the hearing on China's economy, on August 3, 1987, that I would be forwarding additional questions with a request that responses be made for the record. The following are the questions I would like addressed:

1. The farm sector has been reorganized and much of it turned over to private control. There has also been some decentralization of industry. How much of the economic growth in 1986 and 1987 can be ascribed to the private sector? How much to the reforms in general?

2. You mention Beijing's concern over budget deficits. First, how large will the deficits be in 1987? Second, we never hear about budget deficits as a problem in other centrally planned economies. Why is it considered a problem for China?

3. What are your estimates for inflation and unemployment for 1987 and how does this compare with the recent past?

4. You discuss efforts to improve productivity, but no figures are cited. What are the figures for labor and capital productivity for each of the past 10 years?

5. The July 27, 1987, issue of Beijing Review contains a midyear report on the economy by the State Statistical Bureau. It shows 10 percent growth in GNP for the first half and a 15 percent rise in total industrial value. How reliable is this report and do you agree with it?

6. According to the Beijing Review midyear report, management reforms had been carried out in 37.8 percent of small, state-owned industrial enterprises by June 1987, as against 8 percent by year-end. Do you agree with this figure, and what does it say about the reforms?

7. In general, how reliable and complete are Chinese official economic statistics compared to those of the Soviet Union?

8. Explain the methodology for estimating China's GNP and the reasons for revising it downward since 1986.

9. Nongovernment groups, such as the World Bank and Wharton Econometric Forecasting Associates, use a different approach for estimating the size of China's economy and come up with much larger estimates. Explain the differences between the CIA's and these other methodologies.

10. Is the CIA considering whether to modify its methodology along the lines of the World Bank's?

11. In your March 1987 report, you say that you suspect Beijing's policy mix for 1987 is likely to fall short of the mark and that the problems are worse than leaders admit and will probably not improve significantly this year. Explain what was meant by those conclusions and whether they still represent your view.

12. The CIA has predicted large exports of Chinese oil. What has constrained exports and what is the status of on-shore and off-shore exploration?

13. You say in your prepared statement that defense spending grew by 5 percent in 1986 but will grow by only 1.3 percent in 1987. Are those real or nominal growth rates, and, if the latter, what are the real rates and what have they been for the past five years?

14. I thought they were trying to hold down their defense spending. Why did it rise by 5 percent in 1986?

15. What is the Chinese defense burden in terms of the share of GNP spent for defense, and to what extent does their relatively modest burden account for their good economic performance in recent years?

16. We have numerous exceptions for China in CoCom. Does this suggest that we want China to buy U.S. weapons and military technology?

17. The Soviets are reportedly directly involved in several dozen industrial projects in China. Can you summarize the projects and their significance and provide for the record a detailed explanation of each?

18. What is the status and significance of the Soviet-Chinese Amur River project?

19. What significance do you place on the revival of Chinese-Soviet trade and economic relations?

20. Is our military sales policy to China in conflict with our interests in Taiwan?

21. What is the future of U.S. grain sales to China, and of U.S.-China trade in general?

22. To what extent do Chinese textile exports, directly or through Hong Kong, threaten U.S. textile interests?

This hearing was the second part of hearings begun in March on the "Allocation of Resources in the Soviet Union and China." I would appreciate responses to the above questions at the earliest possible time so that we might publish the entire record of the hearings. I would also like the responses to be in unclassified form so that they might be printed in their entirety.

The testimony and reports received in the March and August hearings were extremely helpful and I am appreciative of the excellent cooperation we have received from the Agency. I look forward to working with you again.

Sincerely,

William Proxmire
Chairman
Subcommittee on National
Security Economics

WP:rkt

Central Intelligence Agency

Washington, D.C. 20505

17 September 1987

The Honorable William Proxmire
Chairman
Subcommittee on National Security Economics
Joint Economic Committee
Congress of the United States
Washington, D.C. 20510

Dear Mr. Chairman:

Enclosed are responses to questions submitted by your Subcommittee for the record with your letter of 10 August. They pertain to China's economic development and recent reforms as discussed in a classified briefing on 3 August.

The enclosed material is unclassified.

In a separate channel, the Agency is forwarding a response to one of the Subcommittee questions which had to be classified CONFIDENTIAL/NOFORN.

I trust that the Agency information will assist the Joint Economic Committee in its review of leading economic issues.

Sincerely,

Robert M. Gates
Acting Director of Central Intelligence

Enclosure

Responses To Questions Regarding Resource Allocation in China

Submitted by Senator William Proxmire, Chairman,

Subcommittee on National Security Economics of the US Congress

The farm sector has been reorganized and much of it turned over to private control. There has also been some decentralization of industry. How much of the economic growth in 1986 and 1987 can be ascribed to the private sector? How much to the reforms in general?

For the past 8 years Beijing has implemented economic reforms that have decentralized decisionmaking authority and increased the use of material incentives in the economy. These reforms have caused output in many sectors of China's economy to increase rapidly.

Reforms in the countryside have been extensive. Peasants now lease land for up to 30 years, make most production decisions on their own, and market all output remaining after they have fulfilled production contracts with the state. Beijing has encouraged peasants to diversify agricultural production and also has permitted them to leave farming and start up rural industries and service trades. However, the government continues to control the supply of important inputs such as fertilizer and diesel fuel and to set the price of grains purchased through state contracts.

Reforms in industry have been less extensive, but factory managers now retain a larger share of revenues and have more flexibility in determining production beyond that

which must be supplied to meet quotas in the state plan. Although the entrepreneurial, or private, sector of the urban economy has grown rapidly in the past several years, the number of self-employed workers in cities still amounts to less than 4 percent of the urban labor force. Therefore, the urban private sector has not had a large impact on economic growth in the past two years. Much of China's economic growth in the past two years can be attributed to the overall economic reform program.

You mentioned Beijing's concern over budget deficits. First, how large will the deficit be in 1987? Second, we never hear about budget deficits as a problem in other centrally planned economies. Why is it considered a problem for China?

According to Beijing's draft budget for 1987, the government deficit will grow by about 13 percent this year to 8.02 billion yuan ($2.16 billion). However, Beijing's accounting format adds 6 billion yuan ($1.6 billion) in domestic government bond sales and 14.6 billion yuan ($3.9 billion) in anticipated foreign borrowing to the "revenue" side of the ledger. The projected government deficit would thus be substantially larger if calculated according to Western accounting methodology.

In the past, China has covered a substantial portion of budget deficits with overdrafts from its central bank. Beijing is concerned, therefore, that deficits will add to demand pressures and drive up prices on those goods that are produced outside of the plan.

In general, how reliable and complete are Chinese official economic statistics compared to those of the Soviet Union?

Chinese data, on the whole, are not as statistically reliable as that released by industrialized and newly industrializing countries. China faces many of the same problems that other countries at its level of economic development face in collecting accurate data and scientifically estimating economic indicators. Beijing realizes that it is vitally important to have accurate data when formulating economic policies, particularly as it increasingly relies on monetary and fiscal policies, in place of administrative dictates, to maintain economic stability. China, therefore, has stepped up efforts to improve the accuracy of its economic statistics.

In general, official statistics for the quantity of industrial output of particular industries in China and the Soviet Union are probably more reliable than statistics for the total value of production. We do not judge the comparative reliability of overall economic indicators for China and the Soviet Union.

What are your estimates for inflation and unemployment for 1987 and how does this compare with the recent past?

We do not publish a price index for China nor do we estimate China's unemployment rate.

Many foreign observers believe that the actual rate of inflation is higher than Chinese official statistics indicate. Year-to-year changes in the officially calculated inflation rate, however, may provide an accurate qualitative indicator of inflation trends. Listed below are inflation rates for the past several years that are calculated on the basis of China's official retail price index.

1979	2.0%
1980	6.0%
1981	2.4%
1982	1.9%
1983	1.5%
1984	2.8%
1985	8.8%
1986	6.0%

Rapid, reform-driven economic growth and policies allowing workers to open their own transport and service-oriented businesses have caused China's unemployment rate to fall since the late 1970s. However, Chinese officials admit that in many state enterprises more than one-fifth of the factory work force is surplus. China's rural sector also suffers from extensive underemployment of labor. Therefore, China's official unemployment statistics probably do not accurately depict the economy's ability to create productive employment opportunities for Chinese workers.

You discuss efforts to improve productivity, but no figures are cited. What are the figures for labor and capital productivity for each of the past 10 years?

Official Chinese statistics indicate that labor productivity in state-owned industrial enterprises grew at the following rates from 1979 to 1986.

1979	6%
1980	2%
1981	-2%
1982	2%
1983	8%
1984	8%
1985	8%
1986	4%

China publishes a time series that shows the gross output value of state-owned industrial enterprises per 100 yuan of fixed assets. The capital productivity numbers are seriously biased, however, because the fixed assets are valued according to their original purchase price.

The July 27, 1987, issue of Beijing Review contains a midyear report on the economy by the State Statistical Bureau. It shows 10 percent growth in GNP for the first half and a 15 percent rise in total industrial value. How reliable is this report and do you agree with it?

China has been publishing GNP estimates for only 2 years, and we have not yet made a judgment on the accuracy of these estimates. China measures the industrial output of large state-owned enterprises in constant prices, but it may not adequately adjust for inflation in measuring the output of small-scale rural enterprises--thereby biasing the industrial output estimate upward somewhat. Nevertheless, it is apparent

that overall economic growth, and industrial output in particular, picked up in the first half of 1987.

According to the Beijing Review midyear report, management reforms had been carried out in 37.8 percent of small, state-owned industrial enterprises by June 1987, as against 8 percent by year-end. Do you agree with this figure, and what does it say about the reforms?

We cannot independently confirm the estimates for the number of small, state-owned industrial enterprises that have carried out management reforms. In the past few years, Beijing has gradually extended the scope of management reforms. Chinese leaders have stated that industrial reforms will be carried out over a long period of time.

Explain the methodology for estimating China's GNP and the reasons for revising it downward since 1986. Nongovernment groups, such as the World Bank and Wharton Econometric Forecasting Associates, use a different approach for estimating the size of China's economy and come up with much larger estimates. Explain the differences between the CIA's and these other methodologies. Is the CIA considering whether to modify its methodology along the lines of the World Bank's?

Our estimate of $343 billion for 1985 Chinese GNP was based on a time series that uses a 1983 exchange rate to convert Chinese currency values to US dollars. Beijing has devalued its currency significantly since 1983. The estimate for 1986 Chinese GNP that we gave during the hearing was based on the current exchange rate, and therefore does not represent a decrease in Chinese GNP.

There probably are several valid alternative approaches to calculating China's GNP from its officially released statistics.

What has constrained Chinese oil exports and what is the status of on-shore and off-shore exploration?

China reduced the volume of its oil exports by about 5 percent last year in response to lower world oil prices (oil export earnings fell by almost 50 percent), and Beijing publicly supports OPEC efforts to stabilize oil markets and prices. Over the next few years, growing domestic demand probably will restrain Chinese oil exports to near their recent levels.

Some foreign oil firms are continuing to explore for offshore oil, but the results to date probably have been disappointing for both Beijing and the foreign firms. China is continuing to exploit existing onshore fields and is stepping up efforts to explore for oil in the northwest region of China.

You say in your prepared statement that defense spending grew by 5 percent in 1986 but will grow by only 1.3 percent in 1987. Are those real or nominal growth rates, and, if the latter, what are the real rates and what have they been for the past five years?

Chinese budget statistics indicate that defense spending increased by 5 percent in nominal terms in 1986 and is budgeted to increase by 1.3 percent in nominal terms in 1987. The following lists the nominal growth rates for announced Chinese defense spending during the past few years.

1982 5%
1983 4%
1984 2%
1985 6%

We do not calculate a price deflator for Chinese defense expenditures, but it is highly likely that because of inflation in the past several years, announced defense expenditures fell in real terms.

I thought they were trying to hold down their defense spending. Why did it rise by 5 percent in 1986?

The 5-percent increase was slightly more than planned. That growth rate for defense spending was consistent with rates since 1982, which ranged from 2 percent to 6 percent.

What is the Chinese defense burden in terms of the share of GNP spent for defense, and to what extent does their relatively modest burden account for their good economic performance in recent years?

We estimate that China spends approximately 5 percent of its GNP on defense. By apparently restraining the growth of defense expenditures, Beijing probably has somewhat facilitated reform-driven economic growth.

We have numerous exceptions for China in COCOM. Does this suggest that we want China to buy U.S. weapons and military technology?

This question concerning US policy should be addressed to the Department of State and other US Government agencies. As for China's policy, Beijing is interested in acquiring selected Western military technology, including US technology that the United States exports to many countries. China probably is reluctant to become too dependent on any one source, however, and thus seeks to diversify suppliers, and where possible, to acquire manufacturing capability as well.

The Soviets are reportedly directly involved in several dozen industrial projects in China. Can you summarize the projects and their significance and provide for the record a detailed explanation of each?

In the two years since Chinese and Soviet officials signed a broad five-year agreement on technical cooperation, they have agreed that the Soviets will provide equipment and technical advice for the renovation of 17 Chinese factories and for the construction of seven new facilities. Neither side has published a list of the projects,

and we believe they may not yet have reached agreement on all of them. Bilateral discussions have focused on metallurgy, power generation and transmission, coal, machinery, railways, textiles, light industry, and chemical processing. Projects that have been mentioned in the Soviet or Chinese press as candidates for cooperation include:

	Project	Province
--	Anshan Iron and Steel Corporation	Liaoning
--	Wuhan Iron and Steel Plant	Hubei
--	Baotou Iron and Steel Plant	Inner Mongolia
--	Fushun Aluminum Plant	Inner Mongolia
--	Matou Ore-Dressing and Coal Mining Plant	Hebei
--	Yiminhe Open-Pit Coal Mine and Coal-Concentrating Mill	Inner Mongolia
--	Xingangtai Coal Mine	Heilongjiang
--	Qixing Coal-Dressing Factory	Heilongjiang
--	Luoyang Copper Processing Plant	Henan
--	Luoyang No. 1 Tractor Factory	Henan
--	Xian Electrical Manufacturing Corporation	Shaanxi
--	Xian Insulation Plant	Shaanxi
--	Xian High-Voltage Circuit Breaker Plant	Shaanxi
--	Xian High-Voltage Insulator Plant	Shaanxi
--	Taiyuan Chemical Fertilizer Plant	Shanxi
--	Lanzhou Chemical Industry Corporation	Gansu
--	Nancha Timber Hydrolysis Plant	Heilongjiang
--	Jiamusi Paper Mill	Heilongjiang
--	Harbin Flax Mill	Heilongjiang

--	Thermal Power Plants	Shanghai, Shanxi, Shandong, Heilong-jiang, and Others
--	Power Transmission Lines	Shanxi-Hubei and Jilin-Heilongjiang
--	Rail Electrification	Unknown

China's ability to pay for Soviet technical assistance through barter trade, rather than hard currency, is one of the factors encouraging the development of technical cooperation with the Soviets. Beijing is seeking Soviet technology in areas--such as thermal power, open pit mining, hydroelectric generation, and long-distance electric transmission--where it is on a par with that available from the West. Beijing is also interested in Soviet assistance in modernizing Soviet-designed heavy industry facilities, where it has had difficulty attracting Western investment.

In contrast to the situation in the 1950s, when the Soviet Bloc was China's primary source of technical assistance and equipment, the number of Sino-Soviet technical cooperation projects planned for the 1986-90 period are dwarfed by the thousands of contracts for Western assistance that will be signed during the same timeframe. Sino-Soviet technical cooperation also will involve a comparatively small number of technical personnel; several hundred Soviet technicians will work on the Chinese projects between 1986 and 1990, compared to the tens of thousands of Western technicians that have worked with the Chinese over the past eight years.

What is the status and significance of the Soviet-Chinese Amur River project?

Soviet General Secretary Gorbachev called for the joint development of boundary river resources in his speech in Vladivostok in July 1986, and in October 1986 the Soviet and Chinese governments agreed to establish a committee to plan for joint development of the water resources of the Argun and Amur Rivers. Since then, the two sides have concluded a joint survey of the Amur River and signed a protocol stipulating that each side by 15 September 1987 should draw up a detailed report on constructing first-phase projects. These reports will provide the basis for a joint report to be written when Soviet experts visit China this October. Beijing and Moscow reportedly intend to work together in building a multipurpose dam and large hydropower stations to (1) prevent floods by regulating water levels of the two rivers, (2) reduce energy shortages in adjoining areas, and (3) harness water resources for agricultural purposes.

China and the Soviet Union originally considered jointly developing their boundary river resources during the 1950s, but the plan fell victim to the Sino-Soviet split. The present Soviet-Chinese Amur River project, taken together with heightened prospects for an eventual border agreement, signals willingness by both countries to defuse the once-contentious border dispute. The Chinese, however, still insist that political normalization is possible only if Moscow makes concessions on the "three obstacles" of Soviet support for Vietnam's occupation of Cambodia, the Soviet invasion of Afghanistan, and the Soviet military build-up along China's northern border.

What significance do you place on the revival of Chinese-Soviet trade and economic relations?

During the 1950s, Sino-Soviet trade equaled about $1.2 billion annually, and accounted on average for almost 45 percent of China's total trade in any given year. Because of frictions between Beijing and Moscow that surfaced in the 1960s, the total value of Sino-Soviet trade in that decade was less than one-half what it was in the 1950s. In the 1970s, Sino-Soviet trade equaled about $300 million per year accounting on average for 2.5 percent of China's total trade.

The increase in political, economic, and scientific contacts between Beijing and Moscow in the past two years has been accompanied by an increase in Sino-Soviet trade. In 1985, bilateral trade increased by 45 percent to reach $1.9 billion. Sino-Soviet trade grew by an additional one-third last year to $2.6 billion. However, trade with the Soviet Union accounted for less than 4 percent of China's total trade in 1986, and probably will average about $3 billion annually until 1990 under the terms of the current Sino-Soviet trade accord.

Is our military sales policy to China in conflict with our interests in Taiwan?

This question regarding US policy should be addressed to the Department of State and the Department of Defense.

What is the future of U.S. grain sales to China, and of U.S.-China trade in general?

In the early 1980s, sales of grain to China accounted for 30 to 40 percent of total US exports to China. Because of the success of economic reforms in the countryside, China's demand for grain imports has decreased considerably, and US grain sales to China were equivalent to less than 1 percent of total US exports to China in 1986 Although China has stepped up purchases of US grain in the first half of 1987, grain sales probably will continue to be a relatively small portion of total US exports to China.

Trade between China and the United States has grown at an average annual rate of almost 9 percent since 1980. If Beijing continues to implement market-oriented economic reforms, China's economy probably will continue to expand rapidly--as will its demand for capital equipment and industrial inputs. Because of the technological sophistication and high quality of US equipment, the United States will likely be able to expand its exports of those products to China. Growth of Chinese imports will partly depend on Beijing's ability to earn foreign exchange through exports, and Beijing probably will push hard for increased sales of handicrafts, textiles, and light industrial goods of low to moderate technological sophistication.

To what extent do Chinese textile exports, directly or through Hong Kong, threaten U.S. textile interests?

Tables A and B indicate that in 1986 China was the fourth largest exporter of clothing to the United States and the second largest exporter of textile fabrics and yarns. Table C shows that the share of US imports of clothing accounted for by China

has increased from 4 percent in 1980 to about 10 percent in 1986. Many categories of Chinese clothing and textile exports to the United States are controlled by quotas.

The Department of Commerce and other US Government agencies can address the impact of these Chinese exports on the US textile industry.

Table A. US Imports of Clothing in 1986

Country of Origin	Million US Dollars	Percent of Total
Hong Kong	3,390	19%
Taiwan	2,633	15%
South Korea	2,573	15%
China	1,710	10%
Italy	850	5%
Philippines	474	3%
Japan	465	3%
Singapore	384	2%
India	345	2%
Mexico	321	2%

Table B. US Imports of Textile Fabrics and Yarns in 1986

Country of Origin	Million US Dollars	Percent of Total
Japan	856	16%
China	475	9%
Taiwan	445	8%
Italy	441	8%
South Korea	379	7%
West Germany	259	5%
Canada	241	4%
India	225	4%
United Kingdom	216	4%
Hong Kong	181	3%

Source: US Department of Commerce (imports valued F.A.S.).

Table C. US Imports of Clothing From China, 1980-86

Year	Million US Dollars	Share of US Clothing Imports
1980	250	4%
1981	422	5%
1982	635	8%
1983	773	8%
1984	863	7%
1985	967	6%
1986	1,710	10%

Source: US Department of Commerce (imports valued F.A.S.).

Senator PROXMIRE. You've been very responsive and very helpful. I would like to thank you.

The subcommittee stands adjourned.

[Whereupon, at 11:30 a.m., the subcommittee adjourned, subject to the call of the Chair.]

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