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JOINT COMMITTEE PRINT

THE ECONOMY OF 1981: A BIPARTISAN LOOK

PROCEEDINGS

OF A

CONGRESSIONAL ECONOMIC CONFERENCE

ON

WEDNESDAY, DECEMBER 10, 1980

COSPONSORED BY THE

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(II)

LETTERS OF TRANSMITTAL

APRIL 13, 1981.

To the Members of the Joint Economic Committee:

Transmitted herewith for the use of the members of the Joint Economic Committee, other Members of Congress, and the interested public is a committee volume entitled "The Economy of 1981: A Bipartisan Look." This volume comprises the official proceedings of a Congressional Economic Conference which was held in Washington, D.C., on Wednesday, December 10, 1980, and which was sponsored by the Joint Economic Committee, the Lyndon Baines Johnson School of Public Affairs, the Lyndon Baines Johnson Library, and the Harvard Competitiveness Group. It includes the texts of all speeches and statements made during both the plenary sessions and the seminar sessions, except for those made by speakers who spoke from notes, as well as additional statements that were submitted for the proceedings by participants and nonparticipants alike.

This Congressional Economic Conference was convened by former Joint Economic Committee Chairman Senator Lloyd Bentsen, to gather ideas for a report on economic policy which Senator Bentsen and Representative Clarence J. Brown submitted earlier this year to President Ronald Reagan. The report is included at the beginning of the proceedings.

The views expressed in the contributions to this volume are those of the authors and do not necessarily represent my views or the views of any other member of the Joint Economic Committee. The speeches and presentations by members and former Members of the Joint Economic Committee represent their own views and do not necessarily represent findings or recommendations of the Joint Economic Committee.

Sincerely,

HENRY S. REUSS,
Chairman, Joint Economic Committee.

APRIL 6, 1981.

HON. HENRY S. REUSS,
*Chairman, Joint Economic Committee, Congress of the United States,
Washington, D.C.*

DEAR MR. CHAIRMAN: I am pleased to submit a volume of speeches and papers entitled "The Economy of 1981: A Bipartisan Look." This volume comprises the official proceedings of a Congressional Economic Conference which was held in Washington, D.C., on Wednesday, December 10, 1980, and which was sponsored by the Joint Economic Committee, the Lyndon Baines Johnson School of Public Affairs, the Lyndon Baines Johnson Library, and the Harvard Competitiveness

Group. It includes the texts of all speeches and statements made during both the plenary sessions and the seminar sessions, except for those made by speakers who spoke from notes, as well as additional statements that were submitted for the proceedings by participants and nonparticipants alike.

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Although this volume is being presented for publication during the 97th Congress, the Conference was held during the 96th Congress, and the participants are identified by their titles and positions at the time of the Conference.

This volume was compiled and edited by Dr. William R. Buechner of the Joint Economic Committee staff.

Sincerely,

JAMES K. GALBRAITH,
Executive Director, Joint Economic Committee.

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*A printed copy of the speaker's statement is not included in the proceedings of the conference, as the speaker's remarks were delivered from notes.

JOINT ECONOMIC COMMITTEE

REPORT ON
CONGRESSIONAL ECONOMIC CONFERENCE

December 1980

"President-elect Reagan will have the opportunity to take advantage of a promising alignment of forces in our economic universe. We have a once-in-a-lifetime opportunity to succeed in the future when we have failed in the past. We await a new Administration that has promised and won a mandate for new approaches to old problems."

Senator Lloyd Bentsen
Chairman
Joint Economic Committee

"Inflation cannot be fought by high taxes which reduce the supply of goods on the shelf. Unemployment cannot be lowered by aggravating inflation because inflation causes unemployment. The key to our unsurpassed rising standards of living was our unequalled productivity growth. To reverse our miserable productivity performance, we must adopt policies that stimulate saving and investment. Economic growth is a worthy, proper and absolutely necessary solution to our economic problems."

Rep. Clarence J. Brown
Ranking Republican
Joint Economic Committee

On December 10, 1980, the Joint Economic Committee -- in conjunction with the Lyndon Baines Johnson School of Public Affairs, the Lyndon Baines Johnson Library, and the Harvard Competitiveness Group -- heard the economic advice of approximately 150 representatives of labor, government, business, consumer and minority groups who attended the Congressional Economic Conference.

The objective was not to develop consensus on economic policy, but to determine how best the diverse interests in America can contribute to the restoration of a strong economy and provide advice to the new Administration.

The first economic policy steps of the new Administration must be dramatic in degree, must be sweeping in scope and must be clear in content. Now is not the time for passive leadership but instead for immediate, bold and reasoned action.

Needed in the early days of the Administration are policies which seek to rebuild confidence in the future, and in our institutions. For that to take place, policies must be set into motion which establish real economic growth as the highest priority on the Nation's agenda.

Government has the responsibility to provide a total environment which enables the private sector to make its maximum contribution to the economic strength of our Nation. As stated by one Conference speaker, "The task requires the cooperation of all of us -- a cooperation which will produce some winners and some losers, but no winner take all."

Twenty million Americans are expected to enter the work force during the next 10 years. Do we plan to offer them work in moribund industries whose only hope for survival is a government-installed life support system? Or a reinvigorated, healthy and productive economy eager for the input of their time and talent? Real economic growth must be our Nation's goal.

As a major part of the Conference, participants conducted seminars on the subjects of inflation, productivity, employment, energy and international trade. The following pages contain policy recommendations on these issues which we believe can offer the best hope of turning the economy around.

Business, government and labor alike agreed that no longer can the Nation attempt to combat inflation by increasing unemployment.

Carefully targeted policies to create increased saving, more capital formation, significantly increase productivity, to produce more domestic energy supplies and to establish secure rather than insecure supplies of energy are among the recommendations.

These bipartisan recommendations are offered in the spirit of creating the early lines of cooperation between the Congress and the Administration.

INFLATION

The success of economic policies of the Reagan Administration will most likely be judged by whether a cure is found for the persistent recurrent and expanding inflation that has plagued our economy for the past decade.

During the 1970's, consumer prices virtually doubled, rising at an annual average rate of just over 7 percent. During 1980, in all likelihood the CPI will have risen another 12.5 percent or even more, and forecasters predict that the inflation rate will stay above 10 percent during 1981 as well.

By comparison, consumer prices rose only 2.3 percent annually on the average during the 1960's and by 2.0 percent annually during the 1950's.

The severe inflation of the 1970's has weakened our economy and caused major dislocations, while imposing hardships on American workers and consumers, particularly those at the bottom of the income scale.

As a result of inflation, business investment has become inadequate to meet the growing needs of the economy. Inflation creates unnecessary uncertainty for business expectations concerning the risks and profits of potential investments. It discourages investment in long-term projects and research and development efforts needed to spur economic growth, in favor of spending that promises short-term payoffs. It siphons business earnings into the government's tax coffers by playing havoc with depreciation allowances that are based on historical rather than current replacement costs. Inflation also reduces saving by

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individuals by reducing the real value of interest, dividends and capital gains. Taxes, which are also increased after inflation, further reduce the incentive to save. In addition, the high inflation of the past few years has caused interest rates to rise to record heights, and contribute directly to inflation as businesses raise prices to compensate for increased costs.

In many other ways, the current inflation has been undermining the strength of the American economy. During the 1970's we have had three major recessions, all related to problems and policies caused by inflation. High home mortgage interest rates have twice this decade knocked the bottom out of the housing market, contributing to inadequate housing supply and rising home prices. The rate of productivity growth in the American economy has come to a virtual standstill, the balance of payments is in chronic deficit and less expensive foreign imports have been capturing the domestic markets of important basic American industries.

Most important, the living standard of the average American family is declining -- as the real weekly earnings of the average American workers now stand lower than at any time during the 1970's -- while millions of lower income workers and pensioners stand on the brink of an inflation-fed financial disaster.

The most important task facing the new administration will be to reduce the rate of inflation. This should be its first priority.

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There will be no easy solutions. The anti-inflation effort must be a well integrated attack dealing with both inflation and economic growth.

For a number of years, the Joint Economic Committee has recommended a combination of policies designed to address inflation and stagnation simultaneously. Instead of putting all of our policy tools on "stop" to fight inflation, or all on "go" to fight unemployment resulting from stagnation, the various fiscal and monetary policy tools would be used separately to address the problems over which they had the most influence. Inflation is too much money chasing too few goods. It should be attacked from both ends -- less money creation, more creation of real goods and services. The goal is the disinflation of nominal demand while encouraging the growth of real supply and employment.

Monetary policy would aim at reducing nominal demand and inflation. It is widely agreed that there is no hope of reducing inflation if rapid expansion of money and credit are pumping up spending several times faster than the economy's capacity to supply goods and services. A gradual reduction in the growth rates of the monetary aggregates over time to levels which match the rate of growth of real output is essential if inflation is to be stopped.

Fiscal policy would be used in two ways.

First, the rate of growth of government spending would be reduced. This would reduce nominal demand while freeing up real resources for the private sector to use to increase invest-

ment, productivity, economic capacity and the real supply of goods and services. Spending restraint would also be of great assistance to the Federal Reserve in pursuing a stable monetary policy. Large Federal deficits put pressure on the Federal Reserve to create additional money and credit to prevent Federal borrowing from crowding too many private borrowers out of the market.

Second, tax policy would be used to create incentives to encourage the private sector to work, save and invest, expanding the supplies of labor, capital and real output. Its main emphasis would be on combating stagnation and promoting real growth. Real growth is essential both for its own sake and to make the process of restraining the growth of money and spending to fight inflation politically acceptable. In addition, faster productivity growth would be of modest but significant help in reducing inflation directly by expanding output more rapidly.

This is not to say that better performance on the supply side and faster productivity growth can eliminate inflation by itself. For example, if real output is growing at 4 percent a year and the money supply is growing at 12 percent, then roughly 8 percent inflation might be expected over the long run. An increase in productivity growth which caused an increase in the growth of real output to 5 percent a year would lower the inflation rate only to 7 percent. The remainder of the inflation would have to be eliminated over time by a reduction in money

and spending growth rates. Thus, supply side policies are aimed primarily at the stagnation part of stagflation.

However, the productivity increase is more important in reducing inflation than it may appear to be from this type of example. A rise in productivity growth and a drop in the rate of inflation would help to change inflationary expectations. The rise in productivity growth would enable the Federal Reserve to take the first step in reducing the growth of the money supply with no adverse effect on real output, since inflationary expectations would already be declining. If the inflation rate were expected to continue to fall, the Federal Reserve could continue to move toward its non-inflationary long-run targets with far less impact on the real economy than traditional analysis would bear, and there would be far less political pressure on the government to reflate spending.

This three-pronged approach to inflation, involving monetary policy, spending policies, and tax policy, is not traditional.

In traditional stop-and-go policy, this splitting of fiscal policy to address separate problems was never done. It was at one time thought to be an inconsistent approach. Would not a tax cut worsen the deficit? And would this not defeat the attempt to reduce inflation by cutting spending and cutting the deficit? This concept of the deficit as the primary statistic to watch is at the head of the rigid and counterproductive stop-go policies of the past.

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It is true that the government can reduce interest rates and free up funds for private sector growth by reducing government spending to lower the deficit and reduce Federal borrowing. However, a tax rate increase to reduce the deficit would be counterproductive. Tax rate increases reduce corporate and personal saving by reducing the after-tax return to saving. The deficit per se does not determine the degree of crowding out or inflation. Rather, it is the relationship between the deficit and the supply of saving to finance it without inflationary creation of new money that determines the impact on inflation. In fact, a tax change that created a bigger jump in saving by individuals and firms than it cost in revenue would produce "crowding in" lower interest rates, less inflation and more real growth.

There are several areas relating to saving, investment, productivity and employment that the government should address through fiscal policy.

First, to encourage investment, faster tax write-offs on business investment in new plant and equipment should be enacted. Depreciation allowances should, to the extent possible, be based on replacement rather than historic costs. To encourage savings, tax rates on dividends and interest income and on capital gains should be reduced.

Second, the Federal Government should expand its support for research and development, both in the public and the private sector, to offset the decline that has occurred as a result of the uncertain or unprofitable economic environment resulting

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from the current inflation. Research and development is essential for enriching the basic scientific knowledge that businesses can draw upon for developing new products and utilizing new techniques.

Third, the Federal Government should focus on improving the productivity of the American economy, through a series of measures that we describe in the Productivity section.

Fourth, we must reduce the inflationary impact of government regulations by assuring that all regulations are cost-effective and that the private sector is not forced to comply with regulations that are wasteful, ineffective, duplicative, conflicting or unnecessary. All regulations that are issued by government agencies should achieve their objectives at the lowest possible cost to the economy. We can achieve our goals of clean water, clean air and safe workplaces without wasting precious resources. In addition, a regulatory budget should be enacted that will permit Congress to tabulate the annual cost of government regulations and channel the resources used in regulatory programs to where they will do the most good.

Finally, as we discuss in the employment section, our job training programs, operating in both public and private sectors, should be better directed toward providing job skills that will be in demand in a growing economy.

It is our belief that a sophisticated and imaginative mixture of monetary policy, spending policy, and tax policy can produce stable growth and stable prices. Such a program could let the economy off the boom-and-bust rollercoaster which has saddled us for too long with unacceptable inflation and unemployment.

PRODUCTIVITY

An acceleration of productivity growth is essential if the Nation is to be able to satisfy the growing claims on its output, if the erosion of U.S. competitiveness in international markets is to be reversed, if inflation is to be reduced and if America's standard of living is to improve. But economic well-being will come about only if the Nation takes action to reverse the productivity decline.

The decline of net investment -- particularly in the context of an expanding labor force -- is one of the key problems. So too is the increasing propensity to consume rather than to save. Adversarial relations among management, labor and government have played a decidedly negative role, as has the tendency of business executives to think short term rather than long term, to emphasize current rather than future profits, and the effort by government to use economic policies to attempt to "fine tune" the economy rather than to provide an environment that is congenial to long-term economic growth. The proliferation of regulations without cost effectiveness has been damaging, as has the sluggish growth of R&D expenditures. The rapid rise of energy prices and the continuing question of energy availability have retarded investment in more modern and productive plants and equipment, and encouraged the substitution of labor for capital and for energy.

Prospects need not be bleak, however, if appropriate tax, energy, regulatory, worker training and other policies are marshalled.

If living standards are to be raised and if the United States is to regain its competitive edge, productivity-enhancing policies must be developed and implemented as a part of a broad-based anti-inflation program. Central to this effort is a commitment to put money supply growth on a steady, stabilizing course, and Federal expenditures should be reduced as a ratio of GNP. Success in these efforts would help prevent a displacement by government of private capital spending and would have the beneficial effect of stabilizing interest rates. Such an economic environment is congenial to saving, to investment and to economic growth, and it will contribute directly to the development of the cooperative, unified efforts needed to face America's challenges.

At the productivity seminar, an informal survey was taken of the participants' suggestions for solving our lagging major recommendations of the seminar participants:

PROPOSED SOLUTIONS TO OUR LOW PRODUCTIVITY GROWTH

	<u>Number Citing Solution</u>
Tax Structure/Policy Revisions to:	
Increase R&D, increase saving and capital formation, promote faster depreciation allowances, increase investment tax credits, reduce capital gains taxes and reduce personal tax rates	43
Reduce government regulation	14
Improve education of the workforce	10
Balance the Federal Budget and reduce government spending	8
Establish more effective energy policy	6
Encourage cooperation between labor-management-government	4

Other ideas cited were to formulate a "national policy" for reindustrialization and productivity, reduce interest rates, provide stable monetary and fiscal policies, give attention to employee health, provide better opportunities for minorities, relax antitrust laws for joint research and development, rely more on the market system and encourage the growth of small business.

To develop a sound economic environment would require the following actions:

To encourage investment, business should be permitted faster tax write-offs on plant and equipment. Tax write-offs should, as nearly as is administratively possible, approach current replacement costs. To encourage savings, tax rates on dividend and interest income and on capital gains should be reduced. Increased saving and the reduction of government borrowing competition if federal budgets are balanced would make more investment funds available for private venture borrowing, thus reducing interest rates and increasing return on investment.

To encourage energy conservation and domestic energy production and thus reduce production costs, special incentives will be required. Also, up to 40 billion barrels of oil in the United States that are not presently recoverable could be produced with enhanced recovery techniques. Because present technologies are so expensive and because technological improvements are still on the horizon, consideration should be given to accelerating Federal research into enhanced recovery.

As the real prices of oil and natural gas rise, the production of synthetic fuels will become more economic. The Federal

Government should encourage the use of a broad range of energy sources. This could include efforts to reduce the cost of coal pollution abatement and the pursuit of a safe, secure nuclear energy supply program.

To encourage access to alternative international energy sources, conversion from insecure sources should be a major goal of Federal policy. The United States should encourage oil and natural gas exploration in the less developed countries.

To encourage cost-effective regulatory initiatives, Congress should adopt a regulatory budget. A regulatory budget would impose limits for a given time period of the compliance costs that the Executive Branch could impose on the private sector or on governmental units by its regulations. The purpose of the regulatory budget would be to encourage cost-effective implementation of regulatory mandates and to enable the Congress and other interested parties to gain a more comprehensive view of the Federal Government's command over resources. The regulatory budget would be a logical extension of the fiscal budget.

Environmental, health and safety regulations should be implemented on the basis of performance rather than design standards. For price-regulated industries, such as public utilities, permissible rates of return should be based on current rather than historical costs.

To encourage research and development, there should be -- in addition to the current allowable deductions -- investment credit for business expenditures incurred specifically in R&D. More favorable treatment should be given to firms

which increase levels of R&D spending, with special treatment during the early years of high technology firms.

Contributions made by individuals and corporations to nonprofit research-oriented activities should be encouraged, possibly through tax credits. In addition, capital gains derived from the sale of venture capital stock could be exempted from taxation if the capital gains are reinvested in new, small, R&D-oriented businesses. More favorable treatment should also be given to those who invest in new, high technology companies.

To encourage investment in human capital, the Federal Government should encourage the development of programs:

- (a) to reduce illiteracy;
- (b) to strengthen consistent science and engineering education;
- (c) to provide vocational training which matches skills and training to the needs of the work world and eases the impact of structural changes in the labor markets.

The Federal Government should continue its efforts to end discrimination. Discrimination reduces potential output by hampering employment opportunities of minorities, women, handicapped and elderly workers.

While the Federal Government must shoulder its share of responsibilities in the battle to revitalize productivity growth, it is the private sector that must confront the problem of adversarial relationships between management and labor, a contributor to the erosion of productivity growth. The available evidence here and abroad suggests that joint labor-management committees can identify opportunities for productivity gains and that this can lead to significant improvement in worker morale.

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Establishment of a Council on Productivity in the Office of Management and Budget to serve as a clearinghouse for Federal actions that might affect productivity would be a positive step. However, great care is required to assure it is not to be a new Federal regulatory body or new Federal bureaucracy. One specific area which should be addressed by this body is the need to promote higher productivity through the cooperative efforts of labor, management and government. A primary task of the productivity office should be to determine the positive or negative effects of proposed government programs and to "sound the alarm" when programs are proposed which will impede productivity growth efforts.

An effective, thoroughgoing and long-lasting commitment on the part of the Federal Government to the provision of an environment that is congenial to long-term economic growth could encourage more cooperation between labor and management. If that is the result, then the attack on declining productivity will have fostered a timely partnership of labor, management and government, a partnership that can usher in a new era of dynamic American economic strategy.

ENERGY

The United States places undue and needless reliance on insecure foreign sources of oil. This reliance is largely a result of unbalanced ad hoc energy policies characterized by inconsistent objectives and conflicting techniques. These policies have magnified our vulnerability to imported energy inflation and the resulting unemployment, and slowed economic growth and productivity to a trickle.

A national policy must be developed which addresses these major and fundamental energy issues confronting the United States.

As leader of the industrialized West, the United States cannot divorce its own energy issues from those of Western Europe and Japan. Due both to security treaty commitments and to historic ties of commerce and friendship, energy shortfalls in other major Western nations or Latin America will involve the United States as well. Our energy problems do not end at the shoreline.

U.S. Government policies have discouraged the utilization of enormous domestic energy resources. Vast underutilized coal, gas and oil deposits are scattered across America, some of them on untapped and even unexplored Federal lands. Yet, Federal energy and environmental policies have confused social with energy objectives and hamstrung private-sector efforts to maximize energy production.

Minimizing dependence on insecure foreign sources of oil will be a lengthy process. The United States must develop a

credible and effective interim program to ameliorate the domestic impact of oil import interruptions. Twice in the past eight years, the U.S. economy has been subjected to oil shocks which sapped real incomes, drove up unemployment, accelerated inflation, and reduced savings, investment, and productivity. Yet, in that period, no effective program has evolved to ameliorate the economic and social effects of either a major or minor oil import disruption or sharp cartel price increases.

Because of energy's preeminence as a factor of production, resolution of the domestic gap between energy demand and supply will have an enormous impact on our economy. This relationship can be a source both of conflict and of mutual reinforcement. To restore a large degree of energy independence requires massive new investment in energy exploration, production, and conservation. That investment can and will be a source of renewed economic growth. Yet, this investment will have to come at a time when other sectors of the economy are desperate for investment funds to restore productivity growth, provide jobs for new workers and regain a competitive U.S. position in international trade. The combination of these needs suggests more saving will be required.

Integrating domestic energy and economic policies is perhaps the greatest economic challenge confronting the new Administration. It is a challenge that can be met in part only through the design of an effective national energy policy.

Any energy policy must recognize that the energy crisis encompasses the entire Western Alliance. It must focus on both conservation of energy use and the maximum utilization of

potential energy supplies. The major objectives of such a policy should be to diversify sources of supply between various energy fuels and their geographic source in order to minimize reliance on Middle East petroleum, and to place maximum reliance on the price system to rationalize both energy use and resource allocation. In particular, heavy oil production in Venezuela should be promoted, the World Bank (IBRD) energy exploration and production loan program should be enlarged, and passive solar and biomass resources utilized worldwide to a much greater extent. A major and rapid expansion of domestic coal exports is appropriate, as well.

Full use of domestic energy resources must be promoted. It is conceivable that rapid development of domestic resources could substantially enhance our energy security by 1990. To attain that objective, however, these components of a national energy policy must be established:

- . Speedy deregulation of oil and natural gas to promote conservation and energy production.
- . A Federal stimulus program targeted at tertiary oil deposits, unconventional natural gas reserves and alcohol fuels.
- . The opening of more Federal lands to environmentally sound energy exploration and production.
- . Consolidation of siting and environmental regulations to permit prompt and positive decisions to be rendered by the public sector on major energy projects.
- . A clear distinction between policies to achieve energy independence and policies to ameliorate the social effects of such action.

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. Resolution of nuclear waste reprocessing and disposal and operating safety issues to permit resumption of nuclear energy growth.

. Accelerated phase-out of the windfall profits tax on new oil and oil recovered with tertiary techniques.

. Rendering coal environmentally acceptable and increasing the use of its supply at home and abroad.

Coal production and utilization is a key element in the international component of the Nation's energy policy. Unfortunately, the international demand for coal as an alternative to oil is being frustrated by this Nation's inability to deliver and load this fuel at export points. Fleets of coal freighters remain anchored for weeks outside the harbors of Baltimore and Norfolk at a cost of hundreds of thousands of dollars a day in idle ship time. Although export sales of coal are soaring, uncertainty concerning expanding and improving rail transport and port loading facilities prevails in the industry. A coordinated program of Federal, State, local Government and industry action should be developed and implemented to raise the performance capacity of our export coal delivery system to a satisfactory level. Meeting the expanding demand for export coal as expeditiously as possible is one direct action the Nation could take to reduce Western reliance on oil and strengthen the economies of our industrialized allies.

Biomass alcohol fuel and coal production and utilization hold the promise of increasing energy reserves, not only domestically but worldwide. Brazil is demonstrating the feasibility of alcohol fuels.

In the United States, within 20 years alcohol fuel could furnish a significant portion of the Nation's liquid transportation fuel requirements without jeopardizing supplies of food or utilizing oil or natural gas for process heat. But these goals will not be achieved without significantly expanding both the financial and technical assistance available to all producers.

Energy price deregulation, with its associated conservation and resource allocation benefits, is the keystone of any realistic national energy policy. Such a policy, however, should acknowledge the disproportionate burden which rising energy prices place on the Nation's poor. Limited transfer payments to the poor and programs to assist in the stimulation of energy conservation are appropriate components of that policy.

A pressing and urgent component of any national energy policy is development of an energy crisis management capability. There is a high probability that the new Administration will confront a partial cutoff of oil imports from the volatile Middle East sometime over the next four years. Our ability to pursue an independent foreign policy and to minimize economic turmoil at such a time rests on our ability to absorb a decline in oil consumption without undue domestic dislocation. We do not have that ability now. Our standby rationing plan is designed to focus a drop in imports on reduced gasoline consumption. It would require from three months to one year to institute. And, while capable of much more rapid mobilization, the Federal petroleum allocation program proved inflexible and inequitable

in its only application. Its authority expires in 1981, as well. Finally, the Strategic Petroleum Reserve contains barely a 17 day supply of imports. That reserve must be filled more rapidly, and additional domestic and foreign stocks accumulated. A ready surge production capability of both oil and gas must be created, and our obligation to share domestic energy resources with our allies clarified, as well.

The scale of investment in energy production and conservation required to reduce our energy dependence is staggering. Yet, that investment offers the hope of restoring price stability to world oil markets while reducing unemployment and stimulating economic growth. It offers the hope, as well, of revitalizing declining industries most in need of energy efficient conservation investments.

Balancing these benefits is the threat such a massive diversion of resources holds for renewed productivity growth and for stable interest rates. For that reason, any national energy policy must include provisions to stimulate savings, including reduced taxation of capital gains, interest, dividends, and simplified, accelerated depreciation of plant and equipment. The Federal deficit must be minimized, as well.

These steps to raise savings and investment must be accompanied by other signals from the Federal Government if energy investment of the necessary scope is to be made. Of paramount importance is a reduction in investor uncertainty which so characterized previous energy programs. Featuring an unwieldy regulatory system and a constant reexamination of policy alterna-

tives, these programs produced far more confusion than energy. A combination of reduced uncertainty and incentives designed to encourage entrepreneurship and innovation are prerequisites to a mustering of the private sector resources necessary to raise energy production and conservation. They must be the foundation of any effective national energy -- and economic -- policy.

EMPLOYMENT

Only strong economic growth will permit full utilization of the Nation's human resources and provide employment opportunities for all Americans willing and able to work.

A weak, protracted recovery--that leaves much of our productive capacity and millions of Americans idle--will simply make stagflation worse. From each post-war recession, the country has emerged with a higher core rate of inflation and higher troughs for unemployment rates. The boom-and-bust cycles have also stunted productivity growth and added substantially to structural unemployment. In this context, the current combination of high interest rates and rising tax burdens is particularly risky, and could send the economy into another recession early next year.

The Nation must pursue the goals of reducing unemployment and inflation actively and simultaneously, adopting a mix of macroeconomic and structural policies designed to return the economy to a steady growth path. Tax cuts can be structured to alleviate inflationary pressures and promote economic growth which will lead to an expansion of employment. Reductions in payroll taxes, tax cuts to encourage saving and the liberalization of depreciation rules would have a powerful and positive effect on employment without worsening inflation.

In addition, structural measures that provide a range of incentives to private industry to increase investment in both capital and human resources must be adopted. Close coordination of these actions will be needed to minimize the possibility of bottlenecks and assure a trained work force in fields of employment growth.

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Effective methods of targeting employment and training programs must be developed to remedy the problems of chronically high unemployment of particular groups in the labor force. While encountering different kinds of labor market difficulties, minorities, youth, women, older re-entrants and workers in declining industries will need assistance in securing permanent employment and acquiring the skills and training to advance their careers.

Government should seek maximum involvement of the private sector--of both employers and labor organizations--in preparing workers for jobs. Education and training programs must be able to adapt to changing economic needs and, at a minimum, assure competence in basic skills. It is obviously a major failure that large proportions of young workers graduate from high school unable to read and write. Employers are also urging greater attention to math, science and technical training in vocational programs. Given the imprecision of forecasts and the inability to predict even relatively broad industrial shifts, incentives to private firms offer a direct means of assuring that the training and preparation of workers will be relevant.

The government has had some experience with employment tax credits which should offer guidance on the structuring of an adequate incentive. Studies show that the New Jobs Tax Credit was very effective in creating jobs, particularly among small businesses. However, employer reliance on the Targeted Jobs Tax Credit, which provides subsidies of up to \$3,000 for the hiring of specific categories of workers, has been relatively

low, perhaps because of administrative complexity and the absence of aggressive publicity and promotion. Many local communities, in addition, have extended favorable tax treatment, reduction in regulatory red tape, and other assistance to industry to foster expansion in their areas. The value of these incentives to employers, their influence on hiring and locational decisions, and their ability to generate new job opportunities should have a major bearing on the shape of any new initiatives along these lines.

In general, two actions are necessary to fight unemployment. One, the tax system in this country must provide incentives for growth. Tax reductions which increase the rate of return to work, savings and investment are particularly needed. Second, it is essential to review the existing array of programs, to learn what effects they have had on the employment and earnings prospects of those they intend to help. Such evaluations must begin immediately.

INTERNATIONAL TRADE

In the coming decade, the United States faces a number of challenges that could affect its economic strength at home and its ability to meet its economic and strategic commitments abroad.

At home, the United States must bolster its economic base to meet growing competition for domestic as well as foreign markets. Throughout most of the 1970's, the United States had difficulty balancing its merchandise trade account, particularly as energy prices and imports have increased. In more recent years, the trade deficit has hovered around the thirty billion dollar mark.

Although there has been some recent improvement in the level of U.S. agricultural and manufactured exports, the outlook for trade balance remains bleak. The rising price of imported oil is part of the problem, but our domestic economic policies have been a major factor, as have the economic strategies of our trading partners. Tax and regulatory barriers to investment and modernization, plus continuing inflation, have hampered U.S. productivity growth and competitiveness. Meanwhile, Europe and Japan are both attempting to move aggressively into high technology fields where current U.S. export strength is concentrated. At the same time, the newly industrialized countries will take a larger share of the market for traditional manufactures.

In terms of the world market, the United States has been a major exporting nation since the close of the second World War.

Until recently, however, exports have not been vital to the overall performance of the American economy. In the past decade, exports as a share of GNP have doubled and now amount to a substantial share of profits and production for a number of industries.

The nature of the American export market has also changed. Developing countries have joined Europe and Japan as key targets for American exporters. Almost 40 percent of U.S. exports are now destined for developing countries. With U.S. manufactured exports concentrated in capital goods, the United States has a major economic stake in the continued growth of the developing world. The prospects for steady growth in that part of the world are now clouded by the attempt to adjust to the high price of oil and reduce dependence on imported energy.

The sudden, sharp increases in the price of energy have also posed a challenge to the international financial system. In the early 1970's, oil was one of the forces that contributed high and varied rates of inflation throughout the industrial world. As a result, the world had little choice but to maintain a regime that permitted considerable exchange rate flexibility. The oil generated surpluses of the OPEC countries have put further strains on the international financial institutions. The tendency to make long-term loans based on short-term deposits and the emergence of what appear to be chronic payments imbalances in a number of developing countries are both causes for concern.

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The world and America's place in it have undergone considerable change in the post-World War II era. The Western Alliance is now composed of several economic powers instead of one and the developing world has become a major actor in international economic matters. Despite these changes, much of the world still looks to America for economic and strategic leadership. To meet the complex problems and responsibilities of the coming decade, the United States will need to wield considerable political imagination from a strong domestic base.

America's problems are so complex and the world situation so critical, that an effective bi-partisanship will have to play an important role in the construction of U.S. foreign economic policy.

Dependence on imported oil has severe economic as well as foreign policy implications for the United States. In terms of adopting a policy to strengthen the U.S. overseas, reducing strains on the international financial system, improving the U.S. trade balance, and contributing to economic growth in the developing world, there is probably nothing that would have a more direct impact than reducing America's need for imported energy. We must move quickly to stimulate domestic production and conservation. We endorse the proposal to accelerate the decontrol of oil and natural gas. Other recommendations are found in the chapter on Energy.

A resilient domestic economy is the key to meeting foreign competition at home and abroad. In other sections of our report, we have urged the incoming Administration to adopt tax and other

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incentives that will encourage saving and investment in new plant and equipment for increased productivity and competitiveness as well as encouraging more research and development. In this chapter, we want to stress how much saving, investment and research mean in terms of improving our standing in the international economy. Our traditional export strength has been in high technology goods. In structuring policies designed to insure the overall health of the economy, we must take special care that we maintain an adequate level of research and a flourishing venture capital market.

The U.S. export performance has long relied on the better mousetrap to attract world wide customers. As world competition and our export dependence grow in tandem, we will have to adopt a more aggressive policy. What we propose is a four-pronged approach to an effective export posture.

First, the United States can no longer shackle her export industries with tax and regulatory restraints without carefully weighing the costs. In addition to general economic problems facing the whole economy, the United States has adopted a series of specific export disincentives ranging from the extra-territorial application of our antitrust laws to the severe taxation of the overseas earnings of U.S. citizens. We urge the incoming Administration to move expeditiously to eliminate or reduce these disincentives.

Second, the United States must be prepared to deal with the export practices of her major competitors. We urge the Administration to equip the Export-Import Bank with enough funds

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and flexibility to meet foreign competition on an equal footing, or to negotiate an agreement among major nations to prevent such competitive financing practices. Incentives should be given to encourage private U.S. lending institutions to be more aggressive in helping domestic U.S. producers and their foreign customers in business arrangements.

Third, many industrial countries have continued to protect their domestic markets--particularly in agriculture and high technology goods. We urge the incoming Administration to adopt the type of international negotiating strategy that will help create new markets for American business. We remain skeptical that the current division of authority between the Commerce Department and the U.S. Trade Representative will prove to be effective.

Slow growth in developing countries has become dangerous to our own domestic economic health. America has long responded to the plight of the world poor with generosity and determination. The more recent emergence of the developing world as a critical export market makes a successful U.S. international development strategy even more pressing.

We have already mentioned the contribution that an effective energy policy would make to the developing world. In addition, economic growth in the United States and the open American market will itself provide an important stimulus to development. And an aggressive U.S. export policy will allow the United States to improve her existing market share in many developing countries.

An international development strategy also has a key role to play. A chaotic adjustment to higher oil prices and payments imbalances will cause considerable economic suffering and reduction of trade. We urge the incoming Administration to strive to continue economic growth in the developing world. The new Administration should favor incentives that encourage the growth of the private sector in developing countries. We also endorse an enlarged role for the International Monetary Fund and the World Bank in dealing with oil induced economic adjustment. The adjustment must be made, not avoided. Nonetheless, international lending can smooth the transition process and lead to a far stronger, more broadly based economy in the developing world.

We urge the incoming Administration to push more of the responsibility for recycling directly onto the OPEC powers. Either the countries must be willing to deposit their funds for much longer periods or they will have to shoulder directly a greater risk in lending to developing countries.

In addition, the United States should continue to support an expanded role for the IMF and the World Bank. The international commercial banks are already approaching the limits of prudence in their exposure to overseas lending and should not be expected to bear the full burden of future recycling.

I. CONFERENCE AGENDA AND PARTICIPANTS

A. Conference Agenda

- 7:45 a.m. REGISTRATION
Room 318, Russell Senate Office Building.
- 8:45 a.m. PLENARY SESSION
Room 318, Russell Senate Office Building.
- 9:15 a.m. MASTER OF CEREMONIES Dean Elspeth Rostow.
INTRODUCTION Representative Clarence Brown.
KEYNOTE ADDRESS Senator Howard Baker.
- 9:45 a.m. Coffee Break
- 10:00 a.m. KEYNOTE ADDRESSES William Batten, chairman of
the board, New York Stock
Exchange.
Barbara Jordan, professor,
Lyndon Baines Johnson
School of Public Affairs.
Lane Kirkland, president AFL-
CIO.
- 11:45 a.m. LUNCHEON
Room 1202, Dirksen Senate Office Building.
LUNCHEON KEYNOTER: Senator Lloyd Bentsen.
- 1:30 p.m. ADJOURNMENT TO CONCURRENT SEMINARS
- | <i>Seminar</i> | <i>Chairman</i> | <i>Cochairman</i> | <i>Presenters</i> |
|---|--|--------------------------------|---|
| <i>Inflation</i> —Room
4232, Dirksen. | Senator William
Roth. | Finn M. W.
Caspersen. | Howard Samuel.
Beryl Sprinkel. |
| <i>Employment</i> —
Room 5110,
Dirksen. | Representative
Parren Mitchell. | Sol C. Chaikin. | Robert Holland.
Charles Killings-
worth. |
| <i>Productivity</i> —
Room 6226,
Dirksen. | Representative
Clarence Brown. | C. Jackson
Grayson. | Bill Usery.
Charls Walker. |
| <i>International eco-
nomic problems</i> —
Room 424,
Russell. | Senator Jacob
Javits. | Representative
Henry Reuss. | Reginald Jones
(cochairman).
Peter Peterson.
John Winthrop
Wright.
Ezra Vogel. |
| <i>Energy</i> —Room
457, Russell. | Representative
William Moor-
head. | Walt Rostow. | Thomas Schelling.
Marina Whitman. |
- 4:00 p.m. CONCLUDING REMARKS
Room 318, Russell. Representative Richard Bolling
Senator William Roth.
- 5:00 p.m. ADJOURNMENT.
- 6:00 p.m. RECEPTION
Governor and Mrs. W. Averell Harriman,
3038 N. Street NW., Washington, D.C.

B. Executive Committee

- | | |
|--------------------|---|
| Albertine, John M. | Executive Director, Joint Economic Committee. |
| Bowles, John, IV | Vice President, Kidder Peabody & Co. |
| Edgar, Richard | Vice President, New York Stock Exchange. |
| Ephlin, Don | Vice President, International Union, United Auto
Workers. |
| Friedman, Philip | President, Garth, Friedman & Morris. |
| Fuller, James | Senior Vice President, New York Stock Exchange. |
| Howard, Janet | Executive Assistant to Mrs. Pamela Harriman. |
| Vogel, Ezra P. | Chairman, Council on East Asian Studies, Harvard
University. |

C. Participants

Allen, H.K.	Vice Chairman, Export-Import Bank.
Allen, Richard V.	Senior Adviser to President-elect Reagan.
Amory, Robert, III	Director, Program on U.S.-Japan Relations Harvard University.
Arnold, Melvin C.	Executive Vice President, Corporation Law, Eaton Corp.
Arnold, S. Dewey	Price, Waterhouse, Inc.
Ashe, A. J.	Senior Vice President, B. F. Goodrich.
Ashman, Richard T.	Vice President, Holiday Inns, Inc.
Anderson, William S.	Chairman, NCR Corp.
Batten, William M.	Chairman & CEO, New York Stock Exchange.
Bendetsen, Karl R.	Chairman & CEO Retired, Champion International Corp.
Bonilla, Ruben, Jr.	National President, League of United Latin Ameri- can Citizens.
Bradley, Gene E.	Chairman, International Management & Develop- ment Institute.
Brobeck, Stephen	Executive Director, Consumer Federation of America.
Brophy, Theodore F.	Chairman, General Telephone & Electronics Corp.
Brower, David	Friends of the Earth.
Brown, Charles L.	Chairman & CEO, American Telephone Co.
Brown, Janet	Executive Director, Environmental Defense Fund, Inc.
Burgess, Les M.	Vice President, Fluor Corp.
Bushnell, Nolan K.	Chairman, Alliance for American Innovation.
Byrom, Fletcher L.	Chairman & CEO, Koppers Co., Inc.
Calvin, Don	Executive Vice President, New York Stock Exchange.
Cantor, Arnold	Assistant Director, Department of Economic Research, AFL-CIO.
Callahan, Ed	Ford Motor Co.
Carlough, Edward F.	General President, Sheet Metal Workers' Interna- tional Association.
Caspersen, Finn M.W.	CEO, Beneficial Corp.
Chaikin, Sol C.	President, International Ladies Garment Workers Union.
Chalker, Durwood	Chairman & CEO, Central & South West Corp.
Childs, John Brown	Assistant Professor, Afro-American Studies, Yale University.
Cook, Charles J.	Senior Vice President, SRI International.
Creedon, John J.	President, Metropolitan Life Insurance Co.
Cunningham, William	Economist, Research Department, AFL-CIO.
Davidson, James	Director, National Taxpayers Union.
Davis, Donald	Associate Director, National Council on the Aging.
Denison, Ray	Director, Department of Legislation, AFL-CIO.
de Vries, Rimmer	Partner, Morgan Guaranty Trust Company of New York.
DeWind, Adrian	Chairman of the Board, National Resources Defense Council.
Dingman, Michael C.	Chairman of the Board, Wheelabrator-Frye, Inc.
Draper, Anne	Economist, Department of Economic Research, AFL-CIO.
Doctor, Ron	Commissioner, California Energy Commission.
Downer, Joseph	Vice Chairman, Atlantic-Richfield.
Drummer, Dorothy	President, American Business Conference.
Dunham, Corydon	Executive Vice President, NBC.
Dunlop, John T.	Lamont University Professor, Harvard University
Eckstein, Otto	President, Data Resources, Inc.
Etzioni, Amitai	Director, Center for Policy Research.
Finley, Murray H.	President, Amalgamated Clothing & Textile Workers Union.

- Fisher, John W.
Fontaine, Joseph
Forney, Robert C.
- Fowler Henry H.
Freeman, Paul, Jr.
Freund, William C.
Gagnier, P. H.
Gardiner, Robert M.
Gardner, Sid
Garfield, David C.
Garvin, Clifton C.
Garza, Pedro Ruiz
Gay, Leonard A.
- Georgine, Robert
Giles, Alexander W.
- Gordon, Shana
Grayson, C. Jackson
Greenough, William C.
- Hackler, Loyd
Hadin, Michael
Hagopian, B. Kipling
Hardin, Garrett
Hatcher, Richard
Hatfield, Robert S.
Henderson, Lenneal J.
- Herring, Leonard G.
Herring, Robert R.
Holland, Robert C.
Hoving, John H. F.
- Jeffers, Dean W.
Johnson, Lady Bird
Jones, Reginald H.
Jordan, Barbara
Jorgenson, Dale W.
Karpatkin, Rhoda H.
Keehner, Michael
- Kemp, C. Robert
Keys, Martha E.
Killingsworth, Charles
Kintner, William R.
Kirkland, Lane
Kozmetsky, George
- Krasts, Aivars
- Kuhlmann, Fred L.
- Laird, W. F.
Leshner, Richard L.
Levy, Lawrence
Levy, Walter J.
Liedtke, Hugh
Liedtke, William C., Jr.,
Lindsay, Franklin A.
McBride, Lloyd
- McCarthy, John F.
- Chairman & CEO, Ball Corp.
The Sierra Club.
Senior Vice President E. I. DuPont de Nemours & Co.
Partner, Goldman, Sachs & Co.
Small Business National Unity Council.
Senior Vice President, New York Stock Exchange.
Finance Executive, Chrysler Corp.
Senior Vice President & Treasurer, Haverty
President, Dean Witter Reynolds, Inc.
National League of Cities
Vice Chairman, Ingersoll-Rand
Chairman & CEO, Exxon Corp.
National Director, Ser-Jobs for Progress, Inc.
Furniture Companies.
Building & Construction Trades, AFL-CIO.
Chairman of the Board & CEO, Modular Computer Systems, Inc.
Executive Director, Consumers for World Trade.
Chairman, American Productivity Center.
Chairman, CREF Finance Committee, Teachers Insurance & Annuity Association of America.
President, American Retail Federation.
Senior Associate, Pfizer, Inc.
General Partner, Brentwood Associates.
Chairman & CEO, The Environmental Fund.
President, U.S. Conference of Mayors.
Chairman, The Continental Group, Inc.
School of Business & Public Administration, Howard University.
President, Lowe's Companies, Inc.
Chairman & CEO, Houston Natural Gas Corp.
President, Committee for Economic Development.
Senior Vice President, Federated Department Stores, Inc.
Chairman & CEO, Nationwide Insurance Co.
LBJ Library.
Chairman & CEO, General Electric Co.
LBJ School of Public Affairs.
Professor of Economics, Harvard University.
Executive Director, Consumers Union.
Vice President, Corporate Finance, Kidder Peabody & Co.
President, Opportunity Funding Corp.
Former Member of Congress.
Professor, Michigan State University.
President, Foreign Policy Research Institute.
President, AFL-CIO.
Dean, Graduate School of Business, University of Texas at Austin.
Vice President, Coordinating & Planning, Conoco, Inc.
Vice Chairman & Executive Vice President, Anheuser-Busch, Inc.
President, The Columbia Gas System, Inc.
President, U.S. Chamber of Commerce.
President, Northern Energy Corp.
Chairman, W. J. Levy Consultants Corp.
Chairman, Pennzoil.
Chairman, Pogo Producing Co.
CEO, ITEK Corp.
International President, United Steelworkers Union.
Vice President, United Telecommunications, Inc.

- McCloskey, Peter F.**
McClements, Robert
McGuire, Willard
McSwinney, James W.
Malmgren, Harold
Marlowe, Howard
Massa, Cliff III
- Martin, William F.**
Maurer, Richard S.
Mayer, Arnold
- Meese, Edwin**
Middleton, Harry
Miossi, Alfred F.
Murphy, Charles
Nevin, John J.
Perera, Ana Maria
- Peterson, Peter**
Peterson, Russell
Place, Geoffrey
Randall, Edward III
Rashish, Myer
Rettgers, Forrest
- Reynolds, David P.**
Robinson, James D. III
Rohatyn, Felix
Rosovsky, Henry
Ross, Steven I.
Rostow, Elspeth
Rostow, Walt W.
- Russell, Milton**
- Samuel, Howard D.**
- Sarnoff, Robert W.**
Schelling, Thomas
- Schwab, Charles**
Shanker, Albert
Shaw, Harry A.
Shepherd, Mark Jr.
Siebert, Muriel
- Smiley, Donald B.**
Smith, Herman
- Smith, James F.**
Smith, Richard M.
Southard, Shelby E.
Sprinkel, Beryl
- Staats, Elmer**
Stemper, Malcolm
Strawbridg, Herbert E.
Swiggett, Robert L.
Thompson, John P.
Toupin, Art
Train, Russell E.
Trimble, George
Twomey, Thomas
- President, Electronic Industries Association.**
Executive Vice President, Sun Co., Inc.
President, National Education Association.
Chairman & CEO, Mead.
Malmgren, Inc.
Associate Director of Legislation, AFL-CIO.
Vice President, National Association of Manufacturers.
Chairman of the Board, Phillips Petroleum Co.
Vice Chairman, Delta Airlines.
Vice President, United Food & Commercial Workers International Union.
Adviser to President-elect Reagan.
LBJ Foundation.
Executive Vice President, Continental Bank.
Murphy Oil Corp.
President, Firestone Tire & Rubber Co.
President, National Association of Cuban American Women of the U.S., Inc.
Lehman Brothers Kuhn Loeb.
National Audubon Society.
Vice President for R&D, Proctor & Gamble.
President & CEO, Rotan Mosle, Inc.
Economic Consultant.
Executive Vice President, National Association of Manufacturers.
Chairman & CEO, Reynolds Metals.
Chairman, American Express Co.
Lazard Freres.
Dean, Harvard University.
CEO, Warner Communications, Inc.
Dean, LBJ School of Public Affairs.
Professor, College of Liberal Arts, University of Texas at Austin.
Director, Center for Energy Policy Research, Resources for the Future.
President, Industrial Union Department, AFL-CIO.
Chairman, Planning Research Corp.
Kennedy School of Government, Harvard University.
Charles Schwab & Company, Inc.
President, American Federation of Teachers.
President, Huffy Corp.
Chairman, Texas Instruments.
Superintendent, New York State Banking Department
Former Chairman & CEO, R. H. Macy & Co.
President-elect, National Association of Homebuilders.
Chief Economist, Union Carbide Corp.
Vice Chairman, Bethlehem Steel Corp.
Cooperative League of U.S.A.
Executive Vice President & Economist, Harris Trust & Savings Bank of Chicago.
Comptroller General of the United States.
President, The Boeing Co.
Chairman of the Board, The Higbee Co.
President, Kollmorgen Corp.
Chief Executive Officer, Southland Corp.
Vice Chairman of the Board, Bank America Corp.
President, World Wildlife Federation (U.S.).
President & CEO, Aminoil.
Director, COMPAC, United Mine Workers.

Ueltschi, Albert L.	President, FlightSafety International.
Usery, Bill	Bill Usery Associates.
Verity, J. William	Chairman of the Board, Armco, Inc.
Waidelich, C. J.	President, Cities Service Co.
Walker, Charls	Charls Walker & Company, Inc.
Wasserman, Lew R.	Chairman of the Board, MCA, Inc.
Watkins, Sam R.	Vice President, I. C. Industries.
Weidenbaum, Murray L.	Director, Center for the Study of American Business Washington University.
Weintraub, Ronald	President, Flexnit Company, Inc.
Wexler, Anne	Assistant to the President.
Whitman, Marina	Vice President, General Motors.
Wilson, Robert	Associate Dean, LBJ School of Public Affairs.
Woolley, Donald	Senior Vice President, Bankers Trust Co.
Wright, John Winthrop	President, Wright Investors' Service.
Wurf, Jerry	President, American Federation of State, County, & Municipal Employees.
Young, Howard	Social Security Program, United Auto Workers.
Zayas, Edison	Chief Economist, National Federation of Independent Business.

D. Biographies of Speakers

ELSPETH ROSTOW, Conference Master of Ceremonies, is Dean of the Lyndon B. Johnson School of Public Affairs of the University of Texas at Austin, a position she has held since 1977. She holds degrees from Barnard College, Radcliffe College and Cambridge (England) University. Dean Rostow has served on the President's Advisory Committee for Trade Negotiations and the President's Commission for a National Agenda for the Eighties. She has been a Trustee for the College Board and a Director for Sarah Lawrence College, Barnard College, Texas Arts Alliance and the Lyndon Baines Johnson Foundation. She is a member of the National Academy of Public Administration and has been Director of the Executive Council of the National Association of Schools of Public Affairs and Administration.

REPRESENTATIVE CLARENCE J. BROWN (R-Ohio), Presenter of Opening Remarks as Ranking Minority Member of the Joint Economic Committee and Chairman, Conference Productivity Seminar: Congressman Brown has been a member of the House of Representatives since 1965 and currently serves on the Joint Economic Committee as well as the House Committees on Government Operations and Interstate and Foreign Commerce. He is an Economics graduate from Duke University and an M.B.A. graduate from Harvard University. Before his election to the House, Congressman Brown was a newspaper editor and publisher and manager of a radio station in Ohio. He is currently a farm owner and Board Chairman of Brown Publishing Company. He is a member of the board of trustees of several universities and organizations and is a member of the Advisory Commission on Intergovernmental Relations.

SENATOR HOWARD H. BAKER (R-Tennessee), Conference Keynote: Senator Baker was first elected to the Senate in 1966, and in 1977 won the post of Minority Leader. When the 97th Congress convenes in January, he will become the Senate's new Majority Leader. The Senator's committee assignments include: Environment and Public Works, Foreign Relations, Rules and Administration, and

the Select Committee on Intelligence. A candidate for the Presidency in 1980, Senator Baker first won national recognition as Vice Chairman of the Senate Watergate Committee. In 1976, he was chosen to give a keynote speech for the Republican National Convention. The Senator is a graduate of Tulane University and the University of Tennessee Law College, from which he received his LL.B. Before his election to the Senate, he was an attorney in private practice in his hometown of Huntsville, Tennessee. Senator Baker comes from a family that has devoted many years to public service: his father and stepmother were members of the House of Representatives and his grandmother was a county sheriff in Tennessee. His father-in-law, Senator Everett M. Dirksen, like Senator Baker, served as Minority Leader in the Senate. In his spare time, the Senator is an avid photographer.

WILLIAM M. BATTEN, Conference Keynote, is Chairman of the Board of the New York Exchange, Inc., a position he has held since 1976. Prior to joining the New York Stock Exchange, he had spent his business life with the J. C. Penney Co., Inc. He joined the department store chain as an extra salesman in 1926, became a regular salesman in 1928, and then moved up through executive ranks. He was elected President and Chief Executive Officer of J. C. Penney Co. in 1958 and elected Chairman of the Board of Directors and continued as Chief Executive Officer in 1964. He retired from the department store chain in 1974. Mr. Batten is now a Director of The Boeing Company. A graduate of Ohio State University, he received a B.S. degree in economics. He did graduate work at the University of Chicago and holds several honorary degrees. Mr. Batten was presented the Gold Medal Award of the National Retail Merchants Association in 1969 and the Equal Opportunity Award of the National Urban League in 1976. The Wharton School of Finance of the University of Pennsylvania named him Man of the Year in 1977. He was selected to receive the Humanitarianism Award of the Fund for Higher Education in 1979 and was named to the Junior Achievement National Business Hall of Fame in 1980. A native of Reedy, West Virginia, Mr. Batten served as a Lieutenant Colonel in the Office of the Army Quartermaster General during World War II.

CONGRESSWOMAN BARBARA JORDAN, Conference Keynote, is currently a Professor teaching Intergovernmental Relations and Ethics in Public Affairs at the Lyndon B. Johnson School of Public Affairs of the University of Texas at Austin. Prior to joining the faculty at the LBJ School, Congresswoman Jordan served three terms in the U.S. House of Representatives before declining to seek reelection. Recognized for her outstanding oratorical ability, Congresswoman Jordan was chosen to give a keynote speech for the 1976 Democratic National Convention. Congresswoman Jordan was elected to the Texas State Senate in 1966. During her six years as State Senator, she rose to the post of President Pro Tem of the Senate. Congresswoman Jordan has been on the Board of Directors of a number of companies and has been named one of the Ten Most Influential Women in Texas, one of 100 Women in Touch With Our Time, Woman of the Year in Politics, and headed the poll of Red-book magazine on Women Who Could Be President. Her book, "Barbara Jordan—Self Portrait," was published in 1979.

LANE KIRKLAND, Conference Keynoter, was elected President of the AFL-CIO in 1979 after serving ten years as Secretary-Treasurer, the labor federation's second highest office. His election to the Office of President in 1979 was without opposition. He graduated in 1942 from the U.S. Merchant Marine Academy and received a B.S. degree in 1948 from Georgetown University School of Foreign Service. He studied at Georgetown University at night while working as a nautical scientist with the U.S. Navy's Hydrographic Office in Washington, D.C. He joined the research staff of the AFL in 1948 and over a ten-year period handled a wide range of assignments for AFL and AFL-CIO. Mr. Kirkland became Director of Research and Information of the International Union of Operating Engineers in 1958 and two years later returned to the AFL-CIO as Executive Assistant to President George Meany. He is a Fellow of the American Association for the Advancement of Science. The recipient of the Distinguished Public Service Medal from the Department of Defense, he served on the Blue Ribbon Defense Panel, the President's Commission on CIA Activities Within The United States, the General Advisory Committee on Arms Control and Disarmament and the President's Missile Site Labor Commission. He was a member of the U.S. Delegation to the International Labor Organization Conference in Geneva in 1980 and several prior years.

SENATOR LLOYD BENTSEN (D-Texas), Conference Luncheon Keynoter: Chairman of the Joint Economic Committee, Senator Bentsen was first elected to the Senate in 1970. In addition to his position on the Joint Economic Committee, the Senator is a member of the Committees on Finance and Environment and Public Works and serves as Chairman of the Finance Subcommittee on Private Pension Plans and the Public Works Transportation Subcommittee. Senator Bentsen holds a law degree from the University of Texas where he graduated in 1942. During World War II, he served in the Army Air Corps as a Commander of a B-24 squadron and flew 50 missions over Europe. Before completing his military service, he was promoted to the rank of Colonel and received the Distinguished Flying Cross and the Air Medal with three oak leaf clusters. After the War he was elected Hidalgo County Judge and at the age of 25 was Texas' youngest county judge. Elected to Congress in 1948, he served three and one-half terms before declining to seek reelection. Between his service in the House and his election to the Senate, Senator Bentsen became President of Lincoln Consolidated, a financial holding institution, and served as director of a number of major corporations.

SENATOR WILLIAM V. ROTH (R-Delaware), Chairman, Conference Inflation Seminar: Senator Roth first came to the Senate in 1971 and is currently serving his second term. Along with his position on the Joint Economic Committee, the Senator is also a member of the Senate Committees on Finance and Governmental Affairs. Before his election to the Senate, he spent four years in the House, a Representative-at-Large from Delaware. Senator Roth holds a B.A. degree from the University of Oregon, an M.B.A. from the Harvard Business School and an LL.B. from Harvard Law School. During World War II he served in the U.S. Army, earning a Bronze Star and the rank of Captain.

- REPRESENTATIVE PARREN J. MITCHELL** (D-Maryland), Chairman, Conference Employment Seminar: Congressman Mitchell was first elected to the House of Representatives in 1970. In addition to his membership on the Joint Economic Committee, the Congressman also serves on the House Banking, Finance and Urban Affairs Committee and the Small Business Committee. He received his A.B. degree from Morgan State College and an M.A. from the University of Maryland. He has been the recipient of a number of awards including the National Bankers Association Distinguished Service Award and the Southern Christian Leadership Conference Black Achievers Award.
- SENATOR JACOB K. JAVITS** (R-New York), Chairman, Conference International Seminar: Senator Javits has served four terms in the Senate after first winning his seat in 1956. His Senate Committee assignments include: Labor and Human Resources, Foreign Relations and Governmental Affairs. Senator Javits is a graduate of the New York University Law School and holds a number of honorary law degrees. Before entering the Senate, he served four terms in the House of Representatives. Senator Javits has held the post of Chairman of the North Atlantic Assembly's "Committee of Nine" to study the future of NATO and has been a member of the National Commission on Marijuana and Drug Abuse.
- REPRESENTATIVE WILLIAM S. MOORHEAD** (D-Pennsylvania), Chairman, Conference Energy Seminar: First elected to the House of Representatives in 1958, Congressman Moorhead has served as the Assistant Democratic Whip. He is a member of the Joint Economic Committee and the House Committees on Government Operations and Banking, Housing and Urban Affairs. Congressman Moorhead earned a B.A. degree from Yale University and a law degree from Harvard University. Before his election to the House, the Congressman served as the Assistant City Solicitor of Pittsburgh, and was a member of the Allegheny County Housing Authority. He has been a member of the Board of Trustees of several organizations.
- FINN M. W. CASPERSEN**, Cochairman, Conference Inflation Seminar, is Chairman of the Board and Chief Executive Officer of the Beneficial Corporation. He has held this position since 1976. He received a B.A. degree in economics from Brown University and a law degree from Harvard University. He serves on the board of directors of several companies and has been a member of the New Jersey Board of Higher Education. Mr. Caspersen has been a Trustee for the New Jersey College Fund Association, the Camp Mejeda Foundation for Diabetic Children, Brown University, and the Committee for Economic Development. He is Vice President of the O. W. Caspersen Foundation.
- SOL C. CHAIKIN**, Cochairman, Conference Employment Seminar, has been President of the International Ladies Garment Workers Union and Vice-President of AFL-CIO since 1975. He received an LL.B. from Brooklyn Law School and began his association with the International Ladies Garment Workers Union in 1940. He was a member of the Business Roundtable and Brookings Institution and has served on the Board of the Trilateral Commission. Mr. Chaikin was the recipient of the Three Founders Award from the American Veterans Committee in 1976, the Parsons Award from the Par-

sons School of Design in 1977, and the Labor Human Rights Award of the Jewish Labor Committee in 1977. He was recognized by the American Society of Personnel Administrators in 1975.

C. JACKSON GRAYSON, Jr., Cochairman, Conference Productivity Seminar, is a former college professor and has headed the American Productivity Center since 1975. He was Chairman of the Price Commission in 1971-73, and was Dean of the School of Business Administration of Southern Methodist University before founding the American Productivity Center. He had also been Professor and Dean of the School of Business Administration at Tulane University. Dr. Grayson holds degrees from Tulane University, University of Pennsylvania and Harvard University. He has been a newspaper reporter and a Special Agent for the FBI. He has been a member of Operations Research Society of America and the American Finance Association.

REPRESENTATIVE HENRY S. REUSS (D-Wisconsin), Cochairman, Conference International Seminar: Congressman Reuss is currently Chairman of the House Banking, Finance and Urban Affairs Committee and serves on the Joint Economic Committee. In addition to his career in the House, Congressman Reuss is an author whose works include: "The Critical Decade," "Revenue Sharing: Crutch or Catalyst," "On the Trail of the Ice Age," and "To Save Our Cities: What Needs to Be Done." Before his election to the House in 1954, he was Assistant Corporation Counsel in Milwaukee County, President of the White Elm Nursery Company, Director of the Marshall and Ilsley Bank, Milwaukee, Wisconsin, and the Niagara Share Corporation in Buffalo, New York.

WALT W. ROSTOW, Cochairman, Conference Energy Seminar, is a Professor of Economics and History at the University of Texas at Austin and is the author of several books, including "Getting From Here to There" and "The World Economy: History and Prospect," both published in 1978. He received a B.A. and Ph.D. from Yale University and was a Rhodes Scholar. Dr. Rostow was Deputy Special Assistant to the President for National Security Affairs in 1961, Special Assistant to the President from 1966-69, and Chairman of the Policy Planning Council of the Department of State. He was awarded the Presidential Medal of Freedom with distinction. Dr. Rostow taught at Oxford, Cambridge (England) University and Massachusetts Institute of Technology and was a staff member of the Center for International Studies.

HOWARD D. SAMUEL, Presenter, Inflation Seminar, is President of the Industrial Union Department of AFL-CIO. He is a former Deputy Under Secretary for the Bureau of International Labor Affairs in the Department of Labor. A graduate of Dartmouth College, he served as Secretary of the National Committee for Full Employment and as a member of the National Manpower Advisory Committee. He was Vice-Chairman of the New York Urban Coalition and a member of the Governing Board of Common Cause. Mr. Samuel has been a Trustee for the Carnegie Corporation and the Joint Council on Economic Education and served on the Board of the American Civil Liberties Union.

BERYL SPRINKEL, Presenter, Inflation Seminar, is an Economist and Executive Vice President of Harris Trust and Savings Bank of Chicago, a post he has held since 1974. Dr. Sprinkel joined the bank in 1952. He holds degrees from the University of Missouri and the University of Chicago. He has been a consultant to the Federal Reserve Board, the Bureau of Census and the Joint Economic Committee, as well as the House Banking and Currency Committee and Senate Banking Committee. He received the Alumni Leadership and Service Award from the University of Chicago, the Hamilton Bolton Award from the Financial Analysts Association and the University of Missouri Alumni citation merit.

ROBERT C. HOLLAND, Presenter, Employment Seminar, President of the Committee for Economic Development, was formerly associated with the Federal Reserve System. He has a B.S. in Finance, an M.A. and Ph. D. in Economics from the University of Pennsylvania where he was an instructor in money and banking before joining the Federal Reserve Bank in Chicago in 1949. From 1961 to 1976, he was with the Board of Governors of the Federal Reserve System. He has been a member of the Board of Wharton School and on the Finance Department Advisory Committee there. He serves on the Board of Pensions for the Lutheran Church.

CHARLES KILLINGSWORTH, Presenter, Employment Seminar, is an economist and has been a member of the faculty at Michigan State University since 1947. A professor since 1960, he previously headed the Department of Economics. He was Panel Chairman and Special Hearing Officer of the National War Labor Board in 1943-46. He has been a member of several Presidential labor dispute boards. Dr. Killingsworth has degrees from Missouri State University, Oklahoma State University and the University of Wisconsin. He has been an arbitrator of labor-management disputes since 1943 and has served as a member of the National Council on Employment Policy.

BILL USERY, Jr., Presenter, Productivity Seminar, a former Secretary of Labor, is the President of Bill Usery Associates, a Washington-based firm specializing in employer-employee relations. Mr. Usery formed the company in 1977 after leaving government service where he held five Presidential appointments. He has been the National Director of the Federal Mediation and Conciliation Service, Assistant Secretary of Labor for Labor-Management Relations and Special Assistant to the President for labor-management negotiations. Mr. Usery is on the Board of Directors of the American Productivity Center in Houston and the Institute of Collective Bargaining in New York. He was the industrial union representative on the Presidential Missile Site Labor Committee and Grand Lodge Representative to the International Association of Machinists and Aerospace Workers, AFL-CIO.

CHARLES WALKER, Presenter, Productivity Seminar, is a consulting economist and has been President of Charles E. Walker Associates, Inc., in Washington, D.C. since 1973. Dr. Walker, who holds degrees from the University of Texas and the University of Pennsylvania, previously taught at those universities and was associated with the Federal Reserve Bank. He has served as both Under Secretary and Deputy Secretary of the U.S. Treasury Department. A Trustee for

the Joint Council on Economic Education, Dr. Walker was Chairman of the American Council for Capital Formation and on the board of the Wharton School of Finance. He received the Alexander Hamilton Award from the Treasury Department and was Executive Vice President of the American Bankers Association.

REGINALD H. JONES, Cochairman and Presenter, International Seminar, began his association with General Electric in 1939 and became Chairman of the Board and Chief Executive Officer in 1972. Born in England, he became a naturalized citizen of the United States in 1925. He has a B.S. degree in economics from the University of Pennsylvania. He has been Chairman of the Board of Overseers of the Wharton School of Finance at the University of Pennsylvania and a Trustee for the university. Mr. Jones served as Cochairman of the Business Roundtable and Chairman of the Business Council. He has been a member of the Advisory Committee on International Monetary Reform.

PETER PETERSON, Presenter, International Seminar, former Secretary of Commerce, has been Chairman of the Board of Lehman Brothers Kuhn Loeb, Inc., since 1973. He was previously Chairman of the Board and Chief Executive Officer of Bell and Howell Company. Prior to becoming Secretary of Commerce in 1972-73, he was Assistant to the President for International Economic Affairs in 1971-72. He is a graduate of Northwestern University and received an M.B.A. from the University of Chicago. He has been a member of the Trilateral Commission and Trustee of the Council on Foreign Relations and the University of Chicago. He was named outstanding young man in the Chicago Junior Chamber of Commerce in 1955 and by the United States Junior Chamber of Commerce in 1961.

JOHN W. WRIGHT, Presenter, International Seminar, is President of Wright Investors Service in Bridgeport, Connecticut. He became president of the company in 1960 after serving as Founder and President of Wright Power Saw and Tool Company and Chairman of the Board of Rototiller, Inc. A graduate of Amherst College, he is the author of "Q.V.T. Three Keys to Stock Market Success." He is a Director for the Institutes for the Achievement of Human Potential and a Trustee for the Center for Financial Studies at Fairfield University in Connecticut. Mr. Wright served on the President's Financial Summit Conference on Inflation in 1974. Later this month Mr. Wright will speak for the tenth consecutive year to the New York Society of Security Analysts on the subject of economic and stock market forecasts.

EZRA VOGEL, Presenter, International Seminar, is a Professor at Harvard University and has been Chairman of the Council on East Asian Studies since 1977. He was a member of the Joint Committee on Contemporary China and the Committee on Scholarly Communication with Peoples Republic of China, and is currently a member of the Joint Committee on Japanese Studies. Dr. Vogel holds degrees from Ohio Wesleyan University, Bowling Green State University and Harvard. In 1970 he was named the recipient of the Harvard faculty prize for the book of the year. He was a Guggenheim Fellow in 1972 and has been a Trustee of Ohio Wesleyan University. Dr. Vogel has authored several books, including "Japan As Number One," published in 1979.

THOMAS SCHELLING, Presenter, Energy Seminar, is a Professor of Economics at Harvard University where he has taught since 1958. Since 1978 he has served as Chairman of the Research Advisory Board of the Committee for Economic Development. He formerly was an economist for the U.S. Government in Copenhagen, Paris and Washington and taught at Yale University. He holds degrees from the University of California at Berkeley and Harvard. Dr. Schelling was the recipient of the Frank E. Seidman Distinguished Award in Political Economy in 1977 and was named a Fellow of the American Academy of Arts and Sciences.

MARINA WHITMAN, Presenter, Energy Seminar, was named Vice President and Chief Economist for the General Motors Corporation in 1979. She previously was Professor of Economics at the University of Pittsburgh. Dr. Whitman has degrees from Radcliffe College and Columbia University. She was Senior Staff Economist for the Council of Economic Advisers in 1970-71 and a member of the Price Commission in 1971-72. She has been a member of the President's Advisory Committee on Technology and World Trade and the President's Advisory Group on Contributions of Technology to Economic Strength. Dr. Whitman received the Columbia Medal for Excellence in 1973 and the George Washington award of the American Hungarian Foundation in 1975.

REPRESENTATIVE RICHARD BOLLING (D-Missouri), Committee Vice Chairman and Presenter of Concluding Remarks: First elected to the House of Representatives in 1948, Congressman Bolling currently serves as Vice Chairman of the Joint Economic Committee and Chairman of the House Committee on Rules. Congressman Bolling received his B.A. and M.A. from the University of the South and did further graduate work at Vanderbilt University. He later was a teacher and coach at the Sewanee Military Academy and served as Veterans Adviser and Director of Student Activities at the University of Kansas City. He volunteered as a private in the Army in 1941 and rose to the rank of Lieutenant Colonel before completing his distinguished military career. Congressman Bolling authored two books on the House of Representatives: "House Out of Order" and "Power in the House."

II. ADDRESSES BY KEYNOTE, LUNCHEON, AND CLOSING SPEAKERS

A. Introduction

STATEMENT OF REPRESENTATIVE CLARENCE J. BROWN (R-OHIO),
RANKING MINORITY MEMBER, JOINT ECONOMIC COMMITTEE

It is my distinct pleasure and honor to welcome all of you to this Conference. For the 34 years since its establishment by law in 1946, the Joint Economic Committee has served the Congress as an economic sounding board and policy prescriber. For the 12 years I have served on the Joint Economic Committee, I have had the privilege and opportunity to listen to and be part of the lively debates on national economic policy from this unique forum. It has been a valuable experience to discuss major public policy questions directly with the brightest economic minds in the country.

This Conference today marks a unique accomplishment for the Committee, however, as we have with us in one place, at one time, more than one hundred of America's most effective leaders, practical achievers, and applied visionaries.

And this Conference today marks a special challenge to the Committee and to you, for it has been convened at a time when the Nation's economic problems are so severe. Consider these developments.

The U.S. economy is now completing its second consecutive year of insufficient, almost nonexistent, growth. American productivity growth lags well behind that of every other major industrialized country in the world. Inflation is dangerously out of hand and appears to be skyrocketing again as it did in the first quarter of this year. Unemployed workers now number more than at any time since the Great Depression. And many *employed* workers have no confidence in their own job security. Minority unemployment has reached a point beyond the crisis stage which threatens catastrophic consequences for the Nation's social structure and the future stability of other elements of our society. America's historic basic industries, such as autos and steel, face an uphill fight for survival against international competition. The average paycheck of American workers after adjustment for inflation and higher tax rates has fallen almost 15 percent during the past few years. The Federal budget has rung up over \$200 billion in debt over the past four years, even though Federal revenues through taxes have doubled in that same time period. And, above all, while unemployment and inflation are still ruinously high, the first signs of economic recovery have been discouraged by higher and higher interest rates.

These cruel statistics and their accompanying human misery bear out the existence and extent of our current economic problems. These

frightful developments clearly provide the impetus for undertaking immediate efforts to turn the U.S. economy around. This is the first reason why we have requested your attendance: to draw on your expertise and advice in accomplishing this huge task.

The task is all the more difficult because the evidence is overwhelming that the economy is not in an historically normal economic cycle. The traditional business cycle and normal economic relationships truly have not been in existence for almost a decade. Consider *these* developments.

Inflation has not dropped back to previous lows during times of recession or economic slowdown. Unemployment no longer lags recessions. Instead, it rises in the initial stages of an economic downturn. Interest rates *increase in the short run* when the growth rate of the money supply *increases*. Large tax increases over a long period of time have moved the budget *away* from balance. And above all, there no longer appears to be a successful trade-off between unemployment and inflation—both are on an increasing trend whether the economy is in relatively good or positively bad times.

Because traditional economic cycles and patterns are not being followed, historic policies have not only been unsuccessful in reducing inflation and unemployment, they seem to have worsened inflation and unemployment.

And this fact leads to the second reason why we have asked you here. The traditional verities are not holding up, old policies have failed, and we need fresh approaches to U.S. economic problems. We have invited you 150, from many different backgrounds, to provide us with your vision in structuring these new solutions. You all are leaders in business or labor or academics or social movements because, above all, you have had visions of turning the improbable into the possible through hard work and reasoned thought. This Committee and this country needs to hear from people like you.

And we need especially to hear from you at a time when stability in the world is threatened for many reasons: natural resources are dwindling and many are being controlled by cartels; the economic disparity between nations is wide and growing; political differences within entente blocs threaten armed confrontations at a time when military imbalances encourage adventurism; world power appears to be decentralizing into unpredictable patterns; and individual standards and aspirations have been modified into unconventional attitudes. Each of these striking changes will have its impact on future economic, political and social conditions, and your assessment of these new departures is needed so that we can anticipate, assess and address these changes as the situation merits. But we need the appraisals of the impacts of change now so our judgments of the courses of action will be relevant to the future rather than the past.

The Joint Economic Committee is the proper forum for the development of a new economic doctrine for it was the first congressional body not only to recognize the error of this country's economic policies, but the harm those policies were doing. The recognition was bipartisan, and the conclusion reached in the Committee's 1979 Annual Re-

port and subsequent Reports were supported by all the Democrats and Republicans, liberals and conservatives, on this Committee.

Reports of the Joint Economic Committee in recent years have emphasized that a policy shift aimed at stimulating the supply side of the economy was needed:

That inflation cannot be fought by high taxes which reduce the supply of goods on the shelf;

That unemployment cannot be lowered by aggravating inflation because inflation causes unemployment;

That the key to our rising standards of living—until recently unsurpassed—is our unequalled productivity growth;

That to reverse our recent miserable productivity performance, policies that stimulate saving and investment must be adopted; and

Finally and above all, economic growth is a worthy, proper and absolutely necessary solution to our economic and social problems.

While the Committee is justifiably proud of its meaningful achievement, you have not been asked here today to merely set your stamp of approval on a prepackaged set of solutions. This Conference has been convened today to seek your advice, to learn from your special knowledge and experience and to be invigorated by the exchange of ideas between all the participants here.

This day's work is not an extraneous exercise. The conclusions reached at this Conference will be presented to President Reagan as the Committee's recommendations drawing from your advice and counsel, as to the economic policy steps to take to lay the foundation during the first 100 days of the new President's term and to set the patterns for the decade ahead.

This is our task today. All of you have put aside your important work to be here. Many of you have traveled thousands of miles to participate. Your effort has a purpose in that you are fulfilling your duty to your country. Your generosity in agreeing to piece together an economic agenda shows your willing and quick response to aid your Nation in an hour of distress.

But your effort has a sounder purpose, a higher meaning. For duty to your country is nothing more than service and responsibility to the *people* of your country. We must never forget that worsening economic statistics are a cold reflection of human misery. High unemployment and inflation damage *peoples'* lives, harden *peoples'* attitudes and threaten *peoples'* hopes and dreams.

The Joint Economic Committee for over 30 years has attempted to provide expert economic analysis to all branches of Government. Because the economic times of this country are *unusually* troubled, the Committee has taken the *extraordinary* step to ask all of you for *your* advice to aid our deliberations. Your participation will help this Committee. It will have an impact on our Government. And most importantly, it will provide a unique and necessary service to your fellow citizens.

It is for this last reason that I most sincerely welcome you here and most fervently thank you for coming.

B. Keynote Speakers

STATEMENT OF WILLIAM M. BATTEN, CHAIRMAN,
NEW YORK STOCK EXCHANGE, INC.

A TIME OF OPPORTUNITY, A TIME OF DANGER

This is an historic event. Never before, to my knowledge, have a group of leaders of government, labor, business, academia and environmental and consumer groups sat down together to discuss policy options and recommendations for presentation to a new Administration.

I would like to express my gratitude, which I am sure all of you share, to the sponsors of this conference and especially to Senator Bentsen and the Joint Economic Committee of Congress for taking the leadership in planning this gathering.

The timing of the conference could hardly be better. Our Nation's poor economic performance during the Seventies is a matter of record, as these all-too-familiar statistics illustrate:

Our annual economic growth rate fell a full point from that of the Sixties. It was 3.8 per cent in the 1960s and 2.8 per cent in the 1970s.

Consumer price inflation more than quadrupled in the last decade, from a rate of 1.8 per cent a year in the 1960s to 7.6 per cent in the last 10 years. It has been in the double digits recently.

Our annual productivity growth rate for the Seventies was less than half that of the Sixties—dropping to 1.2 per cent in the last decade from 2.9 per cent in the Sixties. And in the last two years, total productivity actually declined in this country.

Our share of free world exports has declined substantially, from 18 per cent in 1960 and 15 per cent in 1970 to 12 per cent this year.

Of the eight major industrial nations, the United States ranked last in average annual per cent increase in savings during the 1970-1978 period.

During the same period, the U.S. also ranked last in business capital expenditures as a percentage of GNP.

We created almost two million jobs a year since 1970, which was quite an accomplishment, yet at the same time our unemployment rate was climbing, from an annual average rate of 4.8 per cent for the Sixties to 7 per cent the last five years.

Finally, the typical real U.S. wage has been trending downward since 1973, and the biggest drop occurred during the last two years. In purchasing power, the typical American worker's wages in 1980 are no higher than they were in 1962 and are almost 15 per cent less than they were in 1972 and 1973.

And what's even more discouraging, we face a new decade with no evidence of any real improvement in the unfavorable trends.

Our poor performance has serious economic and human implications. The American people understand the seriousness of the situation, as we have found out in two public opinion surveys commissioned this year by the New York Stock Exchange. The most recent poll was taken three weeks ago. Here are a few of the key findings:

The American people understand the problems we face are severe. Sixty-one per cent say this is a genuine crisis and not just a situation

involving some minor problems. In fact, more than half of the respondents think the nation is likely to suffer a 1930s-type depression in the next two or three years.

The people are feeling the effects of our economic problems personally. More than 80 percent say inflation has cut their buying power during the last year, and two-thirds feel their income is increasing more slowly than prices.

The public expects major changes to be made by the new Administration and Congress, and it is willing to give new policies a chance to work. Fifty-four per cent expect major changes in economic policy. The Administration's new economic policies should be given three or more years to work before we can expect results, 64 percent say. And, significantly, 93 percent of the respondents say that, since nothing else has seemed to work, they are willing to see the new President try new policies even if they don't agree with the policies themselves.

The public sees no overnight improvement and in fact expects the economic situation will get worse in the next year. Fully 48 percent of Americans say that inflation will actually increase in the next year, while 34 percent say it will remain the same and only 16 percent say it will decrease. Thirty-one percent of the respondents say they think unemployment will increase next year, while 44 percent say it will remain the same and 22 percent say it will decrease.

The people know that solutions to our problems will take a long time. Of the 61 percent who say we face a real economic crisis, three-fifths say it will last three years or more, 22 percent say it will last more than five years, and only 8 percent say it will be over in a year. Looking ahead, 67 percent of Americans say it will take three or more years to reduce inflation to 5 percent a year. Sixty-five percent say it will take three or more years to reduce unemployment to 5 percent. And 57 percent say they believe it will take three or more years to balance the budget.

Interestingly, Americans indicate a willingness to suffer short-term hardships if they can achieve long-term economic benefits. Seventy-seven percent of the respondents say they are willing to accept a higher rate of inflation for a year if that means a stronger economy in the long run. Eighty-three percent say they are willing to accept almost any program that has a chance of reducing inflation—even if it makes things difficult for the short haul.

To sum up the survey findings, we see the public is more sophisticated than might have been thought. While the people do not expect the nation's economic problems to be solved overnight, they want and expect major change and they expect to see significant, positive change within a reasonable timeframe.

This, then, is a time of opportunity for those in leadership roles—a time for the development of a new economic strategy and the necessary policies for implementing it. It is a time when new strategies and policies may be accepted with considerable public understanding and forbearance.

Others have observed that this is a period of difficult problems. As the report of the Commission on Critical Choices for Americans said in 1976:

... institutions and values which have accounted for our astounding progress during the past two centuries are straining to cope with the massive problems

of the current era. The increase in the tempo of change and the vastness and complexity of the wholly new situations which are evolving with accelerated change, create a widespread sense that our political and social system has serious inadequacies.

We can no longer continue to operate on the basis of reacting to crisis, counting on crash programs and expenditure of huge sums of money to solve our problems. We have got to understand and project present trends, to take command of the forces that are emerging, to extend our freedom and well-being as citizens and the future of other nations and peoples in the world.

The difficulties in taking command of the forces that are emerging must not be minimized.

Our society is highly fragmented, for example. The traditional political power centers—the political parties and the chairmen of the Congressional committees, for instance—have seen their power erode. The old-time party loyalty and discipline, the cement that helped to get agreement on policies and programs, has been greatly weakened.

Adding to the fragmentation of our society is the rapid growth of single-issue constituencies with skill in gaining acceptance for their views through effective use of the media. In describing the fragmentation, I do not mean to judge it. Whether it is good or bad, it is a fact of life.

Another difficulty is the dangerous erosion of our competitive position in the world, threatening both our economic health and our national security. Foreign competition is more severe than ever before. Our domestic corporations must compete against companies that are more competent and more aggressive today and that often have their governments as allies and partners for both financial and research resources.

Perhaps our most difficult task is settling on an overall strategy to begin with. There are, however, a few basic goals that I think we all can agree on that can help us shape a viable strategy.

One is the recognition that the individual is more than merely an economic being. Economic benefits alone will not fulfill people's hopes; they want a higher quality of life. As the preface of the Report on Critical Choices for Americans said :

Concern for the quality of life for all Americans has reached a new level of awareness in this country. The comfortable belief has all but disappeared that with enough legislation and enough money, quality could become a reality for everyone. Americans, and particularly young people, are looking beyond the "standard of living" as the measurement of quality—they are searching for new meaning, new self-realization and new purpose in their lives.

There is no GNP for quality of life, for individuals or for a society. Quality in one person's life can be, and often is, meaningless in another's. While we can and do measure the objective areas of quality of life—per capita income, level of education, employment status, health care, housing—the subjective elements of quality of life—the values, the attitudes, the philosophies by which we perceive quality—are much more elusive. We pursue it in very different ways.

In that same report, Senator Moynihan, then a professor at Harvard University, posed two questions that I think can help focus our discussion on the most important choices we face. "There are only two critical choices affecting the quality of life," he wrote. "The first is, How much growth do we want; the second, How much government do we want."

Real economic growth has provided the basis for our present standard of living. Unless we want to risk a further decline in our quality of life, we must accept at least some economic growth. And an acceleration of the rate of real economic growth is the only way we can provide the 15 million new jobs we need in this decade.

A national consensus on a goal of real economic growth would provide the broad policy base for the formulation of specific implementing strategies. We must have policies that create additional, new wealth rather than policies that merely redistribute the existing store of wealth. To do otherwise would create unmanageable social conflict and tear our society apart as each group tries to improve its economic position at the expense of all other groups.

Trying to answer the second of Senator Moynihan's questions, how much government do we want?, requires us, because we have a mixed economy, to think through not only the appropriate role for government but also the role of the private sector and the relationship between the two.

Government's role, in addition to its normal responsibilities of establishing and enforcing necessary laws and regulations, should have a responsibility to provide a total environment which enables the private sector to make its maximum contribution to the economic strength of our nation and the quality of life of our people. Operating in the right environment, management and labor jointly determine, to a large extent, the productivity and thus the contribution of the private sector.

We can see some examples of corporations that have good productivity increases. They seem to have common characteristics. Their management establish priorities for healthy, long-term growth. They allocate significant resources for research and development, for capital investment and for people development. Their management style is based on respect for the individual and on the belief that the individual worker can make a contribution for improvement of work arrangements. The net result is increased job satisfaction for the worker, a climate of growth for people, and more innovation, resulting in higher productivity.

Our complex problems will not yield to a compartmentalized approach by government or the private sector. New and additional ways to cooperate, to work together for the common good, must be found. Our survey shows that the American people want such cooperation. Eighty-seven per cent of the respondents say there has been too little cooperation among business, labor and government, and 83 per cent believe closer cooperation should be a higher priority for the next few years.

The American people are saying to all of their leaders—government, business, labor, environmentalists, consumer groups: Put aside your parochial differences, identify the crucial policies necessary for healthy growth and work together to make a higher quality of life a reality. You can and must work together to marshal our nation's abundant resources—human, natural, physical and technical—to bring this about.

One of the greatest deficiencies today is in the development of our most important asset—our human resources. A dramatic example, of course, is the number of employable people who don't have jobs. Less

dramatic, but very important, is the failure to match the requirements of jobs with knowledge and skills of people. Young people are entering our workforce today ill-prepared for today's jobs—let alone tomorrow's jobs. We are at the beginning of a technological revolution which is driving a major change in job content and the skill requirements to fill the more technical jobs.

If we are to improve the development of our human resources and train our young people properly, government, business and labor must work together closely with our educational institutions.

This is but one example of the crying need for cooperation.

The fragmented nature of our society and the nature of our political process combine to create a demand for an extraordinarily high level of leadership. How many times have we heard the commit, "It's a sound idea but it's not politically do-able"?

Effective leadership today calls for the ability to organize coalitions, to develop consensus and to communicate effectively.

There are, in fact, some encouraging signs of consensus-building. The bipartisan reports of the Joint Economic Committee, with their emphasis on the need for policies that would encourage savings, investment and job creation, are evidence that consensus-building is possible. In addition, the Conference on U.S. Competitiveness at Harvard last April and this conference, among others, represent encouraging signs of cooperation.

The American people in our survey say they are willing to give new economic policies a chance to work, perhaps as long as three or four years. In reality, the length of time will depend on their level of understanding of the new policies and programs and the extent to which they perceive benefits will be derived from them.

In today's world, effective communication by the President is essential if the people are to understand our problems and the status of our progress and thus have a basis for evaluating fairly the policies and programs. The corporate world has found it desirable to supplement the annual report with quarterly and interim reports to try to keep its constituencies adequately informed. Perhaps consideration should be given to supplementing the State of the Union Address and press conferences with more frequent, perhaps quarterly, progress reports to the American people.

This is a time of opportunity for leaders in business, government, labor and other areas, a time when the American people will accept strong economic measures and will endure short-term difficulties looking for fundamental solutions.

This is the time for all leaders to find effective ways for their constituencies to work together. The adversarial tone and mutual distrust that still mark those relationships must give way to a higher level of trust and cooperative action. Only then can we begin to reverse the recent unfavorable trends. Only then can we begin our journey on the high road that will help all of our people achieve a better quality of life, both material and non-material. Only with a new higher level of cooperation among our major constituencies will we be in a position to effectively discharge our responsibilities as a world leader.

In addition to a change in attitude, we must make a commitment to work together, institutionalizing, if possible, that commitment through various means.

Yet this is also a time of danger. One clear implication of the survey results is that the American people perceive a failure of leadership in all sectors of our economy. Unless we take advantage of the present window of opportunity to make some strong moves to change our economic direction, increasing public cynicism and distrust can pose a serious threat to the continuance of our political and economic system.

This is the challenge we face now.

Poor economic performance for a decade, a deep and pervasive concern in the public about our economic results and direction, plus the expressed forbearance of the American people in accepting long-term solutions, make this a time of unique opportunity.

As leaders, we cannot hesitate.

Nobody knows how many more windows of opportunity American leaders will have.

We must act now.

We dare not wait.

STATEMENT OF BARBARA JORDAN, PROFESSOR, LYNDON BAINES JOHNSON
SCHOOL OF PUBLIC AFFAIRS

The letter inviting me to speak at this conference stated in part, "Would you give us your thoughts . . . on the issue agenda which the next President must face during the first critical 100 days of his administration. We want to know what you think the priority issues are and we want to hear your suggested solutions." Like most political observers, I will be definitive about the issues and less so about their solutions.

More specifically, the letter indicated that the Joint Economic Committee is working on an agenda for economic policy to be presented to the President-elect prior to the inauguration.

I congratulate you for this undertaking. The American people place economic issues at the center of their concerns and somewhat indistinctly perceive the effects of correct decisions at the center. What is decided regarding economic issues could have far flung interrelated effects. Each of the subjects of today's seminars—unemployment, inflation, energy, productivity and international trade, represent a critical component of the economic conditions which beset us and each are concerns of the public and private sectors.

I further congratulate you on the mix of invited conference participants. Your invitees reflect what I hope is a developing view that any program which portends to offer workable solutions to the problems of the economy in the 80's must include representatives from the crucial triumvirate, (government, business, labor) as well as others with vital interests in such an undertaking. No negative intent inheres in my reference to government, business and labor at the crucial triumvirate. It is simply a recognition of the practical reality that if effective action on the economic problems of the 80's is to be taken, cooperation between these three groups is essential.

No single component of our society can unilaterally make the economy healthier and restore America's confidence in the future. The Congress cannot do it alone, nor can business, labor or the President go it alone. The task before us requires the cooperation of all of us. . . . A

cooperation which will produce some winners and some losers, but no "winner take all." The people will look to the President for leadership, but they will insist on a clear definition of where we are being led.

In a September speech to the Economic Club of Detroit, Lane Kirkland said, "We welcome the President's proposal to establish an Economic Revitalization Board that will make labor and management partners with their government in this critical program."

William Batten said in an April speech at the Conference on U.S. competitiveness, "All of us have to work together to build a consensus. Government, business, labor, academia, consumer groups—all have to join in a coalition to decide on what we should do and then to make sure that it gets done."

A recent survey conducted by Cambridge Reports, Inc. for Union Carbide Corporation finds that, "Americans are strongly convinced that the most important first step toward solving these problems is a greater degree of cooperation among all the groups and institutions in our society. The public does not believe the government and business today work together closely enough on economic problems and it wants business, labor and government to cooperate in stimulating greater growth."

There appears to be significant agreement that greater cooperation is needed if satisfactory solutions are to be found to the economic problems which abound. But how will such cooperation be engendered? It will not be easy. Joint appearances at conferences by representatives of business and labor cannot obliterate decades of hostility and confrontation. We cannot expect that labor will renounce its Samuel Gompers heritage of devotion to self-interests, such as improvements in wages, fringe benefits and working conditions. Similarly, we cannot expect business to abandon its devotion to the self-interests of profit and growth.

What we can—and do—ask is that business and labor enlarge their bargaining framework—widen their perspective—raising their sights from limited, narrow interests to national interests, from consideration of a domestic market to a worldwide market. We want business and labor to consider the effects of its decisions and make the public interest and equity the overriding/predominant criteria of its decision making. Structuring such a new framework would require the unusual negotiation teams of management and labor—persons of good will and vision who would allow the outlines of their *common* interests to emerge.

As an observer who listens, I hear the strains of discontent, indeed it is a clamour, arising from the public and private sectors. We *want* to have confidence in the future. We want to have confidence in our institutions. For this confidence to exist, real economic growth must have the highest priority on the nation's agenda. Without such primary goals, solutions to the problems of unemployment, inflation, energy, productivity and international trade will continue to elude us. The need for the economic growth of which I speak is too great to be met by merely an incrementalist or tinkering approach. The target set should be high but reasonable and action to reach it should be sustained.

I quote from and subscribe to, a recent *New York Times* editorial titled, "How to Defend America" "The great temptation will be to do a little of everything, and not much of anything. But a bold new President would cut through the clamor and directly attack the source of America's weakness: A sputtering, inflation-ridden, energy-dependent economy.

"Unless it achieves significant economic growth in the next few years, America, with or without more missiles, will not regain the confidence of allies or the respect of adversaries. And real economic growth depends overwhelmingly on government discipline and incentives that stimulate production and restrain consumption. The more goods and gasoline that Americans can produce, and the less that they immediately consume the safer and more prosperous they will become. . . .

"Details aside, there is simply no way to defend American security without putting the economy ahead of every other claim. Without economic revival, inflation will hobble new weapons programs and dissipate military pay increases. Without economic revival allies will become trading enemies and nations depending on American support will turn elsewhere. Without economic revival, social tensions will tear at public morale."

My friend, Walt Roston of the Department of Economics, University of Texas, wrote in a recent letter to me, "A real surge in productivity will not be possible without high sustained growth; and continued high inflation will frustrate that most essential condition for the continued social progress of our society, except for the equally important freeing of ourselves from the tyranny of oil imports."

I join the advocates of high sustained economic growth. The alternative is totally unacceptable. Twenty million Americans are expected to enter the work force during the next ten years. What will they do? Do we plan to offer them work in moribund industries whose only hope for survival is a government installed life support system? Or a reinvigorated, healthy and productive economy eager for the input of their time and talent? Real economic growth must be our nation's goal.

Of course, it is easier to state a goal than to meet it. A number of possible solutions have been proposed for our economic problems, solutions that to me, a non-economist, are worthy of consideration. Because if properly conceived and executed, they could meet the criteria of equity and serving the public interest.

One such proposal would be, "A wage, price, dividends freeze to break the unit cost inflationary expectations now built into our economy and its institutions, to be followed by a long-term incomes policy, *not* permanent wage-price controls. It would be understood that the freeze would hold until business, labor and government representatives achieve agreement on criteria and a method for negotiating wage-price stability and Congress acts in support of that agreement."

Felix Rohatyn, chairman of the N.Y. Municipal Assistance Corporation, states that, "Any national economic program to have a chance of success must combine austerity with growth." He then proposes that in order to "begin to control inflation, an incomes policy that relates wage and price increases to productivity is essential; it should

be administered through benefits and penalties of the tax system rather than through a new bureaucracy. A wage/price freeze should be imposed until such an incomes policy can take its place."

From the political sector, Senator Ribicoff tells us that our anti-trust laws may require adjustment to allow U. S. corporations to compete effectively abroad as other nations do, permitting certain practices we would normally discourage at home in terms of combined marketing strategies.

Sen. Bentsen asks, "How do we put the brake on inflation, restore stability and remain competitive without throwing our economy into a major recession." He responds, "We begin with a balanced budget—and there is every reason to believe we can balance it in 1981. We begin by holding the lid on government expenditures . . . by continuing to pursue stable fiscal and monetary policy."

Lesley H. Clark, writing in the *Wall Street Journal* recently said, "The Reagan administration, with a strong commitment to a free economy, won't push for wage or price controls at any time soon. But high inflation, high interest rates and a weak economy could bring eventual controls."

Whatever solutions are proposed, I believe we will find substantial agreement that our economic problems will not yield to a quick fix, political posturing or bureaucratic tinkering. We must take the long view and offer structural and programmatic changes that will last not just through the next election, but as long as warranted. What we do here may heighten public cynicism or plant the seeds for a revitalized America.

Collectively, we have been participants in decades of inter-group hostility and confrontation. We are labor, management, government, minorities, environmentalists, consumers, people. Is it at all possible for these strangers to become friends and partners working together in a spirit of cooperation?

It will not be easy, but we must begin. We begin without any pre-fixed notion of placing blame on any persons, groups or institutions. There is enough blame for all to share. We must shed our parochial sensitivities. Labor must understand that complaints of declining productivity are not a polite condemnation of the American working men and women. As one of my students, Art Ziev, wrote in a recent paper on declining U.S. productivity, "In order to keep the productivity issue in proper perspective, it is important to note that the concern about declining American productivity refers to the rate of productivity growth and not total productivity." Business must not apologize for being motivated by profit but develop ways to enlarge the distributive share available for the public good. Government must be willing to change past policies which stifle growth and discourage competition.

If sacrifice is required it must be mutual.

Any programs developed must be fair.

The public interest must be served.

You may reject my pleas for serving the public interest as unrealistic. You may view self-interest as inevitable . . . an undeniable fact of human nature. I say you are wrong. It should be reason/intellect which controls us. We decide on the Rational/Reasonable approach to solving our problems. For political philosophers from Socrates

and Plato to Walter Lippmann caution us that to be controlled by our appetites is barbarism.

To paraphrase Reinhold Niebuhr, we have an obligation to check our own egoism, to comprehend the public interest and thus enlarge the area of cooperation.

This is a time for Lyndon Johnson's invocation of Isaiah's invocation,

Come now, let us reason together.

STATEMENT OF LANE KIRKLAND, PRESIDENT, AMERICAN FEDERATION
OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS

Dean Rostow, Mrs. Johnson, Senator Bentsen, ladies and gentlemen, I would like to commend Senator Bentsen and his colleagues on the Joint Economic Committee for convening this forum. It is my sincere hope that the purpose of this assembly—the development of a bipartisan economic agenda—can be achieved.

I will not offer you my particular list of mistakes and misfortunes that have led to the nation's current sad state of economic affairs. I have too much faith in the strength and resiliency of the nation's people, processes and institutions to admonish and warn in terms of "watersheds" or imminent crises.

But the fact that the economy is adrift is undeniable. Bearings must be determined, a destination established and an appropriate course charted.

There are immediate problems to solve like the day-to-day financial and emotional plight of those who are unemployed and those whose only hedge against inflation is a tighter belt and a lowered aspiration.

And there are fundamental issues exemplified by urban decay, energy insecurity, falling real incomes and the stagnation and decline of industries essential to domestic economic balance, growth and international security.

The first task is to put aside the polemics and false dichotomies that permit demagogues to leap from concrete discussion of need and genuine injury to the fingering of scapegoats and demands for penance and retribution.

A division between those who think government is too big and those who think it too small will not clean up a stream, repair a bridge or enhance a skill; nor will it get rid of a cumbersome form, an outmoded regulation or an unnecessary program.

Do we really need to answer the question, "Are the taxes too high or too low?" when the critical questions are "Who is paying their fair share, who is not and are public facilities and service adequate?"

Should policies be shaped in response to a "consumption versus investment" aggregation that fails to recognize that consumption includes bread as well as caviar and "investment" makes no distinction between a lathe and a gambling casino?

We still imprison ourselves in an ideological trap of free trade versus protectionism. I suspect that few Americans endorse the motion that we can grow indefinitely and ignore environmental and resource limita-

tions. Yet that does not mean we can no longer afford progress nor does it mean that goals and values must be redefined—ever downward.

I might point out that the inflation versus unemployment dilemma was resolved by attaining both, and I submit that the mutual exclusivity implied in the newest formulation—dichotomy of demand versus supply-side economics—could lead to the attainment of neither.

It is my understanding that after this opening session, each of you will be participating in seminars specifically addressed to five topics: Unemployment, inflation, energy, productivity and international economic problems.

Trade unionists will participate in each seminar and, in the spirit of this conference, emphasis will be on ways to unify rather than divide. We are comfortable with such a framework; free collective bargaining is, after all, an institution to resolve differences.

Last summer the AFL-CIO presented a program and an agenda to the platform committee of both political parties. No attempt was made to devise one program for presentation to the Democratic Convention and another that might be more suitable for Republican acceptance. Our theme and our goal, at that time, was "An America that works for everyone." Nothing has happened since then to change that objective.

Unemployment and inflation—two of the issues before you—represent the most graphic indicators of national economic failure and individual hardship.

I am convinced that the persistence of the notion that one must be fought by sacrificing the other, regardless of cause and insensitive to effect, has been the most serious impediment to progress against either. Most frustrating is the fact that this ideological trap is a self-imposed one, and, despite all the evidence of damage and destruction, policy makers stubbornly refuse to recognize that the emperor has no clothes.

In November, according to the Department of Labor, unemployment was 7.5 percent of the labor force and almost eight million people were jobless. An additional 969,000 had dropped out of the workforce because they knew the search was futile and another 1.6 million were on part-time wages because full-time work was not available. But this overall number, as bad as it is, represents only the tip of the iceberg.

For blacks, for example, unemployment is almost twice the national average, and one out of every 3 black teenagers is jobless. Over the past year, 800,000 manufacturing production worker jobs have been wiped out, unemployment is above 9 percent in 4 States and 31 cities including 8 metropolitan areas with reported rates of 12 percent or higher.

These sharp departures from the average argue for programs and policies that can address specific needs and particular problems such as public service jobs, accelerated public works, energy and transportation programs and housing construction. Public employment programs provide needed services and new skills which add to the nation's productive potential. Public works programs can be targeted to provide jobs and facilities such as sewers, water and transportation essential to economic development. Unemployed workers can be put to work in energy conservation projects for schools, hospitals and the homes of low-income families. Improving railroad, mass transit, high-

way, maritime and airport facilities would also lead to further energy conservation. Spurring housing programs for low and middle-income families would help reduce the severe housing shortages that drive up home prices.

I fail to see how huge across-the-board tax cuts for business or even individuals can solve these problems in a timely, effective or efficient manner. Tax policy has a role to play, but I urge you to recognize that tax cuts generate jobs in a very indirect and imprecise fashion. They add to budget and inflationary pressures and divert resources and attention from programs that can be specifically and precisely targeted to the industries, areas and the people who are most in need. They also provide another excuse for the Federal Reserve Board to squeeze the economy.

Similarly, inflation must be dealt with in terms of specific causes and selective effects. It is not the spending habits or the wages, pensions and welfare needs of low, moderate and middle-income Americans that are responsible for a 16.9 percent increase in the cost of fuel over the past year, or the 14.1 percent jump in housing costs, the 10.9 percent rise in medical care or the 10.1 percent in food prices.

Specific targeted policies— to channel credit, moderate energy price increases, increase housing supply, control medical costs, maximize agricultural output—are essential to deal with inflation.

Such policies, admittedly, are not particularly fashionable topics around Washington these days. Nevertheless, we cannot permit ourselves to experiment with the lives and the futures of ordinary people by trying to prove that less is really more.

In developing your agenda for inflation and unemployment, I urge you to recognize that the policies that lead to the enforced idleness of men, women, machines and equipment—policies that create huge gaps between the economy's potential and its performance—are the fundamental impediments to curbing inflation. A fully employed economy would generate the output, savings and investment needed for price stability.

And a fully employed economy would generate jobs for the growing labor force. The basic human right of every American to full opportunities for useful paid employment at fair rates of compensation is part of this nation's body of laws. It is not a will-o-the-wisp nor an item for compromise and concession. It is a social and economic imperative.

I am pleased that one seminar will deal specifically with energy. Our extraordinary dependence on unstable supplies has been a barrier to economic progress and a major contributor to worldwide tension and instability. For seven years the nation has been at the mercy of the OPEC cartel and the multinational oil companies. The sanctioning and encouraging of higher prices for consumers has been the major means to promote needed conservation and development. The result has been hardship for many and greater wealth for a privileged few.

One key to breaking OPEC's stranglehold on the U.S. economy is to provide the federal government with the authority to determine the amount of oil to be imported, to negotiate its price, and to see that it is allocated in a manner which meets the needs and interest of all segments of society.

Conservation is of major importance but its approach must be equitable as well as effective. Among such measures are gasoline rationing;

heating, lighting and cooling controls; mandatory building efficiency standards; restricted gas and electricity utility rates, conversion of oil-fired boilers; cogeneration; strengthening of automobile fleet standards and establishment of energy efficiency standards for appliance.

Government loans, loan guarantees and grants should also be available to private citizens, as well as businesses, for installation of new conservation equipment. Goals should be established for oil and natural gas to be replaced by alternative forms, and a substantial commitment must be made toward the advancement of solar, gasohol and geothermal technology.

The nation must never relax stringent health and safety regulations governing nuclear power and nuclear waste disposal. Safety hazards must be further reduced so that nuclear power will enjoy the public support it must have to become a significant energy source.

To finance the high cost of technology to develop synthetic fuels, President Carter and the Congress established a multi-billion dollar Energy Security Fund. This has already stimulated development of a variety of synthetic fuel production processes such as shale and coal liquefaction and gasohol.

These efforts to promote synthetic fuels must be expanded and they must be administered in a fashion which leads to the selection of the most promising and efficient production methods.

The Federal Government must also bear the responsibility and expense for expanded research into any potential environmental hazards which may result from development of synthetic fuels.

I believe the decision to decontrol the price of oil was wrong. The control of energy prices and energy company profits is a legitimate responsibility of Government. Legislation is needed to prevent oil companies from diverting the capital resources needed for development of domestic energy sources to acquisitions or mergers with companies in other industries.

High on the priority list in any consideration of economic problems facing the U.S. is the question of Maritime policy, and I am glad to note that President-elect Reagan, in addressing one of our affiliated unions, stated, "a major goal of my Administration will be to assure that American flag ships carry an equitable portion of our trade. . . ." Let me offer three suggestions which would help to achieve this goal.

First, let us insure that the sharp increase in coal exports is handled in a way to further the national policy to strengthen our merchant marine. The nations of the world need our coal.

Let us strike bilateral shipping arrangements as part of the bargain which will assure that American flag ships carry on equitable portion of our coal exports.

Second, let us make sure that the U.S.-China Maritime Transport Agreement is fully implemented. The agreement states that it is the intention of the Parties "that their national flag vessels will carry not less than one-third of bilateral cargoes." We need to make certain that this provision is honored in practice and not ignored, as has been the case with respect to the U.S.-Soviet Maritime Transport Agreement.

Third, let us see to it that our Merchant Marine again would be able to carry out its responsibilities as a naval auxiliary in wartime. We must have men committed to that aim heading up our Navy and Military Sealift Command. The spectacle of a British fast store ship entering our harbors this week, under charter to the Military Sealift Command, for use in the troubled spots of the world because U.S. ships were not available to fulfill its mission, is a disturbing symbol of our present condition.

As to productivity and international economic problems, the remaining issues on today's agenda, I urge you not to waste time or tears in mourning the alleged demise of something called the "work ethic", and nothing will be accomplished if you direct your attention to the pursuit of an academic abstraction called "free trade."

The notion that productivity growth is essential to solving economic problems begs the question. Perceived lags in growth of productivity, as presently measured, however, provide an easy excuse for economic failures and a convenient rationale for attacks on unions and on laws that protect consumers, the environment and workplace, health and safety.

I also suspect that the legislative history of virtually every business tax loophole and gimmick contains the appropriate genuflection to a "need to increase productivity and enhance international competitiveness."

Productivity improvements stem from many factors. More private sector machinery, equipment and structures is certainly one source, but it is not the only one. The most definitive study on the issue indicates that such investments explain only some 15 percent of the nation's long run productivity gains and that the most significant factors are education and advances in knowledge which account for over two-thirds of the gains—most of which are financed through the public sector.

In light of such evidence how can so many self-styled protectors of the "taxpayers dollars" advocate a \$50 billion plus corporate depreciation tax giveaway that will primarily pay firms for doing what they would do anyway and at the same time argue that unemployment compensation is a deterrent to hard work, that welfare destroys character and that a publicly financed facility such as a bridge, road or sewer is a make-work boondoggle.

It seems to me, there's a double-standard in effect which asks that a corporate tax giveaway be accepted as an article of faith and a public investment as a bar to economic freedom.

One item that is not explicitly on your agenda—the urgent need to reindustrialize America—is fundamental to and perhaps even transcends the issues you will be discussing.

The U.S. economy is rapidly losing essential industries and narrowing its base. In the process, our options become limited and more and more economic mishaps and misfortunes—from oil supply interruptions to predatory trade practices—fall into a category of "beyond our control."

America must continue to be a diversified Nation with a broad and firm industrial base. It cannot stake its future on the successes or failures of a handful of industries nor can it continue its slide into an economy that provides the services, while others produce the goods.

We firmly believe that you can't write off major industries in this country without paying for it dearly in the future. Nor do we believe that whole cities and regions of America can be allowed to become ghettos of poverty and decay, while others prosper, without the most grievous social and economic consequences.

The world is not so constituted that this nation can risk limiting itself to its own particular list of specialties based on some economic model makers' idea of cost effectiveness or some academic theory of comparative advantage—if for no other reason than no other nation accepts the notion.

Reindustrialization means a recognition that substantial amounts of capital are required for modernization of plant and equipment in many but not all industries and in many but not all areas. Implicit in this is a need for selectivity and consensus that will require the combined efforts of labor, business and government.

Government must take the lead in developing such a partnership and be willing to make the huge financial commitment that is necessary. This, of course, cannot come about if the Treasury is laid bare through massive tax cuts and in the belief that some eighteenth century "invisible hand" will guide us—if only everyone else steps aside. The full cooperation and concerted efforts of business, labor and government will be required. I hope today represents its start.

Thank you.

C. Luncheon Speaker

STATEMENT OF SENATOR LLOYD BENTSEN (D-Texas),
CHAIRMAN, JOINT ECONOMIC COMMITTEE

On behalf of the Joint Economic Committee—and as a member of America's newest minority—I want to thank all of you for joining us today in Washington and contributing to the success of this conference.

You are here during a period of domestic change, and I can tell you it is sometimes difficult adjusting to the new order in the Senate.

Just this morning I had some last-minute scheduling problems, so I called my good friend Howard Baker, told him what a wonderful meal we'd be having this afternoon, and asked if he could switch appearances with me at the conference.

Howard said, "Well, I'd sure like to help you out, Lloyd. But I think we've already eaten your lunch."

So I think it's safe to predict that the next few years will be an interesting time in the Senate. They will also be a very critical period for our Nation, which is facing its most difficult and dangerous economic crisis since the Great Depression.

We are here today because we understand that the challenge of the American economy transcends politics. It goes far beyond our special—and legitimate—concerns as labor leaders, businessmen, minorities, consumers, or elected officials of both major parties.

We are here because we recognize that the future of America hinges on our ability to regain control of our economic destiny, to hammer out a new consensus on where this country is headed and how we want to get there.

That is the challenge of the eighties and that is what this conference is all about.

Since I have only a few weeks remaining as Chairman of the JEC, I will throw modesty to the wind and tell you how proud I am of the Committee and the fact we are hosting this conference.

During the past two years the Joint Economic Committee has provided the best evidence I have seen that liberals and conservatives, majority and minority, can actually agree on the economic problems troubling America and the best way to resolve them.

We have demonstrated that it is possible to overcome two decades of partisan bickering and get twenty members of the House and Senate to agree unanimously on bold new economic policies for the future.

The diversity of America is evident in our Committee and at this conference. But so is a deeper sense of unity and shared purpose that has always been the secret of America's success.

Our task is to forge unity from diversity. In the Senate we must demonstrate that bipartisanship can be more than a slogan. I'm confident we can do it; we can work together to turn our economy around.

I'm ready to work with President Reagan, his Administration and the new Senate leadership to restore stability and real growth to the American economy. To provide the incentives for savings and investment that will increase productivity and create millions of new jobs, millions of new opportunities, for all our people.

I'm not going to tell you that we shall always agree; you wouldn't believe me if I did. But I can promise you that we will walk the extra mile in the search for consensus. We will aim at the same objectives and if we can't agree on the best means to attain them we shall offer responsible, constructive alternatives.

We've got to start today, because there will never be a more promising time to attack our economic problems. Years ago American scientists probing the frontiers of space saw a once-in-a-lifetime opportunity. They say the planets of our solar system nearing an unusual alignment in which a single satellite launched from Earth could survey Mars and Jupiter, Saturn and Neptune.

With American technology and know-how, we were able to exploit that opportunity. We created Voyager II; we sent it on a brilliant, flawless mission of more than a billion miles. And today we have opened up new horizons of understanding in our universe.

As President-elect Reagan prepares to assume office next month, he will have the opportunity to take advantage of a promising alignment of forces in our economic universe. We have a once-in-a-lifetime opportunity to succeed in the future where we have failed in the past.

Recent studies, for example, have suggested that we can deal more effectively with even deep-seated inflation if the public is convinced their government has a workable fiscal and monetary plan to stop it.

For the past fifteen years inflation has been a fact of life in this country. We raise prices, wages, rents and interest rates to accommodate it. We jaw-bone, we stimulate demand, we prime the pump and then we pump the prime. The only rational expectation is for more of the same. Policymakers have failed to demonstrate either the will or the means to overcome inflation.

But today we are at a watershed. We await a new Administration that has promised and won a mandate for new approaches to old problems. People are alert and watching. For the first time in a long time they are ready to take a new look at their inflationary expectations. They are willing to give a new Administration the benefit of the doubt.

That's only the beginning of the good news. Back in the days when all the pundits were predicting a cliffhanger on November 4 I was saying we would see a whole new emphasis in economic policy regardless of the election outcome.

Today, in the cold light of December, we can see the clear outlines of agreement on the pillars of a new economic strategy for the eighties.

We see Republicans and Democrats, business and labor lining up behind policies to increase productivity in our economy, to encourage more spending by the private sector and less by government, to reduce the tax burden, to restore freedom and incentives to our economic system and to blow away some of the regulatory fog that shrouds our economic performance.

Sure, there are differences—important, vital differences—that must still be resolved.

We must establish that regulatory reform does not mean dismantling the safeguards that have brought America cleaner water, cleaner air, a safer workplace, and an honest understanding of product content. Then we can all agree that cost effectiveness has a vital and legitimate place in the regulatory process.

We must establish that “supply side economics” is not some buzz word for a business bias in tax policy. Then we can all agree that policies encouraging our economy to produce goods and services more efficiently will enable us to beat inflation with production lines, not unemployment lines.

We must establish that a tax cut carefully designed to increase productivity, encourage job-creating investment, and help individuals cope with bracket creep and higher social security taxes need not be inflationary. Then we can agree that new depreciation schedules to encourage massive investment in our economic future will pay handsome dividends for all segments of our society.

Our workers and consumers, our businessmen and minorities, our public and private sectors will never see eye to eye on every issue. But they can—and they must—stand prepared to bargain with tolerance and good faith to seek the unity and consensus that is vital to our future strength and prosperity.

Congress deals in public policy and may have the easiest job of all. We have heard the voters and they have spoken in angry voices. We have no real choice but to heed the call for some fundamental changes in the way government conducts its affairs.

But the search for solutions to America's problems must extend beyond the realm of public policy. It must reach every group or interest represented at this conference.

We count among our guests today some of the top managers of American business, some of the best educated and most professional executives in the world. But all too often they operate with goals imposed by the financial community that are counter-productive to the long range interest of our economy.

The top levels of American management today have a vested interest in short term success and profitability, because that is the time frame in which their performance is judged. Bonuses and tenure are based on corporate goals as short-term as a politician's next election.

There are exceptions, of course, but too many managers today are reluctant to devote scarce resources to the sort of research, development and global marketing activities that will pay off during the tenure of their successors.

Until the American business community is willing to look and plan beyond the short term, we will have problems with productivity and inflation regardless of what we do in the area of public policy.

Labor has an equally important role to play in the long-term battle against inflation. The word "productivity" has been a red herring for too long. Some people think it means machines replacing workers. Others believe it is a veiled call for American labor to work longer and harder on the job.

Both those stereotypes are wrong. The industries with the highest rates of productivity increase are the strongest, most competitive sectors of our economy. They are the areas where employment opportunities—solid, well-paying jobs—are most readily available.

Increased productivity is a bonus for labor; it is good for business and for the consumer. It is a key element on the road back to stability and real growth to our economy.

No, the American worker is not to blame for the fact that we have the lowest rate of productivity growth in the industrialized world. Lagging productivity in our economy is a result of tax and fiscal policies that discourage investment in new plant and equipment. And the only answer to the problem is incentives for investment that will place the most modern tools of production in the hands of the American worker.

We've lived with our economic problems long enough to recognize that there are no simple or painless answers, no magical cure for the plague of inflation.

A bipartisan Congress will help, but it won't be enough. Bipartisan means two parties—in this case Republicans and Democrats. But we have seen at this conference that both the source of our problems and their solution involve more than two parties.

For a decade our country has been in the grip of a centrifugal force. We have suffered political paralysis; major groups have been warring against each other, straining the fabric of our unity. Labor and Management, business and the regulators, the individual and the government, Congress and the bureaucracy, Sunbelt and Snowbelt, consumer and marketer. The list goes on and on. In the absence of consensus, there has been little effective action. We have let our problems build to a critical mass.

This conference will be a success if we can set aside the differences of the past and work together to achieve the unity that is the true strength of America. When we're united, this country has the assets to overcome any challenge and succeed as never before in our history.

I don't know about you, but I get awfully tired of listening to foreign leaders criticize America. With most of them, our problems would be their solutions.

We worry about energy, but it is a fact that we produce half the energy we consume in America. Competitors like Japan and Germany would love to have our energy resources.

We talk about unemployment, but it is a fact that we've created 9 million new jobs in three years. No other nation in the world could even come close to that achievement.

We talk about instability, but it is a fact that the smart money from all over the world is beating a path to our door, seeking to invest in America.

Why? Because this is the greatest market, the most stable democracy, the freest economy in the world. And because America is being sold below book value.

There are over 4 billion people in the world today and half of them would brave any danger to come here tomorrow if they could share in America's freedom and opportunity.

Make no mistake about it. For billions of people, America still represents the dream of a better, freer, brighter tomorrow.

We who are living that dream have an obligation to preserve it. As we stand at the doorway of a new decade and a new Administration, let us resolve to seek a new consensus and work together to build a prosperous, dynamic and secure America that can look with confidence to the challenges of the future.

D. Closing Speaker

STATEMENT OF SENATOR WILLIAM V. ROTH, JR. (R-DELAWARE),
MEMBER, JOINT ECONOMIC COMMITTEE

As we conclude our discussions on the economy in 1981, I think it is safe to say that at least one consensus opinion has emerged: the prospects for the economy in 1981 are gloomy.

Continued inflation, high unemployment, and a stagnating economy—these are the problems we will face in 1981.

The recession is still with us, and inflation continues at double-digit levels.

The Nation is confronted with stagnant, if not declining, economic growth. Working Americans face lay-offs and falling real incomes.

Our major basic industries are declining, and nothing is being done to reverse the deterioration of our capital stock.

Savings and investments are at record-low levels, and people are encouraged by government policies not to save and invest for the future.

In addition to recession, inflation, and stagnating economic growth, we face a Federal budget completely out of control.

The fiscal 1980 budget, once described as being lean and austere, is now expected to have a \$60 billion deficit.

And instead of being balanced, the fiscal 1981 budget could be as much as \$50 billion in the red.

Federal spending is increasing at a seemingly uncontrollable rate, as inflation and unemployment push up mandated spending on program after program.

And federal taxes have increased to unprecedented levels, pushing up tax rates and imposing a tremendous drag on the private economy.

Against this background of economic deterioration, the new Administration and the new Congress face enormous challenges.

No matter what positive steps the new Administration may take, our economic decline will not be reversed in one year. Prosperity will not be restored overnight by government fiat.

It is extremely important to realize there are no instant cures. It has taken us years to get into this economic problem, and we will not solve our economic problems unless we make long-term, structural changes.

Despite the temptation to take temporary steps to provide temporary relief, real economic growth can only be restored through a long-term strategy.

Nothing is more important than economic growth. And while we cannot expect to restore economic growth overnight, substantial gains can be made in the long run, as the following example illustrates.

From 1973 to 1979, the U.S. economy grew in real terms at a rate of only 2.5 percent a year. This is well below the 4.4 percent growth rate realized from 1962 to 1969.

If, after the current recession, the economy continues to grow at the recent rate of 2.5 percent, GNP will barely reach \$3.1 trillion by 1990 in real terms.

But if the economy can regain the growth rates experienced during the 1960's, GNP will reach \$3.7 trillion by 1990, nearly 20 percent higher.

If this kind of growth can be obtained, incomes and living standards would be substantially higher; jobs would be plentiful; fewer people would be dependent on welfare or unemployment benefits.

Federal revenues in 1990 would be nearly \$120 billion higher, enough to provide for a balanced budget, increased defense spending, and adequate funding of nondefense programs. Higher employment levels and lower price levels would revitalize the Social Security System, as more funds were paid into the system and less were paid out.

The federal tax burden could be reduced, and prices would stabilize as the expanding economy eliminated budget deficits and reduced pressure on the Federal Reserve to create more money. Obviously, the social gains from economic growth would be enormous.

Three fundamental steps must be taken to restore economic growth to our economy.

First, we must reject quick-fix solutions and develop a long-term strategy for growth.

Second, we must concentrate on expanding the supply side of the economy.

And third, we must enact a tax cut which sharply reduces the high with more unemployment and continued inflation.

As four straight consensus Joint Economic Committee reports have emphasized, our economic problems cannot be solved by stimulating short-run demand. Instead, we must make long-term structural changes to revive the supply-side of the economy.

For the last fifteen years, our economy has followed a boom and bust scenario.

To fight every economic slowdown, we have inflated the economy. Then to fight inflation, we have thrown the economy into a recession.

And at the end of every recovery, we have had higher rates of inflation and unemployment, and lower rates of economic growth.

To fight the 12 percent inflation of 1974, we had the recession of 1974-1975.

To fight the 8 percent unemployment of 1975-1976, we pumped up spending in 1978-1979, which gave us the 18 percent inflation of 1980.

And to fight this new round of inflation, we had the 1980 recession, with more unemployment and continued inflation.

Each time we have fought recession, we have hyped up demand. We have increased spending, run up budget deficits, and printed more money. And at the end of each recession, we have found ourselves with higher federal debt, higher levels of spending and taxation, and higher inflation.

Government policies have caused inflation—which is too much money chasing too few goods—by hyping demand and strangling supply.

Budget deficits and excessive money creation lead to too much money.

And a rising tax burden and excessive regulations result in the production of too few goods.

Therefore, in order to fight both unemployment and inflation, we must make long-term structural changes to remove unnecessary constraints on the supply of goods in the economy.

We must lower the tax rates on income. We must lower the tax rates on savings. We must revitalize our productive capacity through new depreciation laws. And we must restrain the growth of Federal spending to reduce the percentage of GNP eaten up by the Federal government.

In my judgment, the present tax system, with its high marginal tax rates, is one of the principal causes of our economic stagnation.

The individual income tax system is characterized by steeply progressive marginal tax rates. These high tax rates blunt incentives to work, save, invest, and produce—and all of the ingredients needed for economic growth.

That is why I believe it is so necessary to reduce individual tax rates, and that is why I reject the notion that substantial individual tax cuts are inflationary. In fact, it is the tax increases, not tax cuts, which are inflationary.

Substantial tax cuts are needed just to offset the massive tax increases facing the working people of this country over the next five years.

In fiscal 1980, the total tax burden on the economy as a percent of GNP equalled 20.6 percent.

In order to keep the tax burden at this same level, Congress would have to enact a \$40 billion tax cut in fiscal 1981 and a \$187 billion tax cut by fiscal 1985.

Holding taxes at last year's level will not increase inflation.

But allowing taxes to increase—which will happen if we do not have substantial tax cuts—will increase inflation as savings, investments, and production are further retarded.

Since the tax cuts we are proposing will just barely offset the pending tax increases, the tax cut will not dump barrels of money into the

economy. However, the tax rate reduction will allow workers, savers, and investors to keep more of any additional income they earn from working, saving, and investing.

The bill we are proposing reduces individual income tax rates across-the-board by approximately 10 percent a year. When fully effective, marginal tax rates would be reduced from the present rates ranging between 14 and 70 percent to rates ranging between 10 to 50 percent. And once the tax rates are reduced, a tax indexing system would go into effect to keep tax rates down.

Across-the-board reductions in individual tax rates are not intended to stimulate consumption and demand.

Instead, marginal tax rate reductions are designed to stimulate supply by reducing the barriers to work effort, savings, production, and growth. The high marginal tax rates are the major impediments to saving, and substantial rate reductions will increase the incentive to save.

Combined with rate reductions, specific tax incentives to encourage individual savings must also be enacted to maximize savings.

It is for these reasons that I refute the notion that the best supply-side tax cuts are business tax cuts.

In my opinion, the best supply-side tax would be one which sharply reduces the high marginal tax rates on personal income and reforms business depreciation laws.

Individuals are not only consumers, but workers, savers, investors, and producers as well. And unless individuals receive a major share of next year's tax cut, supply-side economics will not work.

Entirely independent of and aside from the economics of tax cuts, individual tax cuts are essential to build support for our long-term economic strategy. If we want an ongoing political climate where we can make the changes necessary for growth, the working people of this country must be involved.

If we can accomplish these actions, we can indeed help solve our economic ills. But, I believe we must also go a step further.

Not since 1947 have we taken a long, hard look at government, its relationship to business and consumers, its cross-functions, and if it is providing adequate services to the American people.

As the incoming chairman of the Senate's Government Affairs Committee, one of my first priorities will be the establishment of a Hoover type commission to look at all elements of government, their impact on the economy and what changes can be enacted to improve government delivery and effectiveness.

For over 30 years, we have been adding layer upon layer without a total knowledge of the effect each layer has on another. I believe we should initiate an overall study of government.

I believe that former President Gerald Ford will be an ideal selection to head such an effort.

I do not believe we can tolerate another period of layering without knowing exactly the effect that government is having on the economy.

Before we make quick-fix changes, we must establish an overall study of government.

I welcome the opportunity this Conference has provided to develop a bipartisan strategy to deal with our economic problems in 1981 and beyond.

And I am hopeful the new Administration and the new Congress will follow the example set by the Joint Economic Committee and work together to develop a bipartisan consistent set of policies.

These policies—fiscal and monetary restraint and sharp reductions in the tax and regulatory barriers to production—will restore the U.S. economy to health at home and to strength abroad. There is no reason that this country with unity of purpose and strong leadership cannot regain a strong and buoyant economy.

III. ADDITIONAL REMARKS BY A MEMBER OF THE JOINT ECONOMIC COMMITTEE

STATEMENT OF REPRESENTATIVE CHALMERS P. WYLIE (R-OHIO)

There is no question but that productivity growth is slipping, and it is a problem which deserves the attention of the Congress of the United States, the Administration, as well as the business, the labor, and the consumer sectors of our economy. As David Rockefeller noted on October 13 at the American Bankers Association convention in Chicago, "If inflation can be roughly summed up as too much money chasing too few goods, a relative decline in production is as inflationary as a relative increase in money." He also noted that, "Each sustained increase of one percent in productivity growth can bring a two percent reduction in the rate of inflation."

Clearly, we need to increase productivity because it is important in combatting inflation. It is also important in making the United States competitive in world markets.

There are a variety of factors which have gone into the decline in productivity. Among those mentioned are worker attitude, lack of research and development tax incentives, work-force expansion (influx of teenagers and housewives), energy costs, and lack of investment capital. It seems to me that our best hope for an immediate gain in increasing productivity is to increase investment capital.

The national debt has increased by \$400 billion over the past seven years. The central problem here is that persistently high federal deficits have forced the United States Treasury to go to the capital markets, which are short of savings for investment, which has a decided negative impact on increasing productivity. Because U.S. Treasury issues are risk-free relative to private sector corporate issues, the Treasury can and does crowd much of the private sector out of the markets for capital for investment. Without adequate capital, the private sector cannot purchase the equipment needed to increase productivity.

If there was one message that came through loud and clear following the last election, it is that there is a consensus among all segments of our society that the number one problem facing this nation is inflation. There is no question but that inflation has an adverse effect on productivity. The one entity that can do something about inflation is the Congress of the United States. Beyond the fact that I feel that the huge budget deficits are the root cause of inflation, a balanced budget could have a strong psychological impact on inflationary expectations.

We must also reduce taxes. Time and again, I hear workers say, "What's the use of trying to earn more money? What's the use of working harder? It just all goes to the federal government, anyhow."

There is a psychological attitude which has an impact on production, which could be addressed by a concerted effort to balance the federal budget early next year. Then we can turn to the urgent task of reducing taxes.

In these extraordinarily inflationary times, we have no excuse at the federal level for not balancing the budget. This will serve as both sign and substance so our constituents will both know and feel that we at the federal level are no longer the cause of inflation. It is crucial for political stability in this country that this be done as a top priority of the new Republican Administration.

The announced intention of President-elect Reagan to increase defense spending, cut taxes, and balance the budget forces the choice between guns and butter on the Congress. We must, as a nation, do whatever is necessary to be able to defend ourselves against armed aggression. How many guns this will take cannot be determined with certainty. What can be said with certainty is that inflation is the nation's number one problem and that we must pursue a course to bring it under control. Almost everyone who appears before our Joint Economic Committee now agrees that it is federal deficits and the rising costs of government which are the root causes of inflation.

In addition to balancing the budget, we at the federal level must adopt measures to encourage investment to increase productivity. Higher productivity will increase the supply of goods and services which in turn will help cool inflation.

In the 1970's total employment in the United States increased by about 19 million persons or 25 percent. Far more persons entered the labor force and got jobs than retired and left jobs open. The post-World War II baby boom matured and entered the labor force, and their mothers, in many cases, decided they wanted a career, too. Our economy, and the business people who provide its muscle, performed a substantial miracle in hiring all these millions of people. American business kept faith with the political system in this country and made it possible for 19 million people to have a livelihood. This promoted political stability during a difficult decade.

Now I feel it is important for the political establishment to return the favor. The American worker needs more and better equipment to increase productivity. Consequently, Congress should agree on a program to help business obtain the capital for its employees to use which would result in increased worker productivity. We need a number of measures to promote business saving. Therefore, I favor higher permanent investment tax credits for new business investment in plant and equipment. Suggestions made to me to broaden the definition of investment tax credit to include research and development have merit, and I think Congress should amend the law to increase federal support of research and development. I will also support measures to permit accelerated depreciation of plant and equipment and business tax cuts to increase the cash available for investment. These measures will all increase business cash flow which I feel is appropriate and necessary as an objective for our economy in the 1980's.

Furthermore, I feel that we desperately need to slow the growth of the federal government relative to the private sector. I have introduced several bills to tie federal spending to 20 percent of gross na-

tional product. The purpose of this approach is to make sure that the federal government does not grow at a faster rate than the rest of the economy. Unfortunately, what has been happening for a number of years is that the federal government has been growing more rapidly than the private sector. If this faster rate of growth continues indefinitely, then, as a simple truism of arithmetic, the private sector will disappear and all that will be left will be the public or government sector. If you feel for any of hundreds of reasons that the private sector of our economy must be preserved, then I urge you to look for opportunities to encourage this approach to limiting the federal government, strengthening monetary and fiscal policy, and curtailing inflation. The first legislative priority of our time, as I see it, it is to discipline federal spending in order to bring the federal government out of the inflationary whirlpool which is buffeting all Americans.

As a member of the House Banking Committee on the Joint Economic Committee, I am keenly aware of the need to help financial institutions promote personal savings in addition to business savings. Personal savings, which have been a vital source of productivity growth, are at their lowest level in recent history. This is one of the most alarming developments in the past few years. Something dramatic needs to be done immediately to encourage people to save.

For a number of years, I have sponsored legislation known as the "Small Savers Act." These bills would exempt \$1,000 and \$2,000 in interest or dividends from Federal taxation, depending on marital status. Such amounts would be much more conducive to increased savings than the \$200 and \$400 now in place. Now, I would exempt interest on new personal savings and dividends income on new investments up to \$10,000.

In addition, there is substantial momentum in the House Ways and Means Committee for legislation which will make it possible for all individuals to open their own IRAs, or individual retirement accounts. This momentum should be encouraged. At the present time, only those who are not participants in qualified pension plans may have IRAs. There is a growing realization that retirement incomes may need some shoring up for future retirees and that IRAs would give incentives to individuals to shelter income from taxation and provide for their futures as well.

Opening IRAs to those now covered by qualified pension plans means that the IRA would usually be a third source of retirement income for the retiree. That is, the retiree would have his Social Security income, his company pension income, and then his IRA income. Consequently, the initial levels of IRA payments to qualify for shelter from income taxation do not need to be especially high. My best guess now is that \$500 for single filers and \$1,000 for joint returns would be suitable for initiating this avenue for savings in 1981.

A related approach to encouraging savings in especially inflationary times is a savings tax credit for amounts saved up to a specified dollar amount. Such a tax credit could be legislated for use in periods of unusually high inflation as a way of both dampening demand and increasing the real return to savings. Politically, a tax credit for savings has the advantage that a dollar of tax credit is worth the same (one dollar) for all taxpayers who have a tax liability.

In summary, I feel we should:

- (1) Balance the budget.
- (2) Exempt the interest on new personal savings and dividend income up to \$10,000.
- (3) Make it possible for all individuals to open their own individual retirement accounts.
- (4) Increase investment tax credit and include research and development money.
- (5) Accelerate the depreciation allowance for new plant and equipment.
- (6) Consider a tax credit for savings.

I think the most pronounced signal from the last election was that the American people expect us to do something about the state of the economy. The Administration will be expected to provide leadership, but in the final analysis, the one entity that can do something about having America assume its rightful role as the leading nation in the world is the Congress of the United States. I think the signs are ominous and that the American people might give us just two, perhaps three, years to come up with solutions to inflation and other related economic problems.

The role of Congress is to provide an atmosphere of confidence among the American people that their investments, talents, efforts, and visions will have a greatly improved chance of bearing fruit by being realized the way they hope. In short, all segments of society must feel that faith in America and our free enterprise system will provide fertile grounds for risk-taking.

IV. PROCEEDINGS OF THE SEMINAR ON INFLATION

A. Participants

Chairman: Senator William V. Roth, Jr.

Cochairman: Finn M. W. Caspersen, Beneficial Corp.

Presenters: Howard Samuel, AFL-CIO.

Beryl Sprinkel, Harris Trust & Savings Bank.

Arnold, S. Dewey	Price Waterhouse, Inc.
Batten, William M.	New York Stock Exchange.
Bowles, John	Kidder Peabody.
Brophy, Theodore	General Telephone & Electronics Corp.
Childs, John Brown	Afro-American Studies, Yale University.
Davidson, James	National Taxpayers Union.
DeWind, Adrian	Natural Resources Defense Council.
Draper, Anne	AFL-CIO.
Eckstein, Otto	Data Resources, Inc.
Freeman, Paul J.	Small Business National Unity Council.
Gay, Leonard O.	Haverty Furniture Companies, Inc.
Giles, Alexander W.	Modular Computer Systems, Inc.
Greenough, William C.	Teachers' Insurance.
Hatfield, Robert S.	Continental Group.
Herring, Robert	Houston Natural Gas Co.
Jeffers, Dean W.	Nationwide Insurance.
Karpatkin, Rhoda	Consumers Union.
Keys, Martha	Former Member of Congress.
Kozmetsky, George	University of Texas.
Lindsay, Franklin A.	ITEK Corp.
Massa, Cliff III	National Association of Manufacturers.
McBride, Lloyd	United Steelworkers.
Pritchard, Joel	U.S. House of Representatives.
Rettgers, Forrest	National Association of Manufacturers.
Rohatyn, Felix	Lazard Freres.
Ross, Stephen J.	Warner Communications, Inc.
Schwab, Charles	Charles Schwab & Co.
Siebert, Muriel	New York State Banking Commission.
Smith, James F.	Union Carbide.
Toupin, Arthur	Bank America Corp.
Train, Russell E.	World Wildlife Federation.
Ueltschi, Albert L.	FlightSafety International.
Wasserman, Lew R.	MCA.
Watkins, Sam R.	I.C. Industries.
Weidenbaum, Murray	Center for the Study for American Business.
Wexler, Anne	Assistant to the President.

B. Presentations

STATEMENT OF FINN M. W. CASPERSEN, CHAIRMAN, BENEFICIAL CORP.

INFLATION: THE PROBLEM AND SUGGESTED SOLUTIONS

The topic of inflation has been marked by innumerable technical dissertations, many of which have been correct in their proposed solutions. But none have worked. All have failed because they have not

galvanized the nation to action. Technical expertise is not the answer—action is. Accordingly, my comments will be extremely broad with the caveat that implementation will be complex, detailed, difficult, and indeed, often painful.

Inflation is simply the rapid upward spiral of the price of goods and services which increases the price of labor-wages, the price of goods, and the price of capital for investment-interest.

These cost increases have severely disrupted our economy. They have created an economic lethargy as opposed to an emphasis on dynamic, productive enterprise. Inventory profits often exceed those of the operating enterprise. Individuals and institutions are paralyzed—more influenced by inflationary expectations than by actions that would enhance society's collective wealth and employment.

Most importantly, inflation levies a disproportionate burden on the moderate and lower income sectors of America. As Chairman of Beneficial Corporation, the nation's largest lender to these sectors, I am acutely aware of the problems and deprivation being endured. Simply stated, it is the middle class and disadvantaged who suffer most from inflation. Inflation is not a significant problem to the wealthy. Inflation is by far the most regressive tax, afflicting those who can least afford it.

The causes of inflation are much debated with each group trying to blame the other. Accordingly, it is easier to start off by stating what is not the cause.

Inflation is not caused by a profligate American society. Today's average American is no more profligate or licentious than our predecessors. The American consumer is merely reacting to the new inflationary rules of the game which have clearly set a negative real return for consumer savings as compared with a positive real return for borrowing to the hilt.

Secondly, I strongly believe that inflation is not caused by the wage demands of the American worker. While productivity has decreased on an annual basis for 1980 and conversely wages have increased approximately 10 percent, this is a result of inflation, not the cause. In fact, the real disposable income of the average American, after inflation, is now actually declining.

As a multinational employer, we at Beneficial know that the American worker is as productive, efficient, and innovative as any in the world. However, to compete internationally and increase productivity, American workers must be given the tools to properly exercise their skills and talents and these tools must be purchased by capital made available to business at a reasonable cost. Productivity in the U.S. is not just a function of the industriousness of our work force—it is equally a function of their tools.

What then are the causes of inflation? Obviously, they are multitudinous with no single item having sole responsibility.

The recent dramatic escalation of energy cost is often pointed to as a prime scapegoat. I disagree! As significant as the OPEC price increases have been, by far the most important cause of inflation is government policies that directly and indirectly cause misallocation of resources. Specifically, I refer to government tax policy, government social policy, government monetary policy, government fiscal policy

and government regulatory policy. In contrasting the relative impact of OPEC increases with Government tax policy, one must note that the federal tax burden on American families during the last five years rose eight times as much as their fuel bill. The correlation between government fiscal policy and inflation is clear from the deficits of recent years. During the 1966-79 period, a time of unparalleled inflation, the average annual federal deficit was nine times as much as the 1947-66 period, a time of low inflation.

The solutions to inflation are even more debated than the causes. I do not believe the solution to our present inflationary crisis lies primarily in restraining demand—i.e., the so-called root canal theory, the more it hurts, the better it is for you.

Similarly, the solution does not lie solely with restrictive monetary policy or the variant now being practiced. The Federal Reserve cannot soak up federal deficits of the present magnitude. High interest rates themselves exacerbate the federal fiscal deficit and deprive the productive sector of the economy of needed capital. With close to a trillion dollars of federal debt, even a one percent interest increase over a period of time will increase federal debt service and deficits by 10 billion dollars annually and thus further crowd the private sector from capital markets.

While monetary policy is not the sole solution, we do need a consistent apolitical monetary policy to provide the necessary environment for a solution to inflation. Such a monetary policy should aim to achieve moderate growth over the long-term—a growth that is consistent with the real growth of the economy.

If the country is to truly control inflation, we must alter past policies which have resulted in misallocation of resources, government, human and capital.

First, there must be steady movement towards a balanced budget. We must restore sanity to government fiscal policy—during fiscal 1980 alone, we had a deficit of almost \$60 billion with another \$20 billion in off-budget items. Present deficits are pricing and forcing the productive sectors out of the market. Federal deficits decrease productivity!

Second, Government social programs must be reviewed and revised, including the many sacred cows. I am not, I repeat not, using this as a shorthand way of advocating the elimination or minimization of benefits for those who require them. Those with lower and moderate incomes are already bearing the brunt of inflation. It would be socially unthinkable and politically impossible to ask them at the same time to bear the brunt of anti-inflationary policies.

However, the thrust of most of today's Governmental social programs is palliative rather than solution oriented. Instead, programs should be solely aimed at solving structural problems and restoring the disadvantaged to productive roles. Social programs should not be aimed at making a miserable existence slightly more bearable. Such revisions in our social programs will be extremely difficult and not the least difficulty will be that successful program administrators will be successfully eliminating their own jobs.

Revisions must be made, not only from the standpoint of social conscience, but also because we cannot afford the structure of an unproductive human sector which present programs have produced.

Third, Government regulatory policies, both federal and state, must be subject to a most careful cost-benefit analysis and then subject to regular periodic reviews to see if the original estimates were, in fact, correct.

These analyses should clearly state how many jobs a given regulation or action will cost and what will be the negative multiplier effect on the economy as a whole. What is the true cost to society of Justice Department action in the IBM case, what is the cost of an FTC judge advancing a novel theory in the Tropicana case.

Artificial governmental regulatory barriers to the allocation of resources, human and capital, must be discarded. For example, antiquated state and federal interest controls must be preempted or removed.¹

Fourth, present federal tax policies must be dramatically revised. Several specific areas of tax policy require the greatest attention.

Individual income taxes.—Inflation caused bracket creep is increasing the real tax burden on those with low or moderate incomes. At the same time these groups, because of inflation, have a diminished ability to pay these taxes. Obviously, changes are needed.

Business taxes.—The entire federal tax policy with respect to business must be carefully reviewed. This is where both jobs and productivity originate.

Capital gains.—The present capital gains tax has resulted in the systemic withdrawal of productive capital from the private sector because of inflation induced appreciation. This must be changed.

Finally, and most importantly, there must be a dramatically increased incentive to save. We must drive down the cost of capital accumulation if we are to significantly increase productivity and jobs. Such a program should start with the ultimate saver—the average American, the man or woman on Main Street. But, before we can induce such savings, an attractive real return must be assured to the small saver, not the present inflationary induced negative return.

I propose that to accomplish this the federal government give a limited tax credit for all investments or savings, i.e., a dollar-for-dollar credit against income tax, not a mere deduction from income.

This "Consumer Investment Tax Credit" would greatly encourage savings and investment and move urgently needed resources into the capital markets. Because of the increase in the supply of capital, interest rates would plummet and all segments, individuals as well as business, would benefit, including the hard hit housing and automotive sectors.

Obviously, the concept of a "Consumer Investment Tax Credit" is strikingly different than anything else we have seen in the past. It is, however, a workable concept. Importantly, it is not regressive. There is no reason to treat a business capital investment any differently than a consumer investment in savings. And what better method is there of assuring success than giving the average American a direct stake in the reindustrialization of America.

Doubtless, the task of implementing these necessary changes will be most difficult. Nor can they be accomplished overnight—it will be a decade-long effort.

¹ As a addendum, I am attaching a chart to show the effect of adequate state rates as opposed to low state rates.

But changes must and will be made. The present situation is intolerable and penalizes those who can least afford it. Change we must, or the economic and political system as we know it, will not survive.

EFFECTS OF LOW RATES ON LOAN GROWTH

The following information illustrates the tendency of the Beneficial Corporation Finance Division receivables to flow from states with inadequate consumer loan rates to states with more liberal rate ceilings. The states selected for illustration, have been the four largest states in the Beneficial System throughout the period since 1974, plus Massachusetts. Massachusetts was added since it was a state with substantial outstandings where the Small Loan Regulatory Board, in an admittedly experimental move, enacted a very low rate ceiling in 1977, making it one of the lowest states in the system thereafter. Both Massachusetts and New York have liberalized their laws in 1980, largely as the result of realizing that their laws were having the very effect that is illustrated here. The figures used here extend through October 30, 1980 and do not reflect the changes which became effective in Massachusetts, October 17, 1980 and New York, December 1, 1980. (During the period New Jersey replaced Ohio in the top four and was again replaced by Ohio after a major acquisition in Ohio in 1979.)

In the following list, we have shown the yield collected on our personal loan portfolio in 1979 in the states involved (excluding large real estate loans which were not available in all states),² and the rate on the same type of loans for the entire Beneficial Finance System.

	<i>Annual percentage rate</i>
Ohio	23.88
California	23.52
Pennsylvania	22.8
Beneficial Finance System	22.20
New Jersey	21.24
New York	20.04
Massachusetts	18.00

As can be seen, the New York and Massachusetts rates are the lowest rates by a substantial amount. While other factors contribute to the growth or decline of receivables in a finance system, rate is the most significant factor in the normal course and the attached tables show that the flow of receivables within the system closely mirrors the variations in the rates.

Ohio, California and Pennsylvania, all of which have had rates in excess of the system average, have all grown faster than the system average as best shown by the percentages of outstanding growth during the period in Table II. New Jersey, whose rate was just below the system average, grew at a rate very slightly above the system average, whereas, New York grew at a rate approximately one quarter of the system growth and Massachusetts declined 6 percent despite a system growth of 133 percent. In the space of less than two years, New York

² It should be noted that during the period for which figures are shown below, there were various changes in the interest rates and ceilings of the laws of these states, which affected the yield collected from time to time. However, these changes were not so substantial as to affect the general relative position of these states.

fell from the second largest state in the system to the fourth largest and the percentage of its assets to the system declined from 8.3 percent at the end of 1978 to only 6 percent as of October 31, 1980. The contrast with the growth of California from 19.2 percent of the system receivables to 23 percent of the system receivables is obvious.

TABLE I.—RECEIVABLES OUTSTANDING
(In thousands)

	California	New York	Pennsylvania	Ohio ¹	New Jersey	Massachusetts ²	Beneficial Finance System
1974.....	\$313,544	\$192,402	\$101,545	\$81,949		\$42,715	\$1,781,500
1975.....	332,779	191,988	102,394		\$89,594	41,287	1,828,456
1976.....	383,648	208,504	139,697		104,252	43,902	2,085,042
1977.....	469,869	227,356	151,571		116,204	46,079	2,526,177
1978.....	578,964	250,281	168,864		129,664	48,962	3,015,437
1979.....	835,744	294,216	268,632	272,896		49,693	4,261,000
Oct. 31, 1980.....	958,795	251,492	253,882	265,159		39,955	4,153,403

¹ Includes a major acquisition in 1979.

² Massachusetts figures from form P.D. 95 filed with Massachusetts Banking Department, other figures taken from SEC Schedule 10-K forms.

TABLE II.—OUTSTANDING GROWTH 1974 TO OCT. 31, 1980

	California	New York	Pennsylvania	Ohio	New Jersey	Massachusetts	System
Percent.....	205	31	150	223	140	—(6)	133

TABLE III.—RANK BY YIELD COLLECTED IN 1979

	California	New York	Pennsylvania	Ohio	New Jersey	Massachusetts
Rank.....	2	5	3	1	4	6

TABLE IV.—RANK BY OUTSTANDINGS

	1974	1975	1976	1977	1978	1979	Oct. 31 1980
California.....	1	1	1	1	1	1	1
New York.....	2	2	2	2	2	2	4
Pennsylvania.....	3	3	3	3	3	4	3
Ohio.....	4					3	2
New Jersey.....		4	4	4	4		
Massachusetts.....	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)

¹ Not available.

TABLE V.—RECEIVABLES AS A PERCENTAGE OF SYSTEM RECEIVABLES

	1974	1975	1976	1977	1978	1979	Oct. 31, 1980
California.....	17.6	18.2	18.4	18.6	19.2	19.6	23.0
New York.....	10.8	10.5	10.0	9.0	8.3	6.9	6.9
Pennsylvania.....	5.7	5.6	6.7	6.0	5.6	6.3	6.1
Ohio.....	4.6					6.4	6.4
New Jersey.....		4.9	5.0	4.6	4.3		
Massachusetts.....	2.3	2.2	2.1	1.8	1.6	1.1	.9

STATEMENT OF HOWARD D. SAMUEL, PRESIDENT, AFL-CIO
INDUSTRIAL UNION DEPARTMENT

Military men tell us—usually long after the event—that we fight each war with the previous war's weapons. We're doing the same thing today in our war on inflation.

One would think from the weapons we have chosen to lick inflation that we were suffering from the classic variety, too much money in too many people's hands chasing too few goods. So we're frantically trying to cut the federal budget, reduce wage pressures by rigging the economy for a recession, and raising interest rates. None of these so-called remedies have even come close to working. Instead we've got eight million unemployed, we're cutting key federal support programs, and interest rates are going through the roof. For the second time in a year we're heading into a recession, with substantial production losses, lower utilization rates and declining investment, which in turn tend to reduce productivity.

And has all of this at least helped to lick inflation? About the only thing it licked was an incumbent president and a few dozen incumbent senators and representatives.

We are not going to lick inflation until we attack its causes. The causes are clearly identifiable and are to a major extent limited to increasing costs of food, energy, medical care and housing. Workers' wages are clearly not the cause. Real wages of non-supervisory workers in private industry have been going down. In constant dollars, real wages (after taxes) have declined by almost eight percent since 1967, and most of the decline has taken place in the last few years.

In respect to each of the major causes of inflation, there are steps that we could take to moderate the effect of upward pressures. Food exports, for example, should be closely regulated, especially at a time of impending shortages. To the extent possible, furthermore, we should encourage family farming; it has proved to be more efficient than the giant agri-business which now dominates much of agriculture.

Housing costs have been sharply rising, not because of wage costs—they represent a smaller part of housing costs today than they used to—but because of high interest rates. The supply of housing is not meeting the need. We should be making housing easier to obtain, at lower costs, through building programs, allocation of credit and prompt abandonment of the tight money policy.

We have taken some useful steps to conserve energy and we are in the very early stages of developing alternative sources. But we are rationing energy today through the price mechanism, which is wasteful and costly. If rationing is considered a necessary part of a conservative program, we should ration on the basis of fair shares, not through price.

Cost controls should be imposed on the suppliers of medical care. The only rational way to do it is through a comprehensive system of health insurance.

On a combined basis, these four categories of necessities—food, shelter, energy and medical care—make up over 60 percent of the total "market basket" of the Consumer Price Index for urban wage earners and clerical workers. If we aimed our anti-inflationary efforts

at the real causes of inflation, we would be more effective in controlling it.

Unemployment, one of the "last war's" remedies for inflation, is not the answer. We've had several years of proof that unemployment does not cure the kind of inflation we are experiencing, and in fact makes it worse. Is unemployment insurance less inflationary than a day's pay for a day's work? Is lost sales and production good for productivity? Are either unemployment or lost production good for political leaders?

The answer is "no" to all of the above.

Is it possible to defeat inflation without relying on fiscal and monetary restraints? It is not only possible, but because of the nature of the inflationary causes, absolutely necessary. Wage and price controls could well be an integral part of such an anti-inflationary program, at least on a temporary basis. Such controls are less painful than a recession, and unlike a recession, would help counter inflation.

Let me add a word about productivity, which is fundamental to the inflation problem in the long term. Productivity is probably talked about the most and understood the least of any of our popular economic issues. First of all, let's understand that our measuring tools for productivity are very rudimentary, so the whole subject must be approached with great caution. We're dealing at best with dimly perceived trends, not hard and fast numbers. Second, it is clear that recession and high interest rates are bad for productivity, so that those who call for both increased productivity and fiscal and monetary restraints are moving in opposing directions. Third, productivity is best approached on a case-by-case basis. A meat axe approach could lead to some nice windfalls, but will have little effect on productivity.

That is why organized labor, in calling for a reindustrialization program, has urged the creation of tripartite committees on an industry basis, so that we can examine productivity problems selectively and respond to them the same way. An across-the-board business tax cut, supposedly aimed at increasing investment in more modern technology in many industries, would have no such result. It will only make it more difficult to hold down the federal budget (particularly at a time of rising defense expenditures) and will thus make inflation worse. Selective tax relief, aimed at industries where there is a clear need for investment incentives and where investment is a likely consequence of tax relief, is the only way to assure the country will get its money's worth.

A final word about regulation, also linked by some, mostly mistakenly, to our inflation problems. Some of our friends in business have been telling us that one of the key problems faced by American business is the growth of regulation. No surprise. The country has been weighing the cost of regulation against the need to save lives on the job and to clean up our water supply and to breathe decent air, and we've opted for the latter. That doesn't mean that regulation should be imposed recklessly or irrationally, but our business friends don't seem to discriminate when they condemn regulation. They'd like to get rid of all of it.

Let me suggest instead that business accept once and for all that regulation is here to stay, that this nation is determined not to allow workers to die needlessly and cannot afford to pollute or destroy our most vital resources. What is possible, however, is to examine the effects

of regulation on specific industries to make sure that we are getting the end result we want. We will not respond when industries cry wolf, which the vinyl chloride producers did a few years ago when OSHA proposed a new standard. You all know what happened; the industry found it could accommodate itself quite readily to the new standard and is more productive today than ever before. But we will respond when it can be demonstrated that a specific regulation cannot accomplish its purpose.

Again, I recommend a selective response, rather than a meat axe approach. And along with selectivity, I also recommend a full measure of democratic participation. Working people will accept sacrifice if they've participated in the policy decisions which led to it, and are assured that all sectors are sharing the burden. But with some exceptions, this has not been typical of the decision-making process in this country. Too often major decisions have come down to us from behind closed doors, on the basis, I suppose, that in times of crisis we have to let slide some of the niceties of the democratic system. I'd like to suggest that there is no time when it is more important to elicit advice and consent from the people as a whole than during a crisis. That's when democracy can prove itself the best system of government ever designed, in either peace or war.

STATEMENT OF BERYL W. SPRINKEL, EXECUTIVE VICE PRESIDENT AND
ECONOMIST, HARRIS TRUST & SAVINGS BANK OF CHICAGO

INTRODUCTION

Most of us agree inflation is an unmitigated evil. Inflation unfairly redistributes income and wealth. Given our tax system, inflation discourages savings and investment and therefore growth in real incomes, and can ultimately result in the loss of our economic and political freedom. Although inflation produces some short-term winners, few will publicly champion serious inflation as a permanent way of life. As a free nation, how did we get in such a double-digit mess?

Some blame greedy businessmen; others unions, OPEC, farmers, bankers, etc. etc. Unfortunately these explanations are far off the mark. Citizens of this Nation merely respond to the inflationary forces unleashed by imprudent monetary and fiscal policies followed by our Government. Since we live in a democracy, we are each ultimately responsible for the kind of economic policies our elected and appointed officials pursue. Therefore, each of us has the responsibility to encourage policies likely to restore nominal inflation rates. If there is a way out, what is it?

CAUSE

Inflation has always been essentially a monetary phenomenon, i.e. too much money chasing too few goods. The Joint Economic Committee has been a leader in pointing out this essential truth. During the 1950's, Senator Paul Douglas, as chairman of the JEC, stressed the inflationary effect of an excessive money supply. In recent years, under the leadership of Senator Lloyd Bentsen, the JEC recommended a set of policies, which if followed, would discourage excessive demand and

inflation while encouraging real economic growth. But until lately, their pleading fell on deaf ears.

CURE

For the past 15 years, money growth has increased relative to output, and accelerating inflation has been the result. (See Exhibit 1.) Monetary growth accelerated while real growth declined. Accelerated monetary growth has been primarily responsible for serious inflation while the decline in real growth contributed modestly to inflation, and explains declining living standards. On a technical level, excessive monetary growth resulted from Federal Reserve policies which have been highly volatile and increasingly stimulative most of the time. Lest you believe that this pattern no longer exists, let me point out that while early this year the absolute level of the money supply declined, the monetary growth rate in the past six months has been the highest in modern history. (See Exhibit 2.) The recent pattern contrasts with an annual average increase in the money supply of only nine-tenths of one percent a year during the Eisenhower years when inflation was minimal. Although the Federal Reserve System has the power to promote stable and moderate monetary growth, it frequently deemed other objectives more important, such as stabilizing short-term interest rates. Furthermore, large Federal deficits have compounded the Fed's problems, and from time to time Congress and the President have encouraged the Fed to provide excessive money growth in order to provide short-term economic stimulus regardless of the long-run costs. For the Federal Reserve to pursue a stable non-inflationary policy, it needs the understanding and support of the public and ultimately the Congress and the President. Nonetheless, the Federal Reserve cannot be excused for the volatile and overly expansive policy it has pursued in the past 15 years. Central Banks in Switzerland, Germany and Japan have followed far superior policies during most of the past one and a half decades, despite their larger relative deficits, and their countries have experienced far lower rates of inflation. If the Federal Reserve is to contribute to less inflation, it must reduce monetary growth in future years.

To compound our difficulties, inflation has dulled the incentives to save and invest while encouraging consumption and Government spending. As inflation rose, our unindexed tax system imposed increasing penalties on those who continued to work, save, and invest. These increased revenues rolled into the Federal coffers and the political process made certain those receipts were spent; in fact, increased Federal deficits have gone hand in hand with these increased revenues. As a consequence, capital formation has declined relative to the number of workers employed, and productivity has sagged. In addition, the growing abundance of regulatory efforts to achieve laudatory social objectives has significantly crippled the goose who once laid the golden egg, i.e., productivity.

The long-term trend in productivity improvement has averaged about two percent per year. In the decade ending 1965, average productivity increased about 2.6 percent per year. (See Exhibit 3.) Since that period there has been persistent deterioration until presently we believe the secular productivity improvement trend is near zero. This trend means not only are living standards declining as popula-

tion grows, but inflation is about 2½ percent higher per year as a result of annual productivity declining from 2½ percent to zero. The remainder of our double-digit inflation is a direct result of excessive money growth.

There is a way out and it will be well worth the effort. However, it will be painful and costly in the shorter run.

1. Excessive monetary growth must be restrained and stabilized.

2. Taxes must be cut to provide encouragement to working, saving, and investment.

3. Government spending must be severely pared until it becomes a smaller percentage of GNP.

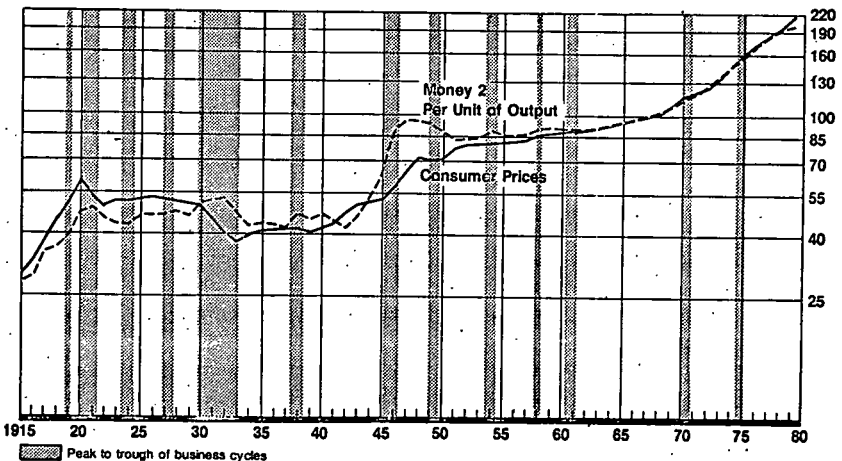
4. Finally, regulation of the productive process must become more rational so that regulation is reduced and the remaining regulation is clearly worth the added costs.

PROSPECTS

It is the stated intent of President-elect Reagan to move aggressively on all these fronts, with a coordinated program designed to improve productivity and reduce inflation. Expect no miracles: in fact, economic activity will probably respond adversely in the short run. Unfortunately those economic policies that correct longer-run problems inevitably bear a sizable short-run cost. Conversely, policies which yield good short-run performance, such as rapid money growth, cause massive distortions in the longer run. As Lord Keynes said, "We are all dead in the long run." Now Keynes is dead, and we're left in the long run!

The election clearly demonstrated that American voters are becoming increasingly unhappy with long-run stagflation. We can restore stable prices and rising living standards. But this is possible only if the new Administration pursues stated policies and if the public, the Congress and the Federal Reserve Board provides support. If not, our destiny will be one of continued acceleration of inflation and declining standards of living for all of us.

Money, Real GNP, and Inflation



MONETARY GROWTH

[Compound annual rates of change, in percent]

	December 1977 to October 1978	October 1978 to March 1979	March to September 1979	December 1979 to May 1980	May 1980 to latest period
Monetary base.....	9.9	6.3	9.8	6.2	10.4
Bank reserves.....	10.0	- .5	7.8	1.0	10.7
M1-A.....	3½-6	7.7	1.8	9.1	-1.2
M1-B.....	4-6½	8.0	6.5	10.9	- .1
M2.....	6-9%	8.4	7.4	10.7	5.9

Note: Latest 4 week ending average, expect M2, latest month.

Source: Federal Reserve Board and St. Louis Federal Reserve Bank.

Date: Nov. 28, 1980.

PRODUCTIVITY CHANGES¹

[Annual rates]

	Percent		Percent
1955-65.....	2.6	1980:	
1965-73.....	1.9	1st quarter.....	-1.0
1973-78.....	.9	2d quarter.....	-3.8
1979.....	-1.2	3d quarter.....	1.8

¹ Output per hour of all persons in the nonfarm business sector.

Source: Department of Labor.

C. Submitted Statements

STATEMENT OF ANNE DRAPER, ECONOMIST, DEPARTMENT OF ECONOMIC RESEARCH, AMERICAN FEDERATION OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS

CONSUMER TAX CREDIT FOR SAVINGS

Most workers want and value savings—at the very least as a nest egg and a buffer against unexpected emergency events. That the savings rates has been in decline testifies not to a decline in savings incentives but to the struggle to meet ever mounting costs of living—the very inflation we seek to combat.

Tax credits for savings offer no real likelihood of inducing additional savings from those already hard-pressed by deteriorating economic circumstance. And where savings are small and incomes low, tax credits would be correspondingly small.

Personal savings tend to come from those with higher incomes, whose immediate needs are satisfied, and who have a surplus to set aside in an "economic security account," with its wondrous workings of producing additional income so effortlessly on the part of the saver. Money merely sits and grows, with no personal sweat at all! Savings accounts can almost be classed as a luxury, which many millions of people would like to have—or have more of.

High income savers hardly need additional incentives: Where else can they put money? If it is into ever expanding luxury consumption, the same purpose can be served by sumptuary taxation on luxury types of expenditures.

Increased borrowing—both of individuals and businesses—often signals economic distress, and an inability to save—not a lack of savings incentives. Indeed a recent analysis in the Wall Street Journal (Dec. 9) attributed half the recent increase in business loan demand to distress borrowing and “weakening corporate liquidity.”

By way of a further footnote and commentary on the phenomenon of consumer credit spending and the “reverse incentives” in tax treatment of borrowing and saving, it should be recalled that it has taken a generation or so to woo consumers into the present extensive use of credit. Much of this has been accomplished by aggressive vending of credit by credit suppliers. There remains a vested interest in credit selling on the part of suppliers, which is hardly likely to be reversed by tax credits to individuals for personal savings.

DEALING WITH INFLATION FUNDAMENTALS

Current prescriptions for fighting inflation rely heavily on monetary and fiscal policy—especially on tightening the money supply, cutting federal spending, cutting taxes, and balancing the federal budget. They even include such drastic proposals as a constitutional amendment to require that the budget be in balance.

We have taken the position that the important focus is not so much that of balancing the budget, as it is that of balancing the economy. Budget balance is not an end in and of itself. In a healthy economy, the budget will sometimes be in deficit, sometimes in surplus, and sometimes in balance. No one has been able to show that budget deficits, as such, have any discernable correlation with the rate of inflation.

I submit that these monetary and fiscal prescriptions do not even begin to address the fundamental economic dislocations which have plagued our economy over the entire period since 1972. These dislocations have their origins in: (1) the initial shut-off of energy supplies in 1973 and the subsequent explosion of energy costs throughout the economy; and (2) the precarious state of food supplies and escalating prices dating from the same year. A third basic supply and inflation problem has emerged in record-breaking interest rates which have drawn down our housing supply, creating further inflationary pressures in the process, and caused a debilitating and uncertain outlook for investment generally.

I believe strongly that we need to employ techniques of “supply management” to address the particular nature of the problems of energy, food, and housing price inflation. These are the areas that have in fact dominated the movement of the price indexes and fed most importantly into the pace of overall inflation. These are sometimes set aside or disregarded as “exogenous” or random temporary events to which no serious attention need be accorded. But I believe the very reverse is true.

We need to manage the supply of energy by collective conservation of its use while developing alternative sources, and the AFL-CIO has made several suggestions for doing so. We believe the least desirable solutions are those that involve additional price increases, whether through abandonment of all allocations and controls, and/or imposition of heavy excise taxes to the consumer. It hardly makes sense to cure inflation by prescribing further price increases.

Most assuredly we ought to be able to do better on food prices. This country has the most abundant food supply in the world. Yet we have not succeeded in stabilizing the domestic price level for foods. The volatile and escalating behavior of domestic food prices is tied strongly into world markets, and will require management of exports, as well as maintenance of reserves, in order to abate this pervasive source of inflation.

Finally, the efforts to curb inflation through a type of money management that produces yo-yo interest rates, with successively loftier peaks and plateaus, has been producing devastating impacts on the economy in terms of reducing supply, increasing inflation, and destroying confidence in our economic future. Interest rate escalation has been the proximate cause of the back-to-back recessions of the 1970's and the impending second downturn of the 1980's. Nothing is more destructive to output, productivity, savings and investment, and to the ability of individuals and businesses to plan for the future. If we can succeed in controlling the real sources of pressures upon the money supply, deriving from gigantic price run-ups in key sectors of the economy, we can avoid any temptations to embark on "Thatcherization" as a remedy. Above all, we need a stable economic environment in which to function.

STATEMENT OF DEAN W. JEFFERS, CHAIRMAN AND CHIEF EXECUTIVE OFFICER, NATIONWIDE INSURANCE COMPANIES OF COLUMBUS, OHIO

A FOUR-POINT PROGRAM TO COMBAT INFLATION

It is an honor and a privilege for me to participate in this Congressional Economic Conference, The Economy of 1981: A Bipartisan Look. In response to Senator Lloyd Bentsen's invitation, I am submitting this paper on inflation for inclusion in the Conference Compendium.

In my view, inflation has become the most damaging social and economic affliction in our nation today. It is a cruel tax, injuring most severely the aged, the infirm, and the disadvantaged who live on fixed incomes. It impacts the small business man and the builders who are most seriously affected by high interest rates and shrinking markets. It undermines the innate savings habit of American families who see the value of those savings shrink in purchasing power over time.

At the same time, the expectation of rapid and continuous price inflation stimulates short-term, non-productive speculation, and dries up the sources of long-term, fixed-income investments that have provided historically the foundation for this country's rising standard of living. Potentially, inflation can destroy the moral and ethical fabric of our society, and lead us down the road to hyperinflation and its consequences that were so devastating to Central Europe after World War I. At stake is the viability, if not the survival, of our entire economic and political system.

Needed now is a national commitment on the part of all segments of the nation—public and private—to launch a comprehensive program to combat inflation. In my opinion, it is imperative that President-elect Reagan initiate a series of prompt and decisive actions during the early days of his Administration that will reverse the

pervasive expectations of inflation. In the spirit of bipartisanship, it should be equivalent to President Franklin Roosevelt's "One Hundred Days" of legislative and administrative measures designed to fight the depression in 1933.

To this end, I am proposing that the new Administration and the Congress, working closely with Federal Reserve Board, develop a consistent, cohesive program that will restore the economic health of the nation. The objectives of such a program, as I see it, are fourfold:

- (1) To curtail the excessive and volatile growth in the money supply.
- (2) To curtail the excessive growth in public spending and in public credit.
- (3) To expand economic productivity and stimulate the growth in total output.
- (4) To increase the volume of individual and business savings.

I. CURTAIL EXCESSIVE AND VOLATILE GROWTH IN THE MONEY SUPPLY

In basic terms, the problem of inflation is "too many dollars chasing too few goods." In general, if the growth in the money supply could be limited to the expansion in the volume of goods and services produced, the overall price level would remain stable over time. It is true that relative prices would fluctuate—oil prices, for example, would rise while other prices fell—but the index of all prices would remain level.

This ideal situation was almost achieved during the decade from 1955 to 1965. During that period, the basic money supply was limited to a growth rate of 2.2 percent per year, on average. At the same time, the consumer price index rose by only 1.3 percent annually.

However, during the Vietnam War, the Federal government attempted to pursue a policy of both guns and butter, and the seeds of inflation were planted. The growth in money supply escalated to 6.2 percent during the decade of the seventies. At the same time, the consumer price index mushroomed to an average increase of 7.4 percent.

The problems of monetary policy were compounded by the massive Federal budget deficits of the past decade. The money supply ballooned most noticeably during the years following those major deficits.

The volatility in money supply fluctuations reached a peak this year and has already produced two major money "crunches." After the imposition of consumer credit controls in the spring, the money supply fell by almost 7 percent, in absolute terms. By September, however, the compound annual rate was rising again by over 15 percent. These wide swings produced major uncertainties in the money markets, and kindled anew the general expectation of inflation.

It is true, however, that the Federal Reserve alone cannot control the money supply if other anti-inflationary policies are not in place. It is for this reason that I am proposing additional policies that should be closely tied to the Federal Reserve's policies of monetary restraint.

II. CURTAIL THE EXCESSIVE GROWTH IN PUBLIC SPENDING AND IN PUBLIC CREDIT

Just as the guns-and-butter spending policy of the Federal government fifteen years ago initiated the ever-rising cycles of inflation, so

a sharp reversal in the growth of public spending and credit extension now must begin the process of curbing inflation. Federal expenditures have taken an increasing share of GNP during the decade of the seventies, particularly those related to social programs.

Federal spending in the fiscal year 1981, as currently budgeted, will represent 22.4 percent of GNP. This figure compares with 13.9 percent during the early Truman years (1947-1948) and 19.5 percent during the Kennedy/Johnson years. Since defense spending has been lagging relative to GNP in recent years and will now have to be increased, in light of international developments, any cuts must be made in other areas. It should be noted, however, that Federal transfer payments for humanitarian and other reasons have increased from 5.8 percent of GNP in 1970 to 8.5 percent in 1979.

The new Administration should set a goal of reducing Federal budget expenditures to 20 percent or less of GNP by fiscal 1984 and should place an equal priority on balancing the Federal budget by that date.

The Reagan administration should also set a goal of reducing the volume of off-budget Federal credit extensions and credit guarantees. These debt issues compete with the securities of private industry, thereby increasing interest rates and reducing the volume of funds available for capital investment.

III. EXPAND ECONOMIC PRODUCTIVITY AND STIMULATE THE GROWTH IN TOTAL OUTPUT

The United States once enjoyed the world's highest standard of living. It no longer does so. Central to this decline has been the sharp reduction in the growth of productivity. The output per hour of work for the private business economy rose by 3.2 percent per year during the period from 1948 to 1965. The increase was only 2.3 percent annually from 1965 to 1972, and it fell to 0.7 percent for the eight years from 1972 through 1979. In fact, productivity fell by 2.1 percent in 1979, the first year in our history when we experienced rising total output but falling productivity.

Improving productivity is a responsibility of both the public and the private sectors. Obviously, we cannot continue to do what we have done in the past. As a country, we can only consume what we produce. If we try to spend more without producing more, inflation will ensue.

To reverse this significant slowdown in productivity and decelerate inflation, I recommend that the Federal tax laws be changed to: (a) accelerate tax depreciation allowances; (b) broaden investment tax credits to include research and development expenditures and new construction outlays; (c) increase Federal support for research and development in real terms (R. & D. expenditures fell from 3 percent of GNP at the beginning of the 1970's to 2 percent at the beginning of the 1980's; (d) increase the investment tax credit; (e) reduce corporate income tax rates; (f) reduce or eliminate double taxation of dividends; and (g) further reduce the capital gains tax.

I believe also that onerous regulatory restrictions have impaired productivity growth and should be modified. It is urgent that, wherever possible, competitive market incentives be used rather than regulations. I would urge the Reagan administration to undertake a com-

prehensive review of all major regulations and agencies to reduce disincentives and, where necessary, strengthen incentives for private investment and savings.

IV. INCREASE THE VOLUME OF INDIVIDUAL AND BUSINESS SAVINGS

The 1981 revision of Federal taxes should be an integral part of a longer term effort to restructure the tax system in order to create greater incentives for saving and investment. Conversely, the 1981 revision should be designed to help remove the long-term disincentives to saving and investment that are contained in the present tax system. Previous tax cuts have tended to stimulate consumption and to penalize saving.

The Federal government should adopt and adhere to a consistent, long-term economic policy of fostering individual and business savings rather than pursuing a series of "stop-go" counter-cyclical palliatives that focus on inflation one year and unemployment the next.

In specific terms, I would urge the new Congress to consider measures that would encourage savings by removing the tax on interest and dividend income up to a relatively high limit. Another measure would be the deferral of income through retirement savings, at least to the current level granted self-employed persons under IRA's and HR 10's. A provision to allow deduction for dividends on life insurance policies, without limitation, would increase the investment capabilities of insurance companies for long-term investments. This measure might be restricted to dividends applied to purchase paid-up additions.

CONCLUSION

The people of this country are deeply concerned about inflation, but there is great uncertainty as to its causes and its solutions. The Federal government could make a major contribution toward better understanding of inflation if it undertook a major educational effort in this area. Such understanding is vital if progress is to be made in changing the "psychology of entitlement," which is at the root of the inflation issue in both the public and private sectors.

STATEMENT OF GEORGE KOZMETSKY, DEAN, GRADUATE SCHOOL OF
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INTRODUCTION AND KEY ASSUMPTIONS

This section sets forth a preliminary plan for developing national energy alternatives attainable for the United States economy by 1990 that will interact effectively with 1980-1990 domestic and international economic issues and, at the same time, permit the strengthening of our nation's security and prestige. The domestic and international economic and security issues are related both to the demand and supply-side of the economy and should form a set of national policies that are integrated with the natural market mechanisms. Supply-side analysis of domestic energy resources are related to the supply-side fiscal policies that deal with investment, technology, productivity, inflation and unemployment.

There are certain key assumptions which this study has given consideration that should, in our opinion, be the foundation for the development of a national policy for attainable energy alternatives. These key matters are: (1) Conservation; (2) domestic and international availability of petroleum; (3) areas for public risk.

Conservation.—The past three administrations have promulgated national policies to encourage conservation. The most critical area for domestic conservation is oil and its liquid fuels derivatives mainly gasoline and aviation fuels. Oil has been a key factor in inflation, investment in alternative energy sources, national security, and unemployment. That these measures have provided some degree of effectiveness is already evident in the lower rate of growth of foreign oil imports, and the projected demands for U.S. oil supply for gasoline and jet fuels. In this respect, Exxon's Energy Outlook 1980–2000 states, "Energy consumption in 1980 is estimated to be reduced by the equivalent of about 6 million barrels of oil per day. . . . These savings are projected to reach 16 million barrels a day by 1990 and 27 million barrels by 2000."¹ We have assumed that the Exxon forecasts reference to current conservation matters are practical and feasible.

Availability of petroleum.—The Office of Technology Assessment technical memorandum titled "World Petroleum Availability 1980–2000" forms a basis for determining the potential supply of petroleum resources for the U.S. and the rest of the world. We concur with their analysis which indicates:

(1) It is highly unlikely that there will be little or no increase in world oil production from conventional sources over current levels.

(2) We will not be able to increase our imports above our current levels.

(3) We will probably face intense competition before the close of this century for the available petroleum supplies.

(4) Domestically, the U.S. will find new economic reserves (at \$30/bbl) in large fields containing at least 100 million barrels of liquid petroleum or equivalents. Smaller fields will be economical to develop when prices exceed \$30/bbl.

(5) It would be prudent to consider national policy to reduce our heavy dependence on petroleum.

Areas for public risk.—There are several obvious, but sometimes overlooked, points that are important when evaluating "public risk." Imports do provide the nation and its citizens economic gains. It is misleading to cite a U.S. deficit as though it represents in some pertinent sense a national loss. U.S. needs for energy, certain minerals, and metals and other commodities are linked with other nations' commerce in a number of important ways. In no case is the U.S. market wholly insulated from what happens in other countries. This is fundamental political and economic matter. Shortages can be a crisis, discomfort, or a boon depending upon circumstances. When to be without produces a crisis, then we are in the arena for "public risk" taking evaluation. When it threatens national security either economically or militarily, it becomes an arena for "public risk" taking. Petroleum import dependence is both of national economic importance and a threat to national security. It, therefore, is appropriate to consider the risk as a public venture.

¹ Exxon Company, USA's Energy Outlook 1980–2000, December 1979, p. 6.

American security is put at risk when there are insufficient reserves of critical materials in private stock to assure economic and military survival. It is appropriate in such circumstances for the U.S. government to build the appropriate security stockpiles.

There are no clearly defined and widely understood policies regarding economic stockpiling. This is particularly true when such stockpiling will lead to economic inefficiencies, manifested in higher material costs, use of unproven technology, conflicts of special interest groups within the society as well as inside the government. Such stockpiling will require investments beyond the possibilities and strategies of the private sector.

Coincident with economic stockpiling is the need for research and development that is beyond the workings of the normal marketplace. Today's energy alternatives research that can be used for both national security and domestic stockpiling for our nation as well as for foreign trade and assistance require a change in the normal process. Timely developments from research to prototype to commercial production is required if we are to have sufficient energy supplies based on domestic feedstock supply sources in the next decade or two. The normal process of "scaling up" from energy R. & D. to commercial production is a risk that is at this time abnormal for the private sector, in our opinion. The "scaling up" of our current technology is also a matter for public risk taking.

The energy domestic supply sources have several characteristics. The first of which is conventional energy sources. The majority ownership is in the Federal domain. The United States owns over 40 percent of the total coal reserves, over 70 percent of the oil shale, 85 percent of the tar sands, over 60 percent of the oil liquids, and over 60 percent of the natural gas reserves. The second characteristic is that the development of our domestic conventional resources require careful coordination of natural policies that relate to water, transportation, environmental, government regulation, monetary policies in terms of priorities, and national income policies for private sector investments. Reasonable coordination could result in lessening import dependence, stabilization of the dollar through international trade, full employment and at required higher price levels reduction of inflation and unemployment.

A final characteristic, the use of alternative conventional energy resource and renewable energy resource, permits value added. This allows us to use an approach that can be characterized as "supply side" because it focuses on such economic phenomena of alternative energy resources as costs, investment, technology, productivity and output within time constraints. The supply side approach uses identically the same formal tools of economic analysis we've always used but emphasizes different aspects of them which we believe to be more relevant to the 1980's and 1990's.

THE U.S. DEMAND AND SUPPLY FOR ENERGY IN 1990

What we will do in this section is set forth an estimate of demand and supply for the domestic energy market needs, international trade and stockpiling for national economic emergency and security. The section in the main body of the report entitled "U.S. Energy Balance Sheet Through 1990" establishes the supply side of energy needs.

While we have considered the estimates therein we have used the Exxon reports to develop the demand side for domestic energy. To this we have added our own estimated demand needs for national security stockpiling and for the international export of conventional energy products and commodities and their derivative products.

Let us repeat some of the significant factors in the main report that established the estimate of energy supplies for 1990 set forth on Table 2, "Best Likely Estimate of the U.S. Energy Balance Sheet." The estimates were based on: (1) GNP will average 2.5 percent increase annually; (2) an average marginal energy/GNP ratio of .04 will be achieved; (3) total energy production will increase about 10 percent over 1980 levels; (4) decline in rate of funding of conventional oil and gas will continue, and be offset by increases in drilling and current federal land policies will preclude any significant development from these sources by 1990; (5) coal production will increase 4.5 percent annually; (6) nuclear plants now in construction or on order will be in production; (7) synthetic production will achieve goals of about 1.2 mboed; and (8) hydroplants, geothermal, solar and other alternative energy sources will increase only slightly.

The specific estimates for energy supplies used in the main body are basically derived by Professor W. L. Fisher, director of the Bureau of Economic Geology at the University of Texas at Austin, and referred to as "Fisher's Estimates." The Fisher Estimates, in turn, were modified by Professor Walt W. Rostow to achieve a net energy export position by 1990 and, therefore, comprise what we refer to as the "Rostow Estimates." As neither Fisher nor Rostow made estimates of U.S. domestic demand for energy supplies, we are using the Exxon estimates.

Energy supply.—Table A sets forth the energy supply estimates for 1990 by Exxon, Fisher and Rostow.

TABLE A.—BEST LIKELY ESTIMATE OF THE U.S. ENERGY SUPPLY FOR 1979 AND 1990

[MBOED]

	1979	Exxon	1990 Fisher	Rostow
Total, U.S. energy production.....	29.8	32.4	33.6	43.4
Oil.....	10.1	6.1	7.7	9.0
Gas.....	9.3	7.6	7.7	9.3
Synthetics.....	0	1.6	1.2	6.0
Subtotal, oil and gas.....	19.4	15.3	16.6	24.3
Coal.....	7.5	11.3	11.3	14.6
Nuclear.....	1.4	4.0	4.0	5.0
Hydro and others.....	1.6	1.8	1.7	2.5
Subtotal.....	10.4	17.1	17.0	22.1
Total U.S. imports.....	9.1	10.6	9.8	1.9
Coal exports.....	.7			3.0
Total.....	39.6	43.0	43.4	48.3

Our analysis of the three different estimates for U.S. energy supply for 1990 generally shows that the Exxon and Fisher total estimates are the same. However, Fisher follows a more aggressive program in drilling for natural gas than Exxon. Furthermore they both estab-

lish a synthetic fuel program that will take over 25–30 years to bring on full stream. Their supply estimates generally reflect the continuation of the current national dependence on U.S. petroleum imports. Rostow's estimates reflect definite change in the national energy program. His estimates suggest a very aggressive drilling program for domestic oil and gas; scaling up production effort for synthetic fuels to about 15–18 years; and a massive increase in coal production by 55 percent over Exxon and Fisher estimates. Rostow's estimate assumes that there should be a dramatic decrease in imported petroleum dependence by 1990 that is offset in terms of balance of payments through exporting of coal.

All three of the estimates made no reference to strategic reserves or assumed that there would be little need to call on such reserves over the next decade.

Energy demand.—A best likely estimate of energy domestic demand by consuming sector as per Exxon's estimates are shown in Table B. The total Exxon domestic demand estimates by sector of demand equals the total energy supply estimates of Fisher.

TABLE B.—EXXON 1990 U.S. DOMESTIC ENERGY DEMAND BY CONSUMING SECTOR, 1960–2000

[MBOED]

	1960	1980	1990	2000
Consuming sector (including utilities):				
Transportation.....	5.4	9.9	9.4	10.0
Residential and commercial.....	6.6	13.0	15.1	17.5
Industrial.....	8.0	12.6	14.8	18.6
Nonenergy (feedstocks).....	1.9	3.2	3.7	4.2
Total.....	21.9	38.7	43.0	50.3

Table B shows that the conservation program has effectively reduced domestic energy demands. The total demand increased by 76 percent between 1960–1980, and the estimated demand increases between 1980–1990 are 11 percent and 17 percent between 1990–2000. The estimates for transportation which is the major user of imported petroleum shows more reduction in demand. It is now appropriate to examine in more detail the energy demand by supply source by consuming sectors.

Energy supply and demand estimates.—The estimated supply sources to meet the domestic demand estimates for 1990 are shown in Table C.

TABLE C.—U.S. DOMESTIC ENERGY SUPPLY AND DEMAND ESTIMATES, 1990

[MBOED]

	Sources of energy supplies						
	Total	Oil	Gas	Syn- thetics	Coal	Nuclear	Hydro and others
Consuming sectors:							
Transportation.....	9.8	7.9	.3	1.0			
Residential and commercial.....	6.8	2.8	3.7	.2	.0		
Industrial.....	9.2	3.0	3.8	.2	2.2		
Nonenergy (feedstocks).....	3.7	1.0	.7		2.0		
Subtotal.....	21.9	14.7	8.5	1.4	4.3		
Utilities.....	14.1	.4	.9		7.0	4.0	1.8
Total.....	43.0	15.1	9.4	1.4	11.3	4.0	1.8

Table C clearly sets forth that if we are to be less dependent on imported petroleum we need to provide energy alternatives that are liquids. In addition the utility sector is heavily dependent on coal. What we need to do is to make sure that any domestic alternative energy program provides an appropriate mix to satisfy the consuming sector demands. It is also important that their future needs be anticipated in sufficient time so as not to cause imbalances in the total supply system, employment, international trade and capital investments for productivity gains.

Other demand factors that need to be added to Table C are those required for exports and for stockpiling. The reason that they are important to consider it to determine whether it is economically feasible as well as if it is in the realm of possibilities for the United States to export energy in the next decade. Equally important is the form in which the United States should export energy resources either as conventional fuel or after some processing with value added. Table D lists the total U.S. energy supply and demand estimate by including a 3-mboed export goal and a 2-stockpiling goal by 1990. The question marks give an indication of the latitude of policy alternatives and action involved. Table D also introduces the renewable energy sources not generally included in the various current energy forecasts

TABLE D.—TOTAL U.S. ENERGY SUPPLY AND DEMAND ESTIMATES WITH EXPORT AND STOCKPILING GOALS 1990
[MBOED]

Demand sector.....	Total	Oil	Gas	Synthetic	Coal	Nuclear	Hydro and others	Renewables
Domestic demand (table C)...	43.0	15.1 ¹	9.4 ¹	1.4	11.3	4.0	1.8	0
Export goal.....	3.0	-----	-----	(?)	(?)	(?)	(?)	(?)
Stockpiling goal.....	2.0	(?)	-----	(?)	-----	-----	(?)	(?)
Total.....	47.0	15.1	9.4	(?)	(?)	(?)	(?)	(?)

¹ Includes foreign imports of 10.6 MBOED.

The markets for U.S. energy are complex and are intertwined with emotion and habit. In the first place we are continuously exporting in one sense energy in the form of agricultural products or as chemical and manufactured goods. The initiatives and policies to deal with energy are also complex. On the other hand it is imperative that today's energy initiatives take into account more than energy near term needs. Energy sources are the wellspring for driving the U.S. economy towards a new infrastructure as well as for a more stable society.

ENERGY INITIATIVES AND ATTAINABLE ALTERNATIVES FOR 1990

The new administration has the opportunity now to make the right choices for the next two decades through its energy alternative choices to shift the economy toward full employment, while its industrial infrastructure is shifted to the technologies of 1980-2000, and provide the growth of the U.S. economy with increased productivity, international trade and stabilize the dollar. The choices derived from the energy

supply and demand analysis show that the new administration has the following alternatives to select from:

- (1) Conservation of domestic and import energy supply through market pricing and regulatory changes.
- (2) Accelerate exploration and development drilling for oil and gas on the Federal domain.
- (3) Public risk policy alternatives.

Please note that the above three alternative areas are not involved with the extension of energy research and development of solar, fusion and other more exotic energy sources for the 21st century. We are more concerned with the decade of the 1980's and 1990's and even more importantly with the first 100 days of the new administration and its program.

Conservation through market pricing and regulatory changes.—There is no reason for us to document that market pricing has been an extremely effective mechanism to conserve energy. The critical aspect of market pricing for conservation is the timing factor. Currently it is evident that there will be a gap in the discovery of domestic gas reserves because of the Natural Gas Policy Act of 1978. Therefore it is important to consider decentralizing natural gas by 1982 instead of 1985. In the same vein the windfall profit tax should be reformed so that the newly discovered and tertiary recovery are exempt. This will provide especially the independent producers with additional liquid funds to invest in increased drilling as well as increase our domestic supply of oil and gas.

Both of these reforms could result in additions to the energy supply before 1984 and have their full impact in place before 1990. Table E shows the estimated results of these initiatives based on the DOE study, "Reducing U.S. Oil Vulnerability," Energy Policy for the 1980's, U.D. Department of Energy, November 10, 1980.

TABLE E.—ESTIMATED RESULTS OF NEW ADMINISTRATION INITIATIVES
[MBOED]

Initiatives	1985	1990
A. Marketing pricing:		
1. Natural gas price decontrol by 1982 instead of 1985.....	0.4	0.4
2. Windfall profit tax reform.....	.0	.2
3. Tertiary recovery.....	.5	1.3
Total.....	.9	1.9

We recommend a U.S. domestic natural gas prices increase to meet world oil prices be carefully considered. Such an initiative could lead to immediate conservation. Irwin M. Stelzer, President of the National Economic Research Associates, Inc., has estimated that for every 1-percent increase in price, the response of consumers has been as follows:

[In percent]

	Electricity	Natural gas
Residential.....	0.1-1.0	0.3
Industrial.....	.5-1.2	.5-2.0

His studies regarding gasoline prices indicate that for every 1 percent increase in price, the short-term reduction in use was .2 percent and between 4–9 percent for the long term. The conservation savings of a 1-percent price increase from utilities would be approximately 140,000 boed; gas would be 85,000 boed and oil 29,400 boed or a total of 250,000 boed.

The key factor to the elasticity of price is that a price increase generates a large pool of dollars for multifaceted uses. A \$1 per gallon increase by 1990 in gasoline prices for automobiles and light trucks would provide \$90–100 billion of revenues a year. In our opinion, there is no reason for “old oil” refined to gasoline to be subjected to the current manner of “windfall profit” taxation. We would suggest that such “windfalls” be directed for reinvestment by the companies in “alternative energy sources” which would be in the public’s interest rather than be processed administratively through the government. Today about 20 companies have over 98 percent of the refinery capacity in the U.S. and their administrative costs would be much less than any public sector could establish to administer under appropriate government audit. We would also suggest that gasoline price increases be timed and integrated with the feasibility of the development of alternative energy resources rather than have prices be increased in small increments. More on this later.

Accelerated exploration and development drilling.—The domestic supply of oil originating from Federally owned lands has been decreasing especially for oil. It is recommended that additional Federal lands be made available for accelerated exploration and development drilling for both oil and gas. The reason for accelerating the gas is that the Natural Gas Act of 1978 has caused private sector drilling to shift from gas to oil because of reduced profit margins and we will soon reap the problems of this act.

There are more than adequate Federal lands onshore and offshore including Alaska that can be leased prior to 1982 for accelerated drilling. We have established as our goal a 1 mboed for oil as well as a 1 mboed for gas by 1990. Our estimated net investment for such accelerated drilling will be between \$2–\$3 billion a year. It will take about 6 to 7 years to get to the 2 mboed level. Of course, we are suggesting a policy of drilling in the near term beyond the current plans of U.S. energy industry. It will deplete our national reserves faster but provide the time and funds to bring alternative energy resources on streams before 2000.

Public risk policy alternatives.—As stated earlier we believe that when there are requirements for energy supplies at above current world market prices, use of unproven or unconventional technology, or requires investments in scaling up facilities that these should be considered as public risk projects.

Selection of new technologies

Next to liquid fuel supplies to meet transportation demands the next highest demand is for coal, oil and gas to be used in the generation of electricity. Estimates for 1990 are that 8.3 mboed will be re-

quired by utilities. Currently the projections by DOE for efficiency in the utilization of these supplies are as follows:

	1979	1985	1990
Input ¹	11.2	13.9	16.4
Output ¹	3.3	4.1	4.8
Efficiency (percent).....	29	29	29

¹ MBOED.

In short, there is no increase in efficiency projected for the next decade.

Advanced technology at selected institutions of higher learning and under development by selected companies for DOD exist to initiate an immediate program to increase boiler efficiencies from 29 percent to about 50 percent and with lower unfavorable emission of conventional coal-burning plants. Our estimate is that an R. & D. program could be successfully accomplished in the next 10 years. The cost of such a program should not exceed \$1 billion.

Now if we assume that the newer boiler technology is available by 1990 with a 50-percent efficiency factor and that the demand for utility power continues between 1990-2000 at the same rate as for 1980-90, then it would be possible to save 1.3 mboed by the year 2000. Development of such newer technology is, in our opinion, clearly a public risk program because of the capital requirements and uncertainty. An investment of \$1 billion in R. & D. could lead to a reduction in the need for energy supplies of \$19 billion per year at \$40 boed. Furthermore it would provide the United States with the capability to export more coal or its value added derivatives.

In addition to the new boiler technologies there are newer technologies of distribution efficiencies of electrical energy which could provide added savings in the decades after 1990. While we encourage the acceleration of this research we would not count on its use prior to 1990. On the other hand such advances can be incorporated in the development of electrical generation for the required new synthetic fuel plants and newer communities associated with their developments.

Synthetic fuels.—In our opinion synthetic fuel plants meet the stated public risk criteria. In order to create an effective public strategic stockpile by 1990 or earlier, it is recommended that this be accomplished by acceleration of the private sector synthetic fuel program from 1 mboed in 1990 to 3 mboed in 1990 and 12-18 mboed by 2000. Participation and dedicated cooperation of the Federal government with private industry would go a long way to accomplish these goals. A joint synfuel program will do much to minimize the capital investment and normal business risk and at the same time provide a market for the expansion of a domestic synthetic fuel program. Exxon's estimates for 1 mboed of synthetic liquids should be supplemented by a "Federal strategic stockpile program" of 2 mboed. A total demand of 3 mboed will provide a larger market than 1 mboed on the synthetic fuel liquid market. This will necessitate scaling up risks for production facilities. Furthermore it will significantly reduce U.S. vulnerability and provide time for diplomatic and military planning.

The recommended accelerated production of synthetic fuel would employ in the year 2000 over 1 million people directly and some 4-5 million indirectly. In the next 10 to 20 years a new industry could be created that directly increased employment over current levels in the mining and processing industries as well as provide for increases in the construction industries and new specialization in synthetic engineering and newer chemical derivatives. These direct employment effects would be multiplied by the industries demand for plants, machinery and other products from suppliers. This derivative demand would allow for plant expansion starting in the 1980-90 period in the current underemployed areas as well as provide the market for advanced materials, special application designs, photosynthesis, supercold technology, industrial and scientific instruments and robots and automated batch production advanced technologies for the 1980's. It could well lay the groundwork for the developments of a renewed American enterprise system that once more provides for worldwide production leadership. More important it provides the market for those products and services that create a new dimension for increased national productivity. We are confident that the technologies required for an accelerated synthetic fuel program will spill over into all sectors of the economy including international trade.

We have estimated that about 400-500 billion 1981 dollars would be required over the next 10 years. This investment can be financed by at least three means. First use private companies capital sources as much as possible.¹ It is our estimate that the 40 largest U.S. energy companies could provide at least 50 percent of such capital expenditures from internal sources. Second utilize the Energy Security Corporation resources. Third provide for a tax policy that allows for an investment tax credit of 15 percent plus another 15 percent for the development of a synthetic industry as well as the renewable energy resources industry to be discussed later. Also we would suggest that if there be an increase in the price of gasoline and these funds should be directed to be used for synthetic fuel development.

As noted earlier a \$1 per gallon increase in price would provide at least \$90 billion a year. This would provide twice our projected needs which indicates that there is no need to increase the price of gasoline \$1 in one step. What we do recommend is that the increase in price be such as to establish fairly quickly that relative prices have to change as the economy grows through development of new synthetic fuel industry and that the higher prices provide for a basic market clearing economic equilibrium in which supply equals demand.²

Furthermore when a \$1 per gallon price increase does become effective then U.S. domestic prices will still be below world market price. It is our belief that the American public could understand and accept a price increase if it builds a new industry and provides a mechanism to

¹ In this regard Exxon has indicated that they could provide their own capital for the synthetic fuel production if it were developed over 30 years.

² For further details see "New Approaches to Economic Problems" in The Institute for Constructive Capitalism. Graduate School of Business, University of Texas at Austin research report "Texas Business, Society and The Economy," Dec. 10, 1980.

fight inflation and unemployment as well as reduce our vulnerability and dependence on foreign imports.

The accelerated synthetic fuel industry would provide for additional growth and improvements through new population centers in the Rocky Mountain Regions, Appalachia, Midwest and Southern United States. There could well be over 100 such new population centers constituting a total of 4-5 million persons. These centers will provide a realistic requirement for the development of housing, school systems, health care facilities, public services, recreation and leisure, commercial and other needs. This formidable challenge is manageable and we believe can be met within a two-decade framework. Our major reason for this belief is that much of the required infrastructure will provide unprecedented opportunities in the "small business" sector. Small business has already served as an effective mechanism to provide employment for all segments of the population in a timely manner in the past and can again meet the nation's future needs.

The critical dimensions to the accelerated development of the synthetic fuel industry are those concerned with Federal land leases, government approvals especially for environmental and community impact statements, water supply and transportation systems. These matters generally are solvable by realistic policies, legislation, regulation and coordination of the responsible agencies at the local, state and federal levels. The more that these approvals can be accomplished in concert rather than in a step by step process the sooner we can expect it to be cost effective. In terms of the economics Exxon has stated in their 1980 report "The Role of Synthetic Fuels in the United States Energy Future," that "shale oil now appears to be economically competitive with imported crude oil"; "liquids from coal are economically sensitive to the revenue the producer realizes from sale of the co-produced SNG (synthetic natural gas)".³

"It appears financially and physically feasible to bring the additional water needed . . . at a resulting increase in costs of about 1 percent. As a side benefit, the transportation system also could provide water for agricultural, municipal and other uses."⁴

Renewable energy resources.—The use of renewable energy resources can be categorized as those which convert renewable energy inputs to alcohol (ethanol and methanol) as well as to electricity for distribution from hydro, geothermal, wind, solar, ocean and photovoltaics to end users. The reason for renewable energy resources to be included in the public risk section is that the resultant energy may require prices higher than current world energy price, they may depend on unconventional technology, the investments required for scaling up facilities are at risk. We know that some of these alternatives may not survive in the long run if relative energy prices were to remain stable. On the other hand the renewable resources do provide substantial energy supplies in a shorter period of time than synthetic fuels and the quantities they provide can have a significant impact in meeting the mix of energy supply by consuming sector.

The renewable resources area which we believe has not been appropriately considered is in the commodity renewable energy resources.

³ Table A. above.

⁴ P. 10, Exxon, "The Role of Synthetic Fuels in the United States Energy Future."

The commodity renewable resources include: (1) conventional agricultural crops (e.g., grains, sugar cane) and (2) unconventional agricultural products, e.g., cat tails, Jerusalem artichokes, cellulosic materials. These commodities are or can be used to produce chemical fuels such as ethanol, methanol, butanol, oils, distillers grain, and other chemical derivatives that are then used as energy liquids for fuel, industrial chemical feedstock and animal feeds. The common myths are that these renewable resources are primarily associated with gasohol and that their use is economically limited because of the high energy costs associated with the current production of alcohol from high priced grain. We believe that these commodity renewable resources when coupled with other renewable sources such as geothermal or cogeneration and scaled up plants will be an important economic energy supply source by 1990 and could well be produced at competitive costs and be a continuing industry.

Energy supply from commodity renewable sources are not included in the energy supply sources in Tables A, B, C, or D. The DOE policy and evaluation study "Reducing U.S. Oil Vulnerability Energy Policy for the 1980's" November 10, 1980, estimated that this area could provide 1 mboed by 1985 and 1.3 mboed by 1990. Our investment for renewable commodities value added area ranges from about \$30-45 billion on the next decade and this estimate could probably produce more than 1.3 mboed and perhaps as much as 2.5-3.0 mboed.

The production and evaluation funds are available from the established Energy Security Act. The DOE and USDA have a number of research and development projects underway. This area is more dependent on the production expansion of independent energy and agribusiness firms. On the other hand, the multinational energy corporations will be more involved with its purchase, marketing and distribution. This area will encourage the development of a renewed as well as new industrial agribusinesses in all geographical sections of the United States. Further new facilities will require much of the same materials and supplies that are required for the synthetic fuels industry. Once more they will utilize the same technologies of the 1980's enumerated in the synfuel section. The increase in productivity for the renewable commodities industry will depend on emerging technologies such as biotechnology, genetic engineering, genetic selection, electrostatic spraying, waste management, and automated continuous processing. Renewable commodities as an energy supply source is a newer form of industrial agribusiness. Its integration from seed selection to the final products and uses is an exciting new area of economics and business on a national and international scale. It will require new national policies that capture the portions required for domestic energy supplies while still providing appropriate exports of food for human and animal consumption. The value added components to commodities is the key to consideration for national policy in both the public and private sectors.

The other renewable resources consisting of hydroelectric geothermal, solar, wind, ocean, and industrial process heat have been estimated by the DOE to supply about 2.1 mboed by 1990. Their estimate is used for the remainder of this study.

Nuclear.—The reason for including nuclear energy in the public risk sector is that it does involve conflicts of special interest groups

within the society as well as in the government, technological problems and safety considerations. The fear of the unknown consequences is so awesome that the projection by Fisher and Exxon made no allowances for the 1990's other than to complete the plants under construction.

Our analysis indicates that the public opinion towards nuclear energy is changing in the direction of acceptability. We therefore recommend that Rostow's increase of 1 mboed over Fisher-Exxon may even be low. Our best estimate for the required investment in nuclear energy resources is approximately \$200-210 billion to produce Rostow's estimated increase to 5 mboed.

Summary.—It is now possible to review the overall impacts of recommended initiatives for the new administration in terms of their impact on the energy supply and demand for 1990.

Table F shows our best likely estimates of the U.S. Energy Supply for 1990 compared to Exxon estimates.

TABLE F.—COMPARATIVE STUDY: BEST LIKELY ESTIMATES OF THE U.S. ENERGY SUPPLY FOR 1990

[MBOED]

	Estimates		
	Exxon	Incremental	Total
Total, U.S. energy production.....	32.4	10.0	42.4
Oil.....	6.1	2.5	8.6
Gas.....	7.6	1.4	9.0
Synthetics.....	1.6	3.0	4.6
Renewable commodities.....		1.3	1.3
Subtotal.....	15.3	8.2	23.5
Coal.....	11.3		11.3
Nuclear.....	4.0	1.0	5.0
Hydro, geothermal and other.....	1.8	.8	2.6
Subtotal.....	17.1	1.8	18.9
Total U.S. imports.....	10.6		5.6
Subtotal.....	43.0		48.0
Less demands for—			
Export goal.....		(3.0)	(3.0)
Stockpiling goal.....		(2.0)	(2.0)
Net, U.S. energy production.....	43.0	5.0	43.0

Table G shows our best likely energy demand by consuming sector for 1990.

TABLE G.—Best likely energy demands by consuming sector for 1990

[MBOED]

Consuming sector:	
Transportation.....	9.4
Residential.....	15.1
Industrial.....	14.8
Nonenergy (feedstocks).....	3.7
Export.....	3.0
Stockpiling.....	2.0
Total.....	48.0

The incremental investments for our estimates of the additional 10 mboed over Exxon as well as our recommended Source of Investment by public and private sectors are shown in Table H.

TABLE H.—ESTIMATED INVESTMENT FOR ENERGY INITIATIVES AND ATTAINABLE ALTERNATIVES FOR 1990
[In billions of dollars]

Energy source: Initiative or alternative recommended	Total estimated investment	Source of investment dollars		
		Federal	State and local	Private
Oil:				
Market pricing.....				
Accelerated drilling.....	\$10-\$15	¹ (\$2)		
Gas: Accelerated drilling.....	10- 15			
Synthetic: Accelerated synthetic program.....	400-500	² 5	\$2-\$3	³ \$396-\$494
Renewable commodities.....	30- 45	¹ 18-25	2-5	10- 15
Nuclear.....	200-210		10-20	190
Hydro, geothermal other.....	9- 10	¹ (6)	1- 2	2
New boiler R. & D.....	1	1		
Gross investments.....	660-795	17-24	15-30	598-701

¹ Represents Government guarantees.

² Estimated lease revenue to Federal Government.

³ To be funded by special investment tax credit and directed investment by fuel price increases and by Energy Security Corporation.

Conclusions.—The analysis performed makes it clear that it is possible to evolve a national energy policy that is consistent with the American economic system, and that will reduce our excessive dependence on import of oil and unnecessary government involvement and interference in domestic energy production. It also shows that the United States will need to import only about 5.6 mboed of oil and can export 3 mboed of energy equivalent. The export depending on value added could improve our balance of payments. The study supports a U.S. policy that diversifies our dependence on oil imports from a few nations to a more balance base of nations. At the same time the United States can keep its commitments to export U.S. energy supplies to our allies. The national security and vulnerability is improved to a level which will permit essential independence at any time of national crisis.

These initiatives and recommendations contained herein show a realistic potential to return to a renewed domestic agri-industrial infrastructure that produces a stable economy, reduces unemployment and inflation based on developing and expanding domestic energy alternatives and value added exports, utilization of appropriate newer technologies and productivity and where abnormal risk factors can be appropriately shared by the economy as a whole.

STATEMENT OF JAMES F. SMITH, CHIEF ECONOMIST,
UNION CARBIDE CORP.

PROPOSALS FOR REDUCING THE RATE OF INFLATION IN THE 1980'S

Inflation has been "Public Energy No. 1" in the United States for at least a decade now and we, the public, have been steadily losing the battle. We are now dealing with a "core" or underlying rate of inflation that is the highest in our peacetime history.

NOTE.—The analysis presented in this paper is solely that of the author and does not reflect the position of the officers, directors, or other employees of Union Carbide Corp.

Does this mean that the situation is all but hopeless, and we should learn to accommodate ourselves to living in a world in which prices rise by a larger amount year after year? Absolutely not! But it does mean that in order to turn the momentum around and return the United States to a climate of stable prices will take very strong political willpower over the next few years, and especially in the first few months of the Reagan Administration. The following program could steadily reduce the rate of inflation during the 1980s, without requiring a drastic price to be paid in terms of lost output and unacceptable increases in unemployment.

The first legislative action the new President and Congress should initiate is a bill that would put the entire regulatory apparatus of the Federal Government on "Hold" for 1981 with respect to the issuance of any new regulations or changes in existing regulations that would increase costs in the economy, regardless of the timetables in existing laws for the issuance of such regulations. Such a bill could well also include a mechanism for establishing a task force to review existing regulations with emphasis on examining the continuing need for some of them, for ways to reduce their costliness while achieving the same benefits, and for developing a regulatory budget to set limits on the total costs that regulations could impose on the economy during any particular year.

The next legislative action should be on a tax cut or, to be more accurate, a reduction in the increased taxation current law would otherwise produce in 1981. Such a tax cut should heavily emphasize supply side incentives. Elements of the tax cut should include:

(1) A significant stimulus to business investment in plant and equipment through sharply increased depreciation allowances and through stronger investment tax credit incentives.

(2) A strong stimulus to exports through tax incentives, including an elimination or dramatic reduction of the U.S. taxes levied on income earned by individuals and businesses in other countries.

(3) A large reduction in the capital gains taxes levied on individuals and corporations and perhaps their elimination, as is the case in many foreign countries.

(4) A reduction of the ceiling rate on personal income from sources other than wages and salaries and perhaps a total elimination of different tax rates for different types of personal income.

The next proposed action may appear somewhat perverse, as it would have a significant inflationary impact in the short run, although its long run consequences for reducing inflation would be very large. That action would be to accelerate into early 1981 the decontrol of crude oil prices scheduled for October as well as full decontrol of natural gas prices as early as possible in 1981. This development, coupled with the investment incentives in the tax cut proposed above, would lead to faster adjustments by business to the realities of the energy situation and thus to greater investment in more energy efficient processes throughout the economy.

The next proposed action would be development of a "reindustrialization" program that would depend primarily on free market in-

centives to provide stimuli for labor and capital to be productively employed in depressed areas of the country. Such a program should not involve a board to pick "winners", but rather should provide such incentives as lower taxes, fewer regulatory constraints, and lower minimum wages to spur investment in areas with the greatest needs.

The last legislative action should be a concentrated assault on the large accretion of laws that prevent market forces from operating to produce the full benefits of a freely competitive system. Any good microeconomist can compile a lengthy list of these impediments, which would include such laws as the Davis-Bacon Act, Jones Act, McFadden Act, minimum wage laws, agricultural marketing orders, orderly marketing agreements, many tariffs, and so on. The important political strategy is to include all of these things in one omnibus "Structural Anti-Inflation Act of 1981" so that the public interest in reducing inflation will have an opportunity to prevail over the large array of special interests that would be affected by such legislation.

These five pieces of proposed legislation, if enacted, would make a powerful contribution toward reducing inflation in the United States during the coming decade. The rest of the proposals could be accomplished within the Executive Branch of government.

The first and most important of these is for the new Administration to announce that they support the efforts of the Federal Reserve Board to pursue appropriate growth targets for the monetary aggregates, and to support this announcement with whatever actions are needed to make all observers understand that the Administration means what it says. Coupled with this should be a strong effort to review the 1981 and 1982 Budgets with an eye toward restraining spending in every possible area. The new Administration should make every effort to make their revised 1982 Budget come in with expenditure totals in current dollars that are no higher than those expected for the final results in fiscal 1981. This would not, of course, result in a balanced budget, but it would win enormous credibility with the public that the Administration was serious about getting inflation under control.

The second important Administration action would be to give strong support to the legislative package outlined above. This would include maintaining a close liaison with all of the appropriate committees in the Congress.

The final Administration action that is included in my proposals would be development of an effective organization to stimulate exports of American goods and services. This would involve consolidating several parts of other departments and agencies into a single agency.

This package of proposals is brief. It will be difficult to implement, but it is well within the realm of the possible. Putting the package into practice would greatly improve the outlook for inflation in America.

[News Release, National Association of Business Economists, Sept. 18, 1979]

FEDERAL LEGISLATION SPURS INFLATION, ECONOMISTS PANEL STUDY SHOWS

In 1978 Congress passed five times as many bills that spurred inflation as those that helped control it, according to a report released today by the National Association of Business Economists. The N.A.B.E. is a professional organization of more than 3,000 members from business, government and academia.

The report, written by a panel of leading economists which comprises the Legislative Review Committee of the N.A.B.E., said that of the 387 nonappropriations bills passed during the 95th Congress' second session, 140 were moderately or significantly inflationary while only 28 helped cool the rise in prices. The remainder were viewed as having little inflationary impact.

"Most of the bills judged to be inflationary were not by themselves very significant," said Dr. George McKinney, senior vice president of Irving Trust Company, the panel's chairman. "But taken together, the impact of these bills will be felt in the pocketbook of every American consumer."

Other panel members were J. Dewey Daane, banking professor, Vanderbilt University; Jane R. Lockshin, director of corporate business analysis. The Singer Company; Roy E. Moor, director of economic research, A. G. Becker Inc.; Arthur M. Okun, senior fellow, The Brookings Institution; Rudolph G. Penner, director of tax policy studies, American Enterprise Institute for Public Policy Research; and James F. Smith, director of credit research, Sears, Roebuck and Co.

Eight of the bills passed were considered to be "significantly" inflationary. These were:

The Emergency Farm Bill, Public Law 95-279, which, among other things, raised permissible target prices paid farmers for diverting land from production;

Public Law 95-334, which expanded the federal credit assistance program for farmers and other rural residents;

Public Law—95-356, the \$4 billion military construction bill;

Public Law 95-483, which sharply limited competition from vessels owned or controlled by the Soviet government in shipping between the United States and other nations;

Public Law 95-523, the Humphrey-Hawkins Full Employment Act, which set as a national goal a 4-percent unemployment rate by 1983;

Public Law 95-588, a bill that increased veterans' pensions;

Public Law 95-599, which authorized \$54 billion in federal aid for highways and mass transit during the next 4 years; and

Public Law 95-600, the bill that reduced taxes in 1979 by \$19 billion.

The only bill that was seen as significantly deflationary was the Airline Deregulation Act, which phases out federal controls over a seven-year period, the panel reported.

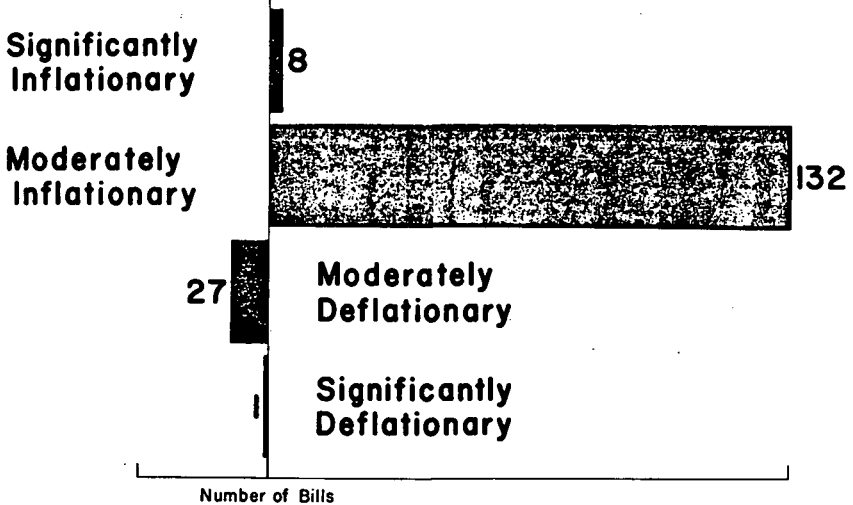
Of 23 appropriations bills adopted during the same session, 22 were judged by the economists to be inflationary. The sole deflationary appropriations bill was the rescission of \$463 million appropriated in 1977 to build two B-1 bombers.

Dr. McKinney noted that in addition to reviewing the 410 individual bills passed by Congress last year, the panel judged both Congressional budget resolutions to be significantly inflationary. The first budget resolution, passed by the Congress in May 1978, approved fiscal 1979 budget outlays of nearly \$499 billion with revenues of nearly \$448 billion, a deficit of about \$51 billion. The second resolution cut budget outlays to \$490 billion, lowered revenue estimates to about \$447 billion, and projected a deficit of just over \$42 billion.

Dr. McKinney pointed out that the sole criterion used in evaluating the laws was the degree of inflation expected to result from passage. No consideration was given to other potentially harmful or beneficial effects of the laws.

In judging the bills, each economist rated the bill on an 11-point scale, with the mid-point indicating "no inflationary impact." The individual ratings for each bill were then averaged. Dr. McKinney said no important statistical problems were encountered, and in most cases there was a general consensus in the group. However, the opinions expressed in the report are those of the committee and should not be interpreted as representing those of the N.A.B.E. nor of its membership.

Inflationary Impact
Nonappropriations Bills
95th Congress 2nd Session



THE INFLATIONARY IMPACT OF LEGISLATION PASSED BY THE SECOND SESSION OF THE NINETY-FIFTH CONGRESS¹

SUMMARY OF FINDINGS

This study of Federal Legislation passed by the Second Session of the Ninety-Fifth Congress was prepared by the Legislative Review Committee of the National Association of Business Economists. The purpose of the study was to evaluate the feasibility of classifying this legislation with respect to its inflationary potential, and of tabulating the voting records of individual Congressmen thereon. It was felt that the committee's professional judgments (all members are well qualified economists) would provide a means of evaluating the inflationary implications of Congressional actions.

Committee members considered every bill passed by the Congress, and qualitatively evaluated and rated its inflationary potential. Consideration was given to such factors as the impact of the legislation on incomes, supplies, prices, or wages whether direct or indirect subsidies were involved; and whether the legislation might alter incentives, influence competition, or otherwise affect economic efficiency. No consideration was given to factors other than inflation, whether favorable or unfavorable.

The tabulation of the ratings shows that the Congress passed 140 inflationary bills last year, but only 28 with a deflationary impact. These figures do not include appropriations bills, all but one of which were judged to be inflationary in one degree or another.

Rating of all legislation other than appropriations bills are summarized in Table 1. In all, 387 such acts were passed. Eight were significantly inflationary and 132 moderately inflationary. On the other side, one measure was rated significantly deflationary and 27 moderately deflationary.

One significant point shows up in Table 1—the sheer number of the “moderately inflationary” bills passed. These 132 bills, more than one of every three bills passed, indicate that a significant part of the inflationary impact of legis-

¹ Prepared by the Legislative Review Committee, National Association of Business Economists.

lation comes in the nickel-and-dime category. None of them felt to be significant by itself, the impact of all of these bills together is important.

TABLE 1.—*Inflationary impact of bills passed (excluding appropriations bills), 95th Congress, 2d session*

Significantly inflationary-----	8
Moderately inflationary-----	132
No inflationary impact-----	219
Moderately deflationary-----	27
Significantly deflationary-----	1
Total -----	387

The individual bills falling in the various classifications (except those rated "no impact") are listed in Table 2. Eight bills fell under the heading of "significantly inflationary." These were Public Laws 279, 334, 356, 483, 523, 588, 599, and 600. Public Law 95-279, the Emergency Farm Bill, raised permissible target prices to be paid farmers for diverting land from production, boosted the cotton loan level, permitted land to be classed as set-aside (diverted from production) while being used to produce crops for gasohol, and raised the limit on the Commodity Credit Corporation's borrowing authority. Public Law 95-334 expanded federal credit assistance programs for farmers, ranchers and rural communities and businesses. Public Law 95-356, the military construction bill, authorized \$4 billion for military construction after considerable political maneuvering over military base closings. Public Law 95-483 sharply limited competition from vessels owned or controlled by the Soviet government in shipping between the United States and other nations. Public Law 95-523, originally the Humphrey-Hawkins Full Employment Act, set various national objectives and set up politically sensitive routines for their review. The central goal is the achievement of a 4-percent unemployment rate by 1983. The bill also targets a 3-percent inflation rate by 1983 and 0 percent by 1988. Public Law 95-588 increased some veterans' pensions, including a boost of as much as 50 percent in maximum pensions payable to able-bodied veterans. Public Law 95-599 authorized \$54 billion in federal aid for highways and mass transit over the next 4 years. Public Law 95-600, the Revenue Act of 1978, reduced taxes in 1979 by \$18.7 billion.

Table 2 also lists the deflationary non-appropriations bills passed. The only bill rated "significantly deflationary" was Public Law 95-504, the Airline Deregulation Act, which adds to competition in the airline industry by phasing out federal controls over a seven-year period and abolishes the Civil Aeronautics Board unless Congress subsequently acts to retain it.

The committee also rated the 23 appropriations bills passed by the Congress. These are summarized in Table 3. All but one were rated as inflationary in greater or lesser degree. Five were rated "significantly inflationary," and 17 "moderately inflationary." One was rated as "moderately deflationary" and none as "significantly deflationary."

Appropriations bills and their ratings are listed in Table 4. Five appropriations bills were given the rating of "significantly inflationary". These were Public Laws 355, 392, 457, 465, and 480. Public Law 95-355 provided \$6.8 billion for supplemental appropriations, of which \$3.2 billion went for raises for federal employees. Public Law 95-392 was the \$67.9 billion appropriation for the Department of Housing and Urban Development (HUD), the Veterans Administration (VA) and 16 other federal agencies. It included \$1.3 billion in new contract authority for low- and moderate-income housing, appropriated \$3.75 billion for community development block grants, and \$400 million for urban development action grants. It also included \$18.3 billion for the VA, \$5.2 billion for the Environmental Protection Agency (EPA), \$4.3 billion for the National Aeronautics and Space Administration (NASA), and \$6.9 billion for revenue sharing and other payments to state and local governments. Public Law 95-457 provided appropriations for the defense establishment. Public Law 95-465 made appropriations for the Department of Interior and related agencies. Public Law 95-480 provided appropriations for the Departments of Labor and Health, Education and Welfare.

The only appropriations bill rated as deflationary, Public Law 95-240, was found to be "moderately deflationary". The highlight of Public Law 95-240 was the rescission of \$463 million appropriated in 1977 to build two B-1 bombers. The bill also contained \$7.8 million of supplemental appropriations for several Departments. No appropriations bills were rated as "significantly deflationary".

In addition to reviewing 410 individual bills that became law last year, the committee rated the First and Second concurrent Budget Resolutions. Both were judged to be "significantly inflationary". The First Budget Resolution, which was passed by the Congress in May 1978, approved fiscal 1979 budget outlays of \$498.8 billion, revenues of \$447.9 billion, and a deficit of \$50.9 billion. The Second Resolution cut budget outlays to \$489.5 billion and lowered revenue estimates to \$447.2 billion, leaving a budgeted deficit of \$42.3 billion.

The committee did not tabulate the individual voting records of Congressmen on these measures. However, votes on bills passed are a matter of public record and can easily be tabulated, using the data in Tables 2 and 4 and the rating scale used by the committee.

TABLE 2.—*Inflationary impact of bills passed (excluding appropriations bills), 95th Congress, 2d session*

Significantly inflationary :

- Public Law 279—Emergency Farm Bill.
- Public Law 334—Farm Credit.
- Public Law 356—Military Construction Authorization.
- Public Law 483—Ocean Shipping.
- Public Law 523—Full Employment (Humphrey-Hawkins).
- Public Law 588—Veterans' Pensions.
- Public Law 599—Highway Programs.
- Public Law 600—Revenue Act of 1978.

Moderately inflationary :

- Public Law 226—1976-77 Drought.
- Public Law 227—Excise Tax on Coal.
- Public Law 234—Utility Poles.
- Public Law 236—Uranium Radiation.
- Public Law 237—Wilderness Areas.
- Public Law 239—Black Lung.
- Public Law 242—Nuclear Proliferation.
- Public Law 248—Appalachian Trial.
- Public Law 249—Wilderness Area.
- Public Law 250—Redwood Park.
- Public Law 251—Administrative Law Judges.
- Public Law 252—Debt Limit.
- Public Law 257—Fishing Vessels.
- Public Law 258—Farm Payments.
- Public Law 259—Folklife Center.
- Public Law 268—Overseas Private Investment Corporation.
- Public Law 273—Ocean Pollution.
- Public Law 289—National Forests.
- Public Law 290—Lowell Park.
- Public Law 291—Social Services.
- Public Law 293—Administrative Conference.
- Public Law 295—Pacific Fisheries.
- Public Law 297—Petroleum Marketing.
- Public Law 298—Maritime Programs.
- Public Law 299—Wildlife Refuges.
- Public Law 300—Environmental Quality.
- Public Law 306—Forest Resources.
- Public Law 307—Forest Research.
- Public Law 310—Wenatchee Forest.
- Public Law 315—Solar Energy.
- Public Law 316—Marine Mammals.
- Public Law 318—Survivor Annuities.
- Public Law 319—Consumer Safety Rules.
- Public Law 320—Federal Reserve Audits.
- Public Law 331—Peace Corps.
- Public Law 333—Public Debt Limit.
- Public Law 336—Drug Abuse.
- Public Law 339—N.Y.C. Aid.
- Public Law 343—Surface Mining.

TABLE 2.—*Inflationary impact of bills passed*—Continued

Moderately inflationary—Continued

- Public Law 344—Chattahoochee Park.
- Public Law 351—Consumers Cooperative Bank.
- Public Law 361—Papago Indian Reservation.
- Public Law 366—Divorcee Pensions.
- Public Law 368—Uniform Health Benefits.
- Public Law 369—Foreign Banks.
- Public Law 373—Outer Continental Shelf.
- Public Law 376—Fishermen's Insurance.
- Public Law 381—Foreign Investments.
- Public Law 384—Foreign Military Aid.
- Public Law 395—R.I. Indian Claims.
- Public Law 397—Servicemen's Benefits.
- Public Law 401—NASA.
- Public Law 402—Farm Interest Rates.
- Public Law 404—Water Resources.
- Public Law 409—Livestock Prices.
- Public Law 410—Customs.
- Public Law 415—N.Y.C. Loan.
- Public Law 420—Conservation.
- Public Law 421—Amtrak.
- Public Law 424—Foreign Economic Aid.
- Public Law 425—SEC Funds.
- Public Law 426—State Department Funds.
- Public Law 427—Fringe Benefits.
- Public Law 428—Sea Grant Colleges.
- Public Law 435—IMF.
- Public Law 443—Loans to Fishermen.
- Public Law 444—Civil Rights Commission.
- Public Law 445—Livestock Slaughter.
- Public Law 450—Wilderness Areas.
- Public Law 456—Rate Discrimination.
- Public Law 458—Excise Tax on Trucks, etc.
- Public Law 460—Farms Sold to Foreigners.
- Public Law 461—Drug Abuse.
- Public Law 469—Wildlife Refuges.
- Public Law 471—Indian Colleges.
- Public Law 472—Tax Court Retirees.
- Public Law 473—Interstate Commerce.
- Public Law 474—Vessel Safety.
- Public Law 476—Veterans Housing.
- Public Law 477—EPA Research.
- Public Law 478—Older Americans.
- Public Law 479—Veterans Disability.
- Public Law 485—Military Procurement.
- Public Law 491—Federal Information Centers.
- Public Law 492—Girl Scout Transportation.
- Public Law 494—Wilderness Preservation.
- Public Law 495—Canoe Areas.
- Public Law 500—Tariffs on Machinery.
- Public Law 501—Agricultural Exports.
- Public Law 502—Waterway User Tax.
- Public Law 505—Great Lakes Vessels.
- Public Law 506—Replacement Costs.
- Public Law 507—Small Business Administration.
- Public Law 512—Cost-of-living Adjustment.
- Public Law 514—Rangelands.
- Public Law 516—Customs Duties.
- Public Law 520—Philippine Veterans.
- Public Law 521—Ethics in Government.
- Public Law 524—CETA.
- Public Law 534—Federal Reserve Purchases.
- Public Law 537—Federal Drug Offenders.

TABLE 2.—*Inflationary impact of bills passed*—Continued

Moderately inflationary—Continued

- Public Law 541—Antartic Conservation.
- Public Law 546—Wilderness and Forests.
- Public Law 555—Pregnancy Rights.
- Public Law 557—Housing and Community Development.
- Public Law 559—Health Maintenance Organizations.
- Public Law 561—Education.
- Public Law 562—Perishable Agricultural Commodities.
- Public Law 565—U.S. Railway Association.
- Public Law 566—Student Aid.
- Public Law 568—Economic Opportunity Act.
- Public Law 571—Chippewa Indians.
- Public Law 572—Jurors' Fees.
- Public Law 576—Water Pollution.
- Public Law 581—Marine Retired Pay.
- Public Law 584—Land in Territories.
- Public Law 602—Rehabilitation Act.
- Public Law 605—Toiyabe Forest.
- Public Law 607—Railroad Rehabilitation.
- Public Law 611—U.S. Railway Association.
- Public Law 613—Family Planning.
- Public Law 614—Cibola National Forest.
- Public Law 615—Tax Reform Act of 1976.
- Public Law 617—Energy.
- Public Law 621—Energy.
- Public Law 623—Health Services.
- Public Law 625—National Parks and Recreation Act.
- Public Law 626—Public Health.
- Public Law 627—Food Programs.
- Public Law 629—Pennsylvania Avenue Development Corp.
- Public Law 630—Financial Institutions Act.
- Public Law 631—Consumer Products Safety.

Moderately deflationary :

- Public Law 238—Energy Research.
- Public Law 245—Air Cargo.
- Public Law 254—Rescind Budget Authorities.
- Public Law 256—Retirement Age.
- Public Law 283—Investor Protection.
- Public Law 303—Duty on Levulose.
- Public Law 321—Grazing Fees.
- Public Law 342—Oil and Gas Leases.
- Public Law 367—National Climate Program.
- Public Law 378—Federal Records Council.
- Public Law 417—Adopted Children.
- Public Law 437—Flexible Hours.
- Public Law 454—Civil Service Reform.
- Public Law 475—Federal Maritime Commission.
- Public Law 486—Additional Judges.
- Public Law 489—Navigation Project.
- Public Law 490—Sand Island, Hawaii.
- Public Law 508—Duties on Metals.
- Public Law 554—Coal Leases.
- Public Law 585—Performance Bonds.
- Public Law 590—Solar Energy.
- Public Law 592—Guayule Rubber.
- Public Law 610—Military Unions.
- Public Law 618—Energy.
- Public Law 619—Energy.
- Public Law 620—Energy.
- Public Law 632—Endangered Species.

Significantly deflationary :

- Public Law 504—Airline Deregulation.

TABLE 3.—*Inflationary impact of appropriations bills passed, 95th Congress, 2d session*

Significantly inflationary-----	5
Moderately inflationary-----	17
No Inflationary impact-----	0
Moderately deflationary-----	1
Significantly deflationary-----	0
Total-----	23

TABLE 4.—*Inflationary impact of appropriations bills passed, 95th Congress, 2d session*

Significantly inflationary :
Public Law 355—Supplemental Appropriation.
Public Law 392—Department of HUD.
Public Law 457—Defense Appropriation.
Public Law 465—Interior Appropriation.
Public Law 480—Labor and HEW Appropriation.
Moderately inflationary :
Public Law 246—Energy Supplemental Appropriation.
Public Law 255—Disaster Supplemental Appropriation.
Public Law 282—U.S. Railway Supplemental Appropriation.
Public Law 284—SBA Supplemental Appropriation.
Public Law 288—Washington, D.C. 1978 Appropriation.
Public Law 301—Agriculture Supplemental Appropriation.
Public Law 330—Agriculture Supplemental Appropriation.
Public Law 332—Black Lung Supplemental Appropriation.
Public Law 335—Transportation Department Appropriation.
Public Law 373—Washington, D.C. 1979 Appropriation.
Public Law 374—Military Construction Appropriation.
Public Law 391—Legislative Branch Appropriation.
Public Law 429—Treasury, P.O., Executive Appropriation.
Public Law 431—State, Justice, Commerce Appropriation.
Public Law 448—Agriculture Appropriation.
Public Law 481—Foreign Aid Appropriation.
Public Law 482—Continuing Appropriation 1979.
Moderately deflationary :
Public Law 240—Supplemental Appropriation.

THE COMMITTEE, THE ASSIGNMENT, AND THE METHODOLOGY

At the annual meeting in September, 1978, the members of the National Association of Business Economists voted to appoint a committee to study the feasibility of classifying Congressional legislation passed during the preceding 12 months with respect to its inflationary implications for the economy, and to tabulate and report the overall voting records of each Congressman on that legislation. The work of that Legislative Review Committee of the NABE is summarized in this report.

Committee members are not a cross section of NABE members, although they were carefully chosen to draw on different employment backgrounds and varied political viewpoints. Each member has experience in one or another aspect of public policy research. Each is well qualified as a professional research economist. Members of the committee are:

J. Dewey Daane, Professor of Banking, Vanderbilt University, and Chairman of the International Policy Committee, Tennessee Valley Bancorp, Inc. Former member, Board of Governors of the Federal Reserve System; former Assistant to the Secretary of the Treasury.

Jane R. Lockshin, Director of Corporate Business Analysis, The Singer Company. Council member, National Association of Business Economists.

Roy E. Moor, Director of Economic Research, A. G. Becker, Inc. Former President, National Association of Business Economists. Fellow, National Association of Business Economists.

Arthur M. Okun, Senior Fellow, The Brookings Institution. Former Chairman, Council of Economic Advisers. Fellow, National Association of Business Economists.

Rudolph G. Penner, Director of Tax Policy Studies, American Enterprise Institute for Public Policy Research. Former Assistant Director for Economic Policy, Office of Management and Budget; former Deputy Assistant Secretary for Economic Affairs, Department of Housing and Urban Development.

James F. Smith, Director of Credit Research, Sears, Roebuck and Co. Former Senior Economist, Board of Governors of the Federal Reserve System.

Chairman: George W. McKinney, Jr., Senior Vice President and Chairman of the Economic Advisory Committee, Irving Trust Company. Former President, National Association of Business Economists. Fellow, National Association of Business Economists.

Serving in an advisory capacity to the Committee were L. Thomas Block, Vice President and Director of Government Relations, Irving Trust Company, and Eleanor M. Johnson, Assistant Vice President and fiscal economist, Irving Trust Company.

In carrying out its first task (to study the feasibility of classifying Congressional legislation during the preceding twelve months with respect to its inflationary implications for the economy), the Committee reviewed all laws passed by the second session of the 95th Congress, including appropriations bills, and the First and Second Concurrent Budget Resolutions. The sole criterion used in evaluating the laws was the degree of inflation expected to result from passage of the legislation. No consideration was given to other potentially harmful effects of the laws, nor to potential benefits. Thus the Committee addressed only the question of the extent to which inflation is likely to be caused by Federal legislation passed during 1978.

Both long- and short-run inflationary implications were considered. It was recognized that there is some trade-off between the harm done by inflation today and that done by the same degree of inflation at some future date. Essentially this problem is one of discounting the future disutility of inflation, much in the same way that bond markets discount the value of a future flow of income in order to arrive at the present value of an investment. Each member of the Committee applied his own professional judgment in deciding on the appropriate weight to give to present and to future inflationary implications of specific legislation. Similarly, each member used his own professional judgment in defining and evaluating any qualitative attributes he felt should be attached to each bill (as, for example, in the case of legislation which might give impetus toward subsequent actions that would in turn have further inflationary or deflationary implications).

Each member rated those acts of Congress, felt to have some potential for inflation or deflation, on a scale of +5 (most inflationary), through 0 (no impact) to -5 (most deflationary). (Members abstained when they felt they could not determine the potential impact.) The individual ratings were then averaged to come up with an overall rating. No piece of legislation averaged in the +5 or -5 category, although some individual members rated specific acts in these categories.

No important statistical problems were encountered. In general, there was a reasonable cluster of ratings that seemed to reflect the majority view rather accurately. There were some notable disagreements. For example, the ratings on the Humphrey-Hawkins bill ranged from 0 to 5, and averaged 2.3. One committee member rated as inflationary just over three-fifths of those bills which he felt had some inflationary or deflationary potential; two members rated just over four-fifths as inflationary; the other four fell between these limits. Even in the case of those laws where there was noticeable divergence in the ratings, the average of the individual ratings seemed to be a fair representation of the majority view. Inability to rate was not a major problem, although one member "had to use extreme self-discipline to avoid the 'not-able-to-rate' category." The vast majority were rated by all committee members; in a very few cases more than two members abstained. Even in those cases, though, there was a reasonable concentration of the ratings which were made.

Thus the committee, by actually rating the bills Congress passed in 1978, demonstrated that it is in fact feasible to "classify Congressional legislation . . . with respect to its inflationary implications for the economy," relying on the professional judgment of well-qualified research economists as the basis for such classification.

The second task of the committee was to study the feasibility of tabulating and reporting the overall voting records of each Congressman on the legislation, once each bill had been classified as to its inflationary potential. Such a tabulation is a simple mechanical problem of statistical aggregation. Votes on each bill are on record (except in the case of voice votes, which obviously cannot be tabulated) and are available to the public.

The committee did not make such a tabulation; some members felt this should not be done, on the grounds that "such ratings, whether based on environmental, labor, or any other kinds of issues, are inherently unfair because they do not reflect the complex bargaining that goes on before any vote." There was not complete agreement on this point. Another member noted that "if you're compiling a batting average for the Congressmen, you want a lot of times at bat." One member felt that 387 separate bills provided "a lot of times at bat." However, the committee noted that the tables listing the ratings provided adequate information for such a tabulation, and that such a tabulation using these tables could be undertaken by any group or individual who would take the time to do so.

We would like to thank Congressional Quarterly, Inc. for giving permission to the committee to reproduce descriptive material covering the legislation and to use the material in its study.

[News Release, National Association of Business Economists, Mar. 25, 1980]

1979 LAWS ADD TO INFLATION, SAYS PANEL OF ECONOMISTS

In 1979 Congress passed more than three times as many bills that spurred inflation as those that helped control it, according to a report released today by the National Association of Business Economists. The NABE is a professional organization of more than 3,000 members from business, government and academia.

The association's Legislative Review Committee, consisting of a panel of leading economists, found that of the 172 nonappropriations bills passed during the 96th Congress' first session, 95 were moderately or significantly inflationary while only 28 helped cool the rise in prices. The remainder were viewed as having little inflationary impact. Thus, last year Congress passed 3.4 times as many bills adding to inflation as combatting it.

"Even this disappointing record, though, represented some improvement over 1978, when a similar study showed that Congress passed five times as many inflationary as anti-inflationary bills," said Dr. George McKinney, senior vice president of Irving Trust Company, and panel chairman. "There may be reason to hope that the Congress is beginning to listen to the millions of Americans who are urgently crying for an end to the inflation.

"Most of the bills judged to be inflationary were not by themselves very significant," he said. "But taken together, these bills—along with similar measures passed in earlier years—are a principal reason why inflation is now out of hand."

Other panel members were Daniel H. Brill, consulting economist; J. Dewey Daane, banking professor, Vanderbilt University; Jane R. Lockshin, director of corporate business analysis, The Singer Company; Roy E. Moor, director of economic research, A. G. Becker, Inc.; Arthur M. Okun, senior fellow, The Brookings Institution; Rudolph G. Penner, director of tax policy studies, American Enterprise Institute for Public Policy Research; and James F. Smith, director of credit research, Sears, Roebuck and Co.

The non-appropriations bill judged to be most inflationary was Public Law 96-185, the Chrysler loan guarantee program. The significance of this bill, Dr. McKinney noted, was in its anti-competitive precedents.

Other non-appropriations bills considered to be "significantly" inflationary were:

Public Law 96-127, continuing price supports for dairy products;

Public Law 96-88, establishing a separate cabinet-level Department of Education;

Public Law 96-128, increasing disabled veterans' benefits by 9.9%; and

Public Law 96-125, authorizing \$3.8 billion of military construction.

The Congress did not pass any legislation that could be expected to contribute significantly to slowing inflation, the report said, although 28 nonappropriations bills were rated as having "moderately" counterinflationary potential.

Of the 15 appropriations bills adopted during the same session, 14 were judged by the economists to be inflationary. Five were felt to be significantly inflationary:

Public Law 96-183, appropriating funds for the Chrysler loan guarantee program;

Public Law 96-103, appropriating \$72 billion for several agencies, including \$33 billion for Housing and Urban Development and \$20 billion for the Veterans Administration;

Public Law 96-108, appropriating \$17 billion for the Agriculture Departments;

Public Law 96-126, appropriating \$30 billion for the Department of the Interior, the Department of Energy, and related programs; and

Public Law 96-154, the \$131 billion Defense Department appropriations bill.

The panel also reviewed Congressional action on the budget resolutions required by the Congressional Budget Act of 1974. Far from bringing the budget under control as that act intended, both Congressional budget resolutions were judged by the panel to be significantly inflationary.

"The resolutions authorized excessive levels of spending and inappropriately large deficits that are adding to current high rates of inflation," Dr. McKinney said. "The first budget resolution, passed by the Congress in May 1979, approved fiscal 1980 budget outlays of \$532 billion, revenues of \$509 billion, and a \$23 billion deficit. The second resolution, passed on November 28, boosted budget outlays to \$548 billion, raised revenue estimates to about \$518 billion, and projected a fiscal 1980 deficit of just under \$30 billion."

Dr. McKinney pointed out that the sole criterion used in evaluating the laws was the degree of inflation expected to result from passage. No consideration was given to other potentially harmful or beneficial effects of the laws.

In judging the bills, each economist rated each bill on an 11-point scale, with the mid-point indicating "no inflationary impact." The individual ratings for each bill were then averaged. Dr. McKinney said no important statistical problems were encountered, and in most cases there was a general consensus in the group. However, the opinions expressed in the report are those of the committee and should not be interpreted as representing those of the NABE or of its membership.

THE INFLATIONARY IMPACT OF LEGISLATION PASSED BY THE FIRST SESSION OF THE NINETY-SIXTH CONGRESS*

SUMMARY OF FINDINGS

This study is the second annual evaluation of inflationary implications of Federal Legislation. A review of all laws passed by the First Session of the Ninety-Sixth Congress, it was prepared by the Legislative Review Committee of the National Association of Business Economists. The purpose of the study was to classify this legislation with respect to its inflationary potential. Professional judgments of the committee members (all are well qualified economists with expertise in public policy) were used to evaluate the inflationary implications of Congressional actions.

Committee members considered every bill passed by the Congress, and qualitatively evaluated and rated its inflationary potential. Consideration was given to such factors as the impact of the legislation on incomes, supplies, prices, or wages; whether direct or indirect subsidies were involved; and whether the legislation might alter incentives, influence competition, or otherwise affect economic efficiency. No consideration was given to factors other than inflation, whether favorable or unfavorable.

The tabulation of the ratings shows that the Congress passed 95 inflationary bills last year, but only 28 with a counter-inflationary impact. These figures do not include appropriations bills, all but one of which were judged to be inflationary in one degree or another.

Ratings of all legislation other than appropriations bills are summarized in Table 1. In all 172, such acts were passed. Five were significantly inflationary

*Prepared by the Legislative Review Committee, National Association of Business Economists.

and 90 moderately inflationary. On the other side, 28 measures were felt to have moderately counterinflationary implications. None were felt to have significant counter-inflationary potential.

TABLE 1.—*Inflationary impact of bills passed (excluding appropriations bills)*
96th Congress, 1st session

Inflationary	95
Significantly	(5)
Moderately	(90)
No inflationary impact	49
Counterinflationary	28
Moderately	(28)
Significantly	(0)
Total	172

One important point shows up in Table 1—the sheer number of the “moderately inflationary” bills passed. These 90 bills, more than one of every two bills passed, indicate that a significant part of the inflationary impact of legislation comes in the nickel-and-dime category. None of them felt to be significant by itself, the impact of all of these bills together is important.

The individual non-appropriations bills falling in the various classifications (except those rated “no impact”) are listed in Table 2. Five bills fell under the heading of “significantly inflationary.” These were Public Laws 88, 125, 127, 128, and 185. Public Law 96-88 established a new cabinet-level Department of Education, initially funded with a new \$14 billion budget. Public Law 96-125 authorized \$3.8 billion of military construction. Public Law 96-127 continued price supports for dairy products. Public Law 96-128 increased disabled veterans’ benefits by 9.9 percent. Public Law 96-185 provided \$1.5 billion in federal guarantees for loans to Chrysler Corporation.

Table 2 also lists the 28 counter-inflationary non-appropriations bills passed. All 28 were rated “moderately” anti-inflationary. No bill was rated “significantly” anti-inflationary.

The committee also rated the 15 appropriations bills passed by the Congress. These are summarized in Table 3. All but one were rated as inflationary in greater or lesser degree. Five were rated “significantly” inflationary, and 9 as “moderately” inflationary. One was held to have no inflationary impact. None were felt to have any counter-inflationary potential.

Appropriations bills and their ratings are listed in Table 4. Five appropriations bills rated “significantly” inflationary were Public Laws 103, 108, 126, 154, and 183. Public Law 96-103 appropriated \$72 billion for various agencies, including \$3 billion for Housing and Urban Development and \$20 billion for the Veterans Administration. Public Law 96-108 appropriated \$17 billion for Agriculture Department programs. Public Law 96-126 appropriated \$30.3 billion for the Department of the Interior, the Department of Energy, and related programs. Public Law 96-154 appropriated \$131.4 billion for the Defense Department. Public Law 96-183 appropriated funds for financial assistance to the Chrysler Corp.

In addition to reviewing the 187 individual bills (including appropriations bills) that became law last year, the committee rated the First and Second Concurrent Budget Resolutions. Both were judged to be “significantly” inflationary. The First Budget Resolution, which was passed by the Congress in May 1979, approved fiscal 1980 budget outlays of \$532 billion, revenues of \$509 billion, and a \$23 billion deficit. The second resolution, passed on November 28, boosted budget outlays to \$548 billion, raised revenue estimated to about \$518 billion, and projected a deficit of just under \$30 billion.

This is the second year in which the committee has rated the inflationary implications of legislation. Table 5 compares key parts of the two studies: the current study covering 1979 legislation and the earlier study of 1978 legislation. Only 123 bills were felt to have either inflationary or anti-inflationary potential in 1979 as compared with 168 bills in 1978. Interestingly, the same number of bills (28) were rated as counterinflationary in both years. However, just over two-thirds as many were rated “inflationary” in 1979 (95 as compared with 140 in 1978). Inflationary bills outnumbered anti-inflationary bills by a five to one margin in 1978, but only 3.4 to one in 1979.

**TABLE 2.—Inflationary impact of bills passed (excluding appropriations bills)
96th Congress, 1st session**

Significantly inflationary :

- Public Law 88—Establishment of Department of Education.
- Public Law 125—Military Construction Funds—1980.
- Public Law 127—Milk Price Supports.
- Public Law 128—Veterans' Disability Compensation Increase.
- Public Law 185—Chrysler Loan Guarantee.

Moderately inflationary :

- Public Law 5—Public Debt Limit—1979.
- Public Law 9—North Atlantic Alliance Reaffirmation.
- Public Law 10—Council on Wage and Price Stability Funds.
- Public Law 12—Investigation of Three Mile Island.
- Public Law 16—Supplemental Funds for NASA.
- Public Law 17—Ocean Pollution Funds.
- Public Law 18—Federal Reserve Loans to Treasury.
- Public Law 22—Veterans Health Care Improvement.
- Public Law 23—Coast Guard Funds.
- Public Law 24—Insurance for Multiemployer Pension Funds.
- Public Law 25—Illegal Rebating Practices.
- Public Law 26—Oceans and Atmosphere Funds.
- Public Law 29—Defense Funds—1979.
- Public Law 31—Peanut Marketing.
- Public Law 33—State Health Planning Agencies.
- Public Law 35—Aid to Israel and Egypt.
- Public Law 36—Smithsonian Institution Space.
- Public Law 40—Navajo-Hopi Relocation Funds.
- Public Law 41—Stockpiling of Strategic Materials.
- Public Law 43—Trials for Federal Crimes.
- Public Law 44—National Science Foundation Funds.
- Public Law 47—Treasury International Affairs Funds.
- Public Law 48—Funds for NASA—1980.
- Public Law 49—Higher Education Program Extension.
- Public Law 53—Funds for Intl. Development and Economic Assistance Programs.
- Public Law 57—Increased Funds for D.C. Metro.
- Public Law 58—Additional Funds for Food Stamps.
- Public Law 59—Bell County, Kentucky Land.
- Public Law 60—Department of State Funds.
- Public Law 63—Safe Water Drinking Act Funds.
- Public Law 66—Arms Control and Disarmament Agency Funds.
- Public Law 67—Aid to Uganda.
- Public Law 70—Panama Canal.
- Public Law 71—FHA Mortgage Insurance Extension.
- Public Law 73—Amtrak Funds.
- Public Law 75—Department of Justice Authority Continuation.
- Public Law 76—Nurse Training Funds.
- Public Law 77—Defense Production Act Extension.
- Public Law 78—Public Debt Limit—1980.
- Public Law 79—Public Health Service Extension.
- Public Law 81—Commission on Civil Rights Funds.
- Public Law 84—National Commission on Unemployment Compensation.
- Public Law 85—U.S. Travel Service Funds.
- Public Law 89—Increase Funds for Canal Zone Biological Area.
- Public Law 92—International Security Assistance Programs Funds.
- Public Law 94—International Energy Program.
- Public Law 95—Archaeological Resources Protection Act.
- Public Law 96—Higher Education and Community Service Funds.
- Public Law 97—Increase TVA Debt Authorization.
- Public Law 98—National Historical Publications Funds.
- Public Law 100—Intelligence Operations Funds.
- Public Law 101—Milwaukee Railroad Restructuring.
- Public Law 102—Emergency Energy Conservation Program.
- Public Law 105—FHA Authorities Extension.
- Public Law 106—Surface Transportation Assistance Act.
- Public Law 107—Defense Funds—1980.

TABLE 2.—*Inflationary impact of bills passed*—Continued

Moderately inflationary—Continued

- Public Law 109—Caribbean Hurricane Relief.
- Public Law 110—Cambodia Refugee Assistance.
- Public Law 111—Pleasure Cruise Industry.
- Public Law 112—Maritime Administration Funds.
- Public Law 117—Lands for Santa Ana Pueblo Indians.
- Public Law 118—Anadromous Fish Conservation Funds.
- Public Law 121—Fire Prevention Funds.
- Public Law 122—D.C. Retirement Reform.
- Public Law 129—Pipeline Safety Act.
- Public Law 132—Department of Justice Funds.
- Public Law 135—Indian Bureau Employee Retirement.
- Public Law 142—Emergency Medical Services Funds.
- Public Law 143—Domestic Volunteer Service Act.
- Public Law 144—Apportionment of Interstate Highway Funds.
- Public Law 146—Pay for Architects of Capitol.
- Public Law 151—Veterans Health Programs.
- Public Law 153—Housing and Community Development Amendments.
- Public Law 156—Retired Federal Employees Health Benefits Charges.
- Public Law 157—State and Local Justice Improvement.
- Public Law 159—Endangered Species Act Funds.
- Public Law 160—D.C. Borrowing Authority.
- Public Law 164—Nuclear Energy Funds.
- Public Law 166—Federal Physicians Allowances.
- Public Law 169—International Energy Exposition Funds.
- Public Law 170—D.C. Civil Rights.
- Public Law 173—Veterans Service Disability Treatment.
- Public Law 174—Amend Section 209, U.S. Code.
- Public Law 176—Extra Long Staple Cotton Program.
- Public Law 178—Business Expenses of State Legislators.
- Public Law 179—Survivor Benefits for Dependent Children.
- Public Law 180—Alcohol Abuse and Treatment.
- Public Law 181—Drug Abuse and Treatment.
- Public Law 182—Water Bank Act Payments.
- Public Law 184—National Capital Transportation Act.

Moderately counterinflationary :

- Public Law 2—Carson City Silver Dollars Sales.
- Public Law 3—Privacy of Bank Records.
- Public Law 6—Countervailing Duties Waiver.
- Public Law 8—Relations with Taiwan.
- Public Law 14—President's Commission on Pension Policy Funds.
- Public Law 19—Ethics in Government Act.
- Public Law 27—Independent Audit of District of Columbia.
- Public Law 28—Ethical Standards for Federal Employees.
- Public Law 30—Antitrust Exemption for Oil Companies.
- Public Law 37—Exemption of Savings and Loans from FTC.
- Public Law 39—Implementation of Tokyo Round Agreements.
- Public Law 56—Repayment of Student Loans.
- Public Law 61—Fisheries Conservation Funds.
- Public Law 64—Deposit Insurance for Foreign Banks.
- Public Law 72—Regulation of Exports.
- Public Law 82—U.S. Magistrates and Federal Courts.
- Public Law 83—Office of Federal Procurement Policy Funds.
- Public Law 104—Usury Ceilings on Business and Agricultural Loans.
- Public Law 113—Exemption for State Prison Farms.
- Public Law 124—D.C. Interest Rate Modification Act.
- Public Law 133—Extension of Antitrust Exemption for Oil Companies.
- Public Law 137—Naval Petroleum Reserves Funds.
- Public Law 150—Sale of Excess U.S. Naval Vessels.
- Public Law 161—NOW Accounts and Usury Override.
- Public Law 163—Port of New York District.
- Public Law 167—Fringe Benefit Regulations.
- Public Law 175—National Defense Stockpile.
- Public Law 177—Meat Import Quotas.

TABLE 3.—*Inflationary impact appropriations bills passed 96th Congress, 1st session*

Inflationary	14
Significantly	(5)
Moderately	(9)
No inflationary impact.....	1
Counterinflationary	0
Moderately	
Significantly	
Total	15

TABLE 4.—*Inflationary impact appropriations bills passed 96th Congress, 1st session*

Significantly inflationary :
Public Law 103—HUD Appropriations.
Public Law 108—Agriculture Department Appropriations.
Public Law 126—Department of Interior Appropriations.
Public Law 154—Department of Defense Appropriations.
Public Law 183—Chrysler Corporation Loan Guarantee Appropriation.
Moderately inflationary :
Public Law 38—Supplemental Appropriations.
Public Law 68—State, Justice, Commerce and Judiciary Appropriations.
Public Law 69—Energy and Water Resources Appropriations.
Public Law 74—Department of Treasury and U.S. Postal Service Appropriations.
Public Law 86—Continuing Appropriations.
Public Law 93—District of Columbia Appropriations.
Public Law 123—Continuing Appropriations.
Public Law 130—Military Construction Appropriations.
Public Law 131—Department of Transportation Appropriations.
No inflationary impact :
Public Law 7—Rescission of Budget Authority.

TABLE 5.—COMPARATIVE RATING OF BILLS WITH INFLATIONARY IMPLICATIONS (EXCLUDING APPROPRIATIONS BILLS), 95TH CONGRESS, 2D SESSION (1978) AND 96TH CONGRESS, 1ST SESSION (1979)

	Number of bills passed	
	1978	1979
Inflationary.....	140	95
Significantly.....	(8)	(5)
Moderately.....	(132)	(90)
Counter-inflationary.....	28	28
Moderately.....	(27)	(28)
Significantly.....	(1)	(0)
Total.....	168	123

THE COMMITTEE AND THE METHODOLOGY

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Daniel H. Brill, Economic Consultant. Former Assistant Secretary for Economic Policy for the Treasury; former Director Research and Senior Adviser to the Board of Governors of the Federal Reserve System.

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The committee reviewed all laws passed by the first session of the ninety-sixth Congress, including appropriations bills, and the First and Second Concurrent Budget Resolutions. The sole criterion used in evaluating the laws was the degree of inflation expected to result from passage of the legislation. No consideration was given to other potentially harmful effects of the laws, nor to potential benefits. Thus the committee addressed only the question of the extent to which inflation is likely to be caused by Federal legislation passed during 1979.

Both long- and short-run inflationary implications were considered. It was recognized that there is some tradeoff between the harm done by inflation today and that done by the same degree of inflation at some future date. Essentially this problem is one of discounting the future disutility of inflation, much in the same way that bond markets discount the value of a future flow of income in order to arrive at the present value of an investment. Each member of the committee applied his own professional judgment in deciding on the appropriate weight to give to present and to future inflationary implications of specific legislation. Similarly, each member used his own professional judgment in defining and evaluating any qualitative attributes he felt would be attached to each bill (as, for example, in the case of legislation which might give impetus toward subsequent actions that would in turn have further inflationary or deflationary implications).

Each member rated those acts of Congress, felt to have some potential for inflation or deflation, on a scale of +5 (most inflationary), through 0 (no impact) to -5 (most deflationary). (Members abstained when they felt they could not determine the potential impact.) The individual ratings were then averaged to come up with an overall rating. No piece of legislation averaged in the +5 or -5 category, although some individual members rated specific acts in these categories.

No important statistical problems were encountered. In general, there was a reasonable cluster of ratings that seemed to reflect the majority view rather accurately. There were some notable disagreements. For example, the ratings on the bill establishing a new Department of Education ranged from 0 to 5, and averaged 2.6. Even in the case of those laws where there was noticeable divergence in the ratings, the average of the individual ratings seemed to be a fair representation of the majority view. Inability to rate was not a major problem. The vast majority were rated by all committee members; more than two members abstained from rating only two bills. Even in those cases, though, there was a reasonable concentration of the ratings which were made.

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We would like to thank Congressional Quarterly, Inc. for giving permission to the committee to reproduce descriptive material covering the legislation and to use the material in its study.

SEARS ROEBUCK AND Co.,
Washington, D.C., June 6, 1979.

Re: Comments on the Credit Control Act of 1969 and S. 35 and S. 389.

HON. WILLIAM PROXMIER,
Chairman, Committee on Banking, Housing and Urban Affairs, U.S. Senate,
Washington, D.C.

DEAR MR. CHAIRMAN: Sears is pleased to comment on the subject of credit controls and these most important pieces of pending legislation. We request that these comments be added to the record of your committee in connection with the recent hearings on S. 35 and S. 389.

Sears has followed the issue of credit controls with interest for nearly forty years. In an earlier comment in 1957 to the Federal Reserve Board, Sears concluded:

"We are therefore opposed to Government regulation of consumer credit in any form. Standby controls, which have frequently been suggested, present problems of administration and, in our opinion, serve no useful purpose. In times of war and national emergency, our country has demonstrated repeatedly the rapidity with which it can make the required adjustments in business and in the economy."¹

We have seen no evidence in the succeeding two decades to change this view. In fact, more recent studies have only strengthened our conviction that credit controls are not needed and are not good public policy for the United States.

One recent study documents the fact that credit controls invariably hurt less wealthy households and small businesses because they have fewer alternative sources of funds.² High income credit users, on the other hand, will generally have access to alternative sources of credit.

Another recent review of the World War II and Korean War experience with consumer credit controls concludes that the capacity of credit controls or other selective credit policies to alter the allocations of real resources is no greater today, and may well be less, than in the past.³

Karl Brunner has succinctly summarized the economic case against controls as follows:

"Good intentions and optimal use of a "needs and priorities" terminology yield no relevant argument justifying the useful application of credit controls. Some frequently encountered justifications are poorly substantiated and upon further examination are revealed to be rather speculative. Moreover, major economic problems motivating credit controls and lending political appeal to the proposal are the results of previous financial policies and political constraints imposed on financial markets. Lastly, some of the major goals addressed with the aid of credit controls are much better approached with substantially different policy instruments. Credit controls achieve nothing for the public welfare that other instruments achieve much better at a lower social cost. They only achieve a particular redistribution of wealth for the benefit of a small group. This is a poor case indeed."⁴

At the recent hearings on S. 35 and S. 389 the witnesses for the Treasury Department and the Federal Reserve Board made good cases against the use of credit controls other than for wartime or a national emergency. Unfortunately, they nevertheless advocated keeping the President's present standby authority. But the fact remains that the factors that economists insist should exist for the consideration of credit controls do not exist today and are not likely to exist in the near future. These include excessively high consumer credit use, supply shortages, excessive delinquencies, and business operating at capacity.

¹ Board of Governors of the Federal Reserve System, "Consumer Installment Credit: Part III. Views on Regulation" (Washington: Government Printing Office, 1957), p. 164.

² Stanley Diller, "Credit Allocation and Housing" in Franklin R. Edwards, ed., *Issues in Financial Regulation* (New York: McGraw-Hill Book Co., 1979) pp. 315-364.

³ Michael J. Hamburger and Burton Zwick, "Credit Allocation and Consumer Expenditures: The case of Installment Credit Controls," in Edwards, op. cit. pp. 364-378. Quotation from p. 378.

⁴ Karl Brunner, "A Summary and Perspective," in "Government Credit Allocation: Where Do We Go From Here?" (San Francisco: Institute for Contemporary Studies, 1975) p. 13.

It has been Sears' experience that its customers continue to use consumer credit prudently. Sears makes small amounts of credit available to large numbers of people for short periods of time, thereby permitting its customers to utilize within the scale of the family budget the economic power represented by anticipated earnings. The American consumer credit industry has created the means for consumers to use and manage debt for their benefit in much the same way as corporations and the government use and manage debt to achieve their programs and goals. Unlike government and some businesses, the consumer is a good manager of debt and relatively few of them encounter difficulty occasioned by mismanagement.

Sears' Annual Report for 1978 shows that delinquency and charge-off rates for its credit consumers have changed very little over the past five years. The figures are as follows:

Percent of accounts delinquent 3 or more monthly payments:

Year:

1974	-----	1.13
1975	-----	1.18
1976	-----	.98
1977	-----	.82
1978	-----	.93

Percent of charged off accounts to credit sales:

Year:

1974	-----	0.58
1975	-----	.68
1976	-----	.54
1977	-----	.45
1978	-----	.52

Moreover, Sears' customers are using credit skillfully to achieve long range economies and to help fight inflation. For example, they are buying insulation for their homes on credit to lower energy bills in the future.

Sears believes in the ability of the free market to adequately channel credit flows to areas of the greatest public good—not as reviewed by some administrator, but as directed by the public. Sears is also fearful that the mere continued existence of the Credit Controls Act of 1969 on the statute books, as the only tool a President can use against inflation without the express consent of the Congress, could be a political temptation too great for this or some future Administration to pass up.

Accordingly, Sears supports S. 35, which would eliminate this authority. If this course of action should not prove feasible now, Sears would support S. 389, which would require Congressional approval before the implementation of the Credit Control Act of 1969, as a second best, but still acceptable alternative.

Sincerely,

RANDOLF H. AIRES.

STATEMENT OF SAM R. WATKINS, VICE PRESIDENT, I. C. INDUSTRIES

PROPOSED TAX LEGISLATION

National objectives (to increase U.S. competitiveness and wealth):

Encourage saving (not spending).

Encourage investment (not consumption).

Encourage productivity (not unproductive expenditures).

Achieve greater fairness in taxation.

Generate capital.

Reduce inflation.

Ameliorate the anti-production, pro-consumption bias of the present tax structure.

To encourage saving:

(1) Exempt from personal income tax the first \$1,500 of interest income on an individual return.

To encourage saving and investment (and improve fairness) :

(2) Exempt from personal income the first \$500 of dividend income, plus 25 percent of the amount over \$500.

(3) Reduce the 70 percent tax rate on individual investment income to the 50 percent rate applied on other income.

To achieve greater fairness (in view of inflation) :

(4) Widen individual income tax brackets by 8 percent.

(5) Reduce corporate tax rate from 46 percent to 44 percent.

(6) Eliminate double taxation of dividends.

To encourage capital investment, increase productivity and reduce inflation :

(7) Enact Capital Cost Recovery Act (10-5-3 Plan).

(8) On Social Security Taxes—increase gradually the retirement age until it reaches 68 and slow down the growth of real benefits for future retirees.

(9) Pass a "Monory-type" tax bill which would provide a tax credit to taxpayers for new investments in stocks and bonds of domestic corporations.

To ameliorate the anti-production bias of the tax laws :

(10) Continue study of the VAT, as a revenue source after major reduction of the national income tax burden and after curtailing Federal spending programs (VAT will otherwise be suspect as an inflationary enlargement of the present tax burden on the people).

STATEMENT OF MURRAY L. WEIDENBAUM, DIRECTOR, CENTER FOR THE
STUDY OF AMERICAN BUSINESS, WASHINGTON UNIVERSITY

STIMULATING PRODUCTIVITY VIA REGULATORY REFORM

The fundamental theme of this paper is quite simple. We can solve one widespread business and economic mystery, the cause of the pervasive slowdown and stagnation in productivity. The statistical experts have been stumped on this issue. But anyone who has left his or her study long enough to wander through a company personnel office has gotten a fairly good idea of one basic cause of the decline in the productivity of American business: the simultaneous expansion of pervasive and costly government directives, rules, forms, prohibitions, and other regulations.

The pervasive effects of regulation

Frankly, it is difficult to overestimate the rapid expansion and the great variety of government involvement in private enterprise now occurring in the United States. The very concept of "a regulated industry"—limited to a few specialized areas like the railroads or airlines—has become, at best, out-of-date. We now live in an economy in which every business in this country feels the rising impact of government in all major aspects of its day-to-day operations. The regulators must be consulted on practically every aspect of business activity—where to locate a business, who can be hired, how to operate the business, what to sell, who to sell it to, and, of course, how much of the proceeds to keep. No business, large or small, can operate without obeying a myriad of government rules and restrictions.

Virtually every major department of the typical corporation in the United States has one or more counterparts in a government agency that controls or strongly influences its internal decision making (see Table I). There is almost a "shadow" organization chart of public officials matching the organizational structure of each private company (see Figure 1). The scientists in corporate research laboratories now do much of their work to ensure that the products they develop are not rejected by lawyers in regulatory agencies. A growing portion of current business research is "defensive research," rather than innovative product and process research. The engineers in manufacturing departments must make sure the equipment they specify meets the standards developed by engineers in the U.S. Labor Department. Marketing staffs must follow procedures established by product safety agencies and the Federal Trade Commission. The location of business facilities must conform with a variety of environmental statutes. The primary thrust of many personnel departments has shifted from serving the staffing needs of their companies to meeting the requirements of government agencies. And finance departments bear the brunt of the rising paperwork burden imposed by government agencies. The key point here, in summary, is that each of these regulatory-induced actions tends to reduce productivity.¹

TABLE I.—*Impacts of Federal regulatory programs by company function*

Top management :

Board of directors :

The Board of Directors is being held more directly accountable for key company policies and activities by the Securities and Exchange Commission and the courts.

Chief executive officer :

The responsibility for corporate adherence to the mandates of the Food and Drug Administration, Consumer Product Safety Commission, and other agencies is increasingly being placed on the chief executive officer of the corporation.

Research and development :

Product design :

Consumer products must adhere to the standards of the Consumer Product Safety Commission.

Defense products are closely reviewed by the Department of Defense.

Process design :

Processes and equipment must meet the standards of the Occupational Safety and Health Administration.

Facilities design :

Structures must meet the regulations of the Environmental Protection Agency.

Manufacturing :

Nature of the product :

Pharmaceuticals must be approved by the Food and Drug Administration of the Department of Health and Human Services.

Processed meat and poultry must meet the standards of the Department of Agriculture (Animal and Plant Health Inspection Service of Packers and Stockyards Administration).

Trucks and automobiles must meet the safety standards of the National Highway Traffic Safety Administration of the Department of Transportation and the emission standards of the Environmental Protection Agency.

¹ See Murray L. Weidenbaum, "The Future of Business Regulation, (New York: AMACOM, 1980), and Murray L. Weidenbaum, "Business, Government and the Public," second edition (Englewood Cliffs, N.J.: Prentice-Hall, 1981).

TABLE I.—Impacts of Federal regulatory programs by company function—Cont.

Manufacturing—Continued

Nature of the process:

Work equipment and conditions must meet the standards of the Occupational Safety and Health Administration.

Marketing:

Advertising:

Advertising is subject to regulation by the Federal Trade Commission to avoid misrepresentation.

Warranties:

Product warranties are regulated by the Magnuson-Moss Act, administered by the Federal Trade Commission.

Labeling:

Package labeling is subject to regulation by the Federal Trade Commission, Food and Drug Administration, Consumer Product Safety Commission, and the Department of Agriculture.

Sales:

The Consumer Product Safety Commission bans the sale of products which do not comply with its standards or which involve imminent hazards. It can order recalls of products already sold.

The Drug Enforcement Administration of the Department of Justice regulates legal trade in narcotics and dangerous drugs.

The Bureau of Alcohol, Tobacco and Firearms of the Treasury Department regulates the legal flow of firearms, alcoholic, and tobacco products.

The Department of Housing and Urban Development's Office of Interstate Land Sales Registration regulates interstate sales of land in quantities of over 50 lots.

Pricing and profits:

The Council on Wage and Price Stability reviews price increases by large, national firms and, on occasion, requests and publishes detailed information, which may act as a deterrent to price increases.

Personnel:

Personnel practices:

The Equal Employment Opportunity Commission investigates and rules on charges of discrimination. Government contractors are required to develop Affirmative Action Programs affecting hiring, training, promoting, and terminating the employment status of workers, subject to the rulings of the Office of Federal Contract Compliance of the Department of Labor.

Contested OSHA enforcement actions are subject to review by the Occupational Safety and Health Review Commission.

Compensation systems of defense contractors are reviewed by the Department of Defense.

Wage rates and working conditions:

The Department of Labor's Employment Standards Administration sets and administers standards under laws relating to minimum wages, overtime, etc.

The National Labor Relations Board conducts union representation elections and regulates labor practices of employers and unions.

Union representation elections in the railroad and airline industries are conducted by the National Mediation Board, which also mediates labor-management disputes.

Employee benefits:

The Department of Labor (Labor Management Services Administration) and Department of the Treasury (Internal Revenue Service) jointly determine eligibility of employee welfare and pension plans and set standards for financial disclosure.

Credit unions are chartered, supervised, and examined by the National Credit Union Administration.

Companies employing 25 people or more must offer their employees membership in a Health Maintenance Organization, if a qualified one is available, as an alternative to the company's conventional medical insurance plan. The Department of Health and Human Services sets the rules determining qualification.

TABLE I.—*Impacts of Federal regulatory programs by company function—Cont.***Finance:****Issuance and trading of stocks and bonds:**

The Securities and Exchange Commission regulates stock exchanges, brokers, dealers, mutual funds, and investment advisers. It sets forth requirements to be met before issuing stocks and bonds.

The Small Business Administration licenses and regulates small business investment companies.

Financial institutions:

Commercial banks are subject to regulation by the Federal Reserve System, the Federal Deposit Insurance Corporation, and the Comptroller of the Currency.

Federally-chartered savings and loan associations are regulated by the Federal Home Loan Bank Board.

Taxes:

In the process of collecting taxes, the Internal Revenue Service promulgates a variety of regulations which strongly influence company decisionmaking—indicating those expenses which are not tax deductible and hence less likely to be incurred; investments not qualifying for the investment credit and thus less likely to be made; pension plans not conforming to IRS regulations and not likely to be continued.

Purchasing:**Energy products:**

The price and allocation of petroleum products are regulated by the Federal Energy Administration (Department of Energy).

Sale of natural gas and wholesale rates and practices in interstate transmission of electric energy are regulated by the Federal Energy Regulatory Commission.

Agricultural products:

Commodity futures contracts, commodity brokers, and dealers exchanges are regulated by the Commodity Futures Trading Commission.

Grades and standards for farm commodities are set by the Agriculture Marketing Service of the Department of Agriculture, which also licenses and bonds warehouses, inspects egg production and administers product and process safety acts.

Leasing of ocean resources is supervised by the Ocean Mining Administration of the Department of the Interior, which also regulates ocean mining.

Communications:

Rates for interstate and international communications by wire, cable, and radio are set by the Federal Communications Commission, which also licenses radio and television stations.

Defense products:

Defense contractors, in awarding subcontracts and ordering supplies and equipment, must follow the Armed Services Procurement Regulation. Specific provisions require giving preference to subcontractors in areas of concentrated unemployment, awarding a "fair" portion of subcontracts to small businesses, preferring domestic over foreign materials, shipments in United States vessels, and purchases of jewel bearings from a government facility.

Facilities:**General:**

Facilities must meet standards on environmental quality set by the Environmental Protection Agency. Where federal funds and authority are involved, acceptable environmental impact statements must be prepared.

Construction projects in navigable waters must obtain permits from the Army Corps of Engineers (Department of Defense).

Housing and related facilities:

Federally insured residential and commercial properties must meet standards set by the Federal Housing Administration of the Department of Housing and Urban Development.

Property insurance in flood-prone areas must meet standards set by the Federal Insurance Administration of the Department of Housing and Urban Development.

TABLE I.—*Impacts of Federal regulatory programs by company function—Cont.***Facilities—Continued****Nuclear construction :**

Nuclear facilities are subject to detailed regulation by the Nuclear Regulatory Commission. Construction of cooling towers may also have to be approved by the Federal Aviation Administration of the Department of Transportation.

Traffic and transportation :**Land transportation :**

Rates, routes, and practices of railroads, trucks, bus lines, oil pipelines, and freight forwarders are regulated by the Interstate Commerce Commission.

Railroad and oil pipeline safety practices are subject to the Federal Railroad Administration of the Department of Transportation.

The transportation of natural gas is regulated by the Federal Energy Regulatory Commission.

Accidents are investigated by the National Transportation Safety Board, which also rules on needed improvements in rail and highway safety.

Water transportation :

Merchant vessels must meet the safety standards of the Coast Guard (Department of Transportation).

Fares, rates, and practices of steamships engaged in foreign commerce are regulated by the Federal Maritime Commission. Carriers engaged in domestic commerce are regulated by the Interstate Commerce Commission.

Air transportation :

Airline routes, passenger fares, and freight rates are regulated by the Civil Aeronautics Board, although these activities are being phased out.

Pilots are licensed by the Federal Aviation Administration of the Department of Transportation, which also certifies the airworthiness of aircraft.

Accidents are investigated by the National Transportation Safety Board, which also rules on needed improvements in airline safety.

Staff operations :**Legal staff :**

Patents and trademarks are obtained through the Department of Commerce's Patent and Trademark Office.

Mergers and acquisitions may be challenged by the Antitrust Division of the Department of Justice and the Federal Trade Commission.

Governments affairs staff :

Contributions to election campaigns are subject to regulation by the Federal Election Commission, which also establishes disclosure requirements.

International operations :**Imports :**

The flow of cargo in and out of the United States is regulated by the Customs Service of the Department of the Treasury, which also administers the countervailing duty and antidumping statutes. The International Trade Commission investigates and rules on tariff and other foreign trade regulations.

Authority to public or private corporations to establish duty-free foreign trade zones within the United States may be granted by the Foreign Trade Zones Board.

Exports :

The eligibility, price and terms of payment of subsidized farm commodities allocated to export markets are determined by the Foreign Agricultural Service of the Department of Agriculture.

Source : Max Ways, ed., "The Future of Business" (New York : Pergamon Press, 1977), pp. 58-63.

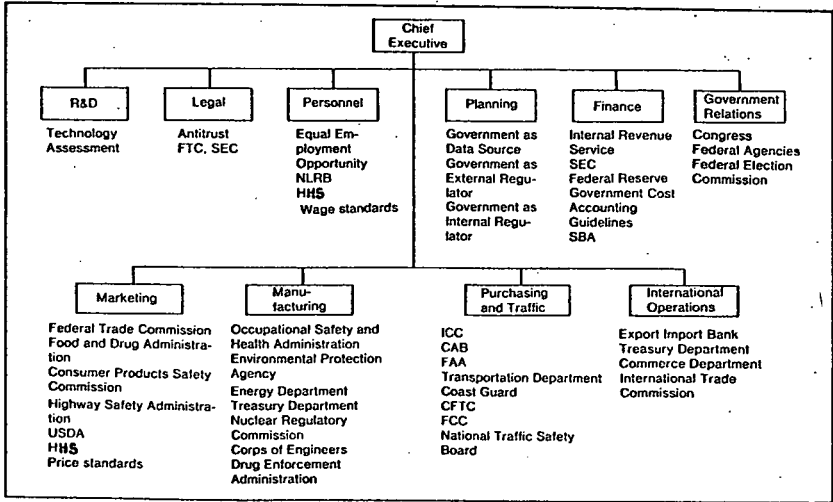


FIGURE 1.—Typical industrial corporation and Federal Government relations

The total impact of the rulings of the Food and Drug Administration (FDA), the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA), the Consumer Product Safety Commission (CPSC), and many other regulatory agencies are, in short, altering the functions of the typical American business firm. As a result of pressures to change production processes in order to meet Federal environmental and safety standards, a larger share of company investment (about one-tenth at present) is being devoted to these mandated social responsibilities—rather than to increasing business capacity to produce a higher quantity or quality of material output, at least as conventionally measured.² Thus, when coupled with the many factory closings (especially among smaller firms) due to regulation, these social requirements are resulting in a smaller productive capacity in the American economy than is generally realized.

Specifically, the effect of regulation on the productivity of personnel is difficult to measure. But we do know a few important facts. In an analysis of the impacts of the 1973 consent decree in which AT&T pledged to carry out an affirmative action program, Carol J. Loomis of Fortune magazine concluded that the favoring of women and minorities which is mandated by the decree has "necessarily also required some lowering of employment standards, and this combination has produced some bruising side effects."³ Surely the end results of lowered employment standards on productivity are fairly clear.

Also, recent research on the effects of regulation on personnel testing reveal that more organizations are now conducting expensive and unnecessary "criterion-related validity studies" (required to demon-

² See, for example, U.S. Council on Environmental Quality, "Environmental Quality" (Washington: U.S. Government Printing Office, 1979), Chapter 12.

³ Carol J. Loomis, "AT&T in the Throes of 'Equal Employment,'" Fortune, Jan. 15, 1979.

strate the lack of bias in the process) and are passing the added costs on in the form of higher prices. Other companies have dropped the use of valid tests of aptitude and are also experiencing lowered work-force productivity. Several researchers note that when selection standards are lowered, the loss of productivity is across-the-board, affecting much of the new hires and not just members of minority groups.⁴

The controversial change now being contemplated by the Equal Employment Opportunity Commission (EEOC)—to judge remuneration not by the test of the market but by the evaluation of the regulator—would constitute an unprecedented drain on productivity. That is, the economy would likely suffer increased costs for many inputs without offsetting increases in output.⁵

In brief, then, the combined effects of elaborate production and review processes, a lowered stock of productive capital, and the imposition of a wide range of regulations designed for social goals can only result in a decline in the ability of the American economy to deliver to the public the rising standard and quality of living that has become the hallmark of the private enterprise system. Important adjustments are now taking place in the structure and operations of the typical corporation in response to the rapid growth of government regulation. And these changes tend to be in a single direction—to increase the overhead costs of doing business, to heighten uncertainty, and to deflect management and employee attention from the conventional tasks of designing, producing, and distributing new and better or cheaper goods and services. In these many instances, regulation becomes a significant factor contributing to the slow down in American productivity.

Relationship of regulation to other economic policies

Regulation, of course, should not be viewed in isolation. Regulatory activities interact with other government policy mechanisms. For example, the various proposals to enhance productivity via supply-oriented tax cuts need to take account of regulatory obstacles. It is not just a matter of the disincentives of regulation offsetting some of the incentives which can be provided by tax reform. Rather, it is often a case of insurmountable government-imposed barriers which any increases in the normal, after-tax rate of return can do little to hurdle.

For instance, the most generous of tax credits will not help a company to market a product that has been banned by the government. The most liberal depreciation allowance will not assist a firm in obtaining the numerous permits which are essential to the operation of a new power plant. Indexing income tax rates will not encourage the job applicant who is turned aside by companies administering government-imposed quotas in their hiring. Nor will massive reductions in personal income taxes help the teenager who is priced out of the labor market by the latest increase in the compulsory minimum wage.

⁴ K. Pearlman, F. L. Schmidt and J. E. Hunter, "Test of a New Model of Validity Generalization: Results for Job Proficiency and Training Criteria in Clerical Occupations," *Journal of Applied Psychology*, vol. 65, 1980, pp. 373-106; Frank L. Schmidt and John E. Hunter, "New Research Findings in Personnel Selection," in *Public Personnel Administration: Policies and Procedures for Personnel* (Englewood Cliffs, N.J.: Prentice-Hall, 1980).

⁵ Cotton M. Lindsay, "Equal Pay for Comparable Work" (Miami: University of Miami Law School, 1980).

Of course, this is not merely a matter of either/or. We need not and should not choose between tax reform and regulatory reform. Rather, we should understand that the two go together. In practice, supply-side tax cuts and reductions of regulatory burdens are mutually reinforcing. Both can increase the capacity of the economy to produce goods and services, the willingness of investors to take risks, the ability of management to innovate, and the capacity of workers to produce.

Moreover, there is an additional reason to turn attention to the need for regulatory reform—and that is the long “pipeline” of new and extremely burdensome regulations that the federal agencies are now working on. Let us lay to rest the notion that the government’s regulatory apparatus is being dismantled piece by piece. It is true, of course, that we are witnessing several highly visible (and much welcomed) reforms. Congress has deregulated the airline industry and is reducing regulatory controls on railroad and trucking. Also, the Occupational Safety and Health Administration has eliminated or modified a few “Mickey Mouse” regulations—those silly rules concerning the difference between a hole and an opening, when a roof is a floor, and how often spittoons are to be cleaned.

But by concentrating on these reforms, we overlook the vast amount of new regulation that is likely to be forthcoming under laws recently enacted by the Congress. Here are just a few major examples: the Toxic Substances Control Act (TOSCA) of 1972, under which all “toxic” substances must be tested; the Clean Air and Clean Water statutes of 1977, which will make it extremely difficult to build new factories in many parts of the United States; and the Resource Conservation and Recovery Act of 1976, which puts in place cradle-to-grave controls for all substances designated “hazardous.” And we should not overlook OSHA’s Generic Carcinogenic Standard. This single, far-reaching ruling is likely to generate far greater compliance costs than all of the existing OSHA standards put together—a cost whose preliminary estimates are in the tens of billions of dollars.⁶

All this makes the task of regulatory reform more urgent. However, it is not a task that lends itself to a simple-minded or monolithic approach. We have to realize that the variety of regulatory activity requires a variety of reforms. Eliminating regulation makes good sense in those areas where the consumer is better served by market competition. Energy is a prime example. Eliminating the entire apparatus of energy price restrictions, allocation controls, entitlements, and reporting requirements would result in more domestic production, more conservation, and reduced imports of foreign oil. Deregulation of airlines, trucking, and railroads are also good examples of regulatory reform oriented to supply-side concerns.

For the social regulations—those which are aimed, via business, at social goals—there is no good alternative to revising the basic statutes under which the regulations are promulgated. The zero-risk approach of the Delaney Amendment to the Food, Drug, and Cosmetic Act is a cogent example of unrealistic and unreasonable social regulation which can be effectively curtailed only by rewriting the law. Given the multiplication of regulatory statutes, what would truly help is, yes, yet

⁶ Foster D. Snell, Inc., “Preliminary Estimates of Direct Compliance Costs and other Economic Effects of OSHA’s Generic Carcinogenic Proposal on Substance Producing and Using Industries” (Scarsdale, N.Y.: American Industrial Health Council, 1978).

another statute—one requiring compulsory benefit/cost tests. Each agency should be required to demonstrate in advance that its rulings will generate more benefits to the nation than costs—or, one would hope, that the marginal benefits equal the marginal costs and that the agency has chosen the most cost-effective approach.

Furthermore, the promulgation of rules is not the only means of accomplishing public objectives. As economists have been trying to explain to government decision makers, pollution taxes could constitute a far less costly method of achieving water quality objectives. Interestingly enough, the business community, which shows little enthusiasm for regulation, is adamantly opposed to this use of the price system. Not that it is necessarily relevant, but I note that environmental standards, unlike pollution taxes, tend to be rougher on new industries than on established facilities. But as we have learned over the years, the most adamant foe of government intervention eventually learns how to convert a government rule to a barrier to entry. As Lee Loeginer has noted, "Thus small enterprises are slowly squeezed out and barriers to entry are established by government fiat that would make an old-fashioned monopolist either envious or embarrassed."⁷

In many other areas of government intervention, notably consumer product safety, an information strategy is an alternative to compulsory standards or product bans. Interestingly enough, this approach often is favored in consumer surveys, although not by the more vocal consumer organizations.

Conclusion

To sum up: if we are genuinely concerned about the very serious slow down in productivity in the United States, then we need to look squarely at the many factors that are slowing it down. Among those inhibiting factors, it is very hard to dispute the fact that many of the regulatory programs mentioned in this paper reduce business productivity in palpable, though not always visible, ways. And the higher costs of goods and services resulting from regulation are passed on to all citizens as a "hidden tax" that is by no means negligible. Over-regulation—those many instances in which the costs of regulation exceed the benefits to society—inhibits productivity in the simplest possible way: it becomes a clear, additional obstacle to business and to its ability to produce effectively and efficiently.

THE UNCERTAIN RECOVERY IN 1981, THE CARTER LEGACY AND THE REAGAN OPPORTUNITY⁸

(By Murray L. Weidenbaum)

It is a real pleasure to have the opportunity to examine economic prospects for the coming year, the first year of a Reagan Administration. In a burst of non-partisanship, I would like to note that it is unlikely that all of our economic ills will be cured in the coming 12 months, or in the next four years. But we now can see the opportunity for real progress. The key question in the economic outlook is, of course, whether the recovery now underway will peter out in its infancy in 1981 or whether it will fully develop next year. The answer may depend in part

⁷ Lee Loeginer, "The Impacts of Government Regulation," lecture at New York University, October 25, 1978, p. 32.

⁸ A speech to the Annual Correspondents Conference of the First National Bank in St. Louis, Mo., Nov. 20, 1980.

on luck. But, to a large degree, it will depend on how quickly Ronald Reagan can overcome the bitter economic legacy which will be bequeathed to him by Jimmy Carter.

WHERE WE STAND

A few economic facts are clear. We have experienced a short but painful recession in 1980. The expansion now underway is neither broad-based nor hardy. It is confined mainly to the consumer sector, housing, and national defense, although high and rising interest rates are now making precarious the continuation of the recovery in homebuilding and in such consumer durables as autos.

Looking at the weaker sectors of the economy, surveys of business investment outlays show that this vital area will be hard-pressed to keep up with inflation during the year ahead, especially if 1981 turns out to be a period of expensive credit. Moreover, the weakening of economic growth in many of the other major industrialized nations reduces the prospects for expansion in our own exports. New uncertainties about the price and availability of oil, resulting from the continuing war between Iraq and Iran, surely do not help.

We must also take account of the domestic economic legacy that President-elect Reagan will soon inherit from the Carter Administration. The news is not good, and it is perhaps worse than many of us in the private sector had anticipated. First and foremost is the problem of a budget which can only be described as hemorrhaging. Despite the great amount of talk about fiscal restraint that we have heard during the recent past, federal expenditures appear to be rapidly outpacing even the most recently raised target. What just a few months ago was advertised as a balanced budget (that for the fiscal year ending on September 30, 1981) is likely to yield a deficit larger than the \$59 billion of red ink experienced in fiscal year 1980. This is a very impressive order of magnitude that has significant impacts on financial markets, especially when off-budget financing is added to the Treasury's chores.

Secondly, the pipeline of additional, costly regulations that the federal agencies are now writing and are scheduled to be issued in the months ahead will generate additional cost-push pressures. That pipeline includes the Toxic Substances Control Act, the Resource Conservation and Recovery Act, the Clean Air Act Amendments of 1977, the Clean Water Amendments of 1977, and OSHA's new Generic Carcinogenic Standard. In addition, several other elements of cost-push inflation must be taken into account. On January 1, increases are already scheduled in social security taxes and in the statutory minimum wage.

Thirdly, the stop-and-go monetary policy that has characterized 1980 will cast its shadow on 1981. The very slow growth in the money supply between January and August—an annual rate of three and one-half percent (as measured by M1-B)—was, as we may now recall, followed by an almost meteoric rise in the following three months—a yearly rate in excess of 18 percent. The next shift in the Federal Reserve System's monetary policy, is likely to be on the side of restraint in the months ahead. Depending on the speed and intensity of the change, the fragile recovery may sputter or even abort.

In this context, therefore, economic policy prescriptions must be carefully crafted. Surely, large cuts in personal and corporate income taxes would be extremely helpful in providing necessary incentives for expansion of private investment, production, and employment. It is necessary to put substantial tax reduction high on the policy agenda. Then, with a lesser flow of revenues into the government, future budget planning will be more modest and restrained. That careful planning at the federal level is more likely to produce lower deficits and reduced inflationary pressures than the traditional approach. By contrast, under the present procedure, generous budget appropriations are approved and taxes are cut late in the Congressional cycle—with the predictable result of higher deficits and more inflation.

A fundamental change would occur in government thinking under the new procedure. Rather than concentrating on what further expansions in government programs could take place, government officials would be forced to ferret out old and obsolete programs that are no longer worth maintaining under the new fiscal restraint. It is pertinent to note that President-elect Reagan already has appointed a task force of knowledgeable, former budget officials who are identifying inefficient, wasteful and other low-priority government spending activities.

Such actions could well be supplemented, in large measure, by two important policies. First, we need a program of regulatory reform designed to focus on more

effective and less burdensome ways of achieving desired social goals. And second, a sensible monetary policy geared to steady growth at more modest levels than we have recently experienced is a vital part of any package of economic policy actions that are designed to promote capital and job formation—and that are also consistent with lower rates of inflation. It is a tall order, but the need merits the effort. The response to the actual implementation of such a new program by both business and consumers is likely to be extremely positive.

A LOOK TOWARD THE FUTURE

Not all of what I anticipate in next year's economy is good news, but let me stress some optimistic notes. Over a four-year period, some key changes would be noticeable in the replacement of Jimmy Carter with Ronald Reagan in the Oval Office. Perhaps the most immediate and obvious change will simply be new faces. The extremists among the self-styled public interest groups will no longer be prominent in the appointments to the major federal commissions and agencies. There will be far more balance in the appointments process, especially toward men and women with solid, real-world experience. Clearly, these measures will have a salutary effect on public policy toward the private sector.

In an overall sense, what could a Reagan administration do? First of all, I expect that tax rates will be cut substantially; consequently, the growth in government spending—especially in social programs—would be slowed considerably. It may become fashionable once again for a president to veto liberal spending bills. Moreover, it is likely that more attention will be given to capital formation, and especially to the concerns of small- and medium-size businesses under a Reagan presidency. There will be less regulation—but, as in other areas, much will depend on the Congress, since we must keep in mind that regulation is carried out under congressional statute. No, I do not expect that EPA, OSHA, or EEOC will be abolished. But a major effect will be launched to cut back and reform wasteful and counterproductive regulation. This is an encouraging aspect of the 1981 economic outlook.

Of course, we cannot ignore foreign policy. It would not surprise me if, early in a new administration, the Soviet Union would "test" any recently sworn-in Chief Executive. Thus, I expect that President Reagan will find himself devoting a good deal of his attention to foreign policy and international events. As a direct result of this, a significant expansion in national defense spending and military capability appears most likely. Certainly, much improvement needs to be made in the quality and preparedness of our defense forces.

In any administration, defense and foreign policy matters tend to get more attention that the undramatic "nitty gritty" of economic concerns. For one thing, the public often is more interested in personalities than in substantive issues. A story in the media on Ayatollah Khomeini or Billy Carter or whatever always provokes more citizen interest than a White House statement on fiscal or monetary policy. This is unfortunate, but perhaps the Reagan administration will bring more balance to economic matters.

We must remember that, over a four-year period, no president ever gets his entire initial program enacted. Whatever the party in power, that old saw about ". . . and Congress disposes" still has substantial applicability. Moreover, all presidents, no matter how qualified, undergo a very special form of "on-the-job training." A leavening process takes place in every administration, brought about in part by the tendency for a wide variety of views to be volunteered, especially as a new president enters the White House. Nonetheless, every president tries to be his own man and to assert his independence from interest groups, especially those which are too obviously trying to reduce his freedom of action.

In general, over the next four years, a fundamental change in national outlook could begin to take place—a shift away from an instinctive dependence on government to solve the problems facing society, and towards the private sector as the basic engine of economic growth and progress.

To those who are pessimistic about the long-run outlook for the American economy, I point to the continued inflow of foreign money. Despite the scare stories about "America for Sale," I am not worried that foreigners are buying some of our land, farms, and businesses. I recall that it was not too long ago that Western Europe was worried that American financial interests and companies were becoming too important in their economies. The French used to write about the "Coca-Cola-nization" of their country. We replied, of course, that U.S. in-

vestment was good for France. It created jobs and income in that country, and American firms also paid taxes there.

Unless we speak with forked tongue, that is the current situation here in the United States. And, in point of fact, one of the few opportunities that we have to get back the dollars we send OPEC is to have those oil-producing nations spend and invest their money here. Providing they fully abide by our laws, foreign investors have a beneficial impact; they create jobs, income, and tax collections in our country. Also, the inflow of foreign investment is a vote of confidence in the underlying strength of our political and economic institutions.

A final thought: I see no economic Valhalla in the coming four years—but I surely do not expect the kind of 1984 envisioned by George Orwell. The strong medicine that I described earlier—the tax cuts, the budget restraint, the regulatory reforms, and the monetary steadiness—can, and hopefully will, provide the basis for a sustained and less inflationary period of economic growth and prosperity in the middle 1980's. That is an exciting, though hardly guaranteed prospect.

V. PROCEEDINGS OF THE SEMINAR ON EMPLOYMENT

A. Participants

Chairman: Representative Parren J. Mitchell.
Cochairman: Sol C. Chaikin, International Ladies Garment Workers Union.
Presenters: Robert Holland, Committee for Economic Development.
Charles C. Killingsworth, Michigan State University.

Arnold, Melvin,	Eaton Corp.
Brown, Janet,	Environmental Defense Fund.
Byrom, Fletcher L.,	Koppers.
Cantor, Arnold,	AFL-CIO.
Creedon, John J.,	Metropolitan Life Insurance Co.
Davis, Donald,	National Council on the Aging.
Dunlop, John T.,	Harvard University.
Edgar, Richard,	New York Stock Exchange.
Finley, Murray H.,	Clothing & Textile Workers.
Fisher, John W.,	Ball Corp.
Gagnier, P. H.,	Chrysler Corp.
Gardner, Sid,	National League of Cities.
Garza, Pedro Ruiz,	Ser-Jobs for Progress.
Herring, Leonard G.,	Lowe's Cos.
Hodin, Michael,	Pfizer, Inc.
Hoving, John H. F.,	Federated Department Stores.
McGuire, Willard,	National Education Association.
Mayer, Arnold,	United Food & Commercial Workers International Union.
Miossi, Alfred F.,	Continental Bank.
Perera, Ana Maria,	National Association of Cuban American Women of the U.S.
Reynolds, David P.,	Reynolds Metals.
Smiley, Donald,	R. H. Macy & Co.
Wilson, Robert,	LBJ School of Public Affairs.
Wurf, Jerry,	American Federation of State, County, & Municipal Employees.
Zayas, Edison,	National Federation of Independent Businesses.

B. Presentations

STATEMENT OF REPRESENTATIVE PARREN J. MITCHELL (D-MARYLAND), MEMBER, JOINT ECONOMIC COMMITTEE

We are here this afternoon to establish priorities and consider alternatives to existing employment policy. We should make an effort to consider alternatives that may be adopted over the next several months while at the same time considering their long-term impact. There is certainly no shortage of problems to solve; the national economy appears headed for a weak recovery, with growth too slow to permit much reduction in overall unemployment. Unless we act to alter this course, we will emerge from this recession with greater "stagflation" and the structural imbalances more deeply embedded than ever.

In developing an agenda, I propose we begin with one of the most pervasive, longstanding and chronic of our economic conditions. That is the condition that results from a disproportionate burden of unemployment shared by racial minorities in no-growth, inner city communities.

The costs of this condition, both economically and socially, have geometrically increased with each year of neglect. Currently these costs represent staggering waste of our natural resources and perhaps the single most identifiable national security threat to this country.

Despite the recent years of strong employment gains for the nation as a whole, many of our central cities continued to decline. The primary and secondary metals industries, which normally create steady entry level employment in the Great Lakes and Northeastern corridor, were steadily losing their competitive advantage to international competitors. Cities as Detroit, Cleveland, Pittsburgh, Buffalo and Baltimore had yet to recover from the last economic turndown when this recession began. This resulted in Blacks and other racial minorities who reside in the inner city actually losing ground relative to white workers during the decade of the 70's. Disproportionate numbers of Black and other minority families live below the poverty line and the income gaps continue to widen—not shrink. The unemployment rate for Blacks and other minority groups is double that of whites—in good times and bad.

Except for the highest educated workers, Black workers lack comparable access to higher skilled, better paying jobs in our society.

We cannot consign another generation of minority youth to long periods of idleness and hopelessness. It will take a concerted attack, including substantial new job opportunities, to overcome the legacy of inequality.

I am totally open to new approaches and hopeful that some concrete ideas for changes in employment policy will be presented here today. However, we should not, out of frustration with existing programs, consider an abrupt termination of existing programs. After seven years of experience with CETA, we are only now beginning to learn what the programs have accomplished in terms of improving the employment and earnings prospects of participants. We should carefully examine alternatives without dismantling current programs.

We should take the approach of phasing in targeted economic development incentives or a new type of tax credit to encourage employment and training by private industry and phase out existing programs based on the success of the new initiative. Far from being duplicative, operating different approaches in tandem offers a way of comparing program performance before committing all of our resources to one method or the other.

In searching for new ways to stimulate private employment and training opportunities, I would strongly emphasize an expansion of the small business sector in general and the minority business sector in particular. Minority-owned businesses could play a leading role in alleviating structural unemployment. They certainly have the potential for providing new jobs, at a large range of skill levels, in our inner cities. This work experience, through small business employment generation, will serve to broaden the opportunities for inner city youth.

Despite the urgency of our problems, there are some corners that simply cannot be cut. The push for economic development and industrial revitalization cannot come at the expense of the health and safety of the American worker. I am certain that a complete accounting would reveal that the benefits of maintaining appropriate standards in these areas fully justify the costs.

This conference today is a broad appeal for advice, for your best thinking on what the future direction of employment policy should be. We are not seeking to develop a consensus for particular approaches or viewpoints. Instead, I hope we can draw upon the discussion to shape legislative proposals and further investigation of the issues in the days ahead.

STATEMENT OF SOL C. CHAIKIN, PRESIDENT, INTERNATIONAL LADIES
GARMENT WORKERS UNION

Stagflation, the simultaneous occurrence of economic stagnation and price inflation, has been the peculiar economic malady of the 70's. Irrespective of party affiliation, three successive administrations have failed to cure this lingering, debilitating illness. May I suggest that this is because the prescribed medicine may have been contributing to prolongation of the sickness.

The medicine was recession. The idea was to bring down the fever of inflation by cooling the economy. The theory was that prices would be held down if demand was held down and to do so it was desirable to make money scarce by raising interest rates.

Since 1974-75—no matter who was in the White House—the medicine of high and ever higher interest rates was dosed out. When neither the Executive nor the Congress moved in that direction, the Federal Reserve Board did.

We have been taking that medicine for more years than is good for us and, from all visible evidence, that medicine is making the patient—I mean this country—sicker. And the reason is not hard to find.

If interest rates go up, then the cost of money goes up and that pushes up the cost of everything in our economy that involves money—which is the total economy.

If interest rates go up, then small businessmen find it hard to survive. As they collapse, their place in the market is occupied by the giants who move increasingly to monopoly positions—with the usual inflationary result.

If the economy is deprived of needed capital to expand, supply runs short—and that is inflationary.

If prices outrun purchasing power, the inflation brings on unemployment, because people don't have enough to buy what we can produce. Hence, we are hit simultaneously by inflation and recession.

Finally, that recession becomes inflationary, because plants are only run at partial capacity and all the idle overhead adds to unit costs.

The policy of high interest rates must, under ordinary circumstances, be both inflationary and recessionary. The proof is in the experience of almost a full decade.

Unfortunately, this dangerous dogma that offers us two miserable alternatives—unemployment or inflation—has been so widely accepted that it has come to be regarded as an incontrovertible truth.

In reality, if a truth has emerged from the past decade, it is that the conventional wisdom is insufficient to deal with stagflation, which within the context of our economic experience, is a highly unconventional circumstance. Clearly, the time has arrived to explore new approaches.

The Joint Economic Committee's emphasis of supply side economics is a half-step in the right direction. I say a half-step because in recommending ways to induce the private sector to produce more, the Committee has ignored the most critical incentive, namely increased demand.

The notion that more money at the top will mean more investment in production and jobs, research and development, is a half truth at best. The expected investment will only take place if there is a market for the product. If buying power of wage and salaried workers lags, the market will be weak and the expected investment will not be forthcoming.

Investment incentives alone may induce business to modernize, to replace inefficient equipment, but the decision to add to productive capacity, to increase supply is contingent entirely on the level of demand. I make this assertion on the certain knowledge that no business person will increase output merely to fill warehouses.

Indeed, even when there is a market, there is no certainty that corporate accumulations will be used to expand production in the United States. Such profits may be used for overseas investments, for higher executive salaries and bonuses, for speculation in land or commodities, or for the acquisition of already existing companies. In this last instance, the new acquisitions often lead to greater concentration in ownership that results in monopoly pricing—and more inflation.

Nor is this merely a theoretical assertion. Since 1975, the dominant investment activity on the part of corporate America has not been to expand but rather to acquire existing firms and their producing facilities outright. In the past five years, a staggering one hundred billion dollars has been diverted from new productive investment into corporate takeovers which benefit only those few fortunate enough to own the business. For the overwhelming majority of Americans who do not derive investment income, the benefit has been nil; and to the extent that such activity concentrates ownership, strengthens monopoly, reduces competition, and stagnates growth, it has contributed to our dilemma.

But if we do not finance our businesses with higher profits and with tax reductions, how then, it is asked, will we raise the necessary capital for our capitalist economy?

In recent decades, the great, probably the greatest source of financing is the worker pension fund. Some 40 percent of the publicly traded shares are now owned by workers' pension funds, and the percentage is on the rise. The same trend is repeated in bonds and other debt instruments.

These pension funds, however, are only one of the sources of capital formation based on the earnings of wage and salaried people. There are also health and welfare funds and union treasury funds.

Experience suggests that higher earnings by wage and salaried people are the surest way to speed capital formation. Full employment

is a necessary adjunct to this process and would certainly aid in the creation of the requisite demand—if we are to induce business to produce more.

I am in complete agreement with those who feel that the private sector should provide the overwhelming proportion of new jobs. But in making this statement, I am mindful that in the United States there are distinct divisions within the private sector economy.

At the top, are the colossal corporations known collectively as the Fortune 500. They embody what has been referred to as the first-tier economy. This first-tier is rich, large-scale, pays good wages and controls its markets.

The other component of the private sector—what I refer to as the second-tier—is engaged in comparatively miniscule operations such as marginal manufacturing, local retailing and individual contracting. It is virtually invisible as it struggles to stay alive in the shadow of its celebrated sibling.

The first-tier is generally depicted as the American economy; the second-tier goes generally unnoted, even unnoticed, although it embraces well over 90% of all enterprises and employs nearly 85% of wage and salary earners in the private sector.

Ironically, the second-tier is the very model of what our business system is supposed to be, for it follows the traditional concepts of Adam Smith and the present preachments of Milton Friedman. Yet, precisely because the second-tier lives by what are allegedly the proper rules of free enterprise, it cannot “make it” in a capitalist society where capital—and plenty of it—is an essential element of success.

Moreover, because second-tier manufacture is frequently carried on with antiquated technology, it is precisely the area in which investment capital can produce the greatest increase in productivity.

Unfortunately, the loss of jobs in second-tier, labor-intensive manufacture has been considerable in recent years. Almost unrestricted imports from low-wage nations have been the principal cause. The policy of high interest rates has exacerbated this problem. And most importantly, the job loss in labor-intensive manufacture has not been balanced by a growth of jobs in capital-intensive manufacture such as steel and autos where jobs are also threatened by imports.

Even if the first-tier economy could provide the needed new jobs, there is no guarantee that all or even a majority of the displaced second-tier workers could be re-employed.

The main lesson to be learned from the War on Poverty of the 1960s is that occupational adaptability is far from perfect, the even under the most optimal of circumstances there are limits to the success of retraining. The attainment of full employment in our nation requires a full spectrum of job opportunities, from the least skilled to the most advanced.

When an industry or a substantial fraction of it is phased out of existence, we are faced with the costs of diminished production, underutilization of industrial plant capacity, and increasing gap between real and potential gross national product, as well as an increased burden on its taxpayers forced to support those who are jobless.

Aside from the governmental costs of unemployment, there are enormous social costs as mature workers find themselves on industrial

scrapheaps. According to the Eleventh Annual Report of the National Council on Economic Opportunity, a rise of one percent in unemployment in the United States is responsible for a rise of 3.4 percent in admissions to psychiatric institutions of about 4 percent in suicides, of 2 percent in deaths from cardiovascular and renal diseases and cirrhosis of the liver, of 4 percent in state prison admissions, 5.7 percent in robberies, 2.8 percent in larcenies and 8.7 percent in narcotic arrests.

As we attempt to solve the riddle of stagflation, it is therefore necessary that we pursue a rational industrial policy which acknowledges the need to maintain a full range of job opportunities. Such a policy would prevent discrimination against second-tier workers and employers as we move toward the reindustrialization of America. This approach would protect not only Chrysler and Lockheed workers but also the 300,000 apparel workers whose jobs disappeared during the last decade.

Another necessary component in the battle against stagflation is a rational policy of fair trade, the central feature of which would be negotiated import quotas allocated on a global basis in those sectors where import penetration has significantly diminished domestic employment.

Without the knowledge that a major portion of the United States market is secure from unfair trade competition, neither first- nor second-tier firms engaged in import-sensitive enterprises will be likely to increase productivity through increased investment and expanded operations.

Increasing the progressivity of the tax rates, improvements in the funding levels for social transfer payments, and indexing the minimum wage for almost ten million workers to 60% of the average industrial wage will help to provide the increased demand which is a necessary precursor to meaningful stimulation of the supply side. Moreover, these steps will provide a direct measure of relief to those who have the least and have suffered the most from the ravages of inflation.

Finally, we must provide subsidies, tax incentives and low-interest loan guarantees to second-tier employers. If we are to put America back to work and increase supply, we cannot arbitrarily exclude the second-tier which is the major sector of our economy in terms of employment and potential for productivity increments.

STATEMENT OF ROBERT HOLLAND, PRESIDENT, COMMITTEE FOR ECONOMIC DEVELOPMENT

Nine key points around which I think it makes sense to design and implement national employment policy:

(1) This nation ought to accept and pursue, as one of its key national goals, the sustained achievements of a job opening for every American who is ready, willing, able and available to work (note: considerable "transitional" unemployment could still exist under this goal).

(2) But this employment goal cannot be reached by inflating the economy.

(a) Because fighting inflation is a priority national goal.

(b) Because cumulative inflation erodes the capacity of the economy to provide jobs.

(3) Overall fiscal and monetary policies can make their best contribution to employment by steadily expanding the economy at the fastest growth rate consistent with not triggering an inflationary spiral (such growth would eliminate what I will call "demand" unemployment).

(4) But under present labor market conditions, this will leave a larger total of people still unemployed than is consistent with our employment goal in Point #1 (this excess over "transitional" employment I will call "structural" unemployment).

(5) To eliminate structural unemployment will take a combination of carefully designed public and private policies, some aimed at improving the labor supply and some aimed at improving the supply of jobs.

(6) On the labor supply side, policies and programs are needed to improve the vocational component in education, expand job training, and assist workers to find and travel to needed jobs.

(7) On the job supply side, policies and programs are needed to better adapt jobs to the skills, needs and limits of the available labor force, and help close geographic gaps between the limits of worker mobility and preferred business location.

(8) On both the labor supply and job supply sides, these programs for job training, job adaptation and job creation need to focus in the private sector, where most of the jobs are. Effective procedures for public-private cooperation, particularly at the local level, can do much to further these objectives.

(9) Also important on the job supply side are policies that can encourage more business expansion (within a noninflationary monetary and fiscal environment) through relaxing regulatory fetters and reducing investment disincentives that cost us more in lost jobs and growth than they produce in offsetting benefits.

Adopting and implementing these points will take time, but the sooner we begin striving in earnest the sooner we will achieve our goal.

JOBS FOR THE HARD-TO-EMPLOY—NEW DIRECTIONS FOR A PUBLIC-PRIVATE PARTNERSHIP*

Summary of Major Recommendations

Americans have long considered it a basic goal to have the opportunity to work, to earn a decent living, and to provide for their families. For the vast majority of adults, what they do to earn that living constitutes a vital part of their identity and sense of values.

Yet, the United States has within its population a growing number of people with special burdens that keep them out of the mainstream of the labor force. Most jobs in this country are designed for prime-age, full-time, socially disciplined workers. However, there are large groups of people in this country who want to work but cannot obtain useful jobs, even in relatively good times, because they: are undereducated, unskilled, or inexperienced; are considered too young or too

*Summary of a statement by the Research and Policy Committee, Committee for Economic Development.

old; are unable to work full time; are subject to discrimination or restrictive labor market practices; and lack the basic work disciplines and abilities necessary to get and hold a steady job.

For the past thirty years, high employment has been a major goal of the nation's economic policy. But except during wartime, this goal has rarely been achieved. During recent years, in fact, the official unemployment rate reached its highest level since the Great Depression. In the first eleven months of 1977, the average number of unemployed still amounted to 6.9 million persons, or 7.1 percent of the civilian labor force.

We believe that this country must make a strong national commitment to high employment and to a situation in which the number of job openings essentially matches the number of those seeking jobs at reasonable wages and in which people able and willing to work have adequate opportunities to be trained and guided toward suitable job vacancies within a reasonable period of time. This commitment must, of course, be pursued in a manner consistent with the nation's other major economic and social objectives, especially the need to curtail inflation.

The primary means of developing adequate training and job opportunities is through strengthening the demand for goods and services in the economy as a whole and in particular sectors and regions.

A vigorous and sustained demand expansion is necessary to overcome cyclical joblessness (which stems primarily from an overall deficiency in demand). It is also the single most effective means of reducing *structural unemployment*, which affects particular groups of job seekers because their education, skills, or locations do not readily match available jobs or because they are handicapped by discrimination and other labor market barriers. However, experience has shown that by itself, a demand expansion strong enough to result in a dramatic rise in jobs for the hard-to-employ is also likely to create serious inflationary pressures.

But the tasks of achieving sustained high employment and conquering inflation are not mutually exclusive. They can and must be attached simultaneously. Therefore, any steps toward healthy demand expansion need to be accompanied by a range of measures to make the economy less inflation-prone. These should include steps to increase its competitiveness and efficiency, to eliminate restrictive practices in product and labor markets, and to enlarge capacity and supply availability.

In earlier policy statements, CED has dealt extensively with ways to improve overall demand management, strengthens economic efficiency and investment incentives, and fight inflation. We are continuing active studies in all these areas. In addition, our new study *Revitalizing America's Cities* is examining the massive problems of the nation's urban centers, including the plight of the deteriorated inner cities, where unemployment is highest. We will explore ways to create the conditions that might bring needed jobs back to these areas and, where necessary, to help bring inner-city residents to suitable jobs in other locations. In other studies, we shall examine means of averting or overcoming the special unemployment problems caused by such factors as unfair foreign trade competition and excessive government regulation.

In this policy statement, we are concerned primarily with the urgent need for a wide variety of measures to cope *directly* with the structural unemployment problems of those groups that have consistently had special difficulties in the labor market—particularly the young, the old, and the disadvantaged—and to increase incentives for productive work.

Unfortunately, there is no single solution or major policy program that can eliminate unemployment for all these chronically affected groups. What is needed instead is an integrated set of public and private actions that will benefit groups and areas of the economy with particularly severe unemployment problems without aggravating the existing inflation.

Government programs to train and provide jobs for the hard-to-employ, including public-service employment, must continue to play a major role in national manpower policy. We welcome the recent increased emphasis by both Congress and the Administration on direct measures to deal with the unemployment problems of hard-hit groups, particularly disadvantaged youths and veterans.

However, four out of five jobs in the United States are in the private sector. A stronger private-public partnership must be developed to increase training and job opportunities in that sector and to speed the transition of the hard-to-employ from government income support and subsidized public or private jobs to perma-

ment private employment. Key ways in which this can best be accomplished are the focus of this study. In particular, we recommend the following measures:

New and expanded use on a nationwide basis of private-sector programs that already work effectively and creation of a clearinghouse for disseminating information about successful and innovative programs.

Stronger organizational mechanisms to mobilize private-sector involvement, including much wider use of:

Direct government manpower contracts with private nonprofit organizations created by consortia of business firms.

Other types of intermediary organizations that can help business handle job development, training, and placement activities.

Jobs corporation to provide training and jobs for the hardest-to-employ.

Cooperative community efforts, involving businesses, nonprofit organizations, unions, schools, and governments, to increase training and job opportunities.

Increased incentives and reduced disincentives for private employment of the hard-to-employ, including additional experimentation with categorical tax credits, with stipends for trainees and apprentices, and with selective exemptions from the minimum wage and increased social security earnings ceilings.

Improved approaches to the problems of particular groups among the hard-to-employ:

Increased stress on business involvement in skill training and upgrading of the disadvantaged.

An improved transition from school to work for youths as well as other age-groups, including increased use of apprenticeship and cooperative education programs.

More productive use of midcareer and older workers, including steps to smooth the transition from regular work to retirement.

Increased and wider use of alternative work patterns to make more employment available to the young, the old, and other workers who cannot conform to a full-time work schedule.

Greater business use of alternatives to outright layoffs in recessions, including skill upgrading and work sharing.

Improved management and closer integration of government programs that facilitate the employment of the hard-to-employ, particularly the U.S. Employment Service and the Comprehensive Employment and Training Act (CETA) programs.

This agenda for action is neither impractical nor visionary. In fact, many businesses, nonprofit organizations, and governments throughout the country are currently carrying out many such programs that are increasing training and job opportunities for the hard-to-employ. In connection with this policy statement, CED has surveyed its own trustees' companies and other firms and has found numerous instances of successful private-sector programs and constructive business-government cooperation.

These and other successful programs can and should serve as models for more action and innovation by both large and small businesses and for more active business-government-community cooperation. Focusing attention on these programs should also help government agencies and civil servants to be more receptive to such initiatives.

To be fully effective, the approaches that we recommend in this statement must be paralleled by continuing strong efforts to overcome the barriers to employment and career advancement that are the result of discrimination. For example, even the best skill-training program for the hard-to-employ is of little use if those who complete it are refused jobs because of their race, sex, or age. There is also a major need for identifying and changing various existing legislative requirements, government regulations, and union or business practices that tend to discourage employment of the disadvantaged and other hard-to-employ groups.

There have been suggestions that the nation can learn to live with unemployment and can simply give income support to those who are poorly equipped to compete for available jobs. However, we believe that this country cannot justifiably deny its citizens the opportunity to work for an adequate income and to be free from the desperation and frustration that frequent or long-term unemployment can bring. Nor can the country ignore the huge economic and social costs of goods not produced and services not rendered and the truly enormous costs of supporting an increasing number of nonworkers. In the long term, such wasteful use of resources is likely to add to rather than curtail inflation.

Both government and business must acknowledge these costs and begin to break down the barriers that separate millions of people from productive work. In doing so, they will find, we believe, that most people want to work, that most of the unemployed are employable, and that most of the untrained are trainable.

STATEMENT OF CHARLES C. KILLINGSWORTH, PROFESSOR, MICHIGAN STATE UNIVERSITY

UNEMPLOYMENT INSURANCE AND OLD AGE INSURANCE ARE IN TROUBLE

Probably the safest economic prediction in this season of uncertainty is that the new Congress will enact a huge personal and business income tax cut. The Kemp-Roth Bill is the leading candidate at present. The generally-accepted estimate of the size of the Kemp-Roth tax cut is \$192 billion per year by 1985.

This is neither the time nor the place to review the now-familiar arguments for and against the Kemp-Roth approach. Instead, I wish to call attention to a generally-ignored adverse effect that seems likely to result from tax cuts on the Kemp-Roth pattern amounting to hundreds of billions of dollars. Two of our oldest and most important social insurance systems are in serious financial trouble.

If we postpone consideration of their troubles until after the Kemp-Roth Bill (or some modification of it) has passed, we will find ourselves in a period of severe budgetary stringency that will compound the difficulty of finding solutions to the problems now clearly apparent in these two social insurance systems.

In an increasing number of states, unemployment insurance tax collections are less than current benefit payments, and reserves have been exhausted, so that payments must be financed by loans to the states from the Federal government. The Old Age and Survivors Trust Fund also faces a financial crisis during 1981; benefits have exceeded contributions since 1975, and during the coming calendar year, the reserves of this system will be used up. In both of these systems, borrowing money to meet current benefit payments can be no more than a temporary expedient which postpones but does not solve the crisis. The existing financial arrangements for these two systems can be maintained only by substantial increases in payroll taxes. The only real alternative to higher payroll taxes (aside from a drastic reduction of benefits) is an infusion of general revenue funds from the Federal government.

I urge the Congress to give consideration now to a plan to *avoid* large future increases in payroll taxes by diverting a small fraction of the hundreds of billions of dollars of income tax cuts proposed by the Kemp-Roth Bill. This approach can realistically be viewed as a change in the *form* of a part of the tax relief under consideration, rather than a reduction in the total amount of tax relief.

Unemployment insurance is financed by a payroll tax which is technically levied by the Federal government. But employers are allowed to offset against the Federal tax almost all of the unemployment insurance taxes paid to State governments. Under a complex system of experience rating, employers may receive state tax reductions (without reduction of the federal offset) if relatively few unemployment insur-

ance claims are filed by their employees. Hence, actual unemployment insurance tax rates vary considerably from state to state and from employer to employer within states. Generally speaking, states with low unemployment rates levy lower unemployment insurance taxes than states with high unemployment. The states usually collect more in taxes than they pay out in benefits during good times, and the surplus goes into a reserve fund. Then, when unemployment goes up during a recession, the reserve fund is drawn upon if necessary to pay any excess of benefits over current revenues. If the state's reserve fund is exhausted, it may borrow from a Federal loan fund, interest-free. Under current law, such loans must ultimately be repaid. If the state fails to take the necessary steps to raise the money for repayment, then the Federal government may impose a blanket tax increase on all employers in the state until the loan is paid off.

The steep recession of 1973-75 substantially weakened the reserves of most of the states, and the continuation of high levels of unemployment after the recession ended, slowed the rate at which reserves were rebuilt. An indirect but very pertinent indicator of the condition of the reserve funds is the number and amount of outstanding Federal loans to these reserve funds. As shown in the accompanying table, in 1974 only three states had loans outstanding, and the total amount of loans was \$111.4 million. By 1975, 15 states owed \$1,589.1 billion; in 1976, 21 states owed \$3,402.4 billion; and by the end of 1979, 14 states owed \$4,445 billion. Thus, the outstanding loans were negligible at the beginning of the 1973-75 recession, but were massive at the beginning of the 1980 recession. And by the end of 1980, 17 states owed a total of \$5,078.6 billion.

In a real sense, these loans represent deferred payroll taxes payable by the employers in the debtor states. The loans resulted from the inability of the states to meet current benefit payments from current revenues plus reserves. This inability, in turn, resulted mainly from much higher unemployment rates in the late 1970s. In the five-year period 1970-74, benefit payments totaled \$28.3 billion; in the ensuing five year period 1975-79, payments were \$67.0 billion, or more than twice as much. The UI payroll tax increases will be levied in what can be called a perverse fashion. The increases will be largest in those states that have had the most unemployment; and within those states, the employers who have had the most layoffs will have the largest tax increases.

The Old Age and Survivors insurance system has also been adversely affected by the high levels of unemployment during the past five years. Some of the effect has come through an increased number of early and regular retirements, as older workers faced increasing difficulty in finding new jobs after losing their old ones. But the main effect has been lower-than-anticipated revenue from the Social Security taxes, despite increases in both tax rates and the tax base. A recent Joint Economic Committee study estimates that in the current year, for every one million workers laid off for one month, the Social Security fund loses about \$100 million in contributions. On an annual basis, that is a loss of \$1.2 billion for each additional one million unemployed; or, in 1980, a loss in excess of \$2.0 billion because of the unemployment increase since January. Many more billions were lost

because of the exceptionally high levels of unemployment during the 1975-79 period.

These two programs are cornerstones of our national income security system. No responsible political faction advocates their abandonment. Both are in serious financial trouble because of excessive unemployment in recent years. In the absence of other remedial measures, large increases in tax rates loom directly ahead for both programs if their present financing arrangements are to be continued. Payroll tax increases concurrent with income tax cuts will increase the inequities of our present tax structure. For example, more than half of all American families now pay more in Social Security taxes than in income taxes. And in the case of the UI tax increases, the largest increases will fall on the states and employers who have been most adversely affected by the last two national recessions.

Under these circumstances, I propose that we avoid large payroll tax increases in these essential programs. I propose that some of the billions of dollars proposed for income tax cuts in the Kemp-Roth Bill be diverted as follows: \$5 billion to pay off the current indebtedness of the states to the Federal loan fund, with additional sums later to be used as needed to assist the states to meet the extraordinary costs of unemployment insurance when the unemployment rate rises above some trigger rate—say, 6 percent; plus an infusion of \$10 billion into the Social Security reserve funds to meet the looming crisis there. Over a longer period, we should study the question whether there should be a permanent commitment of federal general revenue funds to both programs. That study should not be made under the pressure of crises in both programs.

My final point is that payroll tax increases are probably more inflationary than income tax cuts. So my proposal would contribute to the fight against inflation, in addition to rescuing two important social insurance programs that are in serious trouble.

TABLE 1.—OUTSTANDING FEDERAL LOANS TO STATE RESERVE FUNDS, BALANCE

(In millions of dollars)

	1974	1976	Nov. 29, 1979	December 1980 ¹
Alabama.....		30.0		
Arkansas.....		20.0		3.0
Connecticut.....	62.0	363.2	371	370.9
Delaware.....		20.5	47	43.8
District of Columbia.....		33.6	71	65.5
Hawaii.....		22.5		
Illinois.....		515.3	946	946.5
Maine.....		14.9	36	36.4
Maryland.....		36.1		
Massachusetts.....		265.0	232	231.7
Michigan.....		571.0	624	842.0
Minnesota.....		123.0		1.9
Montana.....		1.4	7	
Nevada.....		7.6		
New Jersey.....		497.2	652	651.9
Ohio.....				191.0
Oregon.....		18.5		
Pennsylvania.....		552.9	1,222	1,388.4
Puerto Rico.....		57.0	89	88.7
Rhode Island.....		65.8	103	121.2
Vermont.....	5.3	37.5	35	40.7
Washington.....	44.1	149.4		
West Virginia.....				47.2
Virgin Islands.....			10	7.9
United States.....	111.4	3,402.4	4,445	5,078.6

¹ Includes loans which have been requested through December 1980.

C. Submitted Statements

STATEMENT OF ARNOLD CANTOR, ASSISTANT DIRECTOR, DEPARTMENT OF ECONOMIC RESEARCH, AMERICAN FEDERATION OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS

As the nation starts the decade of the 1980s, the economy is saddled with the twin evils of recessions and continued high inflation. The economy is slowing down; industrial production and housing starts are decreasing; sales are waning; and unemployment is on the rise. The downturn must be stopped and reversed so that the economy may reach its full potential of full employment, production and real income.

The basic human right of every American to full opportunities for useful paid employment at fair rates of compensation is part of this nation's body of laws. It is not a will-o-the-wisp nor an item for compromise and concession. It is a social and economic imperative.

The inflation rate has not been curbed by monetary policy, which continued to raise interest rates; rather, the higher interest rates became built into the inflation rate itself and helped push the economy into the recession.

Those suffering most from inflation are wage earners, retirees and the poor. Their purchasing power has failed to keep pace with inflation. Real earnings have declined, pension plans generally have failed to provide adjustments for inflation, and welfare programs have fallen further behind basic need levels.

The future economic health of the nation requires a strong industrial base to produce the goods America needs and wants. What remains of America's industrial base is being buffeted by a variety of forces as the nation continues to slip closer to a service-dominated economy.

It is time for the government to take the lead in developing a new partnership with labor and business to help reestablish a growing, diversified and secure industrial economy. Such a partnership may be difficult to achieve because of recent and continuing business hostility to basic aspirations of workers and their unions. However, such an effort to establish a limited partnership must be made.

The modernization of existing plant and equipment and the creation of new capacity are needed in many industries. This will require the combined efforts of labor, business and government to design and implement a comprehensive reindustrialization program. The effort must include a broad spectrum of industrial activities, so that America will have a diversified industrial capacity to meet its basic needs and to protect the security of the nation. To plan such a program will require the cooperation of the major economic forces in the country and to implement it will require large amounts of capital.

The AFL-CIO urges the creation of a National Reindustrialization Board, consisting of representatives of the public, labor and industry, which would recommend the priority and magnitude of reindustrialization to be undertaken in various industrial sectors and geographic regions, in light of the national economic and security interests.

The Board should have appropriate industrial and regional subcommittees to review the special needs of specific industries, as well as the particular problems faced by geographic regions. The Board should review the recommendations of the industrial and regional

subcommittees as they relate to industrial development in areas of high unemployment, and should aim to restore and revive the urban economic base. The Board should favor investments in areas served by mass transit facilities to further energy saving. The Board should encourage the use of American built equipment in its development strategies. The Board should seek to forestall shortages or bottlenecks that might have inflationary repercussions. In the process, the Board could also play an important role in reviewing inflationary forces that might be evidenced in the particular industrial sectors.

The Board should also be empowered to direct the activities of a Reindustrialization Financing Corporation (RFC), which would make or guarantee loans or participate in loans made by private lenders to finance reindustrialization projects approved by the Board.

The RFC should have access to both public and private funds to enhance its lending capability. Specific provision should be made to qualify pension funds to invest part of their assets in the RFC. Pension investment should be guaranteed.

The RFC should invest in private and quasi-public ventures through direct loans, loan guarantees and below market rate financing, and should supplement and complement existing public investment programs in building and developing facilities that serve as industrial infrastructure and encourage development.

Any reindustrialization policy must take account of the problems of plant closings. The devastating effects on workers and their communities from unannounced, sudden plant shutdowns and relocations should be eased by legislation requiring advance notification, financial assistance to workers, and basic employee protections of collective bargaining rights, transfer rights, relocation expenses, severance pay, continuation of pension and health care benefits and job retraining.

A reindustrialization program will require the cooperation and participation of everyone in society: taxpayers, through the government, would bear the burden of direct and indirect financial outlays; business would invest capital in needed expansion and modernization, and the pension funds of workers would also be used to invest in future economic health for the nation.

Only through true cooperative action, reflecting a balance of the interests of the public, labor and industry can the reindustrialization program objectives be achieved. The success of the program is vital for each of the interests concerned and for the nation as a whole.

Specific measures to meet employment problems:

1. The federal budget must provide stimulus to expand the economy and to cut unemployment.

2. Government programs must provide jobs for millions of unemployed workers and must be designed to meet the nation's needs for public services and public facilities through such programs as:

Employment and training programs for adult workers and youth.

Economic development programs with specific job commitments.

Initiate and accelerated public works investment program, including improvement of mass transit system and rehabilitation of railroads, highways, port facilities and airports.

Special transportation projects including rehabilitation of the railroads and expansion of urban mass transit.

Energy conservation programs including expanded weatherization programs for schools, hospitals, public buildings and homes of low-income families.

Special structural programs to meet the particular needs of minorities, women, handicapped individuals and others.

Such targeted job stimulation can best be achieved through direct programs tailored specifically to the needs of unemployed workers—not by tax cuts, tax incentives, wage subsidies, subminimum wages, and the like. Each dollar of federal funds used on direct government employment programs has two to four times more job-creating potential than a dollar of tax cuts, and direct job creation programs can be directed to the areas and the individuals where the need is greatest.

3. Equal access to job opportunities must be assured to every worker. All employers must be required to list job openings with the public employment service or a referral hiring hall that assures equal access without regard to race, creed or color. The U.S. Employment Service should be made an effective program for job placements.

4. Illegal immigration must be stopped. Employers who hire illegal aliens and those who traffic in transporting and placing illegal immigrants should be subject to stiff penalties. At the same time, those illegal aliens with a demonstrated attachment to the community should be afforded legal status to end their unconscionable exploitation at the hands of unscrupulous employers.

5. Low interest loans are necessary to encourage expansion of the housing industry, small business investment in plant and equipment, and state and local public investment.

6. The Federal Reserve must move to reduce interest rates and provide enough expansion of money and credit to assure balanced economic growth.

The structure of the Federal Reserve System must be made more accountable to the needs of the nation—through such essential actions as abolition of the bank-dominated Open Market Committee with its functions taken over by the Board of Governors, reduction of the term of office of the governors to seven years, and extension of membership to representatives of major groups in the economy, including organized labor.

7. An expanded program of targeted and stand-by countercyclical aid and other federal assistance for state and local government is needed to help meet urban problems and to blunt the effects of recession on urban areas.

8. Federal procurement and federal installations should be directed to areas of high unemployment.

9. The Nation's unemployment insurance system, must be improved and expanded and protect more workers and to support basic consumer buying power.

10. Establish a health care benefit program for the unemployed and maintain the necessary food stamp allocation, and halt the closure of, public health facilities that serve the poor and unemployed.

11. International trade and monetary policies also affect the U.S. economy and specific policies must address these issues. The Congress

and the administration should pursue an international economic policy that will stop the destruction and export of American jobs and the undermining of the nation's industrial base. This can be achieved by regulating the export of American technology and capital, eliminating the tax and other incentives that encourage U.S. companies to establish and expand their operations in foreign countries, and regulating the flood of imported goods and components that displace U.S. production. Trade adjustment assistance must be improved to help alleviate the immediate hardships of job loss due to imports.

The AFL-CIO supports programs and policies that will provide jobs for all Americans who want to work, strengthen the fight against inflation, assure a rising standard of living for all Americans, and bring about a more equitable distribution of the nation's income and wealth.

STATEMENT OF EDISON R. ZAYAS, CHIEF ECONOMIST, NATIONAL
FEDERATION OF INDEPENDENT BUSINESS

In 1984, Americans, including small businessmen and women, will be asking whether or not they are any better off than they were in 1980. The answer to that question will depend on the Reagan Administration's success in breaking the inflationary spiral that has rocked our once stable economic foundation. Inflation is this country's most serious problem, and conquering inflation must be the number one priority, not just for rhetorical purposes, but for policy purposes as well.

This long-overdue confrontation with inflation will require political courage, and consistency in the implementation of anti-inflationary policies. To gain the necessary support for those policies, the Reagan Administration must create an anti-inflationary climate and constituency. The American public must be convinced that inflation is the most serious threat to their financial well-being, and that price stability can only be restored with their support. It must be made clear that sustained economic growth is not possible so long as inflation continues unabated. Through persistence and well-conceived planning, the Reagan Administration can pave the way towards price stability, while fostering increased productivity growth and a more dynamic economy.

To arrive at such an economic state, the President-elect must openly advocate a restrictive monetary policy that aims at achieving greater stability, as well as significant reductions in money supply growth. The President-elect must also work closely with the Congress to not only reduce federal spending, but to significantly alter the mix of federal spending activities. At the same time, the President-elect must work with the Congress to remove the many structural rigidities in our economy (e.g., tax codes, bias against savings and investment, over-regulation, etc.) that promote our condition of high inflation and stagnant growth. Each of these steps are necessary to revitalize our economy, but taken individually, none of them are sufficient to accomplish the task.

The Reagan Administration must credibly establish in its first 100 days in office that they are committed to pursuing these specific long-

term policy measures. By doing so, they will be removing the prevailing uncertainty over the course of public policy, which has discouraged risk-taking, as well as investment in plant and equipment, and research and development spending. These adverse effects of uncertainty have in turn reduced productivity, contributed to inflation and to a less competitive business sector. The new Administration must be conscious of the fact that a stable public policy precludes a stable economic environment.

MONETARY POLICY

To the extent that excessive growth in the money supply is a prime contributor to the inflationary process, it is imperative that money supply growth be tightly controlled by the Federal Reserve Board. The Reagan Administration can eliminate a great deal of financial market uncertainty by explicitly supporting and advocating a prudent monetary policy from the outset. If inflation is to be reduced, support for such a policy must be unwavering, regardless of the short-term political pressures. Such a position would lend credibility to the President-elect's intentions to continually fight inflation.

Over the past year, the Federal Reserve has had great difficulties in consistently restraining growth in the money supply. The result has been record fluctuations in short-term interest rates, which has in turn bankrupted thousands of small businesses, and left the business community in a quagmire of uncertainty. With the prime rate approaching 20% for the second time this year, small businesses are finding it impossible to finance their operating needs, and they will not survive unless short-term rates fall soon. The Reagan Administration must encourage the Federal Reserve to do everything in its power to quickly reduce money supply growth and to stabilize its growth at those lower rates. This in turn, will reduce inflationary expectations and be followed by lower and more stable rates of interest.

It is equally imperative that the new Administration encourage the Federal Reserve to continue implementing monetary policy by focusing on the monetary aggregates, rather than on interest rate targets. The Federal Reserve's failure to adequately control money supply growth over the last year does not call for the abandonment of that policy approach. The Federal Reserve's problems reflect the technical difficulties involved in attempting to control the money stock in an economy as large and diverse as ours. These technical problems, however, can be overcome and we feel confident that they will be. On the other hand, a reversion to implementing monetary policy by seeking to control interest rates will only lead to a complete loss of control over the money supply, which in turn will escalate inflationary pressures.

In short, a key ingredient to curtailing inflation and promoting steady long-term growth is to reduce the rate of growth of the money supply to a level that more closely approximates the real productive capacity in the economy.

FISCAL POLICY

A lesson to be learned from the 1970's is that a restrictive monetary policy alone does not suffice as an anti-inflationary policy mechanism. Without accompanying fiscal restraint, the tight monetary policies

tend to result in a greater loss of national output than in a reduction in inflation. Consequently, if the President-elect intends to stop inflation, he must work with the Congress to cut back government spending as soon as possible.

Deficits created by excessive federal spending are borne by the public in the form of hidden taxes, as well as explicit taxes. One of the hidden taxes takes the form of inflation which simultaneously robs businesses and individuals of purchasing power, while pushing them into higher tax brackets. In addition, borrowing from the public to cover deficits also acts as a hidden tax by transferring private capital away from the more productive private sector to the less productive public sector.

The hidden tax of inflation is extremely onerous for small business and consequently inflationary deficits created by excessive spending have a disproportionately adverse impact on small businesses. The hidden tax of borrowing from the public, however, has a far more subtle effect on small firms. Every time the federal government borrows from the private sector to cover deficits, it withdraws funds that would have been available to private businesses, thereby "crowding" businesses out of the financial markets. Unfortunately, it is not likely that this "crowding out" is borne evenly across businesses of all sizes. It is more probable that small businesses bear the brunt of this financial displacement since they have fewer financing alternatives available to them. As it is, small businesses are rationed out of the commercial loan market during periods of tight money, so it seems reasonable to contend that small firms are placed at a severe disadvantage when competing with the federal government for funds.

There can be little doubt that our federal government has grown not only beyond its own needs but to the detriment of small business and society as a whole. Americans have generously provided their government with increasingly large fractions of their earnings to finance programs aimed at improving the distribution of wealth in our society. However, experience has shown us that a great deal of government spending is a costly and ineffective manner in which to correct society's existing inequities. As a society, we must accept the fact that we cannot provide what we do not have, or what we cannot afford to provide. Government spending has risen to the point where it is hampering business investment and discouraging individual effort, which are the principal forces behind future rises in living standards. Since the U.S. Congress has consistently demonstrated an inability to live within its financial means, we feel that the Reagan Administration should support legislation that would limit Federal expenditures to a specific percentage of our gross national product, or income.

COMPOSITION OF FEDERAL EXPENDITURES

In addition to reducing federal expenditures, it is equally important that the Reagan Administration promote a drastic change in the composition of federal expenditures. As the size of our federal government has grown, it has also become increasingly involved in economic activities that should be conducted by the private sector. Despite stated national priorities which aim at maintaining the viability of small business, the federal government with all of its financial resources (e.g., the ability to print money) engages in monopolistic, inefficient

competition with the private sector. According to a federally supported Task Force Report on Government Competition to the Small Business Administration, the federal government directly engages in more than 21,000 commercial and industrial activities at a taxpayer cost of at least \$10 billion a year. The task force report states that this government activity diverts \$2 billion annually from small business. According to the report, as much as \$3 billion in taxes could have been saved in 1977 had the government opened up 85 percent of its "in-house" activities to private competition.

We at NFIB feel that this unfair and inefficient substitution of government commercial activity for its private sector counterparts deserve close attention by the new Administration. In fact, the listing of all government activities which are not cost-effective could become the Reagan Administration's principal criteria in abolishing selected government expenditures. In pursuing this approach, great strides can be made in reducing the size of government, while simultaneously improving the competitive climate for thousands of small businesses and promoting greater economic efficiency.

STRUCTURAL RIGIDITIES

Many of the problems we face today (e.g., inflation, low productivity, high unemployment, lagging investment, etc.) are symptoms of deeply-rooted structural imbalances that distort market signals, and prevent the smooth functioning of our economy. If we are to foster an era of sustained economic growth and price stability, then the Reagan Administration must make a concerted effort to avoid merely treating the symptoms of our economic diseases, and instead focus on dealing directly with those imbalances.

The tax code

Principal among those distorting imbalances is our federal tax code which is biased in favor of consumption over savings and investment. By penalizing individuals for saving and investing their money, our current tax system limits the pool of funds available for modernizing our industrial base at a time when massive investments in plant and equipment are needed. So long as this country's future productive capacity is continually drawn down to finance current consumption, productivity growth and the long-term competitiveness of American business will continue on its secular decline. Moreover, under such a system, inflation will remain an obstacle to renewed growth since the current tax code contributes to "demand-pull" inflation by fueling aggregate demand beyond our economy's productive capacity.

In addition, the taxation of capital gains must also be reduced significantly. On the business side, corporate taxes must be reduced further and continually graduated to eliminate the effectively regressive tax rates incurred by smaller firms. Of equal importance, is the need to liberalize depreciation allowances so that recovery costs are more accurately reflected. An integral part of the latter effort should be simplification of depreciation rules so that firms of all sizes can take

advantage of allowed benefits. The Capital Cost Recovery Act of 1980 (10-5-3-) goes a long way towards achieving such instrumental changes.

Social security

More important to small business is the revocation of the 1981 FICA tax increase as proposed in the Gephardt-Bradley bill, to be undertaken in prelude to the revision of our Society Security System. Without fundamental changes in Social Security, we can expect FICA taxes to eventually reach 24 percent, about double the current level. Already a majority of small firms find payroll taxes, of which FICA is the largest, to be their single most expensive tax and an inhibitor to the employment of people, the investment of capital, and to the formation of new enterprises. Further, payroll taxes, at least in the short-term, are the most inflationary form of taxation. As a result, we believe that instead of focusing on personal tax rate reductions, the emphasis should be on payroll tax cuts.

The new administration must address the question of payroll taxes and Social Security—the sooner the better. Social Security, probably the nation's most successful and popular social program, is again facing financial difficulty just as it did when the Carter Administration took office in 1977. In that year the short-term problem was allegedly addressed, but the far more serious long-term problem was avoided. Today a somewhat similar situation faces us, only the time period over which a transition to a long-term reform can occur has been shortened. The issue can no longer be postponed. This nation must begin to move immediately toward the separation of the annuity and transfer functions of OASI as a means to restore the program's financial integrity and promote benefit equity within and between generations.

Government regulations

A less subtle structural rigidity encumbering renewed growth and reduced inflation is the myriad of unwarranted government regulations. The Reagan Administration must provide strong leadership in phasing out or altering government regulations which add to production costs without providing offsetting socio-economic benefits. New Agency heads must be encouraged to fully take into account the impact of regulations on firms of different sizes, as required by the Regulatory Flexibility Act.

Of great importance to small, labor intensive firms are the minimum wage laws which increase the cost of labor and contribute to high teenage and minority unemployment. The President-elect should follow-through on his campaign pledge to at least seek a teenage exemption from the laws.

Moreover, the President-elect should encourage the Congress to change current government policy on patents which prevent the private sector from benefiting from technological innovations. New products and processes invented by R&D firms under government contract are virtually lost to the private entrepreneur once the government takes them over. Patents should instead be assigned to the inventors even when the work is funded by the government.

CONCLUSION

If the President-elect wishes to succeed in his efforts to restore price stability and sustained economic growth to this country, he will have to attack the root causes of our problems through long-term policy solutions. At the same time, if those long-term policies are to succeed, his Administration will have to recognize that our economy does not consist of a homogeneous set of business enterprises. About one-half of this country's gross national product is produced by small businesses, who are also the largest net creators of jobs and technological innovations. The impact of laws and regulations on these smaller firms is much different than that on larger firms. Policies aimed at improving the competitive climate of American business will be doomed to failure if they do not take those latter differences into account.

Finally, we perceive that the Reagan Administration will be under heavy pressure to provide federal assistance to many ailing large businesses. Acquiescence to such demands would be a departure from the President-elect's goals of minimizing government interference in the marketplace, and of improving productivity and reducing inflation. Federal bailouts would result in a diversion of investment funds away from the dynamic element of the business community, thereby suppressing the productivity gains the new Administration seeks to achieve.

Federal bailouts would have an additional adverse effect on productivity as the business community as a whole recognizes that not only are their productive efforts penalized, but that their tax dollars are keeping less productive competitors afloat. Under such circumstances, many managers will not find it in their best interest to persistently seek out innovative cost-cutting production techniques, which improve productivity and dampers inflationary pressures.

VI. PROCEEDINGS OF THE SEMINAR ON PRODUCTIVITY

A. Participants

Chairman: Representative Clarence J. Brown.
Cochairman: C. Jackson Grayson, Jr., American Productivity Center.
Presenters: Bill Usery, Bill Usery Associates.
Charls E. Walker, Charls E. Walker & Associates, Inc.

Anderson, William	NCR.
Bonilla, Ruben	League of United Latin American Citizens.
Bradley, Gene	International Management & Development Institute.
Brown, Charles L.	American Telephone Co.
Burgess, Les M.	Fluor Corp.
Bushnell, Nolan K.	Alliance for American Innovation.
Cunningham, William	AFL-CIO.
Drummer, Dorothy	American Business Conference.
Dunham, Corydon	National Broadcasting Co.
Ephlin, Don	United Auto Workers.
Etzioni, Amitai	Center for Policy Research.
Fontaine, Joe	Sierra Club.
Jorgenson, Dale	Harvard University.
Kemp, C. Robert	Opportunity Funding Corp.
Leshner, Richard L.	U.S. Chamber of Commerce.
McCloskey, Peter F.	Electronic Industries Association.
Martin, William	Phillips Petroleum.
Peterson, Russell	National Audubon Society.
Place, Geoffrey	Proctor & Gamble.
Shanker, Albert	American Federation of Teachers.
Shepherd, Mark	Texas Instruments.
Smith, Richard M.	Bethlehem Steel.
Southard, Shelby	Cooperative League of USA.
Staats, Elmer	Comptroller General of the United States.
Strawbridge, Herbert E.	The Higbee Co.
Swiggett, Robert L.	Kollmorgen Corp.
Stamper, Malcolm	Boeing Co.
Trimble, George	Aminoil.
Verity, J. William	Armco, Inc.
Weintraub, Ronald	Flexnit Co.
Woolley, Donald	Bankers Trust Co.
Young, Howard	United Auto Workers.

B. Presentations

STATEMENT OF REPRESENTATIVE CLARENCE J. BROWN (R-OHIO),
RANKING MINORITY MEMBER, JOINT ECONOMIC COMMITTEE

The most fundamental problem facing the American economy is lagging productivity. Discouraging performance in this critical economic area contributes significantly to inflation, slows economic growth and adds to unemployment.

Productivity is the output per unit of input and is usually measured in terms of labor productivity. In most measures of growth in labor productivity—private business, nonfarm business, manufacturing—the United States lags behind all other industrial nations. This is a sorry state of affairs. This Nation, that saved the world from totalitarianism in the 1940s, and then generously distributed \$134 billion in economic aid to rebuild the free world, plus another \$102 billion in military aid, now finds itself struggling to keep its head above water, and with hat in hand, is seeking to learn what it can from its World War II enemies to increase its productivity.

The dimensions of our productivity crisis are well known. Between 1947 and 1965, output per hour in the private business sector grew by 3.2 percent per year. This fell to 2.2 percent per year between 1965 and 1973, and then to 0.7 percent per year for the 1973 to 1979 period. Productivity actually fell for six consecutive quarters, through all of 1979 and the first two quarters of this year, before rising very slightly last quarter. (Some other measures of productivity continued to decline in the third quarter of 1980.)

Our recent productivity growth rates have been especially abysmal in comparison with those of our major industrial friends. For example, for the 1967 and 1979 period, real gross domestic product per employed person increased by less than 1 percent per year in the United States, France, Germany and Italy all achieved rates of nearly 4 percent. Of course, the Japanese were ahead of everyone else, at 6 percent, while even in the British economy, not noted as a paradigm of efficiency, output per person rose by more than 2 percent per year.

Looking specifically at manufacturing, the cornerstone of our economy, this chart shows [indicating] the growth trends in manufacturing productivity in six countries starting with 1967 as a base of 100. Look how the United States lags. Look how Japan excels.

It is true that the overall level of productivity in the United States still exceeds that in all of these other countries, but this is certainly no reason for complacency. At recent growth rates, productivity in Germany and France would exceed ours by 1984, with both Japan and Canada surpassing us by the end of the decade. In some industries, such as steel, productivity in Japan is already higher than here in the United States.

We are looking forward to the statements of our panel Cochairman Jackson Grayson and our subject presenters—Bill Usery and Charls Walker. After the formal statements of these gentlemen, I will be looking to each of you for your contributions to this seminar.

The basic question is: What can we do to turn around the sorry U.S. productivity performance?

I have a number of subsidiary questions which I will raise during the course of our discussions. But let us turn now to our Cochairman and presenters.

STATEMENT OF C. JACKSON GRAYSON, JR., CHAIRMAN, AMERICAN
PRODUCTIVITY CENTER

PRODUCTIVITY, NATIONAL ECONOMIC GROWTH AND THE U.S. STATUS IN AN
INCREASINGLY COMPETITIVE WORLD: REALITIES AND POLICY OPTIONS*

The United States now faces a national economic crisis which I am convinced is more serious than any we have experienced since the Great Depression. Our very survival as a first-rate world power is at stake, as well as the standard of living of our future generations. There are policy options available to us; but time is very short. Well-organized and determined nationwide effort for the reversal of recent trends in productivity is essential.

EXECUTIVE SUMMARY

The U.S. is experiencing an economic crisis which threatens not only our future living standard, but also our very survival as a leading world power. The abysmal collapse of productivity, coupled with a complex of national errors of both omission and commission, by both Government and the private sector, has led to galloping inflation, significant declines in real earnings and standard of living, the loss of our markets for manufacturing products both within the U.S. and overseas, increasing unemployment, and the second severe recession within a single decade.

Historical perspective tells us that nations rise and fall in leadership in economic growth and in productivity levels. National over-complacency has led nations into an unsound action-inaction pattern which has permitted other industrial nations to overcome their lead in world trade, levels of productivity, and standard of living. The USA is on the verge of joining these nations.

There are policy options available to us to turn this scenario around, but time is very short. A well-organized and determined nationwide effort for the reestablishment of productivity growth is the key to our national future. Jackson Grayson outlines herein his concept of an appropriate national program, involving private-sector business and labor and government—federal, state, and local.

This article provides new insight as to the causes for the growing disparity between productivity growth rates of the past quarter-century between the U.S. and leading international trade competitors. It emphasizes some of the competitive advantages freely given by the U.S. to Japan and the major European nations during the postwar years. It further emphasizes the detrimental results of the too-pervasive tendency of the U.S. to enjoy the good life rather than to invest for the future; and the problems caused by continuing adversary re-

*This paper was prepared with significant assistance from George Sadler, Senior Economist, American Productivity Center. His contribution was large and invaluable.

relationships between government, industry and labor—a deadly contrast to the collaboration to assure national economic development which has characterized Japan, Germany, France and some other leading nations.

Dr. Grayson provides some new productivity data and facts, which will help to understand the realities of recent productivity trends and manufactured-goods market losses.

The history of nations can only be understood backward, but the future must be lived forward. It's time to move out.

HISTORICAL PERSPECTIVE

For almost a century and a half, the United Kingdom was the dominant economic force in the world.

Just as "Britannia ruled the waves," Britannia also was the leader of world trade, of industrial production and of productivity—in terms of national product per capita, per employee or per worker hour.

However, following World War I, Great Britain and the other major European powers found their national strength drained by the deadly cost of the Great War and their former empires largely dismembered. They struggled to keep their economies afloat and to restructure their industrial communities.

Following World War I the U.S. assumed world leadership in industrial output, world trade and in the standard of living of its people. At the same time, it assume the mantle of unchallenged leadership in industrial productivity.

The U.S.-European divergence in levels of industrial technology, management technique and scientific and technological innovation increased rapidly during the two decades between World Wars I and II. At the end of World War II, the U.S. productivity level (output per employee hour) was approximately double that of the United Kingdom, Germany, Belgium and Sweden, and three times that of Italy and France. At the same time, Japan's economy was dead in the water. Her productivity was only 13 percent of the U.S. level in 1950, about one-fourth that of Britain, and roughly one-third the levels of France and Germany (table 1).

POST-WORLD WAR II

Following World War II, however, things began to change. Japan and the European nations shared a dedication to national economic recovery and a desire to substitute for their former colonial structures a strong domestic economy and wide-ranging international export market. They concentrated on improving their productivity as a part of their strategy.

They benefitted tremendously from the postwar U.S. economic and technical assistance programs, and rapidly rebuilt their industries with the latest and best technologies. They concentrated on saving instead of consumption, providing needed capital for investment. Labor, management, and government pledged cooperation. As a result, their national productivity took off at a pace unprecedented in world history.

During the same time-span, the U.S. economy continued to grow,

not as rapidly as the other nations, but at a healthy clip. But seeds were being sown for a slowdown. Most of our industry had become industrially mature, with only a limited potential for continuing rapid productivity gains in some industries. Our earlier youthful zing and dedication to continuing rapid industrial improvement slackened. Leaders of both the Government and the private sector tended to rest on past laurels, convinced that U.S. technical, scientific and managerial leadership could not be challenged.

Concurrently, large segments of the population demanded larger slices of the economic pie, coupled with broadened assurances of "the good life." The euphoria of a continually growing economy, higher earnings and more leisure time to enjoy them, bigger bank accounts, bigger cars, better roads, larger homes, and continually rising profits lulled both the population and the leaders of industry into a false sense of security, and cloaked danger signals in the world economic picture.

Without realizing it, we fell increasingly behind our leading overseas competitors in productivity growth and in international trade competition during the 50's and 60's. By the mid-1960's, the United States was already in deep economic trouble, especially in terms of international competition.

While it was certainly not generally understood as it was happening, "hindsight" now tells us the nation was then beginning to reap an economic problem stemming not only from our national over-complacency and our conviction that we were the strongest and greatest nation in the world, but also from:

A national tendency to consume rather than to save, resulting in a national average ratio of savings to disposable personal income below that of any other major industrial nation—less than one-fourth the averages for Italy and Japan; only one-third that of France, Germany and the United Kingdom; and less than half that of Canada (table 2).

Increasing neglect of the investment of capital needed for improved plant and equipment, coupled with less-than-adequate levels of civilian research and development.

A pervading tendency on the part of industrial leaders to think and act on a short-term basis, disbursing as profits and stock dividends earnings which should have been reserved for plant modernization; and applying marketing strategies directed to an immediate payoff, rather than for shaping future markets.

Continuing adversary relationships between management and labor, accompanied by growing conflict and problems between the Federal Government and private industry.

Dedicated efforts to assure greatly expanded health services, industrial safety and environmental protection, and economic security for all the Nation's citizens, but without adequate evaluation of future economic effects including impacts on productivity.

A failure to comprehend the fundamental economic significance of a growing interdependence on international trade within a world made rapidly smaller by transportation and communication breakthroughs.

The lack of collaboration between government, industry and labor directed to the improvement of the competitive ability of our industry in the international marketing of its products.

Efforts to serve as the world's economic saviour and its political policeman—efforts which involved the expenditure of many billions of dollars reaching nearly 80 nations.

These economic aid and defense support programs made a major contribution to the extreme postwar divergences in productivity trends for the U.S. as contrasted to Japan, Korea and the major western European nations. The U.S. stimulated, sponsored and supported the establishment of National Productivity Centers and Industrial Development Institutes as focal points for national programs in over 40 nations. In sharp contrast, the U.S. itself had relatively little general awareness of "productivity" and never set up an effective national productivity center.

A substantial transfer to other nations of the best of U.S. scientific, managerial and industrial know-how and techniques, use of U.S. patented processes and technology on extremely-favorable terms, and help in starting up the host-country factories.

During the quarter-century after World War II, roughly one-third of Japan's growing national product flowed directly into new machinery and equipment in her factories. For Germany, France and Italy, fixed capital investment ranged from one-fifth to one-fourth their GNP during the same period (figure 1).

Factories in these nations were rebuilt almost entirely after the termination of hostilities, embodying the latest technology. The process was accelerated by Government-supported policies of planned, rapid obsolescence. As a direct result, these nations have maintained an average age of industrial equipment ranging from roughly ten to twelve or fourteen years.

In the United States, in sharp contrast, estimated average age of industrial equipment is now over 20 years. For some major, mature industries (steel; paper and pulp; foundries and forge shops) much of the equipment is 50 or more years old. With rare exceptions, such aging machinery cannot compete in productivity with newer items utilizing the latest technology. Good examples are the large basic oxygen furnaces which constitute over 80 percent of Japan's total steel capacity—and roughly 56 percent of that of the U.S. industry.

The result of all this was a deepening economic illness, which went generally unrecognized. The early warning signals were:

1. The significant labor productivity growth slowdown to a 1965-73 pace only half that of the first two postwar decades—and dramatically lower than that of our overseas competitors. Unfortunately, many leading economists brushed aside our slackened productivity growth as a "temporary, unexplainable aberration which probably would be self-correcting";
2. Increasingly rapid inflation, with a built-in rising "core rate" unique in our economic history;
3. The near or total collapse of a growing number of our industries, with significant unemployment.

POST-OPEC

It was not until after the OPEC petroleum embargo in the fall of 1973 that the true extent and nature of our national economic illness finally became recognized, even as it was being made increasingly more severe.

The seven year span 1973-80 has witnessed the worst productivity catastrophe of the twentieth century—probably the worst in our entire industrial history. The growth rate for U.S. gross domestic product per employed person was only 0.4 percent per year during 1973-78, followed by a decline of 0.4 percent in 1979, with an almost-certain additional decline of over 1 percent in recession-plagued 1980. In the international picture, the U.S. misery was shared to a large extent by Canada and Great Britain. However, Japan and the major European powers other than Britain coped with the problems more successfully, despite their much greater dependence upon imported petroleum.

The crude petroleum embargo and the subsequent price escalation dramatized an already-existing world shortage of economically-exploitable proved natural energy resources. The supply-price shock thoroughly disrupted normal productive operations and forced radical reevaluations of ways of doing business. It contributed to an already-threatened worldwide economic slowing of growth afflicting all industrial nations, though to varying degrees and at somewhat different calendar periods.

The oil crisis and the recession abruptly worsened the U.S. productivity-growth slowdown and helped to feed the most virulent peacetime inflation in our Nation's history—reaching double-digit levels in 1979 and early 1980.

In the international picture, West Germany and France coped fairly successfully with the post-OPEC economic problems, despite their much greater dependence upon imported petroleum. They experienced relatively limited inflation, only modestly reduced national output and lower reductions in productivity growth than did the U.S. Japan, Canada, Italy and the United Kingdom shared with the U.S. the severe early '70's economic woes, with high rates of inflation and low production attending sharp reductions in productivity growth. Japan, however, rebounded with extremely strong productivity growth in both 1978 and 1979.

The productivity slowdown and the increasing divergences in trends between the U.S. and its major overseas competitors made a major contribution to increasingly severe losses of the U.S. share of the world market (figure 3). However, this is only part of the answer.

A large part of the rapid overseas market losses by the U.S. and the equally rapid gains of its principal overseas competitors is traceable to the determined national efforts of Japan, Germany, France and other European nations to expand their economy through exports. The governments worked closely with and supported private industry export efforts, with substantial loans and credit guarantees, tax credits, differential domestic vs. export pricing and other actions. National focus was placed on high-technology products and others with the highest export growth potential.

As noted in the introductory section, the U.S. was the unchallenged leader of total world trade in the 1950's—and as recently as the late 70's. Now, however, West Germany is nearly on a par with the U.S. in the total world trade.¹ Other major nations—primarily Japan and France—also have been making rapid gains in the world market, in most instances substituting their goods for those of the U.S. Further, a number of developing nations—including Korea, Hong Kong, Taiwan and Singapore—are making increasing inroads on the markets

¹ Total world trade equals the sum of actual exports and imports in the given year.

formerly enjoyed not only by the U.S., but by Japan, Germany and France as well.

Our agricultural products exports have done well despite the U.S. grain export embargo to Russia, the soy bean export limitation which distressed Japan several years ago, and the current embargo on exports to Iran and the Soviet Union.

Our foreign trade problem is centered in exports of manufactured goods, where the U.S. led until recent years. However, West Germany topped our annual manufactured goods export totals throughout the decade of the 70's. The margin was only a narrow \$1.4 billion dollars in 1970, but it increased to \$33.9 billion in 1979—a percentage differential of roughly 0.5 percent in 1970, but 22 percent in 1979. Japan's export value was 62 percent of the U.S. level in 1970, but it rose to 85 percent in 1979. If current trends continue, the USA will soon drop to third place in the manufactured goods export market. For France, 1970 manufacturers export volume was only 46 percent that of the U.S., but rose in 1979 to 65 percent of the U.S. level.

These startling gains of major European nations and Japan in manufacturing goods exported developed despite very rapid rises in labor costs for these nations, as compared to the United States. (The 1960–79 annual increase in hourly compensation was 6.5 percent for the U.S.; 15.3 percent for Japan; 10.4 percent for Germany; 15.7 percent for Italy; and 11.5 percent for France.) The gains were clearly due not to a great labor cost advantage, but rather to their more rapidly rising productivity, coupled with effective industry-government collaboration for export promotion. Hence, a closer look at comparative manufacturing productivity trends is warranted.

U.S. manufacturing labor productivity (output per hour, all persons) grew at a rate of 2.6 percent per year during 1950–67, somewhat less than the 3.2 percent per year pace of the pre-World War II years—and a bit below the growth rate for the U.S. private domestic economy over the same span (2.9 percent/year).

The growth rate for manufacturing productivity picked up very slightly during 1967–73 (2.9 percent per year) while the rate for the private economy slowed to 2.1 percent per year. The manufacturing productivity growth rate following the OPEC shock also held up better than for the entire economy, 1.5 percent per year for 73–79 compared to only 0.7 percent per year growth for the private domestic economy.

The troublesome side of the manufacturing productivity picture appears when U.S. manufacturing productivity over the postwar span is contrasted to that of our major overseas competitors, especially in the case of Japan, Germany and France. For the entire period covered by the BLS international manufacturing productivity analysis (1950–79), U.S. output per hour rose 2.4 percent per year, in contrast to Japan's 8.5 percent per year, Germany's 5.7 percent per year, France's 5.2 percent per year, and Italy's 6.0 percent per year (table 3).

The growth rates for each of the major industrial competitors (U.S., Germany, France, Italy and Japan) rose slightly between 1950–67 and 1967–73, with Japan's rate leading the way. During the post-OPEC shock period, however, average productivity increases dropped sharply for all countries except Germany, which held to a fairly steady pace. Productivity growth for the U.S. was halved, to a 1.5 percent per year pace, as was the pace of Italy's increase. France held her increase relatively well, with only about a fifth decline during the two periods.

Japan, in contrast, experienced very substantial difficulty during 1973-77, with her manufacturing productivity increasing less than a third the pace of the earlier period. During both 1978 and '79, however, Japan enjoyed a tremendous manufacturing productivity recovery—7.9 percent and 8.3 percent, respectively, according to the BLS computations. The 1979 growth was a full 12.1 percent in the data series compiled by the Japan Productivity Center!

The American Productivity Center has developed a new binary productivity trend comparison for selected periods 1960-79 covering 13 U.S. and Japanese manufacturing industry groups, plus mining and public utilities. While the figures are drawn from three different data sources which may not be fully comparable, the picture they paint with respect to comparative U.S.-Japanese manufacturing industry productivity trends is dreadfully clear. In every subperiod, Japan's growth rate for all manufacturing outstripped that of the U.S. (see footnotes in table 4).

There was substantial trend variation between the major industry groups in all periods covered. The Japanese relative advantage was in some instances only slight, and in others devastating. Especially large variations are shown in a number of the truly major groups, including iron and steel; fabricated metal products; machinery; chemicals and petroleum products; and stone, clay and glass. Japan's productivity growth rate was not so great—and the U.S. disadvantage was consequently less marked—in food, tobacco, textiles and lumber products.

Six of the twelve Japanese manufacturing industry groups recorded more than double-digit rises in 1979. In sharp contrast, the dismal 1979 0.9 percent rise for all U.S. manufacturing reflected the extremely poor labor productivity experience of all but four of the U.S. industry groups. Especially in the second half of 1979, factories tended to add man-hours to augment output, rather than effecting any significant improvement in equipment or methods and/or expanded use of their more energy-intensive equipment.

THE IMPACT OF U.S. LOSS OF INTERNATIONAL COMPETITIVENESS ON EMPLOYMENT

During the past decade, as U.S. industry has struggled against the complex of difficulties reviewed above, growing market losses in many industries have led to a decline, almost a collapse, in a number of them, such as cutlery and flatware, ceramics and dinnerware, motorcycles, bicycles, footwear, hats, radios, television and some textiles. Of perhaps even more longrun significance, inroads have been made in both the domestic and the international markets of some of our largest and most basic industries—such as steel, machine tools, industrial equipment, household electric appliances and automobiles.

The impact of these market losses upon U.S. civilian employment has been noted increasingly in the U.S. news media. As the international productivity differential continues, or increases still further, other basic industries inevitably will suffer increasing market and employment losses. Even some of our newer high-technology segments, such as semiconductors, computers, communications equipment and other electronics items, are already being targeted by Japan's industrial planners.

On the favorable side, there is a mounting evidence of a reasonable degree of success in reducing our nation's energy consumption and early progress is being made on the development of new economically feasible alternatives to imported petroleum. Our industrial productivity should start to improve somewhat as these efforts mature and as average costs of energy from a variety of sources decline. Ultimately, as the shortage lessens, newer and more efficient industrial machinery should be introduced.

These actions should make it possible to begin some recovery in our productivity growth, but this potential will not materialize if we do not make a similar re-dedication of this nation to growth through productivity.

A NATIONAL PRODUCTIVITY PROGRAM

Corrective action is urgently needed—action which is carefully planned and organized, determined, broad in scope, and continuing. While action must be effective and correct, it must also be taken at the earliest possible date.

The United States has arrived at a stage where further inattention to our basic economic problems and the continuation of the application of outmoded economic theories can no longer be tolerated.

As a nation, we can—and we must—undertake a major national effort to assure our recovery of economic strength.

This effort must be fully comparable in scope and national commitment with our earlier—and successful—engagements in two World Wars and the conquering of space.

Appropriate methods must be set up to allow effective collaboration between currently antagonistic elements of our economy—the government, industry, and labor. The blunt, earthy words of one of the great early leaders of our Nation, Benjamin Franklin, are highly appropriate at this time:

“Gentlemen, we must hang together, or assuredly we will all hang separately.” Unless business, labor and government leaders can shape ways to work effectively and in concert, our entire industrial community will be unrecognizable within a decade or less. Factories will be closed and unemployment at high levels will plague us and our standard of living will shrink. If this message is understood by all of us, and if we act, then we can turn the situation around.

I am delighted to note that—at long last—leaders of our nation have come to realize that the collapse of productivity growth is something much more serious than a “temporary aberration” or a “cyclical phenomenon.” There is obviously a significant new awareness that slowing productivity growth is one of the key contributors to the nation's economic woes and the key to their solution.

Leaders of U.S. industry and academe, labor leaders, members of Congress and leading officials of the present Administration are now sounding the alarm.

The Joint Economic Committee of Congress, under the Chairmanship of Senator Lloyd Bentsen, has taken significant and vigorous leadership in identifying the productivity collapse as both a symptom of and a major contributor to our national economic malaise. The Joint Economic Committee, along with the Committee for Economic Development, the National Planning Association, the New York Stock

Exchange and Professor John Kendrick, have clearly spelled out the seriousness of the problem.

To a very considerable degree, there is agreement on some of the important steps to be taken. I commend to readers a study of writings cited at the end of this article.

However, most of the proposed remedies focus on one or two elements, or focus on public policy only. I believe the solution lies in a comprehensive program of many elements, at many levels in the economy, and in both the private and public sectors.

What follows are my recommendations for a national productivity program.

A National Productivity Program, involving the dedicated efforts of both the private and public sectors, must be launched. It must operate on four levels: (1) Government—Federal, State, and local; (2) Industry; (3) Individual firms and unions; and (4) International.

GOVERNMENT

1. Establish a focal point in the executive branch for a national productivity program charged with the responsibility for creating and implementing an action program.

2. Charge the Joint Economic Committee of Congress with responsibility for serving as a productivity focal point in the legislative branch, with responsibility for conducting investigations and overseeing needed productivity improving legislation.

3. Execute legislative and administrative action to increase capital investment for improved industrial machinery, equipment and methods, all of which are essential for restoration of productivity growth. This should include specific action to: accelerate depreciation allowances on capital equipment, increase the investment tax credit and expand its coverage, reduce the corporate income tax rate, eliminate double taxation of dividends, assure rapid reductions in the rate of interest on industrial fixed capital investment, and stimulate the rate of private savings.

4. Remove contradictory and ill-conceived regulatory action currently impacting productivity, including those relating to energy conservation, environmental protection and worker health and safety. Require all regulatory action (existing and future) to be subjected to "productivity impact" analysis. Equally, make certain that regulations outline the desired results, with flexibility to assure that conformance is based on the most efficient, least costly approaches. This does not mean that all regulations should be dropped or altered. Some regulations are economically and socially justified.

5. Expand rapidly both basic and applied research and disseminate the results—an essential for the accelerated technological improvements required for restoration of productivity growth.

6. The Department of Commerce should carry out, in collaboration with private industry, a systematic program of export promotion and marketing.

7. Through all appropriate means, take action to improve the productivity of the Federal Government itself; and provide assistance to state and local governments.

INDUSTRY

1. Encourage the development of industry-wide productivity improvement programs, including government, business, trade associations, labor unions, professional societies, management consultants and academe.

2. Help develop inter-firm and inter-plant productivity measurement systems, and stimulate and facilitate the use of the results by individual firms in the industry.

3. Help industrial associations and/or other relevant entities to establish programs for the collection and dissemination of "best practice" of individual industries, as a means for productivity improvement.

4. Encourage and support classroom-type and in-plant training of personnel in the skills and techniques needed for a high productivity economy.

5. Assist in the establishment of labor/management cooperation programs suited to the needs of specific industries. Test various approaches, and transfer know-how on both a regional/local and in-plant basis.

6. Assist employers in industries with fading productivity to re-train themselves for new jobs, provide relocation assistance, and help protect the incomes during these adjustment periods.

INDIVIDUAL FIRMS AND UNIONS

1. Organize and operate formal, sustained productivity programs, involving management and employees.

2. Create local productivity educational programs, broadcasting the productivity message to other firms, to community groups, and to government employees.

3. Organize and conduct training programs for unskilled, semi-skilled, crafts and supervisory categories to assure a supply of personnel competent to cope with the demands of modern high-technology industry. In particular, create re-training and other employee-adjustment programs for those displaced by productivity-improvement actions.

4. Organize "quality of working life" programs as an integral part of productivity improvement programs.

5. As a part of programs for improving productivity, analyze product patterns and seek out specific means for entering or expanding existing participation in export markets. To this end, actively seek out and utilize available government support services relating to export promotion.

INTERNATIONAL

1. The American Productivity Center, and other entities involved in the national productivity effort, should seek out specific opportunities for shaping closer continuing contacts with overseas organizations and with other productivity centers. An international productivity information network might be a possibility.

The organization of international productivity tours would be a logical element in this program, targeting exchanges with those nations identified as of particular importance, such as Canada, Japan, France, Italy, the U.K. and Germany in the industrial-nations group, plus developing countries such as Mexico, Brazil, Spain and Korea.

2. Identify and participate in programs for the extension and improvement of existing measurement systems for productivity at both the macro and micro levels.

3. Develop specific programs for providing developing nations with broadening information on U.S. products, processes and management concepts. Provide them, upon request, specific technical assistance in identifying opportunities for local industrial development to improve standards of living, and help them make contact with U.S. international companies and other U.S. organizations which are interested in participating in such ventures.

In summary, there has been a combination of mistakes and inaction, by both government and the private sector of the United States during the past fifteen years and more, that led us to our current economic dilemma—high inflation, productivity stagnation, two recessions in a single decade, and substantial unemployment.

While the decade of the 80's will witness severe economic stresses, there are options open to us which can reverse these past, unfavorable trends, restore productivity growth, reduce the present inflation rate, and restore our capability to compete in the international market. However, time is very short. Early action is imperative.

Figure 1

Gross Private Investment, GNP and Productivity Growth, Selected Periods

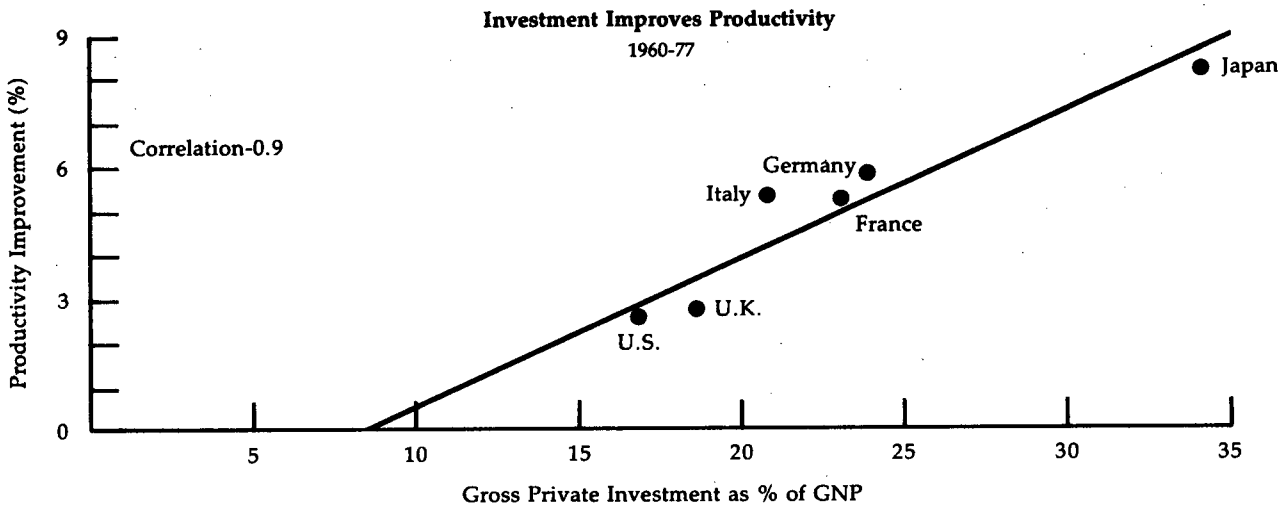
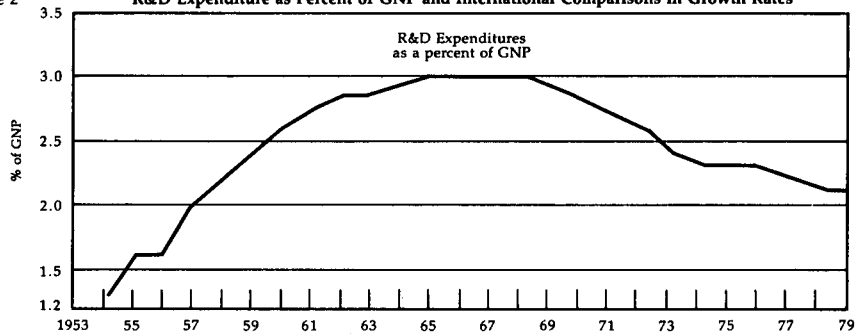


Figure 2

R&D Expenditure as Percent of GNP and International Comparisons in Growth Rates



Sources: National Science Foundation; and Vladi Catto, "Productivity and Growth: A Graphical Approach."

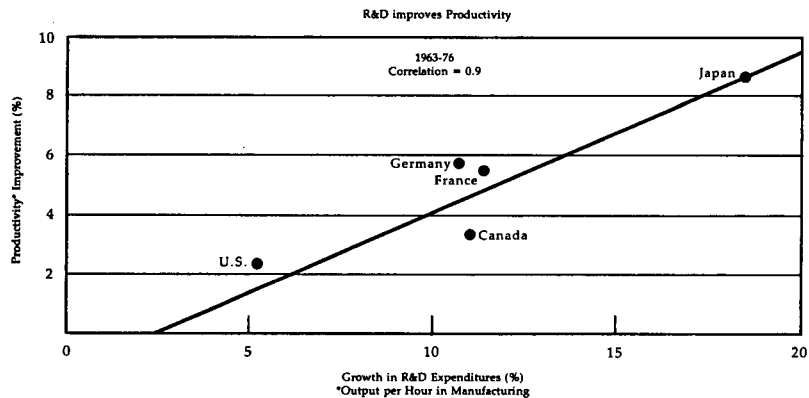
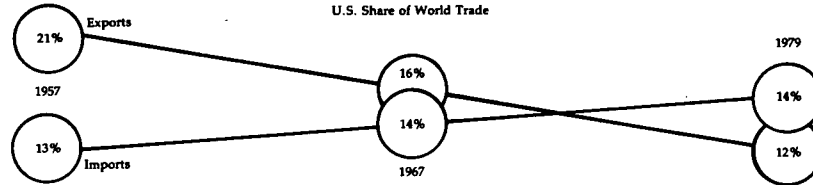


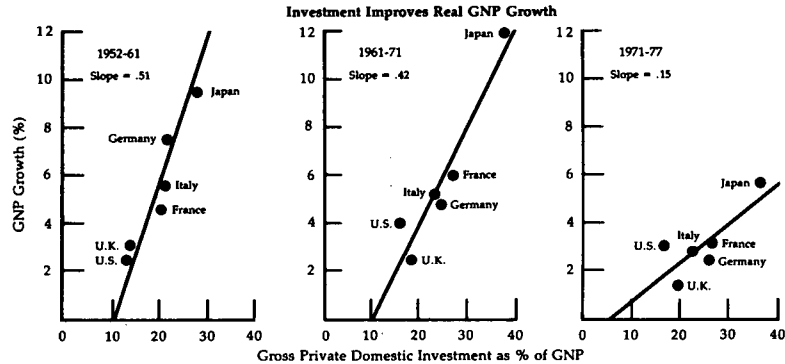
Figure 3

U.S. Balance in World Trade—Exports minus Imports
(in billions of U.S. dollars)

Country	1965	70	73	74	75	76	77	78	79
United States	4.3	0.8	-2.2	-9.5	4.2	-14.6	-36.3	-39.4	-36.4
West Germany	.3	4.3	12.7	19.7	15.2	13.7	16.6	20.7	12.1
Japan	.3	.4	-1.4	-6.6	-2.0	2.4	9.8	18.5	-6.4
OPEC	4.2	7.6	19.3	85.9	58.8	70.6	63.2	38.8	95.8



Sources: Economic Report of the President: 1978 & 1980

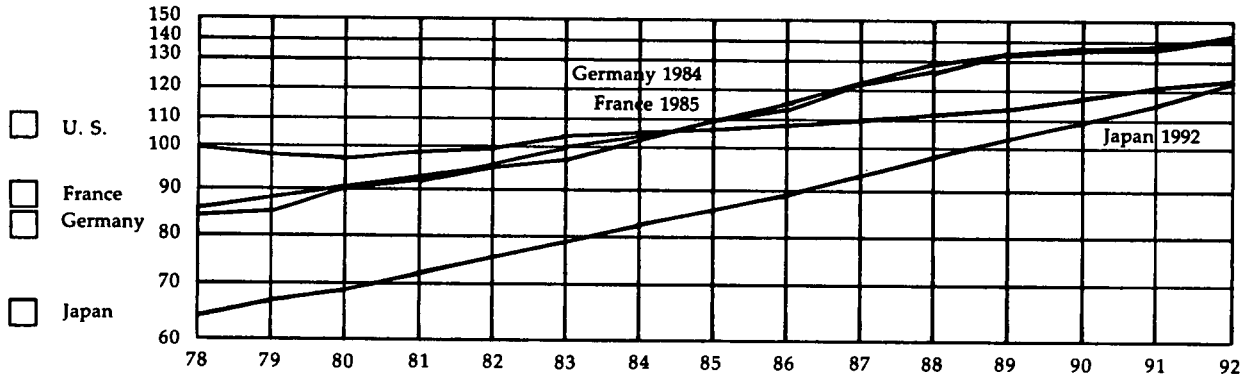


Source: "Productivity and Growth: A Graphical Approach," Vladi Catto in *Business Economics*, May 1979—as presented in APC's *Productivity Perspectives*, 1980.

Figure 4

Projected International Productivity Trends, GDP per Employee

Growth Rate Applied to 1978 Level of GDP per Employee
Based on International Price Weights



For data, see Figure 5

Figure 5
Projected International Productivity Trends, GDP per Employee
 (Constant Dollar Basis, International Price Weights)

1. Level of Productivity (1978 U.S. = 100)

Year	U.S.	France	Germany	Japan	Canada
1978	100.0	85.6	85.6	63.0	96.1
1979	99.1	88.2	88.1	65.8	95.1
1980	98.6	89.9	90.3	68.1	95.1
1981	98.9	92.6	93.0	70.9	96.6
1982	99.9	95.7	96.7	73.8	98.5
1983	101.4	99.2	100.6	77.2	100.5
1984	103.2	103.2	104.0	80.8	102.5
1985	105.3	107.3	108.8	84.7	104.5
1986	107.4	111.6	113.1	88.7	106.6
1987	109.5	116.0	117.1	93.0	108.8
1988	111.7	120.6	122.4	97.8	111.0
1989	113.9	125.5	127.3	103.1	113.2
1990	116.2	130.5	132.4	108.8	115.5
1991	118.5	135.7	137.6	114.8	117.8
1992	120.9	141.1	143.2	121.1	120.1

2. Productivity Growth Rates

Year	U.S.	France	Germany	Japan	Canada
1979	-0.9	3.0	3.5	4.5	-1.0
1980	-0.5	2.0	2.5	3.5	0
1981	0.3	3.0	3.0	4.0	1.5
1982	1.0	3.3	4.0	4.2	2.0
1983	1.5	3.7		4.5	2.0
1984	1.8	4.0		4.7	
1985	2.0			4.8	
1986				4.8	
1987				4.8	
1988				5.2	
1989				5.4	
1990				5.5	
1991				5.5	
1992				5.5	

Sources

1979, actuals, OECD
 1980, best estimates using Economic Report of the President and OECD
 1981-84, best estimates based on OECD and work of J. Kendrick, L. Klein, and W. Freund
 1985-92, best estimates based on various reports of probable economic patterns

Basic data from U.S. Bureau of Labor Statistics, 1978

Average

Rates:	U.S.	France	Germany	Japan	Canada
1979-85	1.0	3.3	3.6	4.3	1.6
1985-92	2.0	4.0	4.0	5.2	2.0

TABLE 1.—LONG-TERM INTERNATIONAL PRODUCTIVITY DYNAMICS: LEVELS AND TRENDS OF REAL GROSS DOMESTIC PRODUCTS PER EMPLOYEE-HOUR, 1870-1978

Nation	Gross domestic production per hour ¹					Average annual growth rate			
	1870	1950	1977	1978	1870-1913	1913-50	1950-60	1960-73	1973-78
Australia.....	183	71	78	85	0.9	1.4	2.8	2.5	4.2
Austria.....	62	29	66	72	1.7	.8	5.9	6.0	3.8
Belgium.....	110	51	94	91	1.2	1.4	3.1	5.4	4.3
Canada.....	89	78	78	89	2.0	2.3	3.1	3.0	1.4
Denmark.....	65	43	66	64	1.9	1.6	3.0	5.3	1.3
Finland.....	45	32	66	67	1.8	2.0	4.1	6.4	2.7
France.....	62	44	79	87	1.8	2.0	4.4	5.5	3.9
Germany.....	63	33	84	83	1.9	1.0	6.8	5.4	4.2
Italy.....	60	30	68	71	1.2	1.7	4.3	6.8	4.1
Japan.....	23	13	52	51	1.9	1.3	5.8	9.8	3.9
Netherlands.....	107	53	84	90	1.2	1.7	3.4	5.5	3.4
Norway.....	60	48	86	86	1.6	2.5	4.1	4.8	4.0
Sweden.....	45	55	79	79	2.4	2.8	3.5	5.5	1.4
Switzerland.....	80	52	65	66	1.5	2.1	3.0	3.8	1.4
United Kingdom.....	122	57	61	67	1.1	1.6	2.2	3.7	2.0
United States.....	100	100	100	100	2.1	2.6	2.4	2.6	1.1
Arithmetic average.....	78	46	74	77	1.6	1.8	3.9	5.1	2.9

¹ GDP is measured in constant 1970 U.S. price and exchange rates.

Source: Angus Maddison, "International Productivity Comparisons—National Differentials." Paper presented at APC Productivity Research Conference, April 1980.

TABLE 2.—RATIOS OF SAVINGS TO DISPOSABLE PERSONAL INCOME; AND RATIOS OF GROSS FIXED CAPITAL TO GNP, SELECTED NATIONS, 1970-79

Period	(In percent)							
	United States	France	Federal Republic of Germany	Italy	Netherlands	United Kingdom	Japan	Canada
I. Ratio of savings to disposable personal income:								
1970.....	7.4	16.7	14.6	18.8	14.0	9.0	18.1	5.3
1971.....	7.7	16.8	14.3	20.6	15.0	8.5	17.5	5.9
1972.....	6.2	16.8	15.5	21.4	15.4	10.4	18.0	7.4
1973.....	7.8	17.3	14.9	20.9	16.5	11.9	20.5	9.1
1974.....	7.3	17.4	16.1	19.2	16.6	14.4	23.7	9.9
1975.....	7.7	18.6	16.4	23.0	14.5	14.0	22.5	10.9
1976.....	5.8	16.4	14.7	21.8	14.6	13.4	22.4	10.2
1977.....	5.0	17.3	13.7	23.1	12.8	13.3	21.1	10.0
1978.....	4.9	18.2	13.8	(¹)	12.9	14.1	20.1	10.4
1979.....	4.5	17.1	14.6	(¹)	(¹)	15.7	(¹)	10.3
II. Ratio of gross fixed capital formation to GNP:								
1969.....	18.1	25.4	24.1	20.1	24.3	18.3	35.1	21.0
1970.....	17.3	23.3	25.6	23.1	25.6	18.4	35.4	21.0
1971.....	17.7	23.6	26.4	20.2	25.7	18.3	34.2	22.0
1972.....	18.3	23.6	25.9	19.7	23.6	18.2	34.0	21.9
1973.....	18.4	23.8	24.5	21.2	22.8	19.1	26.6	22.5
1974.....	17.8	24.5	21.9	22.5	21.6	20.3	34.8	23.2
1975.....	16.3	23.2	20.7	20.6	20.8	19.6	32.2	24.2
1976.....	16.4	23.3	20.6	20.1	19.2	18.9	31.0	23.5
1977.....	17.4	22.2	20.8	19.7	20.9	18.3	30.1	23.0
1978.....	18.1	21.4	21.5	18.8	21.2	18.0	30.2	22.6
1979.....	17.9	(¹)	22.9	(¹)	(¹)	17.5	31.7	22.7

¹ Not available.

Basic data: U.S. Department of Commerce, International Trade Administration, "International Economic Indicators," June 1979 and June 1980.

TABLE 3.—INTERNATIONAL COMPARISON OF POSTWAR GROWTH RATES IN MANUFACTURING INDUSTRY OUTPUT PER HOUR, 1950-79

[Average annual percent change]

Country	1950-79	1950-67	1967-73	1973-79
United States.....	2.4	2.6	2.9	1.5
Canada.....	3.9	4.1	5.1	2.5
Japan.....	8.5	9.5	10.4	4.1
Belgium.....	16.8	25.3	9.0	(?)
Denmark.....	5.0	4.2	8.1	4.3
France.....	5.2	4.9	6.1	4.9
Germany.....	5.7	6.1	5.3	5.1
Italy.....	6.0	6.4	7.2	3.6
United Kingdom.....	2.7	3.0	4.2	.6

¹ 1960-79, earlier data not available.² 1960-67, earlier data not available.³ Not available.

Source: U.S. Bureau of Labor Statistics, May 21, 1980.

TABLE 4.—TRENDS IN OUTPUT PER HOUR: MANUFACTURING, MINING, UTILITIES AND SELECTED MANUFACTURING GROUPS, 1960-79

[Relative average annual output per hour growth rates]

Industry group	1960-72		1972-75		1975-78		1978-79	
	United States	Japan	United States	Japan	United States	Japan	United States	Japan
All manufacturing.....	3.1	9.8	0.9	4.7	2.6	8.4	0.9	12.1
Iron and steel.....	² 2.4	² 10.4	-.1	6.4	3.9	6.7	(?)	15.4
Fabricated metal products.....	2.0	9.6	-.9	2.2	2.3	12.1	1.0	-.1
Machinery ⁴	1.7	11.8	0	6.4	.5	9.6	1.2	19.4
Stone, clay and glass products.....	1.4	7.5	-.5	3.0	4.0	9.5	.2	10.3
Chemicals and allied products.....	4.5	14.0	0	3.5	3.5	11.0	3.6	11.9
Petroleum products ⁵	3.6	14.9	2.3	1.9	3.7	1.7	-3.9	15.0
Rubber products.....	2.4	7.7	.7	9.0	.2	11.5	1.5	11.8
Leather and leather products.....	1.7	3.5	5.8	3.8	.2	.8	3.7	3.6
Paper and pulp.....	5.4	8.9	0	5.6	3.4	9.1	3.5	10.4
Textiles.....	4.6	4.4	1.7	3.2	4.6	7.5	3.4	3.9
Lumber and wood products.....	3.8	4.2	4.0	-2.3	-1.1	2.9	.6	.3
Food ⁶			2.0		4.0		2.2	
Tobacco ⁴	3.0	6.4	2.2	4.9	3.9	.3	-7.1	.4
Mining.....	2.8	(?)	-5.5	6.2	-1.8	7.1	-8.7	1.7
Public utilities.....	4.0	(?)	2.0	5.1	0	5.1	-3.8	5.3

¹ Figure shown is the JPC figure, to assure consistency with the several industry group data shown. In the U.S. Bureau of Labor Statistics; release dated May 22, 1980, this figure was 8.3 percent. (APC has requested a technical explanation for the variance, as earlier years data appeared similar in both source publications).² 1964-72.³ Not available.⁴ For the United States, machinery except electrical for years after 1972. For Japan, includes electrical and other machinery for all periods.⁵ For Japan, includes petroleum and coal products.⁶ For years 1972, United States data for the 2 groups is shown separately; for Japan, the groups are combined.

Source: American Productivity Center.

Data sources: United States and Japan, and 1950-72, U.S. Bureau of Labor Statistics. United States, 1972-79, American Productivity Center (Grossman Total Factor Productivity Series, labor productivity measures). Japan, 1972-79, "Quarterly Journal of Productivity Statistics," Productivity Research Institute, Japan Productivity Center, October-December 1979, and earlier issues.

STATEMENT OF W. J. USERY, JR., BILL USERY ASSOCIATES

Mr. Chairman, I would like to begin by commending you and the Committee for taking such a keen interest in a topic which I believe should be and is becoming a great concern to all Americans—namely the state of American productivity. I do not think there is any issue more important right now than doing the right things to help the

economy. Personally, I am convinced that our productivity slide is one on the fundamental causes of the economic problems we now face. I hope that this Seminar will serve to clarify this issue and make more individuals—within both the public and private sectors—aware of the dangers we are facing.

I place great emphasis on the improvement of productivity through more effective labor-management relations—having served as a member of the National Commission on Productivity, as a member of the National Center for Productivity and Quality of Working Life, and currently as a member of the Board of Directors of the American Productivity Center—a very fine organization that is represented here today by its outstanding president, C. Jackson Grayson.

We all recognize that our productivity growth rate has been dismally low for the past decade, and has even become negative during several quarters.

Now, some of that most recent decline can be attributed to the onset of a recession, but, in fact, that accounts for only a very small part of the problem. The slump has been the result of many contributing factors, such as a lower level of capital investment, the drop in research and development outlays, changes in the composition of the labor force, and even changes in peoples' attitudes toward such basic things as their willingness to work hard, take risks, and assume some measure of responsibility for their own lives. These factors have had a long-run impact on our productivity rate, and we cannot quickly reverse their effects. However, we must make a start in that direction, because the consequences of a low level of productivity will, I believe, be more than most Americans would be willing to bear.

First, and probably most important, a low productivity growth rate, or a decline in productivity, means that the job of fighting inflation will be that much more difficult in the future. The reason for this simply is that the unit labor cost of a given product is inversely related to the level of productivity. If productivity goes down, costs go up. In today's environment, that generally means prices will go up. Most people today rate inflation as our most serious problem. If we are going to do something about it, we must raise our productivity growth rate.

Second, low productivity for our workers means higher unemployment. Again, this is the inevitable consequence of the workings of the marketplace. Less productive workers, like less productive companies, are pushed out by more productive ones. The only way we are going to be able to continue to expand the spectrum of employment opportunities in this country is to make our companies, and in turn, our workforce, more productive.

Third, when domestic inflation combines with low productivity, the United States ends up in a very poor position to compete internationally. Some of our most basic industries are already feeling this pinch. Most notable is, of course, the automobile industry, but many others have also been hard hit, including steel and consumer electronics. We are facing tremendous pressures from industries in foreign countries, such as Japan, France, Germany, and several others. Some of this may be the result of unfair practices or government intervention, but most of it results from the simple fact that foreign companies are becoming more productive than we are. They have been

striving for excellence while we have been living off our past glories. In many areas, we have become careless, and they have passed us by.

From a broader perspective, the implications of low productivity are even more disturbing. First, if we can't effectively produce what we need, it becomes important to consider whether we would have sufficient productive capacity in key industries in the event of a national emergency.

Second, we will have to face up to the fact that our standard of living is inextricably tied in with our rate of productivity growth. All of the good things in life that we enjoy, involving both public and private goods and services, have to be produced by someone. This is something we seem to forget sometimes. If we allow our ability to produce to decline, we will have to lower our standard of living. It is as simple as that.

Obviously, no one wants to accept these dire consequences. Avoiding them, however, will require some changes in the way we've been doing things. First of all, we're going to have to create a climate that is more conducive to productivity-enhancing capital investment. The percentage of our GNP spent on investment is only half that of Japan, for example, and the result is apparent. Japanese productivity growth has been several times ours for many years.

The second requirement that I see for improving productivity is a reorientation of thinking among executives in the business world. In contrast with those in other countries, our executives tend to have a short-run outlook. With notable exceptions, American firms emphasize short-term profit without adequate attention to the long-run implications of their actions. A good example is the failure of American firms to adopt the nation of guaranteed employment for their workers, a practice that is widespread in Japan. Our executives claim it would lead to too much rigidity in labor costs, while ignoring the fact that it also leads to greater employee loyalty and higher productivity.

Similar tendencies in American management were highlighted by Hayes and Abernathy in a recent issue of the *Harvard Business Review*. If our firms are going to be competitive, a lot of them are going to have to make some big changes in management practice.

Finally, and probably most important of all, the U.S. will have to develop a new relationship among the institutions of government, business, labor, and academia. Presently, relations between business and government, for example, are characterized by hostility and excessive adversarism. The same is true for relations among all these groups. The problem is that we can no longer afford this kind of divisive fighting among ourselves. The challenges we face are simply too important and too urgent for that.

I believe the government must take the initiative in trying to forge a new relationship between our great institutions, which is based on cooperation instead of conflict. For instance, in labor-management relations, an area in which I have been involved most of my career, the conflict I have encountered has been the result of the simple unwillingness to sit down and cooperatively work out an agreement. When the parties have been willing to sit down and rationally discuss the issues while keeping in mind the interests and desires of the other side, a mutually satisfactory solution can usually be worked out. There is no

reason such a cooperative approach to problem solving cannot be applied to the broader institutions which make up our society. I believe it will be this approach to the productivity problem that will ultimately prove successful.

In conclusion, I would like to stress the importance of turning this productivity slide around. I believe it can be done, but it will take hard work and a willingness to make some changes. If we delay in taking action, it will have the same affect as taking no action at all; we will slide deeper and deeper in to the hole. On the other hand, the sooner we begin, the sooner we can get back to prosperity. I hope this seminar will help us move toward a timely solution.

Thank you.

STATEMENT OF CHARLS E. WALKER, CHAIRMAN, CHARLS E. WALKER ASSOCIATES, INC.

The fact that I shall take the broad view does not mean that I disagree with Jack Grayson. I think his proposal is excellent and I both hope and think it will be given serious consideration by the Reagan Administration.

A fundamental cause of our productivity problem is the stagflation that plagues our economy with a vengeance. The high inflation rate and its expected continuation raise sharply the "hurdle rates" for new investment projects, particularly those of longer life. Sluggish economic growth slows investment activity because of fear that markets will not be sufficient to absorb the new or additional output. Therefore, the first order of business in restoring productivity growth is to whip the problem of stagflation.

Coupled with the stagflation problem as barriers to productivity growth are a tax system biased in favor of consumption and against saving and productive investment; over-regulation of business, particularly in the form of required investment in nonproductive plant and equipment; and inadequate stimulus to research and development.

If any single factor runs through this problem, it is the fact that Uncle Sam has grown too big for his britches—that the Federal government's growth, both past and potential, is too great. With the Federal budget (not including off-budget items) hovering around 23 percent of gross national product, Uncle Sam is shifting significant amounts of resources from the productive to the non-productive sectors of society. This stimulates inflationary pressures, especially when, has been the case, the public is not willing to shoulder a tax burden sufficient to balance the budget over time. The result is chronic deficit financing and a tendency in our political/economic system for too much of those deficits to be indirectly monetized by the central bank.

(Some critics of this view argue that Japan and West Germany usually have higher deficits/GNP than the U.S., but a better record on containing inflation. The inflationary potential of chronic deficit financing must be considered primarily in terms of the potential of the private sector to generate adequate savings to finance the deficits, not in terms of GNP. The low saving rate in the U.S. relative to those countries is well known.)

Chronic deficit financing also impedes the mounting of new investment projects through the "crowding out" phenomenon. Uncle Sam gets whatever funds are needed to meet its deficits, and it's Devil take the hindmost.

Clearly, therefore, restraining the growth of government spending is key to bringing inflation to heel and thereby fostering faster growth in productivity. Such restraint will also pave the political and economic way to tax reductions on work, saving and investment. The high marginal tax rates on individuals are particularly damaging to saving, and high business tax rates reduce the after-tax rate of return on new investment projects and also the cash flow available to finance them. Carefully structured tax reduction will therefore spur productivity in two ways: (1) by helping restore the solid economic growth that fosters investment spending; and (2) by directly strengthening incentives to save and invest.

The restoration of fiscal responsibility and restructuring of the Federal tax system cannot be done overnight. What is needed is a comprehensive multiyear economic plan, one that envisages steady reductions in the rate of Federal spending relative to GNP, while multi-year tax cuts on individuals and business are put into place. The goal on the spending side should be to reduce the size of the budget relative to GNP from the current 23 percent to the 19 percent that prevailed in the relatively stable but prosperous years between the end of the Second World War and the escalation of fighting in Vietnam in the mid-1960's. This can and should be done gradually.

The major tax cuts that are needed include an across-the-board cut in the high marginal rates on individuals, proportionate to the taxes now being paid. The Roth-Kemp proposal meets this test, although Congress might want to scale back the percentage cuts somewhat in order to release revenue for badly needed tax breaks to reward saving. (One good example is the bill prepared by Rep. Brown, Rep. Rousselot, and Senator Roth, which would in effect separate individual income into two baskets—salary versus investment. Each would be taxed from rates of 14 to 50 percent, instead of the current practice of taxing investment income at the marginal rate established by salary income.)

All of this sounds like a large order, but the fact is that the public mood is right, the Reagan Administration's economic game plan is essentially what I have described, and Congress is ready to move. Major battles over spending priorities lay ahead, but the prospects are good for significant progress in the first session of the 97th Congress on both the spending and tax fronts.

As to the latter, my belief is that a major tax bill will clear Congress by mid-year, including a percentage, across-the-board cut in marginal tax rates on individuals; an increase in the portion of capital gains excludable from taxable income from 60 to 70 percent (which would cut the maximum capital gains tax rate to below 21 percent); and in effect a blending of the 10-5-3 capital cost recovery plan with the Senate Finance Committee bill of last summer, perhaps resulting in a 20-5-3 approach.

As you can see, I am relatively optimistic.

C. Submitted Statements

STATEMENT OF WILLIAM S. ANDERSON, CHAIRMAN, NCR CORP.

MEETING THE JAPANESE ECONOMIC CHALLENGE

When I was invited by Dean Furuhashi to lecture on the subject of "Meeting the Japanese Economic Challenge," I was both pleased and apprehensive. To participate in this distinguished lecture series is an honor I deeply appreciate. On the other hand, I am well aware that the economic challenge facing America today is not a subject for which there are any easy answers.

Arnold Toynbee once described the rise and fall of nations in terms of challenge and response. A young nation, he said, is confronted with a challenge for which it finds a successful response. It then grows and prospers. But as time passes, the nature of the challenge changes. And if a nation continues to make the same, once-successful response to the new challenge, it inevitably suffers a decline and eventual failure.

As we begin the last two decades of the 20th Century, the United States faces such a challenge. At stake is the industrial supremacy which this country has enjoyed for most of this century. And it is Japan, more than any other nation, which exemplifies the seriousness of the challenge to American industrial leadership.

Thirty-five years ago, as a witness at the war crime trials in Tokyo, I saw Japan at the low point of its long history. Its economy was shattered, its political and social fabric torn, and its people demoralized. Those of us who were in Japan immediately after World War II had serious doubts as to whether the nation would ever be a first-rate power.

What has happened since then continues to astonish the world. In a little over three decades, Japan has become the most competitive nation on earth. It has not only caught up with the much better endowed industrial nations of the West; it has in many fields surpassed them. And it has done so by meeting the challenge of a lost war with fresh new responses.

Why have the Japanese been so successful? How did the United States lose its competitive edge? Can it be regained and, if so, how? And will the Japanese economic juggernaut be as awesome in the 1980s as it has been in the decade just ended?

These are the basic questions I should like to explore with you today.

Behind the Japanese phenomenon

In recent months the media have been flooded with attempts to explain the Japanese phenomenon. Everyone wants to know how the Japanese did it. There are, of course, scores of explanations. But it seems to me that Japan's post-war economic growth—the most spectacular the world has ever seen—is the direct result of two fundamental characteristics of the Japanese nation in the years following World War II.

The first of these is Japan's unerring sense of national purpose and its establishment of clearcut, readily understandable goals reinforced by a willingness to do what was necessary to achieve those goals.

I believe the second major ingredient in the Japanese success formula is the personality of the Japanese people themselves.

If we are to analyze the Japanese accomplishment, and learn some lessons from that accomplishment, then we must begin with an examination of those two factors.

Just as every American understands that the United States is rich in natural resources, so every Japanese understands that Japan is one of the poorest endowed countries in the world. It is a country in which 115 million people are squeezed into an area only four times the size of the state of Indiana. It is a country which is almost totally dependent on other countries for oil, coal, iron ore, and most other natural resources. Japan can't even feed itself. Only about 15 percent of its land is suitable for agriculture, and therefore a third of its food supply must come from other nations.

Japan's attempt to enlarge its meager share of the world's resources through military aggression ended disastrously in 1945. Then, in one of the most abrupt turnabouts in all history, the Japanese people reversed direction. In essence, they said this:

In physical resources we are poor, and that will not change. But in human resources we are rich. Our challenge therefore, as a nation and as individuals, is to more fully utilize our human resources than any other country. We will import the raw materials we lack, and through hard work and imagination convert those basic materials into useful products—not only for the Japanese people but for international markets as well.

It was a "you and me against the world" kind of attitude. And the first step in translating that national consensus into an action program was to develop a unique new leadership structure—a structure in which government, business, and labor would form a powerful triumvirate which the world has since labeled Japan, Inc., not in a derogatory sense, as many Japanese fear, but with a sense of envy.

The beautifully simple structure

The structure on which Japan, Inc., was built was beautifully simple. In the government sector, the Ministry of International Trade and Industry would develop and promote a national industrial plan. And the Bank of Japan and the Ministry of Finance would supply the capital and carefully control the purse strings in order to keep the new industrial plan on track.

Meanwhile, the doers—that is, business and labor—would be given a relatively free hand to utilize the inherent strengths of the capitalistic system. Taxation and government intervention would be kept to a minimum. Social programs would be deferred until Japan could afford them. Emphasis was to be on the future, not the past, or even the present.

In looking to that future, Japan's vision was clear. Modernization of its industry was given top priority. This required the importation of Western technology as rapidly as possible. The director of the Japan Economic Research Center, Nobuyoshi Namiki, recently gave credit where credit was due, and I quote:

We were quick to learn from the West—especially from the Americans. We were playing the game of catch-up, with a vengeance.

Other nations have also tried to play the catch-up game, but with conspicuous lack of success. Those nations also had a sense of national

purpose and readily understandable goals. What made the Japanese different? To answer that question, I believe we have to look to the Japanese character and personality.

According to the American Declaration of Independence, all men are endowed by the Creator with certain unalienable rights, among which are life, liberty, and the pursuit of happiness. If the Japanese were to rewrite that venerable document, I suspect they would amend it to read "life, liberty, and the pursuit of happiness and knowledge."

I hope you'll forgive me for quoting a Harvard professor here on the Notre Dame campus, but I believe that Dr. Ezra Vogel has summed up the intellectual curiosity of the Japanese as well as anyone could. This is what he says:

In virtually every important Japanese organization and community—from the national government to individual private firms, from cities to villages—devoted leaders worry about the future of their organizations. And to those leaders nothing is more important than the information and knowledge that the organizations might one day need. It is not always clear why knowledge is needed, but groups store up available information nonetheless, on the chance that some day it might be useful . . . In Japan, study is a social activity which continues through life.

Nationwide zeal for learning

This nationwide zeal for learning exhibits itself in countless ways. Millions of Japanese are fluent not only in English but even in third and fourth languages; how many Americans or Britishers speak Japanese? Japan, with half the population of the United States, graduates almost twice as many engineers; that's a per-capita ratio of four to one. And in international testing programs, Japanese youth run rings around their American or British counterparts, not only in math and science subjects but in many other subjects as well. It's no exaggeration to say that Japan is today the most literate, best educated nation in the world.

The second most striking characteristic of the Japanese people is their unquenchable team spirit. Nowhere is this more evident than in the relationship between management and labor.

Many years ago the chairman of General Motors Corporation created a furor by remarking that "What is good for America is good for General Motors and what is good for General Motors is good for America." If the chairman of Toyota were to make a similar remark in Japan today, I doubt if anyone would lift an eyebrow. In Japan, employees are as interested in the growth of their companies, and in the progress of the national economy, as they are in improving their own wages and benefits. They realize it is company growth and national economic growth which have made possible their own rapidly rising living standards.

Union members not docile

I do not suggest that Japanese labor unions are weak or their members docile. To the contrary. A higher proportion of workers are unionized in Japan than in the United States. Workers are highly militant. I have had the harrowing experience of sitting in a car at the blocked entrance to NCR's factory in Oiso, surrounded by hundreds of un-

happy employees who—to make sure I understood their displeasure—violently rocked the car from side to side before finally permitting me to enter the plant.

Yet long strikes are rare in Japan. In fact, the production time lost because of strikes is only about one-eighth of the days lost in the United States. The reason is that the vast majority of Japanese workers have learned that the team concept works as well on the production line as it does on the athletic field. Whilst they're perfectly willing to squeeze the goose that lays the golden eggs, during every spring labor "offensive," they are very careful not to strangle it to death.

The Japanese are also a proud people, and I use that term in its best sense. As you know, "face" is terribly important to most Orientals, especially the Japanese. World War II ended in international humiliation for Japan. Whether consciously or subconsciously, the Japanese people were determined to make Japan respectable again. What better way to do so than to achieve excellence in everything they undertook? In an economic sense, this translated into no more shoddy merchandise, whose only merit was a lower price tag. Instead, the Japanese vowed to make better cameras than the Germans, better watches than the Swiss, and better radio and television sets than the Americans.

Quality a national obsession

Quality became a national obsession because every Japanese recognized that quality products would not only bring the top dollar required for sustained economic growth but at the same time would restore their country's prestige among nations. And in only a few years, the label "Made in Japan" became the symbol of excellence in a long list of goods—ranging from heavy industrial equipment to everyday consumer products.

Quality in itself, of course, is meaningless if it's lavished on products which no one wants. The Japanese were quick to recognize this. Indeed, their ability to define what the market will buy is probably unequalled by any other country.

This is no accident. The Japanese research a potential market to an almost unbelievable extent. They listen carefully to what the consumer is saying. Then they give him the kind of product he wants, not the kind of product they think he should want. The focus is also on providing greater value to the customer. As a result, Japanese products tend to be better featured than many of their counterparts manufactured in Western Europe or the United States.

Japanese companies also search relentlessly for new applications for older products. No opportunity is too small or remote to be explored. Let me cite a single example:

If you've had occasion to use one of the instant-bonding "super" glues—the kind that will glue your fingers together if you're not careful—the chances are it came from Japan. The Japanese took a 25-year-old product, originally developed in America for industrial use, repackaged it, and created a new, 100-million-dollar consumer market.

Creating new markets, or penetrating someone else's existing markets, requires patience. This the Japanese have in abundance. One of

the characteristics which most distinguish top Japanese management is the emphasis they place on thinking long term rather than short term. On the occasion of his retirement, the founder of Honda Motor Company, Soichiro Honda, was able to say, and I quote:

The deputy president and I have not signed any papers nor attended any executive committee meetings for the past 10 years. We have done what presidents should do; we have spent our time correctly judging future trends. That is our job. The details of day-to-day operation we leave to the responsible personnel.

This is in sharp contrast with the operating style of most American and European business managers. In the West, long-term corporate strategy tends to play second fiddle to short-term performance. The shareholder owners of the company want results now, not five or 10 years from now. And the management that fails to report consistent progress from quarter to quarter quickly falls out of favor with the investment community. The result is a strong temptation to avoid costly investment in basic research and to shy away from new markets which over the short term would only detract from profitability.

The view 5 or 10 years out

This is not to say that the typical Japanese manager is disinterested in short-term results; to the contrary, the Japanese businessmen I've dealt with are just as closely oriented to the profit-and-loss statement as their Western counterparts. The difference is that the Japanese business manager is less likely to lose sight of what his company could be doing 5 or 10 years out, provided the proper investment for that future is made today.

In this attitude he is in close harmony with the average Japanese, who is also strongly future oriented—in contrast with the “now” attitudes so prevalent today in Western countries.

The typical Japanese household sets aside 20 percent of its total income for a rainy day. That is the highest rate of personal savings of any country. It compares with a personal savings rate of less than 5 percent in the United States which is the lowest of any developed nation. This, of course, helps explain why gross capital formation in Japan is approximately the same as in the United States, even though the U.S. economy is twice as large as the Japanese economy.

When one economic system is generating twice as much per-capita funds for investment as another economy, all kinds of favorable things begin to happen. New industries can be started and old industries brought up to date. And Japanese tax laws actively encourage an already thrifty people to become even more so.

The actual figures on industrial investment are sobering. During the past year Japan's investment in new plant and equipment has totaled 17 percent of Gross National Product. That compares with only 7.5 percent here in the United States.

The worship of productivity

But perhaps the greatest catalyst for Japan's remarkable economic achievements has been its near-obsession with finding new ways to increase personal and group productivity. Indeed, the Japanese people

come very close to worshipping productivity. We see this in virtually every industry in which they have chosen to compete. The most dramatic recent example is the phenomenal growth of the Japanese auto industry. Twenty years ago Japan produced fewer than 100,000 automobiles a year. Today the Japanese auto industry has accelerated past the European auto industry and is now on the verge of overtaking America's auto industry as well.

In automobiles—as in steelmaking, camera production, or almost any other Japanese manufacturing operation—productivity is nothing short of amazing. The latest study I've seen shows that Toyota is producing 50 cars per man year compared with fewer than 20 cars per man year for any European manufacturer.

How have they done it? That's what the president of the Ford Motor Company wanted to find out. So he sent whole teams of people to study this latest Japanese miracle. They reported that it's largely a matter of productivity-oriented methods and management, plus an unusually high degree of automation.

At Toyo Kogyo, where Mazda cars are manufactured, there are only five organizational levels between the production-line employee and the vice president in charge of manufacturing. This compares with a dozen layers of management in a typical European or American auto company.

The Ford study teams also found that the Japanese workers maintain their production equipment so carefully that machine breakdowns almost never occur. As a result, Toyo Kogyo can get by with carrying only one or two hours' supply of parts inventories to keep their production lines running. This compares with parts inventories for as much as three weeks in the plants of their American and European competitors.

In addition, suppliers are closely keyed into the production system. The supplier of ornamental trim, for example, drives his loaded truck right into the assembly plant and personally unloads it at the production line. Then he picks up the empty containers, puts them back on his truck, and—believe it or not—actually tidies up the area before returning to his own plant for more parts.

This clocklike approach drastically reduces factory space requirements. It lowers overhead and material-handling costs and reduces the number of employees required to turn out a given number of cars. To quote the president of Ford Motor Company, where the concept of the production line was born:

All the Japanese have really done is to take Henry Ford's basic principle—that is, keep the production line moving in a continuous, rhythmic, dedicated process—and go a few, admittedly brilliant steps further.

Innovative use of supplier capabilities is widespread in Japanese industry. Nippon Steel, with half as many employees as U.S. Steel, achieves approximately the same output. Part of this is due to Nippon's more modern plant, but the biggest factor is that the Japanese steel company makes extensive use of low-wage subcontractors. This holds down their own labor costs and results in more steel per dollar of wages.

In many industries, the Japanese go even farther. In the electronics industry, for example, many small subcontractors farm out much of

their work to even smaller firms or sometimes individual families. As we meet here today, approximately 180,000 Japanese are busy producing electronic components in their homes for these subcontractors, who in turn supply subassemblies to the major electronic manufacturing companies.

Small wonder, then, that the Sonys and the Matsushitas are able to keep their total labor costs low, even though their pay scales are now comparable to those in this country and Western Europe. And in the process millions of jobs are created for men and women who otherwise would probably be unemployed.

Practicing industrial euthanasia

In the never-ending quest for greater productivity, the Japanese do not shy away from killing off dying products and industries. They are constantly asking themselves, "Is this the kind of product or industry in which we can be truly competitive? Or is this something we should get out of, so that we can use our capital and human resources more productively?"

Once dominant in transistor radios, the Japanese have happily forfeited that market to lower-labor-cost countries. They have replaced it with the higher-technology market of color television sets and, more recently, videotape recorders.

Such periodic product transitions are possible only because of the high educational level of the Japanese people. They "transplant" more easily into higher-technology jobs.

The "shape up or ship out" attitude, with which national planners view declining industries, is reinforced by Japan's financial structure. Commercial banks, which are the principal source of capital, simply refuse to finance a dying industry or company. Thus, it must either phase into more productive endeavors or eventually go out of business.

The quest for productivity is almost a national game. Far-out concepts are encouraged. Akio Morita, president of Sony, has said that he "loves to hear crazy ideas." And employees at Honda use their free time, plus company grants and facilities, to turn their dream inventions into reality—even the ones which Honda says "are only good for a laugh."

Consider the Choo-Choo cycle. It's a giant tricycle, on which the rider peddles furiously to generate electricity. This in turn heats a boiler, which in turn produces steam, which in turn powers what Honda describes as "the world's most inefficient vehicle."

To many Westerners, all this may seem rather silly. But for the Japanese, it obviously works. In addition to the industries I've already mentioned, the Japanese zeal for innovation and productivity works in audio equipment, musical instruments, bicycles, sports equipment, machine tools, photocopy machines, and many other products not commonly associated with Japanese culture or capabilities.

In only a few short years, Japan has become a competitor the like of which the world has not seen before. If we compare the competition for international markets with a football game—as seems appropriate here at Notre Dame—we must acknowledge that the Japanese have fielded quite a team. In fact, at this point the score is Japan 35 and the Western nations maybe 14.

Is the game in danger of turning into a rout? To answer that question let's do a little Monday-morning quarterbacking. Let's review what has happened here in the United States since the underrated team from the East began knocking the socks off the leader of the Western Conference.

What ails our industrial engine?

Until the mid-1960s, the American economy towered above that of any other nation on earth. Yet in the past 15 years America's industrial engine has begun to knock, sputter, and display other alarming signs of impending breakdown.

Has this great economic engine been pushed too hard? Has it been poorly maintained? Has it been applied to the wrong tasks? Have we been trying to operate it on too lean a mixture?

I believe the answer is yes to all these questions.

The truth is we have been careless caretakers of an economic system which for many decades created more wealth for more people than any other system in history. And the "we" includes all of us—government, labor, business management, and the public at large. It is the story of a legacy mismanaged—to such a degree that the United States faces the last two decades of this century with apprehension and fear.

Earlier, I referred to Japan's strong sense of national purpose and the willingness of the Japanese people to do what was necessary to achieve that country's goals. In contrast, the United States of the past decade has been a nation of sharply conflicting national goals.

Consider the role played by government.

Under the delusion that government could guarantee every American a higher and higher standard of living every year, solve not only this country's social problems but also those of the rest of the world, and at the same time create a totally risk-free life for every citizen, the United States embarked on a bureaucratic crusade—at the national state, and even local levels—which has been unprecedented in history. The cause was a noble one—no one disputes that. But unfortunately the Utopian dream was based on several false premises.

In the perspective of 1980, the most obvious miscalculations were (a) that the wealth of the United States was limitless and (b) that the economic engine would somehow run a little faster each year to compensate for the increasing demands being placed on it.

Expectations outrun real output

The scenario that followed is well known. I shall not dwell on it here, other than to point out that by the mid-1960s America's expectations began to substantially outrun its real output of goods and services. And to make up to difference, the federal government simply increased the supply of money.

Economist Paul Craig has pointed out that in all the years from the founding of the United States to the year 1966, the money supply grew from zero to 171 billion dollars. Yet today it has swollen to more than twice that—approximately 385 billion dollars. That is an increase of well over 200 billion dollars in 13 years.

During the same 13 years the federal deficit, not counting this year's deficit, has totaled 190 billion dollars. Dr. Craig suggests that the similarity of those figures—a federal deficit of 190 billion and the pouring of more than 200 billion into the money supply—is almost enough to make one develop a theory!

Yet even today, as the nation suffers under double-digit inflation which is on the verge of moving higher, we continue to hear from supposedly responsible public officials that OPEC is the root cause of America's inflation.

Suppose that whilst the printing presses at the Treasury were operating overtime, somehow the American economic engine had continued to run faster and faster each year—as it did in the 1950s and the early 1960s, when productivity gains were averaging 3 or 4 percent a year. Would that have made a difference?

It would have made a tremendous difference. But unfortunately, just the reverse happened. From 1968 to 1973 the annual productivity increase declined to less than 2 percent. Since 1973 it has averaged less than one percent. And for the past year and a half, productivity has actually declined. In the second quarter of 1980 the decline was approximately 3 percent.

That is not only crippling our output of goods and services; it is making America's products less competitive in markets abroad, which is one of the reasons the United States has lost 23 percent of its share of the world market in the past 10 years.

The dilemma of declining productivity, as you know, has been laid at many different doorsteps. We are frequently told that Americans have lost the will to work, and that coffee breaks, retirement parties and other social rituals, plus a high rate of absenteeism, have sapped the output of our factories and offices.

But my personal observation is that, on the whole, the American employee works as hard as his Japanese or German counterpart. So I think we have to probe deeper than that. And when we do, one conclusion is inevitable:

The productivity problem can be attributed primarily to structural deficiencies in our current economic system rather than to any pronounced change in the traditional American work ethic.

Decline of industrial innovation

Consider, for example, the area of industrial innovation. Perhaps more than any other factor, it was industrial innovation which made the United States the most productive nation on earth. Innovation created not only a wealth of new products and new services but entirely new industries.

The industry my own company is a part of—the computer systems industry—is a classic example. Thirty years ago, the computer was a laboratory curiosity; today, it has become a 100-billion-dollar business which during the 1980s is expected to become the world's fifth largest industry, exceeded only by the energy, automobile, steel, and chemical industries.

The computer industry—like the nuclear power, aviation, television, instant photography, and satellite communications—is a high-tech-

nology industry spawned in American which grew out of this country's dedication to research and development.

Yet ever since the mid-1960s, the percentage of R&D spending to Gross National Product has been declining. Expenditures for basic R&D—the kind of research that gives birth to new industries—has dropped from 34 percent of total R&D allotments to only 25 percent today.

So far as R&D is concerned, we are like the farmer who every year sets aside a smaller amount of seed corn for the next year's crop, and then wonders why his production is falling off.

Comparable erosion has occurred in the American industrial plant. During the past 10 years many of America's factories have become obsolete or at best obsolescent. The average age of the machinery used in American plants today is 12 years. This compares with an average equipment age of seven years in the plants of our principal competitors.

We lag in automation as well. Japanese industry, with less than half the total output of American industry, has installed approximately 45,000 computer-controlled factory robots, compared with 5,000 here in the United States.

Industry living on low-calorie diet

In this, the world's richest country, industry has been living on a low-calorie diet. The amount of capital invested per worker grew only 1.5 percent a year from 1963 to 1975. In Japan, the annual increase in capital investment per worker during the same period was 10.1 percent—seven times as much.

The tables have clearly turned; now it's the United States which must do the catching up—and on a massive scale. It's estimated that the U.S. steel industry alone needs to invest almost 5 billion dollars annually during the 1980s just to stay reasonably competitive with foreign steel producers.

What has happened to the American zeal for creating new ideas and opening new industrial frontiers? What has eroded this country's genius from producing more goods, more efficiently, for more people—generation after generation?

The causes of this industrial decline are, of course, legion. But it's surprising how many of the reasons for our current economic problems can be summed up in a single word. That word is "disincentive." In fact, I think it's fair to say that no other country has yet devised so many disincentives to innovation and productivity in such a short period of time.

In discussing these disincentives, I must reluctantly return to the role played by government. I say "reluctantly" because it is not my purpose—nor would it be fair—to make our elected officials the scapegoat for all of America's problems.

In the final analysis, a democratic government reflects the consensus, or lack of consensus, of the people it governs. And for the past decade the United States seemingly has lacked a sense of direction. Meanwhile, government has focused on ways to redistribute the wealth created by earlier generations, and to achieve through brute force the pet social engineering schemes of bureaucrats.

In pursuit of these nebulous objectives, government has:

Engaged in a 15-year spending spree, which besides saddling the public with unprecedented inflation, has grossly distorted the earnings of business and industry. So much so that most of the profits being reported today are consumed in meeting the rising costs of staying in business, rather than in productive new investments.

Government has also established a tax system which gives little incentive to business and industry to invest in R&D and new plants and equipment, and which simultaneously discourages personal savings.

It has intervened in almost every phase of business operations with an endless maze of regulations which, by conservative estimates are currently draining over 100 billion dollars a year from industry's basic function of providing goods and services.

It has discouraged expansion by American business into overseas markets—by lack of any consistent trade policies, by ill-advised attempts to use exports as a club to force other countries to practice American concepts of morality, and by outmoded anti-trust laws which effectively prevent many American companies from competing successfully with powerful foreign consortiums.

The list of indictments could go on and on. As economist Lester Thurow has pointed out, the U.S. economy today is bleeding from "a thousand cuts."

Business management also to blame

I wish it were possible to say that business is blameless in this multiple, persistent wounding of the economy. But such is not the case.

Most business leaders have been quick to unmask the folly of much of the legislation of recent years. However, we have been less than adept in preparing our own companies for the winds of change which began sweeping through almost every industry in the 1970s.

We have allowed our plants to turn out too many shoddy products under the mistaken impression that the consumer will buy anything so long as it's made in the USA.

We have tended to subordinate long-range planning to short-range expediency.

We have devoted too much time and too many resources to shoring up eroding markets, and have not paid enough attention to emerging new markets.

We have preached about the need to keep the spirit of enterprise alive, but we've often been overly cautious when the time came to actually put our chips on the board.

And all the while, we have reassured ourselves as to the wisdom of our course by reporting record revenues and earnings. We have chosen to ignore the realistic dictum of management consultant Peter Drucker that in an inflationary environment, "the figures lie."

And what of organized labor? Again, labor—along with government and business—must accept a share of the blame for America's industrial decline.

As the experience of Japan has demonstrated, labor has as much at stake in achieving improved productivity as management, or the na-

tion as a whole. Yet many unions continue to fight tooth and nail against productivity-enhancing changes. Instead, they have clung tenaciously to outmoded work practices that narrowly define who can do what—when, where, and how. In many industries these rigid work rules have locked companies into a style of operation which is totally inadequate for meeting the competitive realities of today.

Along with government and much of business, labor has also succumbed to the illusion that America's economic growth is an automatic, never-ending process. The overriding philosophy at the bargaining table has been to squeeze the last drop out of the bottle and to let someone else worry about how the bottle is to be refilled.

A "pass-along-the-problem" approach

This "pass-along-the-problem" approach is nowhere more evident than in the cost-of-living provisions written into labor contracts covering millions of employees—provisions which have helped increase hourly labor costs in the auto industry, as only one example, by 20 percent in the past year alone. Yet we are now hearing cries of bewilderment over the unprecedented influx of Japanese-built autos in the U.S. market, at a time when over 200,000 American auto workers are out of work.

Many years ago, the historian Edward Gibbon explained the decline and fall of the ancient city of Athens in few chilling words. He said:

In the end, more than they wanted freedom, they wanted security. They wanted a comfortable life. And in their quest for it all—security, comfort and freedom—they lost it all. When the Athenians wanted finally not to give to society, but for society to give to them; when the freedom they wished for most, was the freedom from responsibility, then Athens ceased to be free.

Can the United States escape a similar fate? I believe that depends, in large measure, on whether this country can regain the competitive edge it has lost in recent years.

Certainly the first step in meeting the economic challenge posed by Japan and other international competitors is to recognize the seriousness of the problem. And evidence is mounting daily that Americans in all walks of life are indeed aware that the nation's industrial engine badly needs a major overhaul.

The message has even reached Washington. As the presidential and congressional campaigns begin building to a peak, each of the presidential candidates—along with every other office-seeker—has sensed the deep concern throughout America about the future direction of the economy.

Almost overnight, "reindustrialization" has become the buzzword of 1980. It is now a favorite theme not only of candidates for political office, but of television specials, radio talk shows, articles in prestigious magazines, town meetings, and even discussions at cocktail parties.

Many liberals are beginning to sound like conservatives. And conservatives are as pleasantly surprised as a professor who discovers at the end of a long lecture that his class has actually paid attention to what he's been saying.

This is all very encouraging. But catchy phrases and red, white, and blue bumper stickers proclaiming the national will to revitalize the

American economy will not solve the economic problems which have been building for 15 years.

Facing some hard choices

It is regrettable, but true, that the mammoth rebuilding task everybody is talking about will require making some hard choices—by government, by business, and by labor. Also, by the tens of millions of other Americans, young and old, who are not part of the power structure.

On November 4th—after the bands have stopped playing, and the last of the campaign oratory has faded away—will the national consensus on the need for rebuilding America's industrial base also begin to fade away in the face of those hard choices? That, of course, is the unanswerable question.

We must proceed, however, on the assumption that the American people—like the Japanese people 35 years ago—will in fact demonstrate a willingness to do what is necessary to breathe new life into the national economy. Certainly that is the one mandatory requirement for reversing the United States' economic decline.

The dilemma facing America today transcends the issue of meeting the Japanese economic challenge—important as that issue is. The Japanese challenge is but the tip of the iceberg, it is highly visible because of the 9-billion-dollar trade deficit with Japan anticipated for this year, and because Japanese-made products are flooding the American marketplace.

But the bulk of the iceberg is still unperceived in many quarters. It is not only Japan which is challenging America's traditional leadership in scores of industries; it is other industrialized countries as well, plus many lean and hungry developing countries.

I'm not suggesting that the Japanese challenge should be underestimated, or that the Japanese experience is without lessons for the United States. It is indeed the most pressing challenge of the moment, and we can benefit by emulating a number of Japanese practices. But we cannot expect Americans to behave like Japanese. Japan is a highly homogenized society, with a history and a culture which are alien to the history and culture of the United States. It is basically a group-oriented society, whilst the United States has been, and remains, essentially individual-oriented.

It seems to me therefore that America's response, both to the Japanese challenge and the broader worldwide challenge, must be built on American strengths, American values, and the American political and social structure.

Business Week magazine has defined the challenge in the most succinct terms I have seen :

The United States, it says, must develop a "consensus-forming framework under which government, business, labor, and other interest groups—without compromising their traditional goals—can agree on tradeoffs that would both strengthen the economy and, in the end, prove beneficial to all."

I think we would all agree that government must be the chief architect in designing and developing such a framework. It is the country's elected officials, and the governmental departments they control, who must establish the necessary priorities. It is government which must create a favorable environment for such an effort.

A task of awesome complexity

The public mandate for overhauling the world's largest economy is unmistakably clear. What is less clear is whether government is equal to the task. Admittedly, it will be a task of awesome complexity.

As a first step, it will require a major shifting of governmental emphasis, including the slowing down of attempts to create an egalitarian society and the speeding up of efforts to generate economic growth. To achieve this massive redirection, government will have to greatly increase its planning and coordinating capabilities.

It will also require acceptance of the fact that any viable program to rebuild the national economy must reduce, to some extent, the level of personal consumption during the initial years of the revitalization effort. There are no magical recipes for creating a larger pie overnight. If a larger slice of the Gross National Product is to be allotted to productive investment, each of the remaining slices of the pie will have to be reduced accordingly. And that must start at the governmental level—specifically with a meaningful reduction in the federal budget and corresponding monetary restraint—reinforced by comparable fiscal restraint by state and local governments.

Any successful rebuilding effort must also recognize the futility of trying to prop up low-skilled, labor-intensive industries, whose products must compete with comparable products manufactured at a fraction of the U.S. cost in low-wage developing countries. Here, too, a change in emphasis will be required—away from traditional attempts to increase blue-collar employment and toward the creation of new jobs in knowledge-intensive industries. This will necessitate major investments in job retraining programs, and, at a more basic level, reorientation of the Nation's educational system.

The rebuilding program will also require a concentrated effort to increase America's exports. This includes the establishment of appropriate export incentives and the removal of current disincentives, plus a revision of anti-trust laws so that American versions of the highly successful Japanese trading companies can open new markets abroad.

Most important of all, it will require greater stimulation of research and development to create new products, new industries, and new jobs and greater capital investment in new plants and equipment so that those products—and existing products—can be manufactured more efficiently than their counterparts abroad.

I've listed several philosophical concepts which in my view are necessary if government is to serve as the catalyst for reversing the recent slippage of the U.S. economy. These concepts are, of course, easier stated than implemented. And their implementation would be viewed with varying degrees of enthusiasm by various interest groups.

Yet on one phase of their implementation there appears to be widespread agreement; namely, that increased investment is the indispensable key for unlocking America's potential for economic growth. The problem is not only to accelerate the rate of capital formation, but to make sure that the additional capital flows into productive channels.

The powerful tool of tax reform

The most powerful tool for achieving those objectives is tax reform—to be specific, tax reform in three primary areas:

First, current tax laws should be amended to provide meaningful incentives to spur research and development. Studies show that high-technology industries generate triple the growth rate, twice the productivity rate, and nine times the employment growth of low-technology industries. America has long been the world leader in high technology. That leadership is now in jeopardy, primarily because R & D expenditures, as a percentage of Gross National Product, have shown virtually no real growth in the past 10 years.

Second, current tax laws should be revised to permit more rapid depreciation of capital investments in new plants and equipment. Current depreciation schedules are inconsistent with the real world—not only because replacement costs have soared, but because of the speed with which most industries, especially high-technology industries, are changing. As only one example, my own company will have to invest almost 400 million dollars in the 1980s to stay competitive in semiconductors, which are the basic building blocks of computers and other types of information-processing equipment.

Third, current tax laws should be amended so as to stimulate personal savings instead of personal consumption. The United States stands unique among industrial nations in penalizing the thrifty and rewarding those who live beyond their means. With an inflation rate twice that of the allowable interest on savings accounts, and with dividends and most other investments subject to double taxation, it is remarkable that Americans save anything at all. The effect of this is further dilution of the capital available for economic growth.

In correcting these glaring deficiencies in the current tax structure, we need only to look to our international competitors for guidance. Japan, for example, offers special depreciation allowances for new technology investments. Canada provides a 10 percent investment tax credit for all research and development expenditures. Germany, France, and the United Kingdom permit accelerated depreciation for both plant and equipment used in scientific and technical research. Comparable incentives are offered by those countries to encourage plant modernization and the growth of personal savings.

Just as we need to generate more capital for investment, so we need to reduce the flow of capital into non-productive areas. Few would quarrel with the good intentions of most of the regulatory legislation of recent years. Protecting the environment, eliminating on-the-job health and safety hazards, and ensuring equal opportunity employment are as justifiable from a business viewpoint as they are from a social or humanitarian viewpoint.

What cannot be justified—or tolerated if the United States is to remain a strong international competitor—is the tragic waste, inefficiency, and inconsistency which characterize so many government regulations today.

An Alice-In-Wonderland world

It is indeed an Alice-in-Wonderland world when one arm of government is constantly pushing for greater use of pesticides at the same time another agency is restricting their use; or when one branch of the federal bureaucracy is demanding weight-adding safety features for automobiles even as another agency is promoting lighter-weight cars to reduce gasoline consumption. A visitor from another planet might well conclude that we have all gone mad.

Not long ago the Business Roundtable sponsored a study of costs incurred by 48 companies in complying with the regulations of only six federal agencies. Those costs amounted to 16 percent of the companies' net income and 43 percent of their expenditures for research and development.

Clearly, it is time for government to begin weighing the merits of many existing regulations and all proposed new regulations against the drain they cause on the capital needed to rejuvenate the national economy.

Rebuilding America's economy will also test the ability of business managers to develop better policies and practices than those that were followed in the 1970's. In the 1980s we need to raise our sights beyond this month's sales report and this year's financial performance. We need to be more interested in where our companies will be five years from now than where they are today. And we must begin measuring our own performances as business managers, and the performances of our subordinates, in terms of contributions to long-term growth and increased market penetration as well as short-term profits.

And that will be difficult. To quote philosopher Paul Valery, "The trouble with our times is that the future is not what it used to be."

I, for one, hope that the future truly will not be what it used to be, insofar as the traditional adversary relationship of business and labor is concerned. If American products are to regain the preeminence they once enjoyed in the international marketplace, we shall have to develop new approaches to that relationship—approaches that will help refurbish this country's reputation for technologically-advanced, high-quality products manufactured with pride and efficiency.

Earlier this month a Japanese trade delegation flew to Detroit, ostensibly to buy auto parts from U.S. manufacturers, but also to pour oil on the troubled waters caused by record exports of Japanese-made cars to this country. The delegation brought along a statement from the managing director of Japan's largest auto manufacturer. It warned the American parts suppliers that they had better improve the quality of their products or face the loss of any future business from Japan.

Classic case of role reversal

The fact that this could, and did happen—in what Americans have always regarded as the auto capital of the world—points up the magnitude of the task confronting American management and labor in the 1980s. It was a classic case of role reversal, with the once-vaunted U.S. auto industry and its suppliers reduced to the status one might give a fledgling industry in some remote banana republic.

I find it difficult to believe that either American management or American labor will be willing to accept that kind of secondary economic role in the world economy of the 1980s. I don't think anyone in government wants it either. Yet there is a clear and present danger that this could happen in many other industries as well. It seems to me that is the real essence of the economic challenge that faces this country.

Can the trend be reversed? In my judgment it can be.

It is true that Japan, to use today's vernacular, seemingly "has it made." But is the Japanese position in tomorrow's economic world really that secure?

More than any other industrial country, Japan is highly vulnerable to future disruptions in the supply of oil and other basic resources, as global political tensions continue to mount.

Japan today is also a high-labor-cost country. It, too, must convert its present industrial base into one that is more heavily weighted toward higher-technology, higher-valued-added products. As the Ministry of International Trade and Industry recently noted, "The period when Japan made progress by applying and improving existing ideas has already come to an end, and a period of creativity and initiative is beginning."

Also, increasing trade friction has raised the spectre of anti-Japanese protectionism in both the United States and Europe, which are Japan's principal markets. And even if international trade remains relatively free, Japan will have to vastly increase its direct investment abroad to remain competitive in many markets. Doing so will require huge amounts of capital. Also, it raises the question of how transplantable the Japanese success formula will be in other countries.

In addition, Japan's own internal house is not in the best of order. Rising inflation, substandard housing, growing consumerism, and the need to streamline an unwieldy state bureaucracy are problems which the Japanese have not yet solved.

Finally, there are signs that the Japanese people themselves, having achieved a level of affluence that once was only dreamed about, are moving toward a somewhat different life style. It is a life style that envisions more leisure time, greater emphasis on culture, and—Heaven forbid—perhaps even doing nothing at all productive once in a while!

The fact that Japan is entering the 1980s with its own agenda of difficult problems offers scant solace to the United States. Momentum still favors the Japanese.

But it's now apparent that the United States—which in recent years has often appeared to be the sleeping giant of the world's industrial

nations—is beginning to wake up at last. And although the scoreboard at the moment may read 35 to 14, the home team still has time to revise its game plan, beef up its offense, and with the big one after all.

It should be an interesting second half.

STATEMENT OF DALE W. JORGENSEN, PROFESSOR OF ECONOMICS,
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Taxation and Technical Change *

1. INTRODUCTION

The growth of the U.S. economy in the postwar period has been very rapid by historical standards. The rate of economic growth reached its maximum during the period 1960 to 1966. Growth rates have slowed substantially since 1966 and declined further since 1973. A major source of uncertainty in projections of the future of the U.S. economy is whether patterns of growth will better conform to the rapid growth of the early 1960's, the more moderate growth of the late 1960's and early 1970's or the disappointing growth since 1973.

The purpose of this paper is to consider the prospects for restoring moderate economic growth through tax policy. For this purpose we decompose the growth of output during the postwar period into contributions of capital input, labor input, and the rate of technical change. For the period 1948 to 1976 we find that all three sources of economic growth are significant and must be considered in analyzing future growth potential. For the postwar period capital input has made the most important contribution to the growth of output, technical change has been next most important, and labor input has been least important.

Focusing on the period 1973 to 1976, we find that the fall in the rate of economic growth has been due to a dramatic decline in the rate of technical change. Declines in the contributions of capital and labor input are much less significant in explaining the slowdown. We conclude that the future development of technology should be the primary focus of efforts to stimulate future U.S. economic growth.

Given the importance of technical change in future economic growth we attempt to analyze the slowdown in the rate of technical change for the U.S. economy as a whole in greater detail. For this purpose we decompose technical change during the postwar period into components that can be identified with technical change at the sectoral level and with reallocations of output, capital input, and labor input among sectors. For the period 1948 to 1976, we find that these reallocations are insignificant relative to sectoral technical change. The combined effect of all three reallocations is slightly negative, but sufficiently small in magnitude to be negligible as a source of aggregate technical change.

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Again focusing on the period 1973 to 1976, it is possible that the economic dislocations that accompanied the severe economic contraction of 1974 and 1975 could have resulted in shifts of output and inputs among sectors that contributed to the slowdown of the aggregate rate of technical change. If this were true, then economic policy should be focused on reallocation of output among sectors. This appears to be the objective of industrial revitalization programs, such as the program proposed by the Carter Administration. Alternatively, sources of the slowdown in the aggregate rate of technical change might be found in falling rates of technical change at the level of individual industrial sectors. In this case the objective of economic policy should be to stimulate the rate of technical change for all industrial sectors.

We find that reallocations of output and inputs among sectors made positive rather than negative contributions to economic growth during the period 1973-1976. Economic policies oriented toward revitalization of the economy by reallocating economic activity among industries appear to be misguided. We conclude that declines in rates of technical change for the individual industrial sectors of the U.S. economy must bear the full burden of explaining the slowdown in the rate of technical change for the economy as a whole. The major focus for economic policy should be to stimulate the development of technology at the level of the individual industrial sector across all industries.

To identify policies that can stimulate the development of technology we present the results of an econometric analysis of the determinants of productivity growth at the sectoral level. Our econometric model determines the growth of sectoral productivity as a function of relative prices of sectoral inputs. For each sector we divide inputs among capital, labor, energy, and materials inputs. We allow for the fact that the value of sectoral output includes the value of intermediate inputs—energy and materials—as well as the value of primary factors of production—capital and labor. Differences in relative prices for inputs are associated with differences in the rate of technical change for each sector.

After fitting our econometric model of productivity growth to data for individual industrial sectors we find that rate of technical change decreases with an increase in the price of capital input for a very large proportion of U.S. industries. Similarly, the rate of technical change falls with higher prices of labor input for a large proportion of industries. The impact of higher energy prices is also to slow the rate of technical change for a large proportion of industries. By contrast we find that an increase in the price of materials input is associated with increases in rates of technical change for almost all industries.

Tax policies over the postwar period have resulted in wide variations in effective rates of taxation on income from corporate capital. Effective tax rates at the beginning of the postwar period were greater than or equal to the statutory rate of fifty-two percent. Beginning in 1954, a series of tax reforms resulted in a steady decline in effective tax rates through 1965. For some assets the effective tax rate on corporate capital was reduced by more than half. Effective tax rates rose sharply from 1965 to 1969 and fell over the period from 1969 to 1973. Since 1973 effective tax rates have remained relatively stable.

Examining the postwar development of technology for the economy as a whole, we find that technical change attained its maximum during the period 1960–1966, when effective rates of taxation on income from corporate capital were falling. During the period 1966–1969, when effective rates were increasing dramatically, the rate of technical change declined to the lowest level in the postwar period up to 1969. The rate of technical change recovered to levels close to the postwar average during the period 1969–1973, when effective tax rates were falling.

Since 1973 the relative prices of capital, labor, energy, and materials inputs have been altered radically as a consequence of the increase in the price of energy relative to other productive inputs. Higher world petroleum prices following the Arab oil embargo of late 1973 and 1974 have resulted in sharp increases in prices for all forms of energy in the U.S. economy—oil, natural gas, coal, and electricity generated from fossil fuels and other sources. Although the U.S. economy has been partly shielded from the impact of higher world petroleum prices through a system of price controls, all industrial sectors have experienced large increases in the price of energy relative to other inputs.

Our econometric model reveals that slower productivity growth at the sectoral level is associated with higher prices of capital and energy relative to other inputs. Our first conclusion is that the pattern of increases and decreases in the aggregate rate of technical change over the postwar period is inversely correlated with changes in the price of capital input through tax policy. High effective rates are associated with low rates of technical change, while low effective tax rates are associated with high rates of technical change.

Our second conclusion is that the slowdown in sectoral rates of technical change since 1973 is at least partly due to the sharp increase in the price of energy relative to other productive inputs. This increase began with the run-up of world petroleum prices in late 1973 and early 1974. The fall in sectoral rates of technical change after 1973 is responsible in turn for the decline in the rate of technical change for the U.S. economy as a whole. Slower technical change is the primary source of the slowdown in U.S. economic growth since 1973.

During 1979 and early 1980 world petroleum prices have jumped 130 to 140 percent, following the Iranian revolution of late 1978. Since the outbreak of the Iran-Iraq War in 1980, spot petroleum prices have begun to increase relative to the higher levels established in 1979 and early 1980. Based on the performance of the U.S. economy since 1973, we can anticipate a further slowdown in the rate of economic growth, a decline in the rate of technical change for the economy as a whole, and declines in sectoral rates of technical change for a wide range of industries.

To offset the drag on the rate of technical change for the U.S. economy as a whole due to higher energy prices, it is important to take immediate steps to reduce the effective rate of taxation on capital. For this purpose we propose a new approach to capital recovery under tax law that would counteract the effects of higher energy prices. In addition, we propose a reduction in the tax wedge between the demand and supply of labor associated with payroll taxes.

2. THE GROWTH SLOWDOWN

In this section we begin our analysis of the slowdown in U.S. economic growth, by decomposing the growth of output for the economy as a whole into the contributions of capital input, labor input, and technical change.¹ The results are given in Table 1 for the postwar period 1948-1976 and for the following seven subperiods—1948-1953, 1953-1957, 1957-1960, 1960-1966, 1966-1969, 1969-1973, and 1973-1976.² Except for the period from 1973 to 1976, each of the subperiods covers economic activity from one cyclical peak to the next. The last period covers economic activity from the cyclical peak in 1973 to 1976, a year of recovery from the sharp downturn in economic activity in 1974 and 1975.

We first present rates of growth for output, capital input, labor input, and the rate of technical change for the U.S. economy. For the postwar period as a whole output grew at 3.50 percent per year, capital input grew at 4.01 percent, and labor grew at 1.28 percent. The rate of technical change averaged 1.14 percent per year. The rate of economic growth reached its maximum at 4.83 percent during the period 1960-1966 and grew at only 0.89 percent during the recession and partial recovery of 1973-1976. The growth of capital input was more even, exceeding 5 percent in 1948-1953 and 1966-1969 and falling to 3.12 percent in 1973-1976. The growth of labor input reached its maximum in the period 1960-1966 at 1.99 percent and fell to 0.58 percent in 1973-1976, which was above the minimum of 0.23 percent in the period 1953-1957.

TABLE 1.—GROWTH OF OUTPUT AND INPUTS FOR THE U.S. ECONOMY, 1948-76

	1948-76	1948-53	1953-57	1957-60	1960-66	1966-69	1969-73	1973-76
Growth rates:								
Output.....	0.0350	0.0457	0.0313	0.0279	0.0483	0.0324	0.0324	0.0089
Capital input.....	.0401	.0507	.0393	.0274	.0376	.0506	.0396	.0312
Labor input.....	.0128	.0160	.0023	.0099	.0199	.0185	.0116	.0058
Rate of technical change.....	.0114	.0166	.0146	.0113	.0211	.0004	.0095	-.0070
Contributions:								
Capital input.....	.0161	.0194	.0154	.0109	.0156	.0211	.0161	.0126
Labor input.....	.0075	.0097	.0013	.0057	.0116	.0108	.0068	.0033

We can express the rate of growth of output for the U.S. economy as a whole as the sum of a weighted average of the rates of growth of capital and labor inputs and the rate of technical change. The weights associated with capital and labor inputs are average shares of these inputs in the value of output. The contribution of each input is the product of the average shares of this input and corresponding input growth rate. We present contributions of capital and labor inputs to U.S. economic growth for the period 1948-1976 and for seven subperiods in Table 1. Considering technical change, we find that the maximum rate occurred from 1960 to 1966 at 2.11 percent per year. During the period 1966-1969 the rate of technical change was almost negligible

¹ The methodology that underlies our decomposition of the growth of output is presented in detail by Jorgenson [1980].

² The results presented in Table 1 are those in Fraumeni and Jorgenson [1980], who also provide annual data for output and inputs.

at 0.04 percent. The rate of technical change recovered to 0.95 percent during the period 1969–1973 and fell to a negative 0.70 percent during 1973–1976.

Since the value shares of capital and labor inputs are very stable over the period 1948–1976, the movements of the contributions of these inputs to the growth of output largely parallel those of the growth rates of the inputs themselves. For the postwar period as a whole the contribution of capital input of 1.61 percent is the most important source of output growth. Technical change is next most important at 1.14 percent, while the contribution of labor input is the third most important at 0.75 percent. All three sources of growth are significant and must be considered in an analysis of the slowdown of economic growth during the period 1973–1976. However, capital input is clearly the most important contributor to the rapid growth of the U.S. economy during the postwar period.³

Focusing on the period 1973 to 1976, we find that the contribution of capital input fell to 1.26 percent for a drop of 0.35 percent from the postwar average, the contribution of labor input fell to 0.33 percent for a drop of 0.42 percent, and that the rate of technical change at a negative 0.70 percent dropped 1.84 percent. We conclude that the fall in the rate of U.S. economic growth during the period 1973–1976 was largely due to the fall in the rate of technical change. Declines in the contributions of capital and labor inputs are much less significant in explaining the slowdown. A detailed explanation of the fall in the rate of technical change is needed to account for the slowdown in U.S. economic growth.

To analyze the sharp decline in the rate of technical change for the U.S. economy as a whole during the period 1973 to 1976 in greater detail we employ data on rates of technical change for individual industrial sectors. For this purpose it is important to distinguish between technical change at the aggregate level and technical change at the sectoral level. At the aggregate level the appropriate concept of output is value added, defined as the sum of the values of capital and labor inputs for all sectors of the economy. At the sectoral level the appropriate concept of output includes the value of primary factors of production at the sectoral level—capital and labor inputs—and the value of intermediate inputs—energy and materials inputs. In aggregating over sectors to obtain output for the U.S. economy as a whole the production and consumption of intermediate goods cancel out, so that values of energy and materials inputs do not appear at the aggregate level.

We can express the rate of technical change for the U.S. economy as a whole as the sum of four components. The first component is a weighted sum of rates of technical change for individual industrial sectors. The weights are ratios of the value of output in each sector to value added in that sector. The sum of these weights over all sectors exceeds unity, since technical change in each sector contributes to the growth of output in that sector and to the growth of output in other sectors through deliveries of intermediate inputs to those sectors. The remaining components of aggregate technical change represent

³ This conclusion contrasts sharply with that of Denison [1979]. For a comparison of our methodology with that of Denison, see Jorgenson and Griliches [1972].

the contributions of reallocations of value added, capital input, and labor input among sectors to technical change for the economy as a whole.⁴

The role of reallocations of output, capital input and labor input among sectors is easily understood. For example, if capital input moves from a sector with a relatively low rate of return to a sector with a high rate of return, the quantity of capital input for the economy as a whole is unchanged, but the level of output is increased, so that productivity has improved. Similarly, if labor input moves from a sector with low wages to a sector with high wages, labor input is unchanged, but productivity has improved. Technical change for the economy as a whole is a combination of improvements in technology at the sectoral level and reallocations of output, capital input and labor input among sectors. Data on reallocations of output, capital input and labor input for the postwar period 1948 to 1976 and for seven subperiods are given in Table 2.⁵

TABLE 2.—RATE OF TECHNICAL CHANGE FOR THE U.S. ECONOMY, 1948-76

	1948-76	1948-53	1953-57	1957-60	1960-66	1966-69	1969-73	1973-76
Sectoral rates of technical change.....	0.0124	0.0219	0.0177	0.0145	0.0217	0.0025	0.0048	-0.1013
Reallocation of value added...	.0016	-.0075	-.0030	-.0010	-.0016	-.0025	-.0030	.0046
Reallocation of capital input...	.0008	.0022	.0008	-.0001	.0002	.0001	.0010	.0008
Reallocation of labor input....	-.0002	-.000	-.0008	-.0021	.0008	.0004	.0006	-.0011

For the postwar period as a whole technical change at the aggregate level is dominated by the contribution of sectoral technical change of 1.24 percent per year. The contributions of reallocations of output, capital input, and labor input are a negative 0.16 percent, a positive 0.08 percent, and a negative 0.02 percent. Adding these contributions together we find that the combined effect of the three reallocations is a negative 0.10 percent, which is negligible by comparison with the effect of technical change at the sectoral level. The rate of technical change at the aggregate level provides an accurate picture of average rates of technical change for individual industries; this picture is not distorted in an important way by the effect of reallocation of output and inputs among sectors.

Again focusing on the period 1973-1976, we find that the contribution of sectoral technical change to technical change for the economy as a whole fell to a negative 1.13 percent for a drop of 2.37 percent from the postwar average. By contrast the contribution of reallocations of output rose to 0.46 percent for a gain of 0.62 percent from the postwar average. The contribution of the reallocation of capital input was unchanged at 0.08 percent, while the contribution of labor input fell to a negative 0.11 percent for a drop of 0.09 percent from the postwar average. The combined contribution of all three reallocations rose 0.53 percent, partially offsetting the precipitous decline in rates of technical change at the sectoral level. We conclude that declines in rates of technical change for the individual indus-

⁴ The methodology that underlies our decomposition of productivity growth is presented in detail by Jorgenson [1980].

⁵ The results presented in Table 2 are those of Fraumeni and Jorgenson [1980], who also provide annual data for productivity growth.

trial sectors of the U.S. economy are more than sufficient to explain the decline in the rate of technical change for the economy as a whole.

To summarize our findings on the slowdown of U.S. economic growth during the period 1973-1976, we find that the drop in the growth of output of 2.61 percent per year from the postwar average is the sum of a decline in the contribution of labor input of 0.42 percent per year, a sharp dip in sectoral rates of technical change of 2.37 percent, a rise in the role of reallocations of output among sectors of 0.62 percent per year, no change in the reallocations or capital input, and a decline in the contribution of reallocations of labor input of 0.09 percent per year. Whatever the causes of the slowdown, they are to be found in the collapse of technical change at the sectoral level rather than a slowdown in the growth of capital and labor inputs at the aggregate level or the reallocations of output, capital input, or labor input among sectors.

The decomposition of economic growth into the contributions of capital input, labor input, and the rate of technical change is helpful in pinpointing the causes of the slowdown. The further decomposition of technical change for the economy as a whole into contributions of sectoral rates of technical change and reallocations of output, capital input, and labor input is useful in providing additional detail. However, our measure of the sectoral rate of technical change is simply the unexplained residual between growth of sectoral output and the contributions of sectoral capital, labor, energy, and materials inputs. The problem remains of providing an explanation for the fall in rates of technical change at the sectoral level.

3. SECTORAL RATES OF TECHNICAL CHANGE

We have now succeeded in identifying the decline in the rate of technical growth at the level of individual industrial sectors within the U.S. economy as the main culprit in the slowdown of U.S. economic growth that took place after 1966. To provide an explanation for the slowdown we must go behind the measurements to identify the determinants of technical change at the sectoral level. For this purpose we require an econometric model of sectoral technical change. In this section we present a summary of the results of applying such an econometric model to detailed data on sectoral output and capital, labor, energy, and materials inputs for thirty-five individual industries in the United States.

Our complete econometric model is based on sectoral price functions for each of the thirty-five industries included in our study.⁶ Each price function gives the price of the output of the corresponding industrial sector as a function of the prices of capital, labor, energy, and materials inputs and time, where t represents the level of technology in the sector.⁷ Obviously, an increase in the price of one of the inputs, holding the prices of the other inputs and the level of technology constant, will necessitate an increase in the price of output. Similarly,

⁶ Econometric models for each of the thirty-five industries are given by Jorgenson and Fraumeni [1981].

⁷ The price function was introduced by Samuelson [1953]. A complete characterization of the sectoral price functions employed in this study is provided by Jorgenson and Fraumeni [1981].

if the level of technology in a sector improves and the prices of all inputs into the sector remain the same, the price of output must fall. Price functions summarize these and other relationships among the prices of output, capital, labor, energy, and materials inputs, and the level of technology.

Although the sectoral price functions provide a complete model of production patterns for each sector, it is useful to express this model in an alternative and equivalent form. We can express the shares of each of the four inputs—capital, labor, energy, and materials—in the value of output as functions of the prices of these inputs and time, again representing the level of technology.⁸ We can add to these four equations for the value shares an equation that expresses the rate of technical change as a function of the prices of the four inputs and time.⁹ In fact, the negative of the rate of technical change is a function of the four input prices and time. This equation is our econometric model of sectoral technical change.¹⁰

Like any econometric model, the relationships determining the value shares of capital, labor, energy, and materials inputs and the negative of the rate of technical change involve unknown parameters that must be estimated from data for the individual industries. Included among these unknown parameters are biases of technical change that indicate the effect of changes in the level of technology on the value shares of each of the four inputs.¹¹ For example, the bias of technical change for capital input gives the change in the share of capital input in the value of output in response to changes in the level of technology, represented by time. Similarly, biases of technical change for labor, energy, and materials inputs give changes in the share of labor, energy, and materials inputs in the value of output that results from changes in the level of technology.

We say that technical change is capital using if the bias of technical change for capital input is positive, that is, if changes in the level of technology result in an increase in the share of capital input in the value of output, holding all input prices constant. The quantity of capital input increases as technology changes, so that we say that the change in technology is capital using. Similarly, we say that technical change is capital saving if the bias of technical change for capital input is negative. As technology changes, the production process uses less capital input, so that the change in technology is capital saving.

Similarly, we can say that technical change is labor using or labor saving if the bias of technical change for labor input is positive or negative. As technology changes, the production process uses more or less labor input, depending on whether the change in technology is

⁸ Our sectoral price functions are based on the translog price function introduced by Christensen, Jorgenson, and Lau [1971, 1973]. The translog price function was first applied at the sectoral level by Berndt and Jorgenson [1973] and Berndt and Wood [1975]. References to sectoral production studies incorporating energy and materials inputs are given by Berndt and Wood [1979].

⁹ Productivity growth is represented by the translog index introduced by Christensen and Jorgenson [1970]. The translog index of technical change was first derived from the translog price function by Diewert [1980] and by Jorgenson and Lau [1981].

¹⁰ This model of sectoral technical change is based on that of Jorgenson and Lau [1981].

¹¹ The bias of technical change was introduced by Hicks [1932]. An alternative definition of the bias of technical change was introduced by Binswanger [1974a, 1974b]. The definition of the bias of technical change employed in our econometric model is due to Jorgenson and Lau [1981].

labor using or labor saving. We can associate energy using or energy saving technical change with positive or negative biases of technical change for energy input. Finally, we can associate materials using or materials saving technical change with positive or negative biases of technical change for materials input. Since the shares of all four inputs—capital, labor, energy, and materials—sum to unity, technical change that “uses” or “saves” all four inputs is impossible. In fact, the sum of the biases for all four must be precisely zero, since the changes in all four shares with any change in technology must sum to zero.

We have pointed out that our econometric model for each industrial sector of the U.S. economy includes an equation giving the negative of the sectoral rate of technical change as a function of the prices of the four inputs and time. The biases of technical change with respect to each of the four inputs appear as the coefficients of time, representing the level of technology, in the four equations for the value shares of all four inputs. The biases also appear as coefficients of the prices in the equation for the negative of the sectoral rate of technical change. This feature of our econometric model makes it possible to use information about changes in the value shares with time and changes in the rate of sectoral technical change with prices in determining estimates of the biases of technical change.

The biases of technical change express the dependence of value shares of the four inputs on the level of technology and also express the dependence of the negative of the rate of technical change on the input prices. We can say that capital using technical change, associated with a positive bias of technical change for capital input, implies that an increase in the price of capital input decreases the rate of technical change (or increases the negative of the rate of technical change). Similarly, capital saving technical change, associated with a negative bias for capital input, implies that an increase in the price of capital input increases the rate of technical change. Analogous relationships hold between biases of labor, energy, and materials input and the direction of the impact of changes in the prices of each of these inputs on the rate of technical change.¹²

Jorgenson and Fraumeni [1980] have fitted biases of technical change for thirty-five industrial sectors that make up the whole of the producing sector of the U.S. economy. They have also fitted the other parameters of the econometric model that we have described above. Since our primary concern in this section is to analyze the determinants of rates of technical change at the sectoral level, we focus on the patterns of technical change revealed in Table 3. We have listed the industries characterized by each of the possible combinations of biases of technical change, consisting of one or more positive biases and one or more negative biases.¹³

The pattern of technical change that occurs most frequently in Table 3 is capital using, labor using, energy using, and materials saving technical change. This pattern occurs for nineteen of the third-five industries analyzed by Jorgenson and Fraumeni. For this pattern of technical change the biases of technical change for capital input, labor

¹² A complete characterization of biases of technical change is given by Jorgenson and Fraumeni [1981].

input, and energy input are positive, and the bias of technical change for materials input is negative. This pattern implies that increases in the prices of capital input, labor input, and energy input decrease the rate of technical change, while increases in the price of materials input increase the rate of technical change.

TABLE 3.—*Classification of industries by biases of technical change*

<i>Pattern of biases</i>	<i>Industries</i>
Capital using, labor using, energy using, material saving.	Agriculture, metal mining, crude petroleum and natural gas, nonmetallic mining, textiles, apparel, lumber, furniture, printing, leather, fabricated metals, electrical machinery, motor vehicles, instruments, miscellaneous manufacturing, transportation, trade, finance, insurance and real estate, services.
Capital using, labor using, energy saving, material saving.	Coal mining, tobacco manufactures, communications, government enterprises.
Capital using, labor saving, energy using, materials saving.	Petroleum refining.
Capital using, labor saving, energy saving, material using.	Construction.
Capital saving, labor saving, energy using, material saving.	Electric utilities.
Capital saving, labor saving, energy saving, material saving.	Primary metals.
Capital saving, labor using, energy using, material saving.	Paper, chemicals, rubber, stone, clay and glass, machinery except electrical, transportation equipment and ordnance, gas utilities.
Capital saving, labor saving, energy using, material using.	Food.

Considering all patterns of technical change included in Table 3, we find that technical change is capital using for twenty-five of the thirty-five industries included in our study. Technical change is capital saving for the remaining ten industries. Similarly, technical change is labor using for thirty-one of the thirty-five industries and labor saving for the remaining four industries; technical change is energy using for twenty-nine of the thirty-five industries included in Table 3 and is energy saving for the remaining six. Finally, technical change is materials using for only two of the thirty-five industries and is materials saving for the remaining thirty-three. We conclude that for a very large proportion of industries the rate of technical change decreases with increases in the prices of capital, labor, and energy inputs, and increases with the price of materials inputs.

4. TAX POLICY

To identify the sources of variations in rates of technical change for industrial sectors of the U.S. economy we next consider the evolution of tax policy over the postwar period. Under current law taxpayers are

¹³ The results presented in Table 3 are those of Jorgenson and Fraumeni [1981]. Of the fourteen logically possible combinations of biases of technical change, only the eight patterns presented in Table 3 occur empirically.

permitted to deduct depreciation as an expense in arriving at income for tax purposes. Taxpayers are also allowed to reduce their tax liability by means of an investment tax credit based on purchases of equipment.¹⁴ As tax rates at corporate and personal levels have increased, provisions for capital recovery under the tax code have become increasingly significant for economic policy. These provisions have an important impact in stimulating or retarding changes in the level of technology.

An ideal system for capital recovery would enable taxpayers to recover economic depreciation on each asset they hold. Economic depreciation is the decline in the value of an asset with age. Depreciation can be measured by simply looking at the profile of asset prices corresponding to assets of different ages at a given point of time. An ideal system of capital recovery would permit taxpayers to deduct the decline in the value of all their assets with age in arriving at taxable income.¹⁵

Although it is a very straightforward matter to describe an ideal system for capital recovery, such a system is difficult to implement. Normally, business expenses under the tax code are linked to actual purchases of goods and services. The approach to capital recovery embodied in U.S. tax law is based on the historical cost of an asset. This cost is allocated over the useful life of the asset in accord with accounting formulas.

In the absence of inflation an approach to capital recovery based on historical cost has many advantages. Perhaps the most important advantage is that capital consumption allowances, like other business expenses, can be linked to actual transactions. However, a capital recovery system based on historical cost fails to provide the necessary link between capital consumption allowances and economic depreciation when there is inflation in the prices of assets.

With inflation the profile of prices corresponding to assets of different ages rises over time due to increase in the prices of newly produced assets. Even capital consumption allowances that accurately reflect the profile of asset prices when the asset is originally acquired rapidly fall behind economic depreciation as inflation takes place. As a consequence, effective rates of taxation have increased substantially and sectoral rates of technical change have been retarded.

The system for capital recovery embodied in current tax law is the result of extended efforts to deal with the problem of inflation in the value of assets. In 1954 a system of capital consumption allowances was adopted that permitted taxpayers to use accelerated formulas for allocating capital recovery over the useful lifetime of an asset. Accelerated depreciation was adopted in response to the rapid inflation in prices of assets during the Second World War and the Korean War.

Between 1954 and 1962 lifetimes used in calculating capital consumption allowances were gradually reduced. In 1962 a new set of guideline lifetimes was adopted for tax purposes. These guideline lifetimes represented a further acceleration in capital recovery. In addition, an investment tax credit for purchases of equipment was

¹⁴ A history of capital recovery provisions under U.S. tax law, an analysis of current tax provisions, and detailed references to the literature are provided by Gravelle [1979].

¹⁵ The concept of economic depreciation is discussed in greater detail by Jorgenson [1973].

adopted in 1962. The combination of the guideline lifetimes and the investment tax credit resulted in a dramatic stimulus to capital formation. Business fixed investment rose by forty percent over the four years from 1962 to 1966.

In the original legislation providing for the investment tax credit, the credit was linked to capital recovery by reducing the basis for calculating capital consumption allowances by the amount of the credit. This feature of the investment tax credit, the so-called Long Amendment, was repealed in 1964. As inflation rates began to rise in the late 1960's pressure began to build to adjust lifetimes for tax purposes to levels below the guidelines of 1962. In 1971 the Asset Depreciation Range System was adopted, permitting taxpayers to reduce lifetimes by as much as twenty percent.

We can summarize these developments by saying that the current system has developed through successive liberalization of depreciation formulas and lifetimes for tax purposes and through the introduction of the investment tax credit. These changes in the capital recovery provisions of the tax code have been motivated by the need to bring capital consumption allowances into line with economic depreciation. However, double-digit inflation in the early 1970's has undercut the effectiveness of the earlier reforms.

To analyze the impact of inflation on capital recovery under the existing law, we have measured effective tax rates on five representative classes of assets. The asset classes are described in detail in Table 4.

TABLE 4.—ASSETS AND THEIR CHARACTERISTICS

Asset class (type)	Tax lifetime ¹	Economic depreciation rate ²	Percentage of 1974 investment
Construction machinery (CM) (equipment).....	5.5 (7.0*)	0.172	02.8
General industrial equipment (GIE) (equipment).....	8.6	.122	4.4
Trucks, buses and trailers (TBT) (equipment).....	5.5 (7.0*)	.254	9.0
Industrial buildings (IB) (structures).....	23.8	.036	5.2
Commercial buildings (CB) (structures).....	31.8	.025	11.0

¹ Tax lifetimes equal guideline lives for structures and 80 percent of guideline lives for equipment, as permitted under current law (*except where a lengthening of tax lifetime is preferred to obtain a full investment tax credit).

² Economic depreciation rates are annual rates of decline in asset value with age, as estimated by Wykoff and Hulten (1979).

For each asset we have given the tax lifetime embodied in current law, and the economic depreciation rate as calculated in a comprehensive study for the Department of the Treasury by Hulten and Wykoff (1979). We also give the proportion of nonresidential fixed investment in 1974 for each asset class. Together these five assets accounted for about a third of investment in that year.

To analyze the impact of changes in capital recovery provisions of the tax law over the postwar period, we have calculated the effective tax rate for each class of assets in Table 4. Effective tax rates represent that fraction of each project's gross income which goes toward corporate taxes. Since such rates may vary from year to year, our figure represents the average tax rate faced by a new asset over its lifetime. To calculate an effective tax rate we first calculate the gross rate of return that a particular investment would have if the corporate tax rate were zero and there were no investment tax credit. We then

calculate the net rate of return, taking account of corporate taxes and adjusting for depreciation deductions and the investment tax credit. We subtract the net rate of return from the gross rate of return and divide this difference by the gross rate to find the proportion of the gross return paid in taxes.

To assess the impact of the tax law prevailing in each year from 1952 to 1979 on capital recovery we present effective tax rates for all five classes of assets for each year in Table 5. For purposes of comparison we also give the statutory rate on corporate income in each year. Under an ideal system for capital recovery the effective tax rates would be equal to the statutory rates for all assets.¹⁶ The first conclusion to be drawn from Table 5 is that effective tax rates have varied widely among assets and over time, depending on the provisions of the tax code and the rate of inflation.

TABLE 5.—EFFECTIVE TAX RATES SINCE 1952

Year	Statutory tax rate	CM	GIE	TBT	IB	CB
1952	0.52	0.57	0.59	0.65	0.51	0.51
1953	.52	.57	.59	.65	.51	.51
1954	.52	.58	.60	.66	.52	.52
1955	.52	.58	.60	.66	.52	.52
1956	.52	.54	.57	.62	.49	.49
1957	.52	.54	.57	.62	.49	.49
1958	.52	.54	.57	.62	.50	.50
1959	.52	.55	.58	.63	.50	.50
1960	.52	.56	.58	.63	.51	.50
1961	.52	.54	.57	.62	.50	.50
1962	.52	.41	.43	.49	.49	.49
1963	.52	.40	.43	.49	.49	.49
1964	.52	.31	.34	.38	.48	.48
1965	.48	.26	.29	.34	.45	.45
1966	.48	.35	.38	.43	.46	.46
1967	.48	.37	.40	.45	.47	.47
1968	.48	.35	.38	.43	.48	.48
1969	.48	.53	.56	.61	.52	.51
1970	.48	.43	.44	.51	.53	.52
1971	.48	.35	.37	.42	.53	.52
1972	.48	.35	.37	.43	.53	.52
1973	.48	.39	.40	.47	.54	.53
1974	.48	.43	.44	.51	.55	.54
1975	.48	.33	.36	.40	.56	.54
1976	.48	.34	.37	.42	.56	.54
1977	.48	.37	.39	.45	.56	.55
1978	.48	.36	.39	.44	.56	.55
1979	.46	.32	.35	.39	.54	.53

Note: Assumes real discount rate to be 4 percent and relevant inflation rate to be unweighted 5-yr. moving average of past inflation rates. Discount rates appropriate for calculating effective tax rates are discussed by Fraumeni and Jorgenson (1980).

Before 1954 effective tax rates for structures were in line with the statutory rate on corporate income of fifty-two percent. However, effective tax rates for equipment far exceeded the statutory rates. While effective tax rates for both structures and equipment were reduced by the adoption of accelerated depreciation in 1954, effective tax rates for equipment remained above statutory rates until the adoption of the guideline lifetimes and the investment tax credit in 1962. With the repeal of the Long Amendment in 1964 there was a further reduction in the effective tax rates on equipment to levels well below the statutory rate.

¹⁶ The criterion that effective tax rates should be the same for all assets is discussed in more detail by Auerbach [1980].

As the pace of inflation quickened during the late 1960's the effective tax rates on equipment rose gradually; repeal of the investment tax credit in 1969 raised effective tax rates to levels comparable to those that had prevailed before 1962. Similarly, inflation and restriction of accelerated depreciation on structures to the 150 percent declining method after 1966 resulted in increases in the effective tax rates for structures to levels that exceeded those that prevailed before 1954. For equipment reinstatement of the investment tax credit in 1970, adoption of the Asset Depreciation Range system in 1971, and the increase in the rate of the credit from seven to ten percent resulted in effective tax rates well below the statutory rate, even in the face of double-digit inflation in 1973 and again in 1979.

Our overall conclusion is that effective tax rates on corporate income are inversely correlated with rates of technical change for the U.S. economy as a whole. Effective tax rates declined sharply between 1960 and 1965; the rate of technical change attained its postwar peak of 2.11 percent per year during this period. The weighted sum of sectoral rates of technical change was 2.17 percent from 1960 to 1966. Effective tax rates rose dramatically from 1965 to 1969; the rate of technical change declined to 0.05 percent per year during the period 1966-1969, a drop of 2.07 percent; the weighted sum of sectoral rates of technical change declined to 0.25 percent per year, a drop of 1.92 percent.

Effective tax rates declined from 1969 to 1972 and have remained relatively constant since then, increasing slightly for some assets and declining slightly for others. The rate of technical change climbed from 0.04 percent per year for the period 1966-1969 to 0.95 percent per year for the period 1969-1973, an increase of 0.91 percent or slightly less than half of the drop from 1960-1966 to 1966-1969. The rise in the weighted sum of sectoral rates of technical change from 0.25 percent per year for the period 1966-1969 to 0.48 percent per year for the period 1969-1973 was less dramatic, but still substantial.

The most striking change in the relative prices of capital, labor, energy, and materials inputs that has taken place since 1973 is the staggering increase in the price of energy. The rise in energy prices began in 1972 before the Arab oil embargo, as the U.S. economy moved toward the double digit inflation that characterized 1973. In late 1973 and early 1974 the price of petroleum on world markets increased by a factor of four, precipitating a rise in domestic prices of petroleum products, natural gas, coal, and uranium. All industrial sectors of the U.S. economy experienced sharp increases in the price of energy relative to other inputs.

Slower growth in productivity at the sectoral level is associated with higher energy prices for twenty-nine of the thirty-five industries that make up the producing sector of the U.S. economy. The dramatic increases in energy prices contributed to the slowdown in productivity growth at the sectoral level. In the preceding section we have seen that the fall in sectoral productivity growth after 1973 is the primary explanation for the decline in productivity for the U.S. economy as a whole. Finally, we have shown that the slowdown in productivity growth during the period 1973-1976 is the main source of the fall in the rate of U.S. economic growth since 1973.

5. RECOMMENDATIONS

Our objective in this concluding section of the paper is to provide recommendations for changes in tax policy to stimulate future U.S. economic growth. For this purpose we cannot rely on the extrapolation of past trends in technical change. From 1960 to 1965 tax policy stimulated sectoral rates of technical change; from 1965 to 1969 tax policy retarded technical change; from 1969 to 1973 tax policy again acted as a stimulant. Comparing the period after 1973 with the rest of the postwar period, we can associate part of the decline in the rate of technical change with the dramatic increase in energy prices that followed the Arab oil embargo in late 1973 and early in 1974.

During 1979 there has been a further sharp increase in world petroleum prices, following the interruption of Iranian petroleum exports that accompanied the revolution that took place in that country in late 1978. Although prices of petroleum sold by different petroleum exporting countries differ widely, the average price of petroleum imported into the United States has risen by 130 to 140 percent since December 1978. In April 1979 President Carter announced that prices of that petroleum products would be gradually decontrolled over the period from May 1979 to September 1981. As a consequence domestic petroleum prices in the United States will move to world levels in a relatively short period of time. Domestic natural gas prices will also be subject to gradual decontrol, moving to world levels as early as 1985 or, at the latest, 1987.

Given the sharp increase in the price of energy relative to the prices of other productive inputs, the prospects for productivity growth at the sectoral level are dismal. In the absence of any reduction in prices of capital and labor inputs during the 1980's, we can expect a decline in the growth of productivity for the U.S. economy as a whole, and a further slowdown in the rate of U.S. economic growth. To avoid a repetition of the unsatisfactory economic performances of the 1970's it is essential to undertake measures to reduce the price of capital input and labor inputs. The price of capital input can be reduced by cutting taxes on income from capital.¹⁷ Similarly, payroll taxes can be cut in order to reduce the price of labor input.

In considering economic policies to stimulate U.S. economic growth, top priority should be given to the design of a new system for capital recovery. Auerbach and Jorgenson have proposed that taxpayers should be allowed to deduct the present value of economic depreciation as an expense in arriving at income for tax purposes. The deduction would be allowed in the year an asset is acquired. Accordingly, they refer to the proposed system for capital recovery as the First Year Capital Recovery System.

Like the present system for capital recovery, the First Year Capital Recovery System is based on actual purchases of depreciable plant and equipment. However, to avoid the deterioration in the value of capital consumption allowances with inflation, the present value of economic depreciation is allowed as a deduction in the same year that the asset is acquired. As a consequence, the capital consumption allowances are

¹⁷ An analysis of alternative proposals for cutting taxes on income from capital is presented by Auerbach and Jorgenson [1980].

unaffected by inflation or by variations in the rate at which inflation takes place.

It is important to recognize that economic depreciation actually occurs in the years after the asset is originally acquired. Future economic depreciation must be discounted back to the present to arrive at a present value of economic depreciation. For example, the present value of one dollar's worth of investment in a long-lived asset such as a manufacturing plant might be fifty cents, while the present value of one dollar's worth of investment in a short-lived asset such as a pickup truck might be seventy-five cents.

Under the First Year Capital Recovery System capital consumption allowances would be described by a schedule of present value of economic depreciation for one dollar's worth of investment in each class of assets. It would be possible to use thirty classes of assets—perhaps ten types of structures and twenty types of equipment. The whole capital recovery system could then be described in terms of thirty numbers, giving the first-year capital recovery allowances for all classes of assets.

The First Year Capital Recovery System would represent a vast simplification of current tax law. Rather than choosing among a range of asset lifetimes and a number of alternative depreciation formulas for tax purposes, taxpayers would simply apply the first-year capital recovery allowance to their purchases of depreciable plant and equipment. No records of past purchases would be required to substantiate capital consumption allowances taken in a given year.

The First Year Capital Recovery System is a direct attack on the problem confronting tax policy makers, namely, to design a system of capital recovery that can cope with high, moderate, and low rates of inflation without the distortions resulting from the current system. While the First Year System would provide substantial stimulus to capital formation, it would also contribute to improving the allocation of capital. The System would enhance rather than dissipate the impact of a higher rate of capital formation on productivity and economic growth.

The First Year Capital Recovery System would result in increases in effective tax rates on some assets and decreases in effective tax rates on others. To provide a stimulus to sectoral rates of technical change it would be highly desirable to combine adoption of the First Year System with a reduction in tax rates. This could be achieved by reducing the statutory tax rate of forty-six percent. Alternatively, the effective tax rate could be reduced on new investment through an investment tax credit on all assets. The rates for such an investment tax credit would reflect differences on economic depreciation rates, so that effective tax rates would remain the same for all assets.

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STATEMENT OF W. F. MARTIN, CHAIRMAN OF THE BOARD,
PHILLIPS PETROLEUM CO.

I was glad to be able to attend the Joint Economic Committee conference on December 10, and I was particularly glad to be one of those who attended the productivity seminar chaired by you. I believe that in a general way, every conceivable impediment to productivity was mentioned at one time or another, and in addition there were numerous comments concerning the various areas where productivity improvement could be most meaningful. I believe I was the only one present who is directly involved in oil and gas, although others may have been involved in other forms of energy. In any event, I did not speak because, first, anything I would have said would have been repetitive, and secondly, some of our problems of productivity may be somewhat different than those in other industries.

In any event, I thought I would write to point out briefly a few of the disincentives the energy industry is facing in efforts to improve productivity. I believe that our industry is regulated perhaps to a greater extent than most industries, and the regulations create stumbling blocks as we try to be more productive and provide more energy. For example, a great deal of federal acreage that has attractive potential for oil and gas is set aside or has not been opened for exploration. This is acreage both on land and offshore. Thus, as we increase our efforts to produce more oil and gas, we find ourselves prospecting in areas that have less potential than other acreage that might be made available. Even so, the industry has been able to increase slightly the production of oil and natural gas liquids in 1980, but much more can be done. In fact, much more must be done and we would hope that we can improve our productivity in the future by having more attractive areas on which to explore.

Another point illustrating loss of productivity occurs with the government system of product allocation, where we have been forced to sell to others who were customers during a particular period in the past. Thus, if one refiner is short of supply he may well not be able to go to another refiner to obtain motor fuel because he was not the customer of the other refiner during the period used to determine allocation of motor fuel. Instead, the refiner, in order to comply with regulations, is forced to sell to his historical customer, who may not need the product, who in turn resells to another customer or to a broker, either of which could then increase the price, with the consumer paying the ultimate bill.

One other point worth mentioning relates to the control on the price of crude oil. By virtue of crude oil price controls, fuel for bunkering ships is selling for \$23.00 per barrel. This is probably the lowest price for this material anywhere in the world. Thus, foreign ships are encouraged to purchase bunker fuel in the United States, while refiners are required to purchase crude oil from foreign suppliers at approximately \$34.50 per barrel. Through controls on crude oil, one can say that the United States is subsidizing foreign ships, who perhaps can even go out of their way to reach a U.S. port, purchase fuel, and still save money compared to the alternatives. Crude oil price controls are being phased out, of course, but productivity has been adversely affected for many years as a result of this kind of energy policy.

The petroleum industry has experienced above average productivity growth but, even so, much more can and needs to be done. Regulation and taxes are the principal impediment to improve productivity in the petroleum industry. A series of federal laws, mostly enacted since 1973, impede efficient operations in the industry. These taxes and laws have (1) prevented construction of optimal-sized refineries, (2) promoted waste and excessive distribution, (3) obstructed needed exploration, and (4) discouraged capital investment. Moreover, these federal laws have influenced similar legislation at the state level.

The next Congress might be well advised to consider amendment of laws that limit access to federal lands for oil and gas exploration, amend major environmental quality laws to reduce energy projects permitting delays or impediments that are socially useless or unnecessary, and review the economic and other effects of the 1980 Windfall Profits Tax. Oil production is in the process of decontrol and at the proper time the 1978 Natural Gas Policy Act should be reviewed and perhaps amended to accelerate phased elimination of price ceilings.

In essence, the 97th Congress should eliminate or at least modify those Federal Government actions which demonstrably lower efficiency and productivity in the energy areas without producing commensurate benefits. In view of your participation in the Congressional energy matters and your interest in developing a sound energy policy for our country, I am sure you are already familiar with the matters I have mentioned in this letter.

I commend you for the efficient way in which you handled the productivity seminar.

STATEMENT OF MARK SHEPHERD, JR., CHAIRMAN, TEXAS INSTRUMENTS, INC.

It was with great pleasure that I attended the Joint Economic Committee's Congressional Economic Conference in Washington last week. I would like to take a few moments here, however, to expand on some of the points made at the conference.

The present poor performance of the U.S. economy has not come about as a result of any single factor. But while government cannot be blamed for all of our problems, neither can it be expected to solve them. Rather, Washington must bring about an environment conducive to increases in productivity and sound economic growth.

It can do this by restructuring the tax system to encourage R&D investment and lower consumption, by reducing Federal spending and budget deficits, by providing incentives for increased savings, by encouraging training and vocational education programs in schools, universities, and businesses, and above all, by taking the necessary steps to reduce inflation. Specific proposals and targets for achieving these objectives can be found in the attached speech made at Harvard last Spring. That done, those enterprises that wished to remain competitive could do so; all others should be allowed to fail.

Further institutionalization of productivity programs, such as the proposal advanced by C. Jackson Grayson, may not be advisable. The time is long past when we could rely on a new bureaucracy to deal with the problems we face. The Joint Economic Committee is best structured and positioned to provide the impetus for the new policy directions required, not the Executive Branch.

And finally, to achieve the necessary degree of cooperation between government, labor, and business and to garner the confidence of the public, we must avoid the pursuit of selfish gain. The continued support for noncompetitive companies sought by some businessmen, and the expansion of labor's participation in management, doggedly pursued by Big Labor, will only undermine policies in the national interest. These tendencies must be resisted at every turn.

These are just a few of my thoughts on various points addressed at the Conference. I have many more, as undoubtedly do the other participants. Therefore, I encourage the JEC to continue its efforts in providing a forum for the airing of these views and to expand its role as an important actor in our struggle to regain our competitive economic edge.

AMERICA'S PRODUCTIVITY CRISIS: THE PROBLEM, ITS CAUSES AND SUGGESTED SOLUTIONS

By Mark Shepherd, Jr.

The decade just passed was marked by a series of headline-grabbing crises ranging from growing shortages of strategic minerals to the energy crisis. But one of the most serious problems was the severe deterioration in the rate of productivity growth in the U.S.

I. THE PROBLEM

Productivity, defined as the real output-per-unit-of-labor in the private business sector, has slipped from an average annual growth rate of 3.5 percent between 1948 and 1966, to a 1.1 percent growth in the 1973-78 time frame.¹ Furthermore, in 1979, productivity actually fell by 0.8 percent, while in 1980, it will decline again by almost 1 percent.²

The sharp deceleration of productivity growth in the 1970s and its decline in the final two years of the decade, has exacerbated our other economic problems. For example, it is estimated that each percentage point drop in productivity, adds two percentage points to the inflation rate.³ Inflation, in turn, reduces real incomes, raises effective tax rates (as inflation-adjusted wage hikes push taxpayers into higher brackets), erodes investor confidence in stock and bond markets, saps the incentive for households to save, skews the distribution of resources in the

¹ Kendrick, John: "Productivity Trends and the Recent Slowdown: Historical Perspective, Casual Factors, and Policy Options" in *American Enterprise Institute; Contemporary Economic Problems* (1979), p. 33.

² Council of Economic Advisors: *Economic Indicators*, October 1980, p. 16.

³ Ekstein, Otto: remarks to the Data Resources, Inc., Economic Outlook Conference, Houston, Texas, November 21, 1980.

economy.⁴ Furthermore, declining rates of output-per-manhour in U.S. industries have made our goods less competitive in domestic and overseas markets, contributing to the chronic U.S. balance of trade deficit and hampering efforts to maintain the dollar's strength in international exchange markets. Although unit labor costs in the U.S. remain among the lowest of the major industrial nations, a continuation of the productivity malaise could erode this advantage and further accelerate the decline of U.S. economic (and political) influence in the world.⁵

In short, the productivity problem strikes at the heart of our ability to effectively deal with the mounting economic, political and social challenges we will face in the 1980s. If we fail to reinvigorate our nation's productivity in the next few years, the outlook for success on other economic fronts will remain very grim indeed.

II. CAUSES

John Kendrick of George Washington University has identified the major sources of productivity growth in the U.S., between 1929 and 1978.⁶ They are: "A

Changes in labor characteristics, including hours at work, age/sex composition and education, which contributed 12% of the total growth rate in productivity during the period.

Economies of scale, made possible by changes in the size of markets, provided 13% of the productivity increase.

Improved resource allocation, covering gains from the movement of labor from farms to industry, contributed 20% to the total increase in U.S. productivity between 1929 and 1978.

The contribution of capital, measured by increases in structures, equipment and inventories for each person employed, accounted for 15% of productivity gains.

Finally, 40% of the productivity growth experienced in the years between 1929 and 1978 is attributable to advances in knowledge stemming from formal and informal R&D, and the diffusion of new technology.

The major cause of the slowdown in output-per-manhour, according to Kendrick, has been the declining rate of technological progress in the U.S. between 1973 and 1978, as compared with the 1948-66 time period, accounting for one-fourth of the decline in productivity.⁷ In addition:

Lower mobility and less efficient allocation of labor and capital accounted for 21 percent of the slowdown in productivity.

A deterioration in the contribution of capital measured by increases in structures, equipment, and inventories per employed worker, accounted for nearly 17 percent of the slowdown.

The proliferation of government rules and regulations was responsible for over 12 percent of the deceleration in productivity growth.

Only one major factor related to productivity increased in the 1973-78 period over the 1948-66 average, but the one percentage point increase in labor quality was not enough to offset the other negative factors.⁸

In another study, Michael Boretsky found that there was a close correlation between technological innovation and productivity in the post-war period. But since the mid-60s, "both the relative intensity of technological advance and the relative advance and the relative rate of productivity growth in the U.S. economy have drastically declined."⁹ Furthermore, future growth in productivity will depend less on technological progress because the nation has slackened its research efforts and because such factors as environmentalism and energy shortages will hamper the diffusion of new technologies.¹⁰

⁴ Boskin, Michael; Gertler, Mark; and Taylor, Charles; "The Impact of Inflation on U.S. Productivity and International Competitiveness," in the Executive Summary of the NPA Committee on Changing International Realities.

⁵ Dresdner Bank; *Economic Quarterly*, November 1980, p. 1.

⁶ This allocation of productivity growth among various sources includes several adaptations of Kendrick's analysis: (1) Changes in labor characteristics includes the contributions from changes in quality of land, and the measure Kendrick defines as "actual/potential efficiency and n.e.c."; and (2) "Intensity of demand", as defined by Kendrick, is a component of resource reallocations.

⁷ Derived from Table 4 in Kendrick, John; "Productivity Trends and the Recent Slowdown: Historical Perspective, Casual Factors and Policy Options," op.cit.

⁸ Kendrick, John; "Sources of the Productivity Slowdown" in *The New York Stock Exchange; Reaching a Higher Standard of Living*, January 1979, p. 14.

⁹ Boretsky, Michael; "The Role of Innovation" in *Challenge*, November/December 1980, p. 13.

¹⁰ *IBID.*

But there are other contributors to the productivity slowdown, including current American management practices. Too many of today's managers place a premium on short-term benefits, often at the expense of long-term planning; pursue imitative rather than innovative product development; and eschew manufacturing process development by focusing only on changes in the final product itself. These characteristics result, in part, from the rapid change taking place within top management from backgrounds favoring production experience, to the present heavy emphasis on legal or financial career people.¹¹

III. SUGGESTED SOLUTIONS

Solving the productivity crisis will demand a multi-faceted approach on the part of government, business and labor. Each will have a part to play, sharing the benefits of success or suffering the heavy costs of failure. Washington's role will be to bring about a new economic *climate*, whereby business and labor will have the incentives necessary to increase their efficiency. The government can do this by reducing inflation, and restructuring the tax system to encourage savings, investment and R&D.

In an inflationary environment, encouraging necessary increases in savings and investment will be extremely difficult, if not impossible. Inflation erodes the incentive to work, increases the marginal level of taxation, discourages savings on the part of households, reduces real rates of return for lenders, and increases effective corporate tax rates. "For all these reasons, inflation and present income tax laws penalize capital holders and reduce the financial returns on investment . . . increasing the real before-tax rate of return required to make new investment profitable."¹² Therefore, *the first step toward reversing the decline in U.S. productivity should be reducing the rate of inflation.* To do this without serious disruptions in employment and output, we must:

Lower government expenditures to 20% or less of GNP. Efforts to simply cut taxes, as in the Kemp-Roth proposal and other supply-side theories, may be plausible, but must be accompanied by reductions in spending and a balanced budget to avoid inflationary pressures;

Reduce monetary growth to a rate sufficient to accommodate the economy's real growth;

Overhaul government regulation by requiring "direct and predictable" consequences of new regulatory legislation and curtailing the power of regulators. Consideration should also be given to adoption of a regulatory budget; and

Make the public, industry, and government aware of the need for productivity improvements, if we are to substantially reduce inflation.

In addition, we must consider the following measures to reduce the economic distortions caused by inflation:

Indexing of tax rates, to prevent increases in individual tax rates as a result of inflation. This would not only maintain work incentives, but also prevent government from obtaining revenue increases due to inflation's impact on the tax structure.

Taxing only the real return on stocks and bonds. This would stimulate activity in the capital markets, releasing more resources for investment and R&D.

Reducing (or removing altogether) government restrictions on interest paid to passbook savers. This would stimulate savings.

These changes will require alterations in present tax legislation, but comprehensive tax reform could also be fashioned to directly stimulate productivity, as well. Tax reform should include lower tax rates for savings related income, the elimination of double taxation of dividends, lower tax rates on capital gains, higher investment tax credits, accelerated depreciation of equipment and facilities, tax credits for R&D spending and exports, and a consumption tax to correct the policy tilt favoring consumption over investment and to offset revenue lost by reform. Furthermore, shortages of trained personnel, particularly in research and engineering, could be alleviated through tax credits for private manpower training programs and expansion of vocational/technical education programs.

¹¹ Hayes, Robert H. and Abernathy, William J.; "Managing Our Way to Economic Decline," in the *Harvard Business Review*, July/August 1980, pp. 67-77.

¹² Boskin, et al.; "The Impact of Inflation on U.S. Productivity and International Competitiveness," *op.cit.*, p. 3.

Texas Instruments recently sponsored a study by Data Resources Incorporated to design a tax mix that would have the most significant impact on the economy. The study concluded that:

The investment tax credit should be increased to about 25 percent, from the current 10 percent rate.¹³ This is preferable to the 10-5-3 capital recovery plan because it is more favorable in both cash flow and profits after tax.¹⁴

A 20 percent *tax credit for industrial R&D* should be enacted to give U.S. manufacturing firms the needed leverage to raise R&D expenditures above their current level of 1.5 percent of sales, at the cost of only a small deterioration in after-tax profit margins.¹⁵

As a result of both policies, the annual rate of productivity growth would rise to 1.5 percent in the mid-1980s and 2 percent in the 1990s. Real GNP growth would rise to 3.3 percent, which is 1.2 percentage points above current trends, and the rate of inflation would fall 3 percentage points in the 1990s.¹⁶

Other policy directions and formats should also be considered to encourage R&D. The importance of universities and colleges in the context of the national R&D effort should be emphasized, since they account for over one-half of *basic* (as opposed to applied) research performed in the U.S. They also represent the primary source of future scientists, engineers, and new technically-oriented brainpower required to spur innovation.¹⁷ The fact that less than 4 percent of U.S. Government financed R&D goes toward the general advancement of knowledge, compared to over 20 percent in the U.K. and France, and over half in Germany and Japan, suggests that more resources should be devoted to this priority in the U.S.¹⁸

There are encouraging signs in Washington that these types of measures will be given serious consideration in the new Administration and the 97th Congress. For example, Senator Danforth's R&D tax credit bill (S2906), giving a 25 percent tax credit on all R&D expenditures over and above the average of the preceding three years, is a step in the right direction. But it may not go far enough, and should it fail to produce dramatic results, Congress may be less willing to further spur R&D expenditures in the future.

Under no circumstances, however, should the government become more directly involved in the economic decision-making of the private sector. Neither incentives targeted at particular industries, nor national economic planning would be desirable policies to pursue. No governmental planning system yet devised anywhere has proven more efficient at "identifying winners" or allocating resources than the free market. What is needed in Washington is a longer-range outlook and the establishment of coherent and attainable goals to guide the formulation of national policy. To encourage the development of a long-range viewpoint among our political leaders, the terms of Congressmen and the President should be lengthened, with the Chief Executive limited to one term. Longer terms of service and higher salaries would attract better people and diminish the demands of reelection campaigning on the time of public servants.

Consideration should also be given to the establishment of a Board for National Goals, with status similar to that of the Federal Reserve Board, but with no independent power of implementation. The members of the board, whose tenures would extend beyond normal political terms, would include ex-presidents, ex-congressmen, ex-cabinet members, and representatives from business, labor and the general public. Its charter would be to formulate, for the consideration of the President, Congress and the public, a set of national goals by initiating public debate and generating a national consensus.

Business and labor, however, need not wait for Washington to begin reinvigorating their own productivity. For in the end, it will be the private sector which will have to do the job. The experiences and philosophy of Texas Instruments may be instructive in this regard. At TI, we believe that labor/management relations are the key to improving productivity and can be facilitated by involving

¹³ Texas Instruments and Data Resources, Inc., *Tax Policy Study*, February 1980.

¹⁴ Shepherd, Mark: "The U.S. Corporation Within the Competitive Environment," address at Harvard University, April 25, 1980, p. 3.

¹⁵ Texas Instruments et al; *Tax Policy Study*, op.cit.

¹⁶ *IBID.*

¹⁷ National Science Foundation, *National Patterns of R&D Resources, 1953-1978/79*, October 1978, p. 15.

¹⁸ Organization for Economic Cooperation and Development, *Technical Change and Economic Policy*, 1980, p. 37.

people to the greatest possible extent in the planning and controlling, and not just the doing, of their work. This is backed up by recognition, training and regular attitude surveys.

Success Sharing should also be an integral part of any program to facilitate labor/management relations and increase productivity. This involves providing each employee with the opportunity to earn a "piece of the action." It's Success Sharing Program ties productivity improvements, plus growth in net sales billed and profit, to Profit Sharing and, in turn, to the total estate programs for individual TIers. These financial incentives create the environment in which persons are motivated to participate in the achievement of their organization's goals through the pursuit of their own.

Management planning is another integral part of institutional success. TI managers, from the top on down, are responsible for the development of clearly defined *objectives*, employing *strategics* and *tactics*. Strategies define the innovations that are necessary to support TI's objectives and are intermediate in range. Tactics, in the form of Tactical Action Programs (TAPs), set forth quantitative goals in detail and are used to justify current resource allocations. TAPs are typically from one to two years in length.

And finally, labor itself can take steps to improve its productivity by eliminating the historic remnants of feather-bedding and inflationary union contract demands.¹⁹ Otherwise, any effort to improve productivity for the benefit of all will end on the shop floor.

IV. CONCLUSION

The productivity crisis is potentially the most serious long-term problem we face. The U.S. cannot hope to make significant progress on other fronts—reducing inflation, restoring economic growth, regaining energy independence, reducing our trade deficit, or stabilizing the dollar—unless it reinvigorates the efficiency of its production base. Recognizing this, we must also recognize that we cannot achieve substantial change overnight. It will take time to reverse trends fifteen or twenty years in the making. But the longer we delay in taking the necessary action, the longer we postpone a brighter future for the nation and its people.

¹⁹ Boretsky, "The Role of Innovation," *op.cit.*, p. 15.

**The U.S. Corporation
within the
Competitive Environment**

by
MARK SHEPHERD, JR.
Chairman & Chief Executive Officer
Texas Instruments Incorporated

Address to the
Conference on U.S. Competitiveness
Harvard University
Cambridge, Massachusetts

April 25, 1980

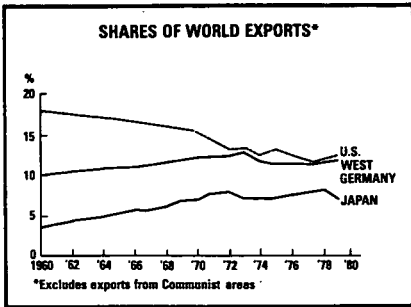


Figure 1

U.S. Share of World Exports Declines

During the past two decades, the U.S. has endured a series of economic and political shocks that have disrupted the post-war period of stable economic expansion at home, and eroded our prestige abroad.

One of the most visible symptoms of this decline has been the steady decrease in the U.S. share of major world markets (Figure 1). Since 1960, our proportion of free world exports has dropped from 18.2% to only 12.1% in 1979. In the same period, Germany's share has increased from 10.1% to 11.5% and Japan's share has almost doubled, rising from 3.6% to 6.9%.

Despite the fact that U.S. absolute unit labor costs are the lowest among major industrialized countries, we have not been able to take advantage of it¹. Losses in the U.S. share of exports have not been limited to one or two items, but frequently have been across the board.

During the 1970s, for example, our share of Japan's major import markets dropped in several important categories, despite a 64% appreciation of the yen against the dollar².

Simultaneously, U.S. imports have risen dramatically, reflecting the postwar economic resurgence of other industrial countries, the rise of the advanced developing nations and OPEC³.

- 1: See note 1 in Appendix.
- 2: See note 2 in Appendix.
- 3: See note 3 in Appendix.
- 4: See note 4 in Appendix.

U.S. Challenge: Solve Own Problems

As U.S. trade deficits have grown, we have searched for convenient scapegoats. Japan, which in the post-war years rapidly has become our most formidable competitor, seems an ideal target.

But we cannot expect Japan or Germany or any other country to give up fairly gained advantages. Our challenge is to learn how to compete more effectively by solving our own problems and developing our own advantages.

Steps to Increase U.S. Competitiveness

To meet this challenge, the U.S. should take several important steps:

- Control inflation,
- Reinvigorate productivity and investment, and
- Encourage exports.

Steps To Control Inflation

To lower the rate of inflation without serious disruptions of employment and output requires a gradual unwinding of the wage-price spiral. The recession we are entering may temporarily push inflation down to 10%, but this is not a very ambitious goal. A deep recession could force inflation lower, but the costs would be severe⁴. And even then, the basic causes of inflation would remain untouched. But we could improve the odds of returning to a stable 2% inflation rate by the end of the century through a broad-based approach using the frequently recommended but as yet untried remedies at our disposal (Figure 2):

Figure 2

TO CONTROL INFLATION

- LIMIT GOVERNMENT SPENDING
- REDUCE GROWTH OF MONEY SUPPLY
- CURTAIL GOVERNMENT REGULATION
- TILT TAX POLICY TO ENCOURAGE INVESTMENT
- EMPHASIZE IMPORTANCE OF PRODUCTIVITY GAINS

- The first step is to lower government expenditures, at all levels. The growth of spending by the federal government should be held below that of GNP, to reduce gradually its share of GNP to 20% or less from its projected 22.5% in fiscal 1981⁵.
- Monetary growth should be reduced gradually to a rate sufficient to accommodate the potential real growth of the economy.
- Government regulation should be overhauled. Both the language and the interpretation of regulatory legislation must lead to "direct and predictable" consequences, and the power of regulators curtailed either through more specific legislative language or Congressional veto. Such control could also be achieved through adoption of a regulatory budget⁶ that would compel legislators to recognize that a dollar spent in the pursuit of one objective is a dollar withdrawn from satisfying another objective.

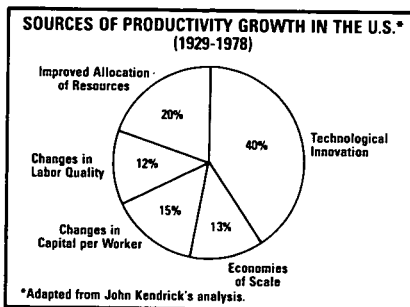


Figure 3

R&D Best Investment for Productivity

Gains in productivity follow increases in capital investment. However, in order to obtain step-function increases in productivity, the accumulation of capital in the form of facilities and equipment should be accompanied by more research and development to increase the effectiveness of capital investment, generating more efficient manufacturing processes and creating new products.

According to findings by John Kendrick of George Washington University, about 40% of productivity increases in the U.S. during the past 50 years can be attributed to advances in technological innovation driven by R&D spending (Figure 3). By contrast, only 15% is attributable to conventional capital usage⁸.

This does not diminish the importance of capital outlays. They create the new capacity essential to a growing economy, and it is through new equipment and facilities that more advanced technology is injected into the production and distribution streams of the economy.

Kendrick's studies do imply, however, that the impact on productivity of a dollar spent for R&D can be several times greater than that of a dollar invested in conventional fixed capital. Yet, as a nation, we have been decreasing the portion of our GNP invested in R&D⁹.

5: See note 5 in Appendix.
6: See note 6 in Appendix.
7: See note 7 in Appendix.

8: See note 8 in Appendix.
9: See note 9 in Appendix.

Need Greater Investment Tax Credit

The reversal of this trend is essential to our international competitive position. But to do so requires some adjustment. For example, lower debt-equity ratios in the U.S. vs. Japan require a higher after-tax profit margin to meet U.S. stockholder's expectations¹⁰. Conversely, Japanese firms, with higher debt-equity ratios and less concern for current profits are better positioned to emphasize long-term R&D projects. The key to offsetting this advantage is a U.S. R&D tax credit more liberal than Japan's¹¹.

Texas Instruments recently sponsored a study to design a tax mix intended to spur productivity growth while reducing inflation. The study, prepared by DRI, concluded that the investment tax credit should be increased to about 25%, from the current 10% rate. And that a 20% tax credit on industrial R&D expenditures should be enacted¹².

A 25% investment tax credit with current depreciation methods is preferred over the 10-5-3 capital recovery plan because it is more favorable in both cash flow and profits after tax¹³.

The R&D tax credit, in turn, would give U.S. manufacturing firms the needed leverage to raise R&D expenditures above their current level of 1.5% of sales, at the cost of only a small deterioration in after-tax profit margins¹⁴. It should be noted, however, that this potential expansion of R&D could be constrained by a relative shortage of technical graduates in the coming decade.

As a result of both policies, the annual rate of productivity growth would rise to 1.5% in the mid-1980s and 2% in the 1990s (Figure 4). This is 1.5 percentage points above the current trend of 0.5% per year. Real GNP growth would rise to 3.3%, which is 1.2 percentage points above trend, and the rate of inflation would be cut to 7.4% in the 1980s and 5.1% in the 1990s.

There undoubtedly are broader mixes of tax measures that will produce similar, or even superior, results and these studies should be undertaken even though they may require more computing power than has so far been applied to econometric models.

- 10: See note 10 in Appendix.
 11: See note 11 in Appendix.
 12: See note 12 in Appendix.
 13: See note 13 in Appendix.
 14: See note 14 in Appendix.
 15: See note 15 in Appendix.

ECONOMIC IMPACT OF NEW TAX POLICIES (Average Annual Percentage Change)

	1980-83	1984-87	1990s
PRODUCTIVITY GROWTH	1.2%	1.5%	2.0%
REAL GNP GROWTH	2.9%	3.3%	3.3%
INFLATION RATE	8.2%	7.4%	5.1%

Note: The above results are obtained through the combination of 1) a 25 percent investment tax credit; 2) a 20 percent R&D tax credit; and 3) a \$10B reduction in non-defense government spending for goods and services. The percentage changes are calculated by assuming baseline values for the variables equal to their estimated trends for 1973-1980 (productivity growth: 0.5% per year, real GNP growth: 2.1% per year, and implicit GNP deflator: 8.1% per year).

Figure 4

Economic models are not infallible. But models do provide a valuable framework for evaluating existing trends and can be used as guides for actions now to move in a desired direction in the future.

Encourage Exports

Reducing inflation and spurring productivity will improve our ability to compete overseas but we also need to encourage exports. Our elected policy makers should (Figure 5):

- Eliminate the disincentives to export¹⁵.
- Change our control efforts to focus on critical technologies rather than on products, which will permit us to protect our National Security without strangling exports.
- And stress the development of a national export orientation similar to that in other export oriented nations.

Figure 5

TO ENCOURAGE EXPORTS

- | <u>DISINCENTIVES</u> | <u>INCENTIVES</u> |
|---------------------------------------|--|
| • U.S. ENVIRONMENTAL HEALTH STANDARDS | • CHANGE TECHNOLOGY TRANSFER PROCEDURES |
| • VAGUE FOREIGN CORRUPT PRACTICES ACT | • DEVELOP EXPORT ORIENTATION |
| • ANTI-BUYER RESOLUTIONS | • ELIMINATE TAXES ON FOREIGN SOURCE INCOME |
| • HUMAN RIGHTS EMBARGOS | • MODIFY INVESTMENT TAX CREDIT |
| | • PROVIDE COMPETITIVE FINANCING |

Note: See appendix for additional measures to encourage exports.

Because our market is so large, U.S. businesses do not feel compelled to export, and those that do, often do not have the same commitment to quality as their competitors. But we need to jar our economy into the national need to export. We must put money in the pockets of exporters now in response to good performance.

The simplest approach could be to eliminate taxation on the 50% of export income classified as foreign source income¹⁶.

A more subtle approach would be to modify the investment tax credit to permit additional credits for investment in qualified assets for firms that increase their exports. The impact of this change would be to stimulate investment and exports — both highly beneficial to the U.S. economy¹⁷.

U.S. financing of foreign purchases of our goods and services should be revised to compete more fully with those of other nations. As the number of potential suppliers for a given product increases, the availability of attractive financing will become more important as a factor in the final sale¹⁸.

Some of these proposals will be challenged under the General Agreement in Tariffs and Trade (GATT), or the Multilateral Trade Negotiations (MTN) agreements.

These incentives are not substantially different from incentives provided by our major trading partners, particularly if we refuse to accept the strained distinction between the rebate of value-added and other consumption taxes on exports, versus the reduction of income taxes on exports¹⁹.

Forces Behind Electronic Technology Growth

The Federal Government can bring about a better business climate and provide a framework conducive to a free market economy. But it still will be up to the private sector to take advantage of that environment to improve its performance.

The electronics industry provides one example of an extremely competitive market where the U.S. retains worldwide leadership. Its growth can be traced directly to technological innovation originating in the semiconductor industry and driving three distinct, yet interrelated factors. They are:

- Cost reductions,
- Increased circuit sophistication, and
- Improvements in reliability.

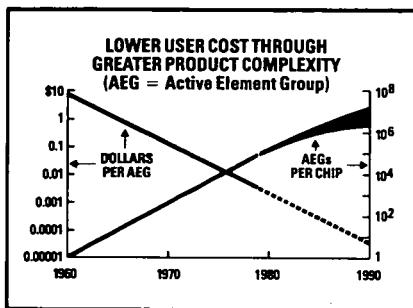


Figure 6

Learning Curve Lowers Cost per AEG

The curves in Figure 6 plot trends in greater product complexity and cost reductions per active element group, or AEG, a unit of measure used to compare the complexity of dissimilar devices that perform similar functions. One AEG roughly equals one transistor with the associated passive components, or one logic gate or memory bit in an integrated circuit.

The manufacturing costs of an AEG have been reduced by 35% each time volume has doubled, so that the function performed by a \$7 transistor in 1960 can be performed for less than one cent today.

The reason for the decline in the average cost of an active element group is the ability to construct more and more of them on a single chip of silicon. Since 1960, there has been an increase of about four orders-of-magnitude in AEGs per chip for state-of-the-art integrated circuits.

At the beginning of the 1960s, small-scale integration (SSI), was characterized by a maximum of 12 transistors on a single silicon chip. We since have moved into the era of large-scale integration (LSI). And we are now on the verge of very-large-scale integration (VLSI), with 100,000 or more AEGs placed on that same small chip.

16: See note 16 in Appendix.

17: See note 17 in Appendix.

18: See note 18 in Appendix.

19: See note 19 in Appendix.

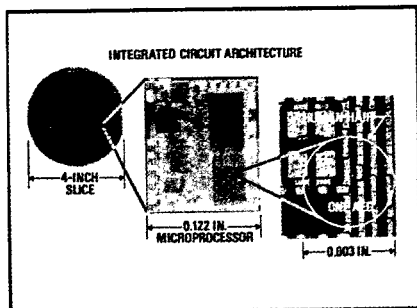


Figure 7

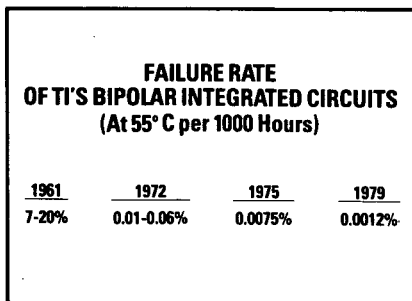
Semiconductor Device Complexity Grows

In Figure 7, the four-inch silicon wafer at left contains approximately 600 chips. Each chip, shown in the middle photo, is a complete microcomputer, containing more than 8000 bits of memory and 6000 transistors. A few of the transistors are enlarged in the photo on the right, and the circle indicates the diameter of a human hair. Note that one AEG can be placed on the cut end of one strand of hair.

Circuit Reliability Improves

As we have lowered the cost and reduced the size of an AEG, we simultaneously have improved its ruggedness and reliability. In 1961, the failure rate of bipolar integrated circuits was between 7% and 20% per 1000 hours (Figure 8). Last year we attained a failure rate of .0012%. To appreciate what this

Figure 8



means, a television set containing 100 of these devices, would operate 24 hours a day for 100 years before a circuit failure occurred²¹.

TI Corporate Philosophy

Technology alone cannot guarantee the success of an industry or a company. Technology must be managed correctly to become an innovation. At TI, we have attempted to do this by developing understandable and well-communicated management philosophies and strategies.

No company can long survive, let alone prosper, if it has not formulated some view of its role in the business community and society at large. Texas Instruments exists to create, make and market useful products and services to satisfy the needs of our customers throughout the world. Our ability to meet those demands is determined by our innovative skills and measured by our profit. But that profit is not an inherent right. We are permitted to operate by the societies we serve and any profit we do make is our incentive as well as our reward for doing our job well. Society will pass judgment on our value. If we do not meet genuine needs we will not make a profit and we will cease to exist.

TI's Business Objectives

Having established a basic philosophy, management must develop a "Corporate Objective." It must define what is right and what is wrong for the corporation and insist on holding to that definition, even when no applicable law exists.

Beyond an ethical framework, the Corporate Objective must define the corporation's goals, such as the types of businesses it wishes to operate, their location, profit and growth objectives, and the direction of its expansion -- internal, by merger or by joint venture. When these objectives have been agreed upon, adequate planning and control systems must be wrapped around them.

At TI, we have tried to encourage such an orientation through our Objectives, Strategies and Tactics (OST) management system. The OST System may be visualized as a pyramid (Figure 9). The capstone is the long-range Corporate Objective, supported by nine business objectives and 62 strategies.

Strategies define the innovations that are necessary to support the objective and tend to be intermediate range. Tactics, in the form of Tactical Action Programs (TAPs), set forth quantitative goals in detail and are used to justify present resource allocations. TAPs have relatively short lifetimes, typically from one to two years.

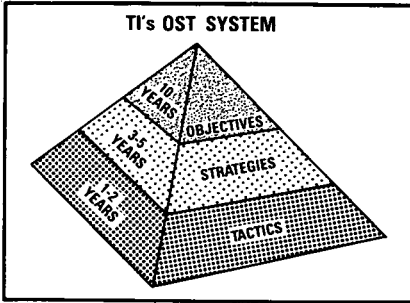


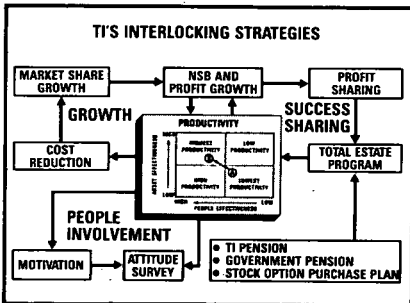
Figure 9

By clearly separating "strategic" expense from "operating" expense, the OST system allows us to prepare for tomorrow by focusing on our long-term goals.

TI's Interlocking Strategies

TI's growth is based on product innovation followed by productivity increases, generated by moving from point A to point B in Figure 10. Market share is increased by the more aggressive pricing policies that result from more efficient use of people and assets. One of the keys to the growth strategy is our Design-to-Cost program. By making cost a primary design specification, and reductions in that cost a major goal, one can create demands for constant cost-reducing innovations in the product and the manufacturing process, which in turn, fuels greater growth.

Figure 10



The second of the interlocking programs is People Involvement. TI's company-wide People Effectiveness Program is based on involving Tiers to the greatest possible extent in the planning and controlling, and not just the doing, of their work. This is backed up by recognition, training, and regular attitude surveys.

Success Sharing is the final link in the Interlocking Strategies chain, and this involves providing each employee with the opportunity to earn a "piece of the action." TI's Success Sharing Program ties productivity improvements, plus growth in net sales billed and profit, to Profit Sharing and, in turn, to the total estate programs for individual Tiers. These financial incentives create the environment in which persons are motivated to participate in the achievement of their organization's goals through the pursuit of their own.

How TI Improves Productivity

At TI, we pursue productivity improvements through:

- People Involvement,
- Automation,
- Product design*, and
- Distributed computing.

Team Improvement is Productivity Aid

One of our more effective approaches is our Team Improvement Program. TI employees meet frequently in teams to discuss and implement more productive ways of doing their jobs. Each team may develop several different tools and techniques for improving productivity, and when these are added to the thousands of other seemingly mundane improvements made by other teams they can make an enormous contribution to overall productivity.

As an everyday example: at the TI facility in Kuala Lumpur, Malaysia, a people involvement team re-examined the method for producing plastic integrated circuits. Defective ICs were coming off their production lines at a rate close to 0.2%, leading to the rejection of a great many completed circuits. In the second quarter, the team members set an error rate goal of 0.01%, to be attained within a year. (Figure 11)

* This definition includes both design-to-cost and redesign as technology allows.

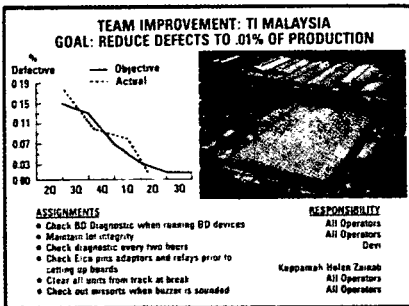


Figure 11

All the operators of the production equipment were responsible for testing and diagnosing the circuits in their line, while additional quality control procedures were assigned to selected persons. Nine months later, they were ahead of schedule and well on their way to the target they had set for themselves.

This achievement illustrates what we have seen repeated so often when team improvement efforts get started. Team members will set what they feel are challenging but realistic goals, and when a program gets rolling, they find that they are exceeding their goals. This is something that is unlikely to happen if the goals are set for the team rather than by the team. Giving people the opportunity to tap their own resources is what we mean when we talk about improving people effectiveness.

Robot Increases Productivity

As we have lowered the cost of memory and logic, we have made possible the automation of ever more complicated applications. We are just beginning to realize that this era of "computational plenty" is pushing us closer to the threshold of implementing elementary portions of human thought processes with hardware and software systems.

For example, in the Visual-Aided Manufacturing program at Texas Instruments we have increased productivity manifold in the testing of calculators, using the computer-controlled robot shown in Figure 12. A TI minicomputer operates four arms, each of which fills four slots containing independent test heads. Once a calculator is in its slot, the minicomputer activates probes that perform

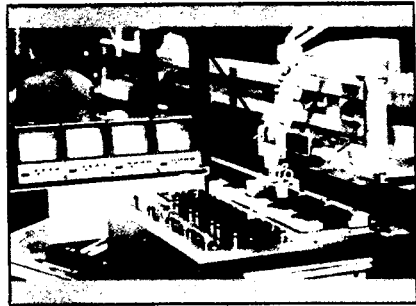


Figure 12

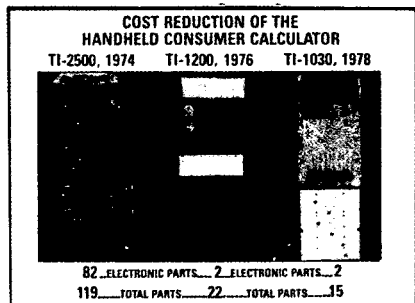
complete functional tests by pushing the calculator's buttons and "reading" its display to check for accuracy in the calculator read-out. It is the intelligence kernel mentioned above that will make Visual-Aided Manufacturing, along with other electronic applications, a major contributor to increased efficiency in the not-too-distant future.

Design Increases Productivity

Productivity also can be increased by improving the technology employed within the product itself through R&D.

An example of this is provided by our handheld calculators. The TI-2500 produced in 1974 contained a total of 119 parts, of which 82 were electronic (Figure 13). By 1976, the TI-1200, which succeeded the TI-2500, had a total of 22 parts, of which only two were

Figure 13



electronic. The Model TI-1030, introduced in 1978, further reduced the total parts count to 15. Over this same time period, the suggested retail price of the calculator was reduced from \$69.95 to \$17.

Fingertip Computer Power

The semiconductor developments we have discussed have made possible distributed computing, which means putting computer power at every employee's fingertips.

Texas Instruments has the beginnings of an international information-sharing system, which currently has more than 140 network-connected distributed computers.

To give us a rough measure of the penetration of computers into TI's operations, we count each personal programmable calculator as one module, each computer terminal as one module, and each minicomputer as one module of computing power. At present, if we add the 12,000 programmable calculators to about 8300 terminals and 8000 minicomputers in use within TI, we average 1.4 modules of distributed computing power per exempt employee. Overall, we average one module for every three employees, many of whom are not directly involved in the manufacturing of our products.

This has been a significant factor in TI's productivity performance, indicating that services, as well as manufacturing enterprises, can improve their efficiency dramatically through the use of electronics.

Corporate Overhead Percentage Reduced

For example, the curve in Figure 14 demonstrates that, since 1966 we have been able to reduce general and administration (G&A) expense as a percentage of net sales billed (NSB), along an 86% slope. That is, in nonproduct-related operations closely resembling those of service industries, each time we have doubled our cumulative NSB since 1966, we have achieved a 14% decrease in corporate overhead costs as a percentage of NSB.

These productivity gains parallel the increasing penetration of electronic equipment within corporate operations. Similar improvements can be made in all types of service industries, from grocery stores to moving companies.

The popular view is that because services are "people-oriented," not "product-oriented," they never can be efficient; that their nature is such we are doomed to its consequence: a perpetual drag on productivity growth, with little prospect for improvement.

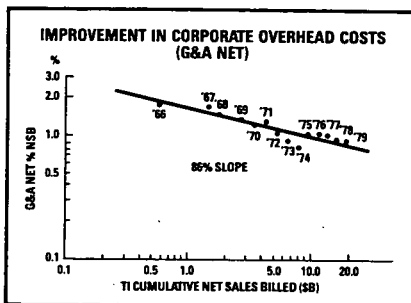


Figure 14

But, as in manufacturing, innovation is the key to increased productivity, and for many service companies, electronic systems will be the answer.

CONCLUSION: Establish National Objectives

As a nation, we cannot hope to "muddle through" our present problems as we have sometimes done in the past. The U.S. must develop a set of coherent and attainable national objectives that will stand for at least a decade, perhaps a generation. The dilemma is how to accomplish this without falling into the trap of national planning.

One way could be through the establishment of a Board for National Objectives, with status similar to that of the Fed, but with no independent power of implementation. The members of the board, whose tenures would extend beyond normal political terms, would include ex-Presidents, ex-Congressmen, ex-Cabinet Members and representatives from business, labor and the general public. Its charter would be to formulate, for the consideration of the President, Congress and the public, a set of national objectives by initiating public debate and generating a national consensus.

To encourage the development of a long-range viewpoint among our political leaders, the terms of Congressmen and the President should be lengthened, with the Chief Executive limited to one term. Longer terms of service and higher salaries would attract better people, and diminish the demands of re-election campaigning on the time of public servants.

An intensive educational thrust will be necessary if we hope to reverse present trends

successfully. Emphasis must be placed on technical and vocational skills and retraining for those whose capabilities are being overtaken by rapid technological change. In addition, knowledge concerning the free enterprise system and the many key issues to be resolved is at such a level that the public is simply not equipped to make the difficult choices.

The people in this country have the ability to understand the key issues, the guts to make hard, intelligent decisions, and the power to implement them through the ballot box. But, they must have the facts underlying these issues, and some options to consider, before they can do so.

Certainly the times are changing; but a strong undercurrent of the old, unchanging American values is still with us:

- There is no lack of spirit, of goodness, of patriotism;

- The work ethic has not been abandoned, although leadership is in short supply;

- And above all, the high value placed upon freedom, at home as well as abroad, remains unaltered.

These underlying values always have been and still are the foundations of American society. But, we need another ingredient: a governmental framework that does not smother the American dream.

The ability to deliver on the promise of prosperity must be maintained, for the bottom line is that real economic growth is the glue holding us together. If economic growth slows precipitously -- the glue begins to dissolve, and so does our society.

NOTE 1

Appendix

Derivation of Absolute Unit Labor Costs

Comparative absolute unit labor costs for the manufacturing sectors of the six major industrialized nations were derived by the Economic Analysis department of Texas Instruments. A prerequisite series, absolute hourly compensation, was developed for each country by combining the absolute U.S. dollar compensation level in 1970 with subsequent annual rates of change in the country's index of hourly compensation in U.S. dollars (Table I). For ease of comparison, all annual country values were expressed as percentages of the U.S. value in the same year.

The absolute labor productivity series was developed utilizing a more extended methodology (Table II). A base was established by calculating each of the six major nation's percentage share of their combined manufacturing output in 1970, expressed in U.S. dollars at average period exchange rates. Ratios representing relative levels of absolute productivity were then calculated by dividing the output shares by comparable 1970 relative shares of combined manufacturing employment, each adjusted for variations in average hours worked per week. The number of weeks worked per year was assumed to be the same for all countries.

Values for 1971 were developed by multiplying the 1970 derived values of absolute productivity by: 1) the ratio of the 1971 index of manufacturing output per man-hour to that of 1970, 2) the ratio of the 1970 period average exchange rate to that of 1971, and 3) the ratio of the 1971 index of wholesale prices, manufactured goods, to that of 1970, for a given foreign country, divided by the comparable ratio for the U.S. The exchange rate adjustment is an attempt to reduce the overstatement or understatement of dollar output values that can be attributed to inflation differentials. Values for all subsequent years were developed with an iterative process using the same procedure. Again, for ease of comparison, all annual country values were expressed as percentages of the U.S. value in the same year.

Finally, absolute unit labor costs (Table III) were derived by dividing the elements of absolute hourly compensation (Table I), by the comparable elements of absolute productivity (Table II).

Table I

Relative Levels of Absolute Hourly Compensation in Manufacturing
(U.S. Value = 100)

	<u>U.S.</u>	<u>Germany</u>	<u>France</u>	<u>U.K.</u>	<u>Italy</u>	<u>Japan</u>
1970	100.0	46.8	41.8	33.5	42.4	22.6
71	100.0	52.3	44.0	36.8	46.6	25.2
72	100.0	60.5	50.8	40.1	53.7	31.5
73	100.0	77.2	61.9	40.7	63.6	40.0
74	100.0	83.0	62.3	44.1	64.4	44.4
75	100.0	88.1	74.9	48.6	74.0	45.7
76	100.0	85.2	71.0	42.7	64.3	45.7
77	100.0	93.3	72.8	41.8	66.2	50.4
78	100.0	107.0	82.7	48.8	72.4	62.8

Table II

Relative Levels of Absolute Productivity in Manufacturing
(U.S. Value = 100)

	<u>U.S.</u>	<u>Germany</u>	<u>France</u>	<u>U.K.</u>	<u>Italy</u>	<u>Japan</u>
1970	100.0	48.0	51.6	29.8	32.5	35.8
71	100.0	50.3	51.0	31.6	32.1	34.4
72	100.0	54.9	57.1	33.7	34.8	39.7
73	100.0	65.9	69.5	33.1	40.0	50.7
74	100.0	72.6	75.7	34.3	48.9	53.5
75	100.0	70.6	70.6	33.3	43.2	44.1
76	100.0	69.3	67.7	29.8	41.4	45.5
77	100.0	74.4	66.6	31.2	42.1	48.9
78	100.0	83.2	73.4	35.3	44.9	61.3

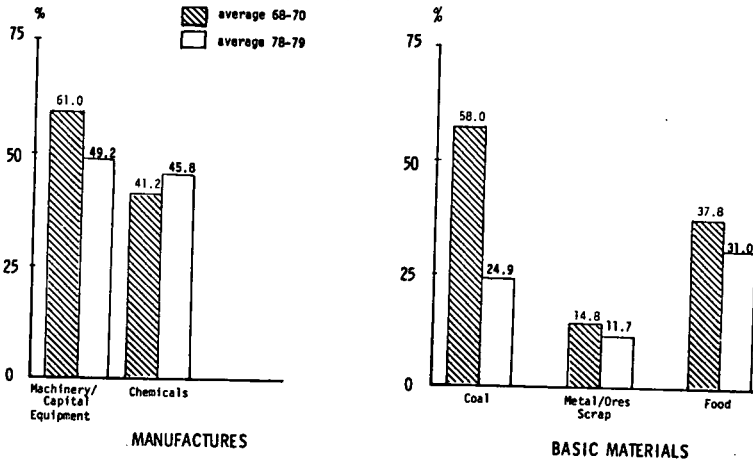
Table III

Relative Levels of Absolute Unit Labor Costs in Manufacturing
(U.S. Value = 100)

	<u>U.S.</u>	<u>Germany</u>	<u>France</u>	<u>U.K.</u>	<u>Italy</u>	<u>Japan</u>
1970	100.0	97.5	80.9	112.4	130.4	63.0
71	100.0	103.9	86.2	116.3	145.5	73.4
72	100.0	110.2	88.9	119.0	154.0	79.3
73	100.0	117.1	89.0	123.1	159.1	79.0
74	100.0	114.5	82.3	128.5	131.7	82.9
75	100.0	124.8	106.0	145.8	171.1	103.7
76	100.0	123.0	105.0	143.3	155.3	100.4
77	100.0	125.4	109.4	133.9	157.3	103.0
78	100.0	128.6	112.7	138.1	161.2	102.6

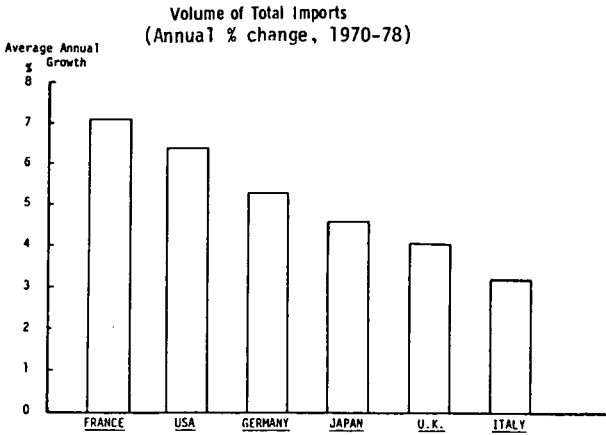
NOTE 2

U. S. SHARE OF SELECTED JAPANESE
IMPORT MARKETS



Source: U.S. Department of Commerce and the Japanese Trade Organization (JETRO)

NOTE 3



Source: INTERNATIONAL ECONOMIC INDICATORS, U.S. DEPARTMENT OF COMMERCE

U.S. IMPORTS BY ORIGIN
(billions)

	<u>1970</u>	<u>1972</u>	<u>1974</u>	<u>1976</u>	<u>1978</u>
Industrial Countries	\$28,868	\$40,202	\$60,084	\$66,297	\$96,701
Oil Exporters	1,657	2,707	16,116	26,618	32,350
Other LDCs	9,441	12,498	26,161	30,251	43,983

Source: Direction of Trade Yearbook, 1979. International Monetary Fund

NOTE 4

Summary of a Study by Data Resources, Inc., on
The Costs of Quick Inflation Reduction

The slowdown in the economy required to eliminate a good portion of the U.S. inflation on a sustained basis would be extremely large. Indeed, the values of policy instruments necessary to bring such a reduction of inflation simply are not feasible.

In the simulations with the optimal control procedures, reductions in real government expenditures ranging from \$45 to \$90 billion dollars late this year and in 1981 would be required to bring the rate of inflation down by 2.5 percentage points in 1985:4 compared to DRI's current forecast. The tremendous reduction in government expenditures would bring unemployment rates of 13 to 15%, if applied. This kind of policy is simply not feasible in the current U.S. economy and therefore one must conclude that the inflation reduction desired could not be achieved through investment tax credits and reduced government spending in the time span analyzed. The major reason is an 8 to 9% core inflation rate, primarily wage rises in excess of productivity still in the U.S. economy during 1985.

Source: Allen Sinai, DRI.

NOTE 5

The 22.5% figure includes budget plus off-budget entities.

Source: "1981 Budget Revisions," Office of Management and Budget, Washington, D.C.

NOTE 6

Regulatory Budget

The current regulatory process fails to recognize that the goals of regulatory programs must be balanced rationally with other national objectives. During the past year, the Joint Economic Committee held hearings to examine how enactment of a regulatory budget could improve the regulatory process and cut unnecessary regulatory costs. As envisioned, the regulatory budget would require Congress to set absolute limits, for a given time period, on the increase in expenditures by the private sector (or by governmental units) required to bring products or procedures into compliance with federal regulations.

Source: Adapted from Plugging in the Supply Side, Joint Economic Report, 1980, Congress of the U.S., Senate Report No. 96-618.

NOTE 7

A Consumption Tax

A consumption-based tax frequently discussed for adoption in the United States is the consumption-VAT (Value-Added-Tax). A consumptiontype VAT, used by the Common Market countries, allows tax paid on capital assets to be deducted at the time of purchase against VAT otherwise payable. Renewed interest has been shown in the VAT as a way to reduce rapidly increasing social security taxes, encourage savings and capital formation by reducing corporate and individual income taxes, and improve the U.S. foreign trade position.

Under the Tax Restructuring Act of 1979, proposed by Chairman Al Ullman of the House Ways and Means Committee (H.R. 5665), a 10% VAT would be instituted yielding an estimated \$130 billion in 1981 to offset proposed reductions in personal, corporate, and social insurance taxes. The Ullman bill would levy lower VAT rates on food, housing and health care, and would completely exempt exports, charitable or nonprofit activities, mass transit, and interest, from taxation.

In the continuing debate on this proposal, consideration should be given to a coupling of VAT (or other such consumption taxes) with limitations on government spending, to allay concerns that the introduction of a new tax into the Federal tax system would ultimately result in a heavier burden of taxes.

NOTE 8

Sources of Productivity Growth

The following breakdown is based on an adaptation of John Kendrick's analyses of the sources of U.S. productivity growth from 1929 to 1978:

Sources of Productivity Growth 1929 - 1978	Percentage Point Contribution	Percent of Total
1. Changes in Labor Quality (*includes age-sex composition, education and training, health, changes in quality of land, and actual/potential labor efficiency and not elsewhere classified.)	0.30	12%
2. Changes in Capital per Worker (*capital/labor substitution)	0.37	15
3. Improved Allocation of Resources (*includes intensity of demand)	0.52	20
4. Economies of Scale	0.34	13
5. Technological Innovation (*advances in knowledge)	1.01	40
6. Net Government Impact	0.00	0
Annual Growth Rate of Productivity (*real product per unit of labor)	2.54	100%

Source: "Productivity Trends and the Recent Slowdown: Historical Perspective, Causal Factors, and Policy Options," by John W. Kendrick, in Contemporary Economic Problems, 1979, American Enterprise Institute.

Similar conclusions emphasizing the dominant role of technological innovation in spurring productivity gains have also been reached by Professor R.M. Solow at the Massachusetts Institute of Technology, as well as by Edward F. Denison at the U.S. Department of Commerce.**

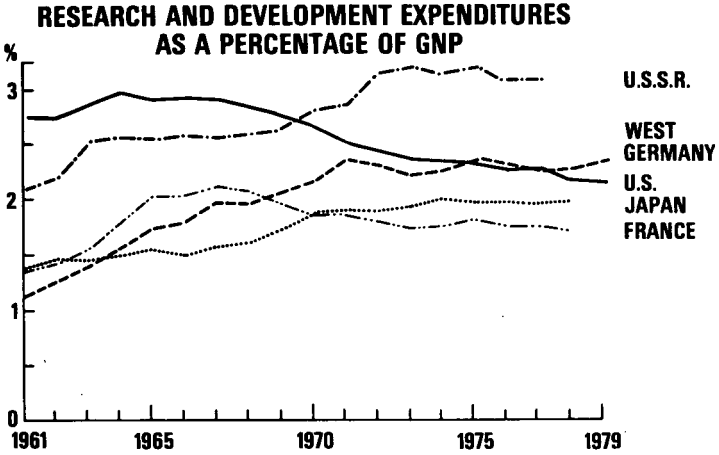
* John Kendrick's terminology

** "Investment and Technical Progress," R.M. Solow, in K.J. Arrow, S. Karlin, and P. Suppes, eds., Mathematical Methods in the Social Sciences, 1959, pp. 89-104, Stanford University Press, Stanford, 1960; also Economics, Paul A. Samuelson, (Ninth Edition), p. 748, McGraw-Hill Book Co. Edward Denison's work appears in Accounting for United States Economic Growth: 1929-69, Brookings Institution, Washington, 1974, and Accounting for Slower Economic Growth: The United States in the 1970s, Brookings Institution, Washington, 1979.

NOTE 9

U.S. Total vs U.S. Industrial R&D

A) Total R&D includes all basic research conducted in universities, nonprofit institutions, and government labs plus all industrial R&D.



B) Industrial R&D includes only private industry R&D and federally-financed industrial R&D.

TABLE I
U.S. Industrial R&D as a Percent of GNP

	<u>Federally Financed</u>	<u>Privately Financed</u>	<u>Total Industrial</u>
1960	1.2	0.9	2.1
1965	1.1	0.9	2.1
1970	0.8	1.0	1.8
1971	0.7	1.0	1.7
1972	0.7	1.0	1.7
1973	0.6	1.0	1.6
1974	0.6	1.0	1.6
1975	0.6	1.0	1.6
1976	0.5	1.0	1.6
1977	0.5	1.0	1.6
1978	0.6	1.0	1.6
1979	0.5	1.0	1.6

Source: National Science Foundation

NOTE 9
Page 2 of 2

C) The definition of R&D corresponds to the following Financial Accounting Standards Board definition:

Research is planned search or critical investigation aimed at discovery of new knowledge with the hope that such knowledge will be useful in developing a new product or service (hereinafter "product") or a new process or technique (hereinafter "process") or in bringing about a significant improvement to an existing product or process.

Development is the translation of research findings or other knowledge into a plan or design for a new product or process or for a significant improvement to an existing product or process whether intended for sale or use. It includes the conceptual formulation, design, and testing of product alternatives, construction of prototypes, and operation of pilot plants. It does not include routine or periodic alterations to existing products, production lines, manufacturing processes, and other on-going operations even though those alternations may represent improvements and it does not include market research or market testing activities.
(FASB; October, 1974)

Although the expensing or capitalizing of R&D expenditures may have been controversial, TI always charged its internally funded R&D costs to expense as incurred, and this is now a standard requirement for all industry under Financial Accounting Standard Board Rules. Under this definition, the R&D expenditures made by Texas Instruments were \$134 million in 1979, up from \$111 million in the prior year.

NOTE 10

Differences in Profit Margins: U.S. vs Japan

Average Profit Margins in Manufacturing, 1974-79
(Percent of net sales)

	<u>PROFITS</u> <u>Before TAXES</u>	<u>PROFITS</u> <u>After TAXES</u>
United States	8.6%	5.3%
Japan	1.8	0.9

Source: Quarterly Financial Report (U.S. Federal Trade Commission),
Yamaichi Research Institute

NOTE 11

Differences in R&D Tax Credit Policies: U.S. vs Japan

The U.S. has no R&D tax credit policy. Japan has an R&D tax credit equal to 20 percent of the increase in R&D expenditures in the taxable year over those of the previous year. The credit may not exceed 10 percent of the total tax owed.

Source: Data Resources, Inc.

NOTE 12

Summary of Policy Mix Study by Data Resources, Inc.Sponsored by Texas Instruments, Incorporated
February, 1980

Data Resources, Inc., (DRI) conducted a study for Texas Instruments to specify a policy mix which could get U.S. productivity growth rates back to 2% by the 1990s. The following three-pronged approach could produce the desired results:*

1. The investment tax credit would be increased to about 25%, from the current 10% rate.
2. A 20% tax credit on industrial R&D expenditures would be enacted.
3. To round out the package, non-defense government spending for goods and services (excluding transfer payments) could be reduced to a level \$10 billion per year lower than currently projected, a reduction of around 20%.

The economic impact of these policies can be quantified over the 1980 to 1987 period using DRI's optimal control model of the U.S. economy. DRI also provided qualitative extensions of the simulation results for the 1990s.

EFFECTS:

- In the first decade, the rate of productivity growth would rise from the 0.5% rate of the late 1970s up to a 1.5% rate by the end of the 1980s as a result of these policies. And by the 1990s, productivity advances of 2% per year would be achieved.
- In the early 1980s, real GNP would grow at nearly 3% per year, and by the 1990s real GNP growth of 3.3% annually could be expected.
- The inflation rate (as measured by the GNP deflator) would be cut to about 7.5% in the 1980s and 5% in the 1990s.
- The ratio of business investment to GNP would rise from 10.1% to about 12%, a gain of nearly 2 percentage points.
- The two tax credit measures boost productivity sufficiently so that a reduction in non-defense government spending of roughly 20% can also be accommodated, with the attendant favorable implications for the deficit and for inflation.

*The optimal control model used for the study has the capacity to solve for no more than three policy instruments simultaneously, over a seven-year interval. The number of testable policy instruments is inversely related to the length of the time period under consideration.

Note 12
Page 2 of 2

IMPLICATIONS FOR INFLATION POLICY

The simulation highlights some of the difficulties we face in the fight against inflation. As a result of these tax measures alone, the study suggests that we cannot realistically expect to get inflation below 5% by the end of the century even with productivity gains of 2% annually. But the prospect of a 5% rise in prices every year is unacceptable. At that rate, over a fifteen-year period the value of a dollar would be more than slashed in half.

An option implied by the simulation is to give up some of the gains in real GNP growth generated by the policy measures in order to dampen the pressure on prices from rising aggregate demand. This potential trade-off means that an additional cut from the expected 5% rate of inflation might be possible if a real GNP growth rate of less than 3.3% were to be maintained.

ECONOMIC EFFECTS OF POLICY MIX

	<u>Baseline (No Policy Action)</u>	<u>After Policy Mix is Enacted</u>			<u>Policy Effects</u>		
	<u>Annual Average Rate of Growth</u>	<u>Annual Average Rate of Growth</u>			<u>Annual Change to Baseline</u>		
	<u>1973-1980</u>	<u>1980-83</u>	<u>1984-87</u>	<u>1990s</u>	<u>1980-83</u>	<u>1984-87</u>	<u>1990s</u>
Productivity Growth	0.5%	1.2%	1.5%	2.0%	0.7	1.0	1.5
Real GNP Growth	2.1	2.9	3.3	3.3	0.8	1.2	1.2
Inflation Rate (GNP Deflator)	8.1	8.2	7.4	5.1	0.1	-0.7	-3.0
Ratio of Business Investment to GNP	10.1	11.9	11.8	12.0	1.8	1.7	1.9

NOTE 13

DEPRECIATION AND INVESTMENT TAX CREDIT

BUSINESS IMPACT

The following quantifies the equipment depreciation, profit, and cash flow impact of an ongoing growing business at various combinations of tax depreciation method, growth, and Investment Tax Credit (ITC). For simplicity, manufacturing equipment and the ITC flow through method were used.

Assumptions: 20% growth rate Net Sales Billed (NSB) for history and forecast;
 Capital Expenditures = 5% NSB + 20% Δ NSB;
 All Investment Tax Credit taken in year earned;
 All other costs except depreciation = 82.1% NSB;
 No consideration for cost of money;
 Cash Flow includes only Profit, Depreciation, Capital Expenditures, and deferred taxes;
 Same depreciation for public reporting used in all cases.

CASE I: 10% ITC, 7 Year DDB/SYD (Double Declining Balance/Sum of Year Digits in Year 3) Depreciation
 CASE II: 10% ITC, Capital Cost Recovery (10-5-3)
 CASE III: 25% ITC, 7 Year DDB/SYD Depreciation
 CASE IV: Same as Case I except Growth Rate increases to 30%/yr for Year 3 and Beyond
 CASE V: Same as Case II except Growth Rate increases to 30%/yr for Year 3 and Beyond

<u>Summary:</u>	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV*</u>	<u>V*</u>
Growth/Yr.	20%	20%	20%	20-30%	20-30%
Depreciation % NSB	6.1%	6.1%	6.1%	6.4%	6.4%
PBT % NSB	11.8%	11.8%	11.8%	11.5%	11.5%
ITC Rate	10%	10%	25%	10%	10%
% NSB	.9%	.9%	2.3%	1.1%	1.1%
PAT % NSB	7.5%	7.5%	8.9%	7.5%	7.5%
Cash Flow % NSB	5.1%	5.3%	6.5%	3.8%	4.1%

*Data for Year 7; Steady State at 30% growth.

Conclusions:

The proposed Capital Cost Recovery depreciation method (10-5-3) (Case II) generates a slightly more favorable cash flow than the current 7 Year DDB/SYD depreciation method (Case I). However, 25% ITC with current depreciation method (Case III) is more favorable in both cash flow and PAT than the Capital Cost Recovery method (Case II).

NOTE 13
Page 2 of 3

CASE I. 10% Investment Tax Credit
7 Year DDB/SYD Depreciation

<u>Year:</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
NSB	100	120	144	172.8	207.4	248.8	298.6
Costs	82.1	98.5	118.2	141.9	170.3	204.3	245.2
Depreciation	6.1	7.3	8.8	10.5	12.6	15.2	18.2
% NSB	6.1	6.1	6.1	6.1	6.1	6.1	6.1
PBT	11.8	14.2	17.0	20.4	24.5	29.4	35.2
% NSB	11.8	11.8	11.8	11.8	11.8	11.8	11.8
Tax	5.2	6.2	7.5	9.0	10.8	12.9	15.5
ITC	.9	1.1	1.3	1.6	1.9	2.2	2.7
PAT	7.5	9.0	10.8	13.0	15.6	18.7	22.4
% NSB	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Cash Flow	5.1	6.1	7.4	8.8	10.6	12.7	15.3
% NSB	5.1	5.1	5.1	5.1	5.1	5.1	5.1
Cum Cash Flow	5.1	11.2	18.6	27.4	38.0	50.7	66.0

CASE II. 10% Investment Tax Credit
Capital Cost Recovery (10-5-3) Depreciation

Only difference from Case I is cash flow because of different depreciation method for tax purposes.

Cash Flow	5.3	6.4	7.7	9.2	11.0	13.2	15.9
% NSB	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Cum Cash Flow	5.3	11.7	19.4	28.7	49.7	52.9	68.8

CASE III. 25% Investment Tax Credit
7 Year DDB/SYD Depreciation

NSB	100	120	144	172.8	207.4	248.8	298.6
Costs	82.1	98.5	118.2	141.9	170.3	204.3	245.2
Depreciation	6.1	7.3	8.8	10.5	12.6	15.2	18.2
% NSB	6.1	6.1	6.1	6.1	6.1	6.1	6.1
PBT	11.8	14.2	17.0	20.4	24.5	29.4	35.2
% NSB	11.8	11.8	11.8	11.8	11.8	11.8	11.8
Tax	5.2	6.2	7.5	9.0	10.8	12.9	15.5
ITC	2.3	2.7	3.3	3.9	4.7	5.6	6.7
PAT	8.9	10.6	12.8	15.3	18.4	22.0	26.5
% NSB	8.9	8.9	8.9	8.9	8.9	8.9	8.9
Cash Flow	6.5	7.8	9.3	11.2	13.4	16.1	19.3
% NSB	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Cum Cash Flow	6.5	14.3	23.6	34.8	48.2	64.3	83.6

NOTE 13
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CASE IV. 10% Investment Tax Credit (Growth rate is 30% for Year 3 and Beyond)
7 Year DDB/SYD Depreciation

NSB	100	120	156	202.8	263.6	342.7	445.5
Costs	82.1	98.5	128.1	166.5	216.4	281.4	365.8
Depreciation	6.1	7.6	9.9	12.9	16.8	22.0	28.6
% NSB	6.1	6.4	6.4	6.4	6.4	6.4	6.4
PBT	11.8	13.8	18.0	23.4	30.4	39.3	51.1
% NSB	11.8	11.5	11.5	11.5	11.5	11.5	11.5
Tax	5.2	6.1	7.9	10.3	13.4	17.3	22.5
ITC	.9	1.3	1.7	2.2	2.9	3.8	4.9
PAT	7.5	9.0	11.8	15.3	19.9	25.8	33.6
% NSB	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Cash Flow	5.1	4.6	6.0	7.7	10.1	13.1	17.0
% NSB	5.1	3.8	3.8	3.8	3.8	3.8	3.8
Cum Cash Flow	5.1	9.7	15.7	23.4	33.5	46.6	63.6

CASE V. 10% Investment Tax Credit (Growth rate is 30% for Year 3 and Beyond)
Capital Recovery Cost (10-5-3) Depreciation

Only difference from Case IV is cash flow because of different depreciation method for tax purposes.

Cash Flow	5.4	4.8	6.2	8.2	10.7	14.0	18.1
% NSB	5.4	4.0	4.0	4.0	4.1	4.1	4.1
Cum Cash Flow	5.4	10.2	16.4	24.6	35.3	49.3	67.4

NOTE 14

Leverage of a 20% R&D Tax Credit
on R&D Expenditures & Profitability

Japanese firms have much less stringent profit margin requirements than do U.S. firms, and are therefore more likely to place relatively more emphasis on long-term R&D projects. The analysis below illustrates the leverage of an R&D tax credit that could provide the U.S. a large delta in research expenditures for only a small deterioration in the profit margin requirement. The private industrial R&D expenditures in this hypothetical example are set at the U.S. manufacturing industry's comparable 1978 level of 1.5% of sales.

	Without Credit		With Credit	
	(\$ mil)	(%)	(\$ mil)	(%)
Net Sales Billed	1000	100.0	1000	100.0
Gross Profit Margin	250	25.0	250	25.0
Period Expense	125	12.5	125	12.5
Operating Profit	125	12.5	125	12.5
Less R&D	<u>15</u>	<u>1.5*</u>	<u>30</u>	<u>3.0*</u>
Profits Before Taxes	110	11.0	95	9.5
Less Tax (50%)	55	5.5	47.5	4.75
PLUS Tax Credit	<u>0</u>	<u>0</u>	<u>6.0</u>	<u>0.60</u>
Profits After Taxes (PAT)	55	5.5%*	53.5	5.35%*

* A 20% tax credit would allow this hypothetical firm to double R&D expenditures from 1.5% to 3% of sales with only a 0.15 percentage point deterioration in PAT. The assumption of the availability of engineering and scientific personnel is implicit in this analysis.

NOTE 15

According to the Washington International Business Report, exporters often point to the following disincentives as having the most significant impact on exports:

- Antitrust legislation
- Restraints on arms sales
- Environmental standards*
- Export controls related to foreign policy objectives
- Export controls on strategic material
- Foreign boycott regulation
- Hazardous substances controls
- Health and pharmaceutical standards
- Human rights standards
- Improper payments
- Restrictions on transfer of nuclear technology
- Restrictions on exports to South Africa

* In the case of environmental, health and safety regulations, this refers only to: 1) the application of U.S. regulations on goods destined for export markets already having their own health and environmental legislation, and/or 2) when the dissemination of U.S. data on the possible detrimental impact of a particular commodity or good on the welfare of the recipient would provide sufficient warning and enable considered judgement on its desirability.

NOTE 16

Export Exemption Proposal

The proposal to exempt from federal taxation 50% of export income classified as foreign source income would have the following effect, on a national basis:*

Assume 10% profits before taxes on 1979 merchandise exports, then

$$\$182.4 \text{ billion} \times 10\% \times 50\% = \$9.12 \text{ billion}$$

Therefore, profit after tax savings = $\$9.12 \text{ billion} \times 46\% = \4.20 billion . (The ultimate tax savings would be reduced by savings currently obtained through the DISC.)

* This 50% of foreign source income is still included in foreign tax credit limitation computation even though untaxed by the U.S.

NOTE 17

Proposal to Modify the Investment Tax Credit

The investment tax credit (ITC) could be modified to provide an incentive for increasing exports. Under this proposal, any U.S. business which increased exports for the current year above the average for the three preceding years would be eligible for an increase in the investment tax credit rate. Each increase in exports of 5% over the base period average export sales would entitle a business to 1 percentage point additional ITC up to a maximum of five additional points.

If a firm's exports declined in the current year plus one to a level below the three year average for the current year, current year minus one and current year minus two, the firm would not benefit from the export tax credit, and the applicable ITC would be 10%.

The export tax credit would not alter the definition or amount of assets on which the ITC could be taken.

The credit is described by the following formula:

$$\left[\frac{\text{Current Year Export Net Sales Billed (NSB)}}{\text{Average Export NSB in Base Period}^*} \right] - 1.0 \div .05 = \text{Increase in ITC Percentage Point}$$

The ITC increase is limited to 10% of the delta of Export NSB over the base period.

Example:

If the proposal had been applied on a national basis to 1979 U.S. merchandise exports, a maximum of \$5.7 billion in additional ITC would have been generated:

$$\left[\frac{\text{Current Exports: } \$182.4 \text{ billion}}{\text{Base Period Average: } \$125.9 \text{ billion}} \right] - 1.0 \div .05 = 9.0 \text{ Percentage Point}$$

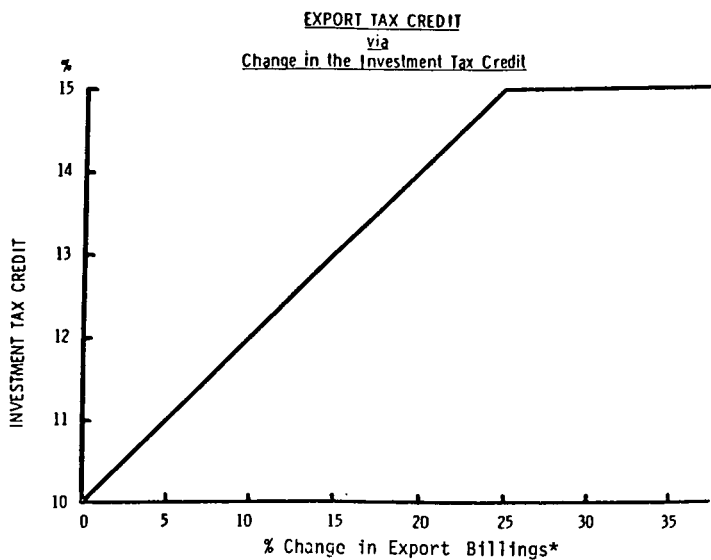
$$\begin{array}{l} \text{Investment qualified for ITC --- } \$162.2 \text{ billion}^{**} \\ \qquad \qquad \qquad \qquad \qquad \qquad \times .05 \\ \text{Yields --- } \$ \quad 8.1 \text{ billion} \end{array}$$

Additional ITC (absolute maximum) = \$5.7 billion since the increase in the dollar-level of the credit is limited to 10% of the export NSB delta for 1979 over the base period.

*Base period is three year period immediately preceding current year

**Producers' durable equipment

Note 17
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The investment tax credit is restricted to no more than 10% of the change in export billings.

*The change is measured over an average 3-year base period.

NOTE 18

Export Financing

In 1977, Japan supported 42% of its exports with government - backed financing; the U.K., 34%; and France, 30%. The U.S. supported only 7% of its exports with government-backed financing. The problem is, not only must the Ex-Im Bank meet the foreign competitions but unlike them, it must be self-sustaining.

(A) The bank's programs include:

1. Direct credits and financial guarantees for major capital goods exports;
2. Medium-term guarantees and discount loans to U.S. commercial banks and Cooperative Financing Facility loans to foreign financial institutions to finance capital goods exports;
3. Insurance against political and commercial risk for exporters.

(B) Financing support by our major competitors, besides being at a higher level, includes programs such as:

1. Insurance against exchange rate fluctuations (Japan, Germany, France, Italy);
2. Inflation indemnity insurance (U.K., France);
3. Performance bond insurance covering losses on whole manufacturing plants (Japan);
4. Combinations of foreign aid and export credit programs;

(C) Not only is the FY1980 funding level (\$4.1 billion) for Ex-Im Bank's programs limited to an estimated one-third of the demand, but legislative foot-dragging may mean the Bank will run out of funds by June 1, 1980. In addition, the Ex-Im Bank is constantly hampered by political restrictions, such as the Jackson-Vanik Amendment on the emigration policies of the USSR.

Ex-Im Bank officials are now attempting to receive enough funding to (1) stay in business and (2) cover their \$14 billion in preliminary commitments to exporters. If they do not get those funds, it could have serious implications for the U.S. aircraft industry, one of the few bright spots in the export picture at present.

NOTE 19

Foreign Government Export Programs

In hearings on U.S. export policy conducted by the Subcommittee on International Finance, foreign government support for exports, directly and indirectly, was cited "as the biggest obstacle to expanded U.S. exports." Chief among them:

1. Industrial Policies, notably in Japan, France, Italy, Taiwan, Hong Kong and South Korea channel government resources into "target" export industries. Regional development schemes also encourage export-oriented industries to relocate or expand in depressed areas, and thereby have a secondary impact on overall export totals.
2. Research and development in Japan and Europe is often directed towards industries with export potential.
3. Lack of anti-trust legislation in many countries allows them to form large and efficient trading companies to promote exports while simultaneously blocking easy access to the indigenous market.
4. Less-stringent environmental and safety standards overseas permit lower development costs and encourage more efficient export licensing procedures.
5. Remission of indirect taxes on exports is another device often used by major U.S. competitors, and low rates of taxation on foreign-source income permit foreign corporations to set-up foreign subsidiaries and pay little or no direct taxes on their exports to them. The U.S. does not permit such differential tax treatment.
6. Financing of exports is the most important non-tax incentive to exports. Most countries provide some form of official export financing, and the French, Japanese and British use supplemental non-tax incentives as well. Small exporting firms in Germany, Japan, Italy and France receive even more attractive financing incentives.
7. Financing of pre-feasibility studies is an effective variant of many export financing programs, which allows exporting firms to receive government help in product and project evaluation for export.
8. Cheaper export shipping is a big advantage to competitor's exports. Shipping costs for U.S. exports average 32% higher than those for our imports. Shipping costs to LDCs, average 100% more than our competitors, and Japan has a 300% freight advantage over the U.S. in shipments to third countries. U.S. government shipments frequently "crowd out" private sector freight on U.S. flag carriers, as well.
9. Export promotion, such as trade shows, is less important in the U.S. than in Japan, the U.K., Italy and France, but our effort is more vigorous than those of Canada and Germany.

NOTE 20

Evaluation of Circuit Reliability

The evaluation of the reliability performance of a given semiconductor device is a time-consuming and expensive proposition. Comparing reliability data with that of other devices, particularly if they are not tested simultaneously under the same conditions, compounds the problem. When tests are run by competitors, often in different countries and from different production lines, the chances of statistical error is magnified as well. Nevertheless, reliability performance is an important characteristic of any semiconductor device and plays a key role in determining its future utilization.

To evaluate new products or new processes, approximately fifty million device hours at 55°C operating conditions should be accumulated. This requires accelerated testing at 125°C or maximum device conditions, to obtain the results within a reasonable period of time.

For example, for a statistically sound data base, three samples of forty units, each taken from different periods of manufacture from an assigned assembly site, should be selected. These samples are then subjected to one thousand hours at 125°C operating life or maximum operating conditions, generating 60.5 million device hours. Assuming one failure is experienced, a failure rate of 0.002%/K hours would result. This is typical of failures being quoted in today's market. From design to completion of reliability testing, four to five months are required.

In comparison, more mature products, such as low power schottky, have been tested in sufficient quantities to achieve 3.31 billion device hours over a three year period. The reliability failure rate for this technology is 0.0011%/K hours. In short, the most valid reliability figures can only be obtained for devices with a fairly long operating history under field conditions, rather than utilizing testing procedures with numerous potential incongruities.

NOTE 21

Circuit Reliability

The example of the television set refers only to the integrated circuits within the chassis; this does not preclude the failure of other components, such as the picture tube, which would prevent the functioning of the television.

STATEMENT OF HON. ELMER STAATS, COMPTROLLER GENERAL OF THE
UNITED STATES

At the conclusion of the session on productivity on Wednesday, you invited any of us to submit additional thoughts if we cared to do so. It occurred to me that it might be useful to elaborate a bit on my brief remarks.

First of all, I strongly endorse the bill which Senator Bentsen introduced on March 12 entitled, "Productivity Improvement Act of 1980," (S. 2147). We worked closely with him in developing this proposal. You will note that it suggests a productivity council with an independent chairman appointed by the President and confirmed by the Senate. Overall it would have a leadership role in bringing together government, industry, and labor in an effort to achieve a consensus on program and policy matters which would have as their objective improvement of productivity. It would have no regulatory powers, nor would it have any charter to intervene in a regulatory way in the private sector.

Here are some of the matters which such a council could do to achieve a national productivity policy and program:

(1) Emphasize tax reform measures which would achieve additional savings and capital investment.

(2) Identify government regulations which inhibit productive investment, increase costs, and reduce competitiveness and suggest reconsideration of the regulations as to whether they can be modified or simplified.

(3) Advise the Director of the Office of Management and Budget with respect to priorities in governmental expenditures which have as their objective productivity improvement, technology innovation, and industrial development. (They now add up to something like \$2 billion spread among large government agencies and are not reviewed from the standpoint of the relationship to each other or the priorities which each expenditure outlay should have.)

(4) Advise the Director of the Budget and the Congress with respect to needed investment in research and development, technology diffusion, patent policy, and other measures which have as their objective improvement of technology and higher productivity.

(5) Take leadership to encourage labor-management cooperation at the company or plant level in such areas as skill training, quality circles, quality of work life, productivity sharing, and profit sharing.

(6) Seek better productivity measures and attempt to achieve a consensus with respect to the differing methods now employed to achieve "total factor productivity, multifactor productivity, high input/output measures," and so forth.

(7) Take leadership in advising with the Office of Personnel Management, Public Technology, Incorporated, and others who are attempting to achieve higher productivity at the Federal, State, and local government levels. (Major improvements in productivity can yield major reductions in the costs of government, thereby reducing the tax burden.)

(8) Operate or arrange for the establishment of a productivity clearinghouse to provide national and international information on various aspects of productivity to all sectors of the economy.

(9) Make periodic assessments to determine the nature and extent of public and private sector productivity problems and recommend to the President and the Congress measures to deal with these problems.

What is being sought is the means to achieve a national consensus, a national policy, and a national program to reverse the downward trend in productivity growth. I do not believe that this can be a function of the OMB. The OMB is burdened with many other matters. Productivity improvement is of sufficient importance to warrant the full-time attention of an individual selected by the President and confirmed by the Senate. The council should have a charter approved by the Congress if it is to have the kind of support it would need. It need not have a large budget—a budget of \$5 million should be adequate—and it should be advisory to the President and the Congress.

I hope these additional thoughts will be of some use to you in your further consideration of the comments and suggestions which were provided at the conference, a conference, incidentally, which I thought served a very useful purpose.

STATEMENT OF M. T. STAMPER, PRESIDENT, THE BOEING CO.

The Boeing Company appreciates the opportunity to participate in this conference and to present this statement of position.

As we know, the major issue areas addressed by the Congressional Economic Conference seminars have complex relationships. The individual problems of productivity, inflation, foreign trade, energy costs and unemployment have each in turn triggered the others as causative factors and each in turn can be affected by the others as we seek solutions.

Their delicate balance makes answers difficult. Nonetheless, The Boeing Company maintains a firm conviction that lasting solutions are attainable; that this great nation possesses the people of good will, determination and ability to make this happen; and that better management is key in stimulating such assets into a balance of solutions.

We stress managerial responsibilities because at the root of these problems are unintended effects, arising from our national determination and impatience to achieve new economic and social objectives for our citizens, and also, in part, for the peoples of other nations. In some significant measure, they are just that—they are the sums of incremental side-effects created from our own determinations, and they are not problems imposed by wills beyond our own. With this in mind, the Boeing Company supports these fundamental points:

Solutions assuring that past mistakes and excesses are recognized as such and are not continued.

Solutions that do not endanger the Nation's long-term social and economic objectives to the short-term gains of either.

Economic solutions that stimulate U.S. world market competitiveness, but that do not impose American objectives and concepts upon other nations.

Solutions (social and economic) that would stimulate the public and private sectors to a longer-term perspective for planning, budgeting and investment decisions.

Finally, we wish to commend the bipartisan efforts of the Joint Economic Committee of Congress, the University of Texas, the Lyndon Baines Johnson Library, and the Harvard Competitiveness Group for their sponsorship of today's conference.

PRODUCTIVITY

There is nothing to inhibit the U.S. industry return to a healthy productivity growth rate if the fundamental building blocks are in place: (1) a well-trained labor force with good management; (2) adequate research and development; (3) favorable investment climate; and (4) constructive relationships among government, industry and labor.

We feel that all four can be much more highly leveraged by innovative and attentive management. Productivity wellness is industry's job, however, government policy perspectives most certainly could help with the job. Boeing commentary addresses two specific areas that are particularly significant with respect to the Economic Issue Conference.

Research and development

In the opinion of 20 industries recently surveyed, the U.S. experienced an R&D drought throughout the 1970's that has resulted in a serious contraction of the nation's research infrastructure. Federal support has been sharply reduced in favor of social programs and much of industry's capability has been diverted by near-term uncertainties in regulatory compliance and capital formation. These circumstances affected industry sectors (or companies) to varying degrees, although some were trend exceptions. Boeing, for example, came off a deep financial crisis to rebuild its R&D base and production capabilities throughout the 1970's. Over the decade, output per employee was doubled, and with this, the Company could undertake a multi-billion dollar risk in facilitating for expanded production with two new airplane programs—the 757 and 767.

However, Boeing and the rest of industry can take little comfort in this. As we know, everything affects everything else in our economy, and the ten-year state of national research had adversely affected the whole to make the job of wellness much tougher today. And adequate R&D building block must consider both product and production processes, and for both, there is a long and expensive period leading to the point of application. It will take a balance of all three elements of the nation's research infrastructure (government, industry and academia) working in a sustained concert to assemble the bodies of technology that are needed. Toward this end, we endorse an increase in direct federal support of R&D as well as R&D considerations as investment incentives.

Investment climate

A positive investment climate is fundamental to needed plant modernizations, yet the U.S. Tax Code has persisted in its bias toward consumption rather than toward savings and investment for over a

decade. The Boeing Company, while not endorsing a specific tax restructure addressing this, would stress that the alternatives for such should be weighed on their long-term job-creation potentials. We do not support schemes of selective industry targeting of tax incentives as solutions to a basic problem affecting the whole of the economy.

The bottom line for the nation's productivity involves time, money and competition. Government seeding of R&D and its perspectives for stimulating the supply side can give industry's management the straight shot it needs to rebuild with confidence for its future and that of the nation.

INFLATION

Inflation bears highly complex relationships to the other economic issues that are addressed by the Congressional Economic Conference. In this respect, inflation has extended itself to become, what many believe, a permanent fixture in the American economy. This perception is a negative factor that is affecting the lives of Americans throughout all of our societal structures.

We are firmly opposed to the position that the nation's inflationary pattern is unfixable, nor are we willing to accept the position that foreign oil dependence is responsible for the inflationary surge of recent years.

Instead, we believe that the continuum of inflationary pressures that have been experienced over the past several decades is tied to the laws of the land and to the processes of governance itself. *In combination*, the two have formed a powerful inflationary *core* to our society that is not only self-generating with respect to inflation, but also with respect to the growth of government and its cost.

Of all the issues addressed by this conference, we consider that of inflation to be the most insidious because of its impairment to long-term solutions for the other issues facing the nation (economic, social and defense); because so many have become resigned to its presence; and because it has dimmed the American spirit.

We endorse a four-part Administration priority: (1) Stop funding on discretionary programs that have poor cost/benefit records; (2) recommend the revocation of similar legislated programs; (3) identify and recommend changes in the National Code of Laws that would retain the objectives of law, but extricate or modify to the extent possible, the mechanisms of law that contribute to core inflation (laws detailing regulatory processes are examples); (4) identify and recommend changes to government structures, processes and operations as affected by the recommended law changes.

The removal of *core* inflation and the return to affordable government (within this description) implies an arduous and long-term task, and we perceive it as nothing less. The problem has been in making for over 20 years, and through many avenues, its non-productive characteristics have proliferated into growing non-productive assessments from the supply side of our economy.

Such examples are found in regulatory enactments without cost impact considerations, in federal procurement, in research contracting, and in a number of federal programs involving transfer payments. In all these examples, the processes of the Federal Government have

dictated responding non-productive and inflationary structures into business or into local and state governments.

Needed jobs and programs, as we have seen, have been sacrificed, and the Nation's peace and security are threatened as this twenty-year trend has evolved into today's "affordability" issues, with the Nation's long-term objectives traded for deficit spending and the short-term solutions of a crisis-oriented government.

There are, of course, many more aspects to the inflation issue. However, that of the *core* inflation which has accompanied deficit spending has received our particular focus because we have become intimately familiar with its effects; as a commercial supplier, as a government contractor and as a corporate citizen within our communities.

INTERNATIONAL ECONOMIC PROBLEMS

The Boeing Company's principal international economic concern is the future course of American trade policy. Leading export sectors of our economy—agriculture as well as industrial sectors like aerospace—depend for their survival on relatively open world markets and an equitable international trading system. Unfair trade practices by other countries must continue to be countered quickly by internationally-approved actions by our own government. But the nation as a whole must also be on guard against measures that would undermine the trading system by closing our markets to foreign goods produced, priced, and marketed here under conditions of fair competition.

The country's need for increased export earnings is evident from the alarming size of our trade deficit and declining share of foreign markets. Much more vigorous action to promote exports offers a positive way to respond to the challenge. The list of measures to promote exports is a long one and well known to the business community as well as the government as a result of a number of exhaustive studies. The Boeing Company wishes to single out two that are of major importance to our industry and, we believe, to many others as well.

First, we must have more adequate and sustained support for export financing. Private financial institutions cannot compete against foreign treasuries offering financing at non-market rates. Ideally, we'd like to see international sales made strictly on the basis of the intrinsic merits of the product with financing a neutral or non-decisive element. But that ideal world isn't here yet and may not be for some time to come. The U.S. Export-Import Bank is accordingly a decisive element in our ability to market our commercial jetliners. EX-IM consistently returns a profit to the U.S. Treasury, so support for EX-IM isn't a gift to business at the expense of the taxpayer. The Boeing Company supports intensified efforts to conclude an equitable international agreement on government-assisted export credits and, in the interim, adequate authority and funding to permit EX-IM to match foreign offers.

Second, The Boeing Company believes the incoming administration needs to mount a vigorous effort to dismantle the various ways we shoot ourselves in the foot—the well-known and well-documented unilaterally imposed U.S. export disincentives. Boeing supports a

recent statement on this subject by the Business Roundtable that reads in part as follows:

Exports should no longer be treated as a secondary concern, carelessly sacrificed to foreign policy considerations. In the past, exports have been subjected to foreign policy restrictions without adequate regard for overall national cost/benefit considerations on the tacit assumption that exports were really not very important. One serious long-range result is a growing tendency for foreign customers to regard the U.S. as an unreliable supplier. With the U.S. facing increasingly severe competition in world markets, the nation can no longer indulge in unilateral export controls that are ineffectual and that serve mainly to divert export business—and jobs—to other countries. (Letter from W. S. Sneath, Chairman of BR International Trade and Investment Task Force to Department of Commerce, October 28, 1980.)

The trade policy record of previous administrations is replete with good intentions but performance has often fallen short. The remedy is to do more than talk about trade and trade policy. It deserves much higher priority and consistent support.

ENERGY

The Boeing Company favors a rapid expansion of domestic energy production from all potentially viable sources. Measures to encourage investment in research, development, demonstration and commercialization are needed to ensure adequate domestic energy production capability and reasonable energy prices. Some specific steps we favor include:

- Orderly deregulation of energy prices.

- Revision of regulatory procedures to allow timely approval of energy projects.

- Tax incentives for domestic energy production of conventional fuels.

- Expanded tax incentives for utility, industrial and residential utilization of solar and other non-fossil energy sources.

- Expanded R&D efforts concerning renewable energy resources and synthetic fuels.

- Development of a comprehensive plan to advance safe nuclear power generation.

- Initiation of design studies of large-scale fusion power plants.

A comprehensive energy program of this kind focussed on energy supply is needed not only to expedite the commercialization of currently available new energy production technologies but also to pave the way for exploitation of inexhaustible energy resources.

We believe the nation needs to move ahead on both near-term and longer-term energy supply requirements so that as petroleum resources become more scarce viable production technologies will be in place to supply the energy required for continued economic growth.

In our democratic society, a coherent energy policy of the magnitude required must have the support of the people. Greater efforts will therefore be needed to inform the public about energy facts and the choices and compromises that will have to be made between conflicting desirable goals.

EMPLOYMENT

Over the 1970 decade, The Boeing Company's employment was essentially doubled, with similar increases experienced by many of our

suppliers. This results from efficiency in planned expansions that were made to maintain our competitiveness in a growing world market. Boeing experience illustrates our position that: (1) industrial expansion is the nation's fundamental for new jobs, but that today's investment climate discourages both; and (2) the social goals for employment are attainable by industry, however, education and training must be better linked to employment goals at all levels.

Industrial expansion

Business and industry can create sufficient jobs to meet new jobs demands of the nation, and also to reduce unemployment. We consider the alternative of government-created jobs to be neither desirable as a solution, or necessary. We believe that adequate private resources for expansion will be marshalled if tax policy were to provide a more favorable balance toward savings and long-term investment risks.

It has been aptly demonstrated that if U.S. industry does not step up to needed improvement and expansions, there are other world sources that will do so, and the economics of scale still inherent in the U.S. industrial base will be further diminished—as will the nation's employment opportunities.

Employment objectives

We are in agreement with national objectives for equal opportunity in employment among minorities and the handicapped and have found our experiences with both to be positive. We believe small business stimulation to be equally rewarding.

The U.S. educational system has been constructively criticized by many observers and commissions. There can be no greater educational goal for our society than that of training the nation's youth for productive employment. Toward this end, we endorse a closer alignment of the nation's education objectives to its employment objectives. To the extent possible, these objectives should be linked very early in educational processes and also should recognize adult education and job retraining needs for all levels of employment.

The nation's recovery needs offer many opportunities for constructive and innovative solutions formed by partnerships between government, industry and labor. Job creation is but one.

STATEMENT OF RONALD WEINTRAUB, PRESIDENT, FLEXNIT, Co., INC.

IMPORTANCE OF SMALL BUSINESS

Small business accounts for close of 50% of our gross national product and about 58% of employment in the business sector. Firms with 20 or less employees generated two-thirds of all new jobs in the United States during a recent eight year period.

Since 1953 more than half of all patentable inventions have been developed by people working in small businesses. Historically, small business has been a breeding ground for innovation, entrepreneurship and individual initiative.

PRODUCTIVITY PROBLEMS

Small businesses typically are managed efficiently but are not optimally productive. *Efficiency* is achieved by an owner/manager closely supervising operations; management intensity coupled with entrepreneurial drive generally result in operating efficiency. However, *productivity* is hampered by inadequate capital investment in modern facilities and equipment, and by excessive paperwork mandated by the government.

Many small companies are undercapitalized and have difficulty raising equity or borrowing money sufficient to modernize and expand. Taxes on profits, capital gains, and estates fall heavily on owners of small businesses and hamper their ability to improve productivity by modernization, training employees, developing new technology, etc.

PRESENT LAWS ARE NOT ADEQUATE

The ability of the federal government to make direct loans or offer loan guarantees through SBA or EDA is not sufficient to meet the capital needs of small business. Investment tax credits and depreciation rules help but they do not directly and significantly address the primary problem of capital formation.

PROPOSALS

The first priority must be to enact changes in the tax laws that will permit small business to generate funds for modernization and expansion from retained earnings. Second, reduction and deferral of capital gains taxes and reduction of inheritance taxes will allow small businesses to pass to the next generation without being significantly weakened. Third, easing of paperwork and regulatory burdens on small business would enhance earnings and free management for more productive pursuits.

These reforms, and others, are covered in HR 6734, the *Small Business Development Act of 1980*, which was drafted in response to recommendations coming from the White House Conference on Small Business held in January, 1980. The Conference proposed 60 specific recommendations and resolutions covering an array of topics including some relating to productivity, namely, "Capital Formation and Retention," "Innovation and Technology," and "Government Regulations and Paperwork." I recommend that the Joint Economic Committee study the report of the White House Conference and support HR 6734.

STATEMENT OF DONALD E. WOOLLEY, SENIOR VICE PRESIDENT AND CHIEF ECONOMIST, BANKERS TRUST CO.

Though there are many factors which have contributed to the distressing record of American productivity in recent years and many remedies are currently being offered for its improvement, a key step, and one that is not receiving nearly enough emphasis, is coping quickly and effectively with the persuasive inflation psychology, so that some semblance of stability can be returned to the credit and capital markets.

The economy has emerged from the 1980 recession with a much higher rate of inflation than prevailed at the start of the 1975-79 business expansion. But more important is that inflationary expectations are clearly more deeply engrained among businessmen, lenders and investors than ever before. As a result, money market rates have been pushed up to unbelievable heights, and corporate and municipal bond yields have recently climbed to new highs, even above the peaks reached early this year. If the inflation psychology is not soon dampened so that interest rates can be brought down and kept down, the viability of the capital markets cannot be restored, the various spurs to investment will not be effective and productivity will remain depressed.

What is sorely needed to promote a return to lasting stability in the credit and capital markets is some assurance that fiscal policy under the new Administration and the new Congress will be aimed with determination and with consistency toward reining in the galloping inflation. This requires first of all achieving control over Federal spending and reducing the huge Government budget deficit. Tax cuts can then follow, along with other incentives for increasing saving and investment and steps to reduce the existing regulatory burden on industry in order to take some of the strain off the shoulders of the monetary authorities in fighting inflation.

Given the mounting pressures to increase military outlays, not much paring of Government expenditures can be expected in the current fiscal year, which will be almost one-third over when the new Administration and the 97th Congress take office in January. However, specific and meaningful cuts in nondefense spending must be made in the budget for fiscal 1982, which President-elect Reagan and the new Congress will inherit. If such cuts are not made, any respite from the present sky-high interest rates is likely to be brief. Unless interest rates can be brought down appreciably and kept down, there is little chance that the investment in new machinery and equipment, in modernized plants and in research and development will be forthcoming in sufficient quantities to return U.S. productivity to a satisfactory rate.

STATEMENT OF HOWARD YOUNG, SPECIAL CONSULTANT
TO THE PRESIDENT, UNITED AUTO WORKERS

Thank you for inviting me to participate in the December 10th Congressional Economic Conference. Dean Rostow said that written comments, for inclusion in the Conference record, would be welcome. Since I assume there will be many such comments, this is limited to one point: the role of government.

While, as one of the morning speakers pointed out, government cannot solve the nation's problems without cooperation from business and labor, I believe that only government can assure that cooperative effort occurs. We do face a crisis; thus government must not simply "request" cooperation from the private decision makers, it must "demand" that cooperation.

That is, given the apparent consensus that widespread participation is a necessary part of the effort to solve any of our major problems (inflation, unemployment, investment, energy, etc.), it is government's responsibility to articulate goals which are compatible with the public good, and to assure general participation to achieve those goals. Otherwise, each group will wait for someone else to take the lead.

This also means that—while a wide range of government actions are possible as positive attempts to implement those goals, and there will be considerable debate as to the action which should be taken—we must not fall into the trap of viewing government's abdication of its job (i.e., reducing its role, and hoping that the private sector will somehow work things out) as one of those actions. Government can, and obviously should, exercise its function more efficiently and effectively; however that is quite different from its taking the negative, backward step of reducing its decision making role.

One major way for government to be more effective, is for it to make qualitative as well as quantitative decisions: it must operate more selectively and target its efforts. As one speaker said, government should not dissipate its resources by trying to do everything at once.

Unless we distrust our democratic institutions, we must recognize that government is the mechanism through which the public will is defined; therefore government must taken the lead in getting the public will implemented.

VII. PROCEEDINGS OF THE SEMINAR ON INTERNATIONAL ECONOMIC PROBLEMS

A. Participants

Chairman: Senator Jacob K. Javits.
Cochairmen: Representative Henry S. Reuss.
Reginald Jones, General Electric.
Presenters: Peter G. Peterson, Lehman Brothers Kuhn Loeb, Inc.
Ezra F. Vogel, Harvard University.
John Winthrop Wright, Wright Investors' Service.

Allen, H. K.	Export-Import Bank.
Amory, Robert	Harvard University.
Bendetsen, Karl	Champion International Corp.
Callahan, Ed	Ford Motor Co.
Calvin, Don	New York Stock Exchange.
Dennison, Ray	United Auto Workers.
de Vries, Rimmer	Morgan Guaranty Trust Co.
Fowler, Henry H.	Goldman Sachs & Co.
Freund, William C.	New York Stock Exchange.
Friedman, Phil	Garth, Friedman, & Associates.
Fuller, James	New York Stock Exchange.
Garfield, David C.	Ingersoll-Rand.
Garvin, Clifton	Exxon Corp.
Gordon, Shana	Consumers for World Trade.
Hackler, Loyd	American Retail Federation.
Hardin, Garrett	Environmental Fund.
Ifshin, Edward	International Communications, Inc.
Kintner, William	Foreign Policy Research Institute.
Kuhlmann, Fred L.	Anheuser-Busch.
Laborde, John P.	Tidewater Marine Services.
Liedtke, William C.	Pogo Producing Co.
McCarthy, John F.	United Telecommunications.
McSwinney, James W.	Mead Corp.
Malmgren, Harald	Malmgren, Inc.
Randall, Edward III	Rotan Mosle.
Rashish, Myer	Economic Consultant.
Robinson, James D.	American Express Co.
Shaw, Harry A.	Huffy Corp.
Struckmeyer, William	American Agricultural Movement.
Thompson, John P.	Southland Corp.

B. Presentations

STATEMENT OF PETER G. PETERSON, CHAIRMAN OF THE BOARD, LEHMAN
BROS. KUHN LOEB, INC.

THE U.S. COMPETITIVE POSITION IN THE 1980'S—AND SOME THINGS WE
MIGHT DO ABOUT IT *

It is enormously tempting at The Center for International Business to talk about, just that, things international: international busi-

*From a transcript of a talk presented at the Center for International Business by Mr. Peterson on Oct. 28, 1980, to the special briefing, "The Challenge of a Changing World Economy: What Will It Mean for Multinational Companies?"

ness, international economics, international trade, international development, international politics, and I, too, shall say something about our eroding economic position vis-a-vis our international competitors. But frankly, I think there has been entirely too much of this strictly international talk. We have foreign policy people who talk about foreign policy as though it were a thing apart. We have international trade people who talk about trade as though it exists in a watertight compartment. Foreign aid people often talk in the same way. However, it seems to me that, like charity, economic and political strength begin at home.

I simply state that obvious truth that we cannot be strong abroad if we are weak at home; that if our economic well-being, and our dollar and our political will are eroding at home then it is virtually inevitable that our international position will also erode. This is true not just because we do not create the resources to invest in defense and other international initiatives—though this is an imperative—but because leadership is both substance and perception. We simply cannot be a leader in the world if our economy and its inevitable partner, our confidence, is perceived as faltering.

Some would say that what Mr. Peterson is urging is a return of economic macho, of being No. 1 just for the sake of being No. 1. Thus, I think we might ask, what difference does it make to the world if our economic position continues to erode? I would hope we know what difference it makes to ourselves. Let us ask ourselves what difference does it make to the world. The irony of this—something both Japan and West Germany would be the first to tell you—is that they could not and would not assume America's responsibilities for political leadership and that they see no alternative to leadership other than the United States. And yet with our very lives at stake, we have somehow managed a brilliant communication miracle: we have transformed the issue of our productivity "decline" (some would say "collapse") into what we in the Nixon Administration used to call a "MEGO subject," which is an acronym for "Mine Eyes Glaze Over." Even more than MEGO, the political realities flowing from our economic position combine unusual amounts of ignorance and apathy. I am reminded of the philosophy professor you may have heard about who asked his class, "which is worse, ignorance or apathy?" Some sleepy student from the back of the room mutters out, "I don't know and I don't care."

To make my message more vivid and less painful, I have updated some charts from my early White House days on the position of the United State in the world and what we have been doing—or I should say not doing—with our resources. The good news is that I shall show you only half of the charts. The bad news is what is on the charts themselves.

Lack of productivity growth equals lack of real income growth

The first point that I would like to make on this MEGO business is that what has been going on for the last six or seven years is not just an abstraction to be discussed only at The Center for International Business. It has a lot to do with the standard of living of the American people. As you can see, previous generations got used to an American

expectation that their standard of living would roughly double every generation. But for the last six or seven years, there has been virtually no increase in the real income of our workers [chart 1]. Now some would ask, what difference would this make if this trend continues? The difference by the year 2000, which is only 20 years from now, is a difference of nearly \$6,000 or 60% in real disposable income—for there is almost a perfect correlation between productivity increases and real income. So while we will talk at this meeting about international economic and political realities, let us not forget that what we are also talking about is the standard of living of our people at home. I will let the political philosophers among you ponder on the social consequences of another twenty years with no increase in the real income of our people and very little, therefore, to redistribute to others.

You can see that, in the terms of world GNP, there has continued to be a significant reduction in America's share of the world's income [chart 2]. Remember how glibly we used to talk about how the U.S. had a third of the world's income? Well, we are nearly down to a fifth. Here we can see the magnitude of the increase in two countries, particularly Japan, which has almost quadrupled its share of world income in only twenty years. You can see that our Communist friends, if that is the right word, are not making much progress either.

Have the Japanese and West German economies made trade-offs between real growth, unemployment, inflation, interest rates, and exchange rates?

We have been told by some that there are trade-offs between real growth, unemployment, inflation, and interest rates, and that we could not, at the same time, do well in all of these crucial indicators. But if you take the longer perspective of these charts and you look at the U.S. and the U.K. economies on the one hand—all too often our relative performance tends to group us together—it does not make much difference whether you are looking at rates of inflation [chart 3] where you can see that there was a post-1973 bulge (although here again, the Japanese and German economies are now doing vastly better than we are), whether you are looking at interest rates [chart 6], whether you are looking at exchange rates [chart 7], unemployment [chart 8], or indeed almost any indicator on the domestic front. The Japanese and German economies, confronted with far more serious problems and commanding far less resources than we, have done substantially better on all counts. We and the U.K. have had two to three times their unemployment rates, two to three times their levels of interest rates, and two to three times their inflation rates. Speaking of prolonged and high inflation, chart 5 shows what a dollar would be worth in 20 years under varying rates. Let us hope we hope we don't need to learn this lesson the way Germany did.

Finally, I would like to take this newest cliché, productivity, and put it even more in an historical context. If you will look at the lines on this [chart 13] that take the period between 1870 and 1950, you will see a difference of somewhere between .6% and .8% in the annual growth trends of our productivity versus that of the United Kingdom, West Germany, and Japan. That small difference, compounded over 80 years, was the decisive difference that made the United States the

economic and the political leader in the world. Yet look at the blue columns and remember where we are now—remembering in 1979 and 1980 we have actually had a net decline—and I want all of us now to imagine what this world be like in another ten years [chart 14] if we should have productivity differences not of .6% but *differences of 3 and 4 and 5 full percentage points compounded vis-a-vis the rest of the world*. What will we be by the year 1990? And how will we be perceived?

*Some case studies in the new drop in manufacturing competitiveness—
Automobiles, color television sets, and integrated circuit chips*

Of course, our position in manufacturing, in particular, has significantly deteriorated. Though I will talk a bit about some of the general reasons, I do not want to approach this productivity problem strictly at a macro or global level. Most of us, whether we care to admit it or not, are anecdotalists at heart. We like examples. So let me take you briefly through three products.

One theme that runs through all of these case studies is that Japanese productivity and much lower cost have not been achieved at the expense of quality. Quite the contrary. The Japanese quality, if anything, seems better. In the case of automobiles, for example, I am told that Rent-A-Car firms find *that the number of breakdowns and the cost of servicing American cars are often two times or more greater than on well-known Japanese import cars*. Also, the relative resale value of Japanese cars has been substantially higher than their American counterpart; indeed it was reported to me that the *Japanese cars' resale price* is about 10 percent higher than their original cost to the Rent-A-Car firms. It seems apparent that the Japanese cars' superior durability, at least as perceived by the consumer buyer, is a principal reason for the higher resale value.

Here are some numbers that compare a few of Ford Motor's and Toyota's more efficient plants in the world. This is material that Ford itself has released [chart 19]. Notice the profound difference in output in engines per day, in the square feet of plant per engine, the almost shocking differences in backup inventory, in work-process inventory, and in labor grade classifications (seven versus something over two hundred). This Ford study went on to point out that Toyota produced equivalent number of cars with many fewer plant labor but *also many fewer salaried and staff people*. Indeed, Toyota, compared to Ford Europe, produced twice the number of cars with less than half of the number of organization levels.

Now let us look at some work done on color television sets. You may be interested in where I have obtained this material. Some manufacturers have apparently been hiring management consultants to do cost studies in conjunction with certain dumping cases, based on the assumption that the Japanese, for example, were doing a lot of dumping. But what has emerged in some of these studies (which have not been made terribly public, perhaps for good reasons) is that in many cases there are real, inherent cost differences in the manufacturing and design of these products.

This chart tells the story of the reliability of television sets, measured in service calls during the warranty period [chart 20]. You can

see that we are doing considerably better than we were, but you can also see that the Japanese manufacturers still had significantly fewer service calls in 1977. Typically, costs are *designed out* of products and quality is *designed into* products. Some years ago, Japanese manufacturers of color TV sets, concerned about rising repair costs, mounted a major redesign effort to achieve this higher reliability.

Here is the number of direct labor hours per color television set [chart 21]. The U.S. producers have up until recently felt quite good about the progress they have made. They took, as you can see, two-and-one-half to three-and-one-half hours out of the sets between 1970 and 1978 [chart 22]. In spite of greatly increased costs per direct labor hour, you can see that U.S. producers have kept the costs per unit pretty much where they are. This looks very good until one looks at the typical Japanese producer who reduced direct labor hours by about two-thirds from $5\frac{1}{2}$ to 1.7 hours and—with a total hourly labor cost *higher* than ours—showed an annual compounded productivity gain of 33 percent. This has resulted in a product that costs substantially less than the American product even though the reliability is apparently higher. One, but only one, of the contributing factors is more automation: substantially more automatic insertion of printed circuit boards [chart 23].

On the quality front, I was particularly interested in the Hewlett-Packard study on integrated circuit chips [chart 24]. I am taking some of these higher technology products as examples to get us out of the textiles and shoes trade rhetoric of the sixties. On the far right hand column, using Hewlett-Packard's own quality index, two themes emerge. The Japanese products not only show a higher level of quality, but there is substantially less variation among the Japanese manufacturers with regard to quality. We see, in other words, the same pattern that has been observed in automobiles and color T.V. sets.

So, this productivity issue, which we tend to treat at the rather global or macro level, discloses some very important *managerial* aspects—in the broadest sense of that word, “managerial”. It is not simply a matter of increased national levels of saving and levels of investment.

Much less investment than our principal competitors

Let us move now to the macro level. We all know that the Japanese and German economies have saved considerably more than we have [chart 25] and this fact, of course, translates into substantially higher levels of investment, as you can see on these charts [charts 27 and 28]. We are not in an enviable position. Substantially older plant and equipment are, of course, an inevitable result [chart 29]. Many with whom I have discussed this say, “Well, these countries simply remodeled their plants after the War.” It does not take a sophisticated grasp of arithmetic to see that if the average age of Japanese plant and equipment is only ten years—some would say eight years—then we are concerned with a period long after the end of World War II, which as I recall was something like 1945 and not the early seventies which is what this explanation would imply. *Incidentally, this year, with an economy half the size of ours, the Japanese will achieve the extraordinary landmark of spending more on plant and equipment in absolute terms than the U.S.*

During the period covered by these charts, our companies have obviously invested very substantial amounts abroad [chart 31]. Thus, you will notice that in 1978 we still had four times as much invested abroad as was invested by foreign companies in this country. You would not know this by reading some of the headlines implying we are being "taken over" by "furreigners" and so forth, but those are the facts.

The financial market's response to poor profit performance

Our poor economic and profit performance has also been reflected in the marketplace. In the stock market, for example, we see in chart 33 a negative real rate of return: obviously the investors are discounting the future rather heavily. What has happened of course is that companies, knowing the high cost of equity capital, have dramatically increased their dependence on debt [chart 39] and their strained balance sheets increasingly reflect it.

Slipping performance in technological, innovative performance

There is nothing in my opinion that is more important to reinvigorating this economy than a new concentration on research and development. I want you to notice first of all the very substantial, relative drop in our R&D investment, particularly vis-a-vis Japan and West Germany. If I had pushed chart 47 back another ten to fifteen years to include the early 1950's to the 1960's, we would see that we doubled during that period our share of GNP going into R&D.

There are also significant trends taking place in the number of scientists and engineers [chart 49]. In the last decade, we saw a *drop* of about a quarter in the number of Ph.D graduates in engineering. This is not a trend you reverse overnight. It was not many years ago that we produced the same number of lawyers as electrical engineers out of our colleges. We are today producing twice as many lawyers. I think that says two things about our country—both of them lamentable.

Patents granted are clearly something to be looked at—as an early indicator of future innovation trends. The trends in innovation have in previous years been moving against us [chart 51]. In chart 52 you will be interested in the growth level in U.S. patents, or I should say the lack of growth. You will notice between 1968 and 1978, for example, there is either no growth or there is an absolute decline with regard to patents issued to U.S. citizens or institutions. Vis-a-vis the Japanese at the present time I am told that we actually have a negative patent balance; that is, there are now more patents being issued in the United States to Japanese than are being issued in Japan to Americans. I have examined these patent trends in four different but crucial product areas and the trend is troubling in all four of them [chart 53]. Along with self-imposed regulatory burdens we see this resulting in disheartening effects on the introduction of new drug chemical entities [chart 55]. As in all these cases, the fact that much of the debilitation of U.S. innovativeness by government actions may have been unintentional makes it no less debilitating.

Now, in my business, we look for market indices of what is going on. Every study of technological innovation, which has been the source of so much of our economic strength in our country, reveals that the smaller technical companies—the earlier Xeroxes, Polaroids, Texas

Instruments, and Hewlett-Packards—have accounted for somewhere between 50% and 70% of the major commercial innovations. Clearly there has been a major drop in the number of smaller companies coming to the market, although there has been some uplift in the last few years subsequent to the change in the capital gains rate [chart 56].

Another technology/innovation measure is trade in technologically intensive products. I know there are all kinds of definitional problems on what we mean by technologically intensive products. Overall, we have still been doing well in these areas. However, vis-a-vis Japan and West Germany [chart 57]—and I am sure all of us who run companies like to look at our toughest competitors, particularly if we are trying to predict the future—you can see that there has been a significant erosion. Our trade in technologically intensive products with Japan reached a \$13.5 billion deficit in 1978. The recent and most interesting study on international competitiveness submitted to the Congress now indicates that *Japan has the largest trade surplus in technologically intensive products of any country in the world.*

A disappointing trade and export performance

What is happening more generally to our share of world exports [chart 61]? I am indebted to Fred Bergsten for some material he showed me that suggests that we should do some adjusting of dollars based upon changes in exchange rates. But I think Fred would indicate that he too is concerned about our share of world exports, especially in the manufactured area. Let us look here at two or three checkpoints. In 1970 you will notice [chart 63] that we and the West Germans were roughly at the same level in terms of exports of manufactures. Only 8 years later you can see that Germany exported \$31 billion more than we did in manufactures. In 1970 the Japanese were 35% behind us, but by 1978 they matched our dollar level.

What has happened, of course, is a significant erosion in our trade share of manufactures, at least in dollar terms [chart 64]. The competitiveness study that I referred to earlier indicated that in 17 major manufacturing categories the U.S. had increased its market share in none of them, while Japan and West Germany had increased their market share in 14 of the 17 major categories. While we are talking here principally about manufactured goods, I think the point Jack Harbin of Halliburton made last night to a group of us is one that should be respected; namely, that there also is something significant going on in the contracting, service business, where we have traditionally had large surpluses. For example, the recent McGraw-Hill study of shares of the engineering contracts in the Middle East indicates the U.S. share has now fallen precipitously to something like 1.6%. Of course, some recent laws are having a significant effect.

It has become very popular to either suggest that all of us industrialized countries are in this hopeless situation together, or that this country has a patent on the problem of imported-oil deficits. Thus, I thought it would be interesting to take the 1970–1978 trade numbers for the U.S., Japan, and West Germany and break them down by fuels, foodstuffs, raw materials, and manufactured goods [chart 68]. Let us take the Japanese case because it is in some ways the clearest illustration of both the problem and the response. You will notice on fuels (remember

that Japan imports 99½ percent of their oil) that it too experienced a dramatic increase in its fuel deficit of over \$27 billion between 1970 and 1978. This is nearly equal to our increased fuel deficit, but of course Japan has a much smaller economy than ours. You will notice that Japan has also experienced an increase in its food deficit of roughly \$8 or \$9 billion. It has experienced an equivalent increase in its raw materials deficit over that period of time. And if you add up all three, you will come up with something like \$46 billion of increased deficits for Japan in fuels, food, and other raw materials.

The United States possesses far more domestic minerals and other resources and has enjoyed a dramatic increase of about \$12 billion in our agricultural surpluses. Thus, the U.S. had an increased deficit in these three categories on the order of 60 percent of Japan's number, 25 to 30 billion dollars, on a much larger economy. Put another way, the total increase in the U.S. trade deficit in fuel, food, and resources is equal to the increase in *Japan's fuel deficit alone*.

How, then, does Japan still manage a large overall trade surplus in spite of nearly \$50 billion in these three areas? Well, you can see what has happened in the manufactures sector. From 1970 to 1978 the Japanese increased their manufactured goods surplus from \$12½ billion to an astonishing \$76½ billion. This represents their more effective response to much more serious fuel, food, and resources problems than our own response.

We can compare trade outlooks for the future in terms of exports trends by product lines. Here is the U.S. picture [chart 69]—not too many exciting growth areas up to now. The Japanese picture suggests, of course, a more positive portfolio of product trends [chart 70].

Other ways in which our competitors, "partners" I guess would be more charming, have responded to some of these export opportunities is to trade more with the Soviet Union. Some of us Americans were surprised that our Western Allies were something less than thrilled at the suggestion of a trade embargo with the Soviet Union. We might have been less surprised if we had been aware of the facts on chart 72—that in 1978 other OECD countries did about \$54 billion of trade in that part of the world versus our \$5 billion, or over 10 times as much trade as we.

Developing countries—big opportunities and big problems

Another remarkable trade development has been the trade development of LDC's. These countries now account, as you can see in chart 73, for more of our exports than the European community and Japan combined. Many of our companies know (but a surprising number do not) that the LDC's now account for 35, 40, 50, 55, 60 percent of certain very major categories of products [chart 74].

A problem that we will not have much time for today is one that I think has to move closer to the heart of the agenda of any group like The Center for International Business. This is the really stiking increase in debt that is projected among the oil importing, developing countries, as estimated on chart 80. There are several "solutions" to this problem. One of them of course is for these countries to reduce their imports by an equivalent amount. I remind you, however, that we are really in an interdependent world and all of the increase in exports of

manufactured goods from all of the OECD countries since 1974 can be accounted for by increases to developing countries; one man's imports are another man's exports. Yet we are confronted with the problem that the commercial banking system, in my view, is unlikely to take up all of this slack. And until some multilateral help is offered in magnitudes not now forthcoming—not even, in some ways, foreseeable—companies in the multinational business are going to have to develop sophisticated expertise on this debt subject, country by country, whether they wish to or not.

Energy

Let's move to the subject of energy—and I am really preaching to the choir in Texas to talk about it. I am impressed, as I think of our energy supply alternatives, that in spite of all our efforts at phased deregulation, the Exxon Company still projects that by 1985 the nearly 10 million barrels per day of oil we now produce domestically will decline by 2 million barrels, to roughly 8 million barrels. [chart 93]. This will come at a time of increasing dependence on, and supply vulnerability to, certain OPEC countries [chart 97].

I am going to discuss briefly one aspect of the energy problem which is not a popular subject in this country, but which I think should be. In terms of population, GNP, oil consumption, and gasoline consumption [chart 83], you will see that the U.S., with 5 percent of the people, somehow manages to consume 49 percent of the world's gasoline. We wonder why the rest of the world at times suggests we are being a bit profligate; they often use more pejorative phrases than that. They wonder about our conviction to contribute to a balancing of supply and demand of oil when they see [chart 88] that they are charging about \$1.25 to \$1.75 in gasoline taxes while we are still charging 14 cents, and even the vast majority of the small tax goes to the highway trust fund, which of course is still more "reassuring" to our allies across the world.

This is happening in spite of the well-known fact that we have extraordinary reserves of coal and nuclear. Yet we are now in the interesting position where oil accounts for 31½ percent of our reserves, but a striking 49 percent of our consumption [chart 94]. Sooner or later the inevitable balancing will take place; the only question on coal and nuclear remains: Why? How long will it take?

U.S.-Soviet defense balances—Another declining trend

I do not think any quick review by the keynote speaker of this conference on the world economic and political situation can ignore a disturbing fact. It is particularly disturbing to me because I was among those in the U.S. Government in 1972 responsible for negotiating commercial matters with the Soviet Union. Since then I have been trying to figure out what has happened on the defense expenditure front. Currently we are putting significantly less (almost 3 percent less of our GNP) into support of the Western system, defense and aid, than in 1970 [chart 99]. Our allies are moving much closer to our level, with the exception of Japan, which is still under 1 percent.

But what about the Soviet Union? I asked a new colleague in our firm, Jim Schlesinger, to take all of these official statistical extrapolations [chart 100] involving rubles and translate them in terms of

amounts of various kinds of military equipment that the Soviet Union and the U.S. have [chart 101]—such as tanks, armored vehicles, helicopters, and the like. What is striking to me is that from 1974 through 1979—and certainly in 1979—in most categories there are really very substantial differences in the current production rates [chart 102]. And, as with plant and equipment, this obviously means that much Soviet military equipment is considerably newer than ours.

It is unfortunate that a productivity crisis and an energy crisis are now compounded by a defense crisis, but these are the realities with which we must also deal.

What have we been doing with our resources?

We have *not* been putting our resources in research. We have *not* been putting them in plant and equipment. We have *not* been putting them in defense. The obvious question is: what have we been doing with our resources? To put this in perspective, we have to go back a number of years.

34% of our GNP is now appropriated by the government sector [chart 103]. You can also see [chart 105] the striking increase in only 30 years in the federal sector's share of the GNP.

This is partially due to our most interesting tax system [chart 106] that I am sure would delight Mr. Parkinson, whose famous book suggests that we are endlessly ingenious in filling given amounts of space or spending given amounts of money. I looked at a study of what happens to income taxes paid at income levels of \$10,000, \$25,000, \$50,000 and \$75,000 if a couple's income goes up 10%. You will see in every case that their taxes go up much faster, up 15% to 17% compared to the 10% rise in their income. So, we have an interesting tax system in this country which is the delight of those who like to spend money; in which tax revenues from individuals are going up about 60% faster than individual incomes. Unless something is done, increasing amounts of GNP will be inexorably spent at federal levels—some say it could be 24%–25% of GNP by 1985. To bring all this down to the median family: in 1965, its federal tax rate was 9.3%; in 1980, it hit 17.6%.

We are endlessly ingenious both in corporations and in government in handling strained balance sheets. Notice that in 1976, 1978, and 1980 the real deficits are dramatically larger than what we have been led to believe. We talked glibly about balancing budgets in 1980. We talked glibly a few years ago of tax cuts, post-Vietnam "peace" dividends, and the like. Thus, not only have we had very large published deficits, but the red columns [chart 107]—I think they are appropriately colored—will illustrate the dramatic increase in *off-budget* deficits in fiscal 1980 hit something like \$17 billion.

Vast Government deficits equal vast Government borrowing

Now all that, of course, gives rise to extraordinary increases in government borrowing—about 13% annual compounded growth from 1974–1979 [chart 109]. You can see here that in a period of only 30 years through every kind of administration the share of the total credit borrowings undertaken by the federal government has moved dramatically from 5% to 23%, obviously taking funds that could have been available for the private sector [chart 110].

Much less in defense—Much more on human resources

Now, what have we been doing with these resources? This chart illustrates the dramatic shrinkage in only 25 years in the percentage going to national defense and the equally dramatic increase going to human resources [chart 112]. There also has been a significant change from purchasing goods and services to transfer payments to individuals [chart 113] which in the year 1980 hit the interesting number of \$267 billion and is growing rapidly.

The growth in other than human resource programs over the 1970–1980 period is about 115%; but the growth in human resource programs is over 300% [chart 115]. You can see for yourself in chart 116 this list of specific transfer payment programs. I am not displaying this either to bore or depress you. Rather, it occurred to me that you may have had the same problem that I have had with this issue; I read about these programs in general but I have trouble gaining a specific understanding of them. There is, though, a common pattern here. The programs start out small when special interest groups argue with great conviction that these programs are necessary. Then, five years later, with the costs having ballooned, a different argument is used: namely, that the political expectation of support is now so embedded that it would seem almost unconstitutional to cut back the program. Finally we make the melancholy observation that 75% of our Federal budget is “uncontrollable” [chart 114].

Social security—The inevitable and painful example

I do not think that any broad survey of our general economic situation can possibly avoid the question of social security. It is, as you saw, a very large part of our human resource, transfer payment expenditures. When I was brought up in my home state of Nebraska, I recall vividly forty years ago being told by my parents that this was a trust fund system. They believed that their money was being put away somewhere for their retirement, rather like a savings account. We can see that as recently as 1955 the asset/expenditure ratio was over 400%; in other words there were four years worth of assets in relation to the projected years expenditures. We are now down to less than 3 months and next year's prognosis is bleak [chart 117]. You can also see the marked decline in contributors per beneficiary as the demographics of this country change dramatically toward more senior citizens. Partly to scare you and partly to point out that we can no longer avoid a constructive resolution of this social security situation, I reviewed some research to compare the net individual wealth of this country to their claims on the social security system. As you can see in chart 118, the most recent study in 1977 suggests that the social security claims of individuals was something over \$4 trillion, or about 76% of the aggregate net individual wealth, the total wealth held by individuals in this country.

The urgent need for tradeoffs

So we must come to grips with some hard trade-offs, a painful prospect in our society. For too long we have thought that all of us could more or less have it all. Thus, to illustrate the tradeoffs, let us take this social security deficit and over a ten-year period say, “suppose we didn't have that deficit, what could we have done to increase R&D

investment, what could we do to increase investment in plant and equipment?" If, somehow, we could do something about this deficit [chart 121], that something would have a dramatic impact on releasing resources for those other purposes. We could, for example, roughly quadruple our R&D expenditures.

One can't be sure, but the current deficit of the social security retirement system—not including disability—is at least \$650 billion and probably a \$1 trillion dollars or more, depending upon how you want to make your inflation and demographic assumptions. These deficits have occurred in spite of the fact that the combined employer and employee tax rate has doubled since 1960 from 6% to over 12%.

Now, let us illustrate the effect that certain changes in benefits might have. If, for example, we increased the retirement age from 65 to 68 (over a period of time) or alternately, if we could contemplate—if anyone can—raising the payroll tax to over 20%, then we would erase that entire deficit [chart 120]. These are the kinds of painful alternatives that we are going to have to start debating, particularly if we provide alternative ways for people to build their retirement income.

Ballooning regulatory costs in an adversarial economy

While we have been spending all of this money explicitly on various federal programs, we have also absorbed not only the exploding government regulatory budget [chart 122] but much larger regulatory "compliance" costs—costs which are implicit but nonetheless real.

The staffing of our regulatory agencies during this decade shows nearly four-fold increase in staff [chart 124] and a seven-fold increase in budget. According to the work that Murray Weidenbaum has been doing, for every dollar the government spends there are at least twenty dollars being spent by the private sector in compliance. These aggregate numbers are probably now in the range of \$125 billion and even these huge numbers do not include regulatory agencies, such as the Consumer Product Safety Commission, The Department of Energy, the S.E.C., and others, for which Murray could not develop compliance costs [chart 126]. Here too, if we start making tradeoffs, we will need to compare that number to, for example, the total industrial R&D investment made last year by private companies, which is only something a little over \$30 billion. So we are spending something like four times as much on regulation as we are on all private R&D investment in the United States. Of course, even these numbers do not include the enormous hidden costs to our productivity and innovation from the underlying adversariness and ambiguity of all this regulatory activity. In the drug field, for example, the evidence overwhelmingly indicates to me that the so-called "regulatory lag" has been an important cause of sharply reduced innovative performance.

As a society, we have been politically very active. I had a count made of the new social and economic regulatory laws passed by Congress. You can see that the decade of the 70's has been a highly productive one—if you are interested in that kind of productivity—both on the social and economic legislative front: from 27 regulatory laws in the decade of the fifties to 125 laws in the seventies. That is some growth [chart 125].

Again, Mr. Parkinson would say to us, "What did you expect?" Let me elaborate by referring to another dramatic growth curve. Some of

the most admirable people I know are on Congressional committees, which have grown two and a quarter times from 1970 to 1978 [chart 128]. They want both psychic income and financial income. Their psychic income is often to leave their historic landmark on the legislative horizons of America, and they are doing it with great success.

Another subject is painful for me to talk about because some of my very best friends are lawyers. This is the growth of Washington lawyers in the non-Washington law firms [chart 127]. *The U.S. now has roughly four times the number of lawyers per capita as Japan.* Like regulatory agencies and Congressional committees, the law is one of the great growth industries in America. Alas, I wish I thought it were related to economic growth in some positive way.

Some things to be done

Very well, those are all the charts. Now, let me talk as briefly as I can about some things that need to be done about our compound crises—in productivity, the economy, energy, defense, and ultimately the political system of the United States.

Management and the productivity crisis

Allow me first to speak to all of us as management people. I think when we look at this dismal performance of our economy at the macro or general level, we would like to believe that all these problems are at the level of the economy as a whole and that somehow if we just take care of such problems—stimulating savings, investment, R&D, and the like—then all of our other problems will be taken care of in the world markets. That would be a false message. These macro steps are absolutely necessary, but they are not sufficient.

I do not think that it is an overstatement to say that what these charts suggest is what we all know: as management people, we are facing one of the most profound crises that American management has ever faced. Like a lot of things, it all begins at home, at the macro level, that is, in our individual companies. One obvious piece of evidence that management plays a decisive role is this: in many fields particular U.S. companies are doing well indeed, at a time that others tell us they can't compete.

Let me elaborate on several of these areas.

Some of the boards on which I serve are finding in their studies of their Japanese competition that there is something going on here beyond just newer manufacturing equipment. Put bluntly, we are often getting beaten on the shop floor. For example, in the case of the automotive business, we see the important effect of not having such rigidity in job classifications; and we see the important effects of having employees not only tied for lifetimes to "their" companies, but tied to the overall interest of "their" companies. If we had time to go into some of the more definitive studies, we would see that this in turn results in employees who are willing to handle many more machines, who are very much involved with quality of the overall product, who run and not walk, who often do not have coffee breaks and who are preoccupied to a much greater extent than our employees with the general welfare of their companies. It's hard to overlook the fact that Japan, compared to U.S., has recently experienced less than a tenth of the working days lost per 1000 employees due to industrial disputes.

We are also seeing production control and material handling systems that I think most objective observers would say are significantly better than ours. When we get into these companies and try to find out what they are doing, why their production lines are shorter and why their turnover of work-in-process inventories is so much higher, we see such phenomena as vendor trucks unloading right onto much shorter and straight production lines, many fewer store rooms, and of course much less work-in-process inventory.

On the automated equipment side, we saw in the case of television that our Japanese competitors are doing substantially better. We see automatic load grinding machines; we see preprogrammed devices that change models without slowing down production; we see that probably at least half of the world's robots, are now made by about 120 Japanese robot manufacturers.

One company that I work with, also observed sadly, that their leading competitor globally probably has 40% less overhead than they do. This news obviously must be something less than thrilling for those who are in the overhead.

Thus, we have fundamental attitudinal and competitiveness problems that frankly pose not just union but the basic questions of how to motivate our employees and how to organize and restructure our businesses. The answer starts at the highest levels of America's management.

In this connection, the most forward-looking companies that I know are taking the view that in the same way, for example, that the Japanese imported our technology not too many years ago, why should American companies not now import Japan's productivity knowhow? Some of our most sophisticated companies have set unusual productivity exchanges with Japanese companies. We must get "oriented"—if you will forgive the unforgivable.

Perhaps an encouraging word. Akio Morita, Chairman of Sony, has told me that in their Sony TV plant in San Diego, where they produce most of their larger color TV sets for the U.S. market, their productivity and quality levels are already virtually identical to what they achieve in their Tokyo facilities. To be sure, it is a company union, but let's be careful not to put too much of all this on the backs of the American worker and not enough on the backs and minds of American management—engineering management, manufacturing management, personnel, and labor relations management, and so forth.

In any event, I do not see how one can look at this melancholy productivity performance without examining seriously the question of basic organization, including of course worker and union relationships. How to achieve more of this sense of common identity will be in my view one of the great managerial challenges of the next ten to twenty years.

Speaking of the long term, let us not forget the Japanese criticism that American managements are not sufficiently long-term in their outlook. Just because it has become a cliché does not make it invalid. In that connection, I heard a provocative proposal recently—that our top, senior executives should get a significant part of their incentive bonuses five years after they retire.

It is also vital that we become much more sophisticated in our political communication. But more of that later.

The productivity crisis at the national level

First of all, it seems to me that there are some things that should not be done. I would hope our political leaders, whoever they may be—the new economic and political doctors—treat this for what it is. It is a chronic disease. It is a progressive disease. It is in part an iatrogenic disease, i.e., caused by the “doctors.” It reflects many years of overeating and indulgence. We have indulged ourselves in the fantasy that we can have it all. We have too often indulged ourselves at the foreign policy level in believing that we can have foreign policies unconstrained by “mere” economic issues. Indeed, who would not rather have an unconstrained foreign policy? We have indulged ourselves in the concept that we can be the moral leaders of the world and be the principal actors in global morality plays of various sorts. We have indulged ourselves in the concept that we can live off our past and not invest in our future, that we can redistribute wealth we have not created. We have indulged ourselves in the fantasy that the sum of the whole array of special interests in America in some wonderful, magical way adds up to the general interest. We have avoided making hard choices because we did not think it necessary. We have become experts at the vastly easier and more pleasant task of distributing benefits. We are now at a time in our lives when we have no alternative but to learn how to distribute costs.

Some things I hope we don't do

I would hope we could resist two or three quick-fix, interventionist solutions that I am distressed to see are becoming increasingly popular. The first starts with analogies to the Titanic and concludes that what we need to do is stabilize the decks. A year's price and wage freeze, for example, would be a way of stabilizing things. It is beyond my comprehension to understand how we can import 20% to 25% of what we produce from a world economy that is completely uncontrolled by the U.S. and at the same time how we can be serious about extended price freezes.

We are hearing suggestions that we revive a new Reconstruction Finance Corporation, into which we would put in something like \$100 billion. I was a reluctant but negative witness on the Chrysler matter, which I considered a sad and seminal point in America's industrial policy. The senator from Michigan was not pleased with what I had to say about it and he asked me, “Don't you understand that the Japanese government help their industries?” How, he asked, can any sophisticated person not understand that we should help ours? I told the senator that it is my understanding that the Japanese put most of their political and financial resources into the industries of the future, as they are now doing with computers and telecommunications; and that we on the other hand protect the lower technology industries, usually *after* they have lost their competitive edge. In a world of limited resources, the resources we commit to these industries are resources not available for either more dynamic enterprises, or more future-oriented purposes. And in my 21½ years in Washington, I came to the conclusion that Federal intervention in such industries was nearly always a long-term euphemism for protectionism. Besides, have we already forgotten the scandals, charges of political favor-

itism, and just plain arbitrariness that led to the death of the old RFC?

I also hear elaborate proposals for national planning and for strategic selection of industries. My response to that is: God save us all! The concept of any set of bureaucrats in America being able to select the industries of the future boggles more than my mind. What really boggles is the bland assumption that even if we had such a plan, the political log-rolling process of America would permit it to be implemented. I can recall that one of my most difficult assignments in the Government was negotiating still another textile agreement. I can remember that at one point the Attorney General of the United States was arguing with great passion that the textile industry was a "strategic" industry. It was a "strategic" industry because, he argued, one out of eight jobs was in the textile industry. Not irrelevant to the definition of "strategic" was that, in the 1968 Presidential election, the four border states where textile industries were located contributed handsomely to Mr. Nixon's victory. Mr. Nixon, like others before him, had made deals (he at least published his deals, which I think is to his credit). But the idea that the apparel business, including I suppose tennis shorts and girdles, could be defined as a "strategic" industry in America, give us some idea of how likely it would be that those so-called strategic industries would, in the politics of the Congress, remain the same strategic industries that the global planners had picked out.

I am reminded of the story of what happened to the Canadian economy when they too embarked on a grandiose plan and at one point it was said, "How can we miss? We have American resources, the British form of government, and French culture." About 50 years later the results were not very good and apparently a historian found that a few things went wrong. "Alas," he said, "we ended up with the American culture, British efficiency, and the French form of government." Thus, the concept that bureaucratic prescience can be courted is to me as incredible as the concept that we can implement such plans once they are made.

The fundamental problem—Finding the resources to invest in the future

The fundamental issue that these charts illuminate for us is that somehow we must learn that we have limited resources and that we must get somewhere between, I would say, 3% and 4% of our GNP per year to invest in our future—in plant and equipment, in technology, and in defense. We are unfortunate to have to live in an era of compound crises and simultaneous maximum dangers for our country—maximum danger from the Soviet Union, maximum danger from inadequate, insecure supplies of vital energy, and maximum danger from the lack of an underlying productivity thrust in our economy.

Now, the question is where are we going to get an additional 3% or 4% of our GNP, given the history that I have reviewed? I remind you that increased productivity probably reduces inflation over a period of time by very roughly the same percentage points as the increase in productivity, and very likely by somewhat more. However, given two-digit levels of inflation and low, one-digit productivity improvements, working on the supply side, while vital, is not enough.

Needed: Better processes to control spending

Clearly, we need to do something new at the federal budgeting level since the traditional trade-off processes are simply not working. This is not the place to discuss whether we should have budget limits as a percent of GNP, or supra-majorities in spending bills, or binding multi-year budgets. But I think any American interested in securing those resources for our future must come to grips with the process by which we are going to bring this spending under control. It has gone wild.

There is no way I know that we can come to grips with this spending problem without looking at the so-called "uncontrollables" and "entitlements" in our federal budget and coming up with a politically viable solution. For example, we now have 100 percent indexing on very large elements of the entitlements—social security, federal pensions, veterans' benefits—and a great deal of that is tax-free. Something around a quarter of the federal budget—or \$150 billion—is now 100% indexed to the rate of inflation. In the last year, we were confronted with what I found an interesting irony. It did not occur to us as a bit of an assault on equity and logic that many Americans were getting 14.3% increases in the social security, tax-free, at the same time that a wage guidelines policy limited the workers producing the wealth to 9½% guidelines, taxable of course.

Most of these entitlements, incidentally, are considered "uncontrollable" expenditures, which is a curious misnomer since they are subject to the same majority Congressional vote as is the federal budget itself. I understand that social security payments have been adjusted ten times, mostly upward, over the last eight years. Perhaps in candor we ought to talk only about "upwardly uncontrollable" expenditures.

If we are going to change, I think we are going to have to look at unpleasant alternatives seriously, such as making significant changes in the methods of indexing. Make no mistake about it, this is an enormously difficult political task. For example, in recent weeks I was saddened to observe that a brave Congressman had the courage to venture forth with the idea that we should change the indexing on Federal pensions to once a year instead of twice a year—not change the 100% indexing, just alter the frequency of adjustment. After some early support, he was saddened to observe that he lost out on even that minor change, and that he was even beaten by a constituency that are often folk enemies, the so-called bureaucrats. Similarly, indexing military pensions once instead of twice a year had lost earlier, at a cost to taxpayers of \$1½ billion a year.

I also believe that we are going to have to look at the unpleasantness of burden-sharing in which some of us who are more affluent are willing to accept part of the additional burden. For example, some taxation of social security is probably an option that will have to be explored. Social security tax exemption amounts to about \$10 billion a year, that is, about ⅓ of the industrial R&D expenditures in America. I am aware of the fairness argument that it was contributed after tax in the first place. Still, those are the sorts of very tough political choices we are going to have to consider.

Could we change the social security retirement age to 68? This would be very difficult and certainly immoral to do in a hurry. On the other hand, if we were to consider two things, first, phasing an increase in

the social security retirement age to 68 over 15 years, perhaps a year every five years, and second, providing new incentives for individual retirement accounts by encouraging businesses and people to save and plan for their own retirements, we might then be able to have a fair package that could be sold. I remind you that something on the order of half of America's workers have no pension at all.

There is an undeniable relationship between high Japanese saving rates and much greater Japanese dependence on private retirement plans. Money that individuals or companies put aside for retirement is truly a savings plan and is available for long-term investment. "Retirement" that goes into the social security system is not an investment or a savings program. It is a spending program and it is time that we called it that. So, if you want to be pro-savings and investment, I do not think you can avoid thinking about the related issues of social security and private retirement plans.

Mutually phased increased investment and R. & D. incentives and reduced growth in Government spending

On tax incentives, I would share the conventional view that they should be tilted toward investment, saving, plant and equipment, and R. & D. However, I believe we are going to have to think of some mechanisms by which we simultaneously control government spending on a *phased in* basis and at the same time *phase in* new incentives over perhaps 5 years or so. If we simultaneously announce a *comprehensive* program of incentives, spending cuts, and regulatory reform that amounted to nothing less than a restructuring of U.S. economic policy, we would give our investors and our companies signals of confidence that we really are going to change this country's direction and reduce inflationary expectations—but not end up with extraordinary government deficits in the meantime that are in themselves inflationary. In that regard, I am not sympathetic with the Kemp-Roth formulation alone because I think it avoids the awkward question of what you are going to do about government spending and government deficits in the meantime.

Increased R. & D.

On the technology side, there is much that we can do. I will just mention two or three things. At the level of government support, I am much in favor of more government support for basic R. & D. Second, with regard to foreign innovation and R. & D., I think this country is at the point where it should seriously consider encouraging the importation of technology and productivity—enhancing know-how. And yet, ironically enough, our tax laws, as I read them, say that if you import technology you cannot write it off, but if you decide to do it yourself, you can. This is one of the anomalies of a country that is not used to participating in global change. There is obviously a lot we can do on other R. & D. incentives: faster write-offs of laboratories and equipment and of prototype plants, stimulating the formation of smaller entrepreneurial, technologically based companies, and the like. Finally, the patent system needs a good overhaul.

Less regulatory cost

On the regulatory side—this is another speech, and one speech from me is probably one too many—the regulatory burden, I believe, must

be resolved in a socially compassionate and sophisticated way. To amplify the point of how some of us are perceived, I recently heard the neutron bomb referred to as the Republican weapon: "It destroys the people but leaves the property intact."

In this competitive world of limited resources, all regulatory expenditures must be made in the context of trade-offs, of costs versus real benefits, of determining the most efficient ways of achieving rationally-chosen targets. Whether we get at this through sunset laws or sunrise laws, or revised legislative histories and procedures that require assessments of the regulation's impact on cost, productivity, and innovation rather than simply achieving some absolutist result, it is clear that many of the regulations have gone far beyond the point of being worth the benefits. We have become so unrestrained by costs that in some of these regulations the last two or three percent of what we are trying to do, as on emission controls, is reportedly costing us 70% to 80% of the total cost of these regulations. (I have often wondered what might have happened to some of these environmental regulations if the energy crisis had happened before, instead of after the environmental movement bloomed.) And some of the regulatory rules have been grotesquely trivial—classic examples being OSHA rules on the design of toilet seats and the height of fire extinguishers. These illustrate why it may not be a bad idea to propose a temporary moratorium on new regulations until we can get our regulatory act together.

Beyond this, clearly it makes sense not to tell American industry both what has to be done and how to do it, but to tell them the result and let them find out the most cost-effective and market-oriented ways of getting there.

And finally, I am less adverse than some to put regulatory activity more in a judicial framework. Regulators are often looking for things to do. Courts are not looking for cases. The tilt away from administrative review toward judicial review shifts the burden of proof and reduces the current bias to overregulate.

Whatever we do, let us be sure we translate the payoff to the economy. A 25% reduction in the costs of our regulatory burden—surely double when one considers their explosive growth over the last decade—would release enough resources to double the R&D investment by private industry. To help achieve these objectives, I am attracted to the idea of requiring regulators first, to construct an audited, "compliance budget" of what that agency requires the private sector to spend to carry out their regulatory goals, and second, to put a limit on these costs. Carrying this notion a step further, there is no reason we could not put a limit on the aggregate costs of all regulatory activities. One of the important reasons, of course, for the malignant growth of government by regulation is less constrained by public knowledge of the costs.

A stimulating export policy

On exports, I am preaching to the choir here, I know. We are facing a plethora of new export control regulations—Arab boycotts, corrupt practices, human rights, and environmental restrictions. In the kind of world that I like to dream about—where we look in advance at benefits and where we look at costs—I wonder to what extent those policies were ever critically debated. I wonder if anybody sat down in advance

and said, "These are the presumed foreign policy benefits. What will it cost us in terms of reduced exports and our domestic economy?" A government official tells me that one estimate—after the fact unfortunately—was \$5 to \$10 billion and that is probably low considering what is happening in the Middle East. Still, at \$10 billion, the kind of calculation that we are going to have to learn to make is: "Well, how many jobs is that?" It is probably four to five hundred thousand jobs. What would it cost us to produce those jobs in other ways? What are the lost revenues to our economy? What does it do to inflation, because that last 10% or 20% of exports really make a difference in unit costs? These are questions that I am confident were not even asked at the time those foreign policies were evaluated. It seems clear to me that most of these export controls—not clearly related to genuine national security interests—have outlived whatever usefulness they ever had.

To take another example, we have a set of export attitudes that suggests that our international employees should in some way be either punished or reprimanded. We tax salaries. We tax incentive bonuses. We tax fringe benefits. We tax cost-of-living allowances. We are the only major country in the world to do all of those things to the very employees who play such a major role in increasing our exports, our jobs, and our foreign exchange earnings.

Let us as management people also resolve to remedy any of our diffidence or indifference to exports. In other words, it isn't just national policy; it's often management policy as well. Let us be honest. To too many American firms, exports are still a MEGO subject or at most a fringe problem: For example, 80% of our exports are done by only 2,000 companies. Ask a Japanese businessman some time what his market share is. My guess is that he will either give you his *global* market share (he has learned the profound effect of global share on unit costs) or he will ask you which countries you are interested in and then proceed to tell you. Too many U.S. businessmen, as well as the Anti-Trust Department, still think in terms of U.S. market share only.

And while I am giving you free advice—which may approximate its value—I urge you who have not done so to tour Japanese plants, not just to see first hand how they are attaining those inspiring productivity increases, but to see the decisive role of exports in explaining their much larger production runs which bring down their costs even further.

Stimulating foreign investments in the U.S.

On investment, I would hope the business community would stand up and do something it does not do very often—which is to rid itself of some of its own ambivalence (as we used to say in Nebraska). We have gotten into a very interesting habit on global economics where we use a whole set of what a friend of mine calls dysphemisms—it's the antonym of euphemism. For example, we are "assaulted" by foreign companies, and we are "flooded" or "invaded" by imports, as though some kind of hideous economic war has been inflicted on us and that we are all being damaged. We obviously need a much more affirmative attitude toward encouraging foreign companies not only

to bring their money (that we need), but increasingly to import their know-how (that we very much need) to enhance our productivity.

More defense burden-sharing by our affluent partners

On the defense side, I would simply say that we need to develop some political, practical ways to achieve more effective burden-sharing.

Let me illustrate this. I indicated to my colleague, Jim Schlesinger, that I would be interested in what it would cost to provide a permanent naval task force in the Gulf area, since it can certainly be argued that our allies have an enormous interest in protecting those sea lanes. He came up with an assortment of task forces of frigates and submarines and so forth that amounted to a total cost of about \$15 to \$20 billion. I wonder if, for example, our Japanese friends who are only spending .9% of their GNP on defense could not on some basis—with some political imagination to be sure, rather than relying slavishly on a 35-year-old security treaty—be persuaded to contribute significantly to at least the *equipment cost* of such a naval task force. Japan, of course, has enormous steel-building capability and seriously underutilized shipbuilding capability. Even in the unlikely event that they contributed over a 3-year-period all of this naval task force, this would only amount to about .5% of their G.N.P.

In discussing some of the political alternatives with my colleague, George Ball, he suggested we explore some version of lend-lease whereby Japan provides the ships and others operate them. What I am not talking about is a public confrontation because these tend to be counterproductive. I am simply talking about the issue of fairness in burden-sharing. I think with some imagination and sensitivity it is quite possible that this could be arranged, or should be arranged. We simply must bring responsibility and power into closer balance.

Energy—More balance between increasing supply and reducing demand

On the energy front, I would like to urge that part of the increasing political sophistication that the global economy requires of American business is not just to lecture the U.S. on increasing supply. My list of things we can do to increase supply—whether releasing public lands and waters, or using more coal and nuclear power—is at least as long as yours. But reacting as Americans, I think we must also look at where the broader national interests lie.

I, for one, am seriously alarmed at the implications to this economy of the supply vulnerability that we are facing for at least the next five years and probably the next ten years. We may have two million barrels less oil coming from domestic sources by 1985. None of the increased energy supply options—off-shore drilling, synthetics, nuclear, coal and so forth—does anything really significant about energy supply until the late eighties at the earliest, and more likely, the nineties.

In the meantime, we are dependent on a group of Mideast countries which are obviously unstable politically. My colleague, George Ball, took me on a tour of the Middle East and pointed out to me then—before the Iran and Iraq war had reduced oil supply by still another 4 to 5 million barrels—the obvious risks that one or more of those

countries might seriously cut back oil production. We as a country are virtually unprepared for this in the eighties—almost defenseless.

What are we as business people going to do about this? I think that once this election is over, more businessmen have to get more interested in energy conservation, and I am pleased to tell you that several of us have been persuaded of this. Fred Hartley of Union Oil, Tom Clausen of the Bank of America, Charles Brown of AT&T and I are undertaking a major effort to raise some money from the business community to further encourage an even more serious program of energy conservation.

It is our judgment that it will make us far more credible on supply alternatives if it is clear that we are equally persuaded that we should conserve more energy. We cannot ignore the painful fact that if we were as energy efficient as our OECD partners, we could be oil exporters.

As I review the Vietnamish energy alternatives on the conservation front, I am coming to the conclusion that there is no practical alternative (remembering that with 5% of the population we consume 49% of the world's gasoline, and 30% of world oil consumption) to a very large gasoline tax in this country, probably phased-in. I think it would do a great deal to reduce dependency on imported oil. We could figure out how to recycle it; and we could figure out how to minimize the effect on inflation. Those recommending this will be called naive and will be told that it is politically impossible. But three years ago we were also told that capital formation incentives were impossible. And I think that even the Carter Administration's tax proposals, more than half of which are now business-oriented, would have been considered absolutely "impossible" only two years ago.

In terms of emergency storage, clearly we should be building our stocks—to something like six months—as part of a comprehensive energy program, which to me must include a *good defense as well as a good offense*. I understand we now have less than 100 million barrels, or something like 2 weeks of imports in our strategic oil reserve.

In my judgment we must also strike a major deal of some sort with OPEC, what we on the Brandt Commission called a "Concordat," not just on oil supplies and prices, not just to help much more with the agonizing Third World debt problem, but also to increase enormously oil exploration in the Third World. Such a "Concordat" would be difficult, if not tortuous, to negotiate. However, we have no alternative but to get into a real and long overdue dialogue with OPEC. They, the real *nouveau riche*, have the oil and the financial surpluses to make a difference.

Some concluding thoughts on what must be done

I would like to end on an optimistic note. If I were coming to this country from another planet, and I were to look at the incredible resources of energy, of food, and of technology that the U.S. possesses, I would say that you Americans have unparalleled economic strengths. I would say that you Americans have usually responded to crises, and perhaps only to crises. Your problem is that the American people do not yet believe that they have these three compound crises—energy, productivity/economic, and defense. What is clearly needed is for

your people to be persuaded that there is such a crisis in the same way that Germany was persuaded by a common sense of crisis, both political and economic, to end their inflation in the twenties.

How can we do this? I suspect that we can do it in at least two ways. In the first phase, businessmen must become vastly more politically sophisticated *and* courageous *and* come up with politically viable alternatives that will play not only in Peoria but in Washington. And that does not mean that we suggest that we cut out all of the government spending programs for the poor—which is something that is both immoral and impossible—but to come up with practical programs of reducing these government expenditures in a way that is both morally, politically, and socially viable.

We must come up with burden-sharing that makes moral and political sense, if we are to find the additional 3% or 4% of GNP annually that we must find to invest to meet our productivity, energy, and defense crises. We must show the positive long-term connection between productivity, economic growth, quality of life, and advances in egalitarian justice. In the shorter term, we must establish that investment in our economy is not at the expense of equity and social justice for the lowest, poorest end of the socio-economic spectrum.

What we need are compassionate conservatives. Is that a contradiction in terms? Can one at the same time be both socially compassionate and fiscally conservative? And while it is admirable—and I would argue it is even essential for a contemporary conservative to feel compassionate—feelings are not enough. He must act on his compassion. So the problem becomes, how can we be against inflation without being against human beings? How can we husband (or should I say, how can we spouse) our resources so that the dollars we spend find their way into those activities with the highest return in salvageable human lives?

To do all this, we also need informed, passionate, and compassionate *generalists* to form effective majorities and a national consensus for the general good. One of the reasons we must build a truly national consensus is that it is a long-term problem, both in its causes and in its solutions. It will transcend congressional and presidential elections and even decades. Thus, we—all of us—must forge a bipartisan consensus. And to do this, we must acknowledge that the institutionalized adversariness that has spread throughout our economy and our society is a deadly disease. Until the American people are genuinely persuaded that they can *not* have it all—that they must choose—who can blame them for continuing to assume they can have real increases in their standard of living *and* all the quality-of-life improvements, such as an ever cleaner and ever safer and ever more secure environment, *and* at the same time all the so-called entitlements and equal “rights”?

Secondly, we must become much more sophisticated in communicating to the public the nature of these problems. I believe the solution must start with the media. For example, in the White House in which I worked, someone who was once called an “evil genius”—Charles Colson—used to say that he would rather have 20 seconds of Walter Cronkite on the nightly news shows than every front page in America. Lyndon Johnson reportedly got really concerned when Walter Cronkite appeared to have turned against him on the Vietnam situation.

I think those of us who care about these issues must sit down with these top people in the media and try to persuade them of the nature of the crises that confront us. And when the media ask for our public commentary, let us not forget that the news media are by definition interested in *news*. The typical speech we make about free enterprise is not news, I guarantee you. Real news will often involve controversy and courage, and a willingness to risk some of our collegiality to gain some credibility.

So, while we now may have ignorance and apathy, what we need is sophistication and will. And the encouraging thing is that up to now we have everything else that it takes, but that. The poet Yeats said of an earlier time "the best lack all conviction while the worst are full of passionate intensity." Today, some of the "best and the brightest" seem to be telling us that there are no solutions while some of the others offer the quick fix and the easy solution. My own view is that there is only one kind of solution—the long, hard solution. We have told the people what we thought they want to hear and they are certainly no better off for it. In fact, President Carter's decline may be dated by historians from the moment last year when he came down from the mountain to preach the strange sermon that a malaise was abroad in the land and that the people were somehow responsible, that Americans had, unaccountably and to their detriment, lost faith. But in all fairness, it was the same President who presented quite a different message three years before—one with enough resonance among our people that they elected him. That message, of course, was that we needed a government "as good as the people".

The American people, in my view, know we are in trouble. They yearn—indeed they hunger—for greatness once again. The American people want to know the truth. They want to know the tough and the right questions. They want to know the answers. They want to know the costs. They want to know what they are supposed to do. They want their leaders—their business leaders, their union leaders, their minority leaders, and their political leaders—to get *together* to tell them the way it is, to tell them what needs to be done, and to tell them why.

In military terms, the American people are looking for the sense of the platoon, of the larger society, of a positive purpose to which they will contribute. Can we provide them with a sense of the future? That is the question with which I leave you.

CHART 1

U.S. STANDARD OF LIVING: POTENTIAL vs ACTUAL

(REAL DISPOSABLE PERSONAL INCOME PER CIVILIAN EMPLOYEE)

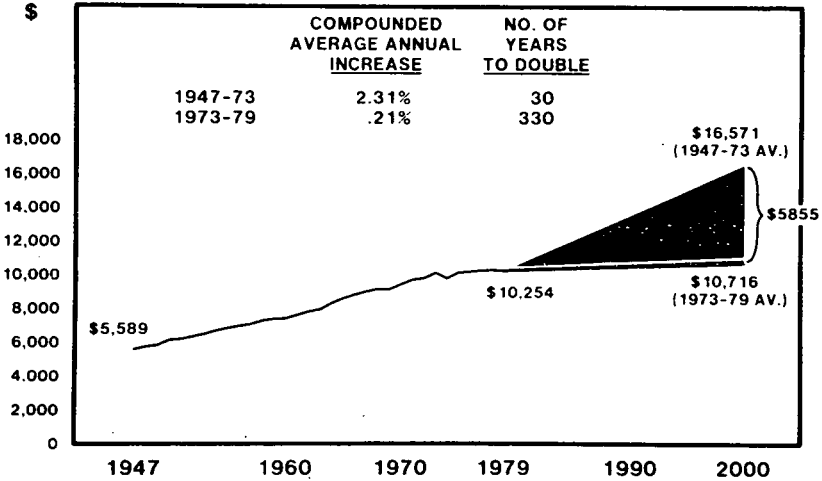


CHART 2

World GNP

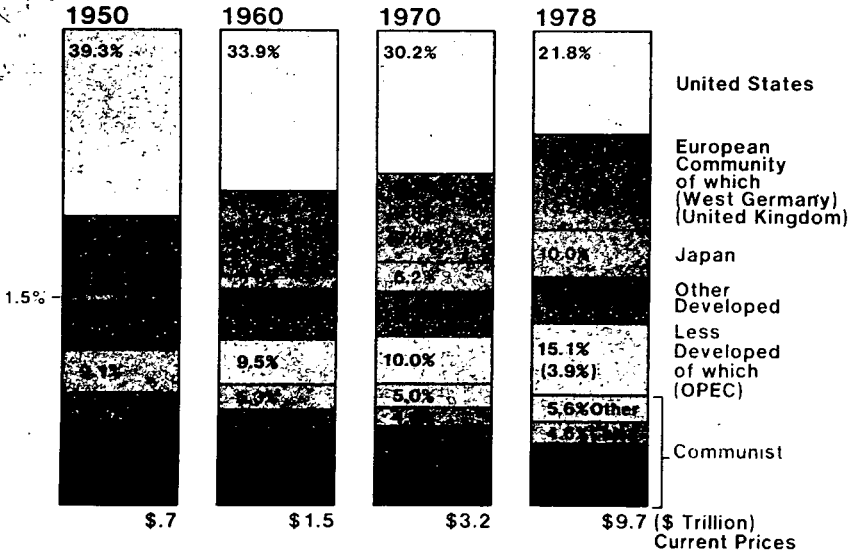


CHART 3

GROWTH IN INFLATION (CONSUMER PRICE INCREASES)

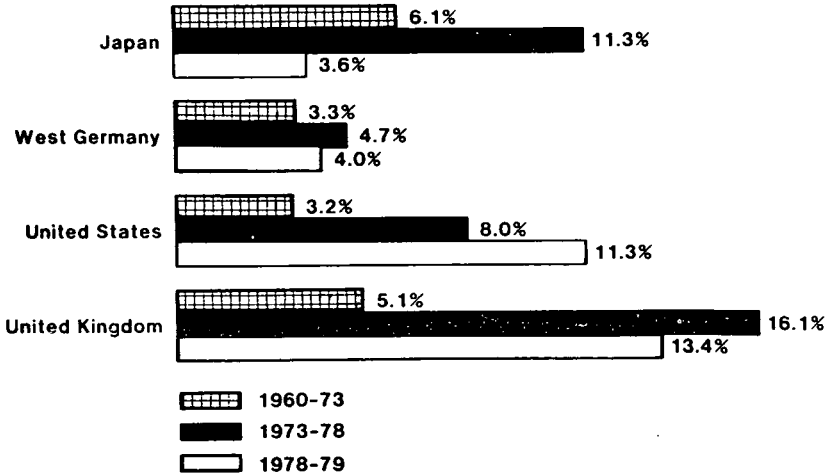


CHART 5

Long Run Effect Of Continuous Inflation

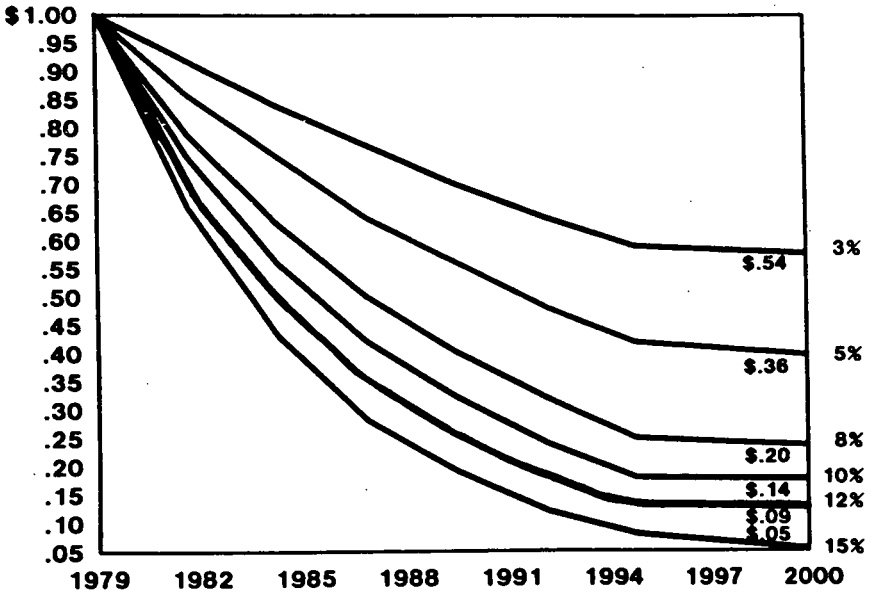


CHART 6

INTEREST RATES

(Central Bank Discount Rates)
(1970-1979; Year-end Rates)

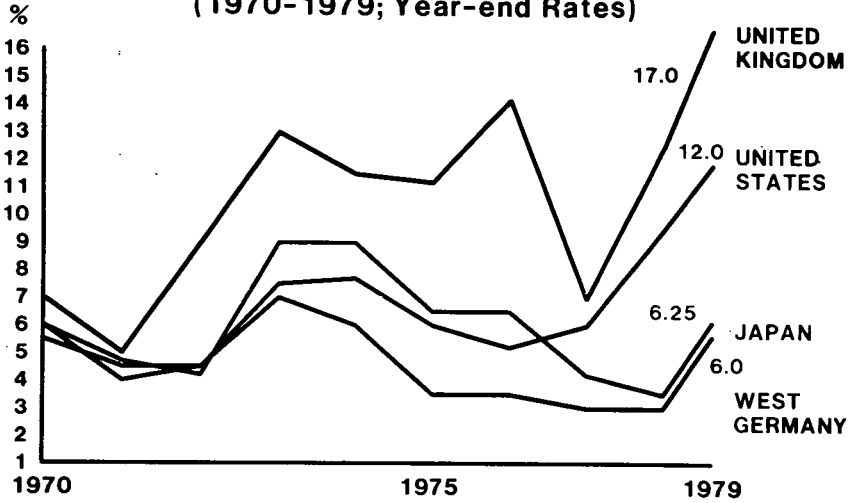


CHART 7

Exchange Rates - Change in Value Compared to U.S. Dollar

(Year-end Rates 1970=100)

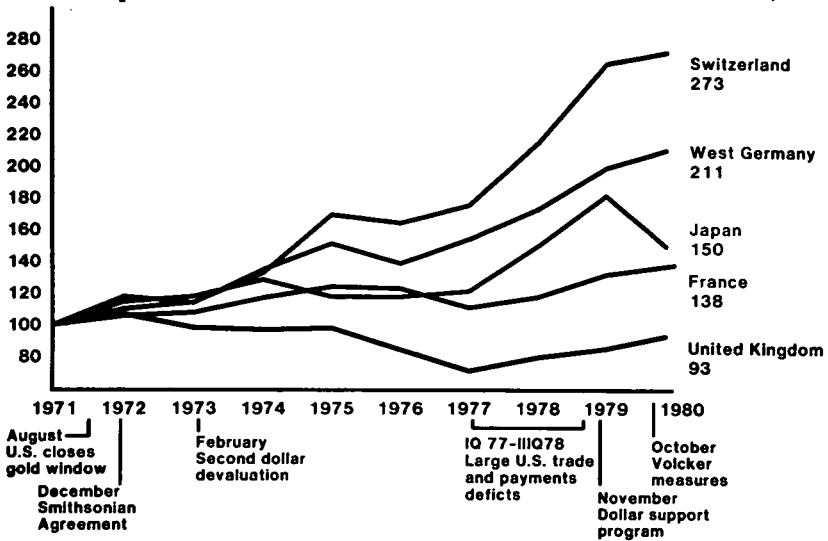


CHART 8

UNEMPLOYMENT RATE
1960-1979
(ADJUSTED TO U.S. CONCEPTS)

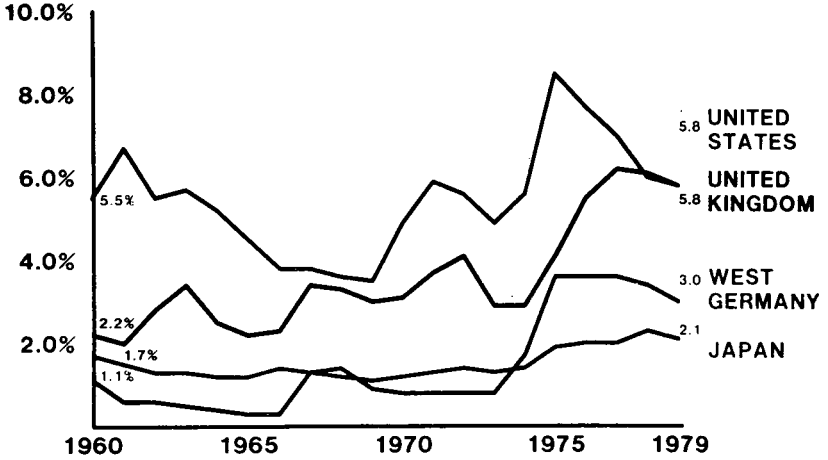


CHART 13

HISTORICAL PRODUCTIVITY GROWTH
(Real GDP Per Person Employed)

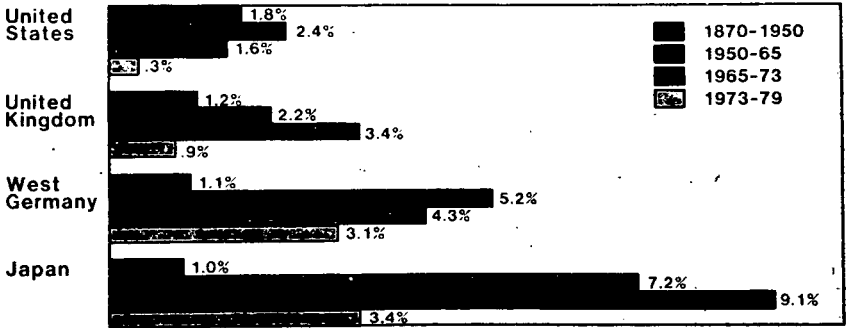
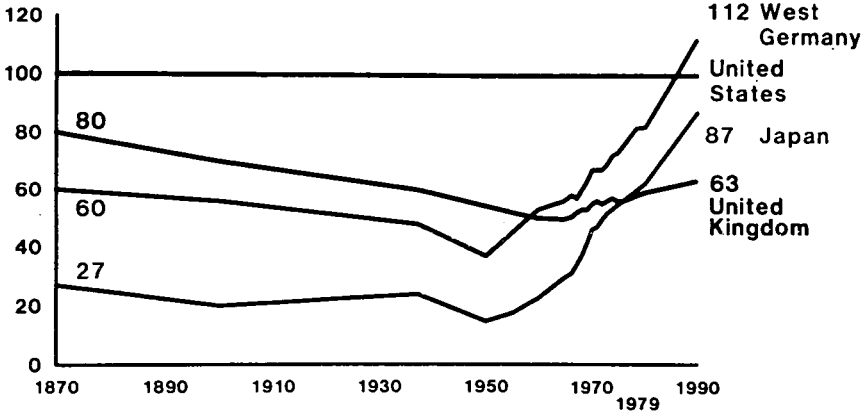


CHART 14

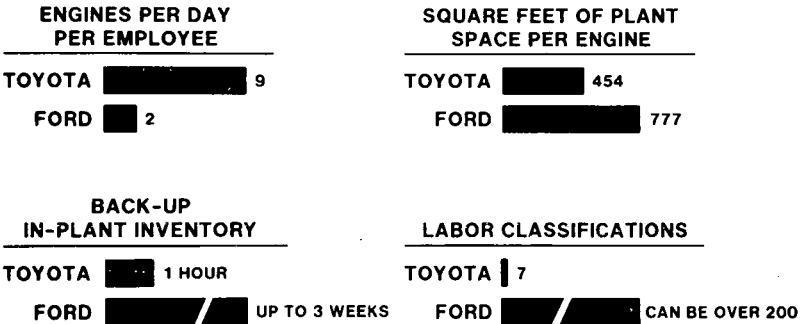
Relative Productivity Growth* Real GDP Per Person Employed (US=100)



* 1979-1990 is an extrapolation of 1973-1979 average annual compounded growth

CHART 19

DIFFERENCES IN FORD VS. TOYOTA MANUFACTURE



TOYOTA'S KANIGO PLANTS SAMPLE OF BETTER FORD'S PLANTS

CHART 20

PERCENT OF POPULATION OF COLOR TV SETS REQUIRING SERVICE CALLS DURING WARRANTY STAGE

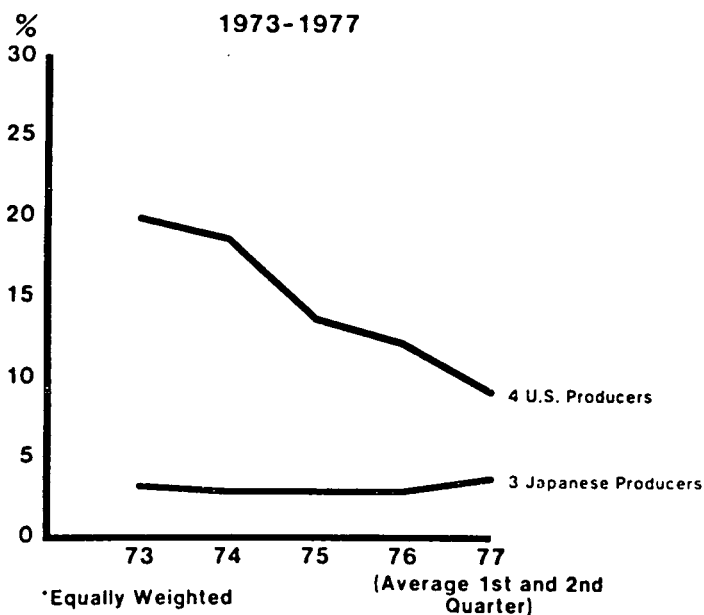


CHART 21

DIRECT LABOR HOURS PER COLOR TELEVISION SET

AVERAGE OF MAJOR NATIONAL PRODUCERS
(ALL ASSEMBLY STAGES COMBINED)
1978

AVERAGE
DIRECT HOURS



ASSEMBLY STAGES INCLUDE PRINTED
CIRCUIT BOARD, CHASSIS, AND FINAL

CHART 22

**LABOR COST PER SET
FOR COMBINED ASSEMBLY STAGES
OF COLOR TELEVISION SETS**

**HYPOTHETICAL U.S. VERSUS JAPANESE SET PRODUCERS
(AT CURRENT DOLLARS AND CURRENT EXCHANGE RATE)**

	<u>U.S. PRODUCER</u>	<u>JAPANESE PRODUCER</u>
1970	\$23.50 - \$28.00 (6.0 - 7.1 HOURS X \$4.00)	\$8.80 (5.5 HOURS X \$1.60)
1978	\$29.60 (3.5 HOURS X \$7.60)	\$15.10 (1.7 HOURS X \$8.90)
IMPLIED ANNUAL PRODUCTIVITY GAIN IN ASSEMBLY	7 - 10%	33%

CHART 23

**PERCENT AUTOMATIC INSERTION IN
PRINTED CIRCUIT BOARDS OF
MAJOR NATIONAL PRODUCERS
OF COLOR T.V. SETS**

1978

RANGE AUTO-
INSERT PERCENT

JAPAN



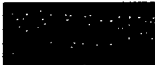
65 - 80%

U.S.



20 - 30%

W. GERMANY



20 - 30%

UNITED KINGDOM



0 - 15%

CHART 24

**HEWLETT - PACKARD'S QUALITY EXPERIENCE
WITH U.S. VS. JAPANESE MANUFACTURERS
INTEGRATED CIRCUIT "CHIPS"
(FOUR - MONTH SAMPLING PERIOD)**

	<u>% FAILED TEST ON ARRIVAL</u>	<u>% FIELD FAILURE PER 1,000 HRS</u>	<u>H-P's QUALITY INDEX</u>
JAPANESE CHIPMAKERS			
A	0	0.010	89.9
B	0	0.019	87.2
C	0	0.012	87.2
AMERICAN CHIPMAKERS			
X	0.19	0.090	86.1
Y	0.11	0.059	83.3
Z	0.19	0.267	48.1

CHART 25

**LEVEL AND COMPOSITION OF SAVINGS
(AS SHARE OF GDP)
(1970-77)**

	<u>CONSUMPTION OF FIXED CAPITAL</u>	<u>GOVERNMENT</u>	<u>CORPORATE</u>	<u>HOUSEHOLD</u>	<u>TOTAL DOMESTIC SAVINGS</u>
UNITED STATES	11.6%	-0.4%	1.1%	5.3%	17.6%
UNITED KINGDOM	10.0	2.1	.4	5.6	18.1
WEST GERMANY	10.7	3.6	1.9	8.9	25.1
JAPAN	13.3	5.0	2.1	14.4	34.8

CHART 27

GROSS FIXED CAPITAL FORMATION AS A SHARE OF GNP

(1970-79 AVERAGE)

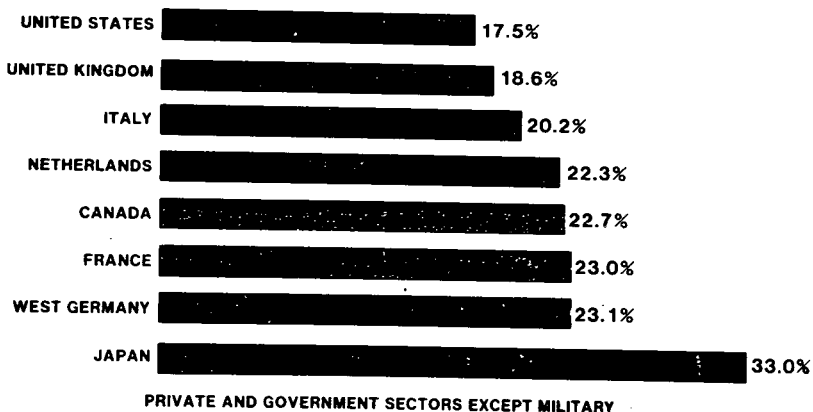


CHART 28

PRIVATE INVESTMENT IN PLANT AND EQUIPMENT

(AS A SHARE OF GNP)(1970-78 AVERAGE)

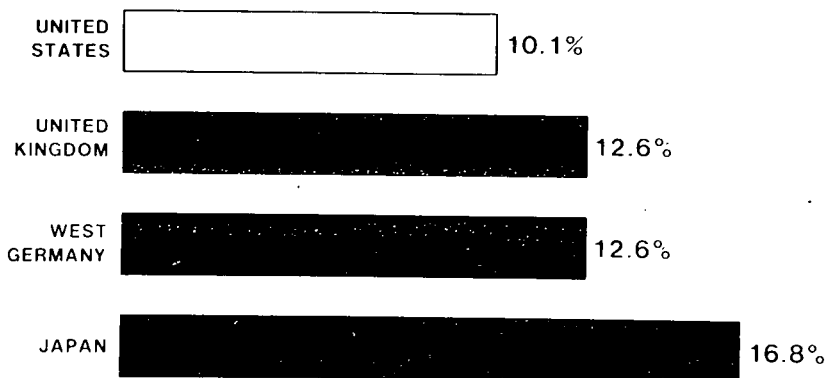


CHART 29

ESTIMATED AVERAGE AGE OF PLANT AND EQUIPMENT

(YEARS) (1978)

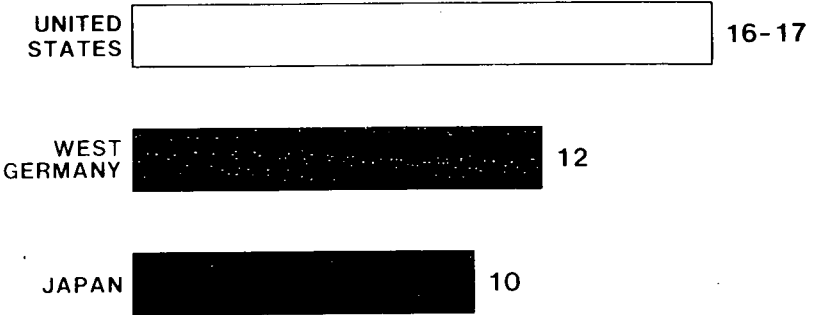


CHART 31

FOREIGN DIRECT INVESTMENT U.S. INVESTMENT ABROAD AND FOREIGN INVESTMENT IN U.S.

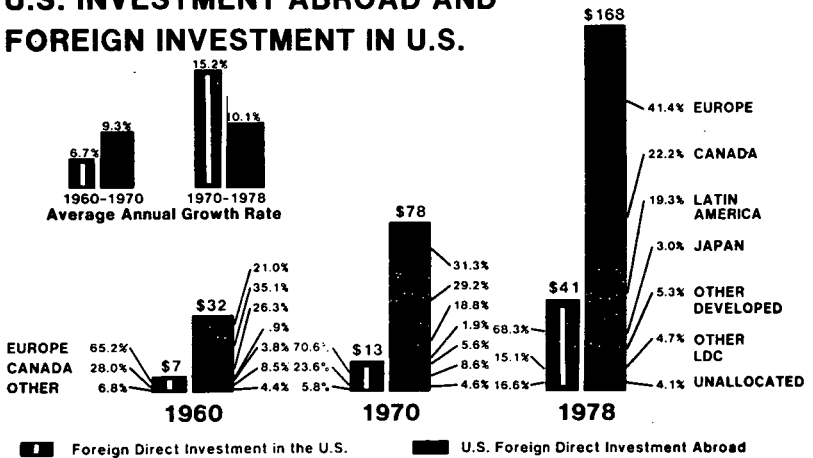


CHART 33

YR. AVERAGE RETURN ON STOCKS AND BONDS - AFTER INFLATIONARY EFFECT

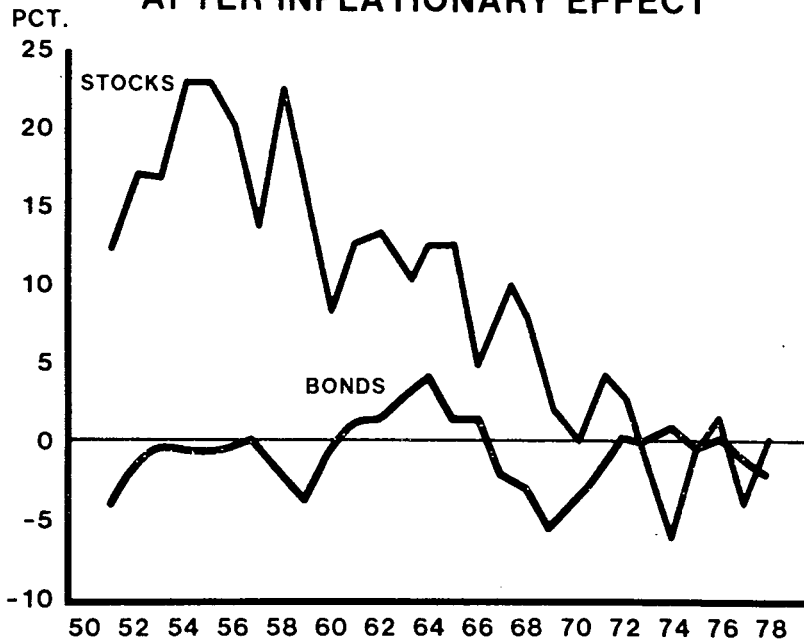


CHART 39

PERCENT OF TOTAL NEW CAPITAL RAISED BY NON-FINANCIAL CORPORATIONS- DEBT VS. EQUITY

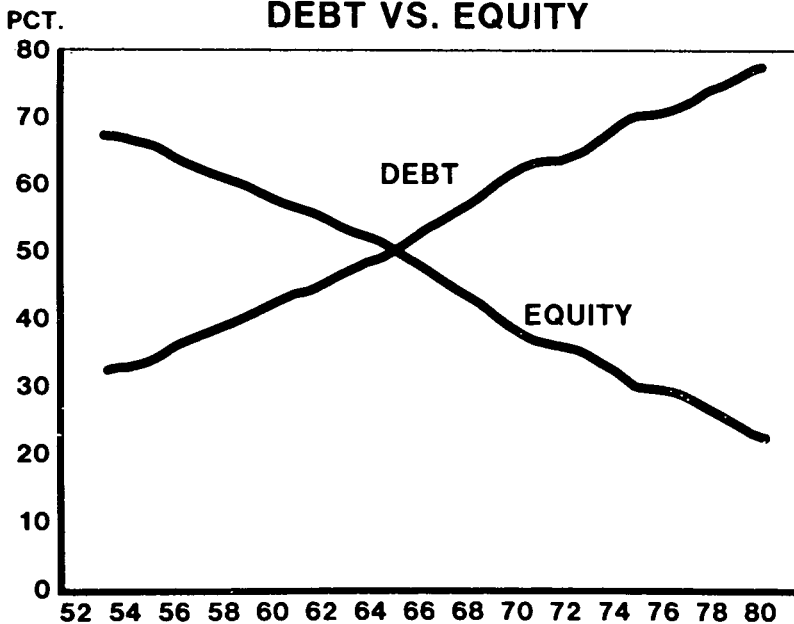


CHART 47

National R&D Expenditures as a Share of GNP

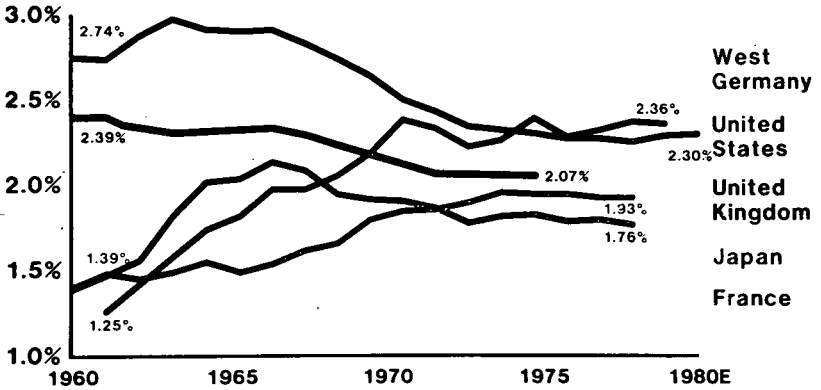


CHART 49

R&D Scientists And Engineers (Per 10,000 Labor Population)

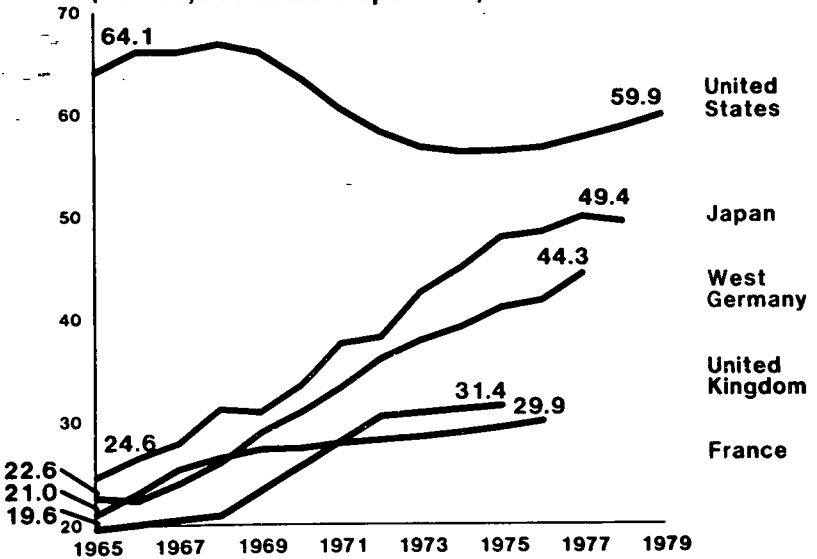


CHART 51

SHARE OF MAJOR TECHNOLOGICAL INNOVATIONS ORIGINATING IN U.S., W. GERMANY AND JAPAN

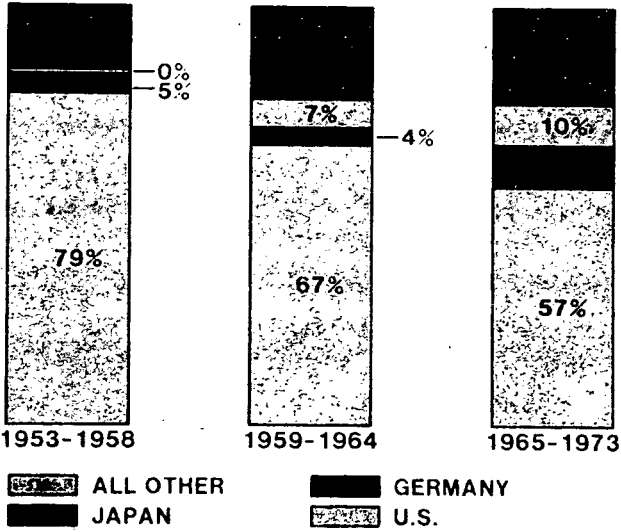


CHART 52

U.S. Patents Granted

TOTAL PATENTS

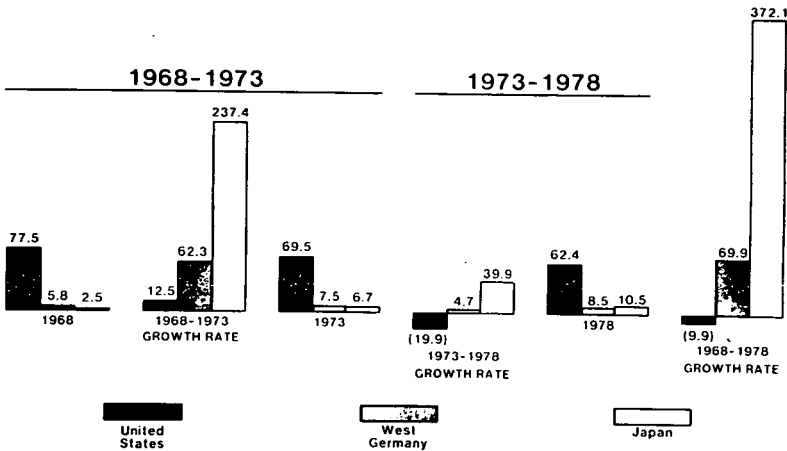


CHART 53

U.S. Patents Granted SPECIFIC FIELDS

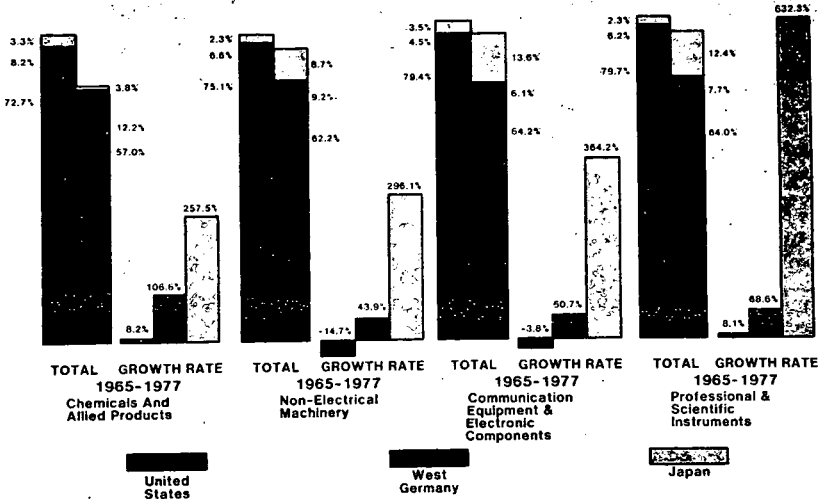


CHART 55

U.S. NEW CHEMICAL ENTITIES

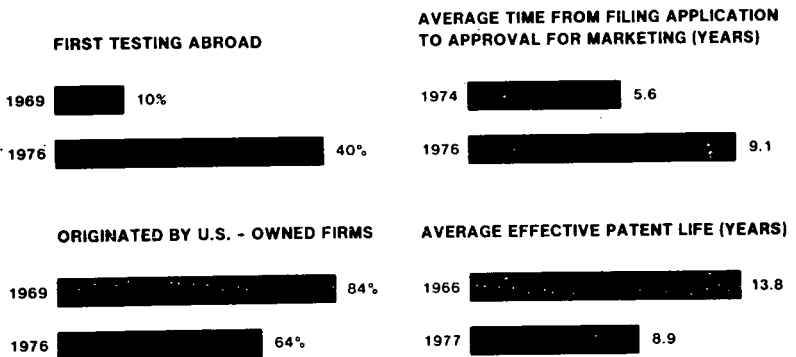
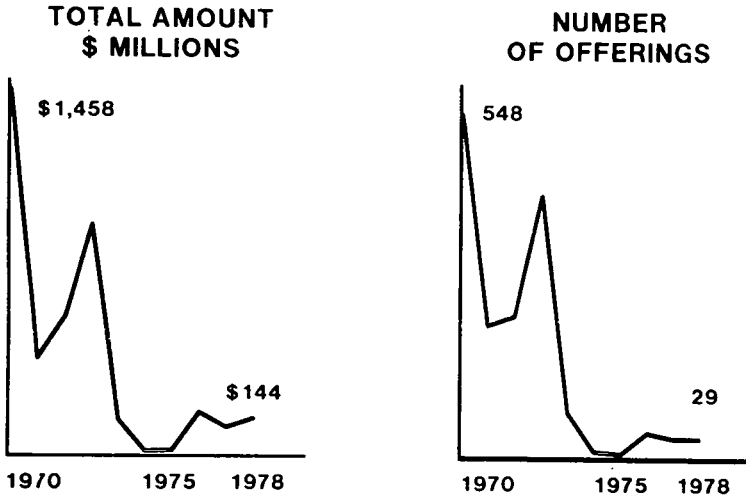


CHART 56

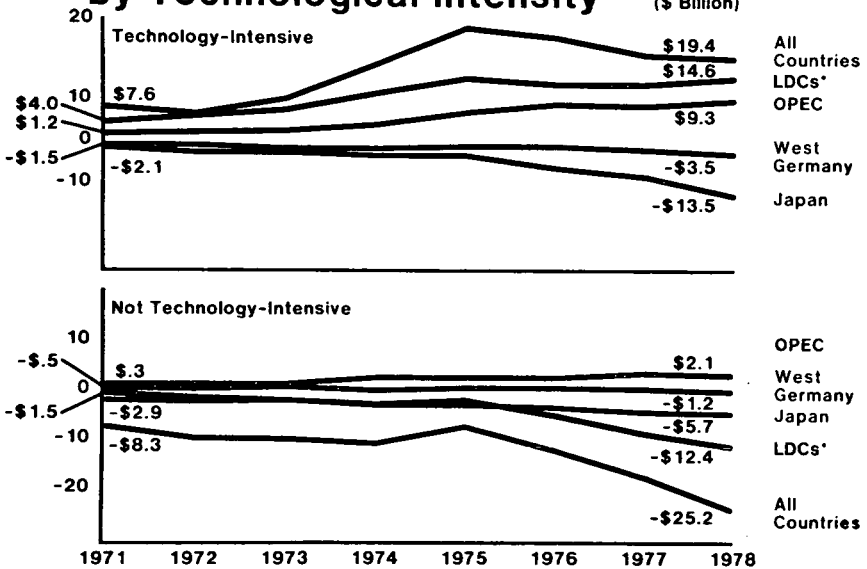
ABILITY OF SMALL FIRMS TO RAISE CAPITAL*



* Public Stock Offerings for Companies with Less than \$5 Million Net Worth

CHART 57

U.S. Trade Balance in Manufactures-
by Technological Intensity (\$ Billion)



*Includes nine non-OPEC LDCs, Australia and New Zealand

CHART 61

World Exports

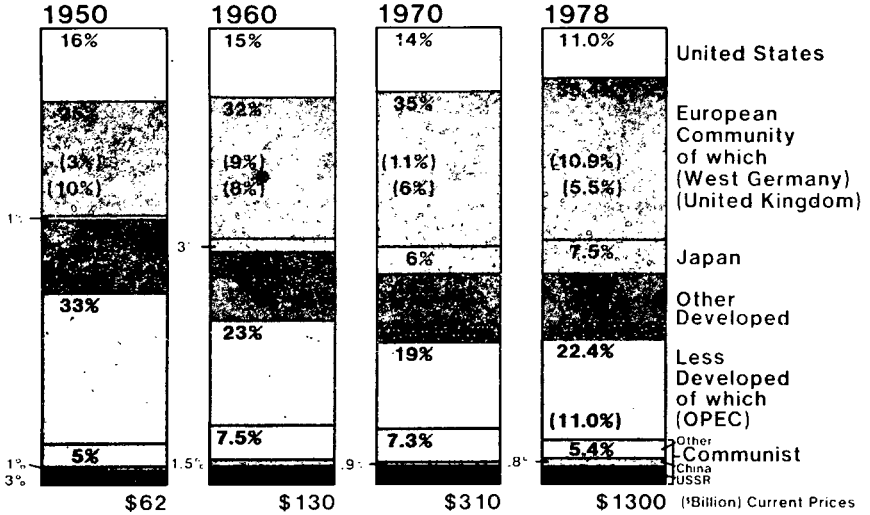


CHART 63

Export Growth in Manufactures (\$Billion)

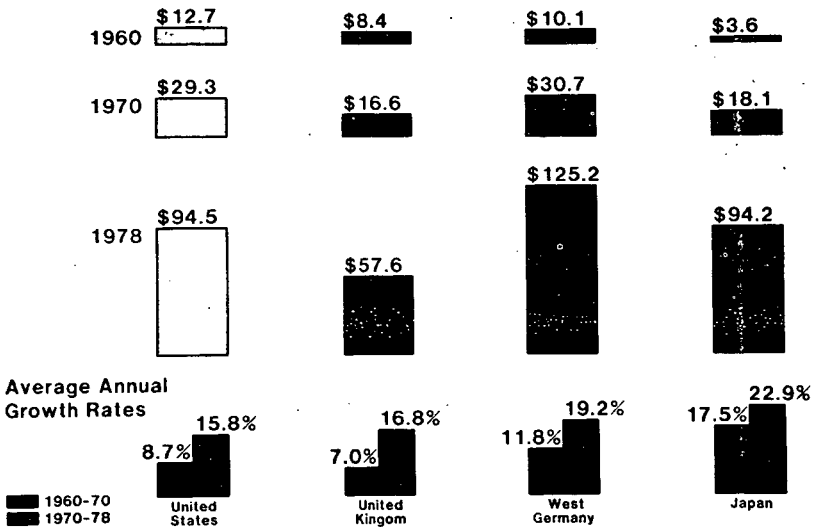
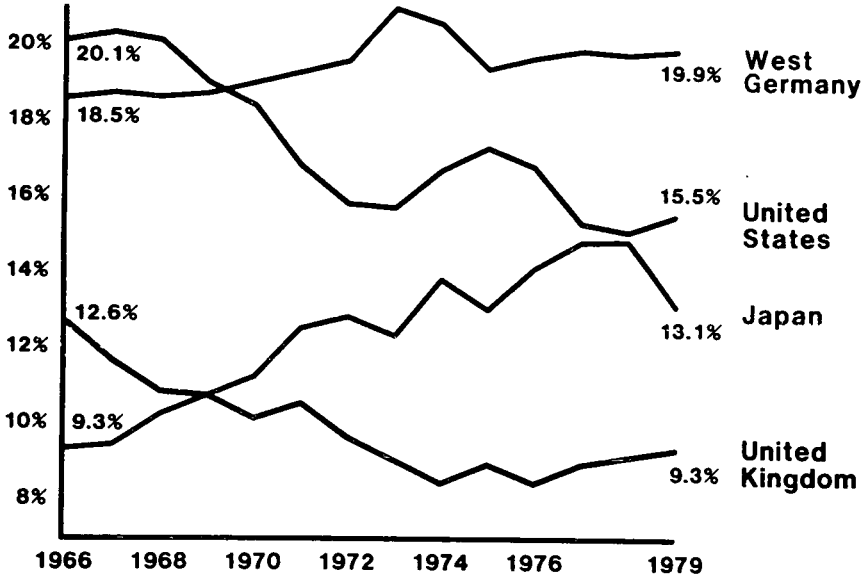


CHART 64

Share of Exports of Manufactures of the 14 Major Industrial Countries*



* These nations account for 80% of world exports of manufactures

CHART 65

Foreign Trade Balance - By Sector US vs. West Germany vs. Japan (\$Billion)

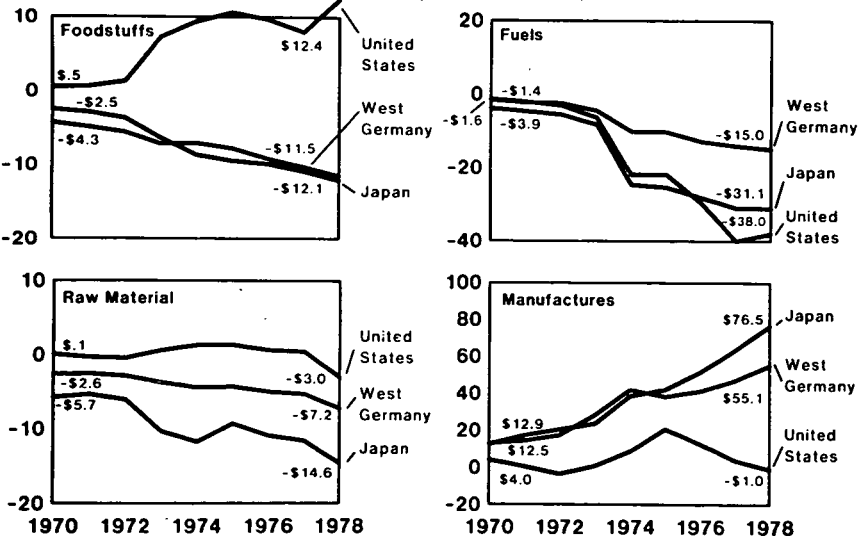


CHART 69

U.S. Trade Balance in Selected Manufactures (\$Billion)

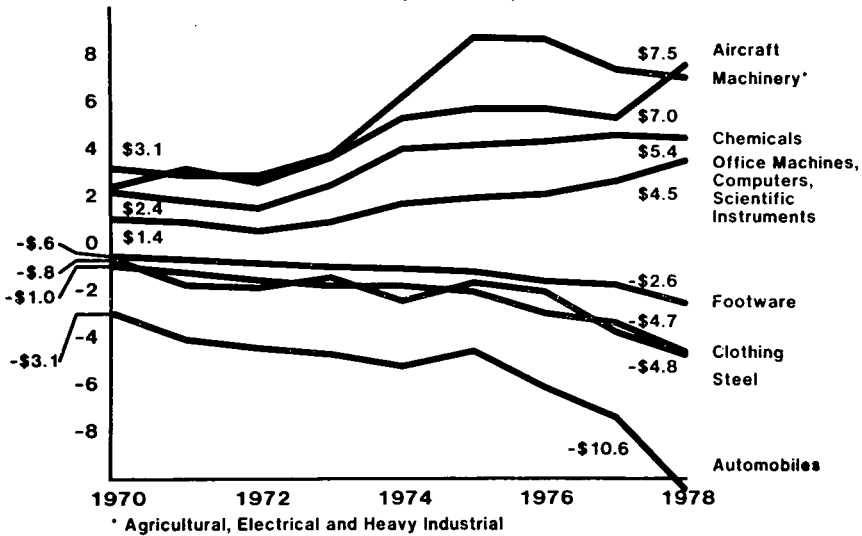


CHART 70

JAPAN'S TRADE BALANCE IN CERTAIN PRODUCTS \$ Billion

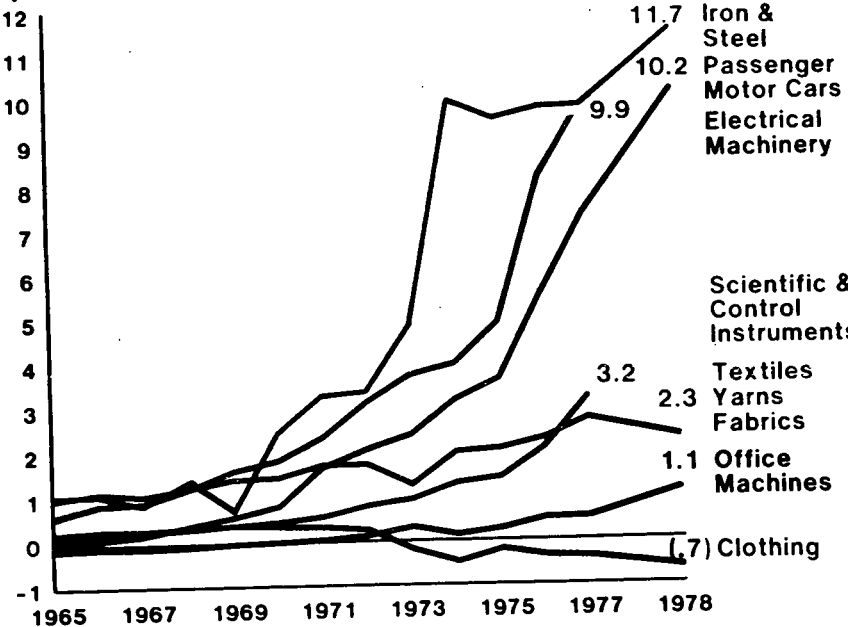


CHART 72

OECD TRADE WITH USSR AND EASTERN EUROPE
(\$ BILLION)

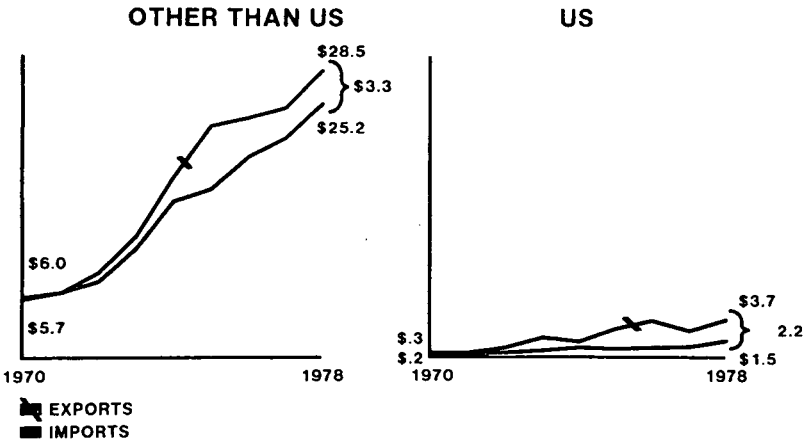


CHART 73

DESTINATION OF U.S. EXPORTS
EUROPEAN COMMUNITY AND JAPAN vs. LDCs
(\$ Billion)

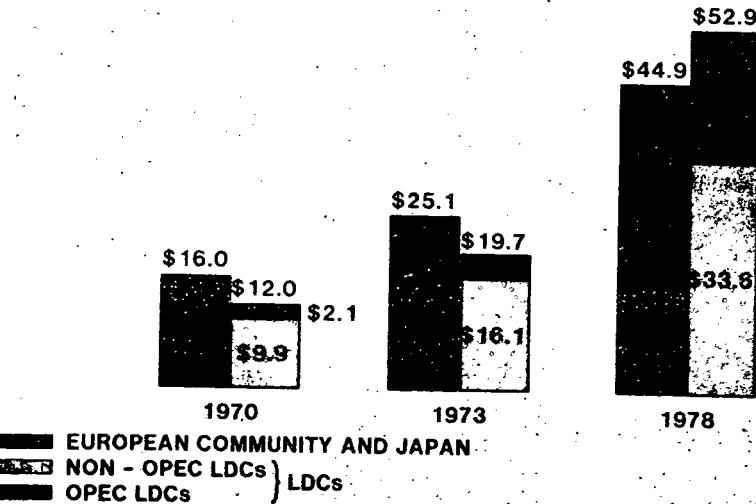


CHART 74

LDC* SHARE OF U.S. EXPORTS

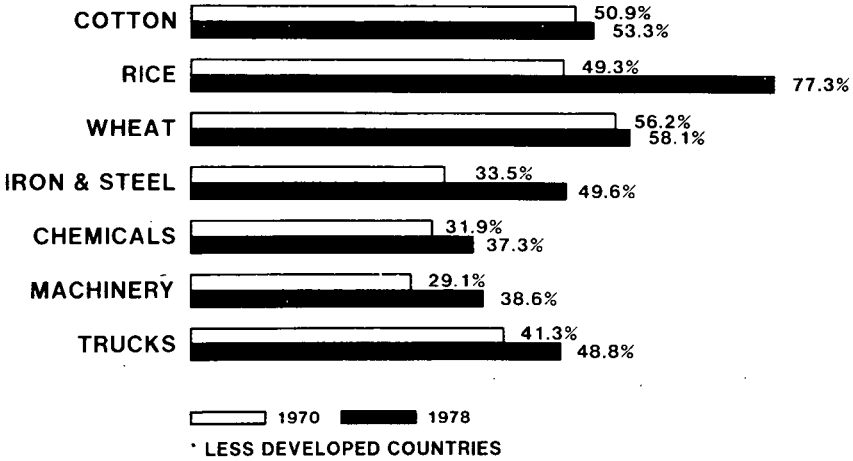


CHART 80

Non-Oil LDC Debt And Debt Service

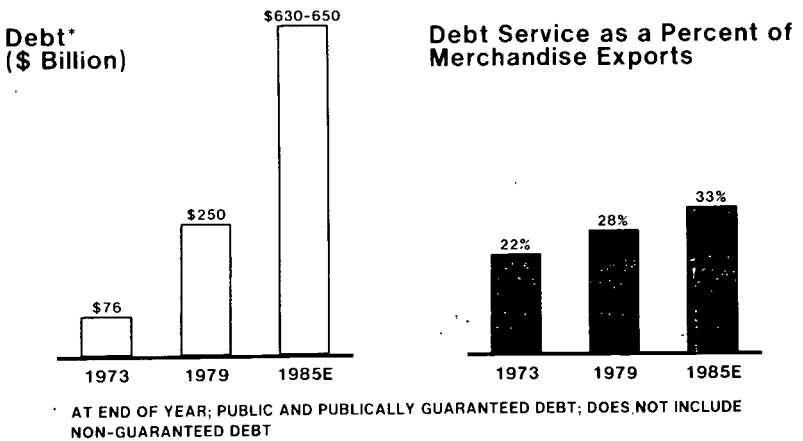


CHART 83

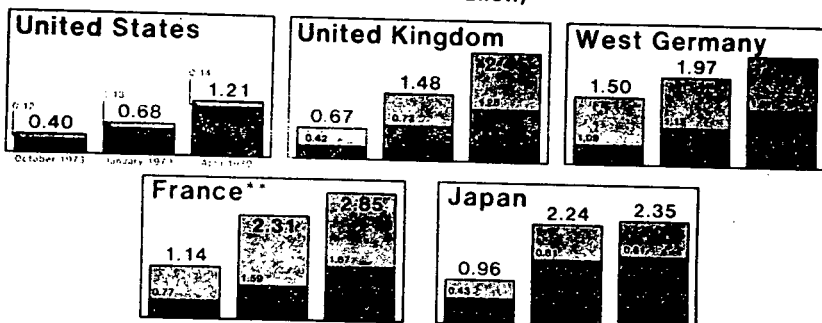
POPULATION, GNP AND ENERGY USE

	POPULATION	SHARE OF WORLD GNP	SHARE OF OIL CONSUMPTION	SHARE OF GASOLINE CONSUMPTION
UNITED KINGDOM	1.4%	3.2%	3.0%	2.6%
WEST GERMANY	1.5	6.6	4.8	3.5
JAPAN	2.8	10.0	8.2	3.7
UNITED STATES	5.3	21.8	30.2	49.3

CHART 88

Regular Gasoline Prices
With And Without Taxes*

(Dollars Per U.S. Gallon)



■ Tax
■ Base Price

*Converted at February 29, 1980 Exchange Rates.

**Government Price Ceilings in Effect.

CHART 93

**DECLINING U.S. OIL PRODUCTION
(Million Barrels Per Day)**

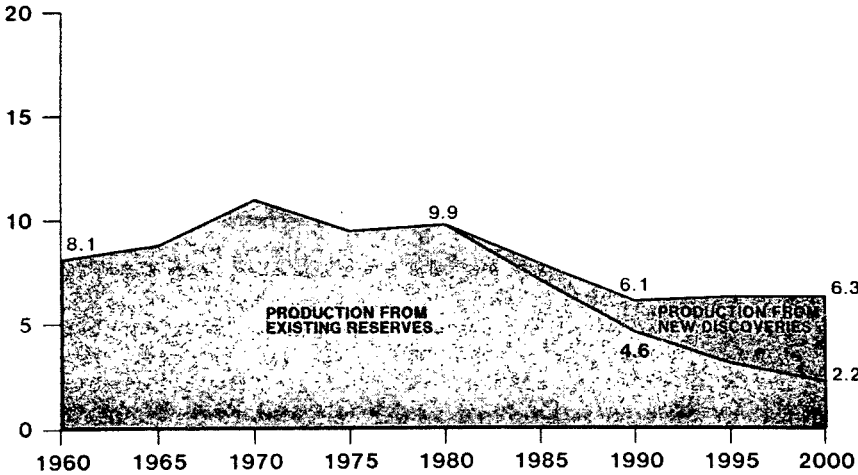


CHART 94

US FUEL RESERVES AND CONSUMPTION

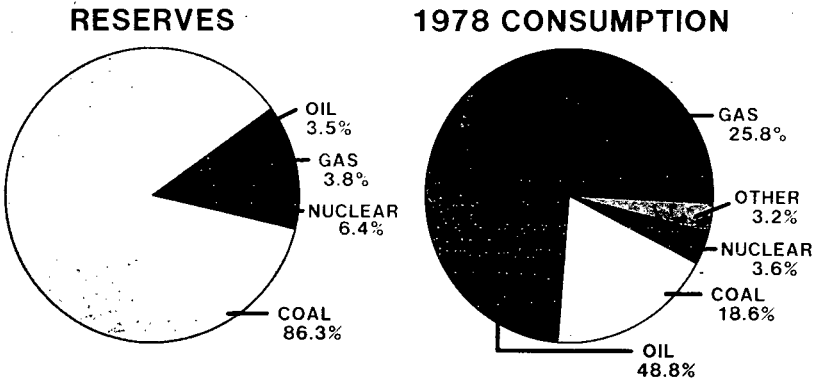


CHART 97

**PROPORTION OF IMPORTED OIL COMING
FROM THE PERSIAN GULF
(1979)**

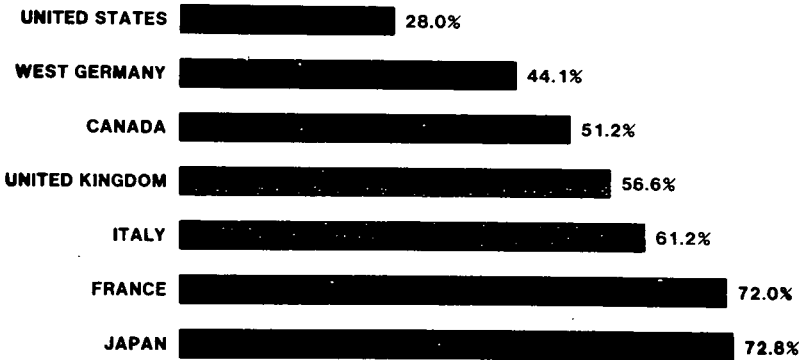


CHART 99

**Support for Western System
(Share of GNP)**

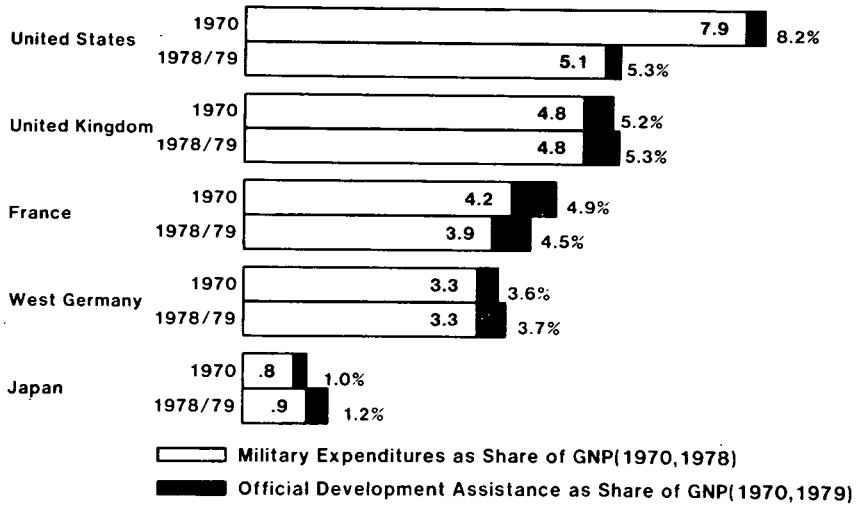
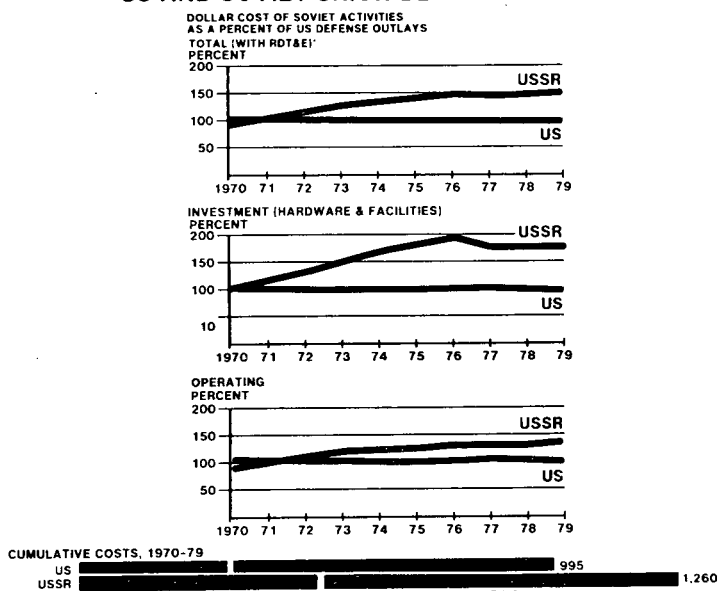


CHART 100

US AND SOVIET UNION DEFENSE ACTIVITIES



INVESTMENT INCLUDES ALL COSTS FOR THE PROCUREMENT OF MILITARY HARDWARE AND THE CONSTRUCTION OF FACILITIES BUT EXCLUDES RDT&E OPERATING INCLUDES ALL PERSONNEL-RELATED COSTS (WITH THE EXCEPTION OF PENSIONS); AND ALL COSTS ASSOCIATED WITH THE OPERATION AND MAINTENANCE OF WEAPON SYSTEMS AND FACILITIES RDT&E = RESEARCH, DEVELOPMENT, TESTING & EVALUATION

CHART 101

Key Measures of U.S. - Soviet Military Balance

Category	U.S.	Soviet
Strategic		
ICBMs	1054	1400
SLBMs	656	950
Heavy Bombers (including Backfire)	316 (excludes mothballs & variants)	215 (includes 90 Backfire, ex- cludes variants)
Ballistic Missile Submarines	41	90
total throwweight	7.8 m. lbs.	14.7 m. lbs.
total megatonnage	2887 mt.	8352 mt.
total warheads	8526	6132
Interceptors	309	3200
SAMs	36	10000
Ground Forces		
Divisions	19	169
Tanks	10570	53000
Artillery	17500	40700
Air Forces		
Medium Bombers	66	761
Fighter & attack aircraft	3400	4690
Air defense radars	59	7000
Transports	936	1305
Naval Forces		
Active Fleet	398	954
Carriers	12	3
Naval & marine aircraft	1464	1310
Attack submarines	77	270

CHART 102

PRODUCTION RATES FOR UNITED STATES AND U.S.S.R.

	1974 - 78		1979	
	(Annual Average)			
	U.S.	U.S.S.R.	U.S.	U.S.S.R.
Tanks	800	1800	850	2500
Armored Vehicles (APCS, Light Tanks, IFC/S etc.)	375	3800	1250	4000
Tactical Fighters/Bombers	275	650	350	650
Helicopters	315	1000	250	700
Major Surface Combatants	5	10	8	7
Attack Submarines	2.5	5	2	7
Missile Submarines	0	6	0	2
Strategic Interceptors	0	200	0	175
Surface-to-Air Missiles*	3600	24,000	4200	28,000
Artillery (Rocket Launchers Over 100 MM)	20	1600	75	1250

* Figures show total production, incl. exports

CHART 103

GROWTH OF GOVERNMENT EXPENDITURES
IN THE UNITED STATES --
ALL LEVELS OF GOVERNMENT
EXPENDITURES

	TOTAL GOVERNMENT (\$ BILLIONS)	PER CAPITA (1958 DOLLARS)	PERCENT OF GNP
1890	0.8	45	6.5
1902	1.5	58	7.3
1913	3.2	89	7.8
1922	9.3	163	12.6
1929	10.3	143	10.0
1940	18.4	288	18.4
1950	61.0	484	21.3
1960	136.4	740	27.0
1970	311.9	1,138	31.8
1980	839.0	1,332	34.0

CHART 105

U.S. Federal Sector Expenditures As Share of GNP (Average)

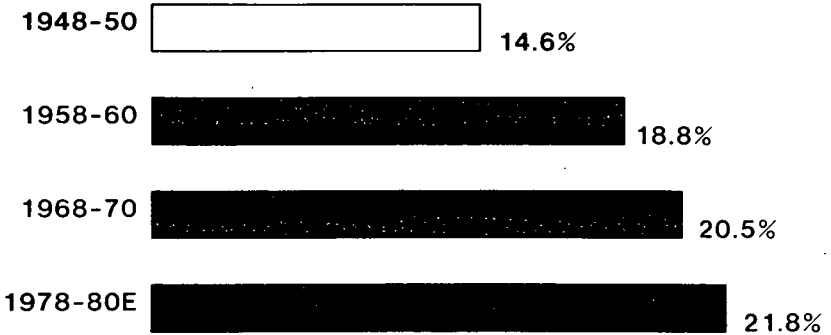


CHART 106

INCREASE IN FEDERAL PERSONAL INCOME TAXES WITH 10% INCREASE IN TAXABLE INCOME

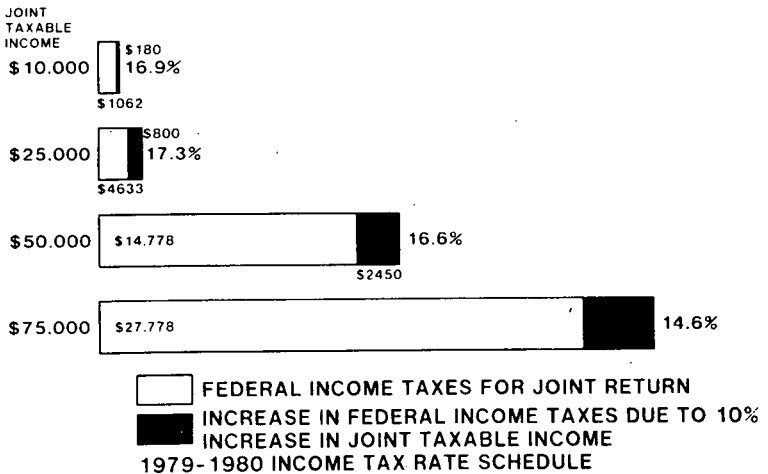


CHART 107

EFFECT OF GROWTH OF OFF-BUDGET FEDERAL ENTITIES ON FEDERAL BUDGET DEFICIT

(\$BILLION)

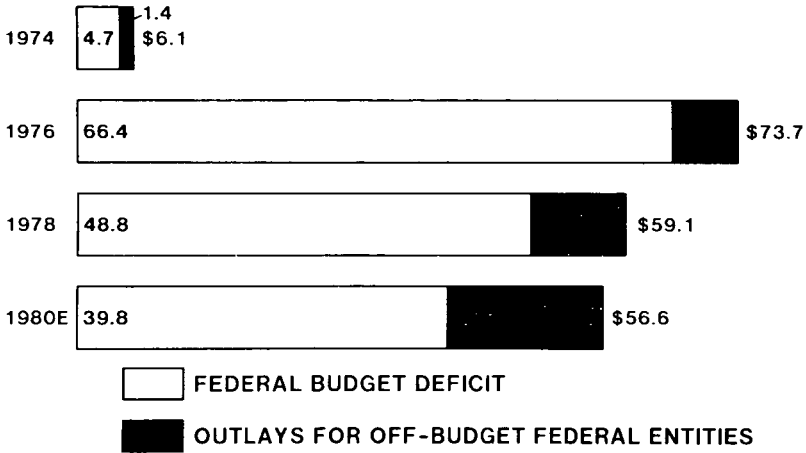
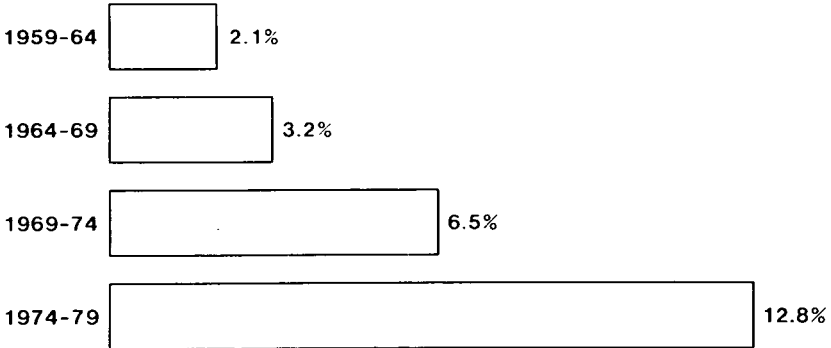


CHART 109

GROWTH IN BORROWINGS BY U.S. TREASURY AND FEDERALLY SPONSORED AGENCIES

(YEAREND OUTSTANDINGS; ANNUAL AVERAGE GROWTH RATE)



* FEDERALLY SPONSORED AGENCIES INCLUDE: FEDERAL NATIONAL MORTGAGE ASSOCIATION, FEDERAL HOME LOAN BOARD, FEDERAL HOME LOAN MORTGAGE CORPORATION, FEDERAL LAND BANKS, FEDERAL INTERMEDIATE CREDIT BANK, AND BANKS FOR COOPERATIVES.

CHART 110

FEDERAL GOVERNMENT BORROWINGS
vs.
TOTAL CREDIT BORROWINGS

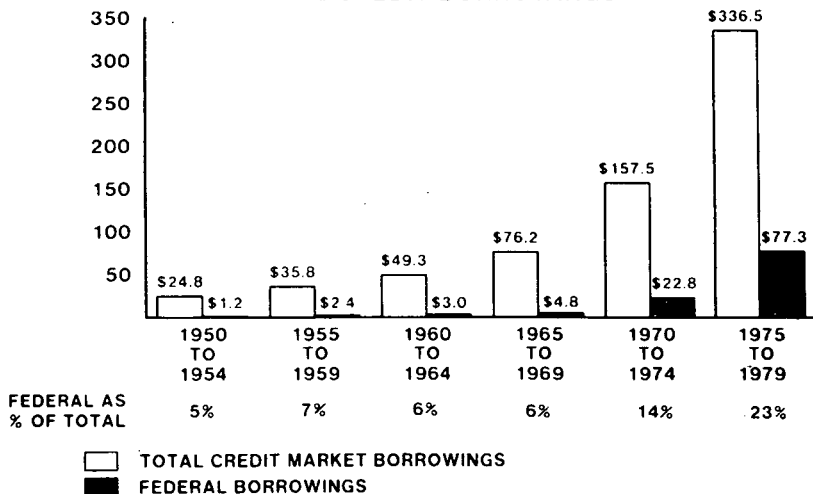
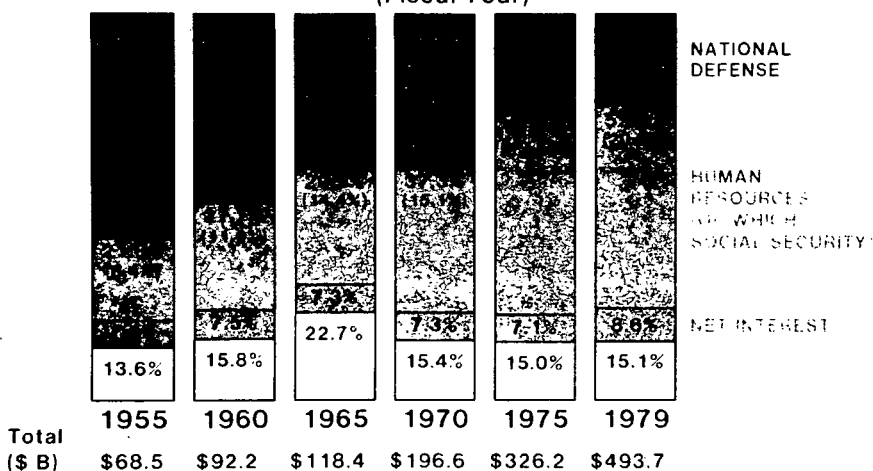


CHART 112

FEDERAL BUDGET FOCUS - FROM NATIONAL DEFENSE TO HUMAN RESOURCES

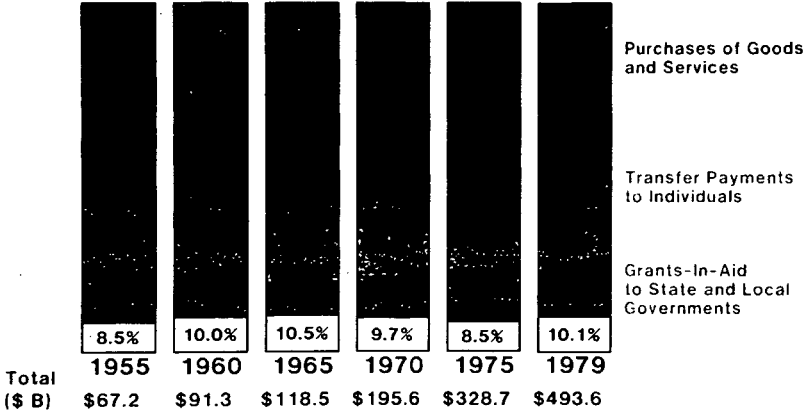
(Fiscal Year)



*Includes, among others, Transportation, Community and Regional Development, and National Resources and Environment

CHART 113

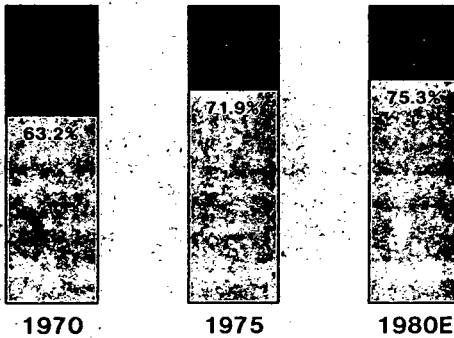
FEDERAL GOVERNMENT - FROM DIRECT PURCHASER TO TRANSFER AGENT



* Chiefly "Net Interest Paid"

CHART 114

FEDERAL BUDGET - RELATIVELY UNCONTROLLABLE OUTLAYS*



Relatively controllable outlays
 Relatively uncontrollable outlays

*OPEN-ENDED PROGRAMS AND FIXED COSTS (INCLUDING SOCIAL SECURITY, MEDICAL CARE, UNEMPLOYMENT ASSISTANCE AND NET INTEREST)

CHART 115

GROWTH IN HUMAN RESOURCES PROGRAMS (1970-1980)

		\$ BILLIONS	
		1970	1980E
GROWTH IN OVERALL FEDERAL BUDGET OUTLAYS	186.7%	196.6	563.6
GROWTH IN NON-HUMAN RESOURCES PROGRAMS	114.9%	123.2	264.7
GROWTH IN HUMAN RESOURCES PROGRAMS	307.2%	73.4	298.9
- SOCIAL SECURITY (RETIREMENT)	280.8%	27.3	104.0
- HEALTH CARE SERVICES	363.1%	11.1	51.6
- UNEMPLOYMENT COMPENSATION	364.0%	3.4	15.6
- SOCIAL SECURITY (DISABILITY INSURANCE)	419.6%	3.0	15.3
- FEDERAL EMPLOYEE RETIREMENT AND DISABILITY	441.3%	2.7	14.6
- PUBLIC ASSISTANCE AND OTHER INCOME SUPPLEMENTS*	532.0%	5.7	36.1
- TRAINING AND EMPLOYMENT**	549.3%	1.6	10.4

* CHIEFLY FOOD STAMPS, AID TO FAMILIES WITH DEPENDENT CHILDREN,

** SUPPLEMENTAL SECURITY INCOME AND HOUSING ASSISTANCE

** CHIEFLY CETA PROGRAMS (INCLUDING PUBLIC SERVICE EMPLOYMENT, GENERAL TRAINING AND EMPLOYMENT PROGRAMS, AND YOUTH PROGRAMS)

CHART 116

GROWTH IN US TRANSFER PAYMENT PROGRAMS (1970-1980)

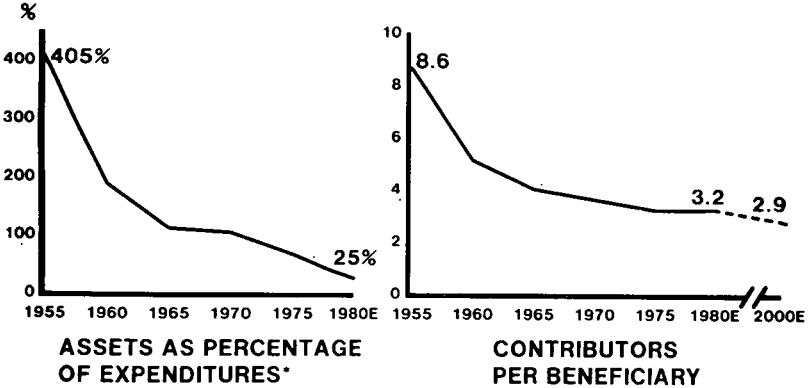
		\$ BILLIONS	
		1970	1980E
VETERANS BENEFITS	77.3%	6.6	11.7
RAILROAD RETIREMENT	193.8%	1.6	4.7
SOCIAL SECURITY	297.0%	29.7	117.9
UNEMPLOYMENT INSURANCE	321.6%	3.7	15.6
MILITARY PENSIONS	325.0%	2.8	11.9
PUBLIC ASSISTANCE*	343.9%	4.1	18.2
MEDICAID & MEDICARE	382.8%	9.9	47.8
FEDERAL EMPLOYEE RETIREMENT	429.6%	2.7	14.3
SCHOOL LUNCH PROGRAM	900.0%	.4	4.0
HOUSING ASSISTANCE	960.0%	.5	5.3
FOOD STAMPS	1350.0%	.6	8.7
		63.2	266.9

* MAINLY WELFARE

** TOTAL INCLUDES \$.6 (1970) AND \$ 6.8 (1980E) NOT SPECIFICALLY SHOWN, OF WHICH \$ 2.0 (1980E) IS FOR DISABLED MINERS' BENEFITS

CHART 117

**FINANCIAL ASPECTS OF THE SOCIAL SECURITY SYSTEM
FEDERAL OLD-AGE AND SURVIVORS INSURANCE AND
DISABILITY TRUST FUNDS (OASDI)**



*Assets at beginning of year
Expenditures during the year

CHART 118

**AGGREGATE SOCIAL SECURITY CLAIMS OF INDIVIDUALS
VS. NET INDIVIDUAL WEALTH
(\$BILLION)**

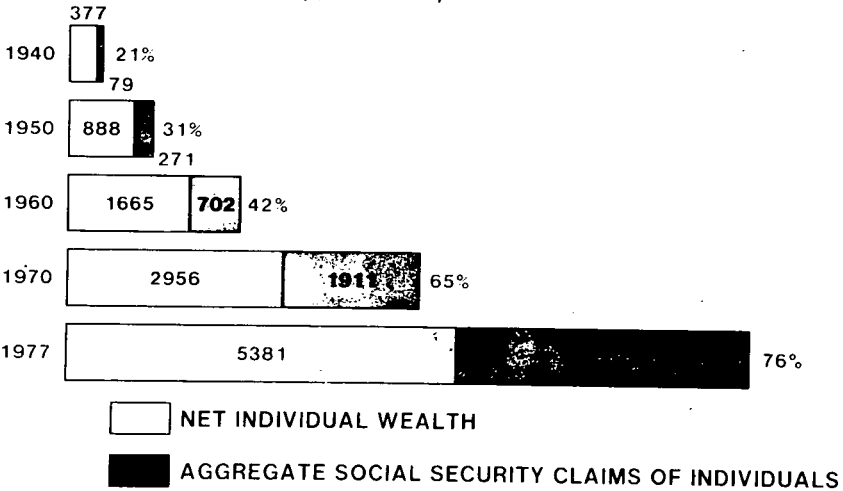


CHART 120

NET FINANCIAL STATUS OF THE SOCIAL SECURITY RETIREMENT SYSTEM* (\$ BILLION)

CURRENT
LAWINCREASE AVERAGE
RETIREMENT AGE
THREE YEARS

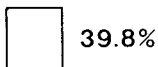
-600 -400 -200 0 200 400 600 800 1000

*DOLLARS DISCOUNTED TO 1977, ADJUSTED FOR INFLATION; SSA INTERMEDIATE
ASSUMPTIONS. RETIREMENT PORTIONS OF SOCIAL SECURITY ONLY, SIMILAR BUT
SMALLER EFFECTS IN DISABILITY INSURANCE & HEALTH INSURANCE

CHART 121

CURRENT SOCIAL SECURITY DEFICIT: IN RELATION TO GNP, INVESTMENT IN PLANT & EQUIPMENT INDUSTRIAL R&D (1970-79)

GNP

INVESTMENT IN
NON-RESIDENTIAL
PLANT & EQUIPMENT

INDUSTRIAL R&D



ESTIMATED AT \$632 BILLION FOR OLD-AGE AND
SURVIVOR INSURANCE TRUST FUND (DISABILITY INSURANCE
TRUST FUND NOT INCLUDED)

CHART 122

**GROWTH OF FEDERAL GOVERNMENT
EXPENDITURES ON REGULATORY ACTIVITIES
(\$ BILLION)**

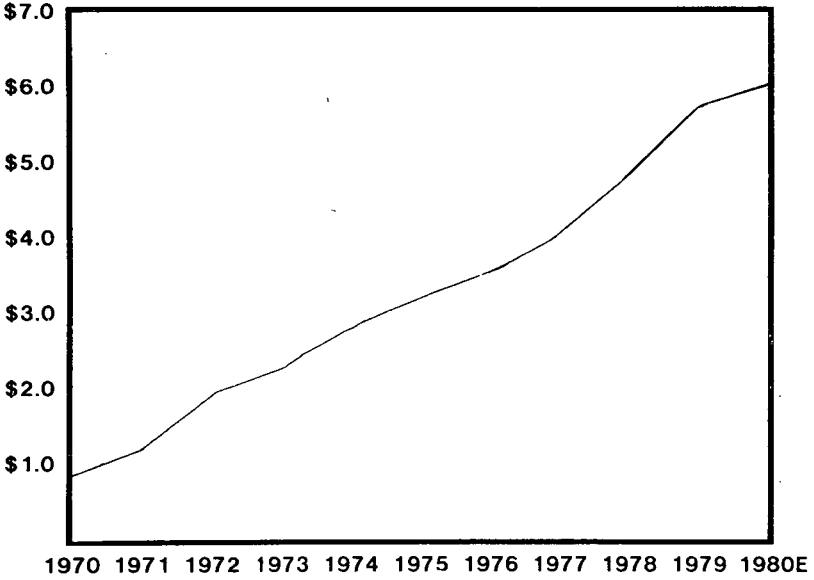


CHART 124

REGULATORY AGENCY STAFFING

PERMANENT
FULL-TIME POSITIONS
(THOUSANDS OF EMPLOYEES)

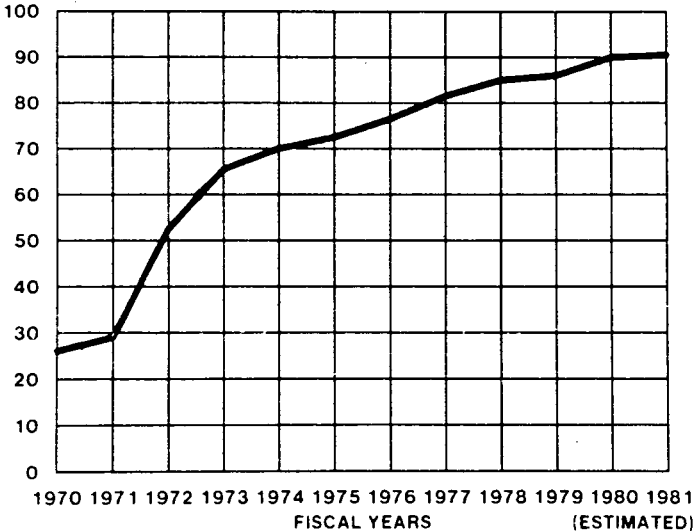


CHART 125

NUMBER OF NEW MAJOR SOCIAL AND ECONOMIC REGULATORY LAWS PASSED BY CONGRESS

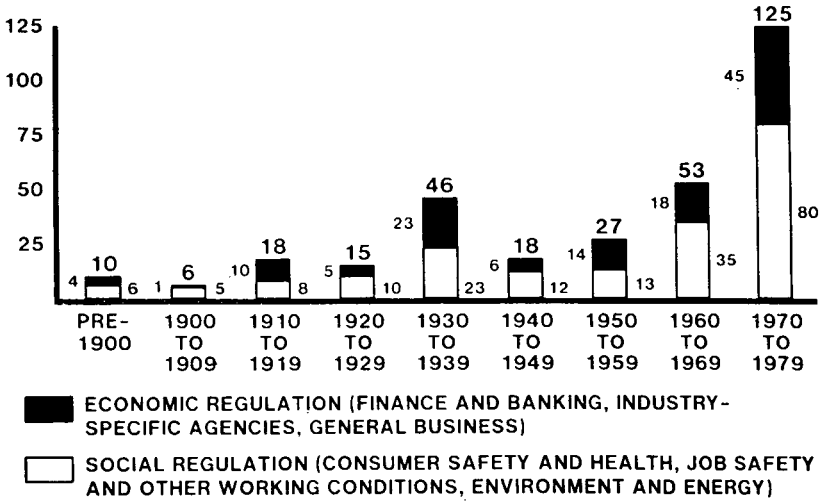
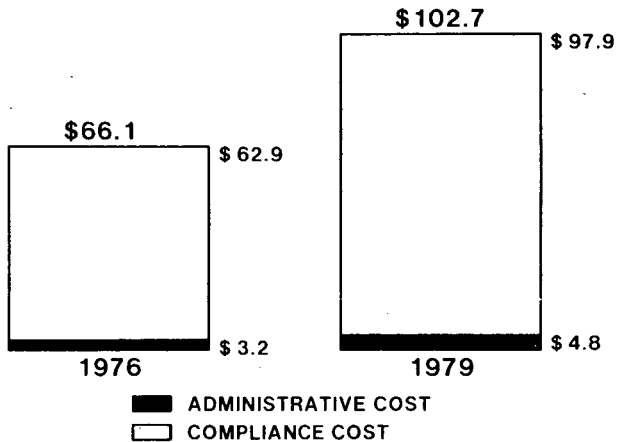


CHART 126

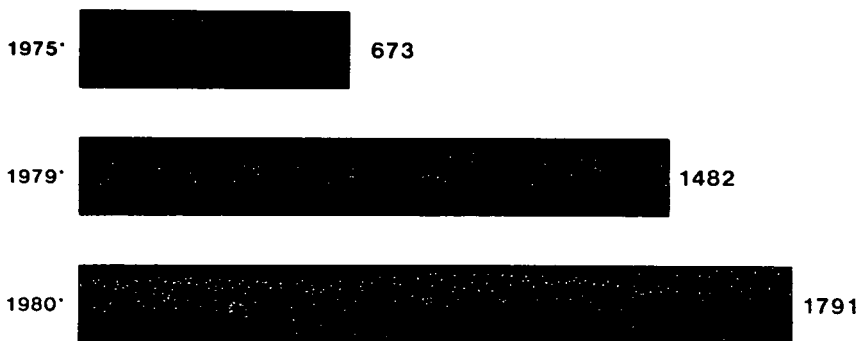
U.S. - COST OF FEDERAL REGULATION OF BUSINESS
 (\$ Billion)



Weidenbaum's 1979 estimate based on applying Compliance Cost/Administrative Cost multiplier of 20 (1976) to 1979 budgeted cost to operate regulatory agencies

CHART 127

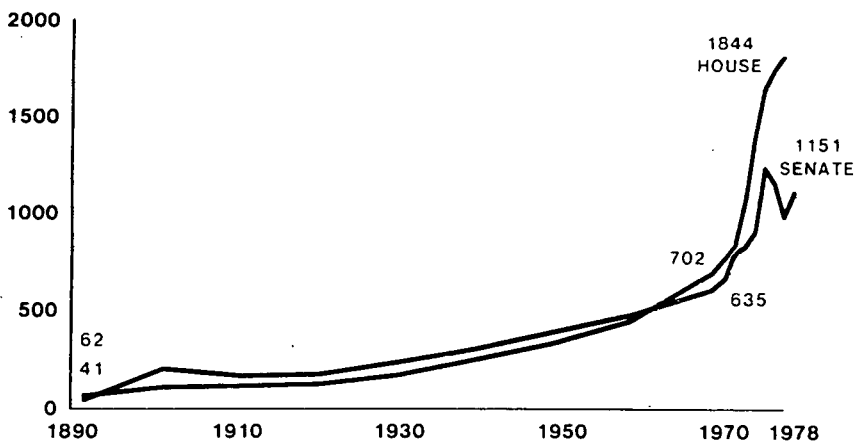
GROWTH IN NUMBER OF WASHINGTON LAWYERS OF NON-WASHINGTON LAW FIRMS



* AS OF JUNE 1

CHART 128

THE GROWTH OF CONGRESSIONAL COMMITTEE STAFFS



STATEMENT OF EZRA F. VOGEL, CHAIRMAN, COUNCIL ON EAST ASIAN STUDIES, HARVARD UNIVERSITY

The period of America's economic supremacy which began with our emergence from World War II has come to an abrupt end. This transition was hastened initially by our foresight and generosity in assisting wartorn countries, but it continued because of the ingenuity, determination, and hard work of businessmen and government leaders in other countries. In the 1970s, the process took an unhealthy turn, for America did not keep pace with development in key countries of Europe and East Asia, and we are now witnessing the consequences.

In Europe, the most impressive progress in recent decades has been made by France and West Germany. The personal savings rates in France and West Germany have been running two or three times those of America. In recent years, American government and private investment has been running about 16% of GNP; in 1978, in both France and West Germany, it was over 21%. From 1973-1977, whereas French productivity growth was 2.9% and West Germany's 3.3%, America's was 0.3%. From 1970 until 1978, France's and West Germany's share of world exports of manufacturers remained steady or even slightly increased while America's declined by about 20%, bringing its total value of world manufactured exports to about 15% below West Germany's in absolute value. The proportion of French and German GNP going into R and D investment has been rising, surpassing ours, which has been declining.

Even more striking is Japan's success. The competitiveness of various Japanese products is by now well known to Americans, but it is important to consider their cumulative significance. In 1978, America's GNP was roughly twice that of Japan and, since our population is twice as large, per capita GNP in Japan was about the same as in America. However, the value of *industrial* production in Japan was already $\frac{3}{4}$ of that of the United States or about $1\frac{1}{2}$ times ours per capita. In the same year, we imported \$5 billion more of industrial goods than we exported, but Japan exported \$76 billion more of industrial goods than they imported. I would not argue that the Japanese market is easy to penetrate or that Japanese officials have opened their market with desirable speed, but it is at least arguable whether, considering the whole range of barriers in the United States—differential state laws, substantial military procurements not open to foreign bidders, restraints on TV, textiles, and steel—whether totally opening the Japanese and American markets would result in a trade balance more in our favor. That the problem is not just one of difficult Japanese markets is clear from the fact that America's share of manufacturing exports to developing countries fell from 28% in 1970 to 22% in 1978 while Japan's rose from 22% to 26%, thus surpassing our share.

Japan's personal savings rate, which had been about 20 percent per year, has now risen to about 24 percent, whereas America's, which had been about 6 percent per year, has now declined to less than 4 percent. By 1973 the average production site in Japan passed that of the United States in modernity of plant and equipment, and the gap continues to widen. America has enjoyed a substantial lead in R & D expenditures. In 1961, American R & D expenses were 2.7 percent of GNP, almost

twice Japan's rate of 1.4 percent. By 1974, the American rate had fallen to 2.3 percent and Japan's had risen to 2.0 percent. Since then, the American rate has continued to fall and the Japanese rate has continued to rise. Because Japanese GNP grows an average of about 5 to 6 percent per year while America's grows about 2 to 3 percent, Japanese investment in absolute terms grows more rapidly than ours. By 1978, Japan's investment in new plant and equipment was already equal to America's in absolute terms, or twice our per capita rate. Japan's investment is more concentrated in areas of future growth. If one had to make predictions on the basis of these facts, the shift in economic power is difficult to question.

America has no need to be the most effective competitor in every major industry, but the inability for America to remain attractive as a site for investment, if not quickly corrected, could have serious long-range consequences for all of us. We are now heavily dependent on increased oil imports, and our agricultural exports alone are not enough to pay for our imports. We are now running a substantial and apparently chronic trade imbalance with the rest of the world that cannot long continue, and petroleum imports are not likely to become cheaper. The American going abroad finds his dollar buys less than a decade ago, and while less visible, the American at home finds that for unit of labor he is able to buy fewer foreign products. Because American-based companies are losing shares of world markets, our real corporate income is declining, and our Nation thus has a smaller tax base. This poses the dilemma of whether to increase taxation still further, thus further reducing American competitiveness, or reduce expenditures for national defense and for services to our citizens, further heightening the divisiveness in our society. It is tempting under such circumstances to become increasingly protectionist, but this would not only sacrifice the goodwill of our allies and the opportunities for developing countries. It would also prevent our consumers from buying more desirable foreign products and reduce the pressure on our companies to keep up, thus allowing them to fall still further behind foreign competitors. And, given the complex internationalization of production, it is even questionable whether protectionist policies could insulate America from the pressures of more effective international competition. Ultimately, the only sensible strategy is to strengthen our areas of comparative advantage and remain open to receiving competitive products from abroad.

Within the last year, we have grown in our willingness to acknowledge our own problems. One can only be cheered by this development, but I would be derelict in my duty as an observer of East Asia were I not to point out how far ahead Japan is in a number of spheres:

1. *Superior information.*—Japanese government, business, and newspaper people have been far more thorough than we have in scouring the world for information. The world's six largest trading companies, for example, are all Japanese, and with an average of over 500 offices in over 100 countries, they bring in a range and depth of political and economic information unrivaled by any American business organization.

2. *Government strategy.*—Japan has a conscious national strategy of finding ways to promote competitive industries of the future and

reduce investment in declining sectors. America, without a conscious strategy and without the analytic capacity in the government to support such a strategy, is at the mercy of political pressures which are strongest in declining industries. We have, in effect, a strategy by default which supports weaker industries.

3. *High quality government specialists.*—America has extraordinarily able and hard-working public servants, but often those in most influential positions have not gone through the development of their able Japanese counterparts, who are more thoroughly trained, more experienced in dealing with the issues in question, and better informed.

4. *Long-term investment.*—American companies, being dependent on stock equity, are much more concerned with short-term profits. Japanese tax law gives more encouragement for savings, and companies, relying more on bank loans for their capital, are better prepared to undertake long-term investments in modernization that do not have high-term payoffs.

5. *Flexibility for management to concentrate on basic problems.*—Japan has ways of representing pressures from the public and from labor for more concern with pollution control, equitable opportunities, and fair treatment for labor without resorting as much to legalistic regulations that in America reduce the moral pressure and the flexibility of business to respond directly and appropriately to the issues that make for effective management.

6. *Receptivity to technical modernization.*—American workers, whose aspirations are often tied with skill specialization, are understandably reluctant to accept new technology where they stand to lose their relative position. A Japanese worker's position is more dependent on his seniority, his success more tied to the success of his company. Being more anxious to see his company do well in the long run, he is more enthusiastic about his company's acquiring new technology.

A new administration can do many things to improve our competitive position: It can provide tax incentives to encourage personal savings, investment in R. & D., and modernization of plant and equipment. By taking measures to reduce inflation, it can help provide a stable environment that encourages more investment. It can continue to reduce excessive regulations that reduce the capacity of business to concentrate on basic company matters.

But certain things cannot be done by anyone at this point, because we do not yet have the public understanding and the consensus necessary to make them work. In considering our current chronic trade deficit, for example, it is clear that we must maintain vigorous competitive companies in sectors like steel and automobiles. It may well be that national and enterprise neglect have allowed these industries to deteriorate to a point where special assistance is required to revive them. To move too quickly in providing aid runs the risk of providing protectionism without the assurance that the industries will modernize sufficiently to remain competitive. In order to build the required consensus that would permit us to give appropriate aid to key sectors and see that it is used wisely, we need a core of leaders from various fields, like that assembled here today, to meet frequently over the next several years to help mold a new national consensus on adjustments required to maintain a healthy competitive economy.

To revitalize America, we will need more basic changes than we have considered in recent years, and these can only be effective if we have a broad base of understanding built over several years. I hope the new administration will help set this process in motion.

STATEMENT OF JOHN WINTHROP WRIGHT, PRESIDENT, WRIGHT
INVESTORS SERVICE

INTERNATIONAL ECONOMIC PROBLEMS

A significant and lasting reduction in the rate of inflation requires, in addition to sound government fiscal policies, both a perceptive reformation of U.S. domestic monetary policy and effective U.S. control over the creation and growth of Eurodollars.

The Presidential election of 1980 is widely seen as a mandate to reduce inflation, to cut back government spending, except for defense, and to establish stability and restraint in monetary policy. In my very carefully considered opinion, success in this effort is unlikely unless we succeed in establishing effective and selective controls over the expansion of dollar credits and deposits both at home and abroad.

The Federal Reserve Board has long attempted to cure inflation by restricting the growth of the domestic money supply through limiting the amount of demand deposits in domestic banks and manipulating interest rates, principally by means of (1) open market purchase and sale of government securities, (2) increasing or decreasing the non-lendable reserve deposits required to be maintained in Federal Reserve banks by commercial banks, and (3) raising or lowering the cost of bank borrowing from the Federal Reserve. After the last ten years of record-breaking inflation, despite the FRB's unprecedentedly vigor-

MONEY SUPPLY, EURODOLLARS AND INFLATION

[In percent]

Annual change	U.S. money supply (M1-B)		Gross national product, constant dollars	Eurodollars		Inflation	
	Current dollars	Constant dollars		Current dollars	Constant dollars	World commodity prices	U.S.
							inflation (GNP deflator)
1970.....	+5.2	+0.1	-0.6	+26.2	+20.0	-2.4	+5.1
1971.....	+6.5	+1.7	+4.6	+22.6	+17.0	+1.8	+4.7
1972.....	+9.2	+4.9	+7.3	+32.3	+27.1	+40.0	+4.1
1973.....	+5.5	-1.8	+3.4	+36.0	+26.5	+59.8	+7.5
1974.....	+4.3	-6.1	-3.5	+41.0	+27.0	+1.9	+11.1
1975.....	+4.8	-2.5	+2.4	+18.2	+9.9	-9.1	+7.5
1976.....	+6.5	+1.7	+4.9	+25.6	+20.0	+38.1	+4.8
1977.....	+8.1	+1.7	+5.7	+18.0	+11.0	+3.1	+6.2
1978.....	+8.2	+0	+4.8	+24.2	+14.8	+15.5	+8.2
1979.....	+7.4	-1.4	+1.0	+20.3	+10.5	+29.0	+8.9
1980.....	+7.1	-2.4	-2.6	+24.0	+12.6	+11.0	+9.7
Last 10 years (Sept. 30, 1970 to Sept. 30, 1980):							
Cumulative change...	+91.2	-4.1	+30.5	+807.5	+371.4	+372.3	+99.4
Average annual rate...	+6.7	-.4	+2.7	+26.1	+17.7	+16.8	+7.1
Previous 10 yrs (Sept. 30, 1960 to Sept. 30, 1970):							
Cumulative change...	+49.9	+12.5	+47.0	Nominal	Nominal	+34.3	+33.3
Average annual rate...	+4.1	+1.2	+3.9	Nominal	Nominal	+3.0	+2.9

Note: M1-B equals currency plus demand deposits and other checkable deposits excluding those held by foreign bank and official institutions; (a) annual rate through September; (b) annual rate through June.

ous employment of all of these means, it can scarcely be doubted that the unselective nature of the established methodology is an unmitigated failure and that it is time for thoroughgoing, constructive reformation of our nation's economic and monetary management.

To begin with, it is clear that the root cause of U.S. inflation is *not* the so-called excessive growth in the money supply per se. As the accompanying table clearly indicates, there is now actually *less* money in circulation, after adjustment for inflation, than there was ten years ago. During the intervening period, the real, inflation-adjusted money supply declined -4%, while real GNP rose by +31%. Consequently, today's money supply is an inadequate 16% of current Gross National Product, vs 22% in 1970. During the same period, inflation totaled 99.4%. During the previous ten years (1960-70), however, when the money supply in constant dollars (M1-B) increased by +12.5%, and GNP grew by +47%, inflation was substantially less (33%). Simple logic suggests that such inadequate expansion of the supply of money needed to finance the growth of the economy is a severe impediment to both productivity and growth and adds to inflationary product costs because it increases the cost of capital and thereby the costs and prices of all of the products of a capitalistic society. Thus, *excessive* restriction of the money supply, as distinguished from moderate, does in fact contribute to inflation, instead of control it.

Perhaps the most important monetary cause of our recent inflation, in addition to the high interest rates encouraged by current monetary policy, becomes obvious from examination of the accompanying table. The incredibly rapid growth of Eurodollars has been a major contributor to soaring world commodity costs, especially oil. Eurodollars are principally dollar credits, that is, bank loans of, and repayable in, dollars which are made by foreign banks, including the foreign-domiciled branches of U.S. banks. When these lending banks deposit these dollar credits in the accounts of their borrowers, this increases the world dollar supply in the same way that loans by domestic banks produce bank deposits which increase the domestic money supply of dollars. The excessive growth of the world dollar supply has been a prime cause of world and domestic dollar inflation since the 1970's began, but the excess is the result of the eight-fold increase in Eurodollars, not the doubling of the U.S. domestic money supply. Despite an ineffective effort by the present administration in late 1979 to control the Eurodollar explosion, the supply of these foreign-generated dollars has continued to grow at a +24% annual rate through the second quarter of 1980, while the expansion of the U.S. domestic money supply was at a +7% annual rate through the third quarter. During the first nine months of this year, the rise of world commodity prices, *in dollars* was +11.0%, a major underlying component of inflation everywhere, including the U.S., where the GNP deflator measured U.S. domestic inflation at a +9.7% annual rate.

The inflationary damage to the U.S. economy from the grossly excessive expansion of Eurodollars is not, however, confined to the effect on domestic prices of the rise of the dollar prices of world commodities. Even more serious and pervasive is the depressing effect which the glut of Eurodollars exercises on the foreign exchange value of the U.S. dollar, *thus raising the cost of all U.S. imports*. It is evident that

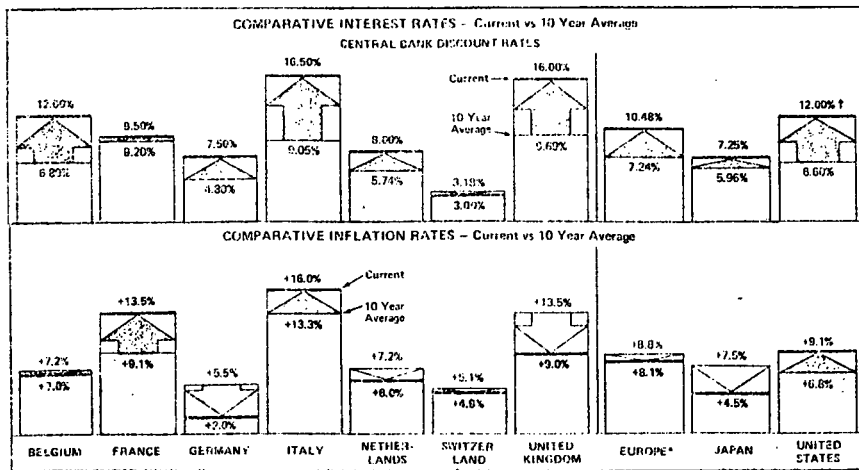
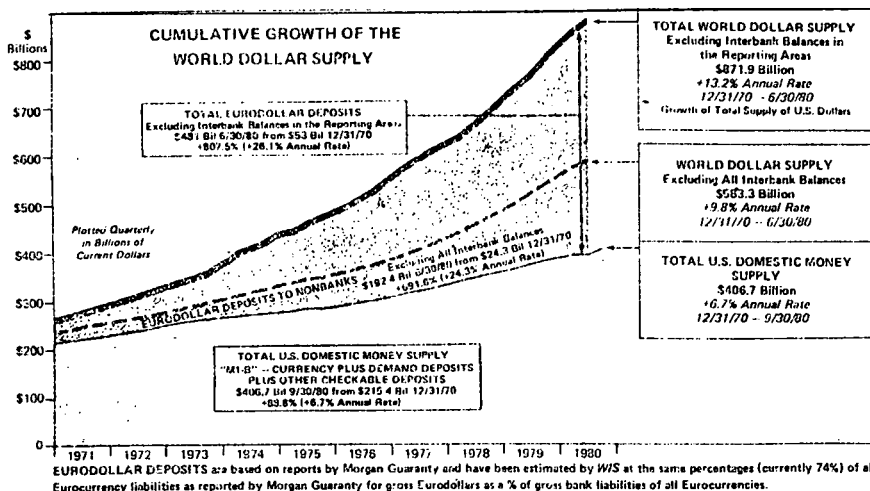
when foreign demand for dollars can be and is satisfied simply by the issuance of dollar credits by, and bank deposits in, foreign banks, instead of by the purchase of U.S. dollars in the foreign exchange markets, the total supply of dollar goes up, while the foreign exchange value of the dollar goes down.

Reformation of the methodology and policies utilized by the FRB in the control of domestic money and credit, including the introduction of selectively, though greatly needed and long overdue, would obviously not *alone* be enough to stop excessive U.S. inflation. The domestic program must be paralleled by effective control of the manufacture and distribution of *dollar* credits abroad. The control of each nation's money, whether in currency or bank credit, is at once a sovereign right and responsibility. The United States has the power to bring about the international acceptance of this principle.

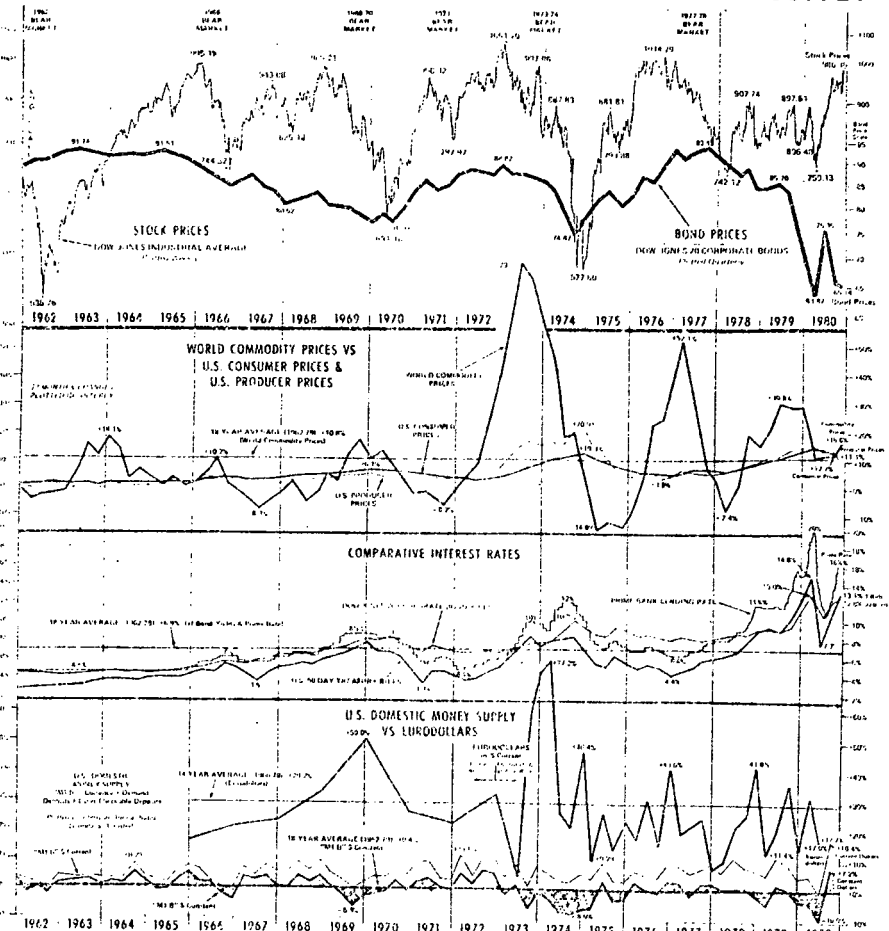
This analysis is not intended to indicate that the continuing uncontrolled proliferation of Eurodollars and the ineffectiveness and obsolescence of U.S. domestic monetary policy are the only causes of U.S. inflation. They are not. But they are major underlying causes which, until removed, will continue to prevent the elimination of excessive inflation by other means, no matter how vigorously employed. Thus far, the new administration has proposed a number of realistic and progressive programs designed to improve productivity through substantial incentives for corporate modernization and expansion of plant and equipment, provide greater work incentives through lower taxes and less regulation, and reduce waste in government expenditures. There may even be hope for some sort of "incomes policy" which can progressively reduce the inflation which is "locked in" by labor and other contracts indexed to the Consumer Price Index. But until the total world dollar supply is stabilized, the dollar is restored to its fair international value, and interest rates are reduced to a level which will improve both production and productivity, by encouraging instead of discouraging long-term investment, the fight against inflation will continue to be an uphill battle, handicapped by an inadequate strategy and fought with obsolescent tactics.

APPENDIXES

- (A) Cumulative Growth of the World Dollar Supply.
- (B) Comparative Interest Rates—Current versus 10 Year Average.
Comparative Inflation Rates—Current versus 10 Year Average.
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- (E) Excerpts From Testimony of John Winthrop Wright Before the Committee on Banking and Currency, U.S. House of Representatives, Washington, D.C., August 7, 1974.
- (F) Excerpts From the New York Times—Credit Controls: Make Them Selective.
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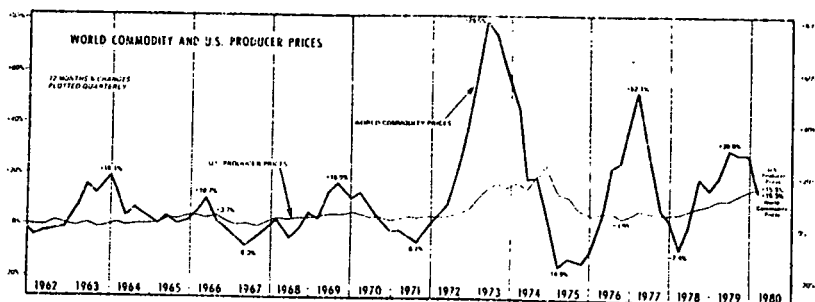
THE SECURITIES MARKETS VS INFLATION & MONEY SUPPLY



PERIOD	INFLATION				COMPARATIVE INTEREST RATES				MONEY SUPPLY		
	Dec. Index Industrial Average	Dec. Index Consumer Prices	12 Month % Change	% Difference	10 Year Average	90 Day Treasury Bill	Prime Rate	10 Year Govt Bond	U.S. \$ Billions	U.S. \$ Billions	U.S. \$ Billions
1971 I	918.13	857.28	+22.1%	+16.2%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
II	913.30	855.55	+23.8%	+16.8%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
III	945.11	854.42	+10.8%	+16.8%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
IV	831.17	837.76	-13.1%	+16.8%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
1972 I	757.86	824.4	-7.3%	+16.5%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
II	818.9%	857.34	-11.7%	+17.4%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
III	865.27	858.84	-19.6%	+18.2%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
IV	855.51	845.4	-19.5%	+18.0%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
1973 I	857.18	845.58	-10.8%	+18.1%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
II	891.98	857.50	-28.0%	+18%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
III	876.54	827.28	-29.3%	+18.1%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
IV	878.24	722.25	-29.0%	+18.1%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
1980 I	784.75	614.7	-11.7%	+18.7%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
II	802.87	747.7	-12.0%	+18.1%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
III	814.42	744.03	-12.4%	+18.4%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0
IV	934.25	757.18	-15.4%	+18.1%	8.0%	8.0%	8.0%	8.0%	100.0	100.0	100.0

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billion vs \$300 billion in the U.S. domestic money supply (including certificates of deposit).

1973: The enormous +58% expansion of the world's total money supply during 1971-73 and especially the \$152 billion increase in total world dollars created the worldwide boom of 1973, when the prices of world commodities, in dollars, doubled within a 12-month period, and the price of oil quadrupled later in the year after the OPEC nations got into the act and embargoed oil shipments for six months.

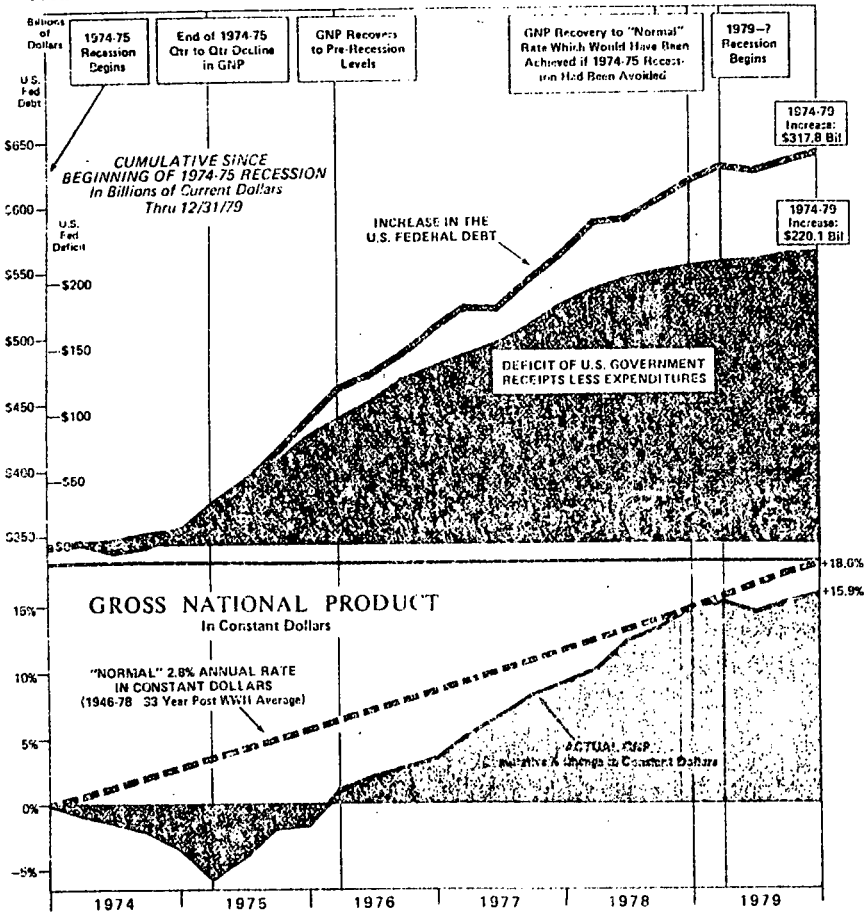
1974-75: The U.S. Federal Reserve, however, remained (at least publicly) oblivious to the facts that OPEC and Euro-manufactured dollars were obviously responsible for worldwide dollar inflation and that the U.S. domestic money supply (M1) had risen at a comparatively moderate +7.2% annual rate (only +1.7% in constant dollars) during 1971-73. Consequently, in early 1974, the FRB applied a rigorous and indiscrimi-

nate restriction of money and credit which resulted in making the 1974-75 recession the most severe and costly economic slowdown since the Great Depression of the nineteen thirties.

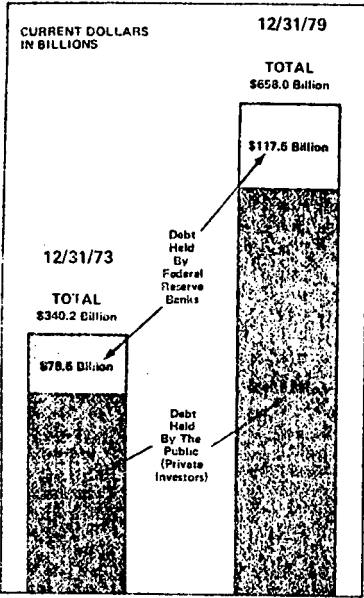
1974-78: During the five years from the beginning of the 1974-75 recession, including three and three-quarter years which were required for the nation laboriously to rebuild its Gross National Product to the level which would have been reached if recession had not interrupted its normal annual rate of growth (post-war average: +2.8%), the federal government through recession-induced deficit borrowing depleted the nation's industrial capital by a total of about \$278 billion.

The devastating results of this depletion of capital are evident today, in the shortage of capital which would otherwise be available for the nation's industrial growth and for the development of new sources of energy, and in an unprecedentedly low rate of improvement in the nation's productivity.

THE 1974-75 RECESSION NEARLY DOUBLED U.S. FEDERAL DEBT

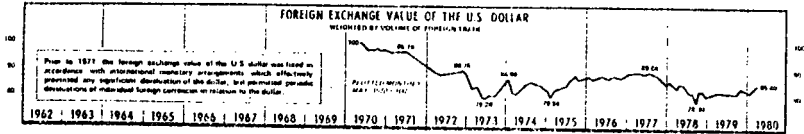


U.S. FEDERAL DEBT



Total excls Debt held by U.S. Gov't Agencies and Trust Funds.

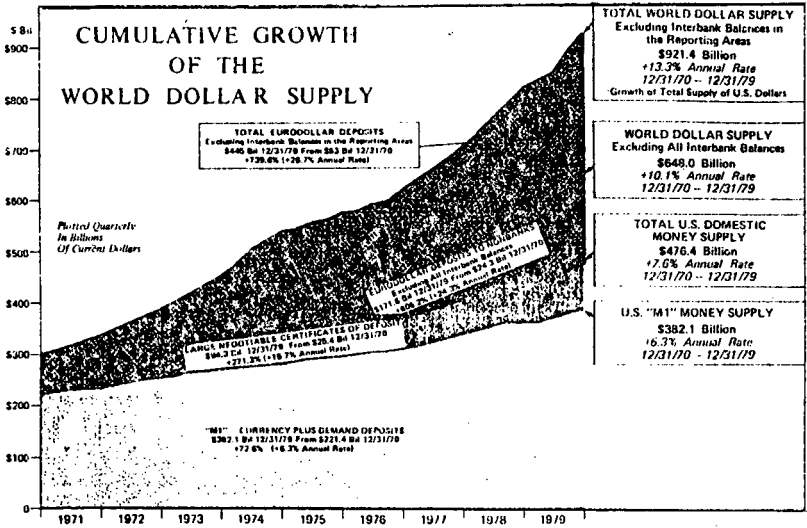
During the period of economic recovery after the 1974-75 recession, no significant steps were taken by our government to curb the continued manufacture of dollar credits and deposits abroad, and there were no signs of constructive innovation in FRB regulatory methods. There was, in fact, no sign of FRB recognition that the creation and use of Euro-bank dollar credits for a wide variety of monetary purposes, including satisfaction of the OPEC nations' demand for dollars, short circuited the alternative purchase of dollars in the foreign exchange markets and was therefore the fundamental cause of the declining foreign exchange value of the dollar. Consequently, instead of making clear to the world that the much-publicized "plut of dollars" was not a product of Washington's Bureau of Engraving and Printing, but rather the result of unregulated dollar credits created by foreign domiciled banks including the foreign subsidiaries of American banks, instead of calling upon the foreign central banks to join with us in controlling and regulating the creation of all credits and deposits in each nation's sovereign currency, and instead of attacking at the source, this monstrous underlying cause of world inflation, the U.S. Federal Reserve turned once again to impose excessive restrictions upon a domestic economy whose growth of money and credit during the four years since the 1974 recession had already been held to a moderate +5.2% annual rate in nominal dollars (M1: demand deposits and currency), a



total money supply which at 1978 year-end had shrunk to only 16% of Gross National Product vs 20% in 1973 and 23% in 1968, the years, respectively, prior to the 1974-75 and 1969-70 recessions.

1979: Thus, as last year got underway, the U.S. supply of money and credit was again the target of misdirected FRB fire power with the result that demand deposits in U.S. banks actually declined during the first quarter by -6.2% in nominal dollars (by -14.1% in constant dollars), the

current money supply (M1) was up +8.8% for the year, but down -2.7% in constant dollars, and interest rates moved up from a bank prime lending rate of 11 3/4% at 1978 year-end, to 15 1/4% by 1979 year-end. Meanwhile, the uncontrolled expansion of Eurodollars overseas was permitted to continue at an incredibly fast and accelerating rate (up at an annual rate of +19.7% in the second quarter, +4.2% in the third, and no sign of slackening since). Last year's growth of Eurodollars is estimated at nearly \$100 billion, a +28% annual rate to a current total of about \$450 billion on deposit in foreign domiciled banks, of



which only about \$50 billion is backed by net claims against U.S. domestic banks. Thus, as we assemble here today, the dollar deposits in banks outside of the United States now total more than \$450 billion. This is within 10% of the \$500 billion total U.S. currency, demand deposits, and large certificates of deposits in all U.S. domestic banks! If Eurodollar growth should continue at the recent rate, and be unchecked for another five years, Eurodollars would become by far the dominant world currency -- and by 1985 would total \$1½ trillion. This would be more than the 1985 projected total of all foreign free-world currencies and nearly three times the projected total of bona fide domestic U.S. dollars.

No wonder that world inflation in dollars is out of control! No wonder that the foreign exchange value of the U.S. dollar has been so depressed that it now costs American businessmen \$2 to buy a cup of coffee in a Viennese hotel and \$3.70 for a McDonald quarter-pound hamburger in Zurich! There is no way of stopping the inflation of dollar prices all over the world, no way of stopping the escalation of Middle East oil prices payable in dollars, no way of avoiding the ever-rising cost of energy in the U.S. and the inflation which inevitably accompanies it; there is simply no way of accomplishing these basic objectives without first recognizing and acting on the obvious principle that the United States must control the creation of credits and deposits in U.S. dollars everywhere!

1979 did, however, see the first signs of movement towards international monetary control

when former IMF Director General Wittveen singled out Eurodollars as the primary cause of World inflation, when FRB Governor Wallich admitted publicly that at least \$150 billion of the Eurodollar overhang is a significant factor, and when FRB Chairman Miller arranged for a meeting of the World Central Banks to formulate controls. Unfortunately, but not surprisingly, only studies and discussions have thus far ensued.

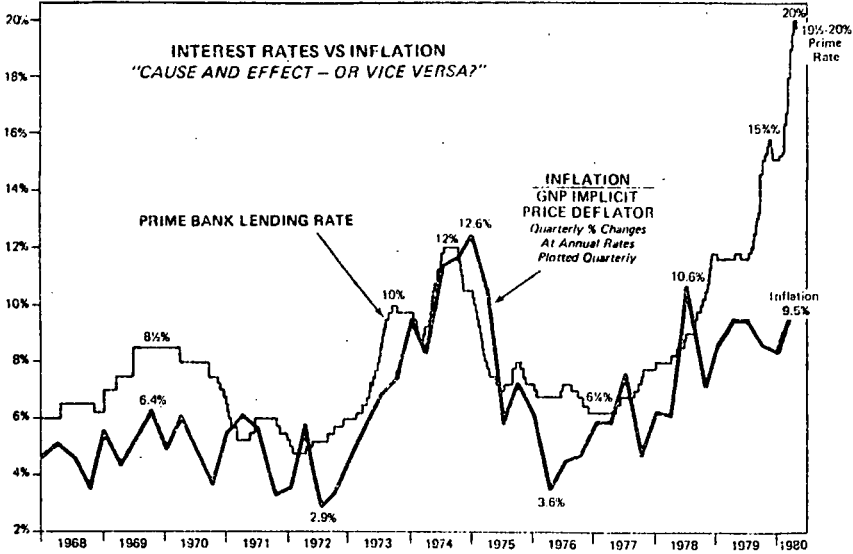
1979 did not see any glimmer of recognition by either the Federal Reserve or the Administration that excessively restrictive monetary policies which escalate interest rates to usurious levels also actually significantly increase, and do not decrease inflation. Despite all of the evidence, there has not yet been any official government acknowledgment of the obvious repeated failure of these policies to contribute to the attainment of our national objectives. Let us consider, for a moment, some of the damage which has, instead, actually been wrought by these policies . . .

1) The last two recessions, 1969-70 and 1974-75, both of which were deliberately caused by severe and indiscriminately restrictive FRB monetary policies, directly depleted a total of about \$250 billion of the nation's capital through governmental borrowing to finance deficits caused both by the huge growth of recessionary unemployment and welfare costs and by the shrinkage of the nation's taxable revenues. The magnitude of the depletion is evident when it is realized that the quarter of a trillion dollars of capital dissipated by the government's recessions

sionary deficits was greater than the total of the nation's current money supply (\$202 billion of currency and demand bank deposits) and 1/6th of all U.S. bank deposits and savings (\$1.50 trillion including all savings accounts and all certificates of deposits in all bank and nonbank thrift institutions) when the 1969-70 recession began!

2) The escalation of interest rates is not only

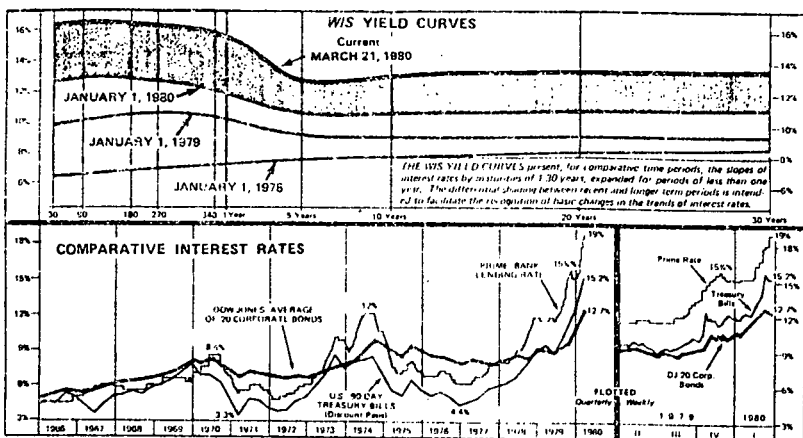
useless as an effective anti-inflation weapon, it is, contrary to doctrinaire belief, in itself a significant *cause* of inflation. The cost of capital, like the cost of energy, is a major component of the cost of all goods and services. When interest rates are raised, a corresponding inflationary rise in the capital use component of the costs of Gross National Product is certain to follow. The magnitude of the inflationary price increase



which accompanies each increase in interest rates is, sooner or later, close to one and a half times the rise in interest rates, a one-time inflationary price increase approaching 1 1/2% for each 1% rise in the cost of capital. This is simply because there is about \$1.50 of debt in the country for each \$1 of Gross National Product. Thus, 1979's approximate +2.5% increase in interest rates generally, can account for as much as 3 or 4 percentage points of last year's +8.9% inflation in the cost of our Gross National Product. This year's skyrocketing interest rate increases -- as long as they last -- are almost sure to offset any decreases which are likely to be achieved by other means.

3) Usurious interest rates have a centuries old tradition of benefiting those who have, and hurt-

ing those who have not. Usury has been discouraged by good public policy since the days when an upcoming Roman republic limited interest rates to 8 1/2%, and the lifting of usury ceilings on interest rates, as is now being demanded by our major banks, has, in the past, reflected governmental extravagance and mismanagement. The Roman ceiling was raised to 11% as the empire became increasingly corrupt. During the last decade, the progressive rise in the cost of borrowed capital was a major impediment to successful corporate operation and growth, especially of medium sized and smaller, cost-cutting competitive businesses. Usuriously high interest rates are, in my opinion, unquestionably a serious impediment to the maintenance and progress of the American system of competitive free enterprise.



EXCERPTED FROM TESTIMONY OF JOHN WINTHROP WRIGHT

Before The Committee on Banking and Currency
U.S. House of Representatives
Washington, D.C.

August 7, 1974

PROPOSALS FOR LEGISLATIVE AND REGULATORY REFORM OF AMERICAN ECONOMIC AND MONETARY MANAGEMENT.

1) Require by Resolution, U.S. International Negotiation to Create an Inflation-proof Standard of Value in the International Monetary System.

The recent international agreement on the "basket of currencies" principle for the valuation of each nation's currency in relation to an international "numeraire" known as "SDRs" was a useful first step in the right direction, but left unsolved the establishment of a constant inflation-proof standard of value to fill the role which, in the past, was acted by gold. For this purpose, I propose an extension of the "basket" principle to arrive at an overall rate of international inflation by applying the same "weights" as in the currency basket to each nation's respective "GNP Deflator" rate, thus adjusting and devaluing (or revaluing) all currencies in relation to the "SDRs", which would thereby always maintain constant purchasing power. By doing this, we would create for the first time a constant standard of monetary value, suitable for inflation-proof international financing and the settlement of international obligations. The result would immensely advance the restoration of confidence in the international monetary system and diminish international inflationary expectations.

2) Require by Resolution, U.S. International Negotiation of An Agreement to Regulate the Creation of "Eurodollar" and Other Foreign Currency Deposits in Non-domiciled Banks.

The unregulated creation of "Euro-dollars" by means of loans made by and deposits in banks domiciled outside of the United States and not subject to U.S. Federal Reserve Board regulation, has been the major cause of worldwide inflation. It is obviously not in the interest of the United States or, for that matter, of any nation to permit a foreign bank to "create" additions to its money supply without restriction, regulation or the requirement of liquid reserve deposits with the central bank of the nation whose money supply has thus been expanded. For this reason, I propose that the United States take the lead in negotiating an international banking agreement under which any bank which accepts or creates deposits in the currency of another nation would be required to keep reserve deposits in the central bank of that nation and to comply with the regulations of that central bank with respect to such deposits. I believe that all central banks would find this to be in their respective self interests.

3) Enact Legislation to Insulate Domestic U.S. Monetary and Credit Policies from the Influence of Excessive Foreign Capital Requirements and Interest Rates.

The fear of increasing the outflow to foreign borrowers of U.S. capital has frequently been given as a compelling reason for maintaining interest rates in the United States which are excessively high by traditional American standards. I propose that this influence can and should be effectively neutralized by requiring American taxpayers with capital deposits, loans or investments abroad to pay a tax on any net annual increase of such capital; the rate of such tax to be determined from time-to-time by the U.S. Federal Reserve Board as sufficient to offset substantially any competitive attraction to U.S. capital of higher interest rates abroad.

4) Expand by Legislation, the Federal Reserve Board's Regulatory Powers to Include Variable Reserve Requirements Depending on the Proportion of Each Bank's Loan Portfolio Allocated to National Economic Purposes and Priorities.

The current reserve requirements of the Federal Reserve Banks are directed to the safety of deposits and the overall liquidity of lendable funds. As a weapon in "the fight against inflation", this is more like a single bludgeon than the assortment of precision instruments which our modern economy and diverse national interests require. Accordingly, I propose that the powers of the Federal Reserve Board be expanded to permit the reserve deposit requirements of individual banks to be varied in accordance with formulae promulgated from time-to-time by the Board for the purpose of increasing or decreasing reserves in proportion to each bank's distribution of its loan portfolio between loans for

- a) Specific National Priorities
- b) Productive Purposes
- c) Consumer Purposes
- d) Purchasing or Carrying Publicly-Owned Equity Securities
- e) Purchasing or Carrying Publicly-Owned Debt Securities
- f) All Other Purposes

Obviously, the present objective of containing inflation would be much better served by selectively favoring loans for productive purposes which would add to the supply of goods and services, and limiting loans which would add to consumer demand, than by the present policy of indiscriminately beating the economy to death.

[From the New York Times, Mar. 2, 1980]

CREDIT CONTROLS: MAKE THEM SELECTIVE

By John Winthrop Wright

The Federal Reserve already has, or could rapidly obtain, the authority to control the cost and availability of bank credit and thus curb the "borrow-and-spend" cycle.

It seems obvious that 99 percent of the widespread resistance to the prospect of "credit controls" stems from the word "control" and its linkage to other almost universally disliked economic phrases such as "wage controls" and "price controls." In the minds of most financial writers, that linkage certainly does exist.

In fact, however, the selective control of bank credit should be regarded as a highly desirable alternative to wage and price controls and to usurious interest rate strategies with which Washington money managers have failed repeatedly in the fight against inflation in prior decades.

It is true that during World War II, specific regulatory credit controls were created that included specific, minimums on installment purchase downpayments and maximums on repayment terms. But it is also true that the regulation of credit has always been an ongoing responsibility of the Federal Reserve Board in peace as well as in war.

The trouble is that the word "selective" seems to be missing from the Reserve Board's lexicon. The board's method of money and credit management has consisted of unselective measures—raising the effective interest rates to all borrowers, for all purposes through its "open market operations," raising the discount rate, and increasing general banks' requirements.

The result has been to give our economy as a whole an unselective beating that debilitates consumers and producers alike—sort of like of caveman's bludgeon, which with one sweep lays low friend and foe alike.

Few things should be more obvious than the fact that when demand exceeds supply it is wrong to discourage production by raising the cost of financing business and the expansion of productive facilities, even though it may be right to discourage consumer spending. Yet, the Federal Reserve Board is doing precisely this today, when much lower, not higher, interest rates are needed to reduce product costs and expand production.

It does not have to be that way. The Federal Reserve already has, or could rapidly obtain from Congress, the authority required to control the cost and availability of bank credit so as to discourage the current "borrow-and-spend" cycle of consumer credit expansion while encouraging the intermediate and long-term financing of corporate capital investment, expenditures that are now greatly needed for expanded and more efficient United States productive and energy facilities.

One way to do this would be to establish Reserve Board variable bank reserve requirements that would link changes in each bank's loan portfolio to increases or decreases in the amount of reserve deposits that each bank is required to maintain with the Federal Reserve.

Thus, during a period like the present, when consumer inflationary spending has been maintained by means of excessive expansion of consumer credit, banks would be discouraged from making loans that directly or indirectly contribute to consumer spending.

The Reserve Board would accomplish this by raising or lowering each bank's reserve deposit requirements in some proportion to the growth or reduction of each bank's consumer loan portfolio. At the same time, banks would be encouraged to expand the volume and reduce the costs of productive industrial financing by lowering reserve deposit requirements proportionately to the growth of their industrial loan portfolios.

Note that no significant regulatory bureaucracy or red tape would be required. This method of bona fide selective credit control would work simply because it would be administered by each credit customer's own bank and because it would be in each bank's self interest to make it work. The availability of funds for consumer credit card financing would automatically be controlled by the variable limitation of bank credit available to credit card finance companies.

One more think. The Congress should promptly act favorably on the Federal Reserve Board's request to make all depository financial institutions subject to the Board's reserve deposit requirements. The present exemption of a huge segment of our credit institutions is an unwarranted handicap to monetary and credit management.

EXCERPTED FROM "IS THE AMERICAN ECONOMY MANAGEABLE
WITHOUT EFFECTIVE INTERNATIONAL MONETARY & CREDIT CONTROLS?"

PROPOSALS FOR INTERNATIONAL
MONETARY AND CREDIT CONTROL.

There is finally beginning to be an awareness of the increasingly imminent danger to the international banking system as a result of the massive short-term liabilities of commercial banks, mostly interest bearing deposits with maturities of less than one year, deposits which are mostly in dollars due to OPEC nations, or in euro-dollars created by the banks themselves out of thin air and utilized to make long-term loans, many of them to borrowers with questionable credit, especially the Less Developed Countries and deficit-ridden Developed Nations. Such loans, like the REITS with which the major U.S. banks have had such a disastrous experience, are nominally very profitable at high interest rates which cannot possibly be paid except out of the proceeds of still more loans with which to meet ever greater debt service charges.

The awareness of this danger is growing, and with it also a willingness on the part of major European nations to accept some form of effective international monetary and credit control. But the leadership is still missing. It can be provided only by the United States of America, which, although no longer a remote colossus which can remain unshaken by overseas disturbances, still overwhelmingly dominates the sea of Western Capitalism. Consequently, I hope that you will join with me in urgently asking our President, at his May Summit meeting in London, to seize the initiative which will be wide open to him, to act swiftly and decisively to control the proliferation of all xeno-currencies as well as euro-dollars, to limit private bank lending to nations, and to establish an effective international central bank with a non-inflationary currency as a medium for international deposits, loans and settlements.

Specifically, I propose that . . .

1) Each nation be acknowledged as the unqualified sovereign of its own currency - Germany over marks, France over francs, England over sterling and the U.S. over dollars. Every bank everywhere in the world which expects to clear its drafts internationally would then be required to establish for all deposits in any foreign (xeno)

currency, with the central banks of each such national currency, such reserves as each such central bank may require. Thus, foreign banks accepting or creating dollar deposits would be placed on the same reserve basis as U.S. domestic banks and the Federal Reserve Board would be able to control the growth of the total money supply of dollars - not just the portion which is on deposit in U.S. banks.

2) An International Treaty Organization for Monetary and Credit Control should be created into which would be incorporated the International Monetary Fund, the Bank for International Settlements and the World Bank. Within this framework, the IMF would expand the issuance of the present "SDRs" ("Special Drawing Rights") as the universal Currency for International Settlements, Deposits and Reserves (a more appropriate use of the "SDR" initials). The SDRs would be made 100% inflation-proof by providing that the trade-weighted world inflation rate be included in the daily adjustments of the SDR exchange ratio to the trade-weighted basket of national currencies, and that corresponding charges be made to, and in proportion to, the debit balances of the SDR accounts of each national central bank.

The IMF would stand ready to exchange the national currency of any participating nation for SDRs, and vice versa, at current rates of exchange, and would accordingly debit or credit the SDR accounts of the respective central banks. Thus, all outstanding SDRs would always be backed by claims on national central banks and would have an aggregate value in national currencies at current exchange rates, which would be exactly equal to their purchasing power during all prior periods.

The result would, of course, be to discourage, although not to prevent, the inflation of national currencies, to attract substantial interest bearing deposits in noninflationary SDRs by the surplus nations and to make available low interest loans to borrowing nations in noninflationary SDRs, thus effectively recycling OPEC surpluses.

Finally, I ask that you consider the alternatives.

This program may be called "bold", "daring", even "revolutionary", but it is really only plain common sense. The important thing is, however, that such a program is desperately needed and needed now — not a year, or two years or sometime in the future. The time is short because the evils of uncontrolled loan and currency expansion are still out of Pandora's box and assuming evermore gigantic proportions. If left uncontrolled, the result can only be some kind of international nightmare in the course of which our domestic recovery will certainly not be realized. If, on the other hand, these international forces are brought under rational and responsible control, our economy will be able to go forward in a world in which . . .

- ▶ Every nation would absolutely control its own currency and its own inflation rate.
- ▶ The world would, for the first time, have

an inflation-proof international currency.

- ▶ The present and prospective surpluses of the OPEC nations would be smoothly and fairly recycled.
- ▶ An international body would have the resources to finance the growth of the Less Developed Countries and the interim requirements of nations with temporarily deficit international payment balances.
- ▶ U.S. currency exchange rates would be freed from the depressing effects of a glut of dollars not made in or controlled by the United States.
- ▶ The U.S. Economy would be free of the unwanted importation of inflation resulting from world dollar prices established abroad.



C. Submitted Statements

STATEMENT OF RAY DENISON, DIRECTOR OF LEGISLATION, AMERICAN FEDERATION OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS

The AFL-CIO recommends realistic international economic policies for the United States in the 1980s. We believe that these policies should be developed in terms of reindustrialization and maintenance of a diversified U.S. economy.

In the United States and in the world today, free trade vs. protectionism, the dialogue since the 1930s, is not an appropriate debate. Today most nations protect their industries and their markets while the U.S. is virtually an open market and its industries under major attack.

Neither the circumstances nor the dialogue of the 1930s is relevant today: This is a period of high unemployment and high inflation, a sharp contrast to the rising unemployment and deflation of the 1930s.

There are other major differences today: Huge trade flows into and out of the United States make up at least 25 percent of the U.S. economy, and world trade exceeds more than a trillion dollars a year. This is in sharp contrast to the 1930s when world trade was stagnant and the U.S. was close to a stoppage because of widespread depression and actions impeding trade and payments.

Also, today we have a world of virtually instantaneous communications, swiftly changing technologies, rapid transportation and multinational firms and banks. Billions and trillions of dollars worth of capital flows among nations with highly protected or managed economies have been rising more rapidly than production, and state-owned corporations have become major factors in virtually every country except the United States.

While the international economic world has changed from the 1930s, so has it changed from the 1940s and 1950s. The United States is no longer the largest exporter of manufactured products in the world. The United States is no longer the newest and strongest industrial base, no longer possessor of the hardest currency, or the developer of the newest technology.

The U.S. and the rest of the world have become interdependent. However, interdependence is not an issue to the AFL-CIO and its affiliates. We have long advocated a more open world and an interchange with other nations. The issue of the 1980's is the structure of that interdependence and within it our ability to revitalize the U.S. industrial base to assure its place in the interdependent world of nations.

The U.S., however, cannot abandon its industrial underpinnings to become a predominantly service economy. This would not be a practical solution for the U.S. in international economic perspectives. Already the majority of AFL-CIO members and the majority of U.S. workers in the labor force generally are service employees. They, as well as their manufacturing employee brothers and sisters, know full well that both are linked in any economy. One cannot exist for long without the other. Furthermore, service jobs have been exported along with manufacturing jobs for many years as the runaway shop, the runaway ship and the runaway films have transported jobs across the globe. Now, in-

creasingly, jobs in both service and manufacturing industries and their parts are being exported daily along with new technology, and the new jobs of the future are being generated abroad by multinational firms and banks.

In short, the premise of the AFL-CIO policy toward international economic goals is that the United States must remain a major manufacturing, maritime, agriculture and service nation in order to participate effectively in the new economic relationships of the 1980s.

In international trade, the AFL-CIO believes that exports can and do create jobs. Appropriate government support for exports has been a longstanding policy of the AFL-CIO and its affiliates.

There are caveats, however: The AFL-CIO opposes further regressive shifts in tax burdens in the name of promoting exports.

The AFL-CIO believes that exports of materials in short supply that are inflationary should be curbed. Such exports are job destroyers, not job creators in our view. Hides, logs, and scrap steel are recent examples. No doubt, others will arise in the 1980s.

Exports of critical technology to nations that undermine the U.S. interest in the world and at home are not exports that help the United States or the world economy. The AFL-CIO has opposed past Western policy that assisted the Soviet Union to overcome its economic and political weaknesses by providing help technology, grain and credits. We support the present curtailment of grain sales and support restraints on high technology sales to the Soviet Union.

The AFL-CIO recognizes the need for imports. The dependence of the United States on supplies of critical materials from abroad is widely recognized, but excessive dependence has become a serious and unnecessary problem.

Effective enforcement of present trade laws would help guarantee fair trade and would regulate injurious imports. The failure to enforce these laws has cost U.S. production, jobs and technology in most industries, and increasingly in parts production for various key U.S. industries. The failure to enforce international and national agreements and regulations has caused a weakening in essential industries and has adversely affected America's ability to export.

Even where the U.S. takes steps to act under international agreements to lessen the hemorrhaging of its vital industries, it suffers criticism. Shoes, apparel, electronics, steel products flooded U.S. markets without action until damage was severe. The steps that were taken have not stopped trade, but have received wide publicity as outrageous "protectionist" measures. The right to curb injurious imports is recognized in both national and international law, but it has become a political whipping boy in international politics, as other nations view any possible curbing of imports in the U.S. as "protectionist" while they maintain their closed markets as "enlightened self-interest."

In 1980, the automobile industry is a good example of the failure of U.S. analysts to recognize and address a problem for this economy until damage was severe. Hundreds of thousands of jobs have been lost—some forever. And the U.S. industry—which consists of thousands of firms—has been severely eroded. Jobs of skilled and unskilled workers have been lost. Machinists, steelworkers, rubber workers, glassworkers and others in supplying industries of aluminum, forg-

ings, etc., are lost. That means a reduction in the skill development of the manpower of this economy—a cost that the nation will need to pay if it wishes to revitalize its industrial strength. The further cost to the nation in government compensation programs, lost taxes, eroded towns and cities is incalculable and worsening.

Service jobs were lost by the tens of thousands—as sales personnel, those who transport cars, and other types of service workers were affected. Over 1,600 dealerships closed in 1980's model year. This was not a problem only for "Detroit," but a problem for America.

With all of these losses, no action has been taken. Congress even refused to restrict the import of Soviet cars because it would restrain the President's power and would be a small fraction of the market. Yet only ten years ago Japanese cars were still an oddity in our markets.

Throughout the 1970's AFL-CIO unions provided examples of industry losses that the nation has suffered where imports destroyed U.S. jobs, production and technological development.

Imports get action abroad, even among some allies whose industrial policies and common goals have restricted entry for autos and other products. They have, however, according to the *New York Times*, faced a different problem:

No one doubts that most Western countries are trying to modernize their economies and the general rightward drift of political feeling among them may encourage governments to take the unpopular measures needed. Yet, as countries like Brazil, Taiwan, Argentina, and Mexico develop—not just in terms of steel mills and textile factories but also in electronics, auto making and aviation—it is far from clear just what the industries of the West ought to be diversifying into. In the view of French planners, it is the problem of "industries without markets." *New York Times*, Sunday, November 30, 1980, Sect. 3, p. 22 "Old Rich, Oil Rich: The West vs. OPEC."

If the United States does not change its policies on trade, the U.S. may be facing a problem of "markets without industries." And all economists know that will not last long.

Unless U.S. trade policy resolves these matters, a reindustrialization program will face serious handicaps. If, for example, tax "incentives" are proposed for the purpose of benefitting this economy, these benefits must not be devices for multinational firms and others to use to operate plants abroad and import products in competition with U.S.-made goods.

Many international economists tend to view these industry examples as microeconomic or anecdotal because they do not show up clearly in data for overall national trade. Therefore they virtually ignore the impact in their equations. The use of such theoretical macroeconomic models may be helpful, but the failure to recognize the realistic needs of a producing and dynamic society with realistic understanding of the workings of the national and internal economy can lead to serious distortions in policy making.

America's trade problems include foreign investment which should be curbed. The AFL-CIO believes foreign investment often substitutes for investment of funds at home and often creates advantages in productivity and technology abroad at the expense of the U.S. Therefore capital outflows and credit extensions for foreign borrowers should be restrained.

Foreign investment in the United States that is speculative should be curbed, but foreign investment in new facilities is necessary. There is nothing unique or punitive about such actions, nor do efforts to regulate or increase reporting on investments curb investment. Experience in other countries shows that domestic requirements have not been a deterrent to investors in recent years. In the 1980s capital is rushing to highly regulated economies and to areas where trade restrictions and capital incentives are in place. The United States cannot assume that there is a free flow of capital, while other nations make internal and external decisions that assure that capital moves into their countries. Most countries of the world have performance requirements or investment incentives that require investors to produce within their markets and often to export as well.

Investment incentives and performance requirements effectively transfer capital and technology to foreign countries where trade restrictions are greater than in the United States. The result is an imbalance in market development that has assumed huge proportions.

Principal among the countries which have failed to develop internal markets rapidly enough to create the kind of balance in the world economy and the kind of living standards their people need are many of the "less developed countries."

This group is composed of many different types of countries in size, structure of their economies and in stages of development. The term now includes the OPEC nations, whose swollen revenues from oil prices have changed world monetary relationships.

"Less developed countries" also include the newly industrialized countries, such as Brazil, Mexico, South Korea, Hong Kong, Taiwan, who are major competitors in world trade in many types of industrial products, ranging from apparel items to sophisticated technology. Some of these countries now have trade surpluses with the U.S. in manufactured goods as well as in oil. Yet the United States—through the Generalized System of Preferences (GSP)—provides preferential tariffs on imports of about 2700 products from 140 nations and territories—rich and poor alike—even in products where the U.S. has had massive industry shutdowns and job losses.

The entry of \$6 billion yearly in duty-free imports from the so-called "poor countries" is a special privilege that has been mismanaged. Non-tariff preferences for imports of drydocks, oil drilling rigs, and railroad cars, and buses, and auto parts are especially unrealistic when the U.S. desperately needs these very industries to revitalize its economy.

The AFL-CIO has urged and urges for the future that the preferences for imports from developing countries be ended because the benefits to development has been marginal at best, the administration of the program has been unrealistic and its effect on U.S. industry and workers has been detrimental. We do, however, support programs that aid healthy development and help to build internal living standards in other countries.

Even in the poorest nations, often only the rich are beneficiaries of the preference system and of other efforts to help their economies.

Multinational corporations, based in the U.S., Japan, Western Europe, or "developing countries" are often major beneficiaries of the preferential tariff program utilized by the poorest nations, while general economic development continues as a serious problem.

At this point in history, there is a serious problem of debt repayment for these countries, because the high price of oil and the rampant inflation adds to their costs while the markets of the developed countries, especially the U.S. are already bludgeoned by imports and by an internal recession or stagflation. This problem cannot be solved by further destruction of U.S. production and jobs through GSP, failure to enforce present laws, or to take action to defend threatened industries and services.

Imports of manufactures from less developed countries rose from \$8 billion in 1973 to \$26.4 billion in 1979, during which time U.S. ability to produce many products and parts of products was destroyed—ample evidence that programs to help the poor must not avoid the realities of the 1980s. Many of the developing countries have enough internal wealth and production to solve more of their own problems. The oil producers must help solve the problems largely because the continued rescheduling of debt will not prove to be an adequate solution.

Added to the problem of debt from the less developed countries is the problem of the enormous credit risk in the Soviet Bloc and the Soviet Union. The U.S. banking system and the Eximbank, as well as some of the preference programs, are now involved in a serious crisis whereby loans to Communist countries have now reached about \$70 billion. Past Western policy has assisted the Soviet rulers to overcome these problems by providing high technology, grain and credits. We support the curtailment of grain sales and high technology transfers to the Soviet Union in reaction to its invasion of Afghanistan. But U.S. policies should not be merely reactive to changes in Soviet behavior. U.S. economic relations with the Soviet Union should be geared to a long-term policy which discourages Western contributions to Soviet war-making capabilities.

Trade with non-market countries, regardless of the political relationships, requires a more realistic system of import monitoring and effective regulation. Increasingly U.S. and foreign multinational firms engage in joint ventures, where the newest technology is placed in communist nations, with an agreement to use the output of the factory to pay for the technology provided them. The result is an inrush of imports into the U.S. which disrupts U.S. markets, destroys U.S. jobs and production. The import-export accounting is not descriptive of the problem. The AFL-CIO has called for curbs on the export of technology to communist economies and for more adequate reporting of trade flows. Non-market trade is becoming a major factor in the U.S. and the world trade system and must be realistically dealt with.

The AFL-CIO believes that trade adjustment assistance is a necessary and integral part of an overall trade policy. The AFL-CIO believes that the program should be a supplement to, not a substitute for other necessary trade policies and actions. Over 11,000 groups of workers have sought help under these provisions in five years. Only

3,252 received any help by the end of September 1980. We support changes that end arbitrary exclusions and provide realistic help to American workers. We believe that employees who produce components and employees who are service workers should get the benefits promised to those adversely affected by imports. The auto experience once again demonstrates that the program needs improvement in its operation and fairness, so that the promise of help to those injured can be realistic.

The AFL-CIO recognizes that the United States has made major international agreements that require careful monitoring and enforcement. The conclusion of the multilateral trade negotiations in 1979 established mechanisms to improve the trade relations among nations. The AFL-CIO believes that the interpretation of these arrangements should be in keeping with their purpose: to address unfair trade practices.

Government procurement will be a key trade issue in the 1980s because the United States has, for the first time, agreed to allow foreign firms equal bidding rights on U.S. tax-supported projects. Close monitoring of the government procurement code and effective action if the code is violated is highly important if U.S. industry and our defense capability are to survive.

Because the government procurement code is a carefully negotiated departure from past GATT agreements, it is essential that the Congress and the public be made aware of its specific provisions. For example, the new code should not be used as a pretext to undermine or preclude enforcement of state domestic preference laws which are excluded from the code. And the code should be applied only to those government entities which have been included in the negotiated code.

The AFL-CIO recognizes that the government procurement code and other codes negotiated in the multilateral trade negotiations are a new approach in guidelines for international economic cooperation. The United States must have fair representation on code mechanisms.

The AFL-CIO believes that the mechanisms established by the codes and other international arrangements should be used effectively to address unfair trade practices. Monitoring of trade flows and monitoring of the codes are necessary for fair code enforcement as well as for effective enforcement of U.S. law.

Too little understanding exists of what the relationships are between international agreements and national law. There is no code violation, for example, in the pursuit of an "escape clause" action under Article XIX of the GATT or Section 201 action under the Trade Act of 1974.

The combination of world trade, investment and technology problems affects the U.S. economy because of the unique role of the dollar. The fact that imports have been flooding the U.S. market has added to the inflation at home by driving down the value of the dollar. The downfall of the dollar encourages domestic monetary authorities to try to keep U.S. interest rates high to deter speculation against the dollar. The high interest deters rebuilding the U.S. industrial base, which also weakens the standing of the dollar.

The AFL-CIO has therefore opposed the use of high interest as a remedy for both domestic industrialization and for foreign economic policy reasons. Jobs and production at home are lost and the U.S. ability to regain its strength at home and abroad is deterred.

The AFL-CIO and trade unions of other industrial countries in the OECD have urged effective international cooperation for full employment. We have decried the use of tight money and or fiscal policies to stop inflation. The AFL-CIO and other OECD trade unions recognize that international cooperation and effective national actions are consistent. The trade unions of industrial countries believe governments should seek full employment and reductions of inflation. We have joined with other OECD unions in urging governments to seek more effective international cooperation, based on more realistic principles for the 1970s, including full employment and structural change and the building of a basis for more equitable relations between industrialized and developing countries.

The AFL-CIO is well aware that consumers are workers as well as taxpayers. We believe that it is time to reassess the impact of trade and investment on the twin problems of inflation and recession. There is ample economic evidence that imports may not, in fact, be cheaper for consumers in the short term, because of the devalued dollar. The removal of trade restrictions, because of the floating dollar, can in fact, create higher costs for the consumers in the United States.

These are new thoughts for the United States in a changing world economy. They require a new approach to international economic problems—carefully weighed in terms of the impact on the pressing need for revitalizing the domestic industrial base. The AFL-CIO will continue to support fair trade, responsible international monetary actions, and urges that foreign investment flows and foreign borrowing be curbed in the interest not only of the United States, but also in the interests of a more balanced world economy.

STATEMENT OF RIMMER DE VRIES, PARTNER, MORGAN GUARANTY TRUST
Co. OF NEW YORK

INTERNATIONAL ECONOMIC ISSUES AND PRIORITIES

With the dollar strong in exchange markets, the new U.S. administration undoubtedly will focus mainly on domestic economic problems. The U.S. economy, after declining nearly 1 percent in 1980, is projected to show at most 1 percent growth in 1981. Productivity, which dipped both last year and this, will show scant improvement in the year ahead. Unemployment, now at 7.6 percent, may rise above 8 percent next year. The rise in consumer prices, which amounted to over 11 percent in 1979 and more than 13 percent this year, is likely to accelerate in the first half of 1981 and recede only modestly thereafter. The federal budget deficit, now estimated at \$45 billion for calendar 1980, could be even greater in 1981 if there is large-scale tax-cutting. Measured from twelve months ago the money supply aggregates may not be far off target, but their recent behavior has put the effectiveness of Federal Reserve policies in question. Interest rates are at or above their peaks of last spring, and when relief comes rates are likely to remain relatively high if inflation expectations are not crushed.

To find a new combination of economic policies that promises progress in all these trouble spots will be a herculean task. While policy-

makers will rightly put their major energies to the domestic challenge, they should not lose sight of some important international issues and the international implications of the domestic policies chosen.

Five issues head the list of international economic concerns: the U.S. balance of payments and the dollar's standing in exchange markets; the control of the Euro market, which some believe to be a major engine of inflation; the workings of the international monetary system; the heavy dependence of most countries on imported oil; and the international debt burden of the less-developed countries and the financing of their future balance-of-payments deficits. Of the five, the first three issues merit relatively low priority at the present time, while the last two demand urgent attention.

U.S. BALANCE OF PAYMENTS

Despite repeated statements by many observers alleging continued weakness of the U.S. balance of payments, the overall position is actually quite strong and satisfactory. In 1980 the U.S. current account will be in approximate equilibrium, while those of all other industrial countries, except Britain and Norway, will show sizable deficits. The deficits of Germany and Japan are particularly striking, given their past large surpluses. As shown in Table 1, the U.S. balance-of-payments structure is not expected to change dramatically in 1981. Even with an assumption of oil prices averaging \$40 per barrel, leaving an OPEC surplus in excess of \$100 billion, the United States can expect a small surplus on current account in 1981.

Following recurring bouts of weakness over the past decade, the present strength of the U.S. international payments position is impressive, especially with the net U.S. oil imports bill soaring from \$3 billion ten years ago to \$76 billion this year. Table 2 indicates that this massive increase in the oil bill has been offset through broad-based improvement in other current account transactions. There has been a \$25 billion gain on net trade in agricultural and other raw materials, a \$20 billion increase in the surplus on manufactures trade, and a \$32 billion surge in net income from service transactions, principally through investment income earned on U.S.-owned assets and enterprises abroad.

By contrast, Germany and Japan are overwhelmingly dependent on net exports of manufactured goods to balance their international accounts. While each recorded enormous gains in their surpluses on manufactures, they were not enough to offset their oil bills and deficits in other areas. Their relative shortage of agricultural and natural resources has led to steadily increasing outlays for food and raw material imports. Neither country enjoys an external investment position comparable with that of the United States. Thus, Japan has few services exports to offset rising freight, insurance and travel payments. Germany's sharp invisibles deterioration has been exacerbated by tourist expenditures abroad, outflows of guest worker remittances, and interest payments on borrowings to finance the weakening external position.

Any perception of weakness in the U.S. payments position presumably relates to oil and to the adjustment problems of the manu-

TABLE 1.—PROJECTED CURRENT ACCOUNT BALANCES

[In billions of dollars]

	1980	1981
Industrial countries.....	-75	-80
United States.....	0	3
Canada.....	-3	-5
Japan.....	-12	-10
Western Europe.....	-60	-63
France.....	-8	-8
Germany.....	-16	-18
Italy.....	-12	-9
United Kingdom.....	5	5

TABLE 2.—TRADE AND CURRENT ACCOUNT BALANCES

[In billions of dollars; 1980 figures are estimates]

	United States		German ¹		Japan ¹	
	1970	1980	1970	1980	1970	1980
Agricultural and raw materials.....	0.3	26	-6.8	-23	-8.2	-36
Fuels.....	-1.3	-73	-2.4	-34	-3.9	-67
Manufactures ²	4.1	25	13.1	64	12.5	92
Trade balance:						
Customs basis.....	2.5	-22	4.3	7	.4	-10
Balance-of-payments basis.....	2.6	-29	5.6	12	4.0	1
Services.....	3.0	35	-2.2	-15	-1.8	-12
Transfers.....	-3.3	-6	-2.7	-13	-.2	-1
Current account.....	2.3	0	.7	-16	2.0	-12

¹ Product balances and customs trade balance value imports c.i.f.² For United States, includes re-exports.

facturing sector. With respect to oil, a start has been made in turning around the acute dependence of the U.S. economy on imported oil that developed in the first half of the 1970s. Net oil imports climbed from modest levels before 1970 to a peak of 9 million bpd in 1977, absorbing a major slice of OPEC production that played no small part in the sharp rise in relative oil prices. The belated introduction of more realistic oil pricing in the United States, assisted by sluggish economic growth, has trimmed net imports to 6.5 million bpd in 1980. They will likely fall lower yet in 1981 as full price decontrol is finally achieved. Since the United States has vast energy resources, the effects of high prices in stimulating domestic production, together with the equally vital price disincentive to wasteful consumption, offer the potential for a radical reduction in the oil import burden as the 1980s go forward. Few other industrial countries can match that prospect.

In evaluating the U.S. trade performance in manufactured goods it should be noted, first, that the greater surpluses of Germany and Japan are a necessary result of their more limited natural resources and foreign investment positions. Under floating exchange rates and relatively free trade, the principles of comparative advantage ensure that the United States does not achieve outside trade surpluses on manufactured products. There is nonetheless a legitimate concern for U.S. industrial competitiveness. Even though relative price competitiveness of U.S. industry remains close to the 1973 level, the deep-seated productivity problems of U.S. industry have handicapped U.S. trade performance. Restoring technological dynamism to the domestic

economy will pay dividends in the international sector also. More positive export policies would be helpful too, especially in fostering expansion of sales to developing countries that already take 40% of all U.S. exports.

Notwithstanding the present strength of the balance of payments, experience over the past decade has demonstrated the risk of neglecting the sensitivity of the dollar's exchange market standing to the effectiveness of U.S. economic management. In 1977 and 1978, the reflationary policies of the Carter Administration had the result of overexpanding U.S. import demand at a time when the world economy and U.S. export markets remained depressed. A widening current account deficit and the market's perception of lax and ineffective policies against inflation prompted the 1978 collapse of confidence in the dollar. Plainly, the United States cannot again play lone locomotive to the world. A legacy of that experience is a continuing uneasiness among OPEC and other international portfolio investors about the dollar as an investment currency, mitigated for the time being by high dollar interest rates. Diversification out of the dollar into less inflation-prone currencies would be quickly rekindled by any appearance in the new administration of inconsistency or passivity in fighting inflation.

CONTROLLING THE EURO MARKET

Control or regulation of the Euro-currency market continues to be called for by those who regard the market's rapid growth as an important cause of inflation in both the United States and abroad. This contention has several pitfalls.

First, these views sometimes are based on the mistaken comparison of total Euro-currency liabilities (\$1.3 trillion as of mid-1980) with the narrowly-defined domestic money supplies. This is like comparing apples and oranges. More than three quarters of the gross Euro liabilities are interbank deposits and most of the remainder consists of time deposits, whereas narrowly-defined domestic money supplies include only transactions balances held by nonbanks. For meaningful analysis, the focus should be on the Euro deposits of nonbanks and on comparable domestic monetary aggregates, such as M-3, which includes large-denomination time deposits and term repurchase agreements at banks.

Second, the views exaggerate the inflationary impact of the Euro markets. The amount of outstanding Euro-currency deposits held by nonbanks still is quite small in relation to domestic monetary aggregates. For example, Euro liabilities to nonbanks in mid-1980 were still less than 6½ percent of the combined broadly-defined domestic money supplies of industrial countries. Taking the Euro-dollar component alone, nonbank deposits were about \$200 billion in mid-1980 and those held by U.S. nonbank residents were less than \$50 billion, compared with the U.S. aggregate M-3, at \$1.84 trillion. This fact undoubtedly helps to explain why numerous quantitative studies have failed to find that the growth of the Euro market had significant explanatory power regarding U.S. inflation or changes in the velocity of circulation of the U.S. domestic money supply.

The real issue is that Euro-currency deposits held by nonbanks have grown more rapidly than comparable domestic monetary aggregates in the principal industrial countries—at an average annual rate of about 25% versus 15% per annum—over the past decade (see Table 3). While the rate of expansion of the Euro market has not accelerated during this period, there nevertheless is a possibility that the Euro market, given its competitive advantages over domestic banking markets, will continue to grow more rapidly than comparable domestic monetary aggregates.

There are at least two ways to deal with this possibility. One way is for the Federal Reserve and other national monetary authorities to take account of the more rapid expansion of the Euro market by tightening domestic monetary policy. Indeed, the Federal Reserve already includes *U.S.* nonbank resident holdings of Euro-dollar deposits in several of the monetary aggregates on which it focuses. The Fed may also want to take account of *foreign* nonbank holdings of Euro-dollar deposits insofar as such deposits could be used to purchase goods, services, and assets in the United States. Moreover, because interest rates in the Euro-dollar market are so closely linked to domestic interest rates, the Federal Reserve can directly influence Euro market growth by altering domestic money market rates.

Another way to handle any potential problems arising from the relatively rapid growth of the Euro market is to slow its expansion by reducing the market's attractiveness to depositors and borrowers. It is well to remember that, as with other markets such as the commercial paper market, the Euro-currency market itself is largely a product of controls and regulations on domestic banking systems, particularly of reserve requirements and restrictions on the payment of interest imposed by the Federal Reserve. Rather than attempting to slow the growth of the Euro market by extending the same controls and regulations to the Euro market—a course of action that would be fraught with difficulty and that would risk disrupting a very efficient market and distorting credit flows—it makes far more sense to eliminate, or at least minimize, the domestic regulatory burdens that give rise to the Euro market's rapid growth. This would reduce the competitive advantage now enjoyed by the Euro market and help bring its rate of expansion more in line with that of the domestic banking system. A step in this direction has already been taken by the Monetary Control Act of 1980, which reduced from less than 30 days to less than

TABLE 3.—EURO-CURRENCY LIABILITIES

	Gross	To nonbanks only	
		Total	U.S. residents
In billions of dollars:			
December 1969.....	85	25	(1)
December 1974.....	480	75	8
December 1979.....	1,180	230	43
June 1980.....	1,310	265	47
Average annual percent change:			
1970 to 1974.....	42	25	(1)
1975 to 1979.....	20	25	40
June 1979 to June 1980.....	31	32	26

¹ Not available.

14 days the term of deposits on which the payment of interest is prohibited, and which provides for a phased reduction of reserve requirements on domestic deposits. Further steps should be taken to phase out reserve requirements on time deposits altogether.

In the final analysis, it is important not to lose sight of the central fact that the growth of money and credit, whether in the Euro market or in other institutions and markets, is ultimately a product of the amount of liquidity that U.S. and other monetary authorities provide visa domestic monetary policy. The Euro market is not independent of domestic markets but is rather closely linked to them and, in effect, an extension of them.

THE INTERNATIONAL MONETARY SYSTEM

There is no urgent need to engage in further protracted negotiations on international monetary reform. The managed float and the evolution of the dollar-based system into a multiple currency reserve system are progressing satisfactorily. Exchange rate changes by and large have reflected fundamental market forces over the longer run: Countries with relatively low inflation rates and strong current account positions have experienced appreciation of their currencies, while those with high inflation rates and weak current account positions have seen their currencies depreciate (see chart).

At the same time, exchange rate changes have proven to be effective instruments for promoting balance-of-payments adjustment. There is ample evidence that changes in international competitive positions as expressed by real effective exchange rates—trade-weighted exchange rate changes adjusted for inflation rate differentials—have been important in altering the trade and current account positions of a number of industrial countries. Much of the narrowing of the U.S. current account deficit in 1974–75 and again in the past two years, for example, is attributable to the improvement in U.S. competitiveness resulting from earlier dollar depreciations. Similarly, the sharp turnaround of the current account positions of Germany and Japan, from large surpluses in 1977–78 to record deficits in 1979–80, is in part the result of the appreciations of the mark and the yen during 1977–78.

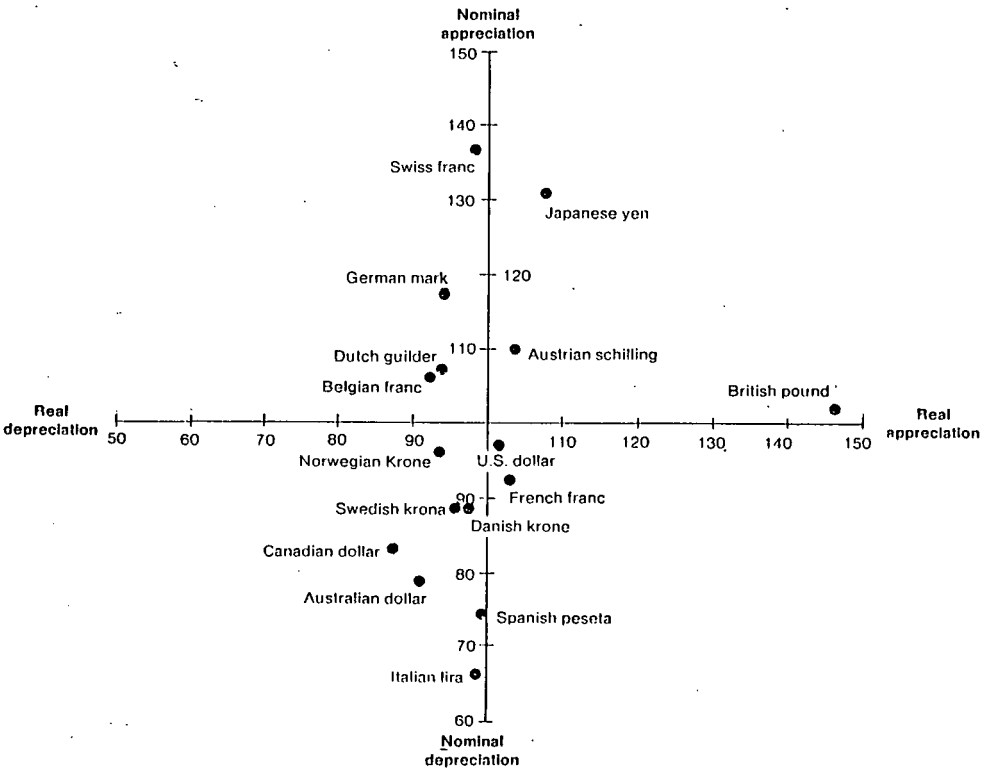
Flexible exchange rates have also proven compatible with a rapid expansion of international trade and capital flows, contrary to the numerous concerns that had been voiced prior to the advent of floating rates. In fact, during the period in which the floating rate system has been in operation, U.S. capital controls were dismantled and exchange controls in a number of other industrial countries were significantly liberalized.

The international monetary system has been evolving gradually toward a multiple currency reserve system. The dollar's share of the world's total foreign exchange reserves (including ECUs) has declined from 85% in 1973 to about 65% at present, while that of other currencies—especially the mark, and to a lesser extent, the yen and Swiss franc—has been rising in recent years. Whereas the dollar at one time was almost the sole currency used for intervention purposes, intervention in other currencies is increasing now, especially in Europe with the establishment of the EMS.

Nominal and real effective exchange rates:

December 1980

Index, 1973-77=100



This development is both desirable and welcome. The relative importance of the U.S. economy has lessened over the years, such that it accounts for barely one third of industrial-country output today, compared with one half ten years ago. During the same period, the relative importance of the U.S. capital market has also diminished. Portfolio diversification is likely to continue, given the changing patterns of international trade and finance, the volatility of exchange rates, and the differences of investment performances of assets in various currencies over the years. In particular, the buildup of a large OPEC current account surplus will remain a key element in the diversification process. Recognition of the legitimate need for portfolio diversification has given rise to a more relaxed attitude by officials in German, Switzerland, and Japan toward their currencies being used as reserve assets.

Concerns continue to be voiced in various official quarters that such a system is inherently unstable. It is asserted that shifts in currency preferences by central banks will exacerbate exchange rate fluctuations arising from private capital movements. However, these fluctuations mainly arise from changes in fundamental factors such as current account balances, inflation differentials, and interest rate differentials, as well as from political disturbances. Exchange rate volatility thus often serves the desirable function of nudging governments toward more realistic policies. Moreover, any risks of exchange rate instability arising from shifts in currency preferences can be minimized by bringing a measure of order to the process of reserve diversification through special placements of government securities with foreign official institutions involving off-market foreign exchange transactions.

Since the early 1970s there have been several attempts to involve the International Monetary Fund in issues relating to exchange rate and international reserve management. In the area of exchange rate management, the role of the IMF was diminished substantially following the abandonment of the par value system. Subsequent efforts to involve the Fund more broadly in the exchange rate management of member countries through IMF "surveillance" under Article IV provisions have not had much impact, since the member countries are under no obligation to alter their policies. The principal obstacle continues to be the reluctance of member countries to surrender their sovereignty over domestic economic policies.

In the area of international reserve management, the stated goal of international monetary reform is to enhance the role of the SDR as the principal reserve asset of the international monetary system. Since the advent of flexible exchange rates, however, the proportion of international reserves held as SDRs has actually declined.

Part of the reason that the SDR has not gotten off the ground is that it has been an unattractive asset to hold in comparison with other reserve currencies. The recent decision to redefine the SDR in terms of five key currencies (the dollar, mark, yen, sterling, and French franc) should make it a more attractive unit than in the past, but not necessarily the most desirable unit for many countries. Any specific combination of currencies may not accord well with the interests of individual portfolio holders in relation to their import patterns and debt service obligations. The fact that the interest rate on the SDR still is equivalent to only 80% of the weighted average of rates in the five major financial centers has also made it a less desirable asset to hold. Even if a "full value" SDR were eventually adopted, there are a number of factors that make it a more illiquid asset than other currencies, thereby limiting its usefulness in private transactions.

Apart from these technical problems there is a more basic, gnawing issue of what role the SDR is expected to play in a world of flexible exchange rates and multiple reserve currencies. As originally conceived, the SDR was to provide a means for improving control over the growth of international liquidity, while reducing dependence on the dollar as a reserve currency. If anything, however, SDR creation has added to world liquidity, since the IMF has no power to control the growth of reserve currencies. Thus, unless the Fund is to become the

central bank of an integrated monetary system, in which national governments surrender their sovereignty over domestic economic policy and the SDR is the sole international currency, one of its principal purposes is likely to be unattainable.

Serious doubts about the desirability of pushing the role of the SDR extend to the proposal to create a substitution account. Foreign central banks would place reserve currencies (mainly dollars) in an account *administered* by the IMF in exchange for claims denominated in SDRs. This proposal was developed to enhance the SDR and to promote greater exchange rate stability, but it was rejected at the Interim Committee meeting in Hamburg last spring. The attractiveness of the proposal to prospective depositors in the account was its apparent promise of greater yield on their reserve holdings. However, without additional contributions from the U.S. taxpayers in the event of either interest or capital value deficiencies such promise was illusory. Even ardent supporters now acknowledge that it was extremely complex and politically unattractive and did not address the more pressing issues of today, such as balance-of-payments financing.

Some have favored reviving the proposal by creating a simpler account that would be an integral part of the IMF in which exchange rate gains or losses presumably would be shared between the United States and the rest of the Fund's members. However, unless depositors are assured of a higher yield, the account would be unattractive to them. Moreover, it is unlikely that the developing countries would participate if they, too, were held accountable for any interest rate or exchange rate losses. Others have sought to rekindle interest by creating a substitution-recycling mechanism in which the Fund would borrow dollars from OPEC and relend the proceeds in SDRs to many non-oil developing countries. Although this proposal has some resemblance to the original, its basic purpose would be entirely different. It would provide the Fund with additional financial resources, but would not deal satisfactorily with the issue of reserve diversification.

Rather than striving for international monetary reform, a better approach is to leave the evolution of the international monetary system to the market place. To the extent that there are legitimate concerns about the need for orderly reserve diversification, appropriate "defensive measures" can better be worked out through intensive consultation among the reserve-center countries. The establishment of credit facilities among the EMS participants represents a step in this direction. The entire G-10 consultative framework could also be strengthened in managing the exchange rate system. The IMF would then be free to concentrate its efforts on providing balance-of-payments financing to the non-oil LDCs.

REDUCING DEPENDENCE ON IMPORTED OIL

Recent conservation efforts notwithstanding, the world remains heavily dependent on imported oil, particularly from the Middle East. Unless future increases in relative oil prices can be contained, it will be difficult to achieve a lasting solution to the problems of growth, inflation, and balance-of-payments financing that now confront the United States and the world economy in general.

During the early part of the 1970s the pressure on oil prices came mainly from the *demand* side, reflecting more than two decades of falling relative oil prices. Even after the 1973-74 quadrupling of oil prices many industrial countries, particularly the United States, failed to adjust effectively so that demand continued to be the major influence on oil prices. However, rising oil production from new areas (primarily the North Sea, Mexico, and Alaska) kept the rate of oil price increases in nominal terms quite moderate during 1974-78. In fact, they declined by 20% in real terms (see Table 4). It was not until the second shock in the wake of the 1979 Iranian revolution, which resulted in a doubling of relative oil prices, that a more fundamental adjustment in oil demand took place. During 1979, the aggregate oil consumption of the major industrial countries remained flat, and this year it has been reduced by over 6%. This development, which is not solely explained by the slowdown in economic growth, has not been limited to the United States (see Table 5).

Oil prices have continued to rise, nevertheless, and may again be on the verge of another surge because of pressures from the *supply* side. Since 1979, political events in the Middle East and a growing desire on the part of most oil producers to conserve their oil resources have reduced the availability of oil supplies, both actual and expected. For

TABLE 4.—OPEC TERMS OF TRADE
[Period averages as index numbers, 1974=100]

	Oil prices ¹	Import prices ²	Terms of trade
1974.....	100	100	100
1975.....	98	111	89
1976.....	106	107	99
1977.....	114	117	97
1978.....	117	136	86
December.....	117	144	81
1979.....	178	154	116
December.....	255	164	155
1980.....	286	175	163
December.....	306	184	166
1981 (projected).....	360	195	184

¹ OPEC marker crude through December 1978 and effective OPEC average price thereafter. The effective price is equal to the weighted average of all official OPEC prices and spot market-related prices. The weights used are the OPEC members production levels.

² Wholesale prices of nonfood manufacturers in 12 industrial countries, in dollar terms, weighted by these countries share in OPEC merchandise imports.

TABLE 5.—TRENDS IN OIL CONSUMPTION IN MAJOR INDUSTRIAL COUNTRIES IN 1979 AND 1980
[Percent change from same period a year ago]

	1979	1980 year to date ¹
United States.....	-1.8	-8.9
Japan.....	1.0	-7.0
Total EEC.....	1.3	-7.7
France.....	-7.7	-7.0
Germany.....	2.9	-8.0
Italy.....	1.4	3.1
United Kingdom.....	.1	-13.6
Netherlands.....	2.5	-5.3
Belgium.....	1.3	-14.0
Denmark.....	.4	-18.6

¹ All data are for January to July except those for the United States and Germany which are for January to September.

example, the level of OPEC production now considered most likely for the decade ahead is some 10 million bpd less than what was expected for the same period only five years ago. This has more or less offset the decline in oil consumption to date and has kept the pressure on oil prices.

The reduction in oil supplies has also changed the consumers' perception of what constitutes an adequate level of oil stocks, and their willingness to share them at times of emergency. The more or less persistent tightness of oil markets because of the fear of inadequate supplies also has meant that the role of OPEC in the setting of oil prices has been overtaken by market forces. Since 1979 official prices, as set by OPEC, have followed rather than led those established by the free market.

The prospects for an improvement in the current oil supply situation are not favorable. Oil supply disruptions due to political factors are likely to continue. The number and complexity of the conflicts that still remain unresolved in the Middle East alone, and the continued dependence of the world on that area as a source of oil, suggest that even with falling demand the path of future rises in relative oil prices will probably continue to be one of abrupt jumps.

The level of the non-Communist world's dependence on the Middle East as a source of energy remains high, in spite of the declines in oil consumption and increased oil production outside this area (see Table 6). This year, the six oil producers on the Gulf are likely to supply nearly one-fifth of the total energy consumed by non-Communist countries. Although this proportion is smaller than the peak of 25% reached in the mid-1970s, it is triple that which existed as recently as 1970. Moreover, Western dependence on the Middle East has become even more concentrated on a few countries, particularly Saudi Arabia. Having raised its production to 9.5 million bpd during most of 1979-80 to make up for the Iranian shortfall and now to over 10 million bpd to make up for the Iraq-Iran war, Saudi Arabia is likely to account for over 21% of the non-Communist world's oil production this year, compared with 16% in 1973 and only 10% in 1970. In terms of total energy consumed by the Western world, Saudi Arabia's contribution in 1980 will exceed 10% versus 5% in 1970.

It is clear that continued reliance on Saudi Arabia to make up for the loss of oil supplies elsewhere is not a long-term solution to the world's energy problems. It creates new pressures as it forces one country to maintain oil production at levels far above those needed to meet its own financial requirements. This results in a concentration not only of world oil production but also of the financial surplus. This year, for example, Saudi Arabia is likely to account for 40 percent of the aggregate OPEC current account surplus. While a high level of production by Saudi Arabia makes at present a significant contribution to the stabilization of oil prices, it should be viewed only as a temporary measure, which needs to be supplemented by further action on the part of the oil-importing countries, particularly the industrialized world. The thrust of this action should be on the development and implementation of comprehensive energy policies that will reduce dependence on imported oil, and thus the vulnerability of their economies to bouts of sharp increases in relative oil prices.

With respect to the measures that need to be implemented a distinction should be made between the immediate situation of the oil supply disruption stemming from the Iraq-Iran war and the longer-term problems for the decade ahead.

In the short term, prompt action is needed on the part of oil-importing countries to prevent a repetition of the events of late 1979, when the scrambling for oil supplies led to sharp increases in oil prices even though oil production by that time was more than adequate to meet demand. At present, oil consumption is falling, most Gulf countries have raised oil production, Iraq and Iran have resumed a limited volume of oil exports, and the Western world's oil stocks are at an historically high level. If drawn and shared effectively these stocks are adequate to offset the shortfall well into 1981.

The EEC and the International Energy Agency (IEA) have agreed on the need for measures to encourage the use of stocks and the sharing of oil supplies among countries. It is now up to the member governments to implement these policies quickly and effectively and to help prevent the further buildup of pressures in the oil market. Effective implementation will require those countries and companies which have excess oil supplies to pass on some of them to the countries and companies most affected by the war, including countries which are not members of either the EEC or the IEA.

With successful cooperation in the sharing of oil supplies among oil-importing countries and the continued willingness of some oil-exporting countries to maintain high production, the average effective oil price (that is the weighted average of official and spot-related prices) for the whole of next year could be kept to around \$40 per barrel. Failure to do so could drive up prices well beyond this level, and the economic implications would be disastrous. Even with an average price of around \$40 next year the economic outlook is bleak. This price represents an increase of 25% in nominal terms and of over 12% in real terms, a rate substantially higher than that indicated by the long-term pricing formula recently proposed by OPEC. It implies no significant decline in the OPEC surplus from the 1980 level of over \$100 billion, a real growth rate in the industrial countries of less than 1 percent, and inflation of around 10% by year-end. In this environment, the projected 1981 current account deficit of the non-OPEC developing countries could widen to over \$80 billion. A higher oil price, in the \$45 to \$50 range, of course, would greatly exacerbate these problems.

Even if the disruption caused by the Iraq-Iran war is managed successfully and another large increase in relative oil prices is averted in the near term, there would still be a need for a crash energy program. While restraints on demand and the sharing of oil stocks have already been recognized as useful measures, stronger action is still needed on the supply side of energy in order to effectively contain the increase in relative oil prices in the decade ahead. This applies particularly to the United States. It is the largest consumer and importer of oil in the world, and also has vast energy resources that could make a substantial contribution to increasing world energy supplies.

The first aim of government policy should be to stimulate oil exploration and encourage higher rates of oil production in parts of

the world outside the Middle East, not only the United States but also Canada, the North Sea, Mexico and the developing countries. Recent fiscal proposals made by Canada and the United Kingdom are not constructive, as their effect may be to curtail oil exploration and production.

The second objective of government policy should be to bring about a quick and significant reduction in the proportion of total energy that is now supplied by oil. During the last few years, despite the large increase in oil prices, only slight progress has been made in increasing the share of non-oil sources in the total energy consumed by the non-Communist world (see Table 6). To raise that ratio in the decade ahead a broad range of policies will be required that will encourage development and use of all types of energy, such as natural gas, coal, nuclear power, and synthetics. While it is true that it will take some time for a substantial increase in non-oil supplies to materialize, the expectation of an increase that a strong energy program will generate could have a positive influence on the production policies of oil-exporting countries and the stock policies of the oil-importing ones. This, in turn, could have a beneficial impact on oil prices.

THE EXTERNAL DEBT BURDEN OF THE LDCS AND RECYCLING

The second oil shock is hitting the developing countries harder than the first. Financing their balance-of-payments deficits will be more difficult this time and is going to require innovative institutional thinking and initiative.

Adjustment to the 1973-74 oil price increases went relatively smoothly. By 1975, the low point of the industrial-country recession, the current account deficit of twelve major non-oil developing countries that are significant borrowers in international capital markets had soared to \$16 billion. This constituted 4.2% of their GDP, up from 1.6% in the first years of the decade. However, in the 1976-78 period many LDCs were able to restore their current account positions to the modest deficit levels of the early 1970s.

Four key developments made possible this successful adjustment. First, as noted earlier, the relative price of oil declined by more than

TABLE 6.—PATTERN OF NON-COMMUNIST WORLD ENERGY CONSUMPTION, 1950-79

	1950	1970	1973	1976	1979
I. Percent of total energy supplied by—					
Natural gas	10	19	19	19	18
Coal	50	23	19	19	20
Nuclear energy		1/2	1	2	3
Water power	7	7	7	7	7
Total, nonoil	66	49	46	47	48
Oil	34	51	54	53	52
Oil from the Gulf	6	18	24	25	22
Oil from Saudi Arabia	2	5	9	10	10
	1951-73	1974-78	1970		
II. Average annual growth rates, in percent:					
Total energy consumption	4.7	1.6	2.0		
Nonoil energy consumption	3.0	2.2	4.0		
Oil consumption	6.7	1.2	.2		
Oil production in the Gulf	11.4	.1	1.7		
Saudi Arabia oil production	12.2	2.0	14.5		

20%, contributing to the virtual elimination of the OPEC surplus. Second, led by the United States, the industrial economies pulled out of recession and their import demand for developing-country products revived. Third, many LDCs—notably in Asia—undertook stringent austerity programs or were successful in building up industrial-country demand for the products of their infant manufacturing industries. IMF oil facilities provided another temporary source of finance to the deficit countries.

Looking into 1981 and beyond, the environment for smooth adjustment and financing of LDC deficits looks much less promising. First, at \$40 per barrel the oil bill of the twelve major non-oil LDCs will reach nearly one third of their export earnings. The rise in oil prices since 1978 is taking an additional 17% bite from their export revenues, compared with the 12% exacted during the first oil shock (see Table 7). This time there is little expectation of a sustained decline in relative oil prices. On the contrary, most observers foresee a rising trend and do not project a significant decline of the OPEC surplus. Second, the United States is no longer in a position to lead the world out of recession by pumping up its own economy. The gloomy economic prospects for industrial countries bode ill for LDC exports and their terms of trade. Third, some developing countries were tardy in adjusting to the first oil shock. Even by 1978 their adjustment was less than complete, and thus they have entered the new adjustment round in a weakened financial condition.

Fourth, the end of cheap energy now is joined by the end of cheap money, compounding the real adjustment burden on the borrowing countries—a significant difference from the situation of the mid-1970s. During much of the past decade dollar interest rates fell short of most indicators of U.S. or world inflation. That is, interest rates were negative in real terms. Borrowed money was cheap money and that low price played no small part in the inflation process. U.S. recognition of that link, together with the adoption of monetary policies that tend to bring about interest rates that are positive in real terms, has been a necessary step in coming to grips with entrenched inflation.

High nominal interest rates, especially their conjunction with strongly positive interest rates in real terms, have serious implications for LDC financing. Ten years ago the twelve major non-oil LDCs paid interest of just \$1.1 billion on their external debt. This was less than 6% of their export earnings and represented an average interest rate of just 3.2% (see Table 7). This year their interest payments will reach \$16 billion, an average interest rate of just under 9% that will absorb 16% of their export earnings—a fraction which could jump to 20% in 1981. This rise in the interest burden of the group has occurred even though there has been no increase in the ratio of these countries' aggregate foreign debt to their export earnings. Instead, the rising share of export revenues dedicated to interest payments is traceable almost entirely to the run up in dollar interest rates over the period, together with some rise of interest costs as these countries increased their reliance on private market finance relative to non-commercial sources.

It is often asserted that inflation benefits debtors by eroding the real value of their outstanding debt. This is true, but is nevertheless an

TABLE 7.—12 MAJOR NONOIL LDC'S¹: BURDEN OF OIL IMPORTS AND INTEREST PAYMENTS

	Net oil imports		Gross interest payments			Effective interest rate ² (percent)	"Real return" on external borrowing ³ (percent)	Current account balance ⁴	
	Billions	Percent of exports	Billions	Percent of exports	Percent of total debt service			Billions	Percent of GDP
1970.....	\$1.0	5.7	\$1.1	6.2	28.4	3.2	10.4	-\$3.3	-1.8
1971.....	1.5	7.7	1.3	6.7	29.5	3.6	2.3	-4.8	-2.4
1972.....	1.7	7.1	1.6	6.6	30.6	3.7	6.1	-3.1	-1.4
1973.....	2.4	6.7	2.0	5.6	30.1	4.1	13.5	-1.7	-0.6
1974.....	8.6	18.1	2.9	6.0	33.9	4.8	13.5	-13.2	-3.6
1975.....	9.1	19.1	3.8	7.9	38.9	5.3	5.0	-16.0	-4.2
1976.....	11.3	18.5	4.5	7.3	36.0	5.2	-3.1	-8.7	-2.0
1977.....	12.8	16.9	5.6	7.4	36.3	5.4	3.4	-7.3	-1.4
1978.....	13.8	15.5	7.5	8.4	34.4	5.9	9.3	-9.6	-1.6
1979.....	21.7	19.9	11.9	10.9	43.4	7.8	4.9	-22.3	-3.1
1980, estimated.....	39.1	30.4	16.0	12.4	49.0	8.8	7.5	-35.0	-4.5
1981, projected.....	47.0	32.3	20.5	14.0	54.0	9.3	4.9	-47.0	-5.3

SELECTED LDC'S: BURDEN OF OIL IMPORTS AND INTEREST PAYMENTS

	Argentina	Brazil	Chile	India	Korea	Philippines	Thailand	Turkey	Mexico	Peru
Net oil imports:										
Millions of dollars:										
1970.....	51	335	48	150	128	126	108	62	9	8
1975.....	291	3,131	227	1,398	1,244	757	691	753	(⁵)	223
1980, estimated.....	755	10,000	2,250	6,600	5,900	2,600	2,700	3,400	(⁵)	(⁵)
Percent of exports:										
1970.....	2.4	10.7	3.7	6.4	8.7	9.3	9.2	5.6	0.3	0.6
1975.....	8.1	31.4	7.5	23.0	20.6	22.7	22.7	21.9	(⁵)	12.8
1980, estimated.....	7.0	45.0	36.0	62.0	26.0	36.0	27.0	65.0	(⁵)	(⁵)
Gross interest payments:										
Millions of dollars:										
1970.....	120	284	123	215	70	65	60	49	217	46
1975.....	251	1,828	212	270	426	180	130	124	827	187
1980, estimated.....	2,800	7,000	1,100	440	2,500	900	550	1,130	5,200	925
Percent of exports:										
1970.....	5.6	9.1	9.6	8.7	4.7	4.8	5.1	4.5	7.3	3.6
1975.....	7.0	18.3	12.1	4.5	7.0	5.4	4.3	3.6	12.8	10.7
1980, estimated.....	29.0	31.5	17.5	3.5	11.0	12.0	6.5	21.5	20.0	18.0
Percent of total debt service:										
1970.....	22.7	29.9	26.4	36.9	24.4	31.5	27.3	23.9	28.0	16.4
1975.....	19.6	45.8	30.7	34.6	50.7	34.6	31.9	43.9	46.9	34.5
1980, estimated.....	47.5	49.0	48.0	38.0	59.3	50.0	62.0	60.0	54.0	46.5
Effective interest rate: ⁶										
1970.....	3.4	5.3	3.2	2.4	4.7	5.5	7.1	2.7	3.0	4.1
1975.....	3.5	8.7	4.2	2.0	6.4	5.5	8.0	3.0	4.7	4.7
1980, estimated.....	14.0	12.0	11.5	2.5	10.5	8.5	9.5	6.1	11.5	9.5

¹ 12-country group composed of: Argentina, Bolivia, Brazil, Chile, Colombia, India, Korea, Philippines, Taiwan, Thailand Ivory Coast, and Turkey.

² Interest payments as percent of midyear total external debt.

³ Real GDP growth minus effective interest rate in real terms. The latter is effective interest rate deflated by an indicator of global inflation. Positive figures indicate that external borrowing has been beneficial in the sense that economic growth has exceeded the real cost of borrowing.

⁴ Excluding official transfers.

⁵ Net oil exporters.

⁶ Interest payments as percent of midyear total external debt.

incomplete view of the effects of inflation on borrowing countries. By recouping for the lender the losses in real value of principal, high nominal interest rates can deprive the borrower of real benefit from inflation. This indeed is the meaning of the shift to positive real interest rates.

The sum of current account deficits and amortization of outstanding long-term debt less the funds provided LDCs through direct investment receipts and official financing provides a measure of their gross commercial borrowing requirements from the private international

markets (GCBR). Table 7 charts this borrowing in relation to export earnings for the group of twelve non-oil LDCs. The upward trend of this ratio since the first oil crisis—partly the result of inflation—is a powerful indicator of the growing vulnerability of these countries to cash-flow problems and highlights their dependence on the confidence of financial markets. In net terms their borrowing demand is of course much less, but nonetheless taxes the capacities of private financial institutions. From 1973 through mid-1980 bank claims on the twelve LDCs spiralled more than six-fold, to a total just short of \$100 billion. That growth has far outpaced the growth of the private banks' capital, a trend they will resist in the future.

One way that the burden on the LDCs can be alleviated is by curbing U.S. inflation through an effective program. This program must be broadly based and avoid the pitfalls of a one-sided monetarist approach as is apparent from the experience of the United Kingdom. The British have not in practice curbed their public-sector deficit, in part from failure to contain public-sector wages. Instead they have counted mainly on restrictive monetary policy, but at enormous cost to the real economy and with slow progress in bringing down inflation. British interest rate policy, of course, mainly affects the British economy. In meeting its world responsibilities, the United States cannot afford excessive reliance on monetary policies alone to fight inflation.

The limited ability of private banks to intermediate the recycling of the OPEC surplus to deficit countries, especially the LDCs, needs the more active participation of OPEC. At the moment, OPEC's involvement in lending to developing countries is much too modest. Even after the first oil shock, it made a significant contribution by providing funds for the two IMF oil facilities and the Supplementary Financing Facility (SFF). At that time, the OPEC current account surplus was only about half of its current magnitude and the prospects for reductions in the surplus were much greater than they are today. Clearly, the time is ripe for OPEC members to assume a more significant share of the recycling function, if not through the IMF, then through other entities. OPEC members may prefer the intermediation through their own institutions, which could be significantly enlarged. Lending through these institutions could be done jointly with commercial banks.

Finally, there has to be some basic rethinking of the future role of the International Monetary Fund. As was noted earlier, attempts to increase the Fund's involvement in the area of exchange rate and international reserve management have produced few tangible results in relation to the time and effort expended. These issues can be dealt with more effectively among the reserve currency countries. This would free the IMF to become more directly involved in providing balance-of-payments support to the non-oil LDCs.

Increased IMF lending to developing countries represents a significant departure from past lending practices of the Fund. The industrial countries traditionally have been the principal "users" of the IMF resources, accounting for about two thirds of all drawings since 1947. It has not been until the past year or so that the developing countries have become the principal users of Fund resources.

While conditionality must remain a central element of IMF lending in order to promote balance-of-payments adjustment, it is important

that the policy recommendations attached to, and the size of, the various IMF facilities be adapted to ensure prompter and greater usage of the Fund's resources by the member countries. Recent decisions to increase the access of member countries to the Fund's resources and to lengthen the terms of IMF programs under the Extended Facility are steps in the right direction. But, it is also essential for the Fund's staff to become more actively involved in advising countries on an ongoing basis, rather than only at the time in which standby arrangements are negotiated, if Fund relations with a number of countries are to be improved. Maintaining a much larger IMF staff permanently in the various locales undoubtedly would help in this regard.

Increased concentration of the IMF on the problems and funding of the developing countries would bring it much closer to the World Bank. The traditional separation of responsibilities between the Fund and the Bank along program versus project finance lines could become blurred if the Fund were to place greater emphasis on structural or supply-side factors and the provision of longer-term assistance to these countries. Closer ties between the international financial institutions may represent a realistic response to one of the most pressing problems of the decade—the economic development and financing of the LDCs.

The financial structure of the Fund also requires much closer scrutiny. The entire structure of the Fund—both on the lending side and on the subscriptions side—was originally based on the quota system, which also determined the voting shares of member countries. On the lending side, the relationship between quotas and borrowing limits for member countries has been relaxed considerably in the past few years. On the Fund's liability side, the importance of quota subscriptions has lessened over the years with the need for the Fund to acquire substantial resources from direct borrowing. Yet, voting arrangements continue to be based solely on quota subscriptions, irrespective of the total resources supplied by member countries. A more flexible approach in determining voting arrangements may be desirable.

This raises the broader issue of whether, as presently constituted, the IMF can be effective in dealing with the financial problems of the 1980s and beyond. Its charter was formulated to tackle an entirely different set of problems from those facing the world today and in the future. The United States, as one of the principal architects of the Bretton Woods system and traditionally the largest contributor to the IMF, has a particular responsibility to ensure that it remains a viable and effective institution. Creation of a special U.S. Task Force to review the Bretton Woods charter would help to clarify U.S. government objectives about what role the Fund ought to play and the way in which these objectives can best be achieved.

STATEMENT OF SHANA GORDON, EXECUTIVE DIRECTOR,
CONSUMERS FOR WORLD TRADE

Consumers for World Trade (CWT), a nonprofit consumer membership organization committed to open, competitive and fair trade, wishes to stress to the Committee how important it is to American consumers that the world trading environment not be subjected to protectionist actions by any of the trading partners.

Restrictions placed by the United States on foreign imports serve as an inflationary force, raising the price of both the imported and

comparable domestic product and limiting choices in those product areas. Retaliatory actions on the part of our partners overseas would have a devastating effect on the prices and availability of a substantial number and wide range of consumer products.

CWT is strongly in favor of increasing U.S. exports, particularly through a mechanism such as export trading companies. By expanding export incentives, capabilities, and markets, the trade deficit can be reduced, thus encouraging imports which would result in better consumer prices and options. In addition CWT is committed to the development and implementation of import-export policies that stimulate productivity through better utilization of human and capital resources.

STATEMENT OF LOYD HAGLER, PRESIDENT,
AMERICAN RETAIL FEDERATION

The U.S. economic conditions has become the number one issue of retailers and it is likely to remain the primary issue for some time. The U.S. retail industry is scattered throughout every community in this nation and, as such, the fortunes of retailing rise and fall as the fortunes of these communities rise and fall. Unemployment in any sector affects retailing.

Inflation is presenting totally new problems for retailers. The persistent double digit inflation is now starting to affect the way consumers plan their buying. Early this year, Cambridge Reports, Inc. did a survey for retailers which revealed two very important principles. Consumers, for the first time, were up-to-date with no lag in understanding as to the actual rate of inflation and how it was affecting their current purchases. The survey also indicated, by an amount of 78 percent, that price was the most important of all considerations in their purchases. Persistent inflation will change buying habits, sale psychologies, and ultimately major portions of the retail industry. Inflation is having another grave effect on retailers. Consumer credit in the last 20 years has become a major factor in general merchandise sales. Nearly one-half of all general merchandise sales are sold by credit card or credit plan. Retailing has to finance those receivables or sell them. For several years the growth in the prime rate of interest has added an unusual cost burden to retail sales. With state usury ceilings sometimes below the national prime rate, the distortion of retail profits becomes even greater. Over the years, retailers have not had as high price earning ratios as many other industries and, therefore, have not been either willing or able to rely on equity financing. Retailers consequently have financed inventories and receivables through debt financing. This has greatly increased the non-merchandise costs of running a retail establishment.

Non-merchandise, as well as merchandise, costs are being increased rapidly during a period of buyer resistance. This has resulted in intensive price competition and greatly reduced profits.

Wage/price controls and guidelines have had little or no effect upon the prices at the retail level where prices have, in most cases, been lower than those allowed by the wage/price guidelines. However, there is an adverse effect from the controls. They have become an ever increasing burden escalating non-merchandise costs with some sig-

nificance. Retailers do not believe wage/price controls are the way to approach control of the economy.

The economics of international trade are also important to retailers. The retail industry favors competition both in domestic markets and in foreign marketplaces. We recognize the increasing interdependence of national economies on each other and that international trade in many areas is managed and regulated. The burden of such regulation is usually a cost that is reflected in the price of goods. That is a particularly costly problem for consumer goods. The economic transfer from consumers, who more often than not are low-end consumers, goes to large economic producers here and abroad. Protection that fails to produce new efficiencies and productivity is an unjustified burden to lay on the consumer.

One area of the U.S. economies which we feel should be focused upon is the decision-making process of the government that affects the public and the marketplace. The interdependence of industries within the economy requires that government lawmakers and regulators determine what the consequences of their decisions for one industry are upon other industries. The use of input-output economics may be important in future government decisions affecting trade, capital formation and employment.

STATEMENT OF GARRETT HARDIN, CHIEF EXECUTIVE OFFICER, THE ENVIRONMENTAL FUND

AN ECOLOGICAL VIEW OF INTERNATIONAL ECONOMICS

In times of perceived scarcity the desire to help others (which comes naturally to the human animal) conflicts with self-helping impulses. Reconciliation of the two drives was not overly difficult in ancient times when the individual was aware only of poverty near at hand, but now that technology enables us to see, in a single instant, poverty all over the world the problem of setting practical limits to altruism becomes pressing. Like all recalcitrant problems this one generates rhetoric that tends to confuse the issues.

As an ecologist I am disturbed by what seem to me to be careless habits of thought developing in the brotherhood of economists. Let me illustrate by commenting on a brief paragraph from a recent report by the Joint Economic Committee:

The world has become an increasingly integrated, interdependent economic community. Goods, money, people, ideas and problems travel across national boundaries as never before.¹

Interdependence may or may not be increasing, but it is certainly not new. Trade is a manifestation of interdependence, and trade between peoples began long before there were any nations as we understand them—even long before writing. The principal forms of international transfer are three: plunder, gifts and trade. If there has been a relative increase in trade (the interdependent form of transfer) in modern times it is principally because we have "improved" warfare to such an extent that it no longer yields any plunder.

¹ "Overview" by Alfred Relfman in *The U.S. Role in a Changing World Political Economy: Major Issues for the 96th Congress*, p. 6. Washington: U.S. Government Printing Office, 1979.

More significant than the doubtful increase in trade (interdependence) has been the genuine increase in gifts from rich nations to poor nations. The gifts are seldom called by their proper name, being variously labeled transfers, aid, "loans," and concessions. Gift-giving establishes a relation of dependence, not interdependence. In the interest of truth almost every assertion of the "interdependence" in recent literature needs to be labeled for what it is: a plea not for more interdependence but for accepting and creating more dependent relations between nations. Perhaps the goal is praiseworthy, but let us not gild the lily with the word "interdependence." We should also examine the argument for fostering dependent relations.

What sorts of things can be transferred from one nation to another? The categories in the passage quoted ("goods, money, people, ideas and problems") are ill-chosen. Better are the fundamental entities of physics: matter, energy and information. For each of these, what is the physical cost of transferring it from one nation to another, and what are the human consequences of a policy that encourages such transfers?

The physical cost of transferring matter, energy and information has diminished greatly in the past thousand years. The cost always includes a loss of energy (strictly speaking, an increase in entropy). The cost argument against transfers is much less important now than it was in the past. With information, the cost argument has almost disappeared with the advent of incredibly cheap information transfer by communication satellites. Nearly instantaneous and nearly cost-free communication of disasters at the other side of the world creates a cost of another sort, the psychological cost of anxiety about distant disasters. It is far easier to know of disasters than to do anything about them, e.g., to transfer food, blankets and building materials. The Good Samaritan of the Bible² had an easy task because the man he helped was one he could both see and touch. But now that we can see more than we can cure we must learn to accept the rediscovered limitations of action. Our hallowed ethical precepts are unfortunately devoid of reference to quantities; but quantities matter. Time, distance, ergs and ohms (in a metaphorical sense) must enter into the calculus of action. Ethics, to serve the modern world, must be made quantitative.³

The most important difference between information and the other two fundamental entities is this: matter and energy are subject to conservation laws, information is not. Transfers of matter and energy cannot escape the zero-sum principle: A's gain is B's loss. Not so with information: the gift occasions no loss. In fact, the receiver may act on the gift of information and pass it back in enriched form to the original giver. Even from a strictly selfish point of view one can urge rich nations to be generous with information, because a supposedly more "backward" receiver may make improvements on the information it receives. When it comes to information, sharing is a plus-sum game.

Not so with matter and energy. In the first accounting, the giver obviously loses in a zero-sum transfer. Is there a second accounting

² Luke 10: 30-37.

³ See Garrett Hardin, "An Ecolate View of the Human Predicament," in McRostie, ed., *Global Resources: Perspective and Alternatives* (Baltimore; University Park Press, 1978), 97 p.

that turns the loss into a gain? There are many now who say so. One argument for gifts between nations raises the fear of force: it is said that the rich must give or the poor will simply take. This is hardly a high-minded argument, and it may not be true. It takes great wealth to wage modern war, so how can a country that is too poor to buy what it needs pay for an invasive war? Terrorism is cheaper of course, but is preemptive surrender the only response to terrorists?

A more elevated argument for international gifts rests on the dream of One World. Nations are regarded as transient divisions of the world. The rhetoric of "global hunger" and "global problems" implies that the accounting unit should not be the individual nation but the entire world. Distribution of goods is to be made according to the principle enunciated by Karl Marx, "to each according to his need." In effect, the global view seeks to turn national goods into common property. Is this wise?

It is not. More than two thousand years ago Aristotle spotted the fatal flaw of commonization. "What is common to the greatest number gets the least amount of care. Men pay most attention to what is their own: they care less for what is common." The enormity of the danger is being made clear in our time by the growing literature on "the tragedy of the commons."⁴

Human nature ensures that the distributional system of the commons fails to create justice. If I can take from the commons according to my perception of my need I am not encouraged to be either energetic or innovative. Those who exploit the commons are rewarded at the expense of those whose consciences lead them to refrain from doing so. The system of the commons is worse than irresponsible: it is negatively responsible. It is counterproductive: it fosters the opposite of the kind of behavior that created the finest products of civilization.

The perils of commonization are exacerbated by population growth. The "each" in Marx's "to each according to his need" stops ethical thinking at the singular level. In the international arena the need is very plural, and the plurality escalates. The 800 million malnourished poor of today will be 824 million a year from now; and another three percent—compounded—a year later. Worse: if we succeed in improving the nutrition of the desperately poor we will surely increase their fecundity. The cross-cultural negative correlation between national fertility and national wealth has led to the comforting belief that improving the nutrition of the very poor will decrease their fertility. Possibly it might in the long term—say two generations—but the weight of the evidence falls on the opposite side.⁵ At the lower levels of income at least, people act rationally: when their circumstances improve they have more children. Fewer people would be seduced into adopting the Marxist ideal if it were more exactly but less elegantly

⁴ See Garrett Hardin, "The Tragedy of the Commons," in Hardin and Baden, eds., *Managing the Commons* (San Francisco: W. H. Freeman, 1977), 294 p.

⁵ For the effect of nutrition on fecundity (ability to produce children) see Fritsch, R. E. "Demographic implications of the biological determinants of female fecundity." *Social Biology*, v. 22, 1975: 17. For the effects of perceived well-being on fertility (achieved family size) see the following. Chowdhury, A.K.M.A., A. R. Khan and L. C. Chen, "The effect of child mortality experience on subsequent fertility in Pakistan and Bangladesh." *Population Studies*, v. 30, 1976: 249. Coale, A. J. "The demographic transition." *Transactions of the International Union for the Scientific Study of Population*, 1973: 53. Morgan, R. W. *New Perspectives on the Demographic Transition*. Washington, Smithsonian Institution, 1976. Teitelbaum, M. S. "Relevance of demographic transition theory for developing countries," *Science*, v. 188, 1975: 420.

phrased, "to the multiplying each's according to their escalating needs."

The unacknowledged assumption of the "New International Economic Order" is that need creates right. This is a Marxist assumption; accepting it creates the creation of an international commons. If Congress wants to support NIEO it should do so in honest language. The supporting bill should begin: "In order to establish an international commons from which all nations may draw at will, in accordance with the Marxist principle 'to each according to his need,' we do hereby . . ." A bill so worded would not have a ghost of a chance of passing of course, which is why those who seek to establish an international commons use other language. They speak not of gifts but of "transfers," or "loans at concessionary rates of interest." When a debt shows no prospect of being repaid they may manage to get it "forgiven," as the U.S. forgave India's debt of three billion dollars in the early 1970s. When the costs of debt-service rise too high, the debt is refinanced at a lower rate of interest, sometimes with an additional loan. The expropriation of American property is seldom protested; many Americans even look on expropriation as a desirable step toward the globalization of property. No mention is made of commonization and the tragedy of the commons. Instead there is much diversionary talk of exploitation, colonialism, inequity, injustice, and imperialism. Rhetoric is wonderful at concealing the truth!

One other consideration dictates caution in trying to diminish the suffering in other parts of the world. No poor nation is a unity: it is made up of the governors (a small fraction) and the governed (the vast majority). Desperate need is confined to the latter group, which is the group our compassion leads us to want to help. But unless we are to revert to imperialism (in the form of a new charitable imperialism) we must honor the sovereignty of other nations and treat them as units, dealing with their de facto rulers, who then control the distribution of our largesse.

Two evils follow from this necessity. First, the well-fed governors may well be corrupt; they are all too likely to distribute the goodies preferentially to themselves, their relatives and their friends. Secondly, the largesse strengthens the position of the governors and diminishes their motivation for tackling their difficult national problems. Internal reform is made less probable by gifts from the outside. Incompetence becomes entrenched. The aim of NIEO and other forms of international commonization is to benefit the poor of the world. Unfortunately such well-intentioned efforts will generally benefit only the governors of the poor. So NIEO is only the latest in a series of well-intentioned proposals that in fact are counter-productive. The road to hell now has one more paving stone.

STATEMENT OF JOHN F. MCCARTHY, VICE PRESIDENT,
UNITED TELECOMMUNICATIONS, INC.

Anything you can do I can do better. I can do anything better than you.
Yes I can, yes I can, yes I can. (Call me Madam, musical.)

These words most clearly express competitive spirit and a dedication to putting forth one's best effort. As this nation addresses the

problem of restoring its past world economic leadership with particular emphasis on increasing productivity, it must undertake a program of restoring a national commitment to quality work by everyone. President Kennedy inspired a national pride and a personal dedication to doing it better than anyone else when he committed this nation to being first on the moon. The sixties with the space program saw great national pride—a quality effort by labor, management and government.

The 70s with its national mood of self-reproach and breast-beating and the resultant decline in national self-confidence and quality of effort is past. Our new president must lead this nation in a renewed commitment to quality of work—management, labor, elected officials and bureaucrats—everyone. President Reagan now has the challenge of rekindling that competitive spirit and quality ethic so characteristic of Americans.

Experts are hard pressed to explain why productivity has fallen so much faster in the U.S. than in other industrialized countries. Something profound, if unmeasurable, may have been affecting the spirit of U.S. enterprise and the relations of business, labor and government (Newsweek, Sept. 9, 1980, page 53).

It is quality of work—doing the job well, doing the job right the first time—which, above all else, can restore the productivity growth that this nation knew during the late 50s and the 60s. Certainly, capital availability, abundant energy and quality of workers are measurable factors which influence productivity. But, it is an unmeasurable psychological factor, the ethic of doing the job right the first time and being proud of the work you have done that is the most important ingredient needed to increase U.S. productivity.

In all of the spoken and written words on the need to increase productivity, quality of work is seldom mentioned. It, possibly above all else, is the one factor that when absent has a compounding multiplier effect. For example, a worker responsible for testing transistors does not age and test every transistor shipped as required by the customer's order. Then say a computer manufacturer uses one of the untested transistors in a processor used to control a steel company's rolling mill. Say that transistor fails a short time after the mill is put in operation. The rolling mill has to be shut down for hours or days while technicians hunt for the failed transistor. The failure of that one person to perform his work in a quality manner has led to a huge loss in production and unquestionably has raised the cost of that company's rolled steel. Examples of that type abound in the American economy. It is the car that went to the garage for a tuneup and comes back not working as well as it had when it went in. It is the truck that fails in a remote area delaying critical material or equipment and disrupting production someone forgot to tighten a bolt properly.

The new Reagan Administration needs to lead a campaign for a people's commitment to a national policy on quality work immediately after taking office. The Congress, business and labor all need to give full and complete support to such a national campaign. The campaign must emphasize that quality of work applies to all workers—management, elected public officials, bureaucrats, professionals, all workers—everyone in this country. Everyone constantly must be made aware of the need for them to do their job well—to do it right the first time.

The scandal of rubbish and offal in grain shipments and the failure of some American helicopters in a desert mission and troubles with U.S. products shipped overseas have tarnished the American image in foreign trade. So this country must rebuild its reputation as a provider of quality products and services if we are to improve the U.S. position in world markets. Improvement in that area alone will do much to slow the rate of inflation through a better balance-of-trade.

We need to improve our quality for our own domestic commerce because there is a general viewpoint in this country that the products of Japan are of better quality than like American products. Certainly the Japanese have borrowed heavily from our technology but they have spent to improve the products while U.S. industry has not making their like product more reliable and of better quality.

American business whether it is domestic or international, a service company or manufacturer, needs to establish a quality incentive program—quality bonuses so to speak. Actions that evidence that competitive spirit, dedication to quality, the desire to be the best, should be rewarded in small ways or big ways as is appropriate. Once upon a time in this country we paid for piecework and did reward both the quantity and quality of work. Somehow that practice fell out of favor under a philosophy that championed the idea that everyone should be treated (or demanded of) equal. What is wrong with everyone doing the same work being paid the same basic wage plus a bonus for quality performance. If they do not have it now, management must regain the right to award their best workers for quality performance. Because, quality and the recognition thereof will lead to greater national productivity.

In the final analysis, it is not measurable factors that explain the real decline in U.S. productivity. Rather, the cause is an unmeasurable factor—it is a matter of attitude—a general acceptance of being second best, an also-ran. This is most pointedly evidenced in the recent acrimonious dialogue between Ford Motor Company and the UAW over the closing of some Ford plants because of the lesser quality of product from those facilities. The union defends the poor performance of its membership and blames management endorsing what it knows to be a second-rate performance by some. The fact is that both groups were probably at fault and they should have sat down together in a spirit of cooperation to develop a plan for building the best autos or trucks produced anywhere in the world.

How can the U.S. increase productivity in manufacturing, in production and delivery of services and information, and in bureaucratic organizations in business, government and labor? One answer is through competitive spirit—that pride in doing something well—the best effort—that is the unmeasurable most important ingredient to high productivity.

President Reagan and the new Administration should address the economy as its number one priority. The Administration in going to the public for support of its new economic policy should recognize that a call for increased productivity will turn off or alienate many who take any suggestion of poor productivity as a personal affront. Rather the Administration should call for all the people to

make a commitment to quality work by every individual—quality; doing it right the first time—quality; taking the time to do a job to the best of one's ability—quality; the key to greater productivity. Quality work, the rallying cry to a growth economy offering more jobs, low inflation and a better quality of life.

STATEMENT OF J. W. McSWINEY, CHAIRMAN OF THE BOARD,
MEAD CORP.

In response to the JEC offer to accept comments relative to our current economic situation, I'd like to highlight for the record a few things which, in my opinion, are controlling as we go about the critical months ahead:

(1) We have, over the last decade or so, evolved into a society in which almost every segment is pluralistic; and now almost every decision (domestic or foreign), made or considered, tries to take this pluralism into account; i.e., no one has any feeling of certainty as to the kind of decision we'll make.

(2) Whether true or not, we and the rest of the Western world act on the assumption that the Soviet army is vastly superior to the Western Bloc, and this too affects, knowingly or unknowingly, decisions or considerations at home or abroad.

(3) People must be expected to optimize their benefits under the "rules of the game" in a pluralistic society. Hence, if we are to get a different result than at present, we must change these rules.

(4) People are currently willing; i.e., there is a window to change the rules of the game.

(5) The smallest body of people and the focal point in our society that can most rapidly and effectively change the "rules of the game" is Congress. (This also assumes that the Executive Branch perceives the need for such change and will act.)

From the foregoing, I deduce a few simple guidelines to keep in mind:

(1) Congress must realize that it is the body which must bring about change. One-third of Congress probably doesn't need convincing, one-third will never understand, which leaves a critical one-third that must be influenced—talked to and convinced.

(2) The "risk-reward" ratio for those who make or consider investments must be changed. (In this connection, it is interesting to note that only eight hundred CEO's make the final determination for 80% of U.S. investments. Note point 3.)

Changing the risk-reward ratio means much more than taxes; e.g., recovery of capital—it is all the things that one takes into account in making an investment. If only the tax rates are changed, many CEO's will not invest, even with more money (less taxes, etc.).

(3) We must gird our military to where, at the very least, we believe we could stand equal to our adversaries.

If Congress can be made to understand point one and take initiative on the two broad counts (2 and 3) now, while we have a window,

I think in a year or so we would all be amazed as to how we once would feel worthy, as servant-leaders, and be an inspiration to both ourselves and the world.

It would be easy to enumerate a number of things for Congress to do—inflation, fiscal-monetary policy, investment incentives, etc.—but in my mind this is not the issue, the issue is Congress understanding it must grasp “the window” if America is to regain its stature in the world. The JEC report clearly indicates Congress has much of the input it needs to “change the rules of the game,” so as each of us go about optimizing our benefits (in this democracy), we produce some results that are more in our total interest.

VIII. PROCEEDINGS OF THE SEMINAR ON ENERGY

A. Participants

Chairman: Representative William S. Moorhead.
Cochairman: Walt W. Rostow, University of Texas at Austin.
Presenters: Thomas C. Schelling, Harvard University.
Marina Whitman, General Motors.

Ashe, A. J.	B. F. Goodrich.
Ashman, Richard T.	Holiday Inns.
Brobeck, Stephen	Consumer Federation of America.
Carlough, Edward F.	Sheet Metal Workers' International.
Chalker, Durwood	Central & South West Corp.
Cook, Charles	SRI International.
Dingman, Michael C.	Wheelabrator-Frye.
Doctor, Ron	California Energy Commission.
Downer, Joseph	Atlantic Richfield.
Forney, Robert C.	E. I. DuPont de Nemours.
Gardiner, Robert M.	Dean Witter Reynolds.
Hagopian, B. Kipling	Brentwood Associates.
Henderson, Lenneal J.	Howard University.
Johnson, Lady Bird	LBJ Library.
Keehner, Michael	Kidder Peabody.
Krasts, Aivars	Conoco, Inc.
Laird, W. F.	Columbia Gas.
Liedtke, J. Hugh	Pennzoil.
Levy, Lawrence	Northern Energy Commission.
Levy, Walter J.	Levy Consultants.
Marlowe, Howard	AFL-CIO.
Maurer, Richard S.	Delta Airlines.
Murphy, Charles H.	Murphy Oil.
McClements, Robert	Sun Companies, Inc.
Rosovsky, Henry	Harvard University.
Russell, Milton	Resources for the Future.
Sarnoff, Robert W.	Planning Research.
Smith, Herman	National Association of Homebuilders.
Twomey, Thomas	United Mine Workers.
Waidelich, C. J.	Cities Service Co.

B. Presentations

STATEMENT OF REPRESENTATIVE WILLIAM S. MOORHEAD (D-PENNSYLVANIA), MEMBER, JOINT ECONOMIC COMMITTEE

Good afternoon, I am William Moorhead. As Chairman, I would like to welcome you to the Congressional Economic Conference Seminar on Energy. The purpose of this seminar is to identify and explore the most pressing energy issues confronting our Nation—issues which the new Administration and Congress are likely to confront the day they take the Oath of Office next month.

It is my personal hope that you ladies and gentlemen will go further, and present to us and the incoming Administration some new answers to the pressing issues we highlight this afternoon. As I think back

over my own years in Congress, I realize that much of our time here in Washington is spent dealing with the traditional and the usual. It is very rare, indeed, when we are exposed first-hand to new or creative approaches or solutions to pressing national issues. Yet, I believe that a lot of new answers—including rapid implementation of my synthetic fuels legislation recently enacted into law—are the only way we can effectively deal with our energy crisis.

And I use that term "crisis" fully aware that it is no longer fashionable to describe our undue reliance on foreign energy in those terms.

True, our petroleum imports have declined noticeably this year. Domestic oil and gas production is up. Yet, we still rely on imported energy for over 20 percent of our domestic energy supply. It must pass over a tenuous 10,000 mile route which begins virtually in a war zone. This vulnerability persists despite really outstanding conservation and domestic production progress made by our Nation this past decade.

Ominously, our Nation may soon receive very concrete signs of this vulnerability. In recent weeks, domestic oil stocks have established a definite downward trend, and spot oil prices have noticeably firmed up—first signs of what may be a world oil shortfall in 1981 arising from the continuing Iraq-Iran War.

What are the most pressing issues we face in dealing with our excessive dependence on foreign energy?

In dealing with conventional energy resources, controversy surrounds the proper level of incentives needed to spark new gas and tertiary oil production. Expanded leasing of Federal lands, and coal transportation and environmental problems need addressing.

Regarding energy conservation, should the Federal Government continue pressing conservation efforts, or do rising prices provide adequate incentives.

Should the sizable Federal renewable energy program be concentrated more on the quick payoffs like alcohol fuels, biomass, and passive solar?

Our nuclear industry is at a standstill now. Should we formally acknowledge that as a national policy, or do we chart another course for the 1980's?

One course we have charted for the 80's is a growing reliance on synthetic fuels. What techniques must we adopt to ensure that such a course does not entail unacceptable environmental costs? And how best can we protect our environment while cutting through the mass of red tape surrounding new energy projects?

And even more pressing are questions regarding our inability to effectively deal with turmoil in the Persian Gulf region or a cutoff of oil imports here at home. We have a full platter.

Before we move on to these and other issues, let me set out the groundrules for this session.

Professor Walt Rostow has kindly agreed to Cochair this session with me, and I have asked him to briefly address this session. He will be followed by my old and good friend Marine Whitman, now at General Motors by way of the University of Pittsburgh and the Council of Economic Advisers, and by Thomas Schelling of Harvard, author of "Thinking Through The Energy Problem," a thoughtful analysis sponsored by the Committee for Economic Development.

Following their comments, I have set aside one hour for your formal presentation of remarks. Time will be equally divided among all those wishing to speak. Our last hour will be devoted to a general, unstructured discussion of issues. Let me remind you that our major purpose here is to spotlight pressing energy issues. We do not expect to develop a consensus on many of the topics to be discussed in the next 2½ hours.

Finally, the Joint Economic Committee will publish a brief report on today's proceedings. A compendium will also be published containing any comments which you submit to me in writing either today or sometime in the next week.

This session is off the record, so your verbal comments will not be reproduced.

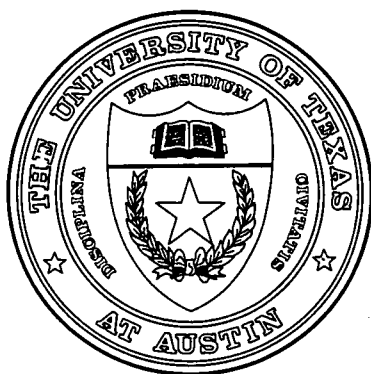
Let me now turn to Professor Rostow.

STATEMENT OF WALT W. ROSTOW, PROFESSOR, UNIVERSITY OF TEXAS
AT AUSTIN

Energy and the Economy

Preliminary Report

December 1980



Council on Energy Resources
The University of Texas at Austin

ENERGY AND THE ECONOMY

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I. INTRODUCTION, BASIC CONCLUSIONS, AND RECOMMENDATIONS¹

In this fourth major collective effort by the Council on Energy Resources of The University of Texas at Austin, we decided to broaden the terrain of our analysis and policy recommendations.² We have done so for two reasons.

First, the problem of energy interacts so intimately with the problems of unemployment, productivity, and inflation that we judged it was not useful, at this critical and potentially hopeful juncture in the rhythm of the nation's political life, to ignore these linkages. They are a package; and it is our hope that the Reagan administration and the new Congress will address them as a package in the early days of their respective responsibilities.

Second, we were conscious that objectives which transcend economic policy hinge on a concurrent solution to the problems we now confront in energy, unemployment, productivity, and inflation. After all, abundant energy, high productivity, and relatively constant prices are not objectives to be sought for their own sake. They are means to certain larger ends which were well defined in the preamble to the Constitution just short of two centuries ago: . . . union . . . justice . . . domestic tranquility . . . the common defense . . . the general welfare.

As of the close of 1980, every one of those abiding goals of our national life is endangered by the nation's failure to render itself independent of oil imports; its failure fully to employ our labor force and manufacturing capacity; its failure to maintain high and steady rates of increase in productivity; and its failure to overcome

¹This edition of our report is to be regarded as preliminary. The final edition will incorporate an analysis by George Kozmetsky of an alternative route to a U.S. net energy export position by 1990. Exigencies of time prevented its inclusion here, although we trust it will be separately available for the symposium organized on December 10 by the Joint Economic Committee.

²Preliminary Assessment of the President's National Energy Plan, The University of Texas at Austin, May 11, 1977; National Energy Policy: A Continuing Assessment, Council on Energy Resources, The University of Texas at Austin, January 1978; National Energy Policy Issues, Council on Energy Resources, The University of Texas at Austin, June 1979. Like the previous publications of the Council, the views expressed in this paper are solely those of its authors and do not reflect any particular position of the component institutions of the Council on Energy Resources or of The University of Texas at Austin. Section II of this report was drafted by W. L. Fisher, W. C. J. van Rensburg, and W. W. Rostow, with contributions by James McKie and Hal H. B. Cooper. Sections III through VI were drafted by W. W. Rostow, with contributions by George Kozmetsky.

inflation. There are tensions between the energy-producing and energy-importing regions of the country which have already eroded national unity to a degree and which may well worsen unless their causes are dealt with; some 8 million Americans are unemployed and, within that group, the proportion of non-whites unemployed is twice that of whites. Under these inequitable circumstances, another decade of the kind of stagflation we experienced in the last seven years of the 1970's might well yield serious social unrest. So far as the general welfare is concerned, stagflation has involved not merely the pain of inflation, felt in every household, not merely large-scale chronic unemployment, not merely an erosion of social services of the most basic kind (police protection, garbage collection, road maintenance, library facilities, etc.) but also an 8-percent decline in real earnings between 1972 and 1980 — a decline unexampled in American economic history, aside from the Great Depression of the 1930's. Finally, the nation's security is endangered — the common defense — not merely by our excessive dependence on a precarious flow of oil from the volatile Middle East but also by the excessive dependence on that flow of our major allies and of many nations in Latin America, Africa, and Asia, and by the weakness in our international economic position caused by the combination of our low productivity performance and high rates of inflation.

Thus, in addressing these technical issues and the interaction among them, we are dealing with conditions for the continued viability of our society and the continued security of the nation.

In broad terms, our conclusions, as they relate to energy, full employment, productivity, and inflation, are rather simple, however complex the underlying analysis may be and the task of implementing the policy recommendations that flow from our conclusions.

We conclude:

1. The international oil prospects for the 1980's require the United States to achieve by 1990 a net energy export position. This implies an energy conservation and production program conducted, essentially, on a state-of-emergency basis.
2. The investment requirements for such an effort are so large that they would generate relatively full employment suffusing all the major regions of the country.
3. Relatively full, sustained employment of industrial capacity and manpower will, in itself, raise and sustain the rate of productivity increase; but additional tax and other measures to encourage the modernization of plant, the rapid diffusion of new technologies, and to raise the proportion of GNP invested are also required.

4. These potentialities require for fulfillment that the nation confront and solve in equity a problem which, in any case, demands resolution: the problem of 8- to 10-percent built-in wage-push (or unit-cost) inflation.

Specifically, the goals we commend are:

- a net energy export surplus of, say, 1 million barrels of oil equivalent per day (mboed) by 1990;
- sustained full employment of labor (say, 4 percent unemployment) and industrial capacity (say, 90 percent);
- a quick return of an annual rate of productivity increase to 2.5 percent or more;
- zero unit-cost inflation.

As our analyses make clear, the attainment of none of these goals will be easy; and they all require a new sense of unity suffusing the relations among business, labor, government, and the community at large. But we are convinced that they can be more easily attained — and the required sense of national unity generated — if they are addressed head-on together, as a package, in the early days of the Reagan administration than if they are approached piecemeal and gradually. Indeed, we fear that the latter, more conventional approach will fail and bring the nation before long into crises at least as severe as those which plunged us into sharp recession in 1974 and 1979.

An America launched credibly on the road to the objectives we commend would be in a position to help lead the advanced industrial countries on similar paths; to develop constructive understandings with OPEC; to develop a new North-South partnership between the advanced industrial countries and the developing regions; and to hold out the possibility to the Soviet Union of cooperation in energy (and other) matters if certain non-economic conditions were fulfilled by the United States and the Soviet Union.

Our major specific recommendations to achieve these objectives are the following:

Energy. The nation should commit itself to the goal of a net energy exporting position by 1990. This requires, by our rough estimates, holding the marginal energy/GNP ratio at about 0.4 and increasing domestic energy production from 30.5 mboed in 1979 to 48.3 mboed in 1980, including coal for export.

— To hold the marginal energy/GNP ratio at 0.4 will require:

1. Firm recognition that price has been and will continue to be the most effective incentive for conservation. Impacts of deregulation on the poor should,

where necessary, be handled as a social issue and accommodated outside the market system.

2. Increasing domestic prices effected through crude oil, natural gas, and product decontrol. These actions have the double effect of inducing further energy efficiency in use and creating additional capital for energy development.

3. Promoting wider use of cogeneration by removing institutional constraints and by offering appropriate financial incentives.

4. Raising the existing fuel efficiency standards for years after 1985 and extending existing standards to light trucks and recreational vehicles.

5. Promoting mass transport where feasible.

— To maximize domestic oil and gas production will require:

1. Acceleration of decontrol, especially for natural gas.

2. Modification of taxation from the present windfall profits tax to a plowback tax. Both decontrol and substantial modification of the current excise tax on oil are essential to generate necessary capital to expand conventional drilling, to enlarge tertiary recovery, to expand infill drilling, to develop frontier areas, and to develop unconventional sources.

3. A vastly accelerated rate of leasing federal lands of the Public Domain and the Outer Continental Shelf. Most promising acreage now unavailable or withdrawn from leasing should be made available immediately.

— To enlarge substantially the production, utilization, and exportation of coal will require:

1. Substantial expansion and modernization of physical infrastructure to supply domestic and export markets.

2. Access to federal lands for new coal developments under reasonable conditions of leasing.

3. Reasonable and consistent environmental regulations, and amendments of excessively stringent regulations such as the Amendments to the Clean Air Act.

4. Improvements in productivity in surface and underground mines in order to protect our competitive position on export markets.

5. Better relations between labor and management, and a reduction in the number and duration of work stoppages which have plagued the industry.

— To realize a critical contribution of nuclear energy to U.S. supply will require:

1. A firm and unequivocal dedication to use and develop nuclear energy along with effective regulation to assure public health and safety.

2. Legislative and administrative reform of the licensing and permitting process to shorten lead times and to reduce uncertainties.

3. A candid and effective separation of perceived and actual risks to achieve wider public acceptance.

— To develop a major synthetic fuel capability will require:

1. The use of commercially proven technology such as Lurgi gasification and Fischer-Tropsch synthesis, and standardization of plant design.

2. A massive increase in the number of chemical and mechanical engineering graduates and skilled artisans such as pipefitters and welders.

3. Accelerated research and development into second-generation technologies such as hydroliquefaction and catalytic coal gasification.

4. Adequate financial incentives and guarantees such as accelerated depreciation schedules, floor prices, low-interest loans, and purchase agreements.

5. Massive increases in the capacity to produce certain special steels and components such as valves.

— To determine the role of various alternative energy sources will require:

1. Continued, substantial efforts in research, development, and, where feasible, commercialization.

2. Recognition that the future level of contribution from any of the alternative sources should depend on their competition in the market place.

— To maintain goals of a clean environment along with substantially enlarged domestic energy production will require:

1. Recognition of the fact that environmental goals cannot be achieved without a viable economy and sufficiency in domestic energy production.

2. Recognition that there are constantly changing and generally poorly understood relationships among technology, scientific data, economic costs, and social desires, and that environmental laws and regulations must accordingly be administered with flexibility and not rigidity.

3. That environmental strategies take a holistic approach rather than focusing on single objectives.

4. That administrative methods be created which provide the private sector a prompt and definitive settlement of the environmental rules governing a given energy project.

Productivity. In addition to noting that the rate of growth of productivity is extremely dependent on a high and regular rate of growth in the economy, we commend measures:

- to slow the impending decline in working force participation rates by extending the period of employment of older citizens;
- to reverse the decline in after-tax profits of non-financial corporations and to raise the proportion of GNP invested in tangible assets;
- to encourage the expansion of private sector R&D outlays;
- to continue to raise the education level of the working force, with special attention to its competence in new and emerging technologies;
- to encourage venture capital to develop new industries based on new technologies;

Inflation. After weighing at some length the pros and cons of a gradualist monetary-fiscal policy to eliminate and control the dominating unit-cost element in inflation versus a wage-price-dividends freeze, followed by a long-term incomes policy, we commend the latter course at the outset of the new administration and suggest that the present session of Congress provide the legal basis for that option by passing promptly legislation along the lines of the Economic Stabilization Act of 1970.

International Energy Cooperation. Since the problem of building a new transitional energy base in substitution for waning oil availability is almost universal in the world economy, it offers the possibility of intensified international cooperation as well as evident potentialities for tension and conflict. The following specific major possibilities for cooperation are identified:

— OECD. In addition to the work now going forward within the International Energy Agency, we recommend the negotiation of long-term contracts between the U.S. and potential purchasers of U.S. coal (or synthetics) exports and investment by potential importers in the expansion of coal and synthetic production.

— USSR. Should other, non-economic circumstances lead to an easing of tensions between the Soviet Union and the West, intensified collaboration on energy matters could be fruitful and in the common interest, including the provision of technology to accelerate the development of Soviet energy resources.

— OPEC. Should the United States (and other OECD members) mount programs capable of keeping the demand for oil well within OPEC production ceilings and move credibly toward the development of alternatives which promise to set a ceiling on the international oil price, negotiations between oil importers and OPEC might be undertaken leading to predictable prices and supplies.

A second area for cooperation with certain OPEC members relates to the current or impending peaking out of their conventional oil production and their need to develop additional energy resources to sustain economic and social progress. Actions to this end belong, we believe, with North-South energy cooperation in general.

— North-South. The energy position of the developing countries evidently differs over a wide range; but the current and prospective situation of the developing regions in general suggests that energy supplies and prices will constitute a major determinant of their economic and social progress and political stability. Intensive North-South cooperation on energy appears justified in the common interest. We recommend that:

1. Such cooperation be conducted substantially on a regional basis; e.g., Western Hemisphere, Pacific Basin, Africa.

2. It include immediate assistance to countries experiencing severe balance of payments constraints due to high oil import prices and related excessive reliance on short-term borrowing.

3. Its major focus, however, should be on cooperation rapidly to expand and to conserve local energy resources to permit the inevitably high rates of increase in energy demand to be met. Supplementing increased mobilization of domestic resources for this purpose, such cooperation should include assistance where desired in intensified exploration as well as expanded flows of technology and of public and private capital from abroad.

II.A. THE INTERNATIONAL SETTING

Academic or other learned analyses of the energy situation in the world economy agree that the last quarter of the twentieth century should be regarded as a transitional period in two senses: we face an interim transition from petroleum to coal, nuclear, and other substitutes for conventional oil; and we must simultaneously prepare the way for a longer term transition to new energy sources which will prove, one hopes, essentially infinite, less polluting, and less dangerous. The leading candidates for the long-term transition are solar, fusion, and breeders, to which a great deal of creative research and development talent is now being devoted in various parts of the world. The common task, it is increasingly agreed, is to lay the basis for the long-term transition while working our way, in reasonable order, through the interim transition.

It is the interim transition which has mainly engaged the world economy since 1973, and all the major nations have made a poor job of it since its contours became clear. None has fully accepted the scale of the production and conservation effort required if inadequate and, therefore, increasingly expensive oil supplies are not to impose on the world economy chronic stagflation, that is, low growth rates and high inflation rates interrupted periodically by intervals of sharp recession.

Many analyses during the 1970's projected a crossing of the curves of international oil demand and supply some time during the 1980's: the CIA as early as 1983, others in the middle or late 1980's. Rationally, these projections should have led to all-out production and conservation efforts given (1) the lead times inherent in energy-related investment and (2) the palpably unstable setting of the Middle East, where about half of the total oil production in the non-communist world took place in 1978 and from which, say, more than 60 percent of the oil entering international trade derived.

In fact, the curves crossed in 1979 in the wake of the Iranian revolution, yielding a 130-percent rise in the international oil price and a second wave of acute stagflation, although not quite as severe as that of 1974-1975 following the initial quadrupling of the oil price.

This second oil shock had three distinguishable effects on the prospects for oil supply in the 1980's: Iran, which produced 5.2 mbod in 1978 was virtually eliminated from the market, a process now completed by the war with Iraq; the reality of the oil

shortage convinced a number of OPEC members that it would be wiser to constrain production, retain reserves, and enjoy the benefit of higher prices that a world market balanced on a knife's edge was likely to yield; and Saudi Arabia discovered that the maximum economic rate of exploitation of its reserves was much lower than had earlier been believed.

Although there is room for differences of view, the accompanying chart 1, reflecting estimates of the Office of Technology Assessment, indicates the consensus. The CIA conclusion, for example, is that "world oil production probably will begin to decline in the mid-1980's."³ This conclusion took fully into account the surge in North Sea oil to a probable peak in 1982-1983 and increases in non-OPEC production in developing countries, notably Mexico and Egypt. It assumes some producers will continue to constrain output below capacity; but it does not take into account the impact on oil exports of the war between Iran and Iraq.

As for demand, rather remarkable progress has been made since 1973 in energy conservation in general, in oil conservation in particular. The analysis of marginal energy/GNP ratios⁴ is an exceedingly complex and indecisive field, for a number of factors have been simultaneously at work: higher energy prices; slower growth, including two sharp recessions; public policies, including in the United States a mandate for more energy-efficient automobiles; short-run, non-repeatable changes in energy consumption (e.g., housing insulation); and investments in energy conservation that will yield results only after a long period of time (e.g., mass transport). In all conscience, no one can be dogmatic about what kind of marginal energy/GNP ratios we will see in the 1980's and 1990's.

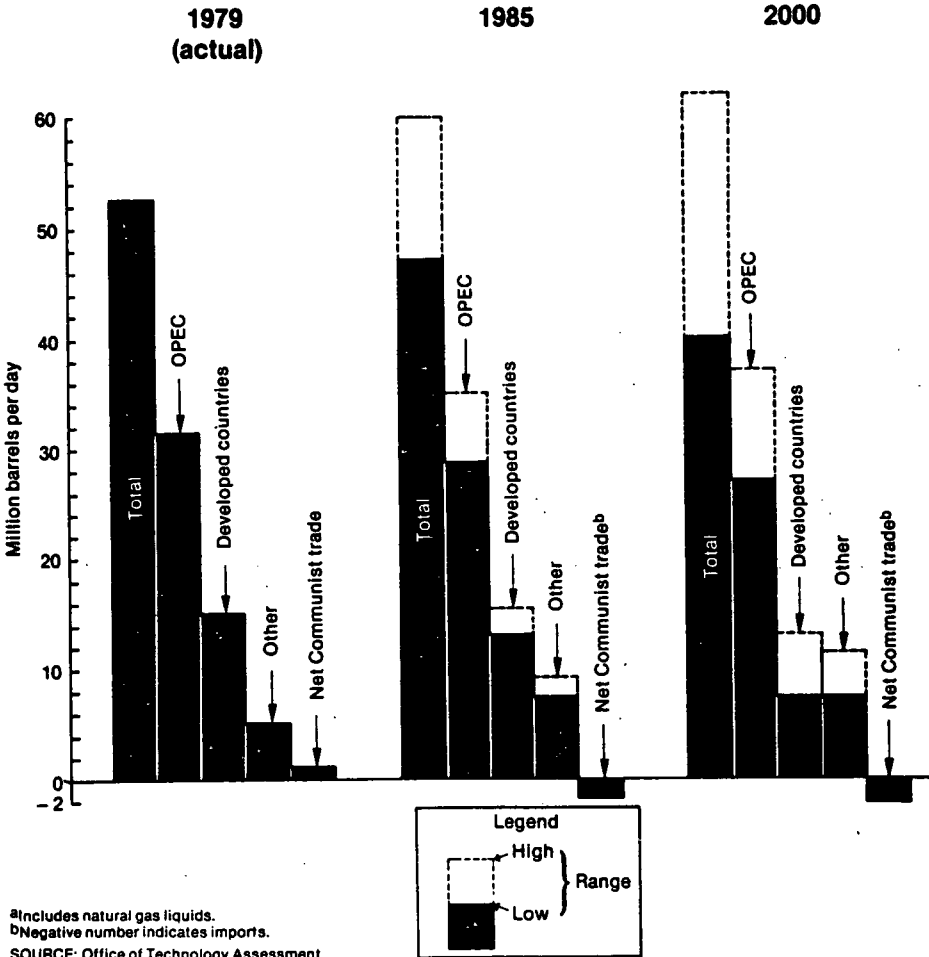
The U.S. energy conservation performance has, by all measurements, been good, bringing the marginal energy/GNP ratio down from about 1 to perhaps 0.5 — a lower figure than for Western Europe and Japan, where smaller automobiles and higher energy prices contributed to lower average energy/GNP ratios than in the United States, although other factors (notably geography) helped bring about the result. Canada, for example, operates with a higher average energy/GNP ratio than the United States. We argue below (II.C.) that, with an all-out conservation effort, the

³National Foreign Assessment Center, The World Oil Market in the Years Ahead, Washington, D.C.: Central Intelligence Agency, August 1979, p. vi.

⁴The marginal energy/GNP ratio measures the percentage increase in energy consumption associated with a 1-percent increase in real GNP. The average energy/GNP ratio measures the amount of energy consumed (usually expressed in British thermal units) to produce, say, \$1 of GNP. For further discussion of the prospects for energy conservation see section II.C., below.

Chart 1

Projections of Non-Communist World Oil Supplies^a



United States may be able to sustain an average 0.4 marginal energy/GNP ratio in the 1980's.

Despite the complexities of energy/GNP measurement and analysis, three simple but far-reaching conclusions seem justified.

First, so far as oil is concerned, increases in consumption in the world economy are still required if GNP is to expand. For example, taking conservation fully into account, the national estimates assembled by the International Energy Agency (IEA) suggest that the global demand for oil (excluding communist countries) will increase at an annual rate of 2.4 percent for the period 1978-1985 and 2.1 percent for 1985-1990. For the advanced industrial countries, the figures are 1.5 percent and 0.8 percent, respectively.

Second, as these figures imply, the developing nations of Latin America, Africa, the Middle East, and Asia, including the oil exporters, are at stages of development when their growth rates and their marginal energy/GNP ratios are higher than those of the advanced industrial countries: their populations are increasing more rapidly; energy-intensive new technologies are being absorbed; their cities are growing faster; their possibilities for conservation are more limited. The World Bank estimates that energy consumption in these developing areas will grow at the rate of 6.2 percent annually in the 1980's, and that their marginal energy/GNP ratio will drop from 1.3 in the 1960's to 0.8 in the 1974-1980 period — the latter a highly optimistic figure. Therefore, their relative claim on the global pool of oil will rise.

Third, the legitimate claim of the United States on the global oil pool will, relatively, decline: we are an advanced industrial country; we still have substantial margins for conservation; and we are the best endowed with alternate energy sources.

Thus, when the heads of government met in Venice in June 1980, they confronted a decade of declining oil availability, increasing oil requirements in the advanced industrial world, and rising claims on oil consumption from OPEC and other developing nations. A substantial gap emerged, therefore, between the oil estimated to be available to the IEA countries and their minimum requirements. Table 1 suggests the order of magnitude of the situation they confronted. In addition, of course, the IEA governments had to take into account the possibility that political or military events might, as in the case of Iran since 1978, further reduce oil availability; and that possibility soon became a reality with the war between Iraq and Iran.

Table 1. Oil shortfall among IEA countries (in mbod).

	1978	1985	1990
Oil available to IEA countries	23.8	22.4	19.3
Net oil-import requirements	23.8	26.0	29.9
Shortfall	—	3.8	8.6

Source: IEA, Energy Policies and Programmes of IEA Countries: 1979 Review, Paris, 1980, p. 15.

If no new dispositions were made, the IEA countries faced a decade of continued slow growth and of inflation exacerbated by further increases in the real price of oil — all this assuming that conservation measures would be intensified. That is why the governments of the major industrial countries in their communique committed themselves at Venice to policies of rapid substitution of coal and nuclear energy for oil: "We must rely on fuels other than oil to meet the energy needs of future economic growth. This will require early, resolute, and wide-ranging actions. Our potential to increase the supply and use of energy sources other than oil over the next ten years is estimated at the equivalent of 15-20 mbd of oil. We intend to make a coordinated and vigorous effort to realize this potential. To this end, we will seek a large increase in the use of coal and enhanced use of nuclear power in the medium-term, and a substantial increase in production of synthetic fuels, in solar energy and other sources of renewable energy over the longer term." Of the 15 to 20 mboed additional energy production in forms other than oil, 7 to 9 mboed are planned to come from coal, 4 to 6 mboed from nuclear, and 4 to 5 mboed from other sources. The increase from other sources was estimated at 1 to 2 mboed from synthetics, 1 to 2 mboed from natural gas, and 2 mboed from hydroelectric, solar, and other renewables.

As for the developing regions, estimated energy requirements down to 1990 are set out in table 2, suggesting once again their inevitably more rapid rates of increase in energy consumption than the advanced industrial countries. The CIA estimates an annual rate of increase of oil consumption in OPEC countries of almost 8 percent, a factor which will progressively reduce OPEC oil exports. Production has peaked in Venezuela and is expected to peak out in a number of other OPEC members in the 1980's (e.g., Nigeria, Algeria, and Indonesia).

Table 2. World commercial energy consumption, 1975-1990, in mboed.

	1975	1980	1985	1990	Avg. Annual Growth (percent)		
					1950-74	1975-80	1980-90
World	122.1	137.8	166.0	201.5	5.0	2.5	3.9
Developing countries	13.9	16.7	22.3	30.6	6.9	3.7	6.2
Oil-importing developing countries	9.3	11.1	15.0	20.5	6.9	3.6	6.3

Sources: Data underlying World Development Report, 1980, table 2, pp. II-67; World Development Report, 1978, table 19, p. 20; UN, World Energy Supplies, 1950-74, UN Statistical Papers Series J, No. 19, (New York: UN Department of International Economic and Social Affairs, 1974).

The Soviet Union produced 11.4 mbod in 1978, the world's largest producer; and it exported a critical margin of 1.5 mbod to Eastern Europe, about 75 percent of that region's net imports. Output is stagnating or declining in all major Soviet oil-producing regions except the giant Samotlor field, now reaching peak production. An intense drilling program is under way in familiar areas; but a decline in Soviet oil production and exports is expected in the 1980's, its exact timing subject to some uncertainty and debate.

Like the United States and the Soviet Union, the People's Republic of China commands large unexploited energy reserves and may, for a time, be an oil exporter, but its rapid rate of increase in energy consumption is likely to constrain its exports to a modest level.

Thus, except for a relatively few oil exporters, with large known reserves, the nations of the world economy face in the 1980's a universal challenge: to conserve energy and to develop new sources of every kind with great urgency or to balance their energy books with low growth, progressively higher unemployment, chronic high rates of inflation, and retarded social progress, if not retrogression.

We turn now to the implications of that challenge for American policy, including the linkages between energy, employment, productivity, and inflation. We shall also examine briefly some of its implications for U.S. foreign policy in section VI.

II.B. U.S. ENERGY BALANCE SHEETS THROUGH 1990 -- A CONTRAST IN FUTURES

Any balance sheet must consider, of course, two elements: projected total energy demand, both volume and mix; and projected production levels, especially of those commodities on which we now depend and those which can be developed at expanded levels.

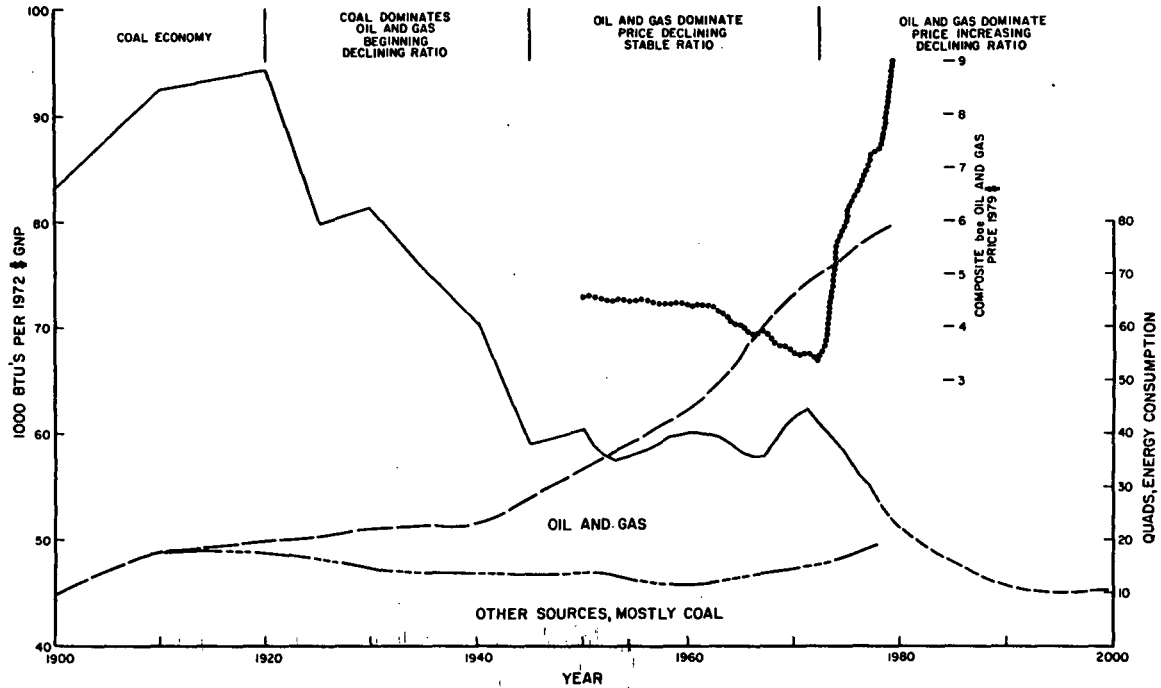
A balance sheet for the future and the implication of fulfilling the major elements must be evaluated in the light of trends of recent years. These trends indicate directions that either must be enlarged or reversed.

Energy Demand and Economic Growth

During the 1960's and early 1970's, the 13-year period prior to the 1973 embargo and price hike, U.S. energy demand rose at an average annual rate of 4.1 percent. During the same period real GNP increased at the same average rate of 4.1 percent. The ratio of increase in energy consumption and increase in real GNP was at unity. The widespread availability of energy at declining real prices led to the extensive substitution of energy for capital and manpower. In this period, each dollar of real (1972 dollars) GNP required about 61,000 Btu's. In the years before the widespread use of versatile liquid and gaseous hydrocarbons, the energy requirement per real GNP was 50 percent higher (see chart 2). However, since 1973, with increasing energy prices, average annual increase in energy consumption has been less than 1 percent, one-fifth that of the pre-1973 period. Since 1973, average annual increase in GNP has declined to an average of about 2.5 percent. But most critically, the unit of energy consumed per increment of GNP has steadily declined with the more efficient use of higher priced energy. Energy use has dropped from a 1973 high of 63,000 Btu's per real dollar of GNP to a current 51,000, a 10-percent overall improvement. The marginal energy/GNP ratio has dropped from 1 to about 0.5. This trend in efficiency is expected to continue, falling to 40,000 to 45,000 Btu's per real dollar of GNP by 1990, an overall 20-percent improvement over the 1960's and early 1970's. A marginal energy/GNP ratio of about 0.4 can possibly be maintained through 1990. Beyond, when a significant part of the utilization of more fuel efficient cars has been realized and when less versatile fuels such as coal or more energy-consuming fuels such as synthetics constitute a greater part of the energy supply, energy requirement per unit of GNP will most likely begin to rise.

Chart 2

ENERGY CONSUMPTION AND THE U.S. ECONOMY



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If general economic trends of the past seven years prevail to 1990, an assumption made in many recent forecasts, real annual growth will average between 2.5 and 3.0 percent. If recent trends in energy efficiency continue, as expected, a projected average annual increase in GNP of 2.5 percent implies an average annual increase (AAI) in energy demand of about 1 percent through 1990, or a 1990 total energy demand of about 43.5 mboed.

The complement to energy conservation in the balance sheet is obviously domestic production. Since 1973, domestic production has been essentially stagnant, with an AAI of about 0.2 percent. This has been possible only through the coming on stream of the large North Slope Alaska oil production, modest increases in coal, and some gains in nuclear output in the early and middle 1970's. Since 1975, coal production has averaged 3.9 percent yearly; oil production has averaged 0.8 percent (including North Slope); natural gas has managed an AAI of less than 0.1 percent; and nuclear has posted, from a small base, an AAI of 6.3 percent, although the last two years have shown an average annual decline of 9.0 percent.

Against this background, we shall set out two balance sheets for U.S. energy through 1990. In one we shall assume the best likely outcome, under current policies. This analysis was made by W. L. Fisher in June 1980. The other will assume an all-out energy production and conservation effort aimed at eliminating net imports of energy by 1990, following projection and analysis made by W. W. Rostow in the fall of 1980.⁵ A third balance sheet for 1990 and beyond, also looking to a net U.S. energy export position, has been developed by George Kozmetsky. Although reproduced separately, because of exigencies of time and deadlines, it will be incorporated in the final version of this report.

Best Likely Under Existing Policies

Over the past two years a number of forecasts to 1990 have been made. In a survey of 14 of these forecasts (half by industry, half by non-industry entities), the following range in U.S. energy production is shown:

⁵W. W. Rostow, "Energy Target for the United States: A Net Export Position by 1990," ORBIS, Fall 1980, pp. 459-489.

Table-3. Various production estimates (in mboed).

	<u>Range</u>	<u>Average</u>
Crude oil and liquids	7.2 - 11.5	9.6
Natural gas	6.75 - 8.45	8.1
Synthetic oil and gas	0.7 - 1.6	1.2
Coal	10.9 - 13.0	11.8
Nuclear	3.9 - 5.0	4.4
Hydro and other	1.6 - 2.0	1.7
Total	31.05 - 41.55	36.8

The estimates of total 1990 energy production ranged from essentially the expected 1980 production of 30.7 mboed to a level 35 percent greater. Averages of all estimates project a 1990 production about 20 percent greater than current production: a modest 2 percent rate of annual increase. It should be noted that the range in estimates of production from the various sources, excepting oil and synthetics, is about 25 percent. In the case of oil the range in estimates is 60 percent.

The rather wide range in estimates of 1990 oil production hinges on three main variables: (1) degree of optimism relative to potential major discoveries in frontier areas, notably offshore Alaska and especially the timing of federal lease sales, (2) assumption as to the future behavior of finding rate, and (3) assumptions relative to unconventional oil production — synthetics, tertiary recovery, and infill drilling. Nearly all forecasts assume continuation of increased oil and gas drilling through the 1980's, with an AAI on the order of 6 to 7 percent.

The wide range in synthetics hinges chiefly on timing of production relative to 1990.

The balance sheet set out in table 4 assumes the following:

1. GNP will average 2.5 increase annually.
2. An average marginal energy/GNP ratio of 0.4 will be achieved.
3. Total energy production will increase by about 10 percent over 1980 levels, with increases chiefly in coal and nuclear.
4. Declines in the rate of finding of conventional oil and gas will continue; this will be offset in part by continued increases in drilling; current federal land policy, especially relative to frontier OCS, will preclude any significant development from those sources by 1990; production will decline on the average of 1.5 to 2.0 percent annually.

5. Coal production will increase by about 4.5 percent annually, somewhat greater than the rate in recent years.
6. Nuclear plants now in construction or on order will be in production.
7. Synthetic production will achieve the stated federal goal of about 1.2 mboed.
8. Hydro power production and other alternative energy sources will increase only slightly.

The essential conclusion from this balance sheet is that, despite a reduced demand and modest increase in production, import requirements will be on the order of 9 mboed by 1990, essentially at the 1979 level. That means the United States would be demanding for itself in 1990 a higher proportion of the oil available for import than it was in 1979; for example, 51 percent of the total available to the IEA countries rather than 38 percent. This is not a feasible position. Unless the U.S. energy performance is radically altered, therefore, the outcome is likely to be further radical increases in oil prices, a U.S. growth rate well below the 2.5 percent, chronic severe unemployment, large idle industrial capacity, and low investment and productivity levels.

Table 4. Estimate of the U.S. Energy Balance Sheet
(mboed unless otherwise indicated).

	1979	1990	Range of Other Estimates*
Average real growth in GNP	← 2.5% →		2.5%-3%
Marginal energy/GNP ratio	← .4 →		At low range of recent forecasts
Total energy consumption	38.9	43.4	
Total energy production†	29.8	33.6	
Oil	8.5	7.7	7.2-11.5
Natural gas liquids	1.6		
Natural gas	9.3	7.7	6.75-8.45
Synthetic oil and gas	0	1.2	.7-1.6
Subtotal, oil and gas	19.4	16.6	14.65-21.55
Coal‡	7.5	11.3	10.9-13
Nuclear	1.4	4	3.9-5
Hydro and other	1.5	1.7	1.6-2
Subtotal, coal, nuclear, and other	10.4	17	16.4-20
Imports (oil and liquefied natural gas)	9.1	9.8	12.35-1.85
Coal exports	.7	0	

* Fourteen separate projections made over the past two years were consulted, including seven industry projections and seven by government, academic, or other nonindustry institutions.

† Excluding coal exports.

‡ Source: W. L. Fisher, Bureau of Economic Geology, University of Texas at Austin.

A Net Export Position by 1990

A consistent element of U.S. energy policy since 1973 has been the reduction of imports. A number of targets have been set ranging from halving to completely eliminating the level of imports. None has been achieved, and movement toward the targets, save demand reduction occasioned by reduced economic activity, has been modest at best.

Let us now turn, therefore, to what a U.S. energy balance sheet would look like if the nation were to commit itself in the early months of 1981 to achieving a net energy-export position by 1990.⁶ One way to derive such a balance sheet would be to set targets approximating the higher end of the ranges set out in table 4. If achieved, this would produce a quite satisfactory result: total production in 1990 of 41.55 mboed. If total U.S. energy consumption were still to be estimated at 43.4 mboed, then required oil imports would be only 1.85 mbd. A coal export figure of at least 2 mboed ought to be attainable over the next decade. A net energy surplus emerges.

An all-out energy production and conservation effort would require, for reasons to be seen, a surge of investment that would take the U.S. economy back to sustained full employment. This, in turn, would bring about a resurgence of productivity, a relationship considered in section III below. Thus, we must count on a higher rate of increase in real GNP in the 1980's and a higher rate of growth of energy consumption. In table 5, we assume a 3.5-percent real growth rate for the U.S., rather than 2.5 percent, as in table 4. This assumes that (1) the working force will expand at 1.5 percent and will be more or less fully employed and (2) the rate of productivity increase will rise from its low recent performance, averaging 0.5 percent annually, to 2 percent. These are more optimistic assumptions than are now conventional, but we did not wish to make attainment of a net energy-export position seem artificially easy by underestimating the playback on the economy and on energy consumption of an all-out energy production effort.

⁶As noted earlier, a part of this report, separately reproduced, is a balance sheet which also sets as its objective a net energy export position for the United States. This balance sheet (prepared by Kozmetsky), which looks beyond 1990, differs from that set out in table 5 — in the following major respects: its synthetic target, drawn from Exxon projections, is more modest for the 1980's; it assumes a lesser level of U.S. coal exports by 1990; but it provides 2 mboed (plus valuable byproducts) from alcohol production.

Table 5. Balance sheet for a U.S. net export position by 1990
(mboed unless otherwise indicated).

	1979		1990
Average real growth in GNP		← 3.5% →	
Marginal energy/GNP ratio		← .4 →	
Total energy consumption	38.9		45.3
Total energy production*	29.8		43.4
Oil	8.5	} 10.1	9
Natural gas liquids	1.6		
Natural gas	9.3		9.3
Synthetic oil and gas	0		6
Subtotal, oil and gas	19.4		24.3
Coal†	8.2		14.6
Nuclear	1.4		5
Hydro and other	1.5		2.5
Subtotal, coal, nuclear, and other	11.4		22.1
Coal for synthetics	0		5.4
Imports (oil and liquefied natural gas)	9.1		1.9
Coal exports	.7		3
NET ENERGY IMPORTS	8.4		-1.1

* Excluding coal exports and coal for synthetics.
† Including coal exports.

Source: W. W. Rostow, "Energy Target for the United States: A Net Export Position by 1990," ORBIS, Fall 1980, p. 475.

Note: In section IV, below, dealing with productivity, we present calculations of John Kendrick which suggest a rate of real growth in the 1980's of 4.8 percent. With a marginal energy/GNP ratio of 0.4, this implies total energy consumption of about 47 mboed. If all other elements in this balance sheet were held constant, a relatively small net import position would still exist in 1990 (0.6 mboed).

The 0.4 marginal energy/GNP ratio from table 5 is kept, but it should be understood that the increased use of coal as a substitute for more energy-efficient oil and gas means that there will be some upward pressure on the marginal energy/GNP ratio. Therefore, in table 5, by assuming a 0.4 ratio, we imply a redoubtable conservation performance over the next decade. When combined with a 3.5-percent real growth rate measured from 1979, energy consumption in 1990 is thus higher than in table 4, 45.3 mboed rather than 43.4 mboed.

With respect to oil, NGL, and natural gas, it should be possible, with a maximum effort and an optimum public policy to sustain natural gas production at roughly the 1979 level, but oil and NGL production will probably decline. As compared with the maximum estimate for this category in the right-hand column of table 4, we would therefore raise somewhat the natural gas figure, lower the oil figure, and emerge with total output in 1990 of 18.3 mboed, compared with 19.4 mboed in 1979.

If in the first half of 1981 a determined effort could be begun on, essentially, a state-of-emergency basis, then synthetic production of oil and gas in 1990 could be much higher than the maximum figure in table 4 (1.6 mboed). Our figure is 6 mboed. The conditions for achieving this ambitious goal are discussed below.

Aside from relieving certain production and transport constraints, which we believe quite likely during the 1980's, coal production is limited by demand. Taking into account maximum feasible substitution of coal for oil, as well as expanded coal consumption in present uses and exports (estimated at 3 mboed in 1990), coal production for these conventional purposes could be increased by about 80 percent, assuming an increase of nuclear power over the decade of 3.6 mboed.

In addition, a further 5.4 mboed in coal production would be necessary for synthetic fuel plants, assuming that half the envisaged 6 mboed in synthetics is based on coal, half on shale. The U.S. Department of Energy's conversion ratio of coal to synthetics (approximately 1.8) was used. This means that total coal production, including its use for synthetics, would be 20 mboed in 1990; but to include on our balance sheet the coal used to produce synthetics would be double-counting.

Brief comments on two of the lesser changes in table 5 from the estimates for 1990 in table 4 are called for. Under "nuclear," the figure is raised from 4 mboed to 5 mboed for two reasons: first, the political requirements for achieving the lower figure, if fulfilled, should make acceptable the building of the plants required for the higher figure; second, the assumed 3.5-percent growth rate for the economy in table 5 is likely to require the increase in electricity supply represented by the higher figure. The somewhat higher figure for "hydro and other" in table 5 reflects the desirability of

and need for a much more determined effort than we have seen, if we are to exploit the potentialities of passive solar units for hot water and home heating as well as the potentialities of other renewable energy resources.

The purpose of the balance sheet leading to a positive net energy export position by 1990 is merely to suggest the order of magnitude of the increased national effort needed to overcome the disaster implicit in the balance sheet based on even an optimistic view of the prospects under existing policy. A great deal of further calculation of particular fuel balances would be required to translate it into an operating plan. Nevertheless, we believe it a useful way to frame an examination of the potentialities of each component of the the nation's energy balance sheet and to identify the policies required if an approximation of the targets in table 5 is to be achieved. We now turn to that kind of rough assessment.

I.I.C. ENERGY CONSERVATION POTENTIAL

Although energy conservation has received emphasis in recent public policy and a variety of incentives have been enacted, the principal drive toward more efficient use of energy has been effected, as might have been expected, by elevated and increasingly higher energy prices.

While economic recession is an effective way to reduce energy consumption, as it was in the early 1930's, in the middle 1950's, in 1974-75, and in 1980, it is obviously not a desirable one. The desirable course is reduced consumption consistent with economic growth, or, more specifically, with increased energy efficiency.

In the early part of the century, when coal was the major energy source in the U.S., it took something on the order of 90,000 Btu's of energy for each real dollar (1972) of GNP. Starting with the advent of more versatile and more efficient oil and gas as our energy source in the 1920's, the amount of energy necessary per increment of economic growth began to decline, reaching about 60,000 Btu's per real dollar in the mid-1940's when oil and gas became dominant energy sources (chart 2). From the 1950's through the early 1970's the ratio remained relatively stable at about 60,000 Btu's per real dollar of GNP. During the 13-year period prior to the 1973 embargo and price hike, U.S. energy demand rose at an average annual rate of 4.1 percent; during this period, the real GNP increased at the same rate. Since 1973, with higher energy prices, average annual increase in energy consumption has been only 0.8 percent, one-fifth that of the pre-embargo period. Rate of growth in real GNP has likewise declined, but still averaged about 2.5 percent annually. In that period of time

the amount of energy per real GNP has declined to a current level of about 55,000 Btu's per 1972 dollar of GNP. It is this trend that is critical, for it marks conservation achieved through energy efficiency rather than reduction of consumption at the expense of economic growth. The improved efficiency recorded since the early 1970's, we may note, coincided with a period of rising real energy prices. These trends in energy efficiency are expected to continue, declining to about 45,000 Btu's per real (1972) dollar of GNP over this decade. The result is that by 1990 energy use in the U.S. will be about 25 percent less than it would have been had trends of the 1960's and early 1970's persisted. In short, the strides that have been made in energy conservation through more efficient use, chiefly in response to prices, have been good; they will continue as a greater percentage of more fuel efficient automobiles are in the fleet, as certain discretionary, unproductive uses of energy are reduced, as more energy efficient houses and buildings are constructed, and as more fuel efficient industrial processes are employed.

However, maintenance of the trend toward increasing energy efficiency will be difficult through 1990 and beyond. A significant part of the conversion to more fuel efficient cars will be realized in this decade. Further, as less efficient energy sources such as coal or more energy-consuming sources such as synthetics, make up a larger portion of the supply mix, maintenance of the trend toward ever-increasing efficiency will be more demanding.

Policy considerations for continued efficiency in energy include:

- (1) Firm recognition that price has been and will continue to be the most effective incentive. Impacts of such policy on the poor should, where necessary, be handled as a social issue and accommodated outside the market system.
- (2) Increasing domestic prices effected through crude oil, natural gas, and product decontrol; these actions have the double effect of inducing further energy efficiency in use and creating additional capital for energy development.
- (3) Promoting wider use of cogeneration by removing institutional constraints and by offering appropriate financial incentives.
- (4) Raising the existing fuel efficiency standards for years after 1985 and extending existing standards to light trucks and recreational vehicles.
- (5) Promoting mass transport where feasible.

II.D. OIL AND NATURAL GAS POTENTIAL

Future domestic production levels for oil and natural gas are critical. These commodities account for more than 50 percent of U.S. domestic energy supply and 65 percent of domestic energy production. Minor changes in future production levels are, therefore, important.

The U.S. currently produces 19.5 mboed of crude oil, NGL, and natural gas — 8.6 mbd of oil, 1.6 mbd of NGL, and 19.7 TCF or 9.3 mboed of natural gas. This production comes from a present proved reserve base of 27.1 billion barrels of oil and 195 TCF of gas. Reserves-to-production ratios are now about 8.5 for oil and 9.9 for gas. If reserves continue to decline at the historic rate established in the 1970's and if R/P ratios fall to 8 by 1990, proven reserves of oil will be down to 15 billion barrels and production will be about 4.9 mbd. Gas reserves will sink down to 78 TCF, and annual production will be about 10 TCF. Assuming that NGL can be kept at about the same extraction rate from gas, NGL production will be about 0.8 mboed. Total production of oil, gas, and liquids would then be about 10.2 mboed, or about 60 percent of the current level. These declines assume future drilling efforts equivalent only to recent levels; production and reserves additions above this amount will hinge on the volume of drilling above recent levels. For example, to hold production at current levels until 1990, it would be necessary to find and develop about 50 billion boe over the next decade, more than twice the current rate of reserve additions of conventional oil and gas. Even assuming no decline in finding rate, this would require the drilling of an average of 100,000 wells a year, nearly twice the current annual level. Most projections show an average of about 80,000 wells drilled annually through the 1980's.

One aspect of oil and gas exploration that must be appreciated and dealt with as a matter of policy and statistical reality is the historic decline in rate of finding — specifically the volume of oil and gas found per increment of exploratory effort. Estimates of the volume of oil and natural gas yet to be discovered in the U.S. are equal to about 60 percent of the volume already discovered — an impressive exploration target. Yet geologic reality is that the first portion of oil and gas discovered was found with greater ease and less expense than the last portion of those resources will be. The remaining volumes are chiefly in smaller traps, or more difficult to locate traps, or in more remote areas. The statistics on U.S. finding rate bear out the geologic reality. Since the middle 1950's, the rate of finding — reserves per increment of exploratory drilling — have declined about 3 percent per year on the average; further, the rate of decline is accelerating and will accelerate further in the

face of an increased drilling effort. This does not imply that we are running out of oil and natural gas to be discovered or that exploratory efforts should not be vastly enlarged. It does imply that an even greater drilling effort is necessary.

Although many of the lower-48 oil and gas basins are mature, especially at relatively shallow depths, there remain significant frontier areas in the U.S. Most notably, in the case of oil potential, are the vast offshore areas of Alaska. The U.S. offshore is judged to hold about 60 percent of the U.S. potential discovery for oil and 35 percent for gas. The Alaska offshore alone constitutes an estimated 40 percent of the U.S. total future discovery potential for oil.

Some 560 million acres comprise the U.S. Outer Continental Shelf; of this amount 350 million acres are considered by the U.S. Department of Interior as promising for oil and gas. Only 38 million acres (about 10 percent of the promising acreage) have ever been offered for lease, only about 18 million acres (5 percent of the promising acreage) have been leased to date, and only 10 million acres (3 percent of the promising acreage) are currently under lease. Of all the OCS acreage leased, 82 percent has been in one area -- the Gulf of Mexico, which also comprises 98 percent of all OCS production.

In addition to the OCS, the vast upland area of the Public Domain, chiefly in the Western 13 states, holds substantial promise for oil and gas discovery. This has been demonstrated by recent, highly successful drilling in the Western Overthrust Belt. Unfortunately, exploration in the West is seriously impaired by the unavailability of vast amounts of federal lands withdrawn from oil and gas leasing and by elaborate administrative constraints to exploration on lands that are open. The drilling record on federal lands compared to drilling on nonfederal lands over the past 15 years dramatically underscores the problems. Through 1974, drilling activity on both classes of lands was essentially the same, about 3,000 wells annually on both federal and nonfederal lands. However, with the upsurge in Western oil and gas drilling since 1974 a wide gap has emerged. While drilling on nonfederal lands has jumped to some 5,500 wells annually, an overall increase of about 85 percent, drilling on federal lands has declined to about 2,000 wells annually, a decline of about 33 percent. The obvious conclusion to draw is that while oil and gas potential is about the same on both classes of land, drilling activity on the federal lands is significantly constrained relative to that on nonfederal lands as a matter of federal land policy. Had drilling on the federal lands paced the overall activity of the West, as its potential merits, a full 50 percent more exploration in this vital oil and gas area would have occurred over the past six years.

Another potential area of oil and gas, particularly gas, lies in deeper drilling. Some 35 percent of U.S. potential gas resources are judged to exist at depths greater than 15,000 feet. Yet, of total U.S. drilling, no more than 2 percent is logged below 15,000 feet. A recent draft report by the National Petroleum Council estimates that between 190 and 570 TCF of unconventional gas can be recovered from tight, low-permeability reservoirs in the U.S. lower 48, at prices up to \$9 (1979 dollars) per MCF.

A third major area of domestic oil potential lies in so-called enhanced or additional recovery. The average volume of recovery of discovered oil is about 32 percent. The remaining amount — on the order of 300 billion barrels — is unrecoverable by conventional means or conventional practices. A significant volume of now unrecoverable oil can be recovered through both tertiary and extensive infill drilling. Both techniques are highly sensitive to price.

Although future discovery and development of oil and gas will be increasingly difficult, and hence expensive, whether from exploration in mature basins with reduced finding rates, from remote frontier areas, or from unconventional sources, a maximum effort on all fronts could offset declines from older fields and realize a 1990 production level approximately that of current levels. Essential, however, is that the current surge in drilling not only be maintained, but enlarged; that high potential areas under federal jurisdiction, both onland and offshore, be made available through immediate leasing; and that special incentives be established for additional recovery of known oil in place as well as recovery of gas from unconventional sources. Critical to the arrest of oil and gas production decline is early successful development of oil in the frontier areas, and rapid development of gas from deep reservoirs and from unconventional sources such as tight reservoirs. As a matter of policy such realization will require:

1. Acceleration of decontrol, especially for natural gas.
2. Modification of taxation from the present windfall profits tax to a plowback tax. Both decontrol and substantial modification of the current excise tax on oil are essential to generate necessary capital to expand conventional drilling, to enlarge tertiary recovery, to expand infill drilling, to develop frontier areas, and to develop unconventional sources.
3. A vastly accelerated rate of leasing federal lands of the Public Domain and the Outer Continental Shelf. Most promising acreage now unavailable or withdrawn from leasing should be made available immediately.

II.E. COAL POTENTIAL

Introduction

Between 1973 and 1977 demand for U.S. coal increased at only about 3 percent annually. In 1978, as a result of a major strike, there was actually a decline in production. In early 1979 coal use began to increase more rapidly at an annual rate of about 5 percent, and during 1980 coal consumption has been running about 7 percent above that of 1979. Two markets, electric utilities and exports, have accounted for most of that growth. However, the demand for electricity is growing slower than the historical rate, and the existing infrastructure for coal exports is being stretched to the limit by the present level of exports.

Coal now supplies less than 20 percent of U.S. energy requirements, and the demand for coal remains below current and future potential. At present, the industry has the capacity to produce at least 100 million tons of additional coal per year. Many mines are closed, and an estimated 20,000 coal miners are out of work. Existing and prospective government policies and regulations have held the rate of increase in coal consumption substantially below its potential. These measures have resulted in delays in the siting, financing, construction, and operation of facilities to use or transport coal, have reduced the price differential between coal and other fuels, and have prevented the mobilization of mineable coal reserves and production from those reserves. These measures also threaten to erode our competitive position on world coal markets.

The Declaration of the Venice Summit, held in June 1980, contains the statement: "Together we intend to double coal production and use by early 1990. We will encourage long-term commitments by coal producers and consumers." In all recent forecasts of domestic energy supply, including the National Energy Plan II (May 1979), heavy reliance is placed on coal. In 1979 U.S. coal production amounted to 741 million short tons, an annual average increase of 5 percent over 1977. The NEP II calls for producing 1,265 million short tons by 1985, and 2 billion short tons by 1990. To reach that goal, production and utilization would have to increase about 6 percent per year. U.S. coal reserves are sufficient to sustain the projected increase at least until the end of this century.

The World Coal Study (WOCOL, 1980)⁷ concluded that coal production in the United States will need to at least triple 1977 levels to more than 2 billion short tons annually by the year 2000 to meet the projected expansion for domestic and export coal demand. U.S. coal exports are projected to increase from the 1979 level of 59 million metric tons per year to at least 125 to 200 million metric tons and perhaps to as much as 300 to 400 million metric tons by the year 2000. Such a level of exports would require a massive improvement of existing infrastructure, the construction of 10 new coal export terminals, each with a capacity of 25 to 30 million tons per year, and vigorous development of international coal markets in competition with countries like Australia, South Africa, and Canada.

WOCOL (1980) estimates that coal will have to supply about two-thirds of the total increase in U.S. energy needs for 1980-2000. Administrative, legal, environmental, physical, economic, social, and political constraints will make attainment of the Venice Summit, NEP II, and WOCOL targets for coal production and utilization difficult. Meeting the targets of our accelerated balance sheet will be even more difficult.

WOCOL (1980) projects an expansion in the demand for coal exports from the U.S. ranging between 125 million tons of coal equivalent to 200 million tons of coal equivalent per year or more. This type of expansion, however, will require a major overhauling of present transportation lines.

A number of serious constraints reduce the demand for coal. Some of these are of a general nature, such as a lack of public appreciation of the depletion of oil and gas reserves and the need for a rapid switch to coal. Uncertainties also exist regarding competition from nuclear energy for electric power generation, with conflicting or confusing public understanding of the relative merits of nuclear, coal-, and oil-fired facilities. Utilities have been reluctant to replace oil- and gas-fired power stations with coal-fired facilities because of environmental objections to the use of coal and the image of coal as an outmoded source of energy. Other constraints are more specific and relate to regulatory, scientific, economic, and other problems.

Regulations covering coal mining fall into two broad categories, namely management, and health and safety. Land management regulations include the Wilderness Act of 1964, the Federal Land Policy and Management Act of 1976, the National Forest Management Act of 1976, the Alaska Native Claims Settlement Act of 1971, the Federal Coal Leasing Amendments Act of 1976, the Mining in the Parks Act, and the

⁷WOCOL, "Coal: Bridge to the Future — The World Coal Study," Carroll L. Wilson, editor, Ballinger Publishing Company.

Surface Mining Control and Reclamation Act of 1977. The Leasing Amendments Act requires that comprehensive land use plans be prepared prior to leasing of coal on federal lands and that leases be developed within 10 years (i.e., due diligence), or they are automatically terminated. Currently there are plans to resume federal leasing in 1981. These mining regulations tend to lengthen the lead times for the development of new coal mines.

The Surface Mining Control and Reclamation Act of 1977 is not expected to materially affect coal production. Delays in permitting could lead to temporary reduction in production. Cost impacts are greatest in Appalachia (\$1.59 to \$5.51 per ton) and least in the West (about \$0.50 per ton) and average nationwide about \$2 per ton of coal mined. Obviously, increased costs could narrow or conceivably remove coal's price advantage over other fuels and thereby reduce production over the long term. Many of the regulations issued by the Surface Mining Control and Reclamation Act of 1977 are not technically justifiable, involve unnecessary costs, or are otherwise unnecessarily restrictive. Furthermore, OSM's delay in issuing acceptable regulations has interfered with the ability of states to develop their own programs as authorized in the Act.

The Federal Coal Mine Health and Safety Act of 1969 has resulted in decreases in the number of coal mine fatalities and injuries since 1969. However, implementation of the Act's measures has also contributed to the decline in underground mine productivity, which has increased the costs of mining and reduced the nominal capacity of existing mines.

The 1977 Amendments to the Federal Clean Air Act will have considerable impact on future coal use in the United States. The uniform scrubbing requirement of 85-percent sulfur dioxide removal under the Best Available Control Technology (BACT) philosophy will necessitate that scrubbers be placed on all new coal-fired power plants, irrespective of sulfur content. On a national scale, this requirement will cause a shift from low-sulfur Western subbituminous coal to high-sulfur Eastern bituminous coal because of the lower transportation costs.

Large quantities of ash and solid waste residuals are generated from coal utilization. These residuals occur largely as the result of air pollution controls implemented for removal of particulate matter and sulfur oxides. These wastes must normally be disposed of in mining areas at mine-mouth plants, or transported to suitable disposal sites for plants located near demand centers.

The Resource Conservation and Recovery Act of 1976 may place some serious restrictions on disposal site locations and significantly increase disposal costs for solid

waste residuals from coal combustion and conversion. Solid wastes classified as hazardous would probably need to be disposed of in landfills with 10-foot-deep clay linings at least 15 feet below the pit; extensive ground-water monitoring requirements would also have to be met. This classification occurs largely because of the presence of trace metals, trace organics, or radioactive nuclides above certain specified levels, not all of which have been defined. The result is an incremental increase in disposal costs which may reach as much as \$4 to \$10 per ton of coal as compared to nonhazardous wastes.

The establishment in the United States over the past 15 years of a complex of environmental, health and safety laws and regulations has significantly increased public participation in decisionmaking, affecting all aspects of energy supply activities including the manner in which coal can be mined, moved, and burned or processed. The regulatory process has significantly increased project lead time from 4 to 5 years in 1970 to the current 8 to 10 years. In addition, project cost has substantially risen from \$150 to \$200 per kilowatt installed capacity in 1970 to \$800 to \$1,000 per kilowatt. About half or more of the increase is due to required additional environmental control equipment and the financial costs associated with longer lead times (WOCOL, 1980).

Conversion to coal will place increased demand on available water resources — air pollution control equipment increases demand by 10 to 20 percent; commercial coal gasification and liquefaction plants require nearly twice as much water as a medium-sized oil refinery; revegetation of mined lands in semi-arid climates will require irrigation; and the water needs for possible slurry pipelines are also substantial. Incremental demand could be high, especially in the water-poor West where large-scale mining, gasification, and liquefaction are contemplated. Already in some Western river basins (for example, Colorado) allocation exceeds available supply. Whether or not the availability of water will slow the nation's shift to coal cannot be determined yet.

The coal industry has a record of work stoppage due to labor disputes. A Library of Congress study cites the Bureau of Labor Statistics as showing an average 947 coal industry work stoppages per year in the period 1970 to 1976. Productivity in tons per man-day has declined dramatically over the past decade in both underground and surface mining.

Training facilities for coal miners are generally poor by comparison with those in other countries. There are serious shortages of coal geologists, mining, preparation, combustion, and conversion engineers, and shortages of facilities for higher education

in some of these areas. Skilled and semi-skilled labor for the coal industry may therefore impose constraints on the development of the industry.

The projected massive increases in the tonnage of coal used will require substantial changes, significant improvements, and the development of new technology in transportation. Critical to the increased use of coal are the costs of transportation. Western coal, in particular, is far from potential markets. Most projections call for the U.S. to be a major exporter of steam coal to the international market.

The projected increase in the use of coal may be constrained by bottlenecks between the interior mining regions and export areas in congested railroads, waterways, and port facilities. Much of the rolling stock in use today is in poor condition, and substantial proportions of trackage will have to be rebuilt in order to withstand the heavier loading caused by larger cars. Much of the Western coal reserve is far from domestic or export markets.

Coal slurry pipelines are technically feasible, but their development has been hindered by the lack of the right of eminent domain to condemn land in many states, and opposition from the railroads. Water availability in many Western states is sufficiently low such that the extensive movement of coal by slurry pipeline could create serious conflicts between energy development and agricultural operations in the Colorado and Missouri River basins.

Railroads have traditionally been involved in the movement of large quantities of coal. Railroads moved about 65 percent of the total coal produced in 1975, or 405 million tons. Essentially all of this coal moved by rail has been hauled by diesel-powered unit trains that consumed 22 million barrels of oil in 1975. Electrified railroad operation could alleviate reliance on burning imported oil for transporting domestic coal by allowing coal or nuclear energy to be used as the major propulsion sources.

If the supply of coal is to be increased, huge additional capital investments will be required to develop new mines and to replace depleted mines. In addition to this "normal" capital investment, there will be a formidable oncost resulting from compliance with environmental and other regulations and from inflation. A production growth rate such as that called for in the NEP II will place a severe burden on equipment production facilities, thus further escalating the capital cost requirements. In addition, massive capital investments will be required for the establishment of the necessary transport networks. Coal-fired power stations are considerably more capital-intensive than oil- or gas-fired stations, requiring enormous capital expenditures. Coal gasification and liquefaction plants are even more capital-intensive.

The investment costs of expanding U.S. coal production, transport, and use may amount to about \$500 billion over the next 20 years.

It appears unlikely that the necessary incentives are available to induce the capital investment required for the level of coal utilization envisaged; although it has been concluded that the availability of capital would not pose a general constraint on coal expansion, individual projects would have to attract investment on their own merits.

Political and institutional barriers loom large in the development of coal as an energy source. Policy studies are needed if ways and means are to be found for stimulating the use of coal while meeting environmental standards.

The realization of coal's potential as a major source of energy will require drastic measures. The following recommendations are offered in this regard:

1. Make all efforts to ensure that the American public hears, understands, and accepts the message on: (1) the urgency of the world's energy problem; and (2) the essential role which coal must play in providing a major part of the future increase in energy needs (WOCOL, 1980).
2. Stabilize the environmental standards for mining, transporting, and using coal, and integrate them with an energy policy which encourages the expansion of coal, so that the necessary investment decisions in coal mines, transport, and user facilities will be taken soon. While providing for appropriate review by interested parties, expedite the environmental decision process for siting new coal facilities, so that coal projects can be executed without delay (WOCOL, 1980).
3. Encourage decisions to build new coal-using facilities, and encourage conversion of existing utility plants to coal. Some existing utility plants were constructed with the capability to use coal but are now using oil or natural gas.
4. Support the expansion of the U.S. coal transportation capacity, including a combination of coal slurry pipelines and expanded rail and barge facilities, siting and building modern coal ports on the East, Gulf, and West Coasts, and ensuring that the transportation system remains competitive and economically viable, in terms of freight rates, for domestic and export customers (WOCOL, 1980).
5. Facilitate the federal, state, and local process for approving federal leasing of Western coal lands, where some 60 percent of the coal reserves are owned by the U.S. government, so that delays are avoided in the expansion of Western coal production (WOCOL, 1980).

6. Initiate a massive research and training program into coal mining, beneficiation, characterization, reserve evaluation, combustion, environmental controls, and utilization.
7. Encourage developing countries to consider coal as a viable and economic energy option for supporting their future economic growth while reducing their needs for imported oil.

II.F. SYNFUEL POTENTIAL

Introduction

From the late 19th century to just after World War II, every major city in Europe and North America had a gas-manufacturing plant. The availability of abundant, cheap natural gas caused the decline of the manufactured-gas industry in the United States. By 1964, the shift to natural gas in the United States was virtually complete.

There are several commercially available processes for the production of medium- or high-Btu gas from coal, including the Lurgi, Koppers-Totzek, and Winkler processes. In addition, a number of so-called second-generation gasification processes are being developed. The most promising of these appear to be the Texaco and Slagging Lurgi gasifiers. The capital cost of coal gasification plants will be very high -- between \$1 and \$3 billion for a plant producing 250 million cubic feet of gas per day.

Coal can be converted to liquid fuels by three fundamentally different methods, namely indirect conversion (gasification followed by hydrocarbon synthesis), hydroliquefaction, and pyrolysis. In indirect conversion, coal is first gasified to produce a synthesis gas. This gas is purified, and in some cases a shift reaction is performed to increase the ratio of hydrogen to carbon monoxide. The synthesis gas can be chemically reacted to produce methanol or a range of intermediates which can be further upgraded to gasoline. Conversion of methanol to gasoline is also technically feasible. In hydroliquefaction, coal is dissolved in a solvent that is usually a production fraction of the process. Liquid fuels are produced by reacting the solution of coal and solvent with hydrogen. Pyrolysis involves exposing the coal to very high temperatures in an inert or oxygen-deficient atmosphere. The coal is converted into coke or char and yields tar, liquids, and fuel gases as by-products.

The only commercial coal liquefaction plant in the world today is the Sasol I plant in South Africa. A second coal liquefaction plant, Sasol II, which has a capacity

10 times that of Sasol I, has been constructed in South Africa, and Sasol III is under construction. Upon completion those plants will produce more than 50 percent of South Africa's gasoline requirements. Experience in South Africa and analyses in the United States indicate that the most thermally efficient method to use the Fischer-Tropsch process is for the simultaneous production of synthetic natural gas and oils, mainly motor fuels. The Fischer-Tropsch process has been vastly improved at Sasol over the past 20 years, and now represents a reliable, though expensive, means of producing synthetic liquid and gaseous fuels from coal. The process is versatile, and the mix of products can be varied within fairly wide limits to suit a particular market. By contrast, hydroliquefaction processes are still in the development stage and are not expected to be commercially available before 1990. These processes produce heavy fuels which differ substantially from crude oil. Many problems remain to be solved with regard to the refining of the synthetic crudes from hydroliquefaction, and their yield of gasoline and diesel is likely to be low. Pyrolysis processes are currently at bench scale and are unlikely to be available on a commercial scale for more than a decade.

In view of the urgency of the U.S. energy situation, first-generation synthetic plants should be based on first-generation, commercially available technology, such as Fischer-Tropsch synthesis and Lurgi gasification. Research into second-generation processes should be intensified for possible use in second-generation plants.

A number of chemical, physical, mineralogical, and petrological properties of coals and their associated ash fractions are extremely important in coal conversion. Much more work should be done in the United States on the characterization of our coal resources, with a view to identifying the best feedstocks for specific coal conversion processes.

Institutional problems are the main constraints on the development of oil shale. A technological base for production has been developed. Federal lands have to be made accessible on a scale large enough to enable the use of the best technology. A number of surface processes have been developed to exploit oil shale. These require that the shale be broken up so heat can be applied to drive off the kerogen. Processes that have reached the pilot plant scale include those developed by Lurgi, Paraho, Union Oil, Tosco, Occidental, and Superior Oil. New developments, such as fluidized beds could substantially reduce production costs.

Modified in situ processing techniques are not as fully developed as surface processing methods. One of the major problems remaining to be solved is the formation of a suitable in situ retort. Estimates for the cost of room and pillar mining

and surface processing of oil shale in the U.S. are around \$16 per barrel. Upgrading costs, estimated at \$4 per barrel, bring the total to about \$20 per barrel, not including return on equity, investment credits, royalties, or land costs. A 20-percent rate of return would bring the price to between \$25 and \$30 per barrel.

The quantities of shale available for production are enormous. However, other factors, such as water and environmental constraints, could limit production. The largest oil shale deposit in the U.S. is the Green River Formation in Colorado, Utah, and Wyoming. Only a small part of this deposit is in private hands.

Coal is not a natural substitute for crude oil or natural gas. Crude oils differ greatly in their physical and chemical properties, and hence in the mix of products that can be produced from them. There is a general trend, both domestically and worldwide, towards the production of heavier oils, which would yield less gasoline and more fuel and residual oil under normal refinery practice. These heavy products can be cracked to yield more light products through the use of hydrocrackers and catalytic crackers. However, such refineries are extremely expensive. If we are to substitute coal for crude oil on a large scale it is important to substitute both the "heavy" and the "light" ends of the crude oil barrel, and to produce the full range of products from coal that are normally obtained from oil. In view of the trend toward the production of heavier crude oils, it is particularly important that we substitute the "light" end of the crude oil barrel by coal.

The hydroliquefaction processes currently favored by the DOE and the Carter administration, including SRCI, SRCII, H-Coal, and the Exxon Donor Solvent process, yield a so-called "syncrude," which is much heavier than natural crude oil, contains a higher percentage of aromatic products, has a higher nitrogen and lower hydrogen content, contains finely disseminated mineral matter which is very difficult to separate from the heavy liquids, and is more difficult to crack and refine than residual oil obtained from the refining of natural crude oil. Clearly this syncrude is designed to substitute only the heavy end of the oil barrel, and its major use will be as a boiler fuel for electric power stations.

The major incentive for the development of these processes apparently has been environmental. It is possible to sharply reduce the sulfur content of these "syncrudes" and to produce an "environmentally acceptable" boiler fuel. To produce a boiler fuel from coal by hydroliquefaction at a cost of \$30 to \$35 per barrel, and then to burn this in a power station, may make some sense in the environmentally sensitive Northeast. It certainly does not in the South, Southwest, and West, where the main products desired are gasoline, diesel, and petrochemical feedstocks. For power generation it

would appear to make much more sense to burn coal directly, and to remove the sulfur through stack scrubbers or other appropriate means.

Large-scale use of hydroliquefaction in the United States would provide an acceptable substitute for the heavy end of the crude oil barrel. However, this practice, together with the production of increasingly heavy natural crude oils, would place an intolerable burden on the petroleum refining industry to produce more light products from a barrel of oil.

While the first priority in the United States is for the production of coal-derived substitutes from crude oil, natural gas supplies are also declining, and substitutes will have to be derived from coal. The tendency in the United States has been toward the development of complex and costly processes which would produce a substitute natural gas from coal. We believe that it would be more economic, and thermally more efficient, to produce a medium-Btu gas from coal by pressurized oxygen-steam gasification or to produce both a substitute natural gas and a synthesis gas for the production of gasoline, diesel, and other valuable products from coal via the same process.

The United States simply does not have the time to develop any of these hydroliquefaction processes for use in first-generation synthetic fuel plants. While research and development into these processes should be continued, and even accelerated, our first generation of synthetic fuel plants should be based on proven first-generation technology such as Lurgi gasification and Fischer-Tropsch synthesis.

Cost estimates for Lurgi-Fischer-Tropsch plants can be made with far greater confidence, on the basis of experience at Sasol in South Africa. This process is unquestionably expensive, in terms of both capital and operating costs. Each year we wait they become more expensive. If we wait until a large number of such plants have to be constructed in a crash program, the costs will further escalate at an alarming rate. Had we constructed such a plant when we should have, starting in 1973, it might now have produced a range of desirable products at competitive prices. Mr. Carter's synthetic fuel plan of July 1979 did not mention some crucial elements of such a scheme: the need to train industry in the construction of such plants, and the need to train personnel to operate them. Even if the incremental cost of producing gasoline, diesel, and substitute natural gas in such plants is high, their effect on average prices of these products will be small. They could also effectively deter OPEC from further massive increases in oil prices.

There is an enormous investment in oil and natural gas pipelines, refineries, and petrochemical plants throughout the United States, but particularly in the Southwest.

It is imperative that we make the maximum possible use of this existing infrastructure in any large synthetic fuels program.

The objectives of the synthetic fuels program should be clearly defined, and the priorities clearly stated. The first objective should be the most efficient possible substitution of oil and natural gas by coal. In the case of electric power generation, this should be done by the direct combustion of coal. The most important single objective of the program should be to produce large quantities of fuel for internal combustion motors, around which our civilization is built. This means the production of gasoline, diesel, and aviation fuels. Of almost equal importance is the substitution of coal for natural gas and oil in the production of petrochemicals, starting with nitrogenous fertilizers, synthetic rubber, and plastics such as PVC. The next objective is to produce a gas composed of carbon monoxide, hydrogen, methane, and butane, as a substitute for natural gas.

The proposed synfuel target of 6 million barrels of oil equivalent per day by 1990 would be impossible to reach under normal conditions. The target of 2 mboed by 1992 set by the current administration is also considered unlikely by many industry experts. The only way in which our target could possibly be reached is by full-scale mobilization on a military emergency basis.

Production of 6 million barrels of synfuels per day by 1990 would require the construction of 120 plants, each with a capacity of 50,000 boed, in the short space of nine years. Such a massive synfuel program will tax the capacity capabilities, ingenuity, and resources of the nation to the limit. At its peak it would require considerably more than 50 percent of the capacity of the U.S. engineering construction industry, and considerable assistance from abroad. It would require a labor force in excess of 150,000, and most of the trained welders in the United States. Oxygen production would have to be increased at least five-fold; heat exchanger capacity would have to be at least doubled; and the production of walking draglines would have to be increased by at least 150 percent.

The availability of skilled labor and engineers looms as one of the greatest constraints on such a massive synfuel program. In view of the long lead-times, we simply would not have the time to train enough highly skilled engineers to have a very large synfuel industry in place by 1990. The only way in which this problem could be overcome is to use a single blueprint, such as Sasol II, and to construct several of these plants in proximity to each other. Even then, the synfuel program would require the services of more than 50 percent of the total technical manpower available to the U.S. engineering contracting industry. To make matters worse, the major need for

engineers will occur early in the program. The program will also require thousands of pipefitter-welders, electricians, and other skilled artisans.

The materials requirements of the program are equally daunting, and it will require massive expansion in the production of alloy and stainless steels, valves, pumps, compressors, heat exchangers, and pressure vessels. Without a total national commitment to the program, the necessary increase in the production of these materials simply will not come about.

The principal constraint on the program may well be the maze of permit and licensing requirements that have emerged over the past decade. The number of permits required for a synthetic fuel plant is estimated at 150 to 200. Many of the applicable regulations are onerous, duplicative, and even contradictory. The Resource Conservation and Recovery Act requires additional permits for synfuel plants. However, the regulations will not be published for several years. Under present circumstances it would probably take about five years to obtain all the necessary permits for a synfuel plant. Clearly, without a fast track, such as the proposed Energy Mobilization Board, and an accommodation with environmentalists, our target cannot possibly be reached.

There are only about 10 to 12 companies in the United States who have the capacity to serve as project managers for commercial synfuel plants. Whether these companies' combined services devoted entirely to the construction of synfuel plants would be sufficient to reach the target is questionable. Certainly, there would be a price to pay in terms of lost opportunities in other important industries.

The capital requirements of a 6 mboed synfuel industry would be staggering. Each 50,000-barrels-per-day plant would cost about \$4 billion. In addition, there would have to be massive expenditures on social infrastructure in order to accommodate large numbers of workers in remote areas, and on improvements to physical infrastructure. Companies producing a wide range of materials and equipment for the industry would also require a massive injection of capital. The program would probably cost more than \$500 billion.

The selection of 120 sites for the construction of synfuel plants would also present serious problems. Each plant would be about a square mile or more in extent; would require a block of at least 1 billion tons of extractable coal reserves; water requirements amount to about 5 gallons per gallon of synfuel; and air, water, and solid waste pollution problems have to be overcome.

It appears that without a massive synfuel production program we simply will not have enough liquid fuels available by 1990 to allow us to maintain our present life-

styles and standards of living. The technology for the production of synthetic fuels is available, and there is every indication that these processes will be commercially viable in the foreseeable future.

The target of 6 million barrels per day of synthetic fuels by 1990 is just barely achievable in terms of a national mobilization on a scale never before attempted in this country or anywhere else. Anything short of a total national commitment would mean that synfuel production would fall far short of our target of 6 million barrels per day by 1990.

II.G. NUCLEAR ENERGY POTENTIAL

The potentialities of nuclear power generation, envisioned 10 to 15 years ago, are far from being realized. Starting from the first commercial reactor in 1957, a total of 74 are now in operation. Production of nuclear power steadily increased from the late 1960's through the middle 1970's. Since 1977, growth stagnated and has actually declined since early in 1979. Orders for new plants steadily increased through 1973, but since that year cancellations have exceeded new orders. Currently the U.S. universe of reactors is 176, including, in addition to the 74 operational units, 85 for which construction permits have been ordered, 14 with construction permits pending, and 3 units on order. The current nuclear output is about 1.4 mboed; operation of the universe of 176 units will yield about 4.5 mboed.

The problems that have plagued nuclear energy since 1973 are legion. These, as outlined in 1979 by Marcus Rowen,⁸ former Chairman of the Nuclear Regulatory Commission, include:

1. Lack of utility confidence. In this area, an array of factors is involved: uncertainties in federal and state licensing requirements and schedules; uncertainties regarding the nuclear fuel cycle policies of the federal government; uncertainties as to the political will to take the actions necessary to maintain the viability of the nuclear option; and problems of public acceptance. All these uncertainties are set in the context of lowered demands for electrical generating capacity since 1973 and likely lower levels of demand in the future. These uncertainties have been reflected in decisions to delay or defer decisions on capacity need.

⁸Marcus Rowen, "Nuclear Energy and National Needs: The Promise, The Problems and the Prospects": Proc. 58th Annual Convention, Gas Processors Association, 1979, pp. 51-55.

2. Licensing process and its problems. It now takes 12 years or more to bring a nuclear power plant from the planning stage to commercial operation -- twice as long as it did 10 years ago and twice the time required in most other areas of the world. A process as extensive as this adds significantly to costs, adds uncertainties as to whether regulatory requirements will remain firm, and for a utility that cannot commit new capacity more than 10 years in advance of needed output, is irrational.
3. Problems in the nuclear fuel cycle. These problems pertain chiefly to key elements of the "back-end" part of the nuclear fuel cycle -- how to handle and effectively isolate radioactive wastes. Adding to this complexity are questions of domestic reprocessing and the use of plutonium, including the breeder reactor.

It is our opinion that the U.S. neither can nor should forgo the nuclear option. If we are to achieve a much larger measure of domestic energy sufficiency, indeed a net export position within the decade, we must move resolutely toward increased use of nuclear power. Indeed, this has been a persistent element of national energy policy through the past three administrations. It is obviously easier said than done. There needs to be a firm, unequivocal policy and dedication to use and development of nuclear energy, coupled with the recognition that its use be regulated effectively to protect public health and safety. Necessary legislation and agency reform in the licensing process need to be made to reduce lead time and to stabilize licensing requirements. Finally, there needs to be an effective separation of perceived risks and actual risks. It may be argued that, in light of all the problems involved, nuclear will not be a viable and contributing source of domestic energy until the overall energy situation worsens drastically. A rational move now can preclude, at least in part, that eventuality.

II.H. ALTERNATIVE ENERGY RESOURCES POTENTIAL

In addition to this nation's potential for stabilizing or reducing the decline in oil and gas production, its potential for substantially increasing coal and nuclear production, and its potential for developing a major synthetic fuel production capacity, a wide range of other sources of energy exists. These include potential sources now contributing little or nothing to energy supply. The list is extensive -- geothermal, solar, biomass, wind, hydrogen, among others. Each of these potential sources has, appropriately, been the focus of extensive research and development. The volume of

energy so-called alternative sources might contribute during this decade is relatively small by most accounts and analysis. However, with continued research and development leading to commercialization, potential contributions by the end of the century and beyond might be impressive.

A major attraction to many of the so-called alternative energy sources is the perception that they are environmentally benign. In fact, these potential energy sources carry, more or less, the environmental burden of any resource development. Which of these alternative, or complementary sources become major contributors to U.S. energy supply should, in the best interest of the consumer, be determined in the market place.

II.I. ECONOMIC IMPLICATIONS

We turn now to the economic possibilities and problems that would flow from a concerted national effort, conducted on an emergency basis, to achieve the targets set out in table 5. The heart of the matter is the scale of the investments required to reach those targets.

In a report by the Council on Energy Resources of The University of Texas at Austin (National Energy Policy: A Continuing Assessment, January 1978), two of our colleagues undertook to estimate the plant and equipment investment needed to reach, over a nine-year period (1977-1985), the production targets implicit in the National Energy Plan (NEP) put forward by the Carter administration at that time. Carter's plan involved a net increase of 9.6 mboed in annual production capacity, apart from finding of new oil and gas reserves in substitution for declining old reserves; increased outlays for energy conservation investment were also estimated. Converted from 1976 to 1979 dollars (using the GNP deflator for fixed, nonresidential investment), the total energy investment figure over the nine years came to \$953 billion, of which \$704 billion was for production and \$249 billion was for conservation: an annual rate over the nine years of \$106 billion. The target set in table 5 is for a net increase over 10 years of 15.9 mboed in annual energy production capacity, excluding coal and shale for synthetics production. The higher target results mainly from the fact that the NEP sought an oil import level of 6 mbd in 1985. Here we are shooting for a net energy-export position by 1990. On the basis of rough analogy, the plant and equipment outlays for production would now come to \$1,166 billion during the coming decade (in 1979 dollars); the total, including conservation outlays as earlier calculated at an annual rate of \$29 billion, to \$1,443 billion. For production, the annual average

outlays would be \$117 billion (in 1979 dollars) compared with \$78 billion in our earlier calculations. This would come to something like 4.1 percent of GNP, projected for the 1980's at a 3.5-percent annual average growth rate — a substantial increase over present levels of plant and equipment investment in energy production (say, 3 percent). But estimates based on rough analogy from our earlier calculations are certainly too low by a substantial margin because of (a) the increased drilling required to establish a unit of additional reserves of oil and natural gas, (b) the high capital intensity of synthetics plants, (c) the investments needed to generate coal and shale supplies for synthetics plants, and (d) the considerable transport outlays implicit in the large expansion of coal use and export. Further, such plant and equipment calculations exclude substantial housing and other infrastructure outlays that would inevitably accompany any effort capable of moving energy production from its present virtual stagnation to anywhere near the 4.8-percent annual growth rate required to reach the 1990 target in table 5.

The reality of these amplifying factors is suggested by a recent estimate of the Bankers Trust Company.⁹ Assuming a much lower rate of growth in energy production (1.9 percent per annum), 7.2 mbod imports in 1990, but taking into account 0.8 mboed in synfuel feedstocks (for a modest production target of 0.52 mboed) and also taking into account certain direct transport and other infrastructure requirements, fixed capital requirements for energy production averaged \$93 billion per annum down to 1990, in 1979 dollars. On this wider basis of calculation, our energy investment requirements for a net import position by 1990 might be doubled.

For our purposes, the central point is simple: increased investment on the scale required to achieve a net energy-export position by 1990 would constitute an enormous stimulus to the economy, one capable of returning us to sustained full employment. Moreover, the location of coal in the United States — and the sites of possible synthetics plants — ensures that the East and Middle West as well as the Mountain States and the Southwest would share fully in such an energy-based boom.

Here are some of the possibilities and problems posed by an energy-led boom:

1. A sustained economic expansion, engaging all regions of the country, would lower unemployment rates and social welfare outlays and raise real tax revenues for all levels of government.

2. A rise in the rate of productivity increase would result, as argued at length in section III below. The deceleration of productivity over the past decade has multiple causes, and there is no firm consensus on the weight to be assigned to each.

⁹Bankers Trust Company, U.S. Energy and Capital: A Forecast 1980-1990.

It is clear, however, that one critically important factor has been the stop-and-go path of the economy, together with low average growth and low investment levels. An energy-based boom would correct this component which, we argue, accounts for at least two-thirds of the productivity deceleration of the past decade.

3. From the time a program to achieve a net energy-export position is credibly set in motion, the dollar will begin to strengthen, for it is now substantially undervalued owing to dim expectations abroad about future U.S. economic performance. This would dampen import prices and reduce pressures for further increases in the dollar-denominated international oil prices; it would also elevate U.S. export prices. Over the course of the decade, as production results are actually achieved, the American balance-of-payments position and the stability of the international monetary system would greatly improve.

4. An energy-based boom and the rise in U.S. export prices induced by a strengthened dollar would render urgent a task that we must, in any case, face: the control of wage-push or unit-cost inflation. This problem is addressed head-on in section IV, below.

One final, often overlooked point about energy and the economy should be made. Increases in the international oil price and in other energy prices have clearly been the greatest single cause of the stagnation or decline of America's real income per family since 1972 and of the deceleration of growth in most parts of the world. But a distinction must be drawn between rising real energy prices and high real energy prices, that is, prices much higher than in 1972, for example. It was the two intervals when energy prices jumped extravagantly — in 1973-1974 and 1979-1980 — that struck at real incomes. High, but stable, real energy prices or high, but gradually declining, real energy prices are quite compatible with reasonable growth rates and rising real incomes, as the revival of the world economy in 1975-1978 revealed. This is so because energy expenditures constitute only a modest proportion of all expenditures (say, 5 percent). So far as the transition from \$2.50 per barrel of oil to between \$30 and \$40 per barrel is concerned, we have already taken our lumps. If we go on with sluggish, indecisive energy programs, things will, of course, get worse: the real price of energy will continue to rise. What is important for the world economy is that we all act in ways that put a ceiling on the real international oil price and, if possible, gradually reduce it. This can be done only by producing an alternative to oil, on a substantial scale and at a price equal to or lower than the current oil price. A synthetics program of the order of magnitude recommended here should, together with the other actions proposed, create that ceiling. Moreover, if experience is any guide,

the productivity of such synthetic operations should rise (and the costs of production decline) as experience with large-scale production increases with the passage of time.

II.J. ENVIRONMENTAL CONSIDERATIONS

A number of wide-ranging and comprehensive environmental laws and regulations were written and enacted during the 1970's. These have had the effect of significantly moving the U.S. toward the goal of a clean environment. However, the rigidity and multiple centers of authority that have too commonly characterized the adoption and administration of these laws and regulations have resulted in costs and delays, most notably in energy development. Some have gone so far as to be counterproductive.

One of the nation's biggest challenges lies in adopting policies and laws that effectively accommodate goals of both a clean environment and vastly increased domestic energy production. The trends are not yet toward accommodation — they are still separate courses. It must be recognized that there are constantly changing and, generally poorly understood relationships among technology, scientific data and information, economic costs, and social desires; these cannot be reduced to simple absolutes and uniform regulations. In the face of such complexities, we adopt and administer environmental laws and rules to be "on the safe side." Then if we err, we will err on the side of the environment. This is laudable, but no other vital elements, such as energy development, can move forward on such a basis. Flexibility, not rigidity, is essential. Errors, if made, can be corrected later, at a relatively small cost for flexible management. The dual goals of clean environment and energy development must be balanced; they cannot be allowed to compete.

The basic conclusion and key recommendations the Committee on Energy and the Environment of the National Academy of Sciences made in 1977 are still appropriate:¹⁰

The basic conclusion is that the inevitable trade-offs between energy and the environment are manageable, and many apparent problems can be solved or mitigated through good resource management. Mistakes in regulation can be corrected, the objectives of a rational balance can be defined in the political process, and major risks can be avoided. The more comprehensive perspective of resource management embraces, at the outset, values that are perceived to be in conflict, minimizes the conflict through more completely informed action in the present, and provides an improved chance for anticipating and preventing environmental problems in the future.

¹⁰ Committee on Energy and Environment, Implications of Environmental Regulations for Energy Production and Consumption, National Academy of Sciences, 1977, Washington, D.C., p. 233

- Pollution control programs that include abatement regulations should be developed with cost-effective goals.

- Efficient pollution control strategies should take a holistic approach instead of focusing on a single pollutant, single source, or single environmental medium.

- To promulgate and implement environmental regulations effectively, there should be greater coordination among agencies with overlapping responsibilities.

- Agency programs should actively experiment with innovative approaches to the regulatory process, such as economic incentives for improving pollution control.

- Agencies proposing and implementing pollution control regulations should undertake in-depth analysis of all trade-offs that may be involved between and within regulated sectors.

- More extensive and reliable knowledge should be developed concerning major sources of pollution, the behavior of pollutants including their interactions and transport, the effects of pollutants on health and the environment, the interdependence of pollution controls, and the costs and trade-offs likely to be involved in proposed regulations.

All sectors of energy development are constrained to some degree by environmental provisions. The greater constraints are, however, in those areas of energy development where expansion in domestic production is most urgent -- frontier oil and gas exploration and development, nuclear development, coal production and consumption, and synthetic fuel development. Environmental provisions need not be suspended nor goals for a clean environment set aside. Yet, they must be balanced in such a way that increased production of energy is not constrained. A clean environment is impossible without a viable economy; and a viable economy with full employment, with increasing productivity, and with controlled inflation can be achieved only through a much larger degree of domestic energy sufficiency.

Of at least equal importance to substantive reconciliation of the nation's energy and environmental objectives is the provision of a means for the prompt and definitive settlement of the environmental values governing a given energy project.

II.K. SHORT-TERM ENERGY SUPPLIES

U.S. importation of energy, chiefly crude and petroleum products, reached a high of 9 mboed of net imports in 1977, or about 24 percent of total U.S. consumption. Since 1977 level of importation has declined, now down about 25 percent from the high of 1977. This has been due to reduced demand achieved through more efficient use of

energy and, notably, by reduced economic activity, along with increased domestic production, attributed chiefly to the coming on stream of North Slope Alaska oil. Even at the current lower level of imports, nearly 20 percent of total energy comes from foreign sources. Some 63 percent of all imports are from OPEC, and 38 percent are from Arab members of OPEC.

Given this level of dependence, and the likelihood that curtailments of supply experienced on several occasions during the 1970's will recur in the future, what short-term sources are available to mitigate against supply interruptions?

Clearly the best short-term mitigation lies in the longer term commitment to an all-out domestic production level. At present, North Slope oil production is essentially at full capacity, the natural gas surplus of two years ago has been largely assimilated, and the volume of oil in the strategic Petroleum Reserve is slight. On the other hand, stocks and inventories, again occasioned largely by current reduced demand, are high and would offer some temporary cushion in the event of supply interruption. However, an increase in economic activity or a harsh winter would draw down current high inventories.

The principal sources of short-term energy supply are from fuller utilization of nuclear and coal capacity. Currently only about 50 percent of rated maximum dependable capacity of existing nuclear plants is being utilized, whereas as much as 64 percent has been sustained for a year, and as much as 76 percent has been sustained for a month. Operation of existing plants at 60 to 70 percent of maximum dependable capacity, instead of the current 50 percent, would yield the equivalent of some 250,000 to 300,000 b/d. Existing coal production is about 100 million tons below capacity. Full utilization of excess capacity would translate to an additional oil equivalent of about 1 mbd. Not all the available increase in production capacity could be utilized over the short term due to demand limitations, but maximum use in existing facilities, with some relaxation of environmental controls and with extensive wheeling, could result in oil savings on the order of 250,000 to 500,000 b/d. Combined increased utilization of nuclear and coal could yield a short-term savings of about 500,000 to 800,000 b/d, some 1.3 to 2.1 percent of current total demand, or some 7 to 11 percent of current import levels.

III. PRODUCTIVITY

The radical deceleration in the rate of U.S. productivity increase in the course of the 1970's has, understandably, generated a great deal of fresh professional analysis as well as many prescriptions for remedy.¹¹ Two of the ablest analysts — John Kendrick and Edward Denison — have sought to identify the determinants of the aggregate rate of productivity increase in recent years. Kendrick, for example, drawing on Denison's work as well as his own, summarizes in table 6 his view of the past, his projection for the 1980's without major policy changes (Basic Projection) and his estimate of potential productivity increases, with policies addressed to "High Growth."¹²

So far as the deterioration in total factor productivity in the period 1966-1978 is concerned, the following factors emerge as Kendrick has calculated them. The percentage contribution of each factor to the total deceleration of 2 percent between 1948-1966 and 1973-1978 is given in parentheses. The brief comments after each item refer only to the major causal forces identified by Kendrick.

— Advances in applied productive knowledge (R&D, etc.) which markedly decelerate after 1966 (-30 percent).

— Changes in labor quality: improvements in the average educational level are partially countered (1966-1973) by a surge into the working force of teenagers and women, a factor reduced in 1973-1978 and which turns positive after 1980, as the products of the baby boom of the 1950's mature. There is a small net positive shift in the quality of the working force between 1948-1966 and 1973-1978 (+5 percent).

¹¹The literature on this problem is well reviewed by Mark Perlman, "One Man's Baedeker to Productivity Growth Discussions," in William Fellner (Project Director), Contemporary Economic Problems, 1979, Washington, D.C.: American Enterprise Institute, 1979, pp. 79-113. Kendrick's detailed analysis of this array of problems is incorporated in his Understanding Productivity: An Introduction to the Dynamics of Productivity Change, Baltimore: Johns Hopkins Press, 1977, and (with Elliot S. Grossman) his Productivity in the United States, Baltimore: Johns Hopkins Press, 1980; Denison's basic analyses are to be found in his Accounting for United States Economic Growth, 1919-1969, Washington, D.C.: The Brookings Institution, 1974; and Accounting for Slower Economic Growth: The United States in the 1970's, Washington, D.C.: The Brookings Institution, 1980.

¹²William Fellner, op. cit., pp. 33-34 and 49.

Table 6. Sources of growth in real gross product: U.S. domestic business economy, for selected subperiods, 1929-1978, and two projections for 1980-1990.

	1929-1948	1948-1966	1966-1973	1973-1978 ^a	1980-1990 Basic Projection	1980-1990 High Growth Projection
Average annual percentage rates of change						
Real gross product	2.6	3.9	3.5	2.4	3.4	4.8
Total factor input	0.3	1.1	1.9	1.6	1.8	2.2
Labor	0.3	0.4	1.4	1.3	1.3	1.4
Capital	0.3	2.8	3.3	2.3	3.2	4.5
Real product per unit of labor	0.3	3.5	2.1	1.1	2.1	3.4
Capital/labor substitution	-	0.7	0.5	0.3	0.5	0.8
Total factor productivity	2.3	2.8	1.6	0.8	1.6	2.6
Sources of total factor productivity growth: Percentage point contribution						
Advances in knowledge	0.7	1.4	1.1	0.8	0.9	1.3
R&D stock	0.5	0.9	0.7	0.6	0.6	0.8
Informal	0.3	0.3	0.3	0.2	0.2	0.3
Rate of diffusion	-0.1	0.2	0.1	-	0.1	0.2
Changes in labor quality	0.8	0.6	0.4	0.7	1.0	1.1
Education and training	0.5	0.6	0.7	0.8	0.8	0.9
Health	0.3	0.1	0.1	0.1	0.1	0.1
Age/sex composition	-	-0.1	-0.4	-0.2	0.1	0.1
Changes in quality of land	-	-	-0.1	-0.2	-0.3	-0.3
Resource reallocations	0.4	0.8	0.7	0.3	0.3	0.2
Labor	0.3	0.4	0.2	0.1	0.1	0.1
Capital	0.1	0.4	0.5	0.2	0.2	0.1
Volume changes	0.4	0.4	0.2	-0.1	0.4	0.6
Economies of scale	0.4	0.4	0.3	0.2	0.3	0.5
Intensity of demand	-	-	-0.1	-0.3	0.1	0.1
Net government impact	0.1	-	-0.1	-0.3	0.2	-
Services to business	0.3	0.1	0.1	0.1	-	0.1
Regulations	-0.2	-0.1	-0.2	-0.4	-0.2	-0.1
Actual/potential efficiency and n.e.c. ^b	-0.1	-0.4	-0.6	-0.4	-0.5	-0.3

Dash (-): Zero or negligible

^a Preliminary

^b Not elsewhere classified

Source: John W. Kendrick, based in part on estimates by Edward F. Denison, *Accounting for United States Economic Growth, 1929-1969* (Washington, D.C.: Brookings Institution, 1974), and on his statement in *Special Study on Economic Change, Hearings before the*

— Changes in the quality of land: quite aside from other forces which have sharply reduced productivity in mining since 1970 (e.g., OSHA and EPA), Kendrick calculates a decline due to the use of domestic sources for energy less productive than imports (-10 percent).

— Resource re-allocations: the shift from farm to non-farm pursuits virtually comes to a halt (-25 percent).

— Volume changes: decelerated average growth and, especially, the stop-and-go experiences of the 1970's retard the estimated contribution of economies of scale and render "intensity of demand" a negative item (-25 percent).

— Net government impact: increased governmental regulations, especially in the 1970's, are estimated to make a substantial contribution to the over-all retardation in productivity (-15 percent).

— Actual-potential efficiency and not elsewhere classified. No net movement in this category which includes a reduction in hours actually worked versus hours paid for due to coffee breaks, work attitude changes, the cost of crime, and other qualitative factors, although the estimate shows a (negative) rise in 1966-1973 which subsides to a degree in 1973-1978.

Those who have sought to decompose the elements leading to a retardation in productivity make clear that calculations like these are pioneering efforts based often on data and methods which are imaginative but not as solid as we would wish them to be. They are, nevertheless, a useful initial framework for coming to grips systematically with the productivity problem.

As the Basic Projection for 1980-1990 shows (derived from Bureau of Labor Statistics [BLS] calculations), some forces may be at work to yield in the 1980's a mild (+0.8) improvement in the rate of productivity increase. This would take the rate back to the average level of 1966-1973 (1.6 percent), still well below the 2.8 percent which characterized 1948-1966. This amelioration flows from the BLS assumptions of some improvements in "advances in knowledge," a substantial improvement in labor quality due to demographic changes and the levelling off of the increase in women's participation in the working force; a large increase due to an assumed higher rate of real growth; and a reduction in the negative impact of governmental regulations.

Kendrick then turns to policy options available to achieve a return in the 1980's to something like the rate of increase in total factor productivity that marked the

1948-1966 period; that is, the High Growth Projection in table 6.¹³ If achieved, this would yield a 2.6-percent average growth rate in total factor input.

Like a good many other policy prescriptions in this field, Kendrick's come to rest on:

- Measures to slow the impending decline in working force participation rates by extending the period of employment of older citizens.

- Tax measures to reverse the decline in after-tax profits of non-financial corporations (from 7.75 percent of gross domestic product in 1947-1969 to 4.25 percent in 1970-1977) and to raise the proportion of GDP invested in tangible assets.

- Tax measures to expand business R&D outlays.

- Tax and other measures to continue to raise the education level of the working force, especially with respect to its competence in new technologies.

- Kendrick calculates no improvements as likely with respect to resource re-allocations, mainly due to his assumption that efforts to decrease reliance on imported oil will continue or intensify; but he commends a variety of measures to counter the tendency towards diminishing returns to natural resources.

- Similarly, Kendrick does not envisage a larger contribution to total factor productivity due to resource re-allocations under his "High Growth Projection" than in the Basic Projection, although he suggests some measures to accelerate the shift of resources to more efficient uses.

- Under his assumption of a higher rate of growth in real gross product (4.8 percent versus 3.4 percent in the Basic Projection), substantial acceleration emerges due to "volume changes."

- The net government impact ceases to be negative as the burden on business costs of governmental regulations is assumed to be more rapidly reduced.

- Finally, Kendrick discusses a variety of measures which would reduce the losses due to actual versus potential efficiency and other causes, and reduces slightly the deceleration as compared to the Basic Projection.

We have summarized Kendrick's analysis and recommendations at some length not only because of his stature in this field but also because they are broadly representative of other thoughtful assessments and prescriptions. This is not an

¹³Kendrick's discussion of policy measures to achieve the High Growth productivity targets are in his "Productivity Trends and the Recent Slowdown: Historical Perspective, Causal Factors, and Policy Options," a chapter in William Fellner, op. cit., pp. 48-49.

appropriate occasion for exploring differences in analytic method, nuances of emphasis, or the details of legislative and administrative measures to reaccelerate the course of productivity.

It may, however, be useful, against the background of Kendrick's analysis, to look at the productivity problem in the light of the linkages between energy and the economy, which is the main theme of this paper.

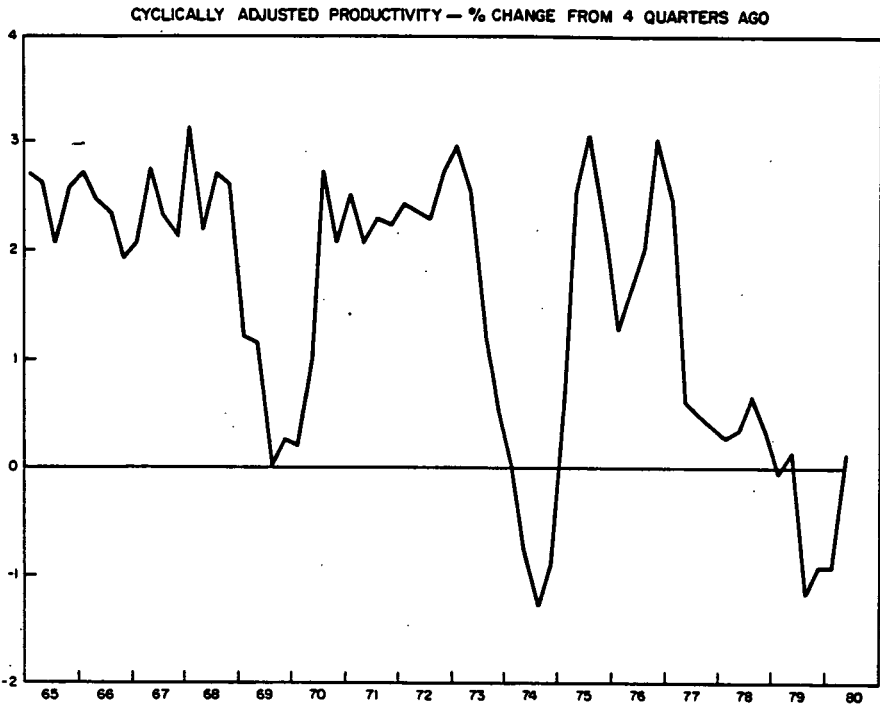
First, a short- or medium-term problem described earlier. The prospects for accelerating the increase in productivity as well as for ending inflation could be endangered by a third quantum jump in the international energy price brought about by the loss of 3 to 4 mbod in OPEC production capacity during the war between Iraq and Iran. The real income and balance of payments consequences of such an oil price increase could, once again, as in 1974-1975 and 1979-1980, move the United States into recession, with negative effects on productivity (see below, table 9).

This leads to a second, more fundamental point relating to the decade of the 1980's as a whole. Putting aside, for a moment, tax measures to stimulate investment, including investment in R&D, and measures to reduce the burden of administrative regulations, the heart of the problem of increasing productivity lies in maintaining a regular high rate of growth. As noted earlier, the modestly hopeful Basic Projection for the period 1980-1990 and Kendrick's High Growth Projection both substantially depend on assumed higher growth rates than in the 1970's. The significance of this assumption is suggested by chart 3, which exhibits the extreme sensitivity of year-by-year changes in the rate of productivity increase to short-run fluctuations in the economy. Although Kendrick's method is addressed to trend movements and measurements, he notes in passing: "The rate of productivity is affected not only by the volume factors just described but also by the variability of production during a given period. It is therefore important that fluctuations in real GNP, if they occur in the 1980 decade, be held to the small average amplitude of the post-World War II era up to 1973. The more severe 1973-1975 contraction produced the first absolute decline in productivity in a quarter of a century, with unfavorable effects from which the economy has not yet fully recovered."⁴ This disconcerting experience was repeated in 1979-1980.

Chart 4 exhibits the average cyclical behavior of the three conventional measures of productivity (output per unit labor, output per unit capital, and total factor

⁴See Michael Mohr, "Labor Productivity and the Business Cycle," in New Directions in Productivity Measurement and Analysis, New York: National Bureau of Economic Research; in process).

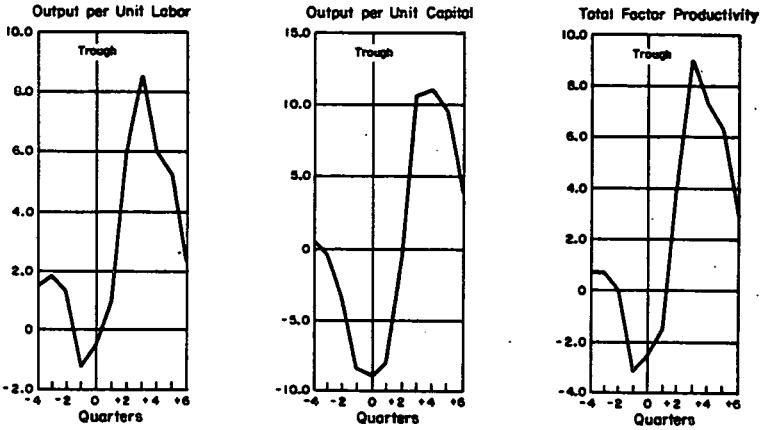
Chart 3



Source: CEA estimates (Cyclical adjustment based on percent changes in the GNP gap for the current and three prior quarters, with a dummy variable set at 1 for quarters after 1973: 1. Productivity is output per hour of all persons in the private nonfarm business sector).

Chart 4

THREE MEASURES OF THE CYCLE PATTERN OF PRODUCTIVITY



Source: John W. Kendrick and Elliot S. Grossman, Productivity in the United States, Baltimore: The Johns Hopkins University Press, 1980, pp. 96-97.

productivity) over the period 1948-1976.¹⁵ It drives home a point which we shall underline in section IV below. Those who counsel controlling inflation by constrained fiscal and monetary policies must also reckon on the inflationary effects of reduced productivity during a recession.

This point is even more important than charts 3 and 4 and Kendrick's observation suggest. Tax incentives to increase business investment (including R&D) are not likely to be highly effective in an environment of erratic fluctuations in the economy of the kind we have experienced over the past decade, carrying with them substantial underutilization of capacity. They can, as in Britain and France, improve business balance sheets without sharply raising the level of private investment. Business firms are most likely to expand and modernize plant, invest more in R&D, and take the risks of actually introducing new technologies when they are operating at or close to full capacity and foresee in the years ahead an environment of rapid, steady growth. Thus, the full effectiveness of investment and R&D tax credits, as well as the hoped for improvement in productivity under the category of "volume changes," depends substantially on the achievement in the 1980's of high and steady growth rates.

Put another way, the "advances in knowledge" category in table 6 depends intimately on "volume changes." Between them, they account for two-thirds of the productivity improvement in the 1980's in both the Basic Projection and the High Growth Projection, as opposed to the negative shift from 1948-1966 to 1973-1978. And this is almost certainly an underestimate, since the upgrading of labor skills and other items bearing on productivity are more likely to proceed positively in an environment of high and steady growth.

Thus, if our analysis in this paper is broadly accurate, our hopes for an acceleration in productivity depend on generating a sustained expansion in the economy insulated, insofar as possible, from both short- and long-run shocks generated by the international oil situation. Over the span of the decade, this means achieving something like the energy production and conservation targets set out in table 5, which would require investment levels virtually guaranteeing relatively full employment; in the more immediate future, this means being prepared to implement something like the short-term energy program described in section II.K., above.

The likelihood of achieving an approximation of Kendrick's High Growth productivity projection depends not only on energy policy but also on policy towards inflation. Here there are three major linkages:

— Inflation has contributed to the reduction in the after-tax profit rate for non-financial business institutions, among other reasons because, in price setting,

¹⁵ John W. Kendrick and Elliot S. Grossman, *op. cit.*, pp. 92-93.

business firms did not budget fully for the effects of inflation on the replacement costs of fixed capital and inventories.

— Inflation has yielded high and erratic interest rates which deterred many forms of investment.

— And, above all, high inflation rates, contributing to balance of payments deterioration and a weakened dollar, have helped lead the Federal Reserve to impose monetary deflation on the economy as a whole with all its consequences for the rate of productivity increase.

These are among the considerations which lead us, in section IV, to advocate a wage-price-dividends freeze followed by a long-term incomes policy accommodating money wage increases to the rate of productivity increase.

There is a further observation to be made about productivity which does not quite fit the approach used by Kendrick and Denison, although, if it is valid, it must by definition be reflected somewhere in their categories.¹⁶

Table 7 shows the 1950-1970 movement of the incremental capital-output ratio (ICOR's) for eight advanced industrial countries. They exhibit a rise in all cases in the period 1965-1970, before the peculiar vicissitudes of the 1970's befell the world economy. This average 19-percent rise (a decline in the productivity of new investment) may be related to the fact that the leading sectors in the growth of the advanced industrial world from, say, 1948 forward, lay in the rapid diffusion of the automobile, durable consumers goods, and industries closely linked in one way or another to them. There is evidence that, even in Japan, output in these industries was decelerating as the 1960's wore on; and it would be expected that productivity increases in them — as in any given industry with the passage of time — would decelerate, barring large, new technological breakthroughs. There is reason to believe such natural deceleration in productivity increases occurred in the late 1960's. The phenomenon was similar to the rise in ICOR's in several advanced industrial countries in the pre-1914 generation: deceleration in ageing leading growth sectors was not fully counter-balanced by the coming in of new sectors of high momentum incorporating new technologies.

The energy shocks of the 1970's, with all their consequences, could have been expected to exacerbate this phenomenon: the leading sectors of the period down to

¹⁶We suspect the argument that follows belongs, to a degree, in two components of Kendrick's decomposition: "advances in knowledge" and "economies of scale." Economies of scale, in conventional usage, refers to a lowering of costs and increased productivity due to large-scale production with existing technologies. In fact, this process is extremely difficult to distinguish from lowering of costs and increased productivity due to technological change.

Table 7. Post-1945 incremental capital-output ratios (ICOR) and growth rates:
eight countries (five-year averages centered on indicated years).

	1950		1955		1960		1965		1970	
	ICOR	Growth Rate	ICOR	Growth Rate	ICOR	Growth Rate	ICOR	Growth Rate	ICOR	Growth Rate
Great Britain	5.5 ^a	2.7%	6.1	2.5%	5.7	3.1%	5.6	3.2%	8.6	2.1%
United States	6.2	3.8	5.3	3.0	4.6	3.2	3.3	5.0	4.3	3.3
France	2.4	8.4	4.1	4.6	4.3	5.0	4.3	5.5	4.5	5.7
Germany	3.5 ^a	6.5	2.7	7.4	2.7	9.3	4.6	5.1	4.7	5.4
Sweden	4.4	4.8	6.5	3.6	6.0	4.2	5.5	4.3	5.9	3.7
Italy	2.3	8.8	3.5	5.6	3.3	6.7	4.2	4.6	4.4	4.6
Japan	2.2	13.3	2.3	9.4	2.8	11.3	3.0	10.3	3.4	10.2
Canada	4.7	4.9	4.9	5.1	5.5	4.0	4.0	5.9	4.9	4.4
Unweighted average	3.9	6.6%	4.4	5.1%	4.4	5.8%	4.3	5.5%	5.1	4.9%

^a 1952.

Source: W. W. Rostow, Why the Poor Get Richer and the Rich Slow Down, Austin: University of Texas Press, 1980, pp. 286-287.

1965 continued to age; some of them were energy-intensive and dampened by the relative rise in the price of energy; stagflation was a poor environment for technological innovation in general; and the strong, new incentives to create and apply energy-related inventions took some time to generate results of major economic significance. A pioneering study by the Bureau of Economic Analysis of the U.S. Department of Commerce estimated that, as of the mid-1970's, 43 percent of a rise in the volume of investment required to achieve a given output in the United States derived from a net rise in ICOR's aside from the negative impact on ICOR's of pollution control laws (25 percent) and investments designed to limit oil imports (32 percent).¹⁷

The two key questions posed by this perspective on the future path of productivity are the following: (1) Are there major new areas of technological advance potentially capable of rapid diffusion on a scale sufficient to lower the U.S. ICOR in the 1980's? (2) If so, what public policies are most likely to encourage and accelerate the process? It is to these matters that we now turn.

During the 1970's some analysts revived a question which was much canvassed 40 years earlier, during the Great Depression of the 1930's: Are we, at last, running out of highly productive inventions and innovations? Has diminishing returns set in for human, scientific, and technological creativity?¹⁸ Do we face secular stagnation? With respect to energy, we shall evidently have to await the fruits of the massive efforts now being devoted to alternative energy resources. And it is true, more broadly, that in the 1970's no new industries emerged, based on new technologies, with a momentum and potential scale to balance the deceleration in automobiles, energy-intensive durable consumer goods, and the industries linked to them (e.g., steel).

On the other hand, a careful examination of the most dynamic areas of basic science and their potential linkages to technology suggest that there are a number of sectors which may be galvanized in the course of the 1980's by the introduction of new methods. Table 8 sets out one such possible list.

As we have emphasized throughout this report, the optimum environment for the introduction of new technologies, the modernization of plant in existing industries, and

¹⁷This report is summarized in Economic Report of the President, January 1976, Washington, D.C.: G.P.O., 1976, pp. 41-47. A disaggregated measurement of productivity changes between 1948-1966 and 1966-1976 is given in John Kendrick and Elliot Grossman, op. cit., p. 72, and analyzed in detail in Chapter 4, pp. 51-81.

¹⁸See, for example, Edward F. Renshaw, "Productivity" in U.S. Economic Growth from 1976 to 1986: Prospects, Problems and Patterns, Studies prepared for the use of the Joint Economic Committee, Washington, D.C.: G.P.O., October 1976. The debate on this issue is explored in W. W. Rostow, Getting from Here to There, New York: McGraw-Hill, 1978, Chapters 8 and 9.

Table 8. Technology for the 1980's.

- | | |
|------------------------------|---|
| 1. Microelectronics | (a) Advanced chips—very high speed integrated circuits (VHSIC)
(b) Advanced software applications
(c) Personal computers |
| 2. Medicine | (a) Biotechnology
(b) Psychotherapy
(c) Transplantation
(d) Birth control |
| 3. Materials | (a) Special application designs
(b) Photosynthesis
(c) Supercold technology
(d) Industrial and scientific instruments and robots
(e) Automated batch production |
| 4. Energy | (a) Solar
(b) Fusion
(c) Coal mining technology
(d) Power stations |
| 5. Defense technologies | (a) Electronic warfare |
| 6. Agricultural technologies | (a) Genetic selection
(b) Electrostatic spraying
(c) Waste management
(d) Nuclear radiation |
| 7. Other | (a) Airwaves and communication
(b) Construction |

Source: George Kozmetsky.

for investment in general is a setting of sustained growth and the expectation that it will continue. But the nurturing of a new technology across the bridge from laboratory or pilot project to rapidly expanding commercial production is a delicate and rather specialized task. U.S. government regulations have not always been sensitive to the requirements of this kind of midwifery, notably the rather inhibiting Investment Act of 1940 which made it extremely difficult to set up a corporation whose sole business was to start companies and develop them. Important innovations often begin with small firms having a bright idea but lacking managerial talent and working capital sufficient to transit delays and frustrations inherent in the process. A number of devices have long been familiar aside from the sale of stock in a small innovative company: the provision of management assistance and some liquid capital as well as the purchase of stock; joint venturing between small and large companies; venture spin-off enterprises to handle secondary developments; venture merging, which combines a number of possible technical approaches to the solution of a given problem.

An important possibility has been strengthened by the passage of the Business Development Act of 1980. This act is designed to encourage the creation of firms in the newer technological areas as well as their growth through public holding companies. Special development corporations may become a significant feature of the business landscape in the 1980's. There are other measures of public policy which could encourage venture capital in the time ahead.

Here, for example, is a list of illustrative measures to encourage venture capital drawn up by Edward H. Erath from the work of a group of businessmen, educators, and former government officials now associated with Pacific Academy for Advanced Study at the University of California at Los Angeles:

- Raise the number of allowable Subchapter S [very small businesses with limited liability] investors.
- Raise the ceiling on Regulation A [not requiring SEC filing] offerings.
- Simplify regulations for small private placements.
- Allow SBIC's [Small Business Investment Corporations] to coinvest with private venture capital firms.
- Modify the "prudent-man" rule.
- Provide favorable stock option incentives for small business start-ups.
- Allow start-up losses to flow through to investors.

The fundamental analytic point to be made for our purposes is that the viability of the American economy on the world scene may well depend in the 1980's and beyond not merely on raising the aggregate average rate of increase in productivity and on

increasing the chances of survival of certain basic older industries (e.g., motor vehicles and steel) but also on the pace at which new technologies are commercialized and emerge as vital, rapidly expanding leading sectors capable of holding their own or better in highly competitive international markets. Just as other nations caught up with Britain after its initial lead in cotton textiles and iron, others caught up with the United States after our initial lead in motor vehicles and durable consumers goods. But we are in a good position to move into leadership in a good many of the technologies listed in table 8 if we nurture the links between science, technology, and creative entrepreneurship on which such leadership has always depended. On a regional basis we have seen that capacity for regeneration, by the development of new industries of high technology, demonstrated in New England over the past generation. We believe these potentialities still exist in American society as a whole and that J. M. Clark's dictum, mounted on the wall of the Regents Room at The University of Texas at Austin, still remains valid for our time: "Knowledge is the only instrument of production not subject to diminishing returns." But we need a public policy focused on this objective and the revival of a national sense of adventure to translate these potentialities into reality over the next generation.

IV. INFLATION

The analysis of inflation in the pathological period in which we have lived over the past decade has become an extremely complex field. Whereas our reigning macroeconomic theories and textbooks focus on aggregate effective demand, demand-pull inflation, and the believed trade-off between the rate of unemployment and the rate of inflation, we have been confronted, in fact, with the interaction between two quite different types of inflation: raw materials-push inflation, in which a commodity (or commodities) with heavy weight in price indexes rises substantially in price — notably, energy and agricultural products; and wage-push (or unit-cost) inflation, measured by the gap between the average rate of money wage increases and the average rate of productivity increase. The links between the latter two types of inflation are many, but two of the most important are these:

— An inflationary surge induced by a sharp increase in energy prices, as in 1973-1974 and 1979-1980, leads to efforts to protect real wages by the negotiation of higher money wage increases. These have been granted even in times of rising employment. When raw material-push inflation eased, the process was reversed to a degree. For example, as the real price of international oil fell from its peak level, in the period 1975-1978, wage-push inflation subsided modestly, as it may have done in the third quarter of 1980 under similar circumstances; but it did not subside to the previous level. Thus (see table 9) compensation per hour rose to 6.5 percent in 1972; at its peak in 1975 it increased to 9.9 percent; it subsided in 1977 to 8.0 percent; but it was up to 10.9 percent in the second quarter of 1980. The figure for the third quarter of 1980 was down to 8.4 percent — a preliminary and somewhat uncertain calculation. The even more erratic movements in unit costs were primarily the result of volatile movements in the rate of productivity increase rather than the rate of money wage increase, which has oscillated more narrowly since 1973 in the range of 8 to 11 percent.

— Productivity has proved extremely sensitive to cyclical fluctuations, as noted in section III — a factor macroeconomists rarely take into account. Thus, when recession came as the result of balance of payments pressures induced by a sharp acceleration of energy prices, as well as the direct effects on real incomes of that acceleration, a sharp drop in the rate of productivity increase occurred. Table 9 shows how unit labor costs and the inflation rate rose sharply from these two distinct causes

Table 9. Productivity, wages, unit labor costs, and inflation:
 nonfarm business sector, selected years
 (percentage change from preceding period).

	<u>Output per hour</u>	<u>Compensation per hour</u>	<u>Average gross weekly real earnings (1967 prices)</u>	<u>Unit labor cost</u>	<u>Consumer price index</u>	<u>GDP deflator</u>
1972	3.7%	6.5%	4.1%	2.8%	3.3%	3.1%
1973	1.7	7.8	-0.0	6.0	6.2	4.1
1974	-3.1	9.1	-4.1	12.7	11.0	10.5
1975	1.9	9.9	-3.2	7.9	9.1	10.6
1976	3.5	8.3	1.4	4.7	5.8	5.4
1977	1.6	8.0	1.2	6.3	6.5	5.9
1978	0.5	8.6	0.2	8.0	7.7	6.6
1979	-1.2	8.9	-3.1	10.2	11.3	8.7
1980 I	-1.0	10.7	-2.4	12.1	16.9	9.5
II	-3.8	10.8	-2.3	15.0	13.7	10.7
III	2.8 (p)	8.3 (p)	+0.1 (p)	5.7 (p)	7.2 (p)	9.8 (p)

Source: Economic Report of the President, January 1980, Washington, D.C.: G.P.O., pp. 245, 247, and 263. 1980 figures supplied by the Council of Economic Advisers.

Note: The third quarter figures for 1980 are provisional (p). The extraordinary subsidence of compensation per hour in that quarter may prove a transient anomaly flowing from the method of calculation. The similar extraordinary decline in the consumer price index results from a transient subsidence in mortgage rates. It will be noted that the consumer price index, with the exception of 1975, increases at a higher rate than the GDP deflator.

in the recession years 1974 and 1979-1980, peaking in the second quarter of the latter year.

Once under way, inflation is a self-reinforcing phenomenon. Business and labor assume it will continue and, therefore, act in ways which validate their common assumption. Indeed, the setting of money wage and profit guideposts under the Carter administration's recent method (for example, 7-percent wage increases for 1978-1979) gave a kind of official sanction to inflationary expectations and left the nation in the position of a dog endlessly chasing his tail. That weak and gradualist effort to bring down the basic inflation rate resulted in money wage increases systematically higher than the guidepost target. This is particularly serious as 1980 draws to a close because, under the impact of the war between Iran and Iraq, an additional 3 to 4 mbpd has been knocked out of OPEC's capacity, spot oil prices are rising again, and a third increase in OPEC oil prices may occur even before current excess oil stocks are run down.

Given its context in the 1970's and 1980's, the battle against inflation must, evidently, be fought simultaneously on many fronts. Above all, as this report argues, it requires that the United States substantially insulate itself from dependence on imported oil and from the vagaries of the international oil price, and that we raise the rate of increase in productivity which can only be done in an environment of steady growth. We need to do these things for reasons which transcend the question of inflation; but they are also fundamental to any serious anti-inflation policy, as are other efforts to fight inflation from the supply side.

At the moment, however, the hard core of the inflation problem lies in the second column of table 9. It poses this question: How, in a way equitable for labor and business, can we bring down the rate of increase in compensation per hour and thus unit labor costs and thus the predominant component of the inflation rate?

It should be said immediately that the pattern of national economic performance reflected in table 9 is, in no meaningful sense, "labor's fault." It arises from the way we as a nation have come, out of a long history, to negotiate wage contracts: at different times, industry by industry. Those bearing responsibility for such negotiations must try to look after their constituencies in an inflationary environment which appears beyond their control. Nevertheless, the settlements they negotiate play back on that environment. As the third column in table 9 shows (average real weekly earnings), labor's position was severely set back by the events of 1972-1974, 1977-1980, despite rising money wage increases. Indeed, real weekly earnings in the United States were 8 percent lower in 1979 than they were in 1972.

Therefore, the question before the nation, as a new administration takes office, is whether or not, by agreement between business, labor, and government, we seek promptly to bring average money wage increases down, say, to the average increase in productivity and assure that an agreement of this kind is reflected in prices and is otherwise equitable for labor, business, and the citizenry at large. In short, shall we attempt a serious incomes policy? The alternative is to try to alter gradually the pattern of wage settlements and unit costs by a combination of constrained fiscal and monetary policy plus tax incentives designed to increase investment and raise productivity.

The problem of controlling inflation is the single most continuous strand in American domestic policy since World War II. It has seriously engaged, without exception, seven successive administrations. Starting in the late 1950's, it has become a progressively more serious problem. Indeed, it has been a central preoccupation of all the advanced industrial democracies. No task has proved more frustrating or difficult, whether control of inflation is attempted by incomes policies, by fiscal, monetary, and tax policies, or by both. The political history of the past 35 years is littered with experiments, occasional periods of transient success, and many failures — a good many of which led to the retirement from high office of major political figures. All who dare suggest — as we do — that the American people and the American political process gather up their collective courage and try again to install an effective incomes policy (along with the energy and productivity policies we recommend) should start by reading carefully the story of American efforts to deal with inflation since 1945. It is well set out, for example, in Craufurd Goodwin (editor), Exhortation and Controls, including the candid and thoughtful reflections on their experiences and the wound stripes earned by those who participated in the successive efforts. It is not difficult to conclude that the task of making an incomes policy work is virtually impossible in an economy and society as complex as ours. It is equally possible to conclude, on the basis of the historical record, that a gradualist approach, via fiscal and monetary policy, is incapable of coping with the current inflation problem.

Nevertheless, the issue is fundamental for the nation's future as well as for the future of the Reagan administration. Indeed, it is quite possible that President-Elect Reagan's decision on this matter before January 20, 1981, will prove to be the most important and far-reaching decision he makes in the next four years. All hands, including, especially, academics like ourselves, should approach the matter as dispassionately as possible and with an acute awareness of its complexity and of the

difficulties faced by either an approach including an incomes policy or one depending primarily on fiscal and monetary policy. (There appears to be virtually unanimous agreement that increased incentives for investment in both plant and equipment and R&D are now called for.) In examining now the pros and cons of each method, it is important to keep in mind that the nation faces two related but distinct questions: how to break inflationary expectations and bring current 8- to 10-percent unit-cost inflation back to zero; how to maintain zero unit-cost inflation for the long pull.

First, the approach through fiscal and monetary policy. There would be, we suspect, virtually universal support for this method if it could work. The reasons are that the tools employed are familiar; they do not require business and labor to alter the ways they negotiate wages and set prices; they do not require an additional role for government vis-a-vis the private sector.

A fiscal and monetary approach calls, at the present time, for two theoretically converging courses of action: (1) attempting firmly to set a rate of growth for the money supply which would bring down the rate of inflation, at some designated and desirable rate of increase in real GNP, implying a predicted rate of increase in productivity; (2) bringing down the size of the federal deficit by cutting expenditures. These methods would be designed to break inflationary expectations, to force business and labor within the rigid monetary ceiling to negotiate contracts which would lower money wages, and thus gradually bring down the inflation rate, and then contain it at a low and acceptable level.

It will be noted that this method, operating on aggregate effective demand, is basically designed to contain demand-pull inflation, not the sort of unit-cost inflation which has progressively risen from 2.8 percent in 1972 to 10.2 percent in 1979. Its efficacy should not be ruled out on those grounds; but that fact justifies a sharp probing of this question: Do the conditions exist in which fiscal and monetary policy are likely to break back unit-cost inflation? Can such a gradualist policy, operating on the aggregate level of demand, tame a combination of raw materials-push and wage-push inflation?

Here are the circumstances which, in our judgment, make it unlikely that a combination of fiscal and monetary policy can do the job in the time ahead.

— The new policy would be introduced early in 1981 when unemployment and idle capacity will be high. The monetary targets would, presumably, have to be quite high to provide for expansion, not contraction, of the economy. If they are set high, they are not likely to persuade business and labor to abandon their present inflationary expectations in the series of industry wage negotiations scheduled for 1981. If they

are set low enough to impress business and labor leaders that the government and Federal Reserve Board are prepared to be tough, they would perforce plunge the economy into a secondary recession via a further elevation of interest rates, already extraordinarily high. This would happen because contractual wage rates can, under normal circumstances, be only slowly changed. What is required for monetary policy to affect inflationary expectations and wage negotiations is a protracted test of will in which the threat of bankruptcy hangs over business firms, and the threat of higher unemployment hangs over labor if they settle too high, given the rigid monetary ceiling. Moreover, whatever mystique is attached to the rate of increase in the money supply, actual experience indicates that counter-inflation monetary policies operate via interest rates to induce recessions, e.g., 1966-1967, 1969-1971, 1974-1975, 1979-1980. But recessions which aim to reduce inflation encounter a Catch 22: productivity declines raise unit costs and the underlying inflation rate.

— As for fiscal policy, the Reagan administration faces an equally serious dilemma insofar as inflationary expectations are concerned: whatever it may trim from the federal budget is likely to be outweighed by the necessary enlargement in military expenditures and the new administration's commitment to cut taxes; this would throw a still greater burden on monetary policy to alter inflationary expectations; this would, in turn, tip policy towards a further recession which would lower productivity, cut federal revenues, and increase automatically outlays for unemployment insurance and related welfare programs — thus raising the federal deficit. Like productivity, the federal deficit has proved extremely sensitive to cyclical fluctuations, rising sharply in recessions.

— Some kind of third increase in the oil price appears on its way. Although this is not likely to be as severe as those of 1973-1974 and 1979-1980, it may well be enough to set in motion on a less dramatic scale the kind of secondary inflationary process, via increased money wages, experienced on the two other occasions unless business, labor, and government concert to dampen its impact. A rise in agricultural prices, in the wake of poor harvests here and abroad, is also predicted for 1981. Raw materials-push inflation does not appear about to relent as it did in 1974-1976.

The record clearly shows that credibly to break inflationary expectations by fiscal and monetary policy is no easy task. Business and labor leaders have seen both President Nixon (1969-1971) and President Carter (1977-1979) try and fail. Both efforts gave way to crises and extreme measures: a phase of price control in the one case, a sharp recession in the other. For different reasons, neither crisis policy succeeded in breaking inflationary expectations. President Nixon announced his phase

of wage-price controls as temporary. Therefore, business and labor jockeyed for position when the barrier went up. (Just as it did, the world economy was hit by a double dose of raw materials-push inflation for which it was ill prepared: the surge of grain prices beginning at the close of 1972; the later quadrupling of oil prices.) President Carter's monetary recession of 1979-1980 failed to break inflationary expectations because neither business nor labor believed that the political process would permit the recession to last long or to proceed to great depths, and because no credible incomes policy was installed equitably to break the vicious circle reflected in high rates of increase in unit costs.

The brief amelioration of the inflation rate in the period 1974-1976 also deserves examination. Here were the factors at work:

— The real price of oil slightly declined, and good harvests dropped the rate of increase in food prices from a 14.4-percent increase in 1974 to a 3.1-percent in 1976. There was, in fact, an absolute decline in the price of foods and feeds in the wholesale price index. In short, for two years raw materials-push inflation relented.

— There was a sharp 6.6-percent reversal of the rate of increase in productivity (from -3.1 percent in 1974 to 3.5 percent in 1976) as the economy recovered, with unemployment falling from 9.0 percent at its peak in May 1975 to an average of 7.7 percent in 1976; capacity utilization rising from its trough of 70.3 percent in the first quarter of 1975 to 80.0 percent in the last two quarters of 1976. As chart 4 indicates, the highest rates of productivity increase come in the early stages of cyclical recovery.

— Compensation per hour made only a modest contribution to the quick halving of the inflation rate, falling from its peak of 9.9 percent in 1975 to merely 8.3 percent in 1976.

What we have here is a recovery from the deep recession induced by the quadrupling of the oil price in 1973-1974 plus an interval of reduced pressure on the cost of living from the side of raw materials-push inflation. Fiscal and monetary policy played little role in all this, excepting the natural decline of interest rates during an interval of recession when declining imports in 1975 plus the easing of the real oil price temporarily reduced pressures on the balance of payments. Unfortunately, the prospects for oil and agricultural prices in 1981 are less hopeful than in the earlier period. But the main point, for our purposes, is that the decline in the inflation rate in the brief interval 1974-1976 in no sense demonstrates the efficacy of fiscal and monetary policy as tools to control raw materials-push and wage-push inflation.

The fact is that there is every evidence that the political and social life of the United States will simply not accept a radical monetarist-fiscal policy effort decisively to break inflationary expectations. One year of recession induced in 1979 through a sharp deceleration in the money supply and consequently extremely high interest rates yielded a tax cut competition between the major presidential candidates plus promises of promptly resumed business expansion. And this happened well before the dominating unit-cost element of inflation had been significantly reduced.

There is a further reason for getting unit-cost inflation under control promptly and decisively, early in the new administration. The argument in this paper is that an environment of steady growth is required for a sustained recovery in the productivity rate and that such a recovery would be brought about by the investment outlays required to meet the energy target we commend. Thus, we raise the possibility of moving in the 1980's toward a situation where the control of demand-pull inflation might again become a real problem. Under conditions of low unemployment and a high rate of capacity utilization, of course, all analysts agree fiscal and monetary policy must play a central dampening role. But it is our judgment that a strong energy-related expansion could proceed longer — with much more vigor and confidence — if a firm incomes policy were put in place from its beginning. Put another way, we fear that the launching of a strong business expansion in 1981, without a prior or concurrent bringing under control of unit-cost inflation, could lead to an acceleration of the inflation rate, a weakened dollar, rising gold prices, and the other now familiar factors of the kind that forced the Carter administration to induce the recession of 1979-1980.

It is something like the analysis of the prospects presented here which led Lindley H. Clark, Jr., a thoughtful commentator on the economy, to predict the Reagan administration may be led to price and wage controls and to urge it to develop contingency plans to that end (Wall Street Journal, November 18, 1980, p. 28). The question the monetary-fiscal gradualists must answer for the country comes to this: Why should the prospects for 1981-1983, with their additional threat of another round of raw materials-push inflation, be better than those for 1969-1971? The latter experience is tersely summarized by a knowledgeable member of the Nixon administration, Arnold Weber:¹⁹ "In addition to difficulties with the balance of payments, the major political problem from the administration's point of view was the failure of 'gradualism' to achieve an acceptable trade-off between unemployment and price stability. Indeed, during 1970-1971 the administration appeared to have the worst of

¹⁹Craufurd D. Goodwin (ed.), op. cit., p. 360.

both worlds, with unemployment high and prices rising rapidly. The defeats suffered by the Republicans during the election of 1970 precipitated a chorus of demands for action and the carefully orchestrated policy of gradualism was abandoned in favor of growth and employment." From the point of view of the nation, we would judge it to be a great and perhaps tragic loss if, say, another two years were wasted in demonstrating for the third time in a decade that gradualism won't work. It would waste the precious initial interval when, after an exhausting and divisive election, the people rally round the new leader, accord him good will and latitude for a while until conventional politics takes over again. It would be one thing for the Reagan administration to lead the nation from the beginning in a united effort to bring unit-cost inflation under control along the lines we commend; quite another matter to do so, say, two years later in the face of an initial failure of a gradualist policy and acute crisis.

These are the considerations which have brought us to the conclusion that the Reagan administration should lead the Congress and the country in a serious effort to bring about an equitable agreement for both promptly breaking the back of current high unit-cost inflation and providing a method for subsequently preventing its reappearance. Unlike Mr. Clark, we commend this course of action at the very beginning of the new administration.

Before proposing a broad formula for achieving this outcome, we would set down three major lessons which can be drawn from the nation's experience with this problem since 1945.

First, business and labor should be involved intimately in negotiating the terms for a long-run incomes policy as well as procedures for maintaining it. The lesson that Gardner Ackley drew from the experiences of the 1950's and 1960's seems, both in retrospect and looking forward, fundamental:²⁰

It seems to me undeniable that any successful stabilization system — whether described as "compulsory" or "voluntary" — demands the consent or at least the tolerance of those whose wages and prices are to be stabilized. For this consent to be forthcoming, those regulated — and the general public as well — must see the system as one that is basically fair and equitable, or, at least, that it embodies sacrifices by "our side" roughly equivalent to those imposed on the "other side." Moreover, members of each group must believe that the restrictions its members accept on their freedom to do as they please will achieve something important — that slowing the rise in prices is a highly desirable objective, and that this system will be effective in achieving it.

In my view, this consent can only be secured through an active participation by the major groups in society — and particularly by the

²⁰ Gardner Ackley, "An Incomes Policy for the 1970's," Review of Economics and Statistics, Vol. 54 (August 1972), pp. 220-21, quoted in Craufurd D. Goodwin (ed.), op. cit., p. 290.

organizations of labor and business — in the process of recognizing the problem to which the policy is addressed, in planning the strategy to be used, and in formulating the basic standards.

Ackley's reflection is simply one application of Jean Monnet's²¹ good rule for planning in a democracy, which he applied to France in these terms: "I am sure of one thing. One cannot transform the French economy without the French people participating in the transformation. When I say the people, it is not an abstract entity. I am referring to the unions, business firms, government departments, all those who will be associated with the plan. . . ." This rule surely applies even more strongly to our less centralized continental society of diffused powers.

Second, business and labor will not experience real economic sacrifices from an effective method for controlling inflation. Both will benefit. But they will have to do things in new ways and, as Ackley said, they will have to accept restrictions "on their freedom to do as they please." The acceptance of that kind of restriction requires not merely a sense of equity but also a conviction that the inconvenience or inhibition serves some larger purpose. Inflation is now such a strong and forbidding and costly phenomenon that its taming may, in itself, be judged to constitute such a larger purpose. But there is wisdom in an observation on this problem made in the 1950's by Mark Leiserson. Commenting on early post-1945 efforts at wage-price agreements in Europe, he wrote that to succeed they must be "part of a coordinated effort to achieve a clearly defined national objective. . . ."²² The national objective within which we present the control of inflation in this paper is, indeed, larger than the problem of inflation itself. It is, in effect, the regeneration of the American economy as a whole, the provision of a base for continued social progress, and the freeing of the nation from the constraints imposed by substantial dependence on oil imports. We believe that the inconveniences of a serious incomes policy may well be more easily accepted in that large context, and that the American people are more likely to throw their weight behind an ambitious program, to break out of the trap in which we are caught, than modest, piecemeal, ameliorative efforts.

Third, unlike the fairly successful Kennedy-Johnson wage-price guideposts in the period 1961-1966, a fresh effort at a national incomes policy should, in the end, be based on law.

²¹Jean Monnet, *Mémoires*, Paris: Fayard, 1976, p. 178.

²²Mark W. Leiserson, *A Brief Interpretative Survey of Wage-Price Problems in Europe*. Study Paper No. 11 for Consideration of the Joint Economic Committee, 86th Congress, 1st Session (Washington, D.C.: G.P.O., 1959), p. 55.

Against this background, we propose a wage-price-dividends freeze decisively to break the unit-cost inflationary expectations now built into our economy and its institutions, to be followed as soon as possible by a long-term incomes policy, not permanent wage-price controls, geared to zero unit-cost inflation. It would be understood that the freeze would hold until business, labor, and government representatives achieve agreement on criteria and a method for negotiating wage-price stability and Congress acts in support of that agreement.

In effect, we are suggesting that, starting in 1981, the nation build on a combination of the two relatively successful intervals of inflation control during peacetime years, while correcting their respective weaknesses: the Nixon wage-price freeze and Phase II of 1971-1972 to break inflationary momentum and expectations; the Kennedy wage-price guideposts subsequently to contain unit cost inflation. The combination would avoid the error of 1971-1972 when wage-price discipline was regarded as temporary; a backing in law would avoid the error built into the pragmatic but fragile arrangements of 1961-1966. With such a policy in place, the administration could confidently move to expand the economy, creating an environment in which tax and other measures to increase investment and productivity could be effective.

It is of the essence of this proposal that the terms for a long-run incomes policy be negotiated among those who would have to carry it out. Nevertheless, we know, from hard-won experience, what some of the critical issues will be. And they may be worth brief comment in the light of the argument of this report as a whole.

First, there will be the problem of how to provide equity as between unions which have negotiated new contracts shortly before the freeze and those who made earlier settlements. Since collective bargaining settlements have been running for some years in a fairly stable, high range, this may not be as difficult as on other occasions. But the provision of equity among the major components of the working force is an inevitable task.

Second, there will be the more difficult question of what to freeze and what subsequently to bring under the guidelines formulae. For example, writing on this matter, Sol Chick Chaikin notes that the AFL-CIO "has long urged a wide-ranging controls program, not only for the usual 'wages and prices,' but to cover all prices and all forms of income: profits, dividends, rents, interest rates, executive bonuses, professional fees."²³ The striving for equity which lies behind this all-embracing formula is wholly understandable, and, to a degree, will have to be met, for example,

²³Sol Chick Chaikin, A Labor Viewpoint: Another Opinion, Monroe, New York: Library Research Associates, 1980, p. 199.

with respect to executive bonuses, professional fees, and dividends. If past experience is valid, effective control of unit-cost inflation should yield a radical decline in interest rates from present levels. For example, the prime rate, which averaged 12.7 percent in 1979, averaged 4.5 percent in the period 1961-1965 (JFK guideposts) and dropped from 7.9 percent in 1970 to 5.25 percent in 1972 (Nixon controls). On the other hand, the requirements for greatly enlarged investment in energy-related tasks, the need to expand capital per worker employed, in the interest of productivity and real wages, as well as the need to re-equip certain specific industries whose international competitive position has weakened, argue for measures that would encourage the plowback of profits rather than their direct limitation. Distributed dividends, however, might be held to some average past performance. With respect to energy, prices reflecting authentically the marginal cost of additional energy supplies are palpably needed as a continuing incentive to conserve as well as to produce. Given the international forces which determine agricultural prices, they too should remain outside the control system. The only comfort here for the consumer at large is that they go down as well as up and that efforts to compensate for their rise, through increased money wages, have failed to shield real wages from raw materials-push inflation and have generated forces which forced the economy as a whole into recession with all its consequences for unemployment, the rate of productivity increase, and real wages.

The arguments against wage-price freeze and wage-price guideposts are often lumped together, but they pose quite different kinds of problems.

The key argument is that freezing prices and wages distorts the price mechanism as an indicator of where capital and labor should most productively flow. This is a thoroughly legitimate argument for a protracted freeze or for permanent, detailed wage-price controls. What we have in mind here is a freeze which would last only for the duration of the period required to negotiate wage-price guideposts.

There is also the argument that wage-price controls force industry to absorb cost increases without raising prices, and thus reduce the plowback of profits into new investment. This could, but need not, happen. If, as in 1971-1972, the economy expands rapidly in 1981-1982, the increase in the size of profits and tax changes to encourage investment could overcome any tendency for the freeze to limit the plowback of profits. The possibility of such a limitation does, however, argue for supplanting the freeze with an agreed long-run incomes policy as soon as possible.

It is occasionally argued, with respect to the 1971-1972 wage-price control interval, that inflation had been merely suppressed for a time but then exploded. As

noted earlier, there was no provision for a long-term incomes policy in the 1971-1972 exercise and raw materials prices adventitiously accelerated in the wake of the lifting of controls for reasons quite independent of the control system.

We conclude that an initial wage-price freeze is capable of breaking back unit-cost inflation, providing a framework in which the economy could be safely expanded, thus lifting productivity. If it is firmly known from the beginning that the freeze would not be lifted until a long-term incomes policy is in place, inflationary expectations would be broken. Once that happens, interest rates would decrease sharply. Success requires that the nation be prepared to accept the possible rise in 1981 of energy and agricultural prices without launching a second-stage inflationary booster in the form of another round of money wage increases which would not, in fact, protect real wages.

The compensation for this self-discipline would be the ability to move into a rapid and sustained recovery and the sense — if something like the whole package we commend is launched — that the country is on the way to recapturing control over its destiny.

The costs of less-than-optimum allocation of labor and capital during the freeze might be real, depending on its length, but they in no way match the costs of not breaking back unit-cost inflation and ending a corrosive eight years of high inflationary expectations.

As for wage-price guideposts, they can provide for a great deal of flexibility. In the 1961-1966 period, when they operated quite well (down to the airlines machinists strike of the summer of 1966, which broke the wage guidelines with a 4.9-percent settlement), there was no evidence of significant distortion of capital and labor flows. One virtue of guideposts is that, by concentrating on a limited number of large oligopolistic industries (including government itself), they can set a pattern which pervades the highly competitive sectors of the economy.

Nevertheless, as we noted at the beginning of this section, any serious analysis of the American wage-price control experience since 1945 underlines that there are significant problems of equity and administration to be resolved if a long-term incomes policy is to operate effectively. In the end, these complex matters will be settled not only by finding terms of equity, as Gardner Ackley correctly advises, but by arriving at a mature, wider consensus. The Federal Republic of Germany, Japan, and Switzerland have weathered the past decade better than most because a wide consensus existed throughout the population — an implicit social contract — that money wage increases substantially in excess of productivity increases are unwise for

labor as well as business, since they lead to intractable high rates of inflation, financial crises, and unemployment; and that they are unwise for the nation because they endanger the capacity to compete in international markets. An "export or die" mentality has suffused national life in those countries, a perspective the United States will have to acquire. Those countries operate, in effect, with a deeply embedded but informal incomes policy. And they have been rewarded with strong currencies which further dampened inflation, relatively high rates of growth and productivity increase, and relatively low levels of unemployment.

One fundamental advantage of an incomes policy is that it draws the national community together around common objectives. An attempt to break wage-push inflation by an unrelenting monetary policy requires, of its nature, a protracted divisive test of will between government on the one hand, and business and labor on the other, and it sets business and labor against one another as each struggles for marginal advantage within the constraints of the monetary ceiling.

Thus, in our view, the heart of the problem of bringing inflation under control in the United States lies in business and labor, led by government, coming to frame their real and sometimes conflicting immediate interests with a firm understanding of the larger interests they share in a regenerated American economy and all it implies for jobs, real earnings and profits, future social progress, and the nation's capacity to control its destiny on the world scene. With such an understanding, we believe the terms of equity in the design of a long-run incomes policy can be found. Without such a policy, we fear that the rich human, physical, and technological resources of the nation cannot be put effectively to work and the large shared goals of our society will continue to lie beyond our grasp.

The decision on this matter will, of course, be made by the new administration and the Congress. At the moment, the President lacks a legal basis for opting for a wage-price-dividend freeze. Therefore, we commend to the present session of Congress that it promptly widen the options open to the new administration much as the Congress did with the passage of the Economic Stabilization Act of 1970 as an amendment to the Defense Production Act of 1950.

V. A NOTE ON THE MILITARY CONNECTION

Aside from the three major interconnected domestic economic issues considered in this paper — energy, productivity, and inflation — it is evident that there is a fourth issue much on the minds of a majority of the American people, the new administration, and the Congress, that is, the present and, especially, the future military balance between the United States and the Soviet Union. This is not the occasion to assess that balance, its projection, and its relation to American security; nor is it appropriate to prescribe here for the complex military manpower, hardware, and budgetary problems involved. On the other hand, it would be unrealistic not to take into account the likelihood that the U.S. military budget will be substantially increased over the next several years. The question is, therefore, how does such an increase relate to the argument of this paper as a whole?

As of the fourth quarter of 1979, government purchases of goods and services for national defense constituted 4.7 percent of GNP. Proposed annual increases in the military budget over, say, the next five years run in the range of \$20 to \$50 billion in constant dollars: an increment of from about 0.8 percent to about 2 percent of 1979 GNP.

As always, increases in military outlays constitute a diversion of real resources from other potential uses. The question is: How much of a diversion?

Two observations are relevant.

First, if the process of military budget expansion starts in 1981, the burden will, to a degree, be mitigated by the fact that the economy will be operating with considerable unemployed capacity and idle manpower. In a presentation to the Senate Finance Committee on July 24, 1980, Walter Heller observed: "If the economy had been growing at 2 percent in 1979-1981 instead of going through three years of slowdown, recession, and sluggish recovery, it would have produced a total of \$300 billion more (in today's prices) than it actually will produce over these years." The economy may bottom out a bit sooner and recover with a bit more vigor than Heller suggested in July 1980; but his calculation underlines both the resource wastage involved in a recession like that of 1979-1980 and the sensitivity of an additional defense burden to the rate of growth of the economy actually achieved in the 1980's.

More specifically, to return to table 6 with its Basic and High Growth projections, the difference between the 3.4-percent real growth rate assumed in the former

and the 4.8-percent in the latter comes to about \$550 billion in 1979 dollars for the year 1990 — about enough to provide a \$50 billion defense increase for each year of the decade. Cumulatively, over the decade as a whole, the difference between the resources generated by the two growth rates comes to more than \$2 trillion.

The point is simple enough: the acceptance of a national requirement for an enlarged military budget in the 1980's heightens the already strong case for running the economy at a steady high growth rate over the decade. This the required increase in energy-related investment and military expenditures could guarantee, if the rate of productivity is adequately raised and inflation brought under control. On the other hand, a continued sluggish and erratic performance by the economy will create a setting in which it may well be difficult for the Congress and the people to accept the ~~measured~~ ^{enlarged} outlays for military purposes our circumstances required.

VI. INTERNATIONAL ENERGY POLICY

The portrait drawn of the international energy situation in section II-A of our report has a number of policy implications. Some do not have substantial budgetary or resource implications and can be dealt with in the narrow context of this paper rather briskly. One — the energy problem of the developing regions — requires more extended discussion.

Cooperation Within the OECD

A rather sophisticated structure for energy cooperation has been developed within the International Energy Agency (IEA), a special instrument of the OECD. Its potentialities have been heightened by the setting of the communal energy targets at the Venice Summit meeting of June 1980. These require, as noted earlier, a radical expansion in production and use of coal and nuclear energy as well as heightened programs of energy conservation. The U.S. accepted somewhat more than half the burden of achieving the goals set out in Venice. If the Reagan administration accepts or — as we commend — elevates those targets as they apply to the United States, it would be appropriate for it to seek heightened cooperation from Western Europe and Japan in two respects.

Once the United States is launched on a policy path that would credibly lead to radically reduced oil imports by 1990, we should insist on equally redoubtable efforts from our IEA partners. The United States' energy performance in the 1970's was so palpably inadequate that, to a certain extent, the other IEA countries substituted complaints about us for all-out efforts of their own. They hoped that if the United States would reduce its claim on the international oil pool, then their oil requirements might be met more easily and with less internal readjustment of energy sources. After all, the switch of utilities from oil to coal and the enlarged exploitation of nuclear power are not easy paths for politicians to pursue, whether here or abroad. But if the world economy is not to wallow along in a swamp of stagflation in the 1980's, risking increasingly serious social, political, and strategic consequences, an all-out effort to achieve or better the Venice targets will be required, together with equally heroic efforts within the developing world to substitute for a waning supply of oil imports by expanding domestic energy production of all kinds.

A second point relates to U.S. coal exports. If rapid growth is to proceed throughout the industrial world in the 1980's, coal (or synthetics) must be rapidly substituted for imported oil in Japan and Western Europe. Given the skewed distribution of coal resources, large additional coal imports will be required from the United States as well as from Australia, South Africa, and Canada.

The Venice Summit target for a doubling of coal production and use by 1990 requires that U.S. export capacity be developed with great rapidity. It would be wholly appropriate for importers of American coal to enter into long-term contracts and invest in U.S. coal production and infrastructure. A similar argument would hold for foreign investment in U.S. synthetics plants, some of whose output might be exported.

Energy and the Soviet Union

As noted earlier, experts may debate its exact timing and dimensions, but it is clear that the Soviet Union faces a major energy problem: its old, well-established fields, notably Samotlor, have peaked out or will peak out in the early 1980's and, with this event, Soviet oil production will tend to decline. At the moment, a belated recognition of this likelihood has led to greatly intensified drilling, in well-established areas, which may, for a time, hold off or slow down the decline. Like the United States, the Soviet Union commands large additional potential energy resources: the exploitation of existing reserves with enhanced recovery techniques; potential oil and gas reserves not yet extensively explored; heavy oils; coal; nuclear.

Although the reality of the energy problem has been acknowledged by Soviet leaders since 1977, a plan to deal with it effectively has not yet been set in motion. The reasons for this delay differ somewhat from those which have postponed affairs in the United States. First, very large capital outlays are required to establish and exploit alternative Soviet energy resources, and the lead times are long. This sets up an acute problem of allocation since the Soviet ICOR has been rising for some time (the productivity of investment falling): although the proportion of GNP invested rose from 21 percent to 32 percent between 1960 and 1978, the rate of growth of GNP dropped from 4.9 percent (1961-1965) to 3.3 percent (1974-1978). This implies a rise in the Soviet ICOR from about 4 to 9. Something like 12 percent of GNP is tied up in military expenditures, expanding at a rate (4 to 5 percent) higher than the recent rates of increase in real GNP. Second, the Soviet Union does not yet command fully all the technologies required for enhanced recovery techniques and other technologies neces-

sary for the full exploitation of its potential reserves. Third, the Soviet Union has a much narrower margin for energy economy than the advanced industrial economies of the West; since the use of automobiles and electric-powered durable consumers' goods is less intense, freight traffic is already heavily concentrated on the railroads, and cogeneration of energy for space heating is already widely applied.

The probable decline in Soviet oil production in the 1980's could have wide ramifications on the energy-poor economies of Eastern Europe which have depended on Soviet oil exports and could increase the total claim on the declining pool of non-Soviet oil exports. So far as U.S. foreign policy is concerned, a major potential implication is the following: should other forces move the Soviet Union toward a judgment that less contentious relations with the West are desirable (e.g., protracted indecisive operations in Afghanistan and a U.S. correction in the U.S.-Soviet military balance), Soviet leaders might judge a serious reduction in arms spending to be to its advantage to free investment resources for energy-related investment. A SALT III negotiation actually cutting military establishments could conceivably then be negotiated. In that setting, enlarged technical assistance — and, perhaps, loans — to the Soviet Union from the advanced industrial countries might be of mutual advantage, to assist in building the new energy base the Soviet Union — like almost all other countries — requires. It cannot be too strongly emphasized, however, that the Soviet Union is most unlikely to move towards a serious detente simply because of its economic problems. If the potentialities for further expansion of its power appear promising, it is likely to press on while muddling through with its economic problems at home.

Cooperation With OPEC

OPEC is, of course, in profound disarray at the moment due to the political as well as economic impact of the war between Iraq and Iran. One must, nevertheless, assume that the interest of its members in cohesion is so great that the cartel will continue to operate.

If the United States adopts and acts on something like the energy targets we propose and the other OECD members move forward seriously to achieve or surpass the Venice Summit targets, the basis might be laid for a negotiation with OPEC on two matters.

First, OPEC prices and production. Formal OPEC prices will continue to be determined by compromises between those oil exporters using their foreign exchange

earnings to the hilt and those with a surplus. In the short run, however, the oil price will be approximately determined by the supply and demand position in the international market, that is, by the spot price. That market involves a relatively small volume of transactions, but it is taken by OPEC to represent an approximation of the price the traffic will bear. Over the longer run the oil price will be determined by the cost of producing an alternative to a barrel of imported oil. An all-out U.S. and OECD production and conservation effort should foreshadow and, in time, bring about a ceiling on the OPEC oil price. The strengthening in the dollar, through the complex of measures suggested in this report bearing on productivity and inflation as well as energy, should in itself yield a lowered and stable or declining dollar-denominated OPEC oil price. Against this background it should be possible to stabilize a common interest leading to: (a) predictable OPEC prices; (b) predictable OPEC availabilities.

A second negotiation with OPEC members could take place bilaterally or regionally but would inevitably play back on the behavior of OPEC with respect to prices and production. It would arise from these facts:

- Production in a number of OPEC members is declining or is likely to peak out in the 1980's (e.g., Venezuela, Nigeria, Algeria, Indonesia).

- As noted earlier, domestic oil consumption is rising rapidly in the oil-exporting countries (about 8 percent per annum), and their exports will come under constraint. This would reduce their foreign exchange availabilities unless the real price of oil rises more rapidly than the decline in the volume of their exports.

- Given the long lead times involved, such countries have a strong vested interest in the expansion of their energy base to sustain continued economic and social progress: to discover and develop new conventional oil and gas reserves, heavy oils, coal, shale, and other alternatives.

- In most cases, this requires technical and managerial assistance, if not capital, from the advanced industrial countries.

A dialogue on these matters and even bilateral agreements have been set in motion with at least one OPEC member (Venezuela). If and when the OECD establishes a credible program to cope with the prospect of progressively declining oil imports, this strand of common interest should be systematically explored and built upon, entering into the broader North-South program of energy cooperation we commend.

North-South Energy Cooperation

Aside from energy cooperation within the OECD, the most important — and greatly neglected — area for constructive international enterprise lies in building a partnership between the OECD and the oil-importing developing countries. They confront a truly ominous future unless, by their own efforts, supplemented by external capital and technical assistance, they rapidly build energy bases in substitution for imported oil.

The prospects for the developing regions are shadowed not merely by the energy problem but by other problems, e.g., stagflation in the advanced industrial countries, which has reduced their export possibilities: inadequate rates of growth in agricultural production requiring increased grain imports, gross environmental degradation, including soil erosion and deforestation, the latter reducing the supply of firewood. All offer the basis for a pragmatic North-South partnership founded in common interests. The immediate and mid-term problem of energy is, however, central.

Immediately, high oil import prices burden the balance of payments of the developing countries, leading to a slow-down in growth, the contraction of additional debts whose repayment requirements further burden the balance of payments, or both. Energy imports as a percentage of merchandise exports rose from 9 percent to 16 percent between 1960 and 1977 for low-income developing countries; from 11 percent to 20 percent for middle-income developing countries. The 1979-1980 further rise in oil prices has intensified this pressure, bringing, for example, the figure for Brazil and India to over 50 percent. Between 1977 and 1980, interest and debt amortization payments for the low-income countries rose from \$2.0 to \$3.5 billion (current); for the middle-income countries, with better access to the private capital markets, from \$25.0 to \$43.5 billion (current). The debt service burden of the low-income developing countries rose from 11.9 percent in 1977 to 16.3 percent in 1979; for the middle-income countries the rise was from 12.2 to 14.8 percent. Perhaps the most vivid reflection of the strain imposed by the increase in oil prices is the following: in 1970 the oil-importing developing countries purchased 1.8 mbd at a cost of \$5.4 billion (1980); in 1975, 4.4 mbd at \$31.5 billion (1980); in 1980, 4.5 mbd at \$49.3 billion (1980).

Looking ahead over the next decade, the energy problem of the oil-importing developing countries will be shaped by the following underlying elements:

— If they maintain growth rates consonant with the requirements for economic progress and minimum social and political stability, energy consumption will expand at an annual rate of about 6.3 percent, by World Bank estimate. This is three times the

expected rate for the advanced industrial countries. That rate could be reduced by major energy conservation programs; but it will, even then, be more than twice the OECD rate of increase in energy consumption.

— The high rate of growth for energy consumption in the oil-importing developing countries results from a number of different factors: high rates of population increase; higher growth rates than among OECD countries as they absorb the backlog of available technologies hitherto unapplied; rising proportions of GNP derived from manufactures relative to less energy-intensive services. These factors, plus a continued population flow from rural to urban areas, determine that marginal energy-GNP ratios will be substantially higher in the developing regions than in the OECD; say, 0.8 versus 0.6, although as noted earlier, the former is an optimistic estimate reflecting highly effective conservation measures in the developing regions.

These factors also decree that the proportion of international oil flowing to the oil-importing developing countries must rise from, say, about 11 percent in 1978 to 17 percent by the year 2000 (Exxon estimate). They also decree that it is a common interest of the advanced and developing countries that their domestic energy production in substitution for imports be expanded rapidly.

Table 10 sets out the investment requirements for such a major effort, with the physical production targets given in the notes to the table. Table 10 does not, of course, include investments required for increased energy economy.

For energy production, table 10 suggests an investment requirement of \$680 billion (1980) for all developing countries, \$450 billion (1980) for oil-importing developing countries. These totals imply a rise in the proportion of GNP allocated to energy production from 2.3 percent in 1980 to 3.2 percent in 1990. The average figure for 1966-1975 was only 1.3 percent.

If anything like the targets which underlie the figures in table 10 are to be met, a serious North-South partnership will have to be developed in the field of energy; for "a massive infusion of external capital" (to use the World Bank's phrase) will be required, as well as much enlarged flows of technology. Governments, international lending institutions, and the private sector will all have to contribute to a successful outcome.

The optimum method for organizing a North-South energy effort is likely to be regional rather than global or, merely, bilateral. First, a global institution involves too many nations for something as serious as the generation of new projects, their financing, and the transfer of relevant technologies. Second, the countries of each developing region know their own resources and possibilities for mutual assistance

Table 10: Oil-importing developing countries: principal investment requirements in commercial energy, 1980-90¹
(billion 1980 U.S. dollars).

	Estimate 1980	Annual Average 1981-85	Annual Average 1986-90	Average Annual Percentage Growth Rate 1980-90
Electric Power²				
Thermal	8.0	11.8	15.4	9.1
Hydro	9.2	13.5	15.1	6.8
Nuclear	1.2	2.1	8.8	30.4
Other	<u>0.1</u>	<u>0.1</u>	<u>0.4</u>	<u>20.3</u>
Subtotal	<u>18.5</u>	<u>27.5</u>	<u>39.7</u>	<u>10.7</u>
Coal ³	0.5	0.7	1.5	15.8
Oil⁴				
Exploration	0.5	1.0	1.5	11.6
Development	<u>2.1</u>	<u>2.5</u>	<u>3.2</u>	<u>4.3</u>
Subtotal	<u>2.6</u>	<u>3.5</u>	<u>4.7</u>	<u>8.2</u>
Gas ⁵	1.0	1.7	2.7	14.2
Alcohol	0.5	0.9	1.2	12.4
Fuelwood	0.5	0.6	1.3	13.6
Refineries ⁶	1.0	1.8	2.3	11.8
Total	<u>24.6</u>	<u>36.7</u>	<u>53.4</u>	<u>10.9</u>
Note:				
All Developing Countries	<u>34.4</u>	<u>54.4</u>	<u>82.2</u>	<u>12.3</u>

¹Based on Case 1 projections, which are described in Chapter II of source.

²Includes cost of transmission and distribution. Estimates assume that capacity requirements will grow at the same rate as in 1973-78.

³Based on the investments required to develop coal production from 160 million tons of coal equivalent in 1980 to 230 million tce in 1990.

⁴Based on the investments required to develop oil production from 1.7 million barrels of oil a day in 1980 to 3.3 million bdo in 1990.

⁵Based on the investments required to raise gas production from 0.9 million bdoe in 1980 to 1.2 million bdoe in 1990.

⁶Estimates assume capital requirements will grow at the same rate as in the recent past.

Source: The World Bank, "Energy in the Developing Countries," Report No. 3076, July 1980, p. 7.

more intimately than is possible on a world basis, and there are substantive possibilities for mutual assistance as among the developing countries of a given region. Third, three regional development banks exist and could play important roles (the Inter-American, Asian, and African). The Organization of American States (OAS) and the Organization of African Unity (OAU) exist and could develop special instruments for dealing with the energy problem. An organization for the Pacific Basin, long overdue, could perform a similar function along with others. It should be noted that a report to the Secretary General of the OAS of August 6, 1980 (Hemispheric Cooperation and Integral Development), from an expert group headed by Felipe Herrera, identified energy as a priority area for cooperation within the Western Hemisphere in the 1980's and recommended the setting up of a high-level energy committee to work closely with the existing intra-Latin American energy organization OLADE. Evidently, the World Bank, which has led the way in analyzing and dramatizing the energy problem of the developing regions, would actively participate in all the regional enterprises. The major countries of the OECD would also participate in all the regional energy groupings; but Western Europe might take the lead with Africa, the United States with Latin America, and Japan and the United States with the Pacific Basin. For the time being, the energy problems of the Middle East (aside from the possible emergence of a negotiation with OPEC) and South Asia could be dealt with bilaterally, or on a consortium basis, backed by the World Bank where appropriate. With respect to the build-up of their energy resources as conventional oil reserves peak and run down, OPEC members would participate in their respective regional groups.

In the end, the outcome would be an enlargement of investment in energy production and conservation from domestic sources, international private capital flows, and official aid — both bilateral and through the multilateral lending agencies. A framework of intergovernmental organization on a regional basis is essential, however, to assure that the governments look ahead to 1990 and 2000, calculate on a uniform basis their energy requirements and the potentialities for conservation, and set in motion the policies which would generate the specific projects which would permit their energy accounts to balance in ways consistent with rapid economic and social progress.

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THINKING THROUGH THE ENERGY PROBLEM

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1

**THE NATURE
OF THE
ENERGY PROBLEM**

Most of our energy, other than sunlight, comes from burning the fossil fuels—oil, gas, and coal. These fuels are burned in homes to keep warm, in engines to drive machinery, in electricity plants to make steam, and in mills and factories to make paper, glass, steel and fertilizer. Some of our electric energy comes from nuclear reactors and from rainwater flowing downhill. Small amounts of energy are in the food we eat, and huge amounts radiate from the sun to keep the planet warm, make the vegetation grow, and produce the rain and wind and the light we see by in the daytime.

The quantities are impressive. If the heat value of coal and gas is converted to oil equivalents, every man, woman and child in America consumes on the average, directly and indirectly, more than his body weight in petroleum every two days. A fifth of this fuel is imported oil, costing about \$40 billion a year. The value of all the fuel is about one-twentieth the value of the gross national product (GNP).

As technology changes, so does the use of energy. As fuel prices go up or down, fuel is used sparingly or liberally. The trend is for energy use, measured in heat content, to rise with both population and per capita income. With the GNP doubling about every twenty years, the use of energy might double

in about twenty-five years and quadruple in half a century, if energy prices stay even with other prices.

There are two inescapable facts about the supplies of fossil fuels. One is that the quantities were determined millions of years ago in the geological history of the planet; there will never be any more than there already was by the time some primitive person discovered that a lump of coal would burn. The other is that they are strikingly unequal in their geographical distribution: half the known petroleum reserves but only one-hundredth of the world's population are in the countries—until recently exceedingly poor, now strangely rich—that border the Persian Gulf.

With the demand for fuels forever growing, potentially quadrupling in half a century, and with supplies that were fixed before history began, it is tempting to ask how long they will last. More straightforwardly, how much oil, gas and coal is *known* to exist, how much can be *economically* extracted, and how do those quantities compare with *projected* consumption? Even the answers to these questions are speculative. The resources are underground in complex formations; and, especially with oil, during most periods, more was discovered than extracted, so that the known amount remaining continually increased. But so did consumption. Consequently, there was always a decade or two of proven reserves awaiting extraction. The urgency of exploration is inversely related to reserves; with a lead time of ten years necessary to find and exploit new supplies, search and discovery are more highly motivated if known reserves will last only ten years than if they will last forty.

As the earth is more explored it becomes less likely that new large deposits will be found. With the accumulation of experience, estimates of likely deposits, even where no drilling has taken place, should become more exact. But actually there remain huge uncertainties about undiscovered oil and gas, even coal. Parts of the earth's surface, especially under the oceans, have not been explored. Exploration of some areas is beyond present technology. There are depths to which drilling has not gone even in familiar areas. Estimates of the oil and gas that may be found at depths and in locations yet unexplored are only guesses. Some of the guesses are highly encouraging and

cannot be refuted with confidence; some are discouraging.

We have not closed the frontier on the discovery of new fossil fuel reserves. Indeed, significant new discoveries are continually being announced. But recent trends and general reasoning strongly suggest—not prove, just strongly suggest—an end to the era when the exponential growth of demand would be continually matched by commensurate growth in the discovery of new easily accessible reserves, and a decline in the ratio of known supply to effective demand *at today's prices*.

THE PRICE DIMENSION

There is a fundamental reason why the question of how much petroleum, gas, and coal exists does not admit a definite answer. It is that *the amounts of fuel that can be economically exploited depend on the prices people will pay for them*. Even from abandoned deposits there is oil to be had at higher extraction costs. Deeper wells can be drilled; oil can be obtained from the ocean bed; it can be brought expensively by pipeline across the entire state of Alaska. Natural gas in huge quantities may be available several miles under the surface. Eventually shale and tar sands can yield large quantities of fuel but at costs that have not been, and still are not, competitive with the common fuels.

Technologies of extraction that are still undeveloped or unproven will become available to bring additional supplies of gas and liquid fuel onto the market in years or decades to come. These technologies will be more urgently developed, the higher the prospective prices of oil and gas.

Coal illustrates the same principle. In the United States alone the amount of potentially combustible coal is estimated at more than a trillion tons, enough to last a thousand years at today's rate of extraction. But successive billions or tens of billions of tons will be progressively more expensive because of quality, depth and thickness, location, and, especially, the environmental effects of mining, transporting, and burning it.

The likely consequence is that fuel costs will not decline

during the coming decades but will rise as the growth of demand confronts the depletion of the most accessible, and least environmentally damaging, supplies of oil, gas and coal. This prospect is often described as the overtaking of supply by demand and the development of a "gap". But that image of the "energy problem" neglects what is central to the relation between supply and demand: the *costs* at which fuels can be produced, and the *values* of the fuels in their myriad uses. More and more expensive sources of supply will have to be used; rising demand will provide the market for them, at higher prices to cover their higher costs. The "energy problem" is not best described as a comparison of demand with supply and the emergence of a gap between them, but as a prospective rise in the cost of fuel. Only if prices are continually regulated below the cost of producing the fuel will an actual "gap" be observed.

That is the medium-term energy problem, during our and our children's lifetimes. It is not that the world will run out of fuel on some uncertain date, or that demand will outstrip supply and create a finite shortage. It is that fuel has become more expensive and is likely to become increasingly so. The energy problem is not to keep the price of fuel from rising. It is to meet the rising economic cost of fuel with policies that minimize the burdens, allocate them equitably, avoid disruptions in the economy, and keep the costs from rising more than necessary.

CHARACTERISTICS OF THE ENERGY PROBLEM

There are five characteristics of this problem to be highlighted. One has been mentioned—the enormous *uncertainty* about the quantities of fuel that will become available at different costs, and with new technologies, in years to come. There is some probability that new discoveries, or new technologies for extraction, will dramatically enhance supply within the next decade or two, postponing or attenuating the rise in the cost of fuels. It is extraordinarily difficult to devise policies in the face of the good news that there is one chance in ten that we shall discover unexpected great wealth within the decade.

A second characteristic is the *long lead time* necessary for almost any development or adaptation to price changes. New supplies of oil, gas, and coal take a decade or more to develop. Conservation of energy often requires replacing plant and equipment, whether for generation of electricity or for trucks, aircraft and automobiles. New technologies, like liquefaction or gasification of coal, involve not a decade but two in their development and commercialization. For purposes of policy we are already in the 1990s. Today's energy decisions will mainly affect supply, conservation, or new technology ten or fifteen years hence.

A third characteristic is that extracting fuel, transporting it, and burning it affect health, safety, and land use, the esthetics and productivity of the terrain, the sociology and demography of remote areas. It is unlikely that concern with the *environment*, greatly enhanced over the past ten years, will diminish in the future. The effects on health and productivity, if not the esthetics, once discovered are not likely to be suppressed. Another million coal cars continuously moving through towns and countryside will be more than an esthetic nuisance.

A fourth characteristic of energy is its impact on the *balance of payments*. About a fifth of the fuel we consume in the United States is imported, and our balance of payments and the value of the dollar are affected by whether we import forty billion dollars of foreign oil each year or a hundred billion.

A fifth characteristic is that an even larger part of the energy consumed by Japan and Western Europe is imported from a small number of oil producing countries, mostly in the Middle East. The supply is susceptible to sudden *disruption*, motivated politically or economically, in peacetime or warlike circumstances. For the United States a sudden disruption would be serious but not devastating. For some countries, like Japan, cessation of overseas oil supply could be a disaster.

The United States is blessed with large quantities of oil, gas, and coal, producing 80 percent of the fuel it consumes and undoubtedly is capable, though not on short notice, of meeting its most urgent needs out of domestic supplies. Most countries, developed and underdeveloped, are more vulnerable than the United States to an interruption in oil imports.

WORLD PROBLEMS RELATED TO ENERGY

There is a complex of world problems related to energy that transcend the geology and the economics. Many but not all of them relate to the concentration of petroleum reserves in the Middle East. The roles of Cuba, Russia, China and the United States in the Somali-Ethiopian conflict on the "Horn of Africa" reflect the strategic significance of oil. The sale of advanced military aircraft to Saudi Arabia is part of the world energy situation. Overflight and landing rights for military supply of Israel were affected during the war of 1973 by the European politics of Middle East oil. Arab-Israeli peace negotiations and Chinese-Japanese trade relations are involved in world energy. The prospects for world trade in plutonium fuel for nuclear reactors were affected by the price of oil in the early 1970s. And the stability of capital markets, even the solvency of banking systems, have appeared to be threatened in some degree by the concentrated financial flows attendant on the Middle East oil trade.

Worldwide problems related to energy are somewhat diffuse, hypothetical, and intertwined with non-energy-related trends and conflicts. But some can be identified as potential crises. Today oil is practically the only economic resource that one can imagine leading to war. Oil has strained America's relations with allied countries. A protracted interruption in delivery of oil to the rest of the world is one of the few genuine economic calamities that come to mind. Control of Middle Eastern oil by the Soviet Union might be construed as such a threat to the viability of Japan and Europe as to be intolerable.

* * *

For the far future it may be wise to anticipate sources of energy quite different from the traditional fossil fuels. Sunlight, which can begin to meet some of our energy needs immediately in space and water heating, can eventually produce electricity. Nuclear fusion is a possible source of electricity by the middle of the next century. And electricity itself can produce clean fuel in the form of liquid hydrogen. Some time in the next

century it may be necessary, despite the continued availability of high-cost fossil fuels, to abandon primary reliance on them for reasons related to climate, health and environmental damage.

THE POLITICS OF PRICES

A final "energy problem" needs to be anticipated, one not based on geology or economics. It is the politics of energy. There is a widespread tendency to view fuel price increases not as reflections of genuine costs, not as an adaptive response of the market to the need for conservation and enhanced supply, but as the problem itself. Price regulation can disguise the ways the costs of fuel are paid and who pays them. It can redistribute costs but it does not reduce them. Keeping fuel prices artificially below the replacement cost of the fuels being used subsidizes excessive consumption, inhibits exploration and development of supply, and misrepresents the worth of technological changes that economize energy. *If prices are considered the problem, rather than part of the solution, we shall only aggravate problems that are going to be difficult enough.*

2

**THE SIZE
OF THE
ENERGY PROBLEM**

U.S. energy problems can be divided into two groups, one worldwide and the other domestic. The worldwide problems are multifarious, complex, and rarely limited to energy. But to *clarify their relation* to domestic U.S. energy a common connection deserves emphasis.

To see this connection, consider first some issues and proposals for domestic energy policy, then the worldwide issues that revolve around or interact with energy, and finally the connections between these two domains—the energy channels through which domestic and worldwide issues impinge on or interact with each other.

A Sampling of Domestic Energy Issues

- Price controls on gas and crude oil
- Taxes to induce conversion to coal
- Subsidies to energy-conserving technologies
- Water rights
- Tax benefits for home insulation
- Peakload electricity pricing
- Auto engine design
- Offshore leasing
- Gasoline mileage standards
- Auto emission standards
- Siting of power plants
- Cogeneration of electricity
- Mass transit
- Strip mine regulation
- Coal transport rights-of-way
- Coal mine health and safety standards
- Energy labelling of electric appliances
- Allocation of wellhead tax proceeds
- Right turn on red light
- Disposal of nuclear wastes
- Liquefaction and gasification of coal
- Development of solar-electric technology
- Alternatives to energy-intensive fertilizers

The domestic energy issues listed in the accompanying box range from important to trivial, from technical to social, from supply to demand, from industrial to household, and from federal to state and local, judicial, and voluntary. One way or another they all involve increasing the *availability* of energy or its substitutes, reducing the *need* for energy or the waste of it, mitigating *side effects* of energy production or use, redistributing the public and private *costs* of using energy or doing without it, rearranging *incentives*, or discovering or dissemi-

nating pertinent *knowledge*. They reflect the pervasiveness of energy in a modern economy and a network of substitution possibilities that keep all the listed items at least indirectly connected with each other.

A sampling of foreign-policy issues that involve energy directly, or that derive their importance or their difficulty from their connection with energy are described in the box below.

A Sampling of Foreign Policy Issues Related To Energy

- The Soviet role in the Middle East
- Proliferation of nuclear-explosive materials
- Overflight and landing rights for military supply in the Middle East
- Advanced armaments for Persian Gulf countries
- Japanese-Arab relations
- Economic development of Third World countries
- Chinese-Japanese trade relations
- Stability of international capital markets
- Brazilian-American nuclear energy relations
- French cooperation with NATO
- Cuban intervention in the Horn of Africa
- Arab-Israeli peace negotiations
- The danger of a disrupted oil supply as a political move, as an economic strategy, or from sabotage, war, or overthrow of regimes in the Middle East.

With only a little simplification it can be said that these two domains, the domestic energy and the worldwide energy-related, have a single major intersection: U.S. oil imports. Except for that connection, the domestic *energy* issues and the world *energy-related* issues impinge on each other little and only indirectly.

The rest of the world feels our energy policies through the oil we import. It makes little difference to energy prices abroad, to Japanese policy toward the Middle East, to the economic development of India or the nuclear development of Brazil, to the relations between Iran and Saudi Arabia, or to almost any

important world energy-related issue, what we do specifically about allocating natural gas, taxing gasoline, insulating new buildings, leasing offshore oil, siting of nuclear reactors, peak-load pricing of electricity, or metering heat in individual apartments—except for what these do to the oil we import. All the consequences get translated into the common currency of British thermal units (BTUs), and their impact is transmitted abroad mainly through the BTUs we import in the form of oil.

The issues in those two domains, the world and the domestic, contrast in their potential gravity. Some of the worldwide problems can be identified as potentially of crisis proportion, carrying at least the possibility of catastrophe. They are undoubtedly what the President of the United States had in mind when in April 1977 he referred to the energy crisis as the greatest challenge, short of prevention of war itself, that we may face in our lifetime. Whether we agree or disagree on the likelihood that world energy problems will lead to some kind of catastrophe, most of us can at least imagine what some of the potential catastrophes might be. It is difficult to reach a common perspective on grave events whose likelihood may be only one chance in five, or one in fifty.

In contrast, the domestic problem of accommodating to the rising cost of energy is not a mortal crisis. It is a serious problem, large but finite; its boundaries can be estimated. It is made more serious by the possibility of sudden disruption in the availability of imported oil, or drastic increases in the purchase price of imported oil; but limits can be estimated on the harm that unexpected disturbances in supply could cause and on the costs of programs to minimize vulnerability.

The prospective continuing rise in the cost of fuel is not so much a problem as a condition. The problem is how to devise short-range policies and long-range strategies for absorbing those price increases into an economy that can grow, in size and in productivity, without inflation and with a reasonable distribution of the benefits of growth among the population.

The rising cost of fuel is one of several serious economic conditions to which we must accommodate during the coming decades. In magnitude it is not altogether unlike the prospect of the medical care industry's consuming not 7 or 8 but 12 or 15

percent of our GNP in another twenty years if we fail to moderate demand and improve supply. Like the aging of the U.S. population and the rising costs of Social Security that will result, the increasing cost of fuels is bad news. The question is: how bad? It is important to get an assessment of its severity.

If it is truly less grave than the global problems—or less grave at its worst than the global problems would be at their worst—it is important to keep the two sets of problems distinct in our minds. We shall exaggerate the domestic difficulties if we approach them with a sense of crisis in the image of Soviet-American confrontation in the Persian Gulf, or the spread of nuclear-weapons material to adventurous governments. And we shall misconstrue the nature of the multifarious worldwide problems if we think of them as primarily endangering our oil supply, or, conversely, think they are to be managed or solved primarily by our energy policies.

The rest of this chapter is an assessment of the likely scope of the domestic energy problem. The role of imported oil—quantity, price, and dependability—is part of that assessment. The special role of oil imports as the main energy supply not under U.S. control, and as the largest and most direct channel of influence U.S. domestic energy has on the rest of the world, will be examined in the chapter that follows.

THE COST IN PRODUCTIVITY

To approximate the likely scope of the domestic problem, the following rough calculation can be made. At twice the present cost of imported *liquid fuel* we can probably have adequate supplies of coal-based liquid fuels, fuels from shale, from old wells by means of enhanced production, and from the oil and gas that may be discovered at depths and distances that will become worthwhile at a market price equivalent to, say, \$30 per barrel at 1978 prices. Having these supplies at such prices could take fifteen or twenty years, but existing supplies and new discoveries of conventional gas and oil will be more than

adequate, at prices between today's OPEC price and twice that price, to meet our needs during the interim. Nuclear power and coal will provide electricity at prices that will likely rise but will not double, even if the costs of coal and uranium double. Aside from short-run disturbances to the overseas supply of imported oil, then, a reasonable upper boundary on what may be in store for the cost of fuel is another doubling between now and the end of the century.

If prices do not change, the growth in energy use is less than proportionate to the growth of the GNP. The GNP is likely to reach twice its present level just after the year 2000. Without any change in energy prices, the use of energy might then be expected to be 80 or 85 percent greater than it is today.

The effect on demand of a doubling of fuel prices is highly conjectural. Except very recently, fuel prices have not risen substantially in peacetime. The recent experience is limited as evidence because most responses to higher fuel prices take time. Many of the responses depend on expectations of future prices; they involve durable equipment and other long-lived investments, even changes of location. Consumption patterns and production technologies in countries that have had much higher fuel prices than the United States are suggestive but rarely comparable. The effect by the year 2000 would depend on the profile of price increases during the interim years. With a doubling of prices, a conservative guess might be a reduction in energy use by 15 or 20 percent below the level associated with unchanged prices. (A conservative estimate is justified because much of the response may be long delayed.)

So if fuel prices were to double again, in relation to the general price level, by the time the GNP had doubled around or just after the year 2000, the use of energy in all its forms could be projected at about 15 or 20 percent below 1.8 times today's use of energy, or roughly one-half more than today's consumption.

An increase of that magnitude over the next twenty-five years, with an adequate mix of solid, liquid, gas and electricity, should be forthcoming at prices up to twice as high as today. Thus when the required quantities are taken into account, reflecting both the negative response of demand to higher prices

and the positive response to higher GNP, a possible doubling of the average cost of fuel over the next couple of decades appears to be a fair upper limit for our calculation of how severe the domestic energy cost increase needs to be.

Raw energy, fuel at mine or wellhead or tanker dock, currently constitutes close to 5 percent of our gross national product. Because oil and gas from older producing wells have regulated prices substantially below their replacement costs, a more realistic estimate of the current cost of fuel in our GNP might be around 6 to 7 percent. With no change in the relative costs of fuels, the corresponding fuel figure for the doubled GNP of 2000-2005 would be about 5 to 6 percent. A doubling of prices with no reduction in demand would thus add 5 to 6 percent of GNP to the cost of fuel. With the 15 to 20 percent reduction in demand, the added cost due to a doubling of prices would be equal to something less than 5 percent of GNP.

That is about the size of the medium-term "energy problem". It may be equivalent to permanently subtracting up to 5 percent from real GNP by about the year 2000. The cost would show up as reduced productivity in the industries producing fuel (and in the terms of trade with oil exporting nations). This much of our GNP would simply disappear into the costs of producing energy and, to some extent, the costs of getting along with less. Most of it would be the higher cost of extracting, delivering, or transforming energy, or abating the environmental damage; some of it would be the extra costs of accommodating, through fuel-saving technologies and consumption patterns; to the higher relative price of fuel.

This, of course, is merely a crude upper-bound estimate that pays no attention to the mix of coal, oil, gas, liquids or gases derived from coal, or nuclear or hydroelectric power. It is a rough estimate of gross magnitude.

Such a 5 percent GNP loss would be a permanent reduction. That is, at a growth rate of 2 or 3 percent per year, it would be equivalent to something like a two-year setback in the development of GNP after the year 2000. In any year after 2000 the GNP might be 5 percent below what it could have been had the real costs of fuel not doubled. Alternatively stated, from about the year 2000, any given level of GNP would be

reached about two years later than that level would have been reached had the average cost of fuel stayed at the level of the late 1970s.

This estimate, based on purely arithmetical operations with a conservative price elasticity, a historically observed GNP elasticity of demand for fuels, and an estimate that the costs of all fuels could on average double again within two decades, is probably pessimistic in purely economic terms. A major uncertainty in the cost of domestic fuel will be the costs we choose to incur to avoid environmental damage, especially the hazards to health in burning increasing quantities of fuel. But the purpose here is only to arrive at a rough estimate of what may be in store, especially if some of the more optimistic estimates of what nature has hidden for us under the earth's surface should be disappointed. What we get is an estimated burden equivalent to a deadweight tax of up to 5 percent on our GNP in perpetuity, or equivalently, a leftward displacement of the GNP growth curve by a couple of years, from and after about the year 2000.

Absolutely, the loss is huge. Five percent of GNP today is about a hundred billion dollars. When GNP has doubled it will be two hundred billion. But in the first few years of the next century it would be two hundred billion dollars subtracted from a GNP of four trillion.

This figure is both immense and modest. If we were calculating the worth of averting a loss of that magnitude, it is an enormous amount of money, equivalent in percent of today's GNP to most of the defense budget or two-thirds of the total outlay for personal health services. But its historical significance can be appreciated by drawing that curve projecting the GNP from now until 2025 on an ordinary printed page; the difference between real GNP with doubled fuel costs and real GNP with today's fuel costs—that is, with the added cost of energy treated as a net subtraction from GNP—is not much more than the thickness of a line drawn with a soft pencil.

This does not belittle the problem. A lot of money is covered by the thickness of the pencil by the time we reach a GNP of four trillion dollars. The problem is a major one. It ranks with, not necessarily above or below, several major foreseeable economic difficulties.

GROWTH, STABILITY, AND INFLATION

The foregoing assessment considers only the aggregate cost to the nation as a whole of diverting resources into higher-cost energy production or into less energy-intensive consumption. It is an assessment of the total *lost real income*. There are at least two other questions about the way the economy works that have to be examined. One is: What would be the impact of another doubling of fuel prices on overall economic performance? Would the induced conservation of energy use resulting from the doubled price so impair economic performance that some further loss must be accounted for, some multiplier effect on production and employment? Our assumed GNP growth, without fuel price increases, would raise energy use by some 80 percent over the rest of this century. In considering a possible doubling of fuel costs we have allowed for a price response that, over the same period, inhibits some of that increase in the use of energy, so that energy use at the end of the century would be 50 percent rather than 80 percent greater than now (i.e., 15/18 or 5/6 of what it would be at unchanged prices). Should we expect that price-induced reductions of energy use, accumulating over a twenty-year period to as much as 15 or 20 percent, will do disproportionate harm to employment, productivity, and economic growth? That is, in avoiding the full cost increase on the quantities of energy that would have been used in the absence of any price-induced reduction, will consumers and businesses do the economy more harm than if they paid the price increase without economizing in the use of energy?

Another question is: how will the impact of a doubling of fuel costs be distributed through the various sectors of the economy? Will the impact of these costs, or of this lost productivity, be spread over the economy in such a way that costs are shared throughout the population, or instead be concentrated by region, by economic sector, or by income class?

Energy permeates the economy. Pure energy in heat, light, and motor fuels is used by everyone. Some production

processes and some consumer goods are much more energy intensive than others, but not many sizeable industries are so concentrated and so energy intensive as to generate isolated serious pockets of depression if the prices of fuels double again. General economic reasoning (as well as some elaborate econometric modelling) finds no reason to believe that in the long run, with steadily rising fuel prices that double in the course of a decade or two, the economy cannot take it in stride. The experience of World War II was that even far more severe short-run dislocations are not a threat to the viability of an economy or to its capacity to remain fully employed.

This conclusion has to be qualified with respect to the balance of payments. During the next decade or two, American oil imports might be anywhere from a low figure of six or eight million barrels per day to a high figure from twelve to fifteen million. Using an intermediate figure of ten million for illustration, and the current price around \$14 a barrel, the annual value of oil imports would be \$50 billion. If the price of OPEC oil continues to be politically determined, by concerted action among suppliers, there is no assurance that prices will not occasionally change abruptly. The motives could be political or commercial. A sudden increase by, say, 50 percent would have three kinds of effect, and they need to be carefully distinguished.

One effect would be on the users of fuel, the price of whose fuel would increase abruptly depending on how much federal regulation held down the price of domestic fuels. The abruptness and unexpectedness of such a substantial price increase would make accommodation to the higher prices more costly than had they been gradual and anticipated. But the extra costs of adaptation due to the abruptness itself would be short-lived and not cumulatively large compared to the cost increase itself.

The second effect would be an inflationary impulse. A sudden cost increase equivalent to one percent of GNP, together with the associated increases in the prices of domestic fuels, would show up promptly in production costs and in the consumer price index. An economy that faces the chronic danger of general price inflation is vulnerable to any imported com-

modity whose price can suddenly and disruptively increase to the extent of a whole percentage point in the consumer price index. The impact is greater than the once-for-all change in fuel prices because of the many wage agreements and other cost elements that have a contractual or statutory relation to the price index and induce further price escalation. Offsetting deflationary policies could be triggered that would have a depressing effect on production and employment. How serious those would be depends on how effectively inflation is combatted; but for at least a brief period, there could be a temporary loss of national income beyond the \$25 billion annual added cost of foreign oil.

A third effect is the deflationary impact of the immediate shift in the balance of payments. Twenty-five billion dollars of current expenditure would be largely diverted from other consumption into the higher cost of imported fuel, not instantly matched by a corresponding increase in demand for U.S. exports. The fiscal impact is like that of a tax imposed suddenly on fuel without an immediate corresponding increase in government expenditure. Well-designed fiscal programs need have no difficulty in substantially offsetting this deflationary impact, but well-designed fiscal programs of that magnitude are not always readily available and politically acceptable on short notice. (This fiscal impact is separate from the effect on the value of the dollar in world currency markets, which can be additionally mischievous.)

The magnitude of such a deflationary impact, if offsetting fiscal policies were not to become promptly effective, could be on the order of a percentage point in unemployment for a year or more. And again, this is lost earnings additional to the lost real income due to the higher cost of imported fuel.

The experience of 1974 was an extreme example of these effects on price inflation and demand deflation. Except briefly during the period of informal motor fuel rationing, higher fuel prices per se had little or no effect on production and employment. But there was a balance of payments effect, which did aggravate unemployment, and a stimulus to price inflation that severely inhibited the government's fiscal action to offset the impact on employment.

WHO GAINS? WHO LOSES?

The distributive question—who is hardest hit by increased fuel prices and who least hard, who gains and who loses—has a short-run and a longer-run perspective. The short run relates to the current regulations on petroleum and natural gas, regulations that have kept the prices of petroleum products and gas below the market level. The prices on “old oil”—oil from wells that were fully operating before 1973—have been held to less than one-half the recent OPEC price. Wells brought into production more recently are allowed to sell at a price closer to, but still below, imported oil. Because refineries buy old, new, and imported oil in different proportions, they pay different average prices; under a system known as “entitlements,” refineries that obtain a cheaper mix make reimbursement payments, and refineries that use a more expensive mix receive reimbursement payments, with the effect that both pay the same average price. That average price has been about 15 percent below the world oil price. Natural gas shipped across state lines has been regulated at a price that may average about one-half of what it would sell for if gas and petroleum were not regulated.

“Old” oil and gas are a depleting resource. Unless the wells more recently developed, or wells yet to be developed, are legally declared “old” in relation to future increases in world oil prices, the old oil and gas will cease to be a significant part of the total in about six years. Meanwhile, the quantitative effect of price regulation averages about \$4 per barrel on some nine million barrels per day of domestic production, or about \$35 million per day, \$13 or \$14 billion per year. For natural gas the figure would be similar. A total in the neighborhood of \$25 billion per year is probably the difference between what all consumers, individuals and businesses, pay for their fuel today and what they would pay in the absence of price regulation.

That is a very gross estimate of the “income transfer” from consumers to oil and gas producers, before corporate and per-

sonal income taxes and before capture of any of those proceeds in higher wages or absorption in higher production costs. (Some part of the increase in wellhead prices of oil may reduce the refinery profits.) Some fraction of the dividends and capital gains arising from price deregulation would accrue to pension funds, insurance companies, and the like. As a very crude estimate we take \$15 to 20 billion per year as the likely current net redistributive effect of recourse to free market prices; this figure diminishes each year as "old wells" are exhausted.

This \$15 to 20 billion per year in net redistributive shift from the rest of us to the owners of petroleum and natural gas resources is primarily what the present policy debate is about. There are two sides to the debate. Should *consumers pay* prices for oil and gas that reflect their market values and the estimated costs of replacing gas and oil with future production? And, if so, should *producers receive*, on oil and gas from wells, many of which were brought into production at much lower market prices, the full proceeds that would accrue from consumers' paying market prices?

The central current issue in the policy debate is whether consumers should pay up to \$20 billion a year more for gas and oil and, if so, how much, if any, of the proceeds should go to producers of oil and gas, and what should be done with the difference. The issue is divisive, and there are regional and other differences in impact to heighten controversy. The amount is as big as most controversial economic figures that arise in a single year; it is equivalent to major tax reform or aid to the cities.

It is not an amount that staggers an economy, reverses historical trends, or changes the quality of life or the character of society. The impact on the poor is somewhat, but only somewhat, more than in proportion to their share of income; the effect on consumers would be about like a transient 2 percent sales tax in its magnitude and incidence.

In the longer run, the issue of what to do about the pricing of "old oil" and "old gas" will persist only if regulation is indefinitely continued. Price regulation is a *distributive* issue for the simple reason that it cannot keep down the costs of fuel, it only determines who pays them.

FACING UP TO THE TRUE COSTS

Our estimate was that the costs of fuels are likely to increase over the next twenty to twenty-five years and that the increases, though substantial, are unlikely to exceed the equivalent of 5 percent of the GNP in added cost or lost income. That estimate we said was probably pessimistic *in purely economic terms*. In political terms it could prove optimistic. The estimate relates to the costs that may be unavoidable, the costs that are determined by technology, geology, demography and economics. Decently managed, the energy component of our economy need not be expected to interfere seriously with employment and continual economic growth and it need not entail costs of a magnitude to deserve much attention from economic historians in the future. But that estimate did not include an allowance for mismanagement.

The danger is that we shall attempt to insulate ourselves from the rising costs of energy, deceiving ourselves that because we do not pay the costs directly they do not have to be paid.

Energy policy itself can aggravate the problem by dealing superficially with its manifestation, by attempting to hold down prices while genuine costs are rising. If the true costs are not faced we shall waste our energy resources in consumption, deny ourselves the enlarged resources that would be available at higher prices, and delay the technological changes that higher costs would encourage.

3

**THE CRITICAL ROLE
OF OIL IMPORTS**

Oil imports, it was noted above, are the critical connection between energy in this country and in the rest of the world. They are the main and virtually the only channel through which world energy supply and demand currently impinge on domestic U.S. energy. They are the main way, although not the only way, U.S. energy supply and demand impinge on world energy. They are the principal energy connection between the United States and a multitude of energy-related strategic and foreign-policy issues.

U.S. imports of oil therefore deserve particular attention in the design of energy policy. The President's National Energy Plan of 1977 made the level of imports a central target. They should be a central concern. But the fact of their importance does not determine what our policy should be. The issues are as complex as they are important.

In the first place, the many international issues that are wrapped up in the world energy problem—NATO and Japanese security, east-west relations, the danger of war in the Middle East, development of the Third World, cooperation on nuclear-materials security—will not be managed mainly by oil imports. In coping with those issues it will be alliance policy, trade policy, nonproliferation policy, arms-sales policy, Soviet-American relations, and a multitude of other foreign-policy dimensions that will principally determine success or failure.

Even relations with Iran and Saudi Arabia depend on more than oil policy.

The world's fuel problems, not to mention the surrounding political and strategic problems, cannot be decisively moderated by U.S. policy on imports. The world's fuel problem is large, permanent, politically and technologically complex, and mostly beyond American control. Turning down the faucet on U.S. imports will not take care of it.

Nevertheless, a difference of five or six million barrels of oil per day, between nine or ten million and fifteen million barrels in the 1980s, would be a large difference. At the current price of oil it would mean a difference in our international payments of \$80 billion instead of \$50 billion per year. If the five or six million barrels of additional imports induced a difference in the price of oil by, say, \$3 per barrel, it would mean \$100 billion instead of \$50 billion in our annual payments. Such a price difference would also add a like amount to the costs of other countries' oil imports. Policy on imports is therefore a big part of any effective approach to world energy.

A policy that significantly moderates our need for oil is a signal to other countries that we can keep our balance of payments under control. It is a signal that we will moderate not only our demand on world supply but our upward pressure on oil prices, helping other countries with their payments' problems as well. Furthermore, an energy program determined to keep oil imports within reasonable limits may provide some leverage on the oil-import policies of other countries. The level of other countries' imports will be determined, in part at least, by the prices we pay for ours. Using the bargaining power that would accrue to us from our willingness and ability to hold imports within agreed limits will add a crucial and difficult dimension to our oil policy.

OTHER CONNECTIONS

Before pursuing the implications of the central role of oil imports, it will be useful to avoid over-simplification by noting other energy connections.

A major one is international trade in *nuclear fuels, reactors, technology, and waste products*. Nuclear power will become a major world energy source during the next two or three decades, and its foreign-policy and national-security significance is beyond exaggeration. As CED's policy statement *Nuclear Energy and National Security*¹ made clear, U.S. domestic nuclear-power decisions will not have a decisive impact on the programs of foreign countries. U.S. concerns relate mainly to the proliferation of weapons material and technology; and the U.S. means of influencing those developments are not tightly connected to the way nuclear electricity is developed or regulated in the United States. Nevertheless this is an important connection between U.S. and world energy. An assured adequate supply of low-enriched uranium reactor fuel can be far more important in helping to meet non-proliferation objectives than its export value would indicate.

Nuclear power is, of course, an area in which formal international cooperation plays an important role. The United States is taking a leading role in the examination by some 40 governments of various ways to assure security of fuel supply and reactor waste disposal for the countries that now have or presently will have nuclear electric power programs. Assuring an adequate supply of reactor-fuel for other countries, and an adequate U.S. capacity to provide low-enriched uranium fuel are simultaneously substantial contributions to world energy and potentially major contributions to security against the proliferation of weapons-grade nuclear materials. They are also modest contributions to our energy balance of payments.

A second connection is *research and development*. The United States shares technical leadership in energy research and development with a number of countries and is by no means a unique source of the world's future technologies. But many of the technologies under development in this country could be important to energy supply or conservation in other countries. There is scope for making U.S. research and development more

¹*Nuclear Energy and National Security*, a Statement on National Policy by the Research and Policy Committee of the Committee for Economic Development, New York, New York, September 1976.

responsive to the needs, resources, and opportunities of other parts of the world, especially the developing countries.

Coal (except metallurgical coal) is not presently a major U.S. export. If the price of oil should resume a steep uptrend, U.S. coal transport to Japan or to Western Europe might become commercially attractive. Export of a hundred million tons or more per year, at a value of five to ten billion dollars, is not out of the question. But unprocessed coal is used in electric power production, and nuclear power is likely to appear a cheaper and environmentally cleaner substitute, even a more secure supply, in the larger countries that might consider importing coal. Converted to liquid, coal will not be competitive on a large scale until, at the earliest, two decades from now; coal thus used would help to reduce oil imports. Coal production will be environmentally limited, and a large exportable surplus may depend on more rapid expansion of mining and transport than can occur. Nevertheless, in the longer run of two or three decades, U.S. coal exports could become significant.

There is one potentially significant *environmental* area in which U.S. and worldwide uses of energy join to produce a common problem. It is the accumulation of carbon dioxide in the atmosphere, a problem only beginning to be systematically explored. It is potentially awesome in the effects on climate that are considered possible, but uncertain, poorly understood, and probably some decades away from requiring action.

Finally there is the entire systemic relation between U.S. economic stability and growth on the one hand, and the economic health of the rest of the world on the other. The volume of U.S. imports and exports, the volume and direction of capital flows, the institutional rules governing trade relations, and a number of areas of international cooperation and foreign aid, are economically and politically affected by the health of the U.S. economy—our growth rate, our inflation, our foreign-currency rates of exchange, our investment markets, and our ability to avoid protectionist depressed areas. There is a linkage between our energy policies and the health and growth of the U.S. economy, a linkage that will be the more noticeable the less well we manage our energy problems. There is linkage between the U.S. economy and the economies of the rest of the

world. And there is linkage between those economies and the "energy problems" embedded in them. But the specific character of any U.S. domestic energy event, in its ultimate impact on energy events in the rest of the world, will be hidden in the complex transmission of overall economic performance, except as it relates directly to the volume of oil imports.

Oil supplies from OPEC countries may be partly dependent on the willingness of those countries to invest in the United States. That in turn will be affected by their perception of the health and growth of the U.S. economy and the stability of our financial institutions. If mismanagement of our energy problems appears to jeopardize the U.S. economy or the U.S. balance of payments, the availability of world oil could be diminished.

THE WORLD OIL MARKET AND THE WORLD OIL PRICE

The President's National Energy Plan included a prospective reduction of oil imports by 1985 to barely half of what they might have been by then in the absence of import-reducing policies. Accomplishing that would require large reductions in energy use, substitution of other fuels, or increases in domestic oil supply. Three issues are involved in devising a policy for oil imports. One is the *quantities*, and whether the quantities should be flexible targets or firm programs. A second is the *program techniques* by which imports would be made to conform to some targets; these could range all the way from fees or direct controls on imports themselves to subsidies for home insulation. A third is the *diplomacy*—the negotiations, commitments, and the cooperative arrangements—with which our goals and programs are worked out or discussed with the producing countries and the other consuming countries.

In addressing these questions it is worthwhile to review some of the roles played by oil imports and the nature of the world oil market.

The market for oil is substantially a "world market." Ship-

ping and marketing of crude oil and refinery products are highly decentralized. End-use controls on refinery products are nearly impossible. Oil exports can be shifted in destination; transshipment of oil and refinery products is easy. The oil producing countries lack any policing mechanism to preserve discipline on selective import controls. Denying a large fraction of world oil to particular countries may not make much difference if the remaining fraction is adequate to their needs and is available at no great change in price.

The implication of this is not only that an embargo of oil is a diffuse and inaccurate weapon, but that consuming countries share a common problem whenever oil exports are interfered with. The severity and timing of the problem would differ among countries in the event of embargo or obstruction. But what one country can do with strategic stockpiles or with emergency conservation will be of interest to the other countries. And what a large consumer like the United States does in an emergency will be perceived either as a major contribution to international cooperation or as a major subtraction from it.

As long as we take seriously that our European allies, Japan, and other countries are part of our mutual security system; as long as we care about French or Japanese policy toward the Middle East; as long as we care about successful development in the poorer countries of the world, the most serious "vulnerability" of the United States to a contrived energy emergency is likely to be the effect it will have on other countries that matter to us, even more than its effect on us.

Among the important characteristics of imported oil in the U.S. economy, the first to note is that it is a major source of energy. It is one-fifth of all the fuel we consume and currently it is not getting smaller. Furthermore it is a flexible source, increasing or decreasing easily on short notice, cushioning the excesses and shortfalls of different supplies and different demands—a cold winter, a coal strike, delays in nuclear power plant construction, or shortfalls in conservation policy. In the absence of disrupting influences, the world supply is a great reservoir for cushioning the vagaries of supply and demand and government policy.

Consuming imports saves domestic reserves. At the same

time, in the absence of measures to develop unused capacity, consuming foreign oil instead of producing domestic oil diminishes short-run domestic productive capacity because of the time lag in bringing in new wells or enhancing output from old wells and enlarging distribution facilities. There is some trade-off between domestic reserves and domestic productive capacity: the more we import the more we save; the more we import the less we currently produce; the less we currently produce the more vulnerable we may be in the short run and the less vulnerable in the longer run.

Oil can be stockpiled as a strategic reserve against interruption in supply. Member countries of the International Energy Agency [IEA] have agreed to establish, by 1980, an emergency reserve equal to ninety days of the previous year's imports. The current U.S. program is to reach a government reserve of at least a billion barrels by 1985, equivalent to at least four months' imports at the 1978 level. How long such a reserve would last would depend on the severity of reduction in availability and the effectiveness of measures to conserve oil. Even if import supplies were reduced by 25 percent, a 10 percent reduction in import consumption (corresponding to reduced consumption of oil by no more than 5 percent, less if production at home can expand promptly) would draw down reserves by only 15 percent of the normal rate of imports, and a reserve equivalent to four months of normal imports would last more than twenty-four months. Of course, stockpiling does increase the current demand for oil in the short run; whether the supply situation will ease enough to permit some accumulation of reserves during the next few years without undue upward pressure on prices will depend crucially on events in Iran.

We are ourselves vulnerable to the needs of other consuming countries in that our foreign policy objectives can oblige us to restrict oil imports somewhat painfully to help make oil available to other countries whose claims to a reasonable share we must recognize. It is important not only that we help ease the oil import and price problems of other countries, but that we appear cooperative and exercise leadership in the interest of alliance relations, nuclear non-proliferation, and the other key objectives that are intertwined with energy. The United States

has agreed to share available oil resources with the other IEA governments and to draw down emergency stocks in the event another OPEC embargo causes shortfalls that exceed specified percentages of normal supply. Performance in such an emergency is not guaranteed, but the leadership and leverage that the United States could exercise would depend not only on the willingness but on the ability of the United States to limit imports in accordance with the sharing formula in such an emergency.

Finally, the relation of oil prices to the quantities we import, or to the quantities that other countries import, can be crucial in determining the "cost" of additional imports or the "savings" due to reduced imports. There is no reliable way to calculate the effect of changes in world import demand on the prices that will be set or obtained by OPEC countries. It is almost certain, however, that reduced demand for imports will soften prices or slow their climb, while increased demand would hold prices up or accelerate their climb, especially when, as it is expected, total demand for OPEC oil approaches the projected limits on OPEC supply capabilities in another decade. A consequence of this price-quantity relation is that the true economic cost of importing more (or the costs saved by importing fewer barrels of oil) is not accurately measured by the price per barrel at which the oil is imported.

Purely as illustration, consider the difference between the estimate in the National Energy Plan that its proposed program could result in oil imports in 1985 of about seven million barrels per day compared with twelve to sixteen million in the absence of the program. Scale that import difference down to a more modest four million barrels per day, eight million vs. twelve million barrels. Assume the price corresponding to eight million barrels would be \$15 per barrel, and that with the higher level of imports (perhaps with some imitation by other IEA countries that observe the U.S. not greatly conserving imports) prices in the late 1980s would be higher by 20 percent, or \$18 per barrel. The "cost" to American consumers of the additional four million barrels is not just the higher price of \$18. Eight million barrels at \$15 would cost \$120 million; twelve million at \$18 would cost \$216 million. The difference

is \$96 million, which comes to \$24 per barrel for the extra four million. (The four million additional barrels cost \$18 apiece and add \$3 per barrel to the eight million barrels already being imported).

(Moreover, other countries also are paying an increase of \$3 per barrel as a cost of *our* extra four million barrels.)

In the same way, if we hold imports to the lower level but other consuming countries let their imports increase so much that the price is \$3 higher after 1985, we pay the extra \$3 on our eight million barrels, or \$24 million per day as *our* "cost" of *their* additional imports.

A final point needs to be made about the market for oil. We noted above that it is indeed a "world market" because of the large quantities that can shift from particular buyers to particular sellers, the ease with which oil can be redirected or resold, and the impossibility of identifying individual refineries' products and policing any program of selective denial. That is quite separate from whether competition determines the market price or prices are set arbitrarily by a cartel, or at least substantially influenced by a single large supplier or a few suppliers that together can manipulate the price by the quantities they are willing to sell. It has been argued that OPEC is by itself responsible for the energy crisis and that a primary policy objective should be to find a way to dissolve OPEC or to coerce it, through economic measures or otherwise, to lower its price. The price of petroleum advanced so decisively when OPEC acquired political cohesion in the aftermath of the October War of 1973, leading to the popular discovery of the "energy crisis," that there is a temptation to believe that if their political cohesion—initially an Arab-nation phenomenon arising in war—could be dissolved or moderated, petroleum prices would recede and the energy crisis would return to its benign non-existence of a decade ago.

Looking backwards five years, one may find that interpretation of the "crisis" plausible. Looking forward any distance, the coming increase in the cost of fuel appears to be much less dependent on OPEC behavior. Although the oil-production

policy of Saudi Arabia could indeed make a difference of several million barrels per day in the late 1980s and the 1990s, it would only moderate the upward pressure on oil prices by depleting reserves more rapidly.

The diagnosis that the energy crisis is purely a cartel phenomenon is contradicted by two considerations. First, even with substantially expanding OPEC production over the next two decades, it is unlikely that petroleum prices can decline except occasionally for brief periods, and likely that the net change will be substantially upward. Second, oil in the ground at today's prices is not an unreasonable investment, especially for Saudi Arabia that has large liquid financial reserves earning a nominal rate of return not much better than the rate of inflation, considering the rate at which petroleum prices may rise during the next decade or two. As long as oil revenues to Persian Gulf nations exceed their current import requirements, expanded production converts oil in the ground into alternative financial or physical assets. The oil-producing states used to be desperate for foreign exchange and liquid assets, but now they can afford to hold oil rather than pump larger quantities at lower prices. It is likely, therefore, that the discipline of an OPEC cartel has been superseded by national self-interest as a motive for not maximizing production in the short run, at least for Saudi Arabia and some other Persian Gulf countries.

Clearly, the world energy problem described in Chapter 1 is not merely the artificial construct of a cartel. Nor is it certain that the situation over the long run would be greatly improved if OPEC countries dumped substantially larger quantities of oil onto the market, greatly depressing current prices while depleting their reserves more rapidly.

In sum, espousing a policy of "breaking the OPEC cartel" could be self-defeating on three grounds. First, if it succeeded it would not make the energy problem go away. Second, it would be economically mischievous if it encouraged the fantasy that the energy problem is going to disappear and prices are going down. Finally, its diplomatic effect would give credence to the most immoderate participants in OPEC.

REDUCING DEPENDENCE ON IMPORTS: THE POLICY CHOICES

It is characteristic of the list of domestic measures that appears on page 9, and of those proposed in the 1977 National Energy Plan, that none would have a *prompt* and *substantial* effect of *predictable* magnitude on the level of imports. While we can usually be sure of the direction of impact, nobody can estimate the speed and magnitude of the effect.

Studies by the Congressional Budget Office and by the General Accounting Office disagreed with the estimates in the National Energy Plan, and the methodologies of those two critiques show how easy it is to be off by a couple of million barrels a day in estimating petroleum imports, even in comparatively straightforward proposals, to say nothing of the exact size and timing of effects that changes in strip-mine legislation or offshore leasing policies would have.

A major reason for this imprecision is that, under present policies, imports are a cushion. If the programs adopted fail to reduce the excess of U.S. demand over U.S. supply on schedule, imports fill the gap. They moderate the domestic shortages or price increases that would result if imports were unobtainable.

Therefore, if a multitude of measures proves inadequate to the reduction of imports in conformity with some program goal, new methods have to be instituted and we have to wait and see how they work in reducing the demand for imports. The only measure in the National Energy Plan that was directly geared to the amount of petroleum consumption, and hence related directly to the volume of oil imports, was the threatened gasoline tax that would have been introduced at the rate of 5¢ per year starting in 1980 if the gasoline-consumption goals were not being met. Even that tax—which Congress did not seriously consider—would have had an impact delayed in years, not months, and an impact of unpredictable size.

If a reduction in our *dependence* on oil imports—whether an actual reduction in imports, a levelling off, a slower rate of growth, or response to emergency—is considered important for foreign policy, balance of payments, vulnerability to disruption,

or orderly progress toward lower oil imports in the future, there will have to be policies that work more effectively on imports than those in place today. "More effectively" can mean more *sizeably*, more *predictably*, more *promptly*, more *sustainably* (i.e., with less troublesome side effects), or any combination of these.

If our main purpose is reducing vulnerability to disrupted supply, the emphasis should be on promptness and predictability of the measures put in place. If the main purpose is moderating world prices in the 1980s, size and predictability, or a combination of prompt effect and flexibility of administration (to permit successful trial and adjustment) will be important. If the primary goals of import moderation are longer term, then size and sustainability of policy effects need to be emphasized along with the incentives that any such measures provide for bringing in new supplies and new technology.

This choice of the focus of emphasis should, in turn, condition the choice of measures used to reduce import dependence. The relative importance attached to the different objectives should broadly determine the choice between those measures that reduce import demand *indirectly*—inhibiting demand, encouraging conservation, stimulating supply, and inducing technological change—and more *direct* actions to inhibit or restrict imports. Among the former would be imposing taxes or offering subsidies or tax relief, or regulations, that discourage the consumption of fuels, especially liquid fuels. It would include efforts to reduce environmental obstacles and delays to enlarged production. It would particularly apply to policies that would allow domestic energy prices to rise fairly promptly to world levels. The more direct actions would be fees or import charges, licensing of imports, auctioning import quotas, or cooperative arrangements among oil importers.

In general, direct means of intervention can be more prompt and predictable in their effects, if there is authorization for them. Obtaining new authorization can be a source of delay (as the congressional response to the original National Energy Plan dramatically illustrates). The former, indirect means, can eventually have sizeable if slower effects and fewer undesired side effects.

The "side effects" are no mere academic detail. There is no way that direct action against oil imports can be separated or insulated from domestic energy prices. Any program that directly inhibits or regulates imports will pose hard choices in domestic fuel price and regulatory policy. This can most readily be appreciated by considering what ought to be the first and most obvious action to reduce imports: to let the price paid by consumers of fuel rise to equal the amount actually paid by consumers collectively for the oil that is imported. Consumers presently pay about \$2 per barrel less for imported oil (and for all oil) than the import price. The importing refinery or distributor pays about \$2 less per barrel, subsidized by the averaging process that withholds from domestic producers part of the price consumers pay and uses that difference to hold down the price of imports. Every barrel of imported oil costs consumers collectively the full OPEC price, but the consumer shifts \$2 of that price to other consumers by raising the average price.

Making consumers pay the full price of imported oil is an obvious first step in rationalizing our fuel policy. The 1977 National Energy Plan provided this, in a succession of annual steps. The effect of an increase by 15 percent or so in the price of imported oil might not be substantial, but it would be at least in the right direction and in the longer run would induce better decisions on supply, conservation, and technological change.

More controversial is the unavoidable domestic counterpart to that decision. Imported oil looks like, burns like, and is like, domestic oil. There is no sensible way to charge people more for gasoline refined from Arabian or Venezuelan oil than for gasoline from Alaskan or Gulf States oil. Letting the consumer pay \$2 more per barrel on eight or nine million barrels of imported oil entails letting the consumer pay \$2 more per barrel for domestic oil as well. This is where the choice gets hard and the controversy bitter.

We are back at the distributive issue discussed earlier. The extra \$2 paid by the consumer for imported oil does not go to the foreign supplier; the foreign supplier has always been receiving the world price. The issue is whether domestic pro-

ducers should receive the world price for their oil, or should some kind of wellhead or other tax be imposed to keep the full price increment from being a "windfall" for domestic producers. This is the issue that was discussed at the close of the preceding chapter.

Now consider a proposal to go even further, reducing oil imports below the level that would correspond to the equalization of domestic consumer prices with world prices. Broadly speaking, there are two ways to do this: with price regulation, and without it. If prices are regulated while imports are reduced, domestic shortages will appear that require some kind of allocation or rationing, or direct measures that reduce demand (equivalent to rationing) that work outside the price system. Permanent rationing and price control are "side effects" of sufficient potential cost to weigh heavily against the benefits from reduced imports.

If price controls are eschewed, the price of oil will have to rise sufficiently to bring about the programmed reduction in demand for imports. The domestic price must rise above the world price of oil, and a duty or import fee of some kind must be added on top of the world price of oil. Domestic prices will rise not merely to the world price but to the world price plus that duty.

There are two sizeable consequences of this approach. First, the "distributive problem" emerges again. An import duty of \$2 or \$3 per barrel transfers income from oil consumers to the federal treasury where, however bitter the partisan dispute about the distribution of those proceeds, it is available for some kind of redistribution. Domestic petroleum, selling at the same price and not taxed, yields proceeds not for the federal treasury but to the producers of oil. That aggravates the distributive issue. If the domestic output is taxed like imports, the desired effect of the price increase on domestic supply will be depressed.

Furthermore, the effect on the consumer price index, and on all the wage and price decisions and agreements that are institutionally related to that index, are likely to be the same as if the price of oil increased on its own, and not as a result of incentive taxes on oil. An extra \$2 per barrel on imported and

domestic oil—a fairly moderate inhibitory tax incentive from the point of view of energy policy—would add a percentage point or two to the consumer price index; and while its impact need not be altogether intimidating, it is far from negligible.

That the choices involving direct action on oil imports are hard ones does not mean that the more indirect measures, those that might act more slowly over time, are easy ones. Whether school buildings or homes or government offices are insulated because of the high price of heating oil, or because of regulations that make it mandatory, the insulation has to be paid for. The point is not that direct action on imports will have side effects and the indirect actions will not, but that the differences among side effects of different kinds of import-conserving policies are so important that they cannot be disregarded in the evaluation of costs and benefits.

4

THE PRICE SYSTEM AND ITS LIMITS

This section recapitulates the themes and observations of the preceding sections and formulates principles that should govern policy. It will not propose specific policies. Many alternative combinations of programs could be responsive to the same needs and principles. They would differ in detail—in the way that benefits and burdens are distributed by region, by industry, or by income level; in their reliance on prices and other economic incentives; in the level of government or the agency of government that formulates or implements the programs; in the year-to-year or region-to-region flexibility with which they may be administered; in the visibility of their application and their effects, and in the awareness of consumers, workers, or property owners of their incidence.

Furthermore, policies should be consistent; the whole program should have a certain balance. Principles can conflict, and the conflict among them should not be disguised. It is in the formulation of specific policies that the compromising, the balancing, and the marginal adjusting should be done to minimize the conflict in the interest of fairness and acceptability.

The preceding chapter emphasized the uniqueness of the connection between the domestic energy economy and the world energy economy, the oil-import connection. A contrasting observation is fundamental to domestic policy. It is that the interconnections within the United States among the different fuels, the different uses of fuels, and the different users of fuels, are multifarious.

While it is not true that coal can substitute for gas in all its uses or that refineries can shift their output mix to 100 percent gasoline or home heating oil, or that we can bake waffles on coal stoves or light our dining rooms with natural gas again, it is true that there are wide margins for making inter-fuel substitutions and for substituting materials, activities, and consumer goods that differ in their demands for energy. Natural gas is simultaneously used for industrial heat, electric power and home heating, and it is easily transported hundreds of miles. Coal, oil and gas can all be used for electric power and are all used for industrial heat. Reduced gasoline consumption allows more home heating oil to be produced from the crude, alleviating the pressure on natural gas or nuclear electric power.

That is why there are so many different ways to devise an energy-policy package. It is also why energy policy is bound to be controversial. If there were but one thing to do, as there occasionally is when an electric grid is over-burdened on a summer afternoon and power cutbacks are unavoidable, there would be little to argue about except the level of risk we were willing to incur, or the investment we would make today to ease the problems tomorrow. It is because there are so many ways that energy can be saved, rerouted and allocated, its production subsidized or its use penalized; so many ways of financing the subsidies or utilizing the tax proceeds; so many ways of discriminating between homeowners and apartment dwellers, the elderly who need warm houses and the motorists who need gasoline, industries in New England or industries in the North Central states, producers of oil from old wells and explorers for new wells—that any major policies affecting this hundred billion dollar component of the GNP generate conflicts.

PERSPECTIVES IN TIME

As we scan the coming century we see a succession of loosely defined and overlapping periods that correspond to changing energy objectives.

There is an *immediate period*, less than a decade, in which limits on domestic fuel production have to be taken almost as fixed. Fuel consumption has only begun to respond to the price increases of the 1970s; and the dominant policy issue is whether consumers should continue to buy petroleum products and natural gas at prices below the world price for oil and the equivalent market value of gas. As "old wells" are depleted, the dollar value of this issue will decrease but not disappear.

Isolated from the future and from the rest of the world, this issue appears to be purely distributive. But the future is not isolated. Future production depends on decisions made in this immediate period on the basis of prices *expected* during the second decade from now. Similarly during this period we are not insulated from the rest of the world. The demand for imported oil reflects the below-market price that refiners and consumers pay. Our balance of payments reflects this subsidy. Thus what appears to be a purely distributive issue in the short run is a long-term supply issue, a long-term conservation issue, and an immediate as well as long-term balance of payments issue, because it cannot be detached from the longer future and the wider world.

A second time perspective is *from now to the end of the century*. During that time most of our energy will continue to come from oil, gas and coal. Increasingly nuclear power, now not quite 10 percent of our electricity, will replace the fossil fuels. But by the year 2000, nuclear power actually on line will be confined to the plants initiated during the coming dozen years, and even if all electricity growth were in nuclear plants from now on, the fraction so fueled by 2000 will not exceed one-quarter. Solar heating, especially space and home water heating, can be increasingly installed and even some start on solar-powered electricity may appear.

Liquid fuel from shale and other unconventional sources will entail not only further development but eventually large investments in new kinds of extracting and refining equipment, and environmental and land use problems that have hardly been investigated, much less resolved. The expected availability and prices of such fuels will have an impact on fossil fuel development in the preceding decade, but actual consumption of such fuels during the remainder of this century will be small. Coal-based gas or liquid fuel could become commercially available before the end of the century, but actual growth of a coal-based synthetic fuels' industry will begin only in the 1990s. The quantities, though noticeable, would not be a significant percentage during any appreciable part of this century. Since nuclear power produces only electricity, the demand for liquid fuels will still have to be met from petroleum.

A third period, less confidently foreseeable, might be from about the *beginning of the next century* and lasting some decades. That will be the period when world production of gas and petroleum may be absolutely declining, despite continually rising demand for energy, and costs are primarily determined by how rapidly and how economically alternative sources of energy, not in use today, can be relied on. The use of sunlight directly for electricity; liquid fuels from coal, shale, tar sands; and perhaps nuclear reactors not dependent on large quantities of uranium, will be competing. Production of liquid hydrogen and even of alcohol could be part of the mix.

Still a fourth perspective, overlapping the third, may have to be located some time in *the next century*. This would be a period in which energy decisions might have to be substantially dominated not by the costs of different kinds of fuel but by the consequences of burning them. If it turns out that the increasing use of fossil fuel jeopardizes climate and productivity, by what the carbon dioxide and other combustion products may do to the thermal properties of the earth's atmosphere or as concentrations of certain elements in air or soil are determined to be too dangerous to health, it could become globally obligatory to reduce our collective burning of fuels around the world. If that time should arrive, or should be foreseen, there will be the economic and technological prob-

lem of drastically limiting the worldwide use of fossil fuels and moving toward reliance on solar and nuclear energy. More than that, there will be a planetary political problem in getting acceptance of some scheme of self-imposed global (but not necessarily universal) rationing. That problem could make some of today's issues, like gasoline taxes or deregulation of natural gas, look easy.

THE ROLE OF THE PRICE SYSTEM

In devising energy policies what is by far the single most important principle is also the most controversial and the most misunderstood. It is that producers of fuels and consumers of fuels are guided by prices, current and prospective. If the prices consumers pay reflect the genuine economic costs of the fuels, the fuels will be used only up to the point where their costs are matched by their value to consumers. If the prices anticipated by producers reflect the value to consumers of additional energy supplies, producers can afford to expand production as long as the fuels they produce are worth more than the resources that go into their production.

For all its imperfections the market—when it is allowed to work—is the only comprehensive source of reliable signals to users, savers, and producers, of the value of the energy that, directly or indirectly, they are producing, consuming, or conserving. Market prices provide the *information* by which people can economically adjust their behavior and the *incentive* to do so. If the costs are paid by those who consume the energy, and they know it; if the savings accrue to those who respond to costs in conserving it; if earnings accrue to those who can shift energy to the consumers who will pay more because it is worth more to themselves or to their customers; and if investment in new production or new technology will be profitable when, and only when, the new oil or gas or coal or nuclear or solar energy is worth enough to somebody to cover the full cost of production; business firms, consumers, and government agencies will have their energy activities coordinated by market

prices in what is undoubtedly, though far from perfect, the most cost-effective way that can be devised.

The danger, of course, is that we will attempt to insulate ourselves from the rising costs of energy by holding prices down. In that way, we will be deceiving ourselves into believing that the costs do not have to be paid, because we do not pay them directly and openly. But if they are not paid, the energy will not be there when we need it. If the costs do not have to be paid by users, consumers need not care and cannot know what it is worth to save energy.

If an attempt is made to hold prices down while genuine costs are rising, there is the danger that "energy policy" will aggravate the problem it attempts to solve by dealing superficially with its manifestation. If the true costs are not faced we shall simply waste energy resources in consumption, deny ourselves the enlarged supplies that could be available at higher prices, and delay the technological development needed to cope with rising costs.

Opinion polls and congressional behavior indicate that nobody likes prices to go up, certainly not by means of a deliberate policy. Those who believe that there is indeed an energy problem often appear to believe that the problem is to be solved by forcibly bringing demand and supply into alignment, not by letting prices bring them into alignment. Price increases then look like the problem itself, rather than as reflections of the problem and part of the mechanism of solution.

Furthermore there is the dilemma, mentioned earlier, of the desire to redistribute the burden of increasing costs in the short run *and* the need to let expected future prices reflect estimated future costs. Not only do the public and Congress dislike price increases, but many of them can do the arithmetic and understand that a few tens of billions of dollars per year, for at least a few years, would be a net transfer to those who own or have contracted for "old oil" and "old gas". Amounts of money of that magnitude, so easily identified by who gets it, are often considered fair targets for redistribution. That was the basis for the proposed wellhead tax on old oil and the origin of the dispute about what to do with the proceeds of such a tax.

It is easy to make the case that perhaps \$15 billion per

year of crude oil revenues are available for the taking by federal tax, with little deleterious effect on the immediate supply of oil (and little net loss to oil producers if the alternative is to retain the current regulated prices). Many congressmen and the administration apparently feel that oil profits have been rendered adequate if not excessive by the political events in the Middle East in 1973, so that in fairness, the higher prices designed for their effect on demand need not benefit the owners of those operating wells. Discriminating in favor of "new oil" and against "old oil" appears to take care of the supply incentive.

But old oil was once new oil. Today's new oil may be declared old tomorrow, and tomorrow's new oil declared old the day after. The same logic by which this year's "windfall gains" can be taxed away while letting consumer prices go to a market level may be just as appealing when oil and gas prices have increased another 20 percent or 50 percent.

The market cannot be divided convincingly between "present" and "future". Its time dimension is continuous. The prices to which today's behavior is a response—the prices that provide the incentives for current decisions on future supply and new investment—are the expected prices for five, ten, or even twenty years from now. Even consumer decisions on heating systems, insulation, or gasoline mileage of the automobiles they buy, depend on the prices anticipated for five years from now. Development now of new fuel sources that may begin to come on the market ten years from now will be a response to the prices expected in the second decade hence. It is *predicted* prices, even more than current prices, that determine investment decisions.

In the best of circumstances there is uncertainty, and no guarantee, that market predictions will be close to the mark. But political predictions by producers and investors are almost certain to depress anticipated prices below what a market analysis would indicate. There is now an impressive record of regulating energy prices to keep them from rising. The National Energy Plan of 1977 proposed a wellhead tax on oil that would allow consumer prices to be based on "the real value of oil" (identified as the "world price of oil"). It proposed a perma-

ment wellhead tax on domestic oil that would keep the net price to producers equal to the 1977 world price, adjusted upward only to keep pace with inflation. That is, in that plan, prospective future oil supplies appeared destined to be worth—to those who found the supplies, developed them, and brought them into production—only what oil was worth on the world market in 1977.

The odds are therefore biased against those who would invest in new sources of energy. If market prices turn out to be unexpectedly low, the investment will be unrewarded; if prices turn out to be unexpectedly high, there is danger of price regulation or taxation. Like the income-tax treatment of gambling, you keep your losses but share your winnings with the Internal Revenue Service. If one accepts the energy projections contained in the National Energy Plan, it is not only in the event of “unexpectedly” high prices that a wellhead or other tax would drive a wedge between the “real value of oil” and the “real worth to the producer” of bringing in new supplies; it is even “expectedly” high prices whose incentive on supply is dampened by the promise of permanent price controls on oil or, equivalently, permanent taxes on it.

The same principle applies to natural gas. Even investments in coal and other energy sources will be influenced by an apparent philosophy of permanent energy price regulation that, originally applied to oil and gas, might be widened in its application.

There is no constitutional way that the government can commit itself to a hands-off policy, or even an evenhanded policy, ten or fifteen years from now. But a rapid and unconditional phasing out of price regulation could make a convincing demonstration that at least one administration and one Congress could agree on a more nearly free-market strategy. Phasing out the regulation slowly, “painlessly,” and with reservations, can be unconvincing.

There is no effective way to keep today’s policy on the treatment of old oil and old gas from casting a shadow on the future. The immediate value of holding down oil and gas prices for the consumer, or of letting them go up but recapturing the difference in a tax that can be used to provide relief in other

forms, is substantial; but it is at the cost of permanent aggravation of an energy problem that will be serious enough even with price policies that stimulate appropriate responses.

If indeed, as the President said in April 1977, the energy crisis is a great challenge, facing that challenge will mean resisting the temptation to evade the very price responses on which our future supplies will depend.

THE MISLEADING IMAGE OF THE "GAP"

This view of the future contrasts with most official analyses. We do not focus on an event expected some time in the late 1980s or early 1990s—the overtaking of world productive capacity by world demand and the emergence of a gap or shortfall.

A real gap, an observable one that actually occurs, would have to result from price control. A gap can occur if prices are controlled below market levels; but unless it is associated with an effective rationing system, there will usually be some kind of cost—time spent waiting, risks of non-delivery, barter arrangements, even bribes—that supplements the price as a moderator of demand.

Usually the "gap" is an analytical construct. It is an estimate of what production would be, and what demand would be, at some specified world price, with either prices unchanged from current levels or prices higher by some hypothetical increment. This construct is intended to illustrate the supply-demand relation of the future on the simplified assumption of unchanging prices or of prices moving in some specified and easily comprehensible path. It simplifies the picture by eliminating price. It eases estimation because much more is known, or can be guessed, about trends in economic growth and energy growth than is known or can be guessed about the response of supply or demand, and the speed of that response, to large price changes. Furthermore, because the response of demand or supply depends not only on current prices but expected future prices, the simultaneous forecasting of prices and demand

depends on methodology that is at best hard to comprehend and usually not available.

But concentrating on gaps and cross-over points is misleading, even prejudicial. It is misleading if it suggests that a gap will actually occur. It furthermore neglects to tell the decision maker the answer to the most important question, which is not the size of some hypothetical gap but how much prices will rise and when. Investors in fuel-economizing equipment, investors in oil and gas pipelines, investors in exploration for new oil and gas, investors in coal gasification or liquefaction technology, household investors in furnace equipment, insulation and solar heating panels, do not know the one thing they need to know when they are given the hypothetical constant-price gap rather than the price. Not only is the price going to be real while the gap is hypothetical; but it is the price, not the gap, that tells an investor whether it is economical to stockpile fuel in advance, to invest in equipment to conserve fuel, or to develop new fuel supplies.

There is a worse effect. By focusing on the gap rather than on the price—by not estimating the corresponding price—there is a strong implication, even if unintended, that price increases are unmentionable. If a variable as obvious and important as price is left out, the reason may be inferred to be that prices would not be allowed to rise, or should not be, and that policy should be based on eliminating the gap rather than anticipating higher costs. A presumption is communicated that a gap should be rationed away, not that a price should be adapted to.

The analysis also inhibits anticipatory action. It suggests that demand will "overtake" supply at some moment in time; and if the conclusion is drawn that prices would *then* rise sharply unless supplies were allocated or demand rationed, there is no scope for taking the anticipatory action that might advance the date of price increases but would moderate their extent.

Finally, the consequences for production and employment are misrepresented if prices are left out of the picture and the metaphor of the "gap" is relied on. A 10 percent gap suggests that 10 percent of the taps will run dry, 10 percent of the

engines will stop, and a crucial input to industry, farming and transport will simply not be available when it is needed. If instead it is proposed that fuel is going to cost more in ten years, adaptation can begin early. Nothing special then happens on that hypothetical date when, had prices been held unchanged, the crossover would have occurred and the "gap" would have begun its appearance. Most of the resiliency in an economy comes from market adjustment to changing prices. If you eliminate the changing prices from the picture, you eliminate the image of an economy in which substitution and adaptation are characteristic.

THE ROLE OF GOVERNMENT

Even if the objections to a freer market in energy are satisfactorily overcome, there is still need for energy policy, because there are many objectives that market incentives cannot accomplish. Four deserve emphasis. They are imports, environment, research and development, and the distribution of income.

IMPORTS

There are important costs of imported oil that are not borne by the importer or by the ultimate consumer of imported oil. These are: the balance of payments; the influence of the volume of imports on the world price of oil; the vulnerability to supply disruption; and the need to cooperate with other consuming countries, through the International Energy Agency and otherwise.

Balance of payments. The United States is currently spending almost a billion dollars a week on oil imports. If equivalent funds were spent by oil exporting countries (or by other countries in which the oil exporting countries spent the funds) on currently produced goods and services from the United States, the effect would not greatly differ from spending the same \$40 billion a year on an equivalent quantity of domes-

tic fuels: having counted the cost of imports as the cost of energy, there would be nothing further to concern us in the fact that \$40 billion worth of miscellaneous goods and services, produced by American labor and capital, was transformed into petroleum by the operation of world markets. But the extraordinary proceeds of oil sales by small countries, recently poor and underdeveloped, has not been matched by an ability to spend such sums in an orderly and effective way on internationally traded goods and services. Huge balances of liquid and semi-liquid assets have grown under the centralized control of a few enormously wealthy governments. Those balances may continue to grow, although not to the startling extent of the 1974-1976 period.

It is beyond this study to analyze the problem for banking and capital markets that could arise from continued increase in centrally held bank deposits and short-term government debt. There is concern, but it is not a concern that particularly affects the consumer of motor fuel, heating oil, or oil-fired electricity. The concern is not reflected in the prices that new domestic fuel supplies would bring on the market, even if those prices were released from control. The market response to concern about these accumulating liquid balances would be through the exchange value of the dollar, interest rates in this country, and the liquidity of the banking system.

Volume and price. Even a modest difference in the amount of oil imported by the United States can make a difference to the price. As pointed out earlier, the difference between eight and twelve million barrels per day—a difference equivalent to about one-tenth of internationally traded oil—could affect the price by an amount that, though not capable of reliable estimation, could be a few dollars a barrel in the 1980s. If instead of eight million barrels at \$15 we imported twelve million at \$18, the difference would be \$24 per barrel on the four million barrel difference.

The higher figure—and this \$24 cost is only to illustrate the nature of the calculation—is the cost to consumers collectively of the incremental oil. The importer calculates the cost at the market price (in our illustration, the \$18 figure). In recognizing what it is worth to American consumers to avoid

importing the extra oil, the correct cost figure is not the higher price per barrel but the still higher incremental cost that reflects the uncertain price increase on the amounts already being imported.

Vulnerability to interruption. If imported oil were a specialized commodity and consumers of it could not readily substitute domestic fuel, importers and consumers could at least be aware that they would be the targets, intended or not, of embargo, sabotage, or war in the Middle East. But if supply is interrupted, the impact, though partly regional, will be essentially national. Particular refineries may be hard-hit, but all consumers of petroleum products will suffer the attendant disruptions. No user of imported products has any reason to believe that his own vulnerability to disruption would be different if he eschewed the imported commodity in favor of domestic fuel. To the extent, therefore, that there is a risk attached to imported oil, because of its potential unreliability on short notice, and especially to the extent that the vulnerability is greater the larger the volume of oil imports, this is a special and additional costliness of imported oil that will not be measured by its market price.

There are, however, at least two ways to insure against that vulnerability. One is to treat imports as more costly, with an attendant reduction in imported quantities. The other is to carry a strategic reserve of quickly available fuel at government expense. As mentioned earlier, the announced plan is to build a federal stockpile of at least a billion barrels by 1985.

Cooperation. There are powerful reasons for cooperating with other importing countries in discouraging the growth of oil imports. One is the corollary of the price calculation given above. If the four million barrel increase in the hypothetical example were not American imports but a combined increase of which the U.S. share was two million, the expected effect on the price might be the same. To continue the illustration, we would be importing ten million barrels at \$18 rather than eight million barrels at \$15, the difference being \$60 million a day. If we could forgo the two million barrels on condition other consuming countries likewise curtail the other two million, we would save \$60 million on two million barrels, \$30 per barrel.

It is strongly in our interest to utilize our willingness to restrain imports as leverage on other countries, for reasons directly related to the dollar cost of our imports.

Another reason for cooperation centers on the role of the United States in world energy matters. As the largest oil importing country, the richest country, and of all the western developed countries the one richest in energy sources, the United States is considered responsible for leadership in managing world energy problems, world payments problems, and the economic and military security of the western world. The governing board of the International Energy Agency formulated a set of principles that included agreement to make import reduction a central goal of national energy programs. The spirit of any such agreement is likely to have more effect on other countries, the more apparent is the U.S. willingness and ability to demonstrate its own participation.

All these considerations argue for going beyond the achievement of a freer market in fuels toward additional steps to discourage consumption of oil in general and consumption of imported oil in particular. There are, however, opposing considerations that have to be weighed, and no easy conclusion emerges.

- The "side effects" mentioned at the end of the last chapter make it impossible to do as we please about oil imports in isolation from the most vexing issues of domestic regulation and price policy, or even insulated from the macroeconomics of inflation. There is no escaping the fact that any kind of policy aimed directly at oil imports means either domestic price increases, domestic price controls, domestic fuel taxes, or some combination.

- Any action directed against oil imports that is more than nominal in its impact would have to be publicly justified and preferably used in negotiation with other consuming countries in a manner that could be construed as aggressively hostile to the oil exporting countries. The diplomatic dimension might be crucial. The supply response in some of the Persian Gulf countries, and the associated price response, might not be of the kind predicated in the foregoing analysis if the program of import restriction is interpreted as a challenge to OPEC. Re-

sistance in this country to any measures that deliberately raise the price of fuels might have to be overcome by fairly vigorous statements, even overstatements, of the importance of "softening" the world oil market to keep prices from rising even further. The atmosphere would not be conducive to the most subtle diplomacy.

Two other political considerations must be mentioned. One is that the history of oil-import restrictions in the United States is full of evidence that, like so many protectionist and necessarily discriminatory controls, oil-import restrictions invariably carry a heavy load of politics and are at best divisive, at worst severely distorted from any rational national purpose. Even if it were evident that an ideally orchestrated oil-import policy could substantially reduce imports to the great economic benefit of the entire nation, prudence might suggest abstaining from the attempt, or, at least, not assuming that the political process would allow oil-import management to follow an optimum course.

Parallel with that is the likelihood that a rational program to inhibit imports would utilize import duties; sound economic principles suggest duties rather than a mixture of quantitative import licensing, price controls, "entitlements" and other direct rationing techniques. But even a 20 percent ad valorem tax would yield \$10 billion per year of revenue if levied on imports alone, twice that much if levied on domestic producers, and still more if domestic gas were treated correspondingly. Ordinarily the fact that a tax, justified on other grounds, also yields revenue would be a welcome side effect; but the recent history of proposed wellhead and gasoline taxes is a reminder that revenues of this magnitude will not be ignored while people choose tax rates guided solely by criteria of sound energy management. What began as oil-import policy may end up as revenue policy.

Thus the considerations both for and against special measures to restrict or discourage imports are powerful. The issues at stake are large. The fact that there are strong arguments both ways does not mean that they cancel out. And the considerations are so diverse in their politics, economics, and diplomacy, that it is hard to reduce them to a common measure. Adding them up and striking a balance would go beyond the purpose of

this statement; framing the issues, not resolving them, is the purpose here.

Nevertheless there may be a legitimate way out of what otherwise looks like an impasse. It is to remind ourselves that we are not yet in a position to debate how much further to go, if domestic oil and gas prices have been allowed to meet world market prices, because they have not been allowed to yet.

The first step is to discontinue subsidizing oil imports through domestic price regulation. Most of the more difficult issues arise only after we have eliminated policies that tilt in the wrong direction. Whether we then wish to pursue policies that tilt in the "right direction," taking into account the costs and dangers that would accompany those steps, is a decision that might legitimately be postponed until it is next on the agenda.

It makes sense to watch what happens to imports once the present bias in the price system has been eliminated. We know the direction of the effect; it is hard to estimate the magnitude. Phasing out the present system of import subsidies will begin to provide better evidence of what can be expected, how much more may be needed, and when it is time to consider tilting our price policy in the other direction.

In any event, the possible effect on price inflation would suggest a time-phased program.

A point made earlier can be repeated here. An estimate that the "true" incremental cost of imported oil is higher than the world market price may be an insufficient reason for proceeding to raise the price of oil above that market price; but because it is insufficient does not mean that it is incorrect. It may still be the right standard to keep in mind in judging measures that work in other ways to reduce imports. (There is an important asymmetry to keep in mind about inflation: taxing a commodity to discourage its use raises the price *index* and can trigger cost-of-living adjustments under wage contracts and statutory provisions; subsidizing alternatives to achieve the same purpose, does not.)

ENVIRONMENT

It is almost a matter of definition that the price system

does not reflect "environmental" costs, and they cannot be left to the market. If someone damages his own land without affecting drainage, silting, or erosion on others' property, kills wildlife only in his own pond, runs noisy equipment that no one else can hear or contaminates only his own water supply, he is not said to create an "environmental problem."

The problem is said to be "environmental" when the lead and the sulphur drift downwind to make somebody else sick, the oil spill washes anonymously onto a public beach, the acid drainage from an abandoned mine destroys marine life, or the burning of fuels or clearing of forests change regional or global climate. Environmental effects are the consequences that are *outside* the purview, the cost accounting, the concern or the effective responsibility of identifiable producers and consumers. They are outside the pricing system (except when damage suits are a feasible way to make them costly).

The effects on health of different fuels, or of burning them in different ways, are still little known and the market will not discover them. As they become known, those effects will show up in the market only if regulatory measures are deliberately chosen that make them show up as costs. They may show up as clean-up costs at the point of combustion, as costs of locating where damage will be less, or as the costs of cleaner mixes of fuels and combustion technologies. And they will get costed only when government authority or the legal system obliges the damages to be abated or otherwise taken into account, and only then if a way can be found to assess the relevant costs as guides to action.

There are two problems here, both relating to the way a price system works. One is keeping environmental concerns from being neglected in the marketplace. The second is to keep environmental protection from itself being as divorced from prices and costs as, in their absence, the environmental damages would be.

The environmental costs of energy are large. They will get larger. Most of them have received serious attention only in the last decade, some only in the last few years. There are chemical, epidemiological, meteorological and ecological uncertainties. The uncertainties are not going to be resolved quickly. And

some of the problems, like nuclear wastes and endangered species, not only are controversial but invite crusades.

The effect of coal combustion on human health, to take an example, is little understood. Professional opinion about it is undergoing rapid change. Whether the harm is caused by sulphur dioxide in the vicinity of the plant or by photochemically produced sulphates a thousand miles downwind is a question addressed only in the last few years. Sulphur is harmful, but how harmful may not be known to within an order of magnitude for years. Eliminating sulphur from smokestacks adds to the cost of electricity, and with current technology it produces a sludge that is an environmental problem itself. Low sulphur coal is obtainable from the western plains of Montana, Wyoming and Colorado; mining that coal entails land reclamation, scarce water, long-distance rights-of-way, and sometimes the social conflict associated with boom towns.

These are real problems. Most of the reasons why coal production cannot be indefinitely expanded at today's costs relate to environmental and other public concerns, whether it be land use, water drainage, overland transport, millions of tons of sulphur in the atmosphere, or lead and other toxic substances whose effect on health has not yet been studied. Changes in the atmosphere, the temperatures of rivers, the chemical composition of rainfall, and ultimately climate itself are involved.

These genuine environmental concerns are large and important. They will account for a large fraction of the rise in the cost of fuels as well as in the cost of burning fuels. Some of the costs are peculiar to fuel itself—acid drainage from abandoned coal mines or acid rain from sulphur emissions. And some, like power-plant siting and rights-of-way for power transmission, reflect the increasing difficulties of land use in an urban economy with a growing population.

Precisely because these effects are real and substantial, it is important to manage them with attention to the costs of environmental protection itself. Environmental protection is often treated, officially as well as popularly, as an absolute—not as an economic choice, not as a correction applied to the price system, not even as part of the cost of our energy, but as a matter of regulatory standards and prohibitions to be judged and

administered without compromise, sometimes as a kind of militant opposition to economic improvement and growth. For some purposes, especially some toxic substances, a purely regulatory approach makes sense. But for most activities relating to extraction or combustion of fuel, environmental damages have to be recognized as costs—costs of abatement to be borne if the abatement is worth the cost, or costs of damage to be borne if they are not worth abating. “Best available technology” is often the standard applied, and it is inherently a standard that cannot reflect costs and benefits and cannot reflect compromise.

People do need protection against lung and heart damage, especially the elderly poor who are most susceptible to whatever the atmosphere brings them and least able to escape it. But the elderly poor also need to be protected against winter cold, summer heat, unlighted stairways, and higher costs of living. In determining the sulphur-removal equipment that power plants must install and maintain, the cost of which must eventually be paid by consumers of electricity, we are determining how much of their budget consumers want to pay for a cleaner outdoor atmosphere compared with heat, light, and air conditioning. Saying that does not settle the issue; it only formulates it.

It is extremely difficult to estimate what those genuine environmental costs—the costs that will have to be paid or that are worth paying—of fuel and electricity will be during the next few decades. It is even more difficult to estimate how much those costs may be aggravated by failure to treat environmental protection as a legitimate economic problem and to treat it instead as a technological absolute. It is difficult to estimate the costs and delays that may accrue to obstructionist tactics, whether they are legal tactics in the courts or acts of trespass and intimidation. It seems fair to guess that misconceiving the nature of environmental problems, mismanaging the regulatory process, failing to recognize that objectives have to be compared with costs and that environmental values compete with other values, could double or more than double the environmental costs associated with energy. Policy errors of that magnitude should not be accepted as inevitable.

The environmental part of energy is divided among several federal agencies, fifty state governments, and private action

in the courts and elsewhere. The issue is not governmental intervention on behalf of the environment so much as it is the mode of intervention, the philosophy of costs and benefits, and the locus of decision.

RESEARCH AND DEVELOPMENT

Research and development, especially in new technologies that are not easily susceptible to patent protection and other proprietary capture by those who invest in the development, are generally recognized as a legitimate concern of federal policy. When discoveries can be adequately protected by patent, copyright, secrecy, or quick exploitation ahead of the competition, market principles are likely to do a good job of inducing the economically justifiable research and development to take place. But when the discoveries and the experience cannot be capitalized by the investors—when the investment generates mainly a public demonstration of feasibility (or infeasibility!), when the development is a “learning process” that people can carry away with them, or when part of the learning is the discovery of environmental concerns that, once identified, are visible to all—the results of research and development will be undervalued in the market.

This principle can apply to a broad range of initiating activity, from basic research at one end of the spectrum to exploratory development, testing, prototypes and pilot operations, demonstration plants, even pioneer operations on a commercial scale. But like the arguments for immediate restriction of imports, this argument for federal subsidy of new technology deserves a guarded response. It is easy to exaggerate the need for governmental sharing in the cost of a new exploratory production process. Compared with most technological development done at government expense, e.g., military and space technology where the government itself is the consumer, development for consumer markets is an open-ended affair.

Nevertheless, in energy technology, especially new technology for liquid fuel and gas, there are special reasons why exploration and development, even initial experiments with

commercial-scale production, can have a national economic significance beyond the criterion of profitability.

One is the importance of arriving at a reduced range of uncertainty about the nature of the energy problem itself. Just knowing whether or not some important synthetic fuels would eventually be competitive, or knowing the world oil prices at which they would become competitive, could help to avoid serious mistakes in energy planning, both private and public. Private investors only lose by investing in a plant that produces mainly the valuable information that such plants are not yet competitive and are not going to be for many years.

The same principle applies to exploration. From the point of view of a private firm exploring for new fossil fuel deposits, success consists in *finding* the deposits that exist. For formulating national energy policy, exploration often has a value in *finding out*, whether the findings are positive or not. The government's National Uranium Resource Evaluation Program (NURE) is based on this principle: it is an attempt not so much to find any uranium that exists but to get a better global estimate of how much uranium there is to be found, at different concentrations and extraction costs. In the same way there is a national interest in knowing how much natural gas and petroleum is going to be found, not only in United States territory but worldwide, because so many decisions, public and private, depend crucially on overall estimates of the likely quantities that may become available, at different extraction and distribution costs, over the coming decades. Knowing only that there is an abundance of gas, or alternatively not much, to be found, is of some help to the company that explores for gas but not nearly as much help as knowing where it is to be found. But the same information is especially helpful to investors in, say, coal gasification, just as it is helpful in deciding on an oil import policy. These decisions depend mainly on knowing what is going to be found, not where to go look for it.

In the same way, learning what the production and environmental costs of coal-based gases and liquid fuels will be, or oil from shale, can provide a crucial parameter that helps to put boundaries on the nature and magnitude of the energy problem which will face this country in the 1990s and the early years of the next century.

There are special reasons in energy why the development of a better knowledge base is of national interest. It is often as important to know that a particular technology will be environmentally unacceptable as to know that it will be acceptable, or as useful to know that a technology will not help in holding down the price of liquid fuel as to know that it will help. Private investors get no return from negative results; but bad news can be a valuable warning to others.

A powerful argument for a strong government interest in the development of new technologies for liquid fuel arises from the markets' undercosting of imports, as described earlier. It was argued above that the savings due to reduced imports could substantially exceed the nominal price per barrel. It was remarked that while that provides a strong argument in favor of import controls, there may be powerful countervailing arguments. But whatever policy one elects with respect to import controls, the higher cost is the correct one to have in mind in considering alternative energy decisions. Synthetic liquid fuels, for example, at a premium above the world price for oil, could be worth their cost if they reduce oil imports, even though consumers would not pay that price because the consumer who pays the full price gets only the nominal value, while the rest of the value accrues to the entire economy in lower oil imports and a possibly lower price of oil.

This could, of course, be a general argument for subsidized domestic production of liquid fuel. While permanent large-scale subsidization of commercial production could be objected to on a number of grounds, at least the federal cost-sharing or subsidization of the relevant research and development could properly be considered justified by the excess of the true collective cost of liquid fuels over the nominal world price of oil.

INCOME PROTECTION

When prices change incomes change. They change because earnings are affected by prices; and more generally they change because price changes have different effects on what different people can buy with their incomes. An increase in the price of coal can reflect greater earnings for coal miners or

greater earnings for companies that own mining properties; it also reduces the real income of people whose electricity costs more. If all fuels become more expensive most of us—not all of us—suffer reduced real incomes, but not all in the same proportion; some of us are old and need warmer homes; some drive longer distances to work or have more children's clothes to wash. The same is true for all prices. But when particular clusters of prices, like meat or medicine or fuel or house rents go up or down, and especially when they go up, there are identifiable effects on people of different incomes, ages, and locations. When the changes are substantial, as with fuel, there is an expected tendency for the people who are most disadvantaged to try to protect themselves through government intervention to forestall the price increases. And because fuels are comparatively standard commodities, already in most cases subject to taxation or to regulation with respect to interstate transport, and because fuel and electricity prices are directly visible to consumers, income protection becomes a politically powerful argument for price control. (Witness the periodic popularity of gasoline rationing whenever "shortages" appear or seem imminent, i.e., whenever prices appear about to go up.)

The price system, when it works well, is impersonal and indiscriminate. What it does not do, and what should never be claimed for it, is to bring about the distribution of income that we might prefer on general grounds of equity and social welfare. The price system that determines our individual wages, salaries and profits, and our individual costs of living is attuned mainly to the supply and demand for particular goods and services, and it generates the distribution of income as a hugely important byproduct. (People with greater needs can sometimes work overtime; people can raise their incomes by moving to where their own particular talents would be in greater demand; people can raise their future income by saving in response to interest rates and investment opportunities; but in determining the relative earning abilities of thirty-year olds, fifty-year olds, and seventy-year olds, the market does it the way it determines the relative prices of avocados and oranges—through supply and demand, not considerations of social welfare.)

There are, broadly, two altogether different kinds of mechanisms for changing the distribution of income or for protecting the existing distribution against change. They can be called the microeconomic and the macroeconomic. The microeconomic mechanisms change income distribution by intervening in particular markets, holding prices up (agricultural price supports, minimum wage laws) and holding prices down (natural gas, rent control) and protecting markets from competition (tariffs and non-tariff trade barriers, airline regulation and taxi medallions) and sometimes by regulating markets or providing information services to make markets work more competitively. The macroeconomic measures work on incomes directly, and in the aggregate rather than with respect to particular markets; these are income taxes, social security, welfare, and sometimes benefit programs for particular groups like veterans, the blind, or college students.

As a general approach to income transfer or income protection, there are two powerful reasons for favoring the macroeconomic approach. One is that it does not so much distort the price signals and price incentives that coordinate demand and supply. The second is that it is much more likely to protect incomes or transfer incomes in accordance with principles that might command widespread political assent. Macroeconomic programs can target the poor, the elderly poor, the very poor, the disadvantaged, the disadvantaged poor, and any other groups within the population who can be defined by reference to what makes them particularly needy or what gives them special claim. Only occasionally does a microeconomic intervention provide help to a substantial part of the target population and only to the target population: some things may be purchased only by, say, the rural elderly poor, and subsidized provision or even price control will concentrate the benefits on the target population if they are indeed the target population. Holding down the price of gasoline or heating fuel, especially if it means that some people cannot even get connected to the cheap natural gas that would be a bargain at twice the price, distributes its purported benefits over a large segment of the population in a way that is hard to calculate and that is unlikely to correspond to any acceptable criteria for income

protection and income support. The fact that the poor buy gasoline too—not all of them, especially not the very poor and the especially disadvantaged poor—does not make price controls on petroleum a program to help the poor. The poor who don't drive are likely to be as much in need of financial help as the poor who drive, and gasoline price control neither confers most of its benefits on the poor nor confers significant benefits on most of the poor.

There are special cases in which sudden price changes would have mischievous effects on particular groups that have a special claim to protection. There are cases in which the government, wisely or unwisely, made price commitments that perhaps should not be abandoned abruptly. (The control of inflation, as mentioned earlier, may occasionally demand direct action on particular prices.) The microeconomic approach to income protection therefore can often be justified as a special case. But compared with the more explicit and more effective macroeconomic route, managing and manipulating the price system to preserve or to affect the distribution of income ought to be justified in terms of special cases. Primary fuels, refinery products, and electricity have a price incidence that is spread so broadly over the population at all income levels and in all regions and at all ages, that for purposes of income protection the justified special cases should be rare.

THE ONE CERTAINTY: UNCERTAINTY

A special principle underlies any approach to energy policy—the *principle of uncertainty*. No one really knows how much undiscovered fuel there is, how quickly it will be discovered, how much it will cost to produce and what the environmental effects of consumption will be. It is not likely that uncertainties about resources and the costs of using them will be dispelled within a decade, or even two. We must design policies that admit the possibility of surprise and that weigh the relative risks of being caught sometime in the future with unanticipated good news, or unanticipated bad news.

We have similarly poor information about how the economy responds to changes in the prices of energy. Since the end of World War II there have not been alternate periods of markedly contrasting energy prices to give us "experimental data" about conservation, substitution, and the stimulus to invention and exploration. There are technological uncertainties about the cost and safety of burning different fuels for different purposes in years to come. There are grave uncertainties about the security of oil from the Persian Gulf, the Mediterranean, Southeast Asia and Latin America.

Given all the uncertainties, the wisest course is to pay special attention not only to the policies but to the policy *process*. Long-term targets may be needed for planning, but they must be susceptible to short-term revision. Buffer stocks of petroleum, for example, can allow not only a cushion against sudden shortages but an even more important cushion against decisions made in haste.

With full recognition that the market cannot respond to all of the environmental or foreign policy considerations, it remains true that for most business and consumer decisions the market, as a process, has the important virtues of flexibility and adaptability.

C. Submitted Statements

STATEMENT OF RICHARD T. ASHMAN, VICE PRESIDENT, HOLIDAY INNS, INC.

Mr. Chairman, Holiday Inns, Inc., is grateful for the opportunity to express its views on important issues which face our Nation. We commend Senator Bentsen and the Joint Economic Committee for sponsoring this conference and urge the continuation of the dialogue which has begun here today.

Holiday Inns, Inc. is the world's leading hospitality company with extensive interests in hotels, restaurants, casino gaming and transportation. Specifically, there are more than 1,750 Holiday Inn hotels operating in 54 countries. 72 hotels are currently under construction and 94 are in the planning stage. Perkins 'Cake and Steak, Inc., the Company's free standing restaurant subsidiary, owns, operates or licenses 364 restaurants in 33 states. Gaming activities are headed by Harrah's and include hotel casinos in Reno, Lake Tahoe, Las Vegas and Atlantic City. Delta Steamship Lines, Inc., a major U.S. flagship company, represents the Company's transportation interests.

With these extensive holdings, Holiday Inns, Inc. remains an integral part of the travel and tourism industry. Travel and tourism is, in fact, the third largest industry in the United States in retail sales and the largest employer in 23 states. In more than 40 states, tourism is among the top three industries in retail sales. In 1979, for example, foreign domestic travelers spent more than \$140 billion in the United States, generating more than 6.5 million jobs, \$29 billion in wage and salary income and nearly \$17 billion in Federal, state and local tax revenues.

Travel and tourism is indeed an important industry in the United States, but it faces many serious problems, especially in the area of energy. Among these energy-related issues, Holiday Inns is particularly concerned with the Federal government's efforts to control and to allocate the availability of gasoline.

The mobility of the American citizen is the very backbone of our economy and the basis of our standard of living. The automobile has been and will continue to be our primary mode of transportation, not only in the pursuit of leisure-time activities but also in the conduct of business. Research conducted by Holiday Inns shows that more than two-thirds of our guests are traveling for business-related reasons.

We are concerned for this traveling business person who is essential to every form of American business. While there is yet no substitute for liquid fuels for motor vehicle transportation, we recognize the importance of sharing equally the burden of coping with reduced and unreliable supplies of petroleum. However, we do not feel the highway motorist should bear a disproportionate share of that burden. Attempts by the Federal government to force conservation through regulatory programs have resulted in undue discrimination against the highway motorist. Conservation efforts have been focused to an overwhelming extent upon gasoline consumption and the administration has refused to distinguish between two very distinct categories of automobile users and their proportionate usage of gasoline. In fact,

the intracity motorist consumes between three and four times more gasoline than the highway-intercity motorist.

As an example of this discrimination, it is interesting to note that the 55 mile per hour national speed limit affects only highway travelers. For the business person, this limit imposes an increase in driving time in excess of 20 percent. For this motorist especially, time is money. The highway motorist must pay . . . together with the intracity motorist . . . substantially higher costs for gasoline.

To date, the administration has placed into effect programs to reduce the consumption of gasoline by the highway motorist which are clearly in excess of his or her ability to contribute to the conservation effort, and far in excess of his or her proportionate share. The Department of Energy has announced a proposed regulation that would prohibit any member of a household from driving any of its automobiles for up to three days per week. There is no question that this regulation would substantially impair the ability of a traveling business person to earn a livelihood. And in businesses which are dependent upon the mobility of their customers, this regulation would reduce sales volumes by as much as 40 percent. In either case, there would certainly be serious economic implications for the Nation as a whole. Interestingly, this type of gasoline conservation program is being considered by the Department of Energy in spite of the fact that both House of the Congress rejected such a proposal by substantial majorities. Such a program is more onerous than the closing of gasoline stations on weekends . . . a proposal which the Congress has prohibited by law.

Holiday Inns is aware that in the event of a substantial shortfall in the supply of petroleum, some method and degree of regulation may be necessary. To cope with such a situation, the Administration has "placed on the shelf" a coupon rationing plan. This rationing plan causes us concern for the following reasons:

The triggering mechanism is imprecise and unpredictable.

Once triggered, the plan will require at least 12 months to develop and at least 90 days to implement.

A 20 percent shortfall will immediately escalate into a 30 percent reduction in availability of gasoline.

A \$464 million mobilization cost and a \$475 million quarterly operating cost is estimated . . . conservatively.

For the first rationing quarter, somewhere between 14 and 28 million individuals might fail to receive allotments to which they are entitled.

Increased price has been proved and is acknowledged to be the most effective means of reducing consumption, therefore, we believe an unregulated free market system of balancing the supply and demand of motor vehicle fuels would serve all segments of our society best. If such a system proves to be inadequate . . . as may occur in the event of a substantial shortfall . . . we suggest the use of a rationing plan based upon price with some taxation to return to the economy any disproportionate escalation in prices. Such a plan could utilize administrative systems currently in place and would therefore require less time and money for implementation.

Although a single regulation may seem harmless or innocuous, the cumulative effect of regulation on any one segment of American society can have devastating effects. No single regulation should be considered in isolation from the whole body of Federal regulations.

In summary, Holiday Inns recommends:

A national energy policy which involves both production and conservation.

That the Congress and the Administration differentiate between the intercity and the intracity motorist in terms of gasoline availability, regulation, allocation and conservation.

That the Congress utilize a unregulated free market system of supply and demand to insure the reliable availability of motor vehicle fuels.

That any rationing plan (when necessary) be based upon price with some mechanism for taxation to return to the economy any disproportionate increase in prices.

That the cumulative affect of laws and regulations be carefully considered so that the one segment of our society is not unfairly burdened or injured.

On behalf of Holiday Inns, Inc. I thank you for the opportunity to present our views. We welcome a continued interchange and an opportunity to participate in the development of legislation which may affect our industry, our nation and our future.

STATEMENT OF DURWOOD CHALKER, CHAIRMAN, CENTRAL & SOUTH WEST CORP.

Of all the problems facing our nation, none is more pervasive than the problem of energy—both as to supply and price. It impacts the lives of every American and is perhaps the major question mark of our future security and prosperity.

The magnitude of that problem is dramatized by the current estimate that we will consume more energy in this country during the next 20 years than we have used totally since the American Revolution.

Within the overall problem of energy, nothing is more compelling than the question of whether this nation exercises fully the option of nuclear power in its future energy mix.

In the judgment of my company and most of the other utility executives who share my kind of responsibility to consumers, it is imperative that the new Administration and the Congress reaffirm a vigorous commitment to nuclear power in America. The alternative is an absolute certainty of ever-soaring energy prices and the probability of serious energy shortages by the late 1980s or early 1990s.

Seven long years after the United States was first faced with the stark reality of dependence on OPEC for too much of our energy needs, we still import almost half our daily energy needs. Assuming the maximum conservation efforts and increased use of coal, there simply is no hope of ending that dependence without massive use of nuclear power.

The electric utilities of the country saw the handwriting on the wall more than a decade ago, long before the first OPEC embargo.

As an industry which consumes enormous quantities of energy, we saw both rising demand and declining supply of traditional fuel supplies of oil and gas. As a consequence, many utilities made long-range plans to diversify their energy mix through increased use of coal and nuclear power.

Anticipating what was to happen to conventional fuel supplies, our Central and South West System by 1970 had committed to the utilization of nuclear power. We are majority owners of the Black Fox Project outside Tulsa, Okla., and a part owner of the South Texas Nuclear Project near Bay City, Tex. Both of these projects represent critical elements in our plans to meet future energy needs of our consumers.

The urgency of having nuclear power as part of our own system's future resources is typical of the industry throughout the country. Indeed, other regions, not blessed with supplies of oil and gas resources, are far more dependent on nuclear power. Four states already depend on nuclear power for half or more of their electric power generation. (Vermont 78 percent, Maine 60 percent, Connecticut 53 percent and Nebraska 50 percent.) The entire New England region is today dependent on nuclear for 34 percent of its generation fuel. Nationally, nuclear now provides about 13 percent of our energy needs. That total could rise to about 30 percent by the year 2000 if we get plants in planning stages and those now under construction completed and in operation.

Vital as nuclear power is to the American consumer, all of us in the utility industry share a continuing frustration over the delays in fully implementing this important energy option.

Let me make it clear that the utility industry fully supports every reasonable action to assure the safety of nuclear power. Certainly none has a greater stake in that safety than those of us who deliver that energy to the consumer.

But the fact is that we who pioneered nuclear power have become paralyzed by its critics that it now takes twice as long to build a nuclear power plant in the United States as it does in Europe.

The story is quite different elsewhere in the world. By 1982, nuclear power will supply 55 percent of France's energy needs. It has a commitment of \$8 billion annually to its breeder reactor program. The British, after examining TMI, decided to accelerate their nuclear power program. Even the Soviet bloc hopes to derive 25 percent of its energy needs from nuclear power by 1990. Closer by, our neighboring Mexico has plans for 20 nuclear power plants.

How ironic it is that the technological giant of the world finds itself falling behind in the energy production it invented. We watch while month after month and year after year slide by, piling delay on top of delay, based largely on bureaucratic vacillation and uncertainty.

We submit that for too long the federal government has been an instrument of uncertainty and obstruction in the development of nuclear power, rather than an instrument of acceleration and encouragement. Obstructionists, whether in or out of government, ignore the central fact that delay only costs the consumer and places our total energy position in greater peril. Their rhetoric of doubt

and fear obscure reality that of all sources of fuel available for electric power generation, nuclear offers the least expensive alternative known to us, as well as the one with the least impact on the environment.

Clearly, if the United States is to avoid energy shortages and further vulnerability to the supply and soaring cost of energy from the OPEC nations, we cannot have further vacillation in this critical area.

We therefore urge the new Administration and the Congress to embark on an enlightened new policy affirmation of the broader use of nuclear power in America. We suggest that the policy be reflected in five major actions:

(1) The immediate articulation by the new Administration of its support for nuclear power and the manifestation of that support by the Reagan transition team in its interface with the Nuclear Regulatory Commission and the industry.

(2) The crash mobilization of all of the nuclear expertise in the world as a continuing resource pool to the Reagan transition team and to the Nuclear Regulatory Commission.

(3) Appointment of a blue ribbon panel of experts to evaluate all existing rules and regulations of the NRC with a view of separating safety-related regulations from nonsafety regulations, and advocate sweeping revision, simplification and outright suspension of the latter where feasible.

(4) Formulation of a request to Congress to appropriate whatever funds are required to staff the NRC with qualified but unbiased expertise to assure the safety of nuclear powerplants, but at the same time dramatically accelerate the process of permitting, constructing and licensing of nuclear powerplants.

(5) Acceleration of development of the breeder reactor, which not only promises the ultimate in plentiful energy at relatively low cost, but also would facilitate the disposal of nuclear waste. At the same time, the breeder reactor would multiply many times over the effectiveness of our total uranium resources.

I believe the actions outlined would produce significant results within a short time. They not only would provide more reasonably priced energy in a shorter time, but at the same time would signal the world that America is determined to take back control of its own energy destiny, and thus enhance its economic future and long-range security.

I want to express my appreciation to Chairman Bentsen and the Joint Economic Committee for its sponsorship in this meaningful forum, along with our gratitude for inviting the Central and South West System to be a participant.

STATEMENT OF MICHAEL D. DINGMAN, CHAIRMAN, WHEELABRATOR-FRYE, INC.

Let the record show I am an advocate of free enterprise, but that I am also a realist. A pure form of free enterprise may have existed sometime in the distant past, but in my memory this country has always had a mixed economy. The recipe for the mix is what we seem to argue about.

My company, which employs nearly 40,000 people, is a world leader in the engineering of, and the development of process technology for, energy plants, environmental systems and other industrial equipment. Being in businesses like ours makes us pragmatists. We work with all kind of customers, and all kinds of governments. We often buck long odds.

A case in point is our M. W. Kellogg Co. In 1942, operating through a subsidiary called Kellex and using American technology, Kellogg took on the design of the Federal Government's massive K-25 plant at Oak Ridge for the gaseous separation of Uranium-235. At the outset, Kellogg said the odds were 1,000 to 1 against the project's success. What it achieved was a historic engineering feat.

Kellogg began its research in synthetic fuels in the midthirties. In the early fifties, again using American technology, Kellogg developed, engineered and built SASOL I in South Africa, the world's first major plant to produce oil, gasoline and other liquids from coal. SASOL has been in continuous operation since 1955, and it has become the symbol of that country's drive for energy independence.

In 1972, we began designing a 1,500-ton-per-day plant to convert garbage into energy, creating a new source of energy. The plant, which we built with our own money and other private capital, was completed in 1975. It is the largest and most successful refuse-conversion system in the United States, serving an estimated 800,000 people in Greater Boston. It also supplies a nearby General Electric Company manufacturing plant with half its energy, thereby displacing imported oil.

Also in 1972, for the Office of Coal Research, we began designing a 50-ton-per-day pilot plant to produce a coal-derived synthetic fuel called solvent refined coal, or SRC. We worked in cooperation with a Gulf Oil Corp. subsidiary. SRC is an environmentally superior method of using coal. The Fort Lewis, Washington, pilot plant demonstrated that it was possible to remove sulfur and ash from dirty, high-sulfur coal at a significantly higher level of production than had been previously achieved. The pilot plant, in operation since 1975, is a major building block of the nation's synthetic-fuels program.

In partnership with Air Products and Chemicals, Inc., we were awarded the contract to design, build and operate the SRC-I demonstration project at Newman, Kentucky. Work on the project is under way. It is being financed by the Federal Government, the Commonwealth of Kentucky and the partners. The plant will convert 6,000 tons of raw coal per day into the energy equivalent of 20,000 barrels of oil. We plan to make it a commercial-scale operation producing 100,000 barrels of oil equivalents per day by 1990.

Most of these activities will continue to flourish despite the level of federal spending. But synfuels development is still an embryonic industry, too fragile to stand alone.

I ask you, therefore, to treat all responsibly managed synfuels projects as "endangered species" that need to be protected, not gunned down. Furthermore, these projects should be accelerated for the good of the country. Delays cost money and, more important, they jeopardize our national security. Remember that in our society indecision means that nothing happens. For too long, the synfuels program was gripped by the inaction born of indecision.

So I urge you not to eliminate the Department of Energy or the Synthetic Fuels Corporation unless, or until, we can devise better alternatives. These agencies may have their problems, but they are far better than nothing at all.

We also need expedited and final interpretation of environmental regulations and statutes so we can get on with the job. We are 100 percent in favor of environmental impact statements. But we are not in favor of giving the Indiana bat, the creature that is stalling our EIS in Kentucky, as much time in the limelight as the snail darter received. Such outrageous delays result in the loss of valuable time that can never be recovered.

We must also foster the growth of domestic suppliers of synfuel equipment so we don't have to buy such essentials as reactors and slurry heaters from abroad. What's the use of achieving energy independence if we become dependent on foreign suppliers for our equipment?

At last, a national consensus supporting synfuels has been achieved. Most of the mechanisms to implement it are in place. Progress has been made, but it's only the beginning. Making the wrong turn now will take us down the dismal road of indecision and inaction, ignoring the valuable lessons of nearly a half century of modest but promising development.

STATEMENT OF JOSEPH P. DOWNER, VICE CHAIRMAN,
ATLANTIC RICHFIELD Co.

UNEMPLOYMENT

Major issues

Current high unemployment rate.

Regional mismatch of labor pools and employment opportunities.

Disparities between labor's skills and employers' needs.

Post-recovery high unemployment.

Discussion

The current high unemployment rates are due largely to the business cycle. Although the economy seems to be recovering, recovery will be gradual with the demand for jobs growing more slowly than the supply of labor. Unemployment is expected to continue rising until the middle of 1981 when the economy is forecast to be stimulated by personal and corporate tax cuts. The recovery, however, will not bring the unemployment rate down to the 4-percent "full employment" rate of the mid-1960's; this noninflationary rate of unemployment has now increased to the 5.0-5.5 percent range. Higher labor force participation rates for women and the greater numbers of younger workers seeking jobs have raised the base unemployment rate because both groups have below-average work skills and job tenure. In addition, the economy has become more sensitive to tight labor markets with demand-pull pressures on wage rates now being felt at earlier stages in the recovery phase. The number of new labor force entrants will drop over the next few years because of the changing age distribution of the population and the female unemployment rate will decline with an increase in women's work skills and greater career orientation,

while the heightened sensitivity to demand-pull pressures will fall only gradually. The post-recovery unemployment problem will be compounded by the reindustrialization process which inevitably will lead to a shift in the profile of job skills and shortages of others. Regional differences in unemployment are also likely to increase due to growing industries often locating in the sun belt while many of the declining industries are located in the colder regions.

Recommendation

High unemployment rates represent a real cost to our country in terms of the human suffering they represent and the output of goods and services foregone. Nevertheless, attempts to artificially limit unemployment by requiring long lead-times on closure notices or sustaining jobs by subsidizing declining industries will only spread the burden through the society via higher taxes and reduced real income growth, while preventing the marketplace adjustments integral to solving the problem. The government's role in reducing unemployment should be to create a climate conducive to sustained economic growth, easing the hardship of unemployment by continued unemployment insurance compensation programs, reducing barriers to employment growth through lower minimum wages for teenagers, and sponsoring job retraining programs.

INFLATION

Major issues

- Supply shortages.
- Cost-push factors.
- Monetary and fiscal policies.
- Synergism.
- Pension policy.

Discussion

Agricultural products and energy supplies are the two main shortages contributing to the current high rate of price increases. Poor climatic conditions caused a shortfall in the 1980 crops that compounds the inflationary impacts of the hog and cattle cycles. Energy is adding to inflation through the pass through of previous world oil price increases into the rest of the economy and the necessary decontrol of domestic oil and natural gas prices. Cost-push factors include the increased expense of doing business caused by government regulations and environmental controls, rising employer social security taxes, and declining labor productivity. The large federal budget deficits caused by fiscal policies have not been offset by appropriately tight monetary measures thereby stimulating demand-pull inflation. The sustained high rates of inflation caused by past and current shortages, cost-push factors, and inappropriate monetary and fiscal policies have created a perverse synergism that has made high inflation somewhat self-perpetuating through buy-now consumer psychology, the indexation of wages and contract prices, and disincentives to both savings and investment through the income tax which treats inflation's impact on asset values as capital gains and provides corporations with inadequate cash flow to replace depreciating plant and equipment.

Recommendation

The most important initiatives the new Administration could take would be the gradual reduction in the federal deficit and the encouragement of the Federal Reserve to dampen growth in money supply. This would cause a slow yet acceptable decline in unemployment while dampening inflation through lowered demand-pull pressures and declining inflationary expectations. Less significant, but still important, would be the alleviation of cost-push pressures by curbing government requirements on businesses without sacrificing the important social and environmental programs. It took a decade and a half for the trend rate of inflation to rise to its current 10 percent level and will take several years to reduce inflation to an acceptable rate. There are no quick solutions. Attempts to rapidly cut inflation through monetary and fiscal policies would raise the unemployment rate to unacceptably high levels. Direct government control of prices works only for brief periods, masks rather than solves the problem, and inevitably leads to a surge in inflation when the controls are removed.

Occasional supply side shocks are probably unavoidable. A good 1981 crop yield would offset some of the inflationary impact of this summer's drought, while the stimulus to conservation and alternative energy sources provided by energy price decontrol would help minimize our dependence on unstable foreign energy supplies. Government response to supply side shocks should be tempered by the long-term impact on inflation.

INFLATION—PENSION POLICY

Discussion

A staff study on social security and pensions was released by the Joint Economic Committee recently. It was prepared as part of the Special Study on Economic Change. This study confirmed our view that control of pension assets and problems associated with retirement income may be major issues in the 1980's and relate directly to the broader issues of inflation, capital formation and reindustrialization.

Assets of private pension plans in 1978 amounted to over \$321 billion. These assets represented about 27 percent of GNP, or more than double their percentage of GNP in 1950. By 1985—if assets grow at a 4 percent compound rate—the total value of these stocks, bonds, real estate and other investments will amount to \$422 billion.

Federal civilian retirement systems in 1978 had accumulated assets of \$57.7 billion which are invested in government securities.

State and local government pension systems in 1978 had about \$142.6 billion in assets, largely invested in private securities.

If assets grow at a 4 percent compound rate, the total will be \$187.7 billion in 1985.

Today, there are about three workers paying taxes into the Social Security system for every person who is drawing benefits from it; by 2025, the ratio of contributors to beneficiaries will be two to one.

The Social Security system now is faced with both an immediate funding problem and the possibility of a long-run funding problem. Costs of indexed pension benefits—benefits that rise with inflation—have increased rapidly due to inflation, and will continue to soar as

the population ages. Policymakers and legislators must consider the future cost implication. In addition, an examination of possible disincentives to productivity such as mandatory retirement age or limit on retirement earnings should be productive.

Private and some public pension plans play an important role in capital formation, since the assets of their pension funds provide an enormous pool for investment. Social Security, on the other hand, builds up no capital stock, since it is funded on a pay-as-you-go basis, and therefore provides no assets for investment. Moreover, there is some evidence to suggest that the expectation of Social Security benefits tends to reduce the incentive for private saving. Since this private saving by millions of individuals would have been available to finance investment, the result is a smaller capital stock which means lower productive capacity, lower output, and lower living standards.

One criticism of the private pension system is that a significant number of individual's do not receive benefits either because they are not covered by a plan or because they fail to meet the plan's vesting provisions. Most private plans require 10 years of participation before accrued benefits vest. With 10-year vesting, a major issue is "portability"—the ability to transfer accumulated pension rights when changing jobs. The President's Commission on Pension Policy which is now studying the problem seems likely to recommend immediate vesting in private pension plans and establishing a mechanism to provide portability.

Recommendation

The provisions of private pension plans are usually developed through internal labor negotiations. The result is an agreed balance between cost and benefits. Mandatory reduction of the vesting period could result, however, in reduced benefits and/or fewer plans offered. It is generally recognized that the Employee Retirement Income Security Act (ERISA) was largely responsible for termination of over 24,000 retirement plans. Thus, even though apparently needed, ERISA had a down side.

On a more positive note, perhaps consideration should be given to expansion of Keogh plan concepts in a way that encourages individuals to save towards retirement individually. Elimination of taxes on interest and deduction from taxable income contributions to retirement accounts would be two steps which would add to capital formation as well as providing additional retirement capability.

ENERGY

Major issues

- Domestic oil and natural gas pricing.
- U.S. energy emergency policy.
- Coal, nuclear and alternative energy sources.
- Energy conservation.
- Strategic petroleum reserves.
- Environmental.

Domestic oil and natural gas pricing

Discussion

Oil price and allocation regulations.—Current oil price controls expire September 30, 1981, and take with them allocation controls, crude

oil entitlements, and the buy/sell program. The return to world market prices should allow our economy to adjust both production and consumption. It should also allow alternative fuels to compete with oil. As prices rise in the future, alternatives also become more attractive. President-elect Reagan will have the power to decontrol oil prices before the statutory deadline if he considers it desirable.

Natural gas pricing.—Prices for certain defined categories of natural gas (intra-state, new interstate, high cost supplies, and others) are allowed to increase each month in a phased decontrol program. The Natural Gas Policy Act of 1978 provides for decontrol of these prices in 1985 (about one half of total production). Phased decontrol allows prices to increase from an April 1977 price of \$1.77 per MCF at the rate of inflation plus 4 percent per month. The current price for new gas is \$2.58 per MCF. This phased decontrol was predicated on allowing gas prices to reach parity with oil in 1985. However, oil prices have risen much more than expected with the result that a substantial price gap now seems inevitable.

Current perceptions of natural gas producibility indicate an adequate supply for the next several years even with prices below oil parity. Fuel use act restrictions on use of natural gas in boilers or other major fuel burning installations tend to depress demand.

Recommendation

The following positive actions should be seriously considered:

- Accelerated decontrol of oil, ahead of the October 1 statutory date;
- Revisions to the Natural Gas Policy Act to increase the rate at which prices are allowed to rise so that parity with oil prices can be achieved by 1985; and
- Changes in the Fuel Use Act that would allow the use of natural gas in boilers, assuming price controls are removed.

U.S. emergency energy policy

Discussion

At present, a mandatory coupon rationing system has been signed into law which the President could trigger in the event of a 20 percent U.S. oil shortfall. For smaller shortfalls we must rely on the same basic allocation regulations that were in effect during the gasoline lines of 1979. It is critical that the United States have in place an effective, easily deployable, straightforward mechanism for managing emergency oil shortfalls. Recent discussion of alternative possibilities has included allowing market forces to work (either alone, or in combination with an excise tax or additional windfall profits tax), mandatory allocation controls and the extension of gasoline rationing to cover smaller shortfalls. These issues are currently being explored within Atlantic Richfield, the National Petroleum Council and DOE. A recent Aspen Institute study suggested serious consideration be given to relying on market forces. The new Administration should quickly focus on this issue because of present Middle East uncertainties and the high economic and human costs in not being prepared.

Recommendation

Development of effective U.S. emergency energy policies should be given high priority, and full consideration should be given to relying on market forces to handle crude and product allocation.

*Coal and alternative energy sources**Discussion and recommendation*

The United States must effectively utilize the range of economic energy sources available to it.

The United States has abundant coal resources and at the present time coal, even with the costs of meeting current environmental standards, is competitive with oil as a boiler fuel in electric utility generation. We need to streamline environmental and regulatory processes that hinder coal utilization. This includes carefully reviewing current air quality standards to determine more appropriate guidelines and allowing industry flexibility in meeting those standards in the least-cost way, and providing a proper climate for the market developing of necessary port facilities to support the growing potential for U.S. coal exports.

Perhaps the greatest incentive that can be provided to alternative energy sources is oil and natural gas price decontrol. By allowing domestic oil and gas prices to rise, alternative energy sources become relatively less costly to consume and produce.

A Synthetic Fuels Corporation has been established and funded with \$20 billion for the next four years with an option of an additional \$68 billion. It has been given targets of 500,000 barrels per day of oil equivalent synthetic fuels production by 1987 and 2 million barrels per day by 1992. The focus of the corporation should be on research, development, and demonstration of cost-effective fuel technologies, rather than on subsidizing their commercialization, as long as their prices do not reflect market price levels for equivalent alternative fuels or conservation. While the operations of the Synthetic Fuels Corporation should be directed at providing the greatest near term gains, longer range alternatives, such as solar, should not be neglected.

*Energy conservation**Discussion and recommendation*

The present system of energy price controls and regulations encourages excessive domestic energy consumption. Allowing domestic prices to rise will increase energy conservation incentives, but it will still take time for the economy to fully adjust to the current level of world oil prices. Beyond decontrol, some government involvement in energy conservation could be most appropriate.

Energy conservation opportunities now available are largely based on increased efficiency of energy use and require capital investment. Government could fund energy conservation R&D technologies as well as provide increased energy cost information (and possibly subsidies) to the energy consumer to assist in making his energy use as efficient as possible. For example, the typical residential consumer demands energy services in kilowatts of electricity or therms of natural gas. However, he has inadequate information on the real cost (energy plus capital cost) of various energy consumption minimization strategies, including different fuels, different insulation and weatherization. The justification for installing a more efficient furnace or other fuel saving equipment, such as thermal solar, is often inadequate for the single consumer at market interest rates, but perhaps the greater national

interest warrants tax and/or other assistance to make such energy conversions. Although the industrial sector has responded to energy price increases and achieved significant energy conservation gains, further gains still seem attainable.

Strategic petroleum reserve

Discussion

The Energy Policy and Conservation Act of 1975 (EPCA) created a Strategic Petroleum Reserve (SPR) in order to lessen U.S. vulnerability to the effects of a severe petroleum supply interruption. President Carter called for the entire 1 billion barrel reserve to be completed by 1985, the plans for which were accepted by the Congress on June 13, 1978.

The SPR has encountered numerous technical and political setbacks, including the 1979 Iranian crisis, and the 1985 target will not be reached if present implementation continues. As a reaffirmation of Congressional intent, the Energy Security Act of 1980 (ESA), signed into law June 30, 1980, mandates resumption of SPR filling at an average rate of 100,000 barrels per day as a condition for continued sale of oil produced from the Naval Petroleum Reserve from October 1980 to September 1981 and each fiscal year thereafter until the 1 billion barrel target is achieved. ESA also requires use of the entitlements program to subsidize the cost of acquiring oil for the SPR.

At the 100,000 barrel per day fill rate, nearly 30 years would be required to achieve the 1 billion barrel target. Current discussions in the Senate consider increasing the fill rate to 300,000 barrels per day so that the target could be achieved by the end of this decade.

Recommendation

Constructive efforts should be made to provide the nation with a strategic petroleum reserve to be used only in a bona fide emergency. The reserve should be filled with domestically produced crude oil at the maximum rate possible with political impunity internationally.

Energy—Environment

Discussion

While it is widely acknowledged that environmental laws and regulations have adversely affected U.S. energy development, industry has had great difficulty in documenting that effect in detail. Mandated 1981 reauthorization of the Clean Air Act, however, has focused efforts for regulatory and statutory reform, notably in relation to prospective energy and mineral resource development.

Three issues illustrate the counterproductive nature of current statutes and regulations:

- (1) All stationary sources that burn coal are required to reduce SO₂ emissions by a given percentage. This requirement effectively forces installation of scrubbers on all coal-fired boilers, regardless of the actual sulfur content of the coal used and encourages use of high-sulfur coal in preference to the higher priced low-sulfur coal. In fact, the requirement was instituted to protect high-sulfur coal producers in the East against competition from low-sulfur coal from the West.

- (2) Visibility regulations have been issued that would create "buffer zones" around so-called pristine areas and scenic vistas, effectively prohibiting energy and mineral resource development well beyond the actual land area designated as pristine. These "buffer zones" contradict actual statutory language of the Clean Air Act.
- (3) The stringent prevention of significant deterioration air quality standards (PSD) applied to pristine areas effectively prohibit energy and mineral resource development within, or immediately adjacent to, those areas. As "wilderness" designations of public lands proliferate, it is not unlikely that corresponding land management under PSD regulations would forestall energy and mineral resource development in the last U.S. frontier: public lands, particularly in Alaska.

Recommendation

SO₂ percentage reduction standards should be replaced by a single SO₂ emission standard, allowing the user to determine if economics and efficiency favor use of low-sulfur coal or installation of scrubbers on coal-fired boilers. "Buffer zones" should be eliminated from visibility regulation and the conceptual basis for visibility regulation should be re-examined. PSD designations for pristine areas should include economic factors, and variances for such designations should be available to facilitate energy and mineral development.

It is hoped that such constructive, reasoned reform of the Clean Air Act will serve as a model for overall reform of environmental statutes and regulation, permitting economic growth to coexist with environmental and public health protection.

Unfortunately, environmental protection has been cast in unduly rigid specifications, which have produced burgeoning economic problems for industry. Projects, otherwise viable, have been "chilled" or their costs inflated substantially by interminable delays in the permitting process. If reforms were to be instituted that set environmental performance standards for industry, and allowed industry innovation and flexibility in meeting those standards on a least cost basis, the economy and the environment of the U.S. would both be well served.

PRODUCTIVITY

Major issues

Structural changes.

Capital supply.

Government regulation.

Discussion

Some of the productivity slowdown has been due to structural changes such as the large number of unskilled new entrants into the labor force and the shift in the composition of the economy's output away from the labor efficient manufacturing sector to lower productivity government and service sectors. Additional decline has been caused by a fall in the capital investment growth in part due to the heightened uncertainty created by an unstable economy and unpredictable government policies as well as the wedge between the cash flow from depreciation charges and the actual cost of replacing the

depreciating assets. Productivity has been slowed further by the need to increase the number of employees in order to meet government reporting and other requirements as well as by the need to adopt less efficient production processes in order to meet environment and safety requirements.

Recommendation

The ongoing change in the age distribution of the population will soon begin to work in favor of increased productivity because of the maturation of the labor force. The shift in consumption towards services will continue to dampen the rate of growth and productivity, although the encouragement of investment would stimulate spending on labor-saving techniques in service industries. Government should assist productivity growth by stimulating plant and equipment investment, and by offsetting the impact of the inflation/depreciation wedge via accelerated depreciation and investment tax credits. Minimizing government involvement in business and changing government safety and environmental regulations towards performance criteria, rather than requiring specific processes, would remove some of the drag on productivity growth.

INTERNATIONAL ECONOMIC PROBLEMS

Major issues

U.S.S.R.

U.S. export policy.

Non-oil LDC debt and North-South issues.

U.S.S.R.

Discussion

The U.S.S.R. is presently faced with serious internal economic difficulties, not only in productivity and innovation but in key areas such as food, crude oil production and raw materials supplies. During the next 5-10 years it will also be going through a period of leadership change at a time when the United States will be at a conventional military disadvantage. These strains will provide both the opportunity and motivation for the U.S.S.R. to be a greater negative factor on the world economic, energy and political scene.

Recommendation

A comprehensive United States policy toward the U.S.S.R. needs to be developed which must include military, economic and energy aspects. For example, there are many who believe that if United States oil producing technologies were made readily available to the U.S.S.R., its oil production would not rapidly decline between now and the mid-1980's as the CIA has predicted. Thus, politics aside, from an energy standpoint, a U.S. strategy which provides such technical assistance would increase world oil supplies and relieve otherwise increasing pressures on the world oil market. Similarly, the context of an effective détente additional agricultural exports and technical assistance to increase productivity in the non-military sectors of the Soviet economy could be considered.

*U.S. export policy**Discussion*

The U.S. government has not created a favorable climate for U.S. exports, nor has it helped to directly encourage those exports—as many of our trading partners already do.

Recommendation

To assist in obtaining a more favorable trade balance, thereby strengthening the dollar and removing some domestic inflationary pressures, the United States should carefully review the export policies of our trading partners and develop a comparably effective one to support our own companies abroad. Private industry has an equally important role to play in actively developing export markets. U.S. export policy should consider pressures toward removing non-tariff barriers of our trading partners, appropriate tax incentives (within the context of GATT), improved information for U.S. companies on foreign markets, and better utilization of the State and Commerce Departments to improve our market access.

*Non-oil LDC debt and North-South issues**Discussion and recommendation*

The debt burden of the non-oil LDC's is increasing significantly because of higher oil prices which increase their fuel import costs, and the resulting world recession which reduces demand for their exports. The gross commercial borrowing requirements of 23 major non-oil LDC's is estimated by Morgan Guaranty Trust Co. to increase to \$45 billion in 1981 from \$37 billion in 1980 and \$32 billion in 1979. The debt problem is highly country-specific (Brazil alone will account for about half of the projected \$45 billion of 1981 borrowing requirements of the 12 major non-oil LDC's). Others in this group of 12 include Argentina, Bolivia, Chile, Columbia, India, Korea, Philippines, Taiwan, Thailand, Turkey, Trinidad and Tobago. Though there is concern in some quarters of a possible major bank default, this need not happen if banks and governments are watchful of LDC debt servicing abilities and individual bank's risk exposure.

The "North-South" dialogue has not made much progress since the 1976-77 Conference on Economic Cooperation. It has slowly proceeded through United Nations and in areas of the World Bank and International Monetary Fund. With OPEC countries making increasing aid contributions to non-oil LDC's there may be growing pressures on the United States and other developed countries to increase their aid as well. Presently, this is a low priority issue, though it is important to assist in energy development in the non-oil LDC's to increase their own energy self-sufficiency and reduced pressure on OPEC oil exports. The ongoing programs in the World Bank to make lending available to non-oil LDC's for energy development purposes should be maintained.



SPECIAL REPORT

John G. Winger

Financing U.S. petroleum supply Need vs. reality

IN this time of turbulence in world oil supply and threatened acute shortages in the decade ahead, the Journal sees no topic more crucial to the energy future and economic wellbeing of the U.S. than the title of this special API Report. We've devoted the entire report to it. To write it, we chose the dean of American oil economists, a man who has spent his entire professional career in study and analysis of petroleum-industry capital expenditures and financial needs.

He is John G. Winger (photo above), who retired in January of this year as vice-president and senior energy economist of Chase Bank, New York City. Winger, previously employed by a major oil company, joined Chase Bank in 1950. He has been studying, writing, and speaking on energy economics ever since. Now living in Durham, N.C., he continues to speak, write, and consult in this field.

Reprinted from the November 10, 1980 edition of Oil & Gas Journal



Financing U.S. petroleum supply Need vs. reality

A REVIEW of the past quarter century reveals an incredible and appalling record in respect to energy matters in the U.S.

Advance signs of a developing shortage of domestic oil and natural gas appeared as long ago as 1954. And the root cause was obvious to anyone interested enough to take note. Yet, in all that time, despite a progressively worsening shortfall, the federal government consistently took actions that inhibited rather than facilitated the development of additional supplies.

The record leaves no doubt that the government's failure to act more constructively is the consequence of both partisan politics and economic ignorance. And, unless flaws in the nation's political system can be corrected, there is no truly meaningful basis for thinking petroleum self-sufficiency will improve.

There were no obvious reasons back in 1954 for believing the nation lacked additional petroleum resources remaining to be found and developed. But it was quite clear that, as a consequence of recent political actions, the petroleum industry would be unable to generate investment funds sufficient to finance a continuing fully adequate search for new reserves of oil and natural gas.

It is an elementary economic fact that the amount of petroleum eventually discovered is determined by the size of the cumulative investment devoted to the search.

That economic principle applies, of course, regardless of whether the financial resources are utilized by the petroleum industry or by the government itself. And it applies also to all other forms of energy. Indeed, all commodities are similarly affected. Underinvestment, if uncorrected, will eventually lead to a shortage of anything. It is that simple.

The period since World War II provides much evidence of the relationship between the amount of oil and gas found and the investment applied to the search. And a step-by-step review of that time frame may help achieve a better understanding of that relationship.

1. The impact of price controls

During World War II controls on prices in general were imposed. As a consequence, the funds required to sustain and expand the nation's overall productive capacity were limited. With much of that restricted output allocated to the war effort, widespread shortages of goods for civilian consumption gradually developed. And by the end of the war there was great public clamor for removal of the price controls.

Professing a fear that runaway inflation would be precipitated by lifting the controls, the government resisted the public demands for a time. But the people would not be put off. They were tired of empty stores and wanted to be able to buy goods at whatever prices required to make them available. Finally, by mid-1946 the government gave in, and controls were removed.

Twin blows

For the petroleum industry the price controls had a double impact. In addition to limiting the generation of investment funds, they led to severe shortages of material the industry needed to conduct the search for petroleum.

Both problems were soon alleviated following the end of price controls. The price of petroleum began to rise in successive stages, and more funds for investment thereby became available. And with their own price freedom, the various suppliers of material had the financial resources needed to increase productivity and thereby satisfy the petroleum industry's needs.

Spending increased

As investment funds and material became increasingly available, the petroleum industry quickly responded by raising the level of its investment.

In 1946 capital investment devoted to the search for oil and gas was \$1.5 billion. A decade later the outlay had risen to more than \$5 billion/year. During that period the industry steadily increased its investment year after year

except in 1949 when a business recession depressed earnings.

2. Investment patterns

The uptrend of investment following the lifting of wartime price controls is traced in Fig. 1.

Response certain

Fig. 1 demonstrates clearly that the petroleum industry will of its own accord expand the search for petroleum, provided the funds needed for capital expenditures are available and the climate for investment is favorable. Large and small components of the industry responded alike to the improved incentives following the end of price controls.

Fig. 2 compares the investment of all the major companies as one group and independent producers as another.

Both groups invested about the same amount of money and increased annual capital outlays at about the same rate.

Uptrend ends

But the uptrend in capital investment came to an abrupt end in 1957. Expenditures were reduced sharply the following year and were severely restricted for an extended period thereafter (Fig. 3). Indeed, it was not until 15 years later that the uptrend was finally resumed. In the

meantime, demand for petroleum continued to grow. While investment remained nearly stationary, the combined market needs for oil and gas doubled.



Obviously, under those circumstances the discovery of new petroleum resources could not keep pace with expanding market needs. Investing money in the search for petroleum doesn't automatically assure success, of course. But the failure to invest positively guarantees that no oil or gas will be found.

Spending the key

Investment is a financial measure of the overall effort the petroleum industry makes to find and develop new reserves of oil and gas. And for the long term, there is an established relationship between the monetary input and the amount of petroleum found.

In 1954 that relationship indicated that there was no likelihood of finding enough petroleum unless investment continued to grow faster than market needs, as it did in the first decade after World War II.

Controls reimposed

The petroleum industry's failure to invest more was the consequence of a resumption of federal price controls. Although the controls at first applied only to natural gas moving in interstate commerce, the actual effect was much broader.

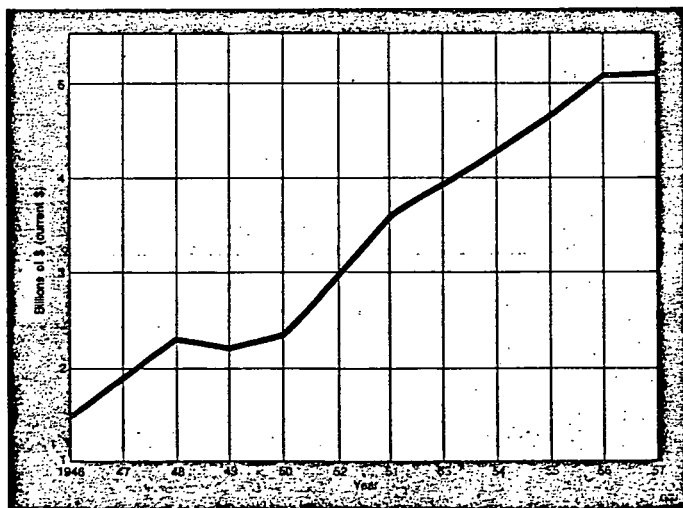


FIG. 1
WARTIME PRICE
CONTROLS END, U.S.
EXPLORATION/
DEVELOPMENT
INVESTMENT SOARS

P Since both oil and coal had to compete with gas in the energy market, their prices too were indirectly limited by the restraints on gas. The regulation of gas by state authorities also had the effect of restraining producer prices. And to make matters still worse, the federal government in 1971 again applied direct price controls to oil as well.

Impact devastating

The overall effect of price controls on the petroleum industry's cash flow was devastating. Under regulation, the price of gas was established at levels far below that of oil in terms of their respective energy content. That caused market demand to grow faster for gas and slower for oil. As a result, the composite unit price received by the producer declined, while unit costs continued to rise.

Fig. 4 shows how major companies and independent producers reacted to these circumstances. The pattern of investment illustrated is much different from that of the first decade after World War II when both groups invested like amounts. While the majors held their spending

more or less level, the independents cut theirs in half during the 14 years from 1957 to 1971 (Fig. 4).

Independents hurt most

Independents were particularly hard hit by the controls, because, unlike the majors, they could not generate funds for investment beyond the wellhead.

The majors fared somewhat better because their integrated operations enabled them to earn profits from the sale of gasoline and other products sold in the transportation market where competition with low-priced gas was not encountered.

Flight of capital

In addition to depriving the industry of much-needed capital funds, price controls also precipitated a flight of capital, particularly on the part of independent producers.

Because the climate for investment within the petroleum industry was so poor and the outlook so bleak, producers began to invest in other sectors of the U.S. economy where the promise

FIG. 2
U.S. EXPLORATION/
DEVELOPMENT
INVESTMENT BY
MAJORS,
INDEPENDENTS
(1946-57)

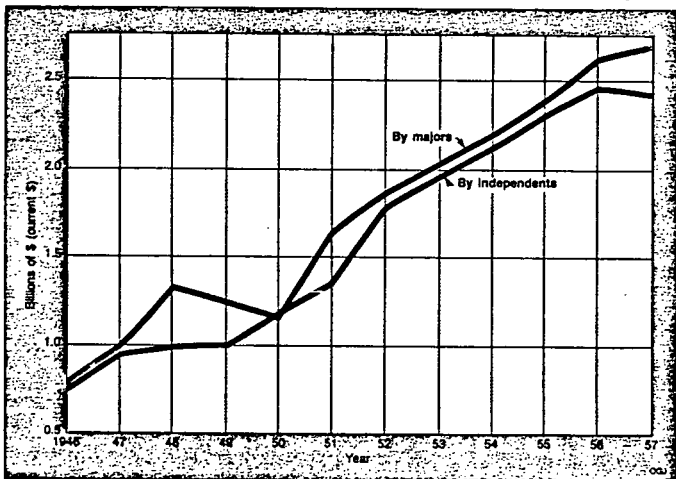
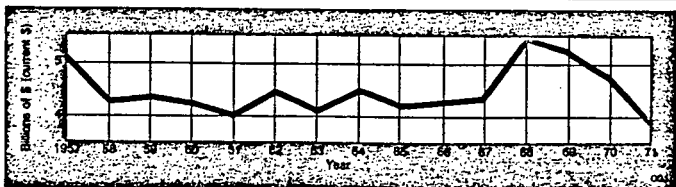


FIG. 3
PERIOD OF LOW
EXPLORATION/
DEVELOPMENT
INVESTMENT
(1957-71)



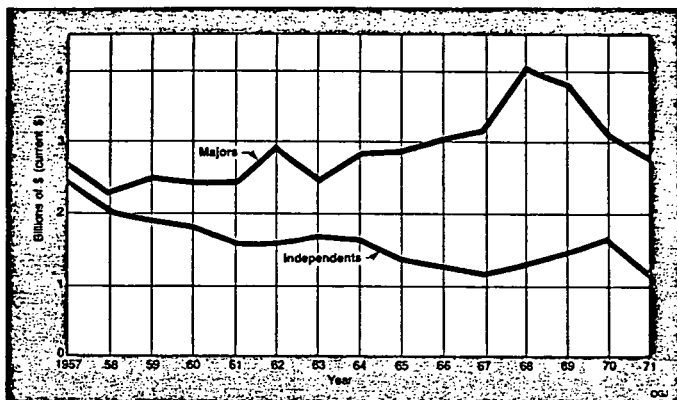


FIG. 4
GAS PRICE CONTROLS
IMPOSED,
EXPLORATION/
DEVELOPMENT
INVESTMENT LAGS

of a fair return was better and more certain.

That, of course, is the normal behavior of all investors. And potential outside suppliers of capital also shunned investment opportunities within the petroleum industry because of the price controls.

Spending climbs in 70s

Conditions began to improve as a result of developments outside the U.S. in the early 1970s. Events in the Middle East caused the price of oil to rise sharply in world markets.

And though controls remained in effect in the U.S., prices were allowed to rise somewhat in reaction to the developments in world markets.

During 1971-77 the composite price of oil and gas at the wellhead doubled. The petroleum industry quickly responded by putting to work the additional financial resources thereby generated.

The investment devoted to the search for petroleum quadrupled in only 6 years (Fig. 5). Both majors and independents increased their capital spending (Fig. 6).

The industry's yearly capital outlay since World War II is traced in Fig. 7 (current \$ line). Note the rise following the end of wartime price controls, the plateau following the reimposition of controls, and the recent increase as the effect of the controls was made progressively less

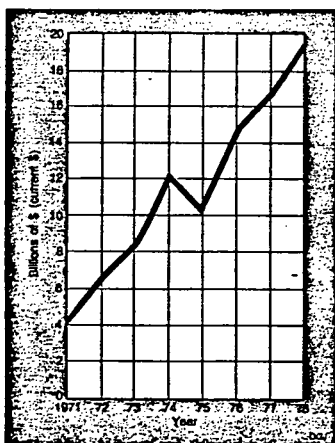


FIG. 5
PRICES JUMP,
EXPLORATION/
DEVELOPMENT/
INVESTMENT
QUADRUPLES
(1971-77)

FIG. 6
U.S. EXPLORATION/
DEVELOPMENT
INVESTMENT BY
MAJORS,
INDEPENDENTS
(1971-77)

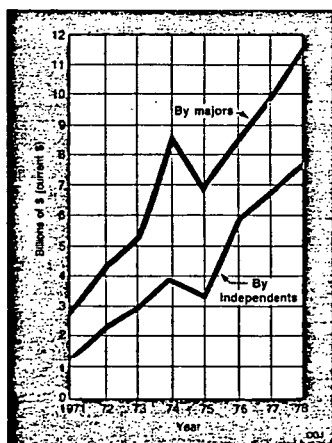
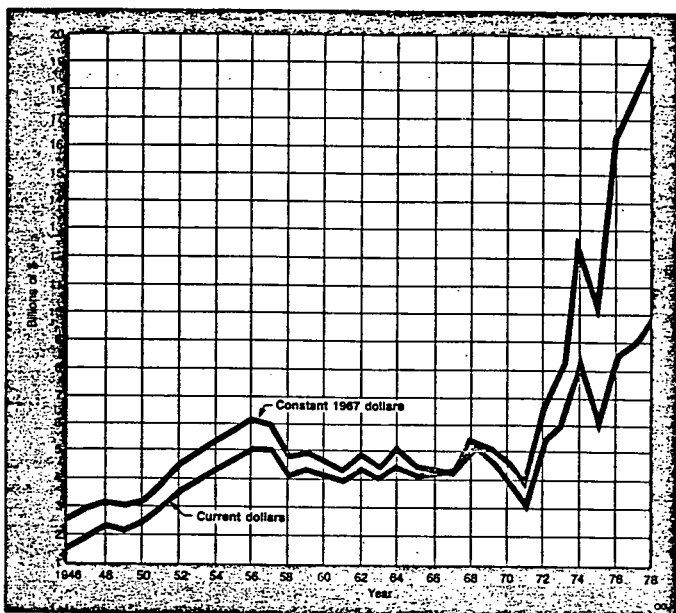




FIG. 7
U.S. EXPLORATION/
DEVELOPMENT
INVESTMENT,
CURRENT VS.
CONSTANT DOLLARS
(1946-78)



oppressive.

The large size of the recent increase implies that a very powerful corrective force has come into play. But the trend line is misleading because it is expressed in dollars of current value. Such dollars don't reveal the decline in the purchasing power of the invested dollar caused by inflation. To achieve a more accurate measure, the investment should be expressed in dollars of constant value.

Adjusting for inflation

Fig. 7 shows the historical investment in constant (1967) dollars as well as in current dollars. Note that the recent rise in spending is much diminished when expressed in constant dollars.

Note also that the investment in the first decade after World War II was actually stronger and the decline thereafter really greater when measured in constant dollars.

As a consequence of inflation, the purchasing power of the money the industry invested in the last 5 years was reduced by fully 40%.

Government rakeoff

The effectiveness of the investment also is reduced by another factor. When government

takes lease bonus payments from the industry in exchange for the right to search on public lands, it siphons off huge amounts of potentially productive capital funds.

Fig. 8 shows for three successive decades the petroleum industry's gross investment in the search for petroleum, the bonus payments to government, and the remaining net investment. Since the bonus payments represent nothing more than the cost of a hunting license, only the money classified as net investment is actively involved in the search for oil and gas.

For all three decades, the bonus payments were equal to 25% of the net investment. And for the third decade alone, they were equal to as much as 40%. During the three decades, government diverted to other purposes more than \$30 billion of capital funds.

National interests could have been much better served if government had allowed the industry to apply this money to the search for more petroleum rather than diverting it. In that event, much more oil and gas very likely would have been discovered. And government could have been paid with part of the proceeds.

Net effective investment

After adjusting for inflation and subtracting

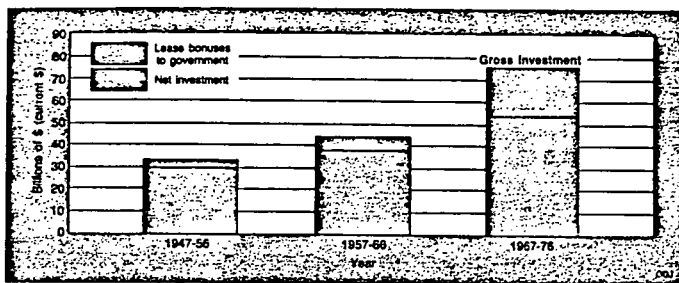


FIG. 8
GROSS AND NET
EXPLORATION/
DEVELOPMENT
INVESTMENT

the bonus payments to government, the remaining funds represent the petroleum industry's true effective investment in the search for petroleum. In Fig. 9 that investment is shown for the post World War II period. Clearly revealed is the harmful effect of price controls.

Stimulated by the ending of the wartime controls, effective investment increased 140% during 1946-56. But when controls were again imposed, investment was cut in half during 1956-71.

The real picture

In constant dollars, the capital outlay in 1971 was actually lower than in 1951—two decades earlier. And only in 1976 and 1977 was the investment higher than the 1956 peak.

When measured in current dollars, the industry's gross investment increased 317% during 1971-77. But the growth of the effective investment was limited to 158%. Reflecting the combined impact of inflation and bonus payments, the accumulated effective investment represented no more than 45% of the gross investment.

The real wellhead price

Figure 9 offers additional evidence of the effect of price controls. The composite wellhead price of oil and natural gas is traced for all of the post World War II period. It is the real price measured in dollars of constant value.

There was a prolonged 24-year decline after

1948. The initial drop was precipitated by the business recession of 1949; but the continuing fall was the consequence of price controls. In the entire 33-year period, the 1948 price level was exceeded only in the last 4.

And, unbelievable as it may seem, the constant dollar price in 1972 was the lowest since the depression year of 1933. Though the price in 1978 was nearly double the 1972 level, it was only 25% higher than in 1948.

Relationship close

Figure 9 shows how very closely the petroleum industry's effective investment follows the constant dollar composite price of oil and gas. Clearly evident is the effect of price controls beginning in the mid-1950s.

The uptrend of both price and investment in recent years is further evidence that the industry will of its own accord invest more money if it is allowed to generate the financial resources. There is no need to force the industry to invest more by enacting legislative gimmicks.

Although the price of petroleum was severely restrained by controls, the combined wellhead value of oil and gas continued to increase, nevertheless, because of the growth of oil and gas production throughout most of the three decades. Output increased 46% in the second period and 37% in the third.

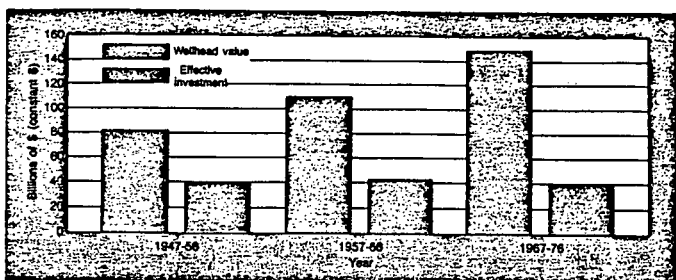
In Fig. 10 the wellhead value is compared with effective investment in each of the three



FIG. 9 -
COMPOSITE PRICE
FOR OIL AND GAS VS.
EFFECTIVE
INVESTMENT
(CONSTANT
DOLLARS)



FIG. 10
WELLHEAD INCOME
VS. EFFECTIVE
INVESTMENT
(CONSTANT
DOLLARS)



10-year periods. While wellhead value rose in the second and third decades, the amount of investment remained virtually unchanged.

During the first 10 years investment was equal to 47% of wellhead value. In the second it was down to 39%. And in the third it was no more than 27%.

Costs soar

Investment couldn't keep pace with the rise in wellhead value because both operating and political costs were growing substantially faster than wellhead value.

They were absorbing progressively larger proportions and leaving less and less available for investment.

The political costs—taxes, bonuses, fees—are real costs just as any other. And they are particularly burdensome because they represent money that can't be used in conducting the business.

Other costs, such as labor expense, represent funds actually used in the operations of a business and thereby advance its interests. The money the petroleum industry uses to pay operating and political costs must be obtained from the sale of oil and gas. When the acquisition of that money is limited by price controls without simultaneous restraints on costs, a reduced generation of investment funds is the bottom line. Somehow, many politicians seem unable to comprehend that basic economic fact.

3. Value vs. demand

Even though the wellhead value of oil and gas production continued to grow throughout most of the post World War II period, it didn't grow nearly fast enough. If sufficient investment capital is to be generated, wellhead value should grow at least as fast as market demand. And if operating and political costs rise faster than market needs, as they have, then wellhead value should increase faster, too.

Wellhead value lags

However, the growth of wellhead value lagged far behind the expansion of demand most of the time because of the price controls (Fig. 11). This chart relates the wellhead value for each year to the demand in the same year.

For example, the total wellhead value of oil and gas produced in 1946 was equal to \$1.82 for every composite barrel of oil and gas consumed in the market that year. Properly, the value relative to demand should have risen every year thereafter. But, as Fig. 11 shows, it rose for only 2 years, reaching \$2.52 in 1948. From then on it progressively declined to only \$1.25 in 1972.

Slowing demand growth and improving prices permitted the value-demand relationship to improve after 1972. But, as recently as 1977, the wellhead value per barrel of demand was still 12% below the peak reached in 1948.

Adequate search impossible

Given these circumstances, there was never any realistic hope that the petroleum industry would be able to finance a search for oil and gas sufficient to find the new reserves needed for market expansion.

If the unit costs of finding petroleum remain constant, the investment devoted to the search should grow somewhat faster than the expansion of market needs to assure full market satisfaction and also maintain a realistic, safe reserves-to-production ratio.

If, however, the unit costs are rising for various reasons, investment must grow still faster than demand. And if inflationary conditions prevail also, investment must then grow even faster.

Since World War II discovery costs have risen, and inflation has prevailed. Therefore it was essential that investment grow much faster than demand. For the first decade after World War II it did. But it was no longer possible for the industry to meet that standard after price controls were again imposed in the mid-1950s.

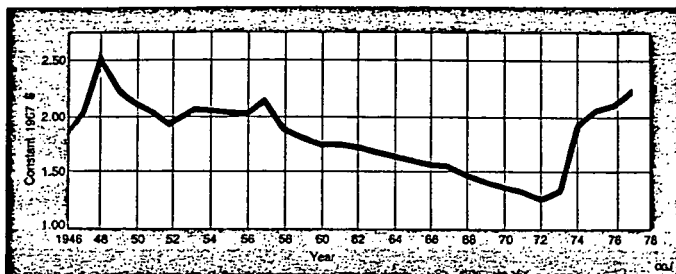


FIG. 11
OIL AND GAS INCOME
AT THE WELLHEAD
RELATIVE TO
DEMAND (CONSTANT
DOLLARS)

Fig. 12 shows for the post World War II period the amount of money the industry invested each year to replace a composite barrel of oil and gas consumed in the market that year. In 1946 the investment to find replacement reserves was equal to 93¢ (in constant value) per bbl of demand.

By 1956 the investment had risen to \$1.10/bbl. But the next 15 years witnessed a steep decline as the consequence of price controls and rising operating and political costs.

By 1971 the industry's investment to replace a composite barrel consumed was down to 31¢. And very little oil and gas can be found for only 31¢.

Prices, investments rise

After 1973 the investment relative to demand began to increase as the combined result of slower demand growth and better prices. Yet, as recently as 1977, the investment still amounted to no more than 80¢/bbl of demand—only about two-thirds as much as the peak level reached in 1956.

To have provided a reasonable basis for hoping to find enough petroleum to continue

satisfying market needs from domestic sources, the investment relative to market demand should have continued to grow rapidly during 1956 to the present.

Fig. 13 provides several related items of highly significant information. First it shows how much money the industry invested in the search for petroleum in three successive decades. Second it shows how much oil and gas was found as the result of that financial outlay. And third it compares the amount found with the market demand for oil and gas.

During 1947-56, the industry's effective investment in constant dollars was \$39 billion. And during that period the industry reported a total of 60 billion equivalent bbl of new proved reserves of oil and gas. That was 52% more than the accumulated market demand.

Situation worsens

In the second decade the industry invested somewhat more money and found slightly more oil and gas. But in that period the market needs were 60% larger than in the first decade. And they were 3% more than the industry found.

In the third decade the industry invested 5%

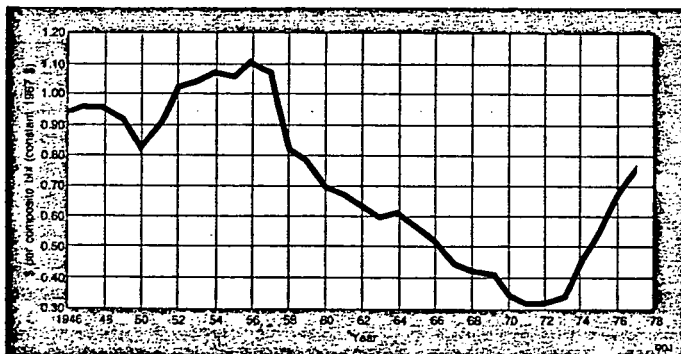
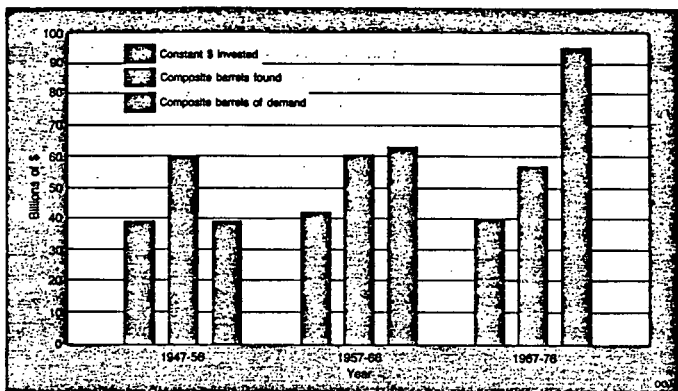


FIG. 12
EFFECTIVE
INVESTMENT TO
REPLACE OIL AND
GAS CONSUMED
(CONSTANT
DOLLARS)



FIG. 13
EXPLORATION/
DEVELOPMENT
INVESTMENT, OIL/GAS
FOUND, AND DEMAND



less money and found 6% less oil and gas. The market demand, however, was 52% larger. And it exceeded discoveries by 68%.

Reserves decline

To satisfy the growing market needs, the industry boosted production 37% over the second decade and more than doubled imports. Production exceeded new reserve additions by 23% and thereby brought about a 16% decline in total proved reserves.

Wrong conclusion

The drop in reserves precipitated a growing belief, particularly within the ranks of government, that there is no longer much oil and gas remaining to be found in the U.S. But the facts indicate such an opinion is not warranted.

Relative to the size of the effective investment in the third decade, the industry found fully as much oil and gas as anyone logically could have expected. Had the investment been sufficient, the industry very likely could have found enough more to prevent the decline in reserves.

Investment tracks discoveries

In all three decades the size of the investment was about the same. And so was the amount of petroleum discovered. Slightly less was found per dollar invested in the third decade. But that was to be expected, considering the industry conducted its search in more costly areas.

To have been able to satisfy market needs wholly from domestic sources and also maintain a realistic reserves-to-production ratio, the industry would have had to discover 70% more oil and gas than it did during the three decades. That it could have done so can neither be proved

nor disproved. But all the evidence from the past in combination with the geologic prospects indicates an expanded search may well have been successful provided sufficient funds were available for the required investment.

4. The impact of inflation

Without question, the petroleum industry's ability to satisfy the nation's needs for oil and gas has been greatly impaired by the imposition of price controls. And that problem has been compounded by inflation.

Without price controls, the industry could have coped with inflation much better, of course.

It could have adjusted prices as required by the rising operating and political costs and thus generated more investment funds.

Inflation is a particularly insidious problem. Its eventual impact is much greater than is currently apparent or expected.

For example, suppose the petroleum industry were able to invest \$40 billion/year in the search for oil and gas in the next decade. And assume annual inflation rates of 7.5, 10, and 15%. Table 1 shows how much the real purchasing power of \$40 billion is reduced by inflation.

Inflation of 7.5% leaves in real purchasing power less than half of \$40-billion investment by 1990. Only one-third remains with 10% inflation. And no more than one-fifth is left if the inflation rate is 15%.

The purchasing power of the accumulated \$400-billion investment for the entire decade is reduced by a third with 7.5% inflation. A 10% rate reduces it by two-fifths. And it is cut by more than half by a 15% rate.



	Investment, billion per year in current \$	Real purchasing power if annual inflation rate is:		
		7.5%	10%	15%
		Billion 1980 \$		
1981	40.0	37.0	36.0	34.0
1982	40.0	34.2	32.4	28.9
1983	40.0	31.7	29.2	24.6
1984	40.0	29.3	26.2	20.9
1985	40.0	27.1	23.6	17.7
1986	40.0	25.1	21.3	15.1
1987	40.0	23.2	19.1	12.8
1988	40.0	21.4	17.2	10.9
1989	40.0	19.8	15.5	9.3
1990	40.0	18.3	13.9	7.9
10-year total	400.0	267.1	234.4	182.1

TABLE 1
HOW PURCHASING
POWER (CURRENT \$)
OF \$40 BILLION
YEARLY INVESTMENT
IS CUT BY INFLATION.

Purchasing power hit

Even more shocking is the effect of these assumed inflation rates when they are related to 1967 dollars.

Since 1967, annual inflation has averaged nearly 7%. Therefore, the purchasing power of \$40 billion 1980 dollars is equal to \$16 billion 1967 dollars. And when the assumed future inflation rates are related to that amount, the purchasing power is further reduced (Table 2).

This table shows the real extent of the erosion of purchasing power caused by continuing inflation. If there is 7.5% inflation, \$40 invested in 1990 will buy no more than \$7.30 in 1967. Or if the inflation rate continues to average 15%, \$40 will buy no more than \$3.10 would in 1967.

Clearly, the \$400-billion hypothetical investment for the next decade would be much too small. Even with the lowest assumed inflation rate, the net effective investment could not be expected to find enough oil and gas to satisfy market needs and rebuild reserves to satisfactory levels.

More ahead

Continuing inflation is virtually certain. Classical theories in respect to causes of inflation haven't stood the tests of modern times. Also there is a demonstrated need for more flexibility

in terms of corrective measures.

But the disciples of the classical theories persist, and so-called corrective actions thus far have dealt mainly with symptoms of inflation rather than real causes.

Government bears blame

Without question, the rising cost of government has proven to be the most powerful inflationary force at work. The cost of government is, of course, embodied in the cost of all goods and services. Because so much of the money used by government is for nonproductive purposes, the rapidly rising governmental expenditures trigger inflationary spirals.

The combined expenditures of federal, state, and local governments have risen throughout most of the post World War II period. But the increase was much greater in recent years.

During the first decade after the war government spending amounted to \$720 billion. In the second decade it increased to \$1.71 trillion. In the third 10 years it totaled a staggering \$4.055 trillion.

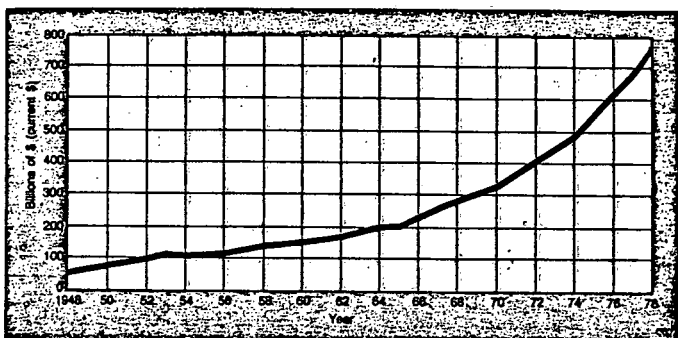
In 1978 alone it reached \$760 billion after an increase of \$80 billion from 1977. Fig. 14 traces the growth of government spending during 1948-78. Note how very large the increase was after 1965.

	Investment, billion per year in current \$	Real purchasing power if annual inflation rate is:		
		7.5%	10%	15%
		Billion 1980 \$		
1981	40.0	14.8	14.4	13.6
1982	40.0	13.7	13.0	11.6
1983	40.0	12.7	11.7	9.8
1984	40.0	11.7	10.5	8.4
1985	40.0	10.8	9.5	7.1
1986	40.0	10.0	8.5	6.0
1987	40.0	9.3	7.7	5.1
1988	40.0	8.6	6.9	4.4
1989	40.0	7.9	6.2	3.7
1990	40.0	7.3	5.6	3.1
10-year total	400.0	106.8	94.0	72.8

TABLE 2
HOW PURCHASING
POWER (CONSTANT
\$) OF \$40 BILLION
YEARLY INVESTMENT
IS CUT BY INFLATION.



FIG. 14
SPENDING BY
FEDERAL, STATE, AND
LOCAL GOVERNMENT
SOARS (1948-78)



Government spending has far outstripped population growth, particularly since 1965. While the number of people increased by only 12% during 1965-78, government spending rose 269%. Thus, the governmental outlay per capita increased 227% during that time.

In 1965 per capita government spending was just over \$1,000. By 1978 it had risen to \$3,500. The long-term growth is shown in Fig. 15.

During 1965-78 government spending increased an average 10.6%/year. But that rate of growth is misleading, because it is measured in current dollars.

Government spending is eventually influenced by the inflation it spawns, of course. And to achieve a more accurate rate of growth it should be measured in dollars of constant value. On that basis spending increased at an average annual rate of slightly more than 4.5% during 1965-78.

Inflation outlook

If the real growth rate of 4.5% persists, and if

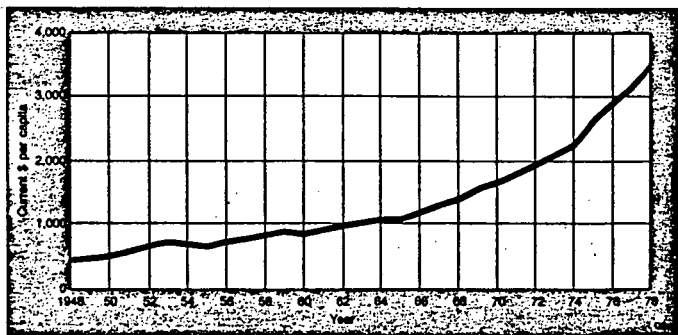
the annual rate of inflation averages no more than 7.5%, government spending could reach \$3.1 trillion by 1990. Total spending during 1978-90 could amount to as much as \$21 trillion (Fig. 16).

U.S. population is projected to rise by 25 million, or 11%, during 1978-90. Therefore, if governmental spending does increase as described, the per capita expenditure will rise to \$12,700 by 1990 from \$3,500 in 1978 (Fig. 17). At that level the governmental outlay would be equal to \$35/day for every man, woman, and child in the nation.

Figs. 16 and 17 aren't forecasts. They are measurements of the momentum of change since 1965. They indicate what is likely to happen if corrective forces don't come into play. Such forces aren't now in prospect. There is evidence of mounting taxpayer unrest but favorable governmental response is lacking.

President Calvin Coolidge once had this to say: "Nothing is easier than the expenditure of public money. It does not appear to belong to anyone and there is an overwhelming desire to

FIG. 15
PER CAPITA
SPENDING BY
FEDERAL, STATE, AND
LOCAL GOVERNMENT
(1948-78)



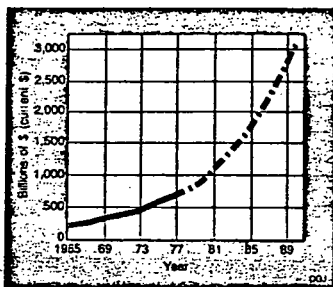


FIG. 16
THE TREND OF
FEDERAL, STATE, AND
LOCAL GOVERNMENT
SPENDING (1965-90)

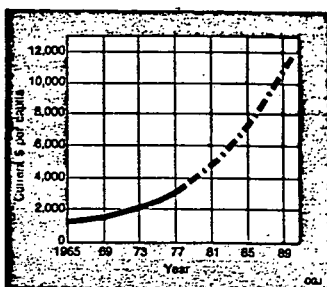


FIG. 17
TREND OF FEDERAL,
STATE, AND LOCAL
GOVERNMENT
SPENDING PER
CAPITA (1965-90)

bestow it on someone." That observation by President Coolidge more than 50 years ago was never more appropriate than now. Government at all levels does indeed act as if the money it spends belongs to no one. There are, of course, essential monetary needs of government. And they are growing. But there are also reasons to believe there is enormous waste, inefficiency, and useless spending.

Productivity decline

The nation's true wealth is governed by its productivity. And productivity is not keeping pace with government spending.

In 1948 the combined outlay of federal, state, and local government was equal to 21% of the gross national product. By 1978 it had increased to 36%.

There is another cost of government that must also be included.

During the 30 years from 1948 to 1978, the scope of governmental regulation of business increased enormously. The cost of conforming to the regulation has become very large. When that indirect financial burden is included, the overall cost of government is indicated to be about 43% of the gross national product.

Funds used to conform to governmental regulation is money that might otherwise be used for productive capital spending. That is one of the reasons why business expenditures for new plant and equipment have declined as a proportion of government spending.

In 1948 the capital spending of business equaled 39% of government spending. By 1978 it had fallen to 20%. Since part of the capital spending in 1978 was for hardware needed to conform to governmental regulations, the decline in spending for new productive capacity was even greater than indicated.

Government expenditures in 1978 were as large as all personal consumption expenditures for food, clothing, housing, and household operation combined. Thirty years earlier the gov-

ernmental outlay was only half as much as the personal consumption expenditures for those purposes.

Government spending in 1978 was equal to 53% of total disposable income. Suppose government spending per capita does rise to \$12,700 by 1990. Suppose it is still equal to 53% of disposable income.

In that event, per capita disposable income would have to increase to \$24,000 in 1990 from \$6,640 in 1978. If that actually happens, the inflation rate is likely to be much above 7.5%, and the spiral will continue.

5. Return on investment

In accordance with conventional accounting practices the rate of return on invested capital is customarily considered a reliable measure of business profitability. But that isn't so in times of inflation.

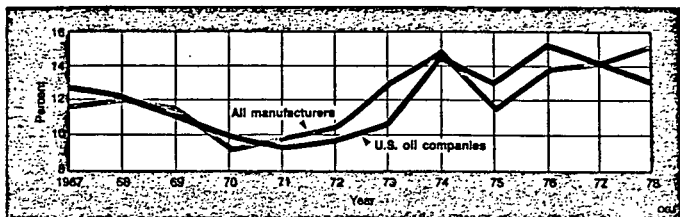
A year-to-year comparison of the rate of return is realistic only if the purchasing power of the dollar is stable. When the purchasing power progressively shrinks as the consequence of inflation, the rate of return is distorted. And it is therefore misleading.

An investment made over an extended period of years is measured in the higher-value dollars of the past. Net income, however, is measured in current dollars of lower value. And when the rate of return on investment is calculated by relating these dollars of unlike value, it is actually overstated.

Suppose the calculated return in 1978 on an investment made in 1967 was 10%. Since the 1978 dollar was worth only half as much as the 1967 dollar, however, the real return was only 5% in terms of actual purchasing power. Obviously, if the return is to be measured more accurately, the dollars involved in the calculation must be adjusted to achieve more uniformity. Either the investment must be restated in



FIG. 18
RETURN ON
INVESTED CAPITAL,
U.S. OIL COMPANIES
VS. ALL
MANUFACTURERS IN
CURRENT DOLLARS



current dollars or the earnings in past dollars.

Measuring the rate

Because sufficient data aren't available, it is impossible to measure the rate of return for the entire petroleum industry. But a reliable indicator is available. Since 1936, the Chase Bank in New York has continuously monitored the annual financial performance of a large group of petroleum companies. Together, these companies comprise a major proportion of the industry and their combined experience is an excellent indicator of industry-wide experience.

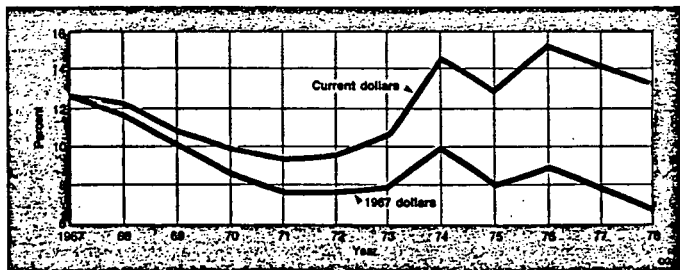
Petroleum vs. all manufacturing

In Fig. 18 the combined annual rate of return for the group of petroleum companies is shown during 1967-78. For comparison, the return for all manufacturers as a group is also shown.

The return was calculated in the conventional manner for both groups. Note how much alike the returns of both groups are and how they tend to rise and fall together. Note also that the returns of both groups in 1978 were nearly the same as in 1967.

In Fig. 19 the rate of return for the group of oil companies is measured in current dollars and in constant 1967 dollars. The return is much lower when earnings are expressed in dollars of like value. On that basis, the return in 1978 was 6.8%—only about half the 13.2% return calculated by the conventional method. But even the 6.8% return is overstated to some degree.

FIG. 19
RETURN ON
INVESTED CAPITAL
FOR U.S. OIL FIRMS,
CURRENT VS.
CONSTANT DOLLARS



By using 1967 as the base year, the average age of the group of oil companies' investment is assumed to be 11 years.

The group's investment has been accumulating for a very long period of time. Though the average age can't be determined precisely, it is surely much more than 11 years. Suppose, for example, that it is 25 years. In that event the 13.2% return would be only 5.4% in real terms.

In Fig. 20 the rate of return of the group of oil companies is again compared with that of all manufacturers as a group. The return of both groups has been measured by restating earnings in dollars of constant 1967 value.

Though the adjusted figures can't be precise because the average age of investment isn't known, they reflect what has actually transpired much more closely than the unadjusted figures in Fig. 18.

As Fig. 20 shows, the real profitability of both groups has been in a long phase of decline. That is a matter of much concern, because profits are the main source of investment funds.

The ability of both groups to reinvest is therefore inhibited by the decline—to the nation's long-term detriment.

Problem compounded

Even more worrisome is that the decline in business profitability has occurred while government spending has grown much faster than the U.S. economy. Thus business expenditures for new plant and equipment have progressively

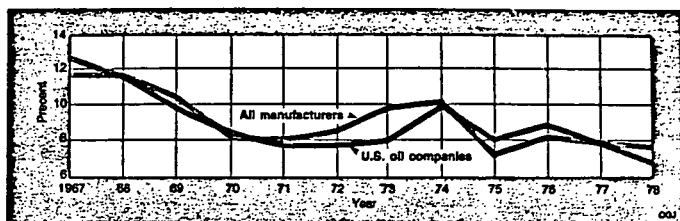


FIG. 20
COMPARISON OF
RETURN FOR OIL
FIRMS, ALL
MANUFACTURERS IN
CONSTANT DOLLARS

declined as a proportion of government spending. So have the capital expenditures of the petroleum industry.

For the first decade after World War II the investment devoted to the search for oil and gas was equal to 4.6% of the combined expenditures of federal, state, and local government. After 1956, however, the industry's investment steadily declined as a proportion of government spending and by 1971 was actually less than 1%.

6. Economic ignorance

In view of all that has happened in the past quarter century, there can be no doubt that for the most part the blame for the nation's lack of developed petroleum resources must be laid at the doorstep of government.

From the beginning, representatives of government were repeatedly warned that price restraints would eventually lead to shortage. But always the warnings went unheeded. Even now, with the shortage a fact, government still refuses to pay attention to financial reality.

To a major degree the petroleum problems of the U.S. reflect a widespread lack of understanding of how the nation's economic system functions.

Only a small proportion of all high school and college students ever take courses of study that explain adequately the mechanics of the system. Indeed, there is evidence that many educators don't understand it.

Realities not understood

It follows, therefore, that neither the general public nor government is well prepared to understand the financial realities of an adequate petroleum supply.

It isn't recognized that the supply of oil and gas is determined by the long-term continuing investment to provide that supply. It isn't understood that an inadequate investment relative to actual market needs surely will lead to an eventual and continuing shortage. Nor is it

realized that this economic principle applies whether the investment is made by the industry as it is now structured or by the government.

The process of capital formation is little understood. Profit seems to be regarded as something left over and not essential to the business. The fact that profit is the most important source of investment funds and that other sources aren't fully available unless profits are adequate doesn't appear to be broadly realized.

Taxes are inflationary

The need for price to rise in step with overall costs of doing business, including taxes and other payments to government, is ignored. Taxes and other political costs apparently aren't recognized as business expenses that must be paid with funds acquired through the price mechanism if the business is to remain solvent.

The curious notion that a price increase is inflationary but a tax increase isn't—even though the impact is the same for the payer—appears to be widely held. And even more incredible is evidence that the difference between gross revenue and net income isn't well understood.

How much is too much?

Continuing economic ignorance on the part of government is manifested in the so-called "windfall profits" tax. The enactment of such legislation reflects the obsessive fear that the petroleum industry might earn too much profit. But how much is too much? By what standard can profits be judged excessive?

All the evidence presented here indicates the petroleum industry earned too little for the past quarter century. It didn't earn enough to provide the investment funds needed to finance an adequate search for petroleum.

The evolving domestic shortage and greater dependence on imports was the consequence. To be judged truly excessive, the industry's profits would have to be large enough to provide more than enough investment funds for at least a decade. That isn't remotely in prospect—even if there were no "windfall profits" tax.

Tax need questionable

The validity of the government's need for still another tax is highly questionable. What conceivable need does government have for additional money that is more vital than the need to expand the search for domestic petroleum?

Even expenditures for national defense would be rendered less effective if the military and the supporting economy lacked sufficient petroleum.

Without the "windfall profits" tax, government would still benefit from the industry's operations far more than would the industry itself.

The money the government receives in the form of other taxes, lease bonuses, and fees is much more than the industry earns as profit.

Tax impact greater

The "windfall profits" tax was imposed without apparent regard for its inflationary impact.

In a practical sense, any action that adds to the consumer's cost of goods and services without a commensurate increase in value has an inflationary impact.

In effect, the relative value of the consumer's money—its true purchasing power—is reduced. A price increase can have that effect.

So can a tax increase, whether direct or indirect. However, the impact of a tax increase can be greater.

Additional funds acquired from a price increase that are in excess of rising costs can be used to improve a product and add to its supply. But a tax increase has no such potential.

Higher prices for petroleum obviously are necessary to generate the additional funds required to expand the search for petroleum. Although the initial impact is inflationary, the money will be productively used.

As additional petroleum is found, U.S. wealth increases and consumer and national interests are thereby served.

Since the "windfall profits" tax is an additional cost of doing business, the petroleum industry must raise prices still more to acquire sufficient money to pay the tax and have enough left for investment purposes. Because the tax will thus increase the consumer's cost without adding more value, the effect is inflationary.

No lasting benefit

Government's use of the tax money isn't likely to increase national wealth. If it is used to support more boondoggles, to keep able-bodied, potentially productive people on welfare rolls, to create more nonproductive jobs inside and outside government and thereby promote more hidden welfare, and to finance all the activities

that constitute nothing more than vote buying, the results will prove counterproductive. The money would be put in circulation without achieving lasting benefits.

Some of the money might be used to foster the development of alternate forms of energy and thereby appear to be used productively. But that too might prove counterproductive if the timing isn't right.

Eventually, alternate forms must be developed, but it shouldn't be done prematurely. It should be noted that money, whether it is spent by industry or by government, can be used for only one purpose at a time. If money is diverted from finding and developing petroleum resources to the development of an alternate, more-costly form of energy, there is the great risk of leaving in the earth vast amounts of undiscovered petroleum. And undiscovered petroleum is of no value to anyone.

7. Where to invest

Because an adequate supply of energy from U.S. sources is so vitally important to the nation, there is an urgent need to use a maximum amount of money in an effort that promises to achieve the most in the least time.

Thus far, petroleum offers the greatest promise.

Expanded search vital

How much more oil and gas remains to be found isn't known and can't be known until a truly exhaustive search is made.

An exhaustive search means continuing to look until sophisticated industry management decides the capital would be more effectively used in the development of other forms of energy.

That time may not be soon. History reveals that most of the petroleum found thus far was actually discovered in areas once thought to be barren or beyond reach. Geologic knowledge increases with time and experience. Technological progress has enormously extended the industry's ability to conduct the search.

Exploration technology advancing

There is no reason to believe such progress has come to an end. Geologic knowledge will continue to accumulate. And the development of more sophisticated hardware and methods used in the search will continue as long as the incentive exists.

The geologic prospects for finding petroleum are extensive; and they increase as technological progress continues to extend the ability to search. □

STATEMENT OF AIVARS KRASTS, GENERAL MANAGER, COORDINATING AND PLANNING, CONOCO, INC.

INTRODUCTION

One axiom common to all economies is that they must save and invest enough to replace their productive capacity as it is used up, or the standard of living of their citizens will fall. Farmers express this view in the adage, "Don't eat the seed corn."

Similarly, in order to survive, a business must invest at a rate which will replace its productive assets when they wear out, deplete, or become obsolete. A business that cannot get the funds to invest at this minimum rate, will have to reduce its production, and enter a state of gradual liquidation in economic terms. Thus, being able to generate as much or more cash than the replacement cost of productive assets is an important goal for all corporations.

In a world with double digit inflation, historical cost financial accounting statements are unable to shed much light on this important question. So about 2 years ago we undertook a series of studies to address this issue, which have just been completed.

These exercises have required the allocation of corporate overhead and working capital by methods with which some people may argue. Also, by their very nature, replacement costs are engineering estimates that lack the precision of past invoices. Yet, I firmly believe that what I am about to show you is a reasonably accurate representation of the true economic state of Conoco's petroleum operations during the past five years. The likelihood of error is in the direction of underestimating replacement costs.

First, I will explain briefly what we did.

[Slide 1—Captions.]

Funds generated by each business area comprise four elements:

Funds from operations are functional after-tax income, plus noncash charges.

Increase in corporate debt capacity credits each business area with the amount of net new borrowing that can be done as the result of that business area's contribution to retained earnings.

We assumed that 50 cents could be borrowed for each dollar added to retained earnings.

Corporate charges are dividend payments, interest expense, and other corporate overhead, allocated to each business area in proportion to the gross book value of its assets.

The working capital number reflects only the change during the period studied.

We will compare the net funds generated to estimated replacement costs.

The replacement charges for non-extractive activities are the estimated current costs of replacing the fixed assets employed in each business area, divided by the estimated economic life of those assets.

For extractive operations, the replacement cost was similarly determined, but was applied on a unit of production basis. Finding and development costs per barrel of oil equivalent were estimated separately for domestic and foreign petroleum operations.

[Slide 2—U.S. petroleum production.]

We have assumed that oil and gas could be found and developed at the same real cost as we experienced during the past decade. On this basis, it would have cost over \$2 billion to replace the reserves produced during the 1974-1978 period.

The total funds generated by these operations during that time period were nearly \$1.5 billion—enough to replace only about 70 percent of the productive capacity used up.

Oil and gas price controls, and taxation of capital recovery, are clearly responsible for the inadequate cash generation of these operations.

Removal of the depletion allowance in 1975 was a serious setback, but it would have been overcome if prices had been permitted to rise to world levels. The combination of no depletion allowance and strict price controls has been subsidizing the users of domestic oil and gas at the expense of keeping the producers in gradual liquidation.

[Slide 3—U.S. processing and marketing.]

The picture has been even gloomier for U.S. petroleum downstream operations.

The cash income including added debt capacity has been barely sufficient to cover allocated corporate overhead and working capital increases.

We used replacement cost data prepared for our 10-K report to the SEC. This replaces assets in kind, and does not fully reflect all probable future antipollution requirements.

The net funds generated could cover only about 8 percent of the \$330 million of estimated replacement costs.

Price and allocation controls are responsible for these results.

[Slide 4—U.S. petroleum operations.]

Adding together the U.S. upstream and downstream operations, shows the combined results for all domestic petroleum operations except for Continental Pipe Line and the Louisiana Gas System.

During the past 5 years, these operations have generated funds to cover less than two-thirds of the estimated replacement cost of fixed assets used up.

For the reasons I noted earlier, the replacement costs are, if anything, understated, and the percentage of assets that could be replaced with the funds actually generated is correspondingly overstated.

[Slide 5—Foreign petroleum production.]

For foreign upstream operations, net funds generated during the past 5 years were sufficient to cover over 70 percent of estimated replacement cost, about the same as for domestic production.

By increasing their take, host governments in Libya and Dubai have succeeded in appropriating to themselves a very high percentage of the benefits of the rising value of oil production from existing sources.

We assumed that the North Sea is the major source of the next generation of foreign production projects, and based replacement costs on our Thistle, Dunlin, Murchison, and Stratfjord development experience and actual finding costs during the previous decade.

[Slide 6—European refining and marketing.]

Conoco's foreign downstream operations have, on average, roughly broken even against replacement costs during the past 5 years.

In part, this reflects flexible price controls or no price controls, in European product markets. Product prices have moved up to recover rising crude and operating costs and provide for some margins.

[Slide 7—Foreign petroleum operations.]

Adding up the numbers on the two previous slides, we see that Conoco's upstream and downstream foreign petroleum operations have recovered less than 80 percent of replacement costs.

[Slide 8—Worldwide petroleum operations.]

Adding up all the petroleum operations covered in this study, which excluded Hudsons Bay Oil and Gas Co., our Canadian subsidiary, results in net funds generated of about \$2.3 billion. This is only enough to cover two-thirds the estimated replacement cost of \$3.4 billion.

In total, during the past 5 years, Conoco's petroleum operations have been in a state of gradual liquidation in economic terms, even as charges of "obscene profitability" assaulted the public's ears.

IMPLICATIONS

What does all this mean?

I think we can draw the firm conclusion that both the U.S. government, and most foreign petroleum producing country governments, have been following policies that lead inevitably to long term shortages of petroleum, by denying producer companies the capital resources necessary to bring on new supplies.

They have done this by interference with market pricing and with exorbitant taxation. And they have done it at a time when the cost of finding and developing a barrel of new petroleum producing capacity has been very sharply higher than the historical cost of finding and developing the larger U.S. fields and the prolific Middle East reserves. This is true even after adjustment for general inflation. Inflation only exacerbates this problem.

Nothing I have said implies that the old investments in petroleum exploration and production, or new investments now being undertaken, are unprofitable in the conventional accounting sense or even after adjustment for general inflation. But the profitability of the old investments is not high enough to cover the much higher cost of replacing the old capacity with new capacity.

In downstream petroleum operations, earnings have not been high enough to justify any new major investments in the United States. Some incremental investments to upgrade product yield and make petrochemical feedstock have shown attractive projected returns. In Europe, incremental refining investments to maximize gasoline and distillate output have been attractive.

Nevertheless, this and other evidence strongly suggests that large segments of U.S. heavy industry are in a state of economic liquidation. Conoco is probably far better off than the average for heavy industry. The effective tax rate on inflation adjusted corporate income is nearly 70 percent. This is simply too heavy a drain to permit retention of enough cash in the private sector to replace its productive assets.

All this could be changed by appropriate changes in government policies. Crude oil price decontrol in the United States, provided it is

not offset by excessive "windfall profits taxes" is a most welcome and needed change. Accelerated depreciation, along the lines of the 10-5-3 proposals now in Congress, would be of material help to downstream investments. More liberal investment tax credits, already provided for synfuels, may become available. But, we also must contend with Council of Wage and Price Stability guidelines more restrictive than last year's, and an election campaign that could focus on which candidate will treat "big oil" most harshly.

Clearly, our industry—and Conoco—needs the higher level of earnings now being realized. We need them not only in 1979, but on a sustained basis.

SLIDE 1

CASH GENERATION vs. REPLACEMENT COST

1974-78

	<u>\$ MM</u>
Funds from Operations	
Increase in Debt Capacity	
Corporate Charges	
Change in Working Capital	
Net Funds Generated	
Replacement Cost	
Funds Generated/Replacement Cost	

SLIDE 2

CASH GENERATION vs. REPLACEMENT COST

U.S. petroleum production
1974-78

	<u>\$MM</u>
Funds from Operations	1,483
Increase in Debt Capacity	365
Corporate Charges	(326)
Change in Working Capital	(45)
Net Funds Generated	1,477
Replacement Cost	2,090
Funds Generated/Replacement Cost	71%

SLIDE 3

CASH GENERATION VS. REPLACEMENT COST

U.S. processing & marketing*
1974-78

	<u>\$ MM</u>
Funds from Operations	323
Increase in Debt Capacity	19
Corporate Charges	(132)
Change in Working Capital	<u>(184)</u>
Net Funds Generated	26
Replacement Cost	330
Funds Generated/Replacement Cost	8%

* Refining, Marketing, associated Surface Transportation and Terminals, NGP ex. La. Gas System

SLIDE 4

CASH GENERATION vs. REPLACEMENT COST

U.S. petroleum operations
1974-78

	<u>\$MM</u>
Funds from Operations	1,806
Increase in Debt Capacity	384
Corporate Charges	(458)
Change in Working Capital	<u>(229)</u>
Net Funds Generated	1,503
Replacement Cost	2,420
Funds Generated/Replacement Cost	62%

SLIDE 5

CASH GENERATION vs. REPLACEMENT COST

Foreign petroleum production (ex HBOG) 1974-78

	<u>\$MM</u>
Funds from Operations	546
Increase in Debt Capacity	115
Corporate Charges	(88)
Change in Working Capital	<u>18</u>
Net Funds Generated	591
Replacement Cost	820
Funds Generated/Replacement Cost	72%

SLIDE 6

CASH GENERATION vs. REPLACEMENT COST

European refining and marketing 1974-78

	<u>\$MM</u>
Funds from Operations	217
Increase in Debt Capacity	13
Corporate Charges	(80)
Change in Working Capital	<u>12</u>
Net Funds Generated	162
Replacement Cost	150
Funds Generated/Replacement Cost	108%

SLIDE 7

CASH GENERATION vs. REPLACEMENT COST

Foreign petroleum operations (ex HBOG) 1974-78

	<u>\$MM</u>
Funds from Operations	763
Increase in Debt Capacity	128
Corporate Charges	(168)
Change in Working Capital	<u>30</u>
Net Funds Generated	753
Replacement Cost	970
Funds Generated/Replacement Cost	78%

SLIDE 8

CASH GENERATION vs. REPLACEMENT COST

Petroleum operations (ex HBOG) 1974-78

	<u>\$MM</u>
Funds from Operations	2,569
Increase in Debt Capacity	512
Corporate Charges	(626)
Change in Working Capital	<u>(199)</u>
Net Funds Generated	2,256
Replacement Cost	3,390
Funds Generated/Replacement Cost	67%

CRITIQUE OF U.S. ENERGY POLICY

By James E. Hunter¹

INTRODUCTION

Since the 1973-74 Arab oil embargo, energy has been a persistent concern of the United States. Each interruption in the supply of imported oil has spurred Congress to consider energy legislation. Although some programs such as phased decontrol of domestic crude oil and the creation of the U.S. Synthetic Fuels Corporation are positive steps in attempting to resolve our energy problems, there is still much to be done.

The purpose of this study is (1) to summarize the nature and magnitude of the U.S. energy problem, (2) to examine the policymakers' reactions to the energy situation and (3) to suggest a policy framework and specific policies that would improve the nation's energy position.

PERSISTENCE OF U.S. ENERGY PROBLEMS

Dependence on insecure foreign oil supplies is the root cause of U.S. energy problems. This makes the nation vulnerable to unpredictable interruptions of oil imports, compromises the country's foreign policy, undermines national security, reduces the strength of the dollar and slows economic growth.

U.S. Oil Imports

Oil imports increased from 6 million BD in 1973 to 7.9 million BD in 1979. In 1973, oil imports accounted for approximately 35 percent of U.S. oil demand; by 1979 oil imports represented approximately 43 percent of U.S. demand. While U.S. imports of oil were rising, the portion of imports attributable to OPEC members increased at a faster pace. Similarly, imports of oil from Arab members of OPEC plus Iran, which are particularly vulnerable, shot up at the fastest rate of all.

U.S. PETROLEUM IMPORTS

	Net imports		Share of U.S. oil imports	
	Million barrels daily	Share of U.S. demand (percent)	Total OPEC (percent)	Arab members of OPEC plus Iran (percent)
1973.....	6.0	35	48	18
1974.....	5.9	35	54	20
1975.....	5.8	36	60	27
1976.....	7.1	41	69	27
1977.....	8.5	46	70	42
1978.....	7.8	42	69	42
1979.....	7.9	43	67	45

Source: Conoco, Inc. and U.S. Department of Energy, "Monthly Energy Review."

Perhaps the most worrisome aspect of a rising level of U.S. imports is that more than one-half of free world petroleum reserves are in the Middle East, mostly in the countries on the Persian Gulf. Half of the world's oil supplies pass through the narrow Strait of Hormuz. Oil exports from this unstable and unpredictable area are vulnerable to the internal affairs of Iran, the Arab-Israeli conflict, tensions between producing countries, and Soviet-American rivalry.

Consequences of U.S. Dependence on Insecure Oil Sources

The Arab embargo of 1973-74 and the Iranian shutdown of 1979 demonstrated that the United States is susceptible to unexpected import disruptions and rapid increases in oil prices. During the Arab embargo, supplies to the United States were cut by 1.9 million BD, some 10 percent of U.S. demand in 1973. Reduced speed limits were imposed and Sunday sales of gasoline were

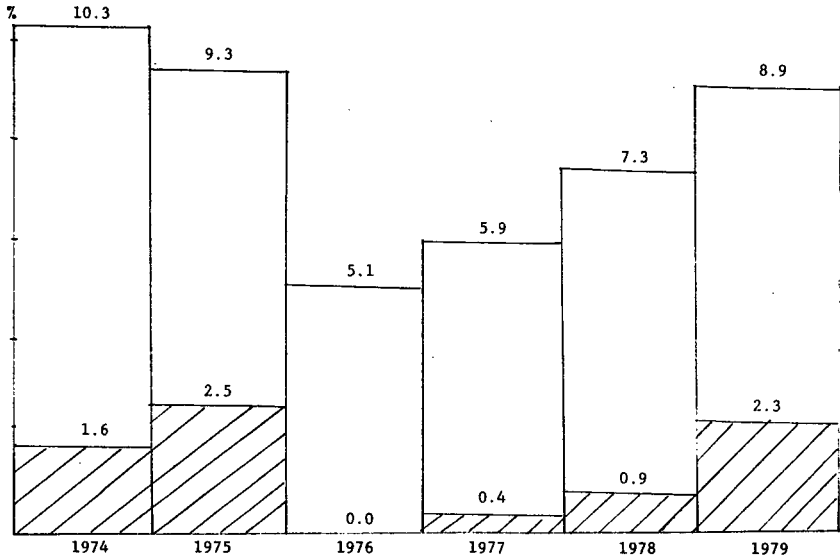
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curtailed. Mandatory allocations of gasoline to retailers resulted in long waiting lines at service stations in certain parts of the country.

In 1979, the Iranian conflict reduced U.S. oil supplies by 700,000 BD, 4 percent of U.S. demand in 1978. Government imposed allocation programs again caused long gasoline lines and inconvenience to consumers.

The role of higher oil prices in the U.S. economic problems of the 1970's is important but often exaggerated. Rapidly increasing oil prices during 1973-74 and again in 1979 were not the main cause of high inflation and poor economic growth. Chart 1 shows the impact of oil price increases on inflation.

CHART 1.—Contribution of rising energy prices (shaded area) to overall U.S. inflation (GP deflator) 1974-79



Source: Data Resources, Inc.

Although the effects of the 1973-74 crisis on U.S. economic growth are extremely difficult to quantify, economic analysis by the U.S. General Accounting Office estimates that the embargo and its concurrent price increases reduced the gross national product by 3 percentage points and increased unemployment by 1.7 percentage points.

Oil imports cause a significant outflow of U.S. wealth to oil exporting countries, and thus have a strong impact on the U.S. balance of payments. The following table shows that oil imports have increased from 11 percent of the total value of imports in 1973 to 27 percent in 1979.

U.S. OIL IMPORTS
[In millions of dollars]

	Petroleum and products	Percent of total imports
1973	7,614	11.0
1974	24,270	23.4
1975	24,814	25.3
1976	31,798	26.3
1977	41,526	28.1
1978	39,109	22.7
1979	56,046	27.2

Source: U.S. Department of Commerce, "Survey of Current Business."

The effect of oil imports on the U.S. balance of payments depends on how the producing countries use the funds they receive from the United States in payment for their oil. If they spend all this money to purchase goods and services produced in the United States, or if they invest this money in the United States permanently, the accounts are balanced, and the only effect on the U.S. economy is that we have to give up these goods and services to get the oil. However, this is not what has happened. The producing countries have invested some of the money in short-term bonds and used some of it to trade with, and invest in, other countries. This has (1) reduced the stability of the dollar's value in terms of other currencies as the producing countries have periodically shifted their short-term investments among countries, and (2) depressed production and income in the United States as some of the money has been used to purchase goods and services in other countries.

The rising value of oil imports has added to U.S. balance of payments deficits which have led to a decline in the value of the dollar. A depreciated dollar has increased the cost of other U.S. imports and has thus contributed to inflation in the United States. Since the world price of oil is denominated in U.S. dollars, a depreciating dollar sets off a spiral of even higher oil prices as oil exporting countries attempt to maintain and increase the purchasing power of their dollar-denominated financial holdings and current receipts for sale of oil. While the United States suffers from this vicious cycle, countries with strong currencies (for example, Switzerland and Germany) enjoy more stable oil prices. As shown in the following table, the FOB price of oil in Swiss francs and German marks has changed much less than the dollar price of oil since 1974.

INDEX OF THE F.O.B. COST OF ARABIAN LIGHT OIL

[1973=100]

	United States	Switzerland	Germany
1973.....	100	100	100
1974.....	370	290	330
1975.....	368	298	357
1976.....	396	199	346
1977.....	426	263	332
1978.....	436	218	295
1979.....	594	296	395

Source: Conoco, Inc.

U.S. POLICY REACTION TO THE ENERGY CRISIS

Following the Arab embargo of 1973-74, the main thrust of U.S. government energy policy was to protect the consumer from rising oil prices. Also, the development of additional supplies of domestic energy was given secondary consideration to protection of the environment and occupational health and safety. The regulations implementing these latter valid concerns have turned out to be very costly and inefficient. Additionally, this energy policy approach by the U.S. government led it into direct confrontation with OPEC and with American oil companies, and also resulted in recriminations from U.S. allies for not facing the problem forthrightly. The outcome of these policies was to maintain oil consumption and imports at higher levels than the country could afford, and to hold down domestic oil production.

Price Controls, Allocation and Taxation

Price controls and allocations have been the instruments used to insulate the U.S. consumer from higher oil prices. In August 1971, the federal government imposed price controls on all U.S. industry. Emergency controls remained in effect for the U.S. petroleum industry even after they were removed from other industries. These price controls hindered the ability of U.S. petroleum companies to provide additional needed domestic supplies by reducing (1) the incentives to find new oil and (2) the amount of funds they could generate and reinvest. The "Two-Tier" pricing of domestic crude oil went into effect as part of the federal government's Phase IV price control program in August 1973. This meant

that oil companies were required to charge one low price (below its true value) for so-called "old" oil and another price for "new" oil.

In response to the Arab embargo, the Emergency Petroleum Allocation Act (EPAA) was signed into law in November 1973, and mandatory allocation of crude and all refined products commenced in the beginning of 1974. Price controls and allocations aggravated the problems caused by the cutoff of Arab oil.

After repeated extensions, the EPAA expired and was replaced by the Energy Policy and Conservation Act (EPCA) in December 1975. The EPCA provided for:

(1) The placement of "new" as well as "old" oil under price controls for 40 months beginning February 1976, with the provision that the Administration could raise oil prices by a maximum of 10 percent per year.

(2) An average price of "old" oil of \$5.25 per barrel and \$11.28 per barrel for "new" oil with a composite average price of \$7.66 per barrel.

Finally in June 1979, President Carter began the reversal of the harmful effects of price controls by gradually decontrolling the price of oil with the goal of letting oil prices reach world levels by September 1981. To a great extent this positive action taken by the President will be offset by the negative impact of the Windfall Profits Tax.

The underlying concept in the history of oil price controls from 1973 through the imposition of the windfall profits tax has been that subjective social equity considerations are more important than economic efficiency considerations. Oil and gas have been priced or taxed on the basis of the date of discovery, ownership, or depth of the well. The value in the market makes no such distinction—a barrel of oil or a cubic foot of gas has the same value regardless of date of discovery of the producing field, ownership, or depth of the well.

The Preeminence of Environmental and Health and Safety Goals

Beginning in the late 1960's, and continuing into the 1970's, environmental and health and safety goals were considered more important than the development of additional domestic energy supplies. In some cases, the effect of this emphasis was to increase demand for imported oil. For example:

In November of 1967, the Clean Air Act placed restrictions on sulfur emissions and created a strong demand for imported low sulfur oil mainly to replace high sulfur coal.

The Coal Mine Health and Safety Act was signed into law in 1969. This legislation increased the cost of producing coal, which forced coal out of some utility markets.

Additional antipollution standards were imposed by the passage of the 1970 Amendments to the Clean Air Act. By mandating a shift from regular to unleaded gasoline, these amendments increased consumption of petroleum by refineries and motor vehicles.

Actions taken under environmental legislation (1) delayed by several years the availability of large new supplies from the Alaskan North Slope and (2) slowed development and increased the cost of oil from the Outer Continental Shelf.

The above mentioned laws comprise only a portion of environmental legislation and regulation. Everyone wants cleaner air and water and safer working conditions. However, the time has come to examine the efficiency of the specific regulations in attaining these desirable ends. Up to the present the failure to balance benefits and costs has restricted domestic energy development and caused greater reliance on imported oil.

Confrontation Policy

A policy of protecting consumers from higher oil prices inevitably led the U.S. government into verbal confrontation with OPEC which has led to no positive results. Frustrated with their inability to control the pricing policies of oil producing countries, U.S. political leaders have attacked U.S. oil companies who could not control events any more than they could. This unproductive scapegoating combined with the efforts to insulate consumers from rising prices was the sum total of U.S. energy policy until very recently, and it left the United States subject to later shortages of oil and the resulting economic consequences of such shortages. Inability or the perception of the inability to

control rising inflation, and the fall of the dollar on international currency exchanges resulted in the U.S. government viewing OPEC as the cause of U.S. economic maladies including slower economic growth.

During the periods in which oil prices increased rapidly, U.S. oil companies also experienced higher profits. Critics of the industry went so far as to charge that oil companies were conspiring with OPEC to raise prices to increase profits. High U.S. government officials have railed at the "obscene" profits of oil companies, and have threatened them with dismemberment. Percentage depletion for petroleum and natural gas was repealed for all but the smallest producers. Recently, pipeline divestiture and anti-merger proposals have been directed at the largest oil companies.

The divisiveness of this confrontation policy of using OPEC and large oil companies as scapegoats has (1) weakened U.S. influence in OPEC countries, (2) undermined the competitive position of U.S. companies abroad and (3) lessened the ability of oil companies to develop domestic oil resources. Overall it has reduced respect for the U.S. government worldwide. Only U.S. adversaries have gained from this bankrupt policy.

U.S. GLOBAL ENERGY POLICY

To resolve energy related problems and stimulate long-term economic growth, U.S. energy policy should be redirected. Energy policy should focus on a positive approach and away from the restrictive, confrontational orientation of the past. A redirection is needed in both global and domestic energy policies.

Our global energy policy should encourage the worldwide development of energy supplies, particularly by promoting the private development of world energy resources and by trying to build relationships that increase the security of oil supplies from producing countries.

Develop Additional Non-OPEC Energy Supplies

Since the market for oil is global, increases in oil supply or conservation anywhere in the world will improve the U.S. energy position. Similarly, from both competitive and security standpoints, diversity of supply among countries and among fuels is desirable.

The particular geological circumstances in the Middle East and a few other limited parts of the world produced the contemporary geographical pattern of the non-Communist world's energy supply. Uncertainty associated with the availability of Middle East oil provides a strong motivation to develop alternative oil supplies.

The possibilities for geographical diversification are great. Areas having untapped potential for development of oil and gas still exist in the United States, Canada and Western Europe. Latin America, Africa and Southeast Asia contain almost 35 percent of the world's total potentially petroliferous regions and, to date, the exploration efforts in these areas have been much less than in the developed countries.

Just as there exists great potential for development of world oil resources in previously unexplored areas, so too, great opportunities exist for the global development of coal, uranium and hydropower. A market environment, with minimum governmental restraints, provides the appropriate incentives to determine which resources are commercially exploitable, the amount to be produced and the price of the resource. Also, by encouraging the development and use of alternative resources to oil, the world demand for oil will be reduced, thereby allaying pressure on sensitive oil markets.

Financial intermediaries should continue and possibly expand their roles in fostering the private development of energy resources. Private financial institutions and public agencies, such as the World Bank, should assist in providing the funding necessary to insure the private development of resources. Private development will contribute to the depoliticization of world energy markets.

The transfer of energy technologies among countries, particularly in the non-Communist world, should be encouraged. Purely from an energy standpoint, technological assistance in developing energy sources in the Communist Bloc would also be desirable. Political and national security considerations, however, may limit technological assistance to these countries.

International contingency planning to deal with supply interruptions should be improved. Increased coordination among energy importing nations could mitigate the impact of disruptions in world energy markets.

Encourage More Secure Supplies from OPEC

A redirection of U.S. policy away from confrontation with OPEC is essential. The political, economic and military hazards associated with upheavals in world oil markets are too great for both individual producing countries and the importing countries. Cooperation based on common interests should be the theme of the U.S. relations with producing countries. Realistic attempts by consuming nations to understand policies and aspirations of OPEC members would contribute to establishing a meaningful dialogue among oil importing countries and between oil importing countries and oil exporting countries.

Greater security of supply could begin with encouraging producing countries to develop greater production capacity. The turmoil that developed in world oil markets as a result of the political situation in Iran could have been reduced if other countries had greater producing capacity and chose to use it.

OPEC members have indicated their desire for protection against inflation through greater stability in international financial markets. In the past, these countries have failed to obtain a satisfactory rate of return on dollar denominated financial investments largely because of rapidly rising inflation. Stable international exchange markets, which would be largely the result of lower rates of inflation, would begin to bring actual rates of return in line with expected returns. The U.S. along with other consuming countries should give serious consideration to indexing world oil prices as a means of protecting producing countries' income against inflation. As a practical matter, OPEC may enforce some form of indexing unilaterally, just as the producing countries now set the dollar price of oil without a formula.

The benefits of a more stable and predictable economic environment would reach beyond making oil supplies more stable. By making investments in the United States appealing, producing countries with financial surpluses could be induced to reduce their holdings of short-term securities in favor of long-term investments that have positive economic effects on the United States.

DOMESTIC ENERGY POLICY

The underlying goal of U.S. domestic energy policy should be to reduce dependence on insecure foreign oil. This can be accomplished by following some basic principles in setting domestic energy policies, and by some specific programs to reduce imports of oil.

Basic Principles of Domestic Energy Policy

To reduce dependence on imported oil, domestic energy policy should rely on basic principles that have been successful in other areas of economic activity. In the absence of supply emergencies, resources should be allocated by market forces to insure efficiency. Cooperation rather than confrontation should be the approach toward reconciling conflicting domestic interests. Finally, energy policy should not foreclose any energy options that can be implemented without unduly compromising other social goals.

Market allocation of resources.—The U.S. experience with energy policy since 1973 has indicated that the most desirable results are most often the direct result of market dynamics. The plethora of energy legislation and regulations has discouraged efforts to increase supply of energy and has disrupted domestic energy markets.

Studies by independent analysts and the Departments of Energy and Justice have all found that government energy regulations aggravated rather than moderated the impact of the 1979 Iranian oil disruption. The generally poor results of government energy regulations provide ample support for the position that the market is better able to distribute energy supplies and encourage additional energy production than any government program.

Cooperation among different interest groups.—The inability to resolve conflicts among different interest groups has exacerbated the energy situation. Co-

operation among industry, environmental groups, and government is essential in developing sound energy programs. The adversary process has failed to produce reasonable policies.

Finding solutions to difficult industry-environmental problems may, in some cases, require that certain conflicting energy, environmental, economic, and social priorities be weighed. Traditionally this task has been accomplished through the adversary process, whereby opposing groups meet at legislative hearings or in the courts to assert their positions. Advocates are forced by the nature of this process to present their case in the starkest terms in order to "win" a favorable decision. This precludes the search for a mutually agreeable outcome. Further, it can lead to additional delays and costs that are in no one's best interest.

The National Coal Policy Project is an outstanding example of successful cooperation among different interest groups. This Project brought together leaders from industry and environmental groups to seek consensus and provide guidance on the important national policy issues related to the use of coal in an environmentally and economically acceptable manner. The Project's report, "Where We Agree," demonstrates that consensus among competing interest groups is attainable on many specific issues and preferable to confrontation.

Promote a variety of energy options.—Flexibility is particularly important with respect to our energy problem where a multiplicity of solutions rather than one or even several approaches is likely to lead us out of our dilemma. This kind of problem requires unpredictable combinations of skills, imagination, and resources. The collective decisions of the millions of people in the marketplace will soon separate out successful methods from the unsuccessful ones, far more efficiently than precise government directives.

Overreliance on any single energy option or group of options may restrict our future energy choices or alternatives. To minimize this problem, energy policy should promote a variety of energy approaches. Only then can we be sure that energy policy has not inadvertently foreclosed valuable energy options.

Programs To Reduce Imports of Oil

To reduce dependence on insecure foreign oil, energy policy should promote conservation, encourage substitution of other forms of energy for oil, stimulate the development of domestic resources and provide for greater security from oil import interruptions through increased storage.

Conservation.—Conservation has several characteristics that make it an acceptable way to reduce oil imports. It has shorter lead time than other energy sources; it is almost always cleaner than other forms of energy; it can usually be adopted in small increments; and it generally carries low technical risk. This is not to say that conservation is always superior to developing new and alternative energy resources. Conservation is an economic activity that can be carried to the point where it ceases to have an advantage over additional energy production.

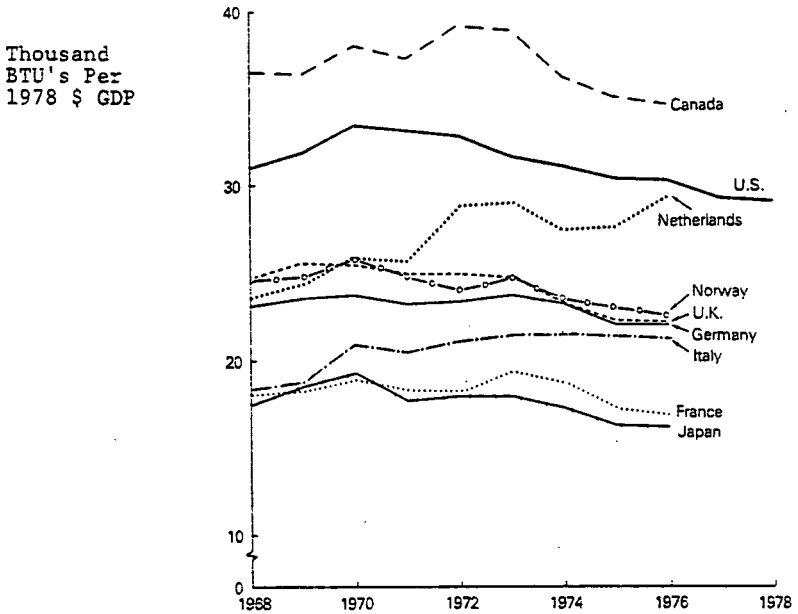
Energy conservation, largely as a response to higher prices, has already had a significant impact on domestic energy demand. Prior to the 1973 embargo and subsequent price increases, most forecasters expected the United States to be consuming over 90 quadrillion BTU's of energy by 1980. Current forecasts call for consumption in 1980 to amount to only 77 quads.

Until 1974, energy prices in the United States declined slowly but steadily in real terms, while recently we have experienced large increases in energy prices—increases which are significantly altering amount of energy used per dollar of output in our economy. The ratio between energy and Gross Domestic Product (GDP) for the United States has dropped steadily, from 33,400 Btu's per 1978 dollar of output in 1972 to 29,100 Btu's per 1978 dollar of output in 1978.

In addition, energy use per dollar of gross output has varied considerably across countries, which suggests there are opportunities for further conservation in the United States. Figure 1 plots energy consumption per dollar of gross domestic product (measured in constant 1978 U.S. dollars) for the United States, Canada, and the United Kingdom, the Netherlands, France, Norway, Italy, Japan and West Germany. The European countries have energy/output ratios well below those of the United States and Canada.

FIGURE 1

Energy Consumption Per \$ of Gross Domestic Product (GDP) for Selected Countries



Source: "Energy: The Next Twenty Years," a report sponsored by the Ford Foundation.

Substitution of other energy sources for oil—While reduction in the consumption of energy is helpful, substituting other energy fuels for oil is also important in reducing oil imports. If, as predicted, oil prices increase more rapidly than the prices of other energy sources, the substitution away from oil, in addition to the reduction of total energy demand, will reduce the demand for oil imports as less costly fuels replace the use of oil. The greatest opportunity is the replacement of oil in electricity generation and industrial heating and steam generation with coal and nuclear.

Development of additional domestic resources.—Besides reductions in petroleum consumption as a result of the conservation and substitution effects of higher prices, development of additional domestic energy sources will help improve the U.S. energy position. Substantial domestic energy reserves have been identified. The table entitled "U.S. Production and Consumption 1978" sets out the slate of energy sources and their relative importance in total consumption. In 1978, oil and gas comprised about three-fourths of U.S. energy consumption; coal only 18 percent. The Reserves/Production ratio indicates the number of years that 1978 reserves will support production at 1978 levels. Coal is by far the most abundant energy fuel with almost 400 years supply at current production levels.

The data indicate that the entire stock of energy reserves remaining is significant; however, the greatest energy reserves are in sources that are not currently in greatest use. To utilize our domestic resources most effectively, we must begin to use those energy sources having the largest reserves.

Although change in the pattern of domestic consumption among fuels is essential, sizeable resources of all individual energy fuels remain to be discovered. The table "U.S. Recoverable Reserves and Resources of Conventional Mineral Fuels" shows that vast amounts of energy resources have not yet been found. Undiscovered hypothetical resources, that portion of the resource base that might be discovered some time in the future, exceed current reserves by a factor of three. Although coal and uranium resources account for a substantial portion of the resource base, the amount of oil and gas that remains undiscovered is significant.

U.S. PRODUCTION AND CONSUMPTION, 1978

	Production			Consumption	
	1978 Production	Quads of Btu equivalent	Reserves/production ratio	Quads of Btu equivalent	Percent
Coal.....	661 (million tons).....	13.9	394.0	14.2	18.2
Oil and natural gas liquids..	10.9 (million barrels per day).....	23.1	10.1	37.9	48.6
Gas.....	19.7 (trillion cubic feet)....	20.2	10.6	19.8	25.4
Uranium/nuclear.....	18.5 (thousand tons).....	5.6	48.1	3.0	3.8
Hydropower.....	284 (billion kilowatt-hours)....	3.0	-----	3.2	4.0
Total.....	-----	65.8	-----	78.1	100.0

Source: "Energy Outlook Through 1990," Conoco, Inc., Coordinating and Planning Department, Economics Division.

Increased oil storage.—The major action taken by the U.S. Government to provide protection against future oil embargoes has been the creation of a strategic petroleum reserve (SPR). In his January 1975 State of the Union message, President Ford recommended a strategic storage program of one billion barrels of oil for domestic needs. During 1975, legislation concerning a reserve was considered and in December 1975, the Energy Policy and Conservation Act was enacted. The act provided for storage of up to one billion barrels of oil, with the provision that three years after enactment, the SPR would contain not less than 150 million barrels. The SPR currently contains less than 100 million barrels of oil, significantly less than had been originally planned.

The purpose of the SPR as stated in the act is to diminish U.S. vulnerability to the effects of interruptions in petroleum supplies and to carry out U.S. obligations under the International Energy Program (IEP). The general belief is that an SPR will help stabilize the national and international petroleum situation by (1) providing credible evidence that the United States has the will to insulate its economy from major energy supply disruptions and (2) reducing the economic impact of an interruption if one occurs. Until the United States accelerates the rate at which the SPR is being filled and develops an operational plan for distributing the SPR oil, neither of these goals will be achieved.

SPECIFIC U.S. ENERGY POLICIES

In addition to more general policy initiatives, a comprehensive energy policy should also aim at maximizing individual contributions of oil and gas, coal, nuclear and synthetic fuels. Specific policy recommendations for each of these fuels are given in the following discussion.

Oil and Gas

Oil and gas have been the preferred fuels due to their ease of transportation, relatively low emissions when burned, general versatility and low cost given the other advantages. In view of the existence of significant undiscovered domestic resources of oil and gas, major efforts should be undertaken to develop these resources.

U.S. RECOVERABLE RESERVES AND RESOURCES OF CONVENTIONAL MINERAL FUELS

Fuel	Identified		Percentage of identified	Undiscovered hypothetical resources	Total	Quads of Btu equivalent	Percentage
	Reserves	Inferred resources					
Coal (billion short tons).....	260	648	92.8	895	1,803	37,863	92.9
Oil and natural gas liquids (billion barrels).....	40	29	1.9	98	167	921	2.0
Gas (trillion cubic feet).....	209	202	2.0	484	895	917	2.3
Uranium (thousand short tons)....	890	1,395	3.3	1,515	3,800	1,140	2.8
Total (quadrillion Btus).....	6,163	14,391	100.0	20,287	-----	40,841	100.0
Oil shale (billion barrels).....	198	-----	-----	-----	-----	1,148	-----
Total (quadrillion Btus).....	7,311	14,391	-----	20,287	-----	41,989	-----

Source: "Energy in America's Future", Sam Schurr, ed.

Government oil and gas policy proposals have tended to focus on keeping prices low rather than increasing supply. A variety of supply side programs could be implemented to make the best use of our oil and gas resources.

A desirable first step in increasing oil and gas production would be to reduce the disincentives in the Windfall Profits Tax by exempting new, stripper and tertiary oil from the Windfall Profits Tax; adjusting the base price level for current world oil prices; and escalating the base price for new and tertiary oil by the Index of Oil Field Machinery and Equipment rather than by the GNP deflator. Imposition of the Windfall Profits Tax in its present form will offset many of the significant contributions of decontrol. Every dollar taxed away by the government is a dollar which is not spent to increase domestic oil supplies. Existing taxes and royalties by themselves would collect 49-55 percent of each additional decontrol dollar for federal, state, and local governments. This would have left only 36-44 percent for oil producers. The enacted Windfall Tax will reduce the producer's share still further, to about 20 percent of the decontrol revenues. This gap between the actual price of the additional production, and the amount the producer receives, is large enough to restrict the production of oil. The American Petroleum Institute estimates that decontrol of oil prices in the absence of the Windfall Profits Tax would boost domestic petroleum production by 1.7 million BD by the mid-1980's.

Some additional programs that would encourage oil and gas production are:

(1) Seek opportunities to speed decontrol of domestic oil and gas prices. Inflexibility of detailed and complex legislation aimed at gradual price decontrol, such as the Natural Gas Policy Act of 1978, makes the goal of market-determined prices difficult to attain.

(2) Accelerate leasing of prospective oil and gas producing areas rather than making them inaccessible to exploration and development. Attempt to resolve environmental concerns by a cooperative approach as discussed in the preceding section on basic principles.

(3) Encourage state and local authorities to expedite regulations that are restricting oil and gas production such as those that curtailed development of oil production in California's Santa Barbara Channel. Implementation of "fast track" legislation would enable the federal government to overrule state and local regulations when it is deemed to be in the national interest.

Although much more emphasis should be placed on stimulating oil and gas production, programs that would curtail petroleum demand would also help reduce our dependence on imported oil. Following are some recommended programs:

(1) Proceed along the current schedule to remove gasoline price and allocation controls by October 1, 1981.

(2) Impose a significant excise tax on all motor vehicle fuels. Ultimately the level of such a tax might be near \$.50 per gallon. This could be achieved with a lower initial tax of say \$.10 per gallon, escalating by \$.05 a year over a period corresponding to the average life of a motor vehicle. In this way, there would be increasing incentive for consumers to buy and manufacturers to produce fuel efficient vehicles. This would avoid the hardship and disruption that might accompany an immediate hike to the ultimate level. The following features should be included in the tax legislation:

(A) Gasoline price and distribution decontrol must accompany imposition of any excise tax increase so that the market can function without the distortions caused by continued controls.

(B) The tax receipts must be immediately and automatically recycled, preferably through a dollar for dollar reduction in either federal income taxes or employer's and employee's Social Security tax burden. Recycling by increasing government spending should be absolutely avoided.

(C) The tax should apply equally to gasoline and all motor vehicle fuels with no exemptions or exceptions.

Coal

Coal represents America's most underutilized energy source. This fuel accounts for 90 percent of the nation's energy resources, but only 19 percent of the nation's energy supplies. Coal produced largely from U.S. sources could provide a bulwark against insecure energy from the Middle East just as domestic oil cushioned interruptions in oil supply from the Middle East during the 1950's and 1960's.

The potential for a greater role for coal is substantial. Increased use of electricity from coal fired boilers could replace electricity produced from oil. Coal could replace oil in many industrial uses. Coal gasification and liquefaction would permit even greater substitutability for oil.

Despite the benefits that would flow from shifting our energy consumption patterns in favor of coal, government regulations restrict growth in demand and needlessly raise the cost of producing coal. One of the regulations most damaging to the effort to shift energy demand to coal is the Environmental Protection Agency's air quality standard with respect to sulfur dioxide (SO₂) emission.

Adverse effect on human health of low-level SO₂ emissions into the atmosphere is unproven. Scientists have questioned the validity of the 1939 review of health studies on which current SO₂ standards are based. More recent research has indicated that reducing SO₂ concentrations to the very low level required by the government is unlikely to produce any health benefits.

Professor Arthur Stern, president of the Air Pollution Control Association, says the current air standards are based on "guesses" made in the later 1960's and that all the SO₂ standards could be relaxed "without harm to the public." This view seems to have many adherents in the scientific community. Nearly three-fourths of the medical specialists attending an environmental symposium sponsored by the New York Academy of Medicine indicated they thought present SO₂ standards are "too stringent."

The bill for installation of stack gas scrubbers or higher-priced low-sulfur coal will be paid ultimately by consumers in the form of higher prices for electricity and for all goods and services. With little or no public health improvement foreseen, it is clear that the SO₂ regulations should be eased.

Mounting evidence that SO₂ is not a major health problem has redirected the Environmental Protection Agency's attention toward "acid rain." There have been allegations that rainfall is becoming increasingly acidic, as a result of sulfur and nitrogen oxide emissions, and that this increased acidity threatens the environment. However, studies by the Electric Power Research Institute demonstrate that there is no clear evidence supporting these charges. Several years of additional study are required to determine whether acid rain is a problem. This research should be undertaken as expeditiously as possible, and corrective measures should be taken only after all the evidence has been examined.

In addition to removing environmental obstacles to coal use, consumption of coal could be increased by making coal the fuel of choice for all new fossil-fired electric utility plants and large industrial fossil-fired steam and electricity generating plants, and by providing incentives to utilities to convert existing plants to coal. Congressional action is needed to expedite this switch to coal for those plants for which conversion is practical.

On the supply side, legislative and regulatory processes have also taken their toll on U.S. ability to produce coal. The most dramatic current example of government regulation's adverse impact on coal production is the Permanent Regulatory Program of the Office of Surface Mining (OSM), an outgrowth of the Surface Mining Control and Reclamation Act of 1977. OSM's regulatory program touches all aspects of coal mining and reclamation, including underground mining.

In assessing the costs and benefits of OSM regulations, Consolidation Coal Company studied 21 provisions of the Permanent Regulatory Program. The 21 items were selected because they were amenable to reasonably quick cost analysis. Thousands of man-hours were devoted to this study, which employed the expertise of reclamation specialists, geohydrologists, air quality scientists, mining engineers, civil engineers, sanitary engineers, process engineers, geotechnical engineers and geologists.

The Consol study shows that the Company's cost of complying with and achieving the goals of the Federal Surface Mining Act using good engineering practices would be about \$1 billion over 11 years. A conservative estimate of complying with OSM's detailed, "cookbook" type regulations is \$2.8 billion over the same time span. The difference between these two costs, \$1.8 billion, indicates the excess costs, beyond what would be necessary to comply with the law, that OSM regulations impose.

Extrapolating these results from Consol's costs to industry costs produces estimates that are startling in magnitude. Industry expense of complying with the

21 provisions in accordance with OSM's final regulations is estimated to be \$34.8 billion over 11 years. This is a yearly expense of \$3.2 billion. The total industry cost of complying with the law using best engineering practices would be \$12.7 billion over 11 years. This would represent a saving of over \$22 billion ; \$2 billion could be saved each year.

The following is a summary of recommended government actions that would stimulate domestic production of coal :

- (1) Raise unrealistically low SO₂ emission standards.
- (2) Enact legislation that will provide incentives for electric utilities to convert oil and gas fired generating capacity to coal.
- (3) Investigate thoroughly the alleged increase in acidity of rainfall and the causes of acid rain and undertake corrective measures only after all the evidence has been examined.
- (4) Change the Permanent Regulatory Program of the Office of Surface Mining to permit coal producers to use good engineering practices rather than detailed, "cookbook" type regulations to meet Federal Surface Mining Act requirements.
- (5) Review mine health and safety regulations with the objective of revising them so as to eliminate measures that do not improve safety but hamper productivity. The standards that lead to safe work practices should not be sacrificed.
- (6) Resume federal leasing of coal lands and revise the "due diligence" provision of leasing regulations to take into account long lead times in developing a mine.
- (7) Enact legislation that will insure access to water rights and remove barriers to obtaining rights of way for coal slurry pipelines.
- (8) Change the system of railroad regulation to encourage a rate system under which all haulers pay the full cost of the service they receive and which permits negotiation of long-term contracts between railroads and their customers.

Nuclear

Despite a growth in U.S. nuclear generating capacity of over 20 percent a year during the past 5 years, nuclear power is running into opposition as a result of concern over safety, waste disposal and environmental damage. These concerns have been reflected in frequently changing and increasingly stringent regulations, which have been a major factor in the doubling since the 1960's of the time required to bring a nuclear plant on stream. Higher standards and accompanying delays have in turn contributed to the escalation of construction costs, which have risen at more than twice the general rate of inflation.

In order to facilitate the development of additional capacity for nuclear power, procedures for siting and licensing reactors should be streamlined. Also a well-planned program for the safe disposal of spent nuclear fuels should be instituted, following the example of some of our European allies. Such a program would defuse much of the criticism from those opposing the future development of nuclear power.

Some of the most devastating criticism of nuclear power is related to operating mistakes. Many of the nuclear reactor operating problems are not caused by equipment failures, but rather, are the direct result of inappropriate actions taken by operating and maintenance personnel. To avoid similar problems in the future, plant personnel should receive better training. Continuing education should also become a requirement.

The continued development of nuclear reactor technology is essential for long term energy development. The recent two year study, "International Nuclear Fuel Cycle Evaluation," by technical experts from industrialized and less-developed nations concludes that new reactor designs, such as breeders, do not pose any greater risk of nuclear weapons spread than existing power plants now in use by the United States and many other countries. Breeder reactors are also more economic than current reactors because they produce more fissionable materials than they consume. This excess nuclear material can be extracted, recycled and used in other reactors.

Problems associated with breeder reactors are complex and will involve many years of study to resolve. By promoting a breeder R&D program beginning today, rather than in the future, it will be more likely that many of these problems will be resolved before the need for the breeder becomes crucial.

Synthetic Fuels

“Synthetics” include synthetic gasoline (alcohols from grain, coal, and other sources), synthetic crude/fuel oils for refining or direct burning by electric utilities (coal liquefaction, shale oil, tar sands and heavy oil) and synthetic gas (including gasification of coal to make high-BTU gas for blending into high-BTU gas pipelines by gas utilities and to make lower-BTU gas for local steam generation.)

Common to all of these sources is their greater projected costs than the current price of imported oil. Conoco estimates indicate that the current cost of producing synfuels is about \$40 per barrel and may rise to \$45-\$55 per barrel in 1980 dollars by 1995. This compares with a current price of \$30 per barrel for imported oil.

The development of synthetic fuels is viewed as an important component of the nation's energy policy. A number of proposals have been designed to promote the production of synthetic fuels. The most productive incentives are those which reduce the cost of synthetic fuels by lowering the capital cost of fuel projects. The following are recommended programs:

(1) *Investment tax credit.*—There is currently an additional 10 percent investment tax credit available for synthetic fuel plants completed by 1982; this extra credit should be extended at least until 1990.

(2) *Accelerated depreciation.*—Accelerated depreciation as proposed in the Capital Cost Recovery Act (10-5-3 Bill) would be highly desirable, particularly if it permits starting writeoffs while construction is still in progress rather than waiting until the plant begins operation.

(3) *Production tax credits.*—Some types of synthetic fuels, such as in situ tar sands production, suffer from high operating costs, and a production tax credit would stimulate production by offsetting those costs.

(4) *Investment grants.*—Now that the government has created the U.S. Synthetic Fuels Corporation, we believe that the most desirable mode of operation will be for that agency to make front-end investment grants to private sector firms or utilities prepared to proceed with commercial projects.

CONCLUSION

Although some programs such as phased decontrol of domestic crude oil and the creation of the U.S. Synthetic Fuels Corporation are positive steps, much of the U.S. government's reactions to the energy crisis has been counterproductive in solving the nation's energy problems. However, there is a growing realization that if the United States is to make progress on the energy front, fundamental changes must be made in energy policies.

Implementation of the policies recommended in the preceding discussion would begin to provide a greater balance between U.S. energy production and use. Supplies and prices of hydrocarbons are unlikely to return to the levels preceding the Arab embargo. However, appropriate government action could facilitate an adjustment to a drastically changed energy situation and could reduce the impact on the economy of sudden interruptions of supply that will likely characterize future world oil markets.

STATEMENT OF HOWARD MARLOWE, ASSOCIATE DIRECTOR, DEPARTMENT OF LEGISLATION, AMERICAN FEDERATION OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS

Seven years after the Arab oil embargo, this nation's energy future remains unclear. America is more vulnerable today and more dependent upon petroleum imports from insecure sources than it was in 1973. The AFL-CIO has continually called upon the President and the Congress to address this nation's energy dilemma with bold and decisive action. We must maximize production of all domestic sources of energy, and promote its conservation while assuring that these supplies are made available at reasonable prices.

Unfortunately, there are those who have been able to take advantage of America's energy crisis for their own, private benefit. The Organization of Petroleum Exporting Countries (OPEC) has discovered that oil prices can be increased dramatically with corresponding reductions in production without incurring adverse consequences. The giant U.S. multinational oil companies have found that these same policies bring massive increases in their profits. Even more intriguing, the oil industry has managed to convince Congress that their rapidly escalating profits are insufficient to finance their investment needs. As a result, the process of deregulating domestic oil prices is well underway, with a similar approach being taken for domestic natural gas prices.

Because of the OPEC stranglehold through price and supply decisions, the United States is presently at the mercy of the oil cartel. The giant oil companies, whose profits swell with every OPEC price hike, have neither the incentive nor the desire to protect the American people. To the contrary, their benefits increase as consumers pay more for decreasing quantities of petroleum.

The oil and gas industries and their supporters in Congress have called for a return to the "free market." There is no such condition as a free market in these industries. Over the years, the majors have been able to work in concert to orchestrate price and supply. Removing all government constraints only serves to give them license to use their monopolistic powers for the further enrichment of industry coffers. Not only do they dictate our national oil and gas policy, but through ownership of major interests in other energy industries, they also dictate the degree to which we can reduce our reliance on oil and gas by switching to other fuels.

This tight-fisted control of American energy supplies by a few giant companies is the central reality of our energy dilemma. It is a reality which demands that the federal government retain an activist role in assuring the availability of plentiful supplies of energy at reasonable prices.

There is no single solution to the energy dilemma. Ways must be found to conserve energy, develop new supplies, regulate the domestic energy industry, and respond to the monopolistic policies of OPEC. Our goal must be the development of an energy self-sufficiency which will provide for economic growth.

The United States must develop an effective mechanism for dealing with OPEC. Over the past 7 years, we have conducted our national energy policy as if there were no means to use our enormous economic power to thwart the cartel. However, the United States is not powerless to deal with OPEC. We should create a government agency to act as the importer of all oil, negotiating price through such systems as blind bidding, allocating supplies fairly throughout the country, and reducing the amount of oil that is imported.

Energy conservation is an indispensable component in the resolution of the energy crisis. By curtailing wasteful uses of energy while maximizing the energy efficiency of heating and cooling systems, we can significantly reduce our need for oil, gas and electricity. We must improve the energy efficiency of major appliances, automobiles and buildings. We must encourage conservation through peak-load utility

pricing and the elimination of discounts for large consumption levels. We must require the conversion of oil-fired boilers to coal. In addition, we need to expand government loans, loan guarantees and grants to individuals and businesses for the installation of conservation equipment, including co-generation technology.

Alternate energy sources must be developed from each of the three primary categories: (1) Essential renewable sources—solar, wind, gasohol, tidal and geothermal—for which varying degrees of technology exist and which appear to have minimal environmental effects; (2) nonrenewable sources—coal and nuclear—for which technology exists but which also pose environmental problems; and (3) new areas—such as waste matter, oil shale, tar sands and other synthetic fuels, and solar power installations—which require expensive new technology and may have potential environmental problems.

It is essential that the newly-established Solar and Conservation Bank be fully funded and put into operation as soon as possible. In tandem with existing federal tax credits for solar and conservation installations, the Bank provides the needed financial incentive to encourage the purchase of solar and conservation equipment. To those who argue that the government should not be in the business of subsidizing energy, we point out that the government has provided decades of financial incentives for conventional fuels. If the subsidies for solar and other technologies are to be removed, so must the subsidies for all other energy materials.

The AFL-CIO supports the recent legislative commitments to wind energy, gasohol, tidal and geothermal energy. Each of these technologies is useful in reducing our reliance on conventional fuels. An Energy Independence Authority should be created to provide loans and loan guarantees for private development of alternative energy sources. This authority should also be empowered to launch projects of its own, patterned after the TVA concept. It should encourage development of new conservation technology, production of oil and gas from public lands, and research to resolve environmental problems.

In the short term, coal and nuclear power have significant importance in our national energy policy. The accelerated development of each of these resources is essential, while protecting the environment and maintaining stringent safety and health standards.

The United States has about 450 billion tons of coal reserves—more than 700 times the national annual usage. The country could double or triple coal consumption and still have enough resources to last more than 200 or 300 years. Nuclear power currently constitutes a little more than two percent of total energy supply. The accelerated development of nuclear power could considerably enlarge that figure and make a major contribution to the resolution of the energy problem. To accomplish this, the licensing of nuclear reactors should be expedited and safe federal repositories established for nuclear waste.

The AFL-CIO strongly supports the newly-established Synthetic Fuels Corporation. Private industry, left to itself, cannot or will not develop the alternative energy sources needed by this country. For that reason, the Federation believes the Synthetic Fuels Corporation will help achieve energy self-reliance for the United States.

An Energy Mobilization Board, which the Administration proposed but Congress failed to enact, would expedite construction of energy-producing facilities by eliminating redtape and unnecessary procedural delays. However, this board's power must not be permitted to negate worker safety, civil rights, labor standards, antitrust, environmental or health laws.

The United States needs west-to-east oil pipelines, such as the Northern Tier Pipeline, to carry Alaskan oil to refineries in the Midwest. Greater shipment of domestic and foreign oil in U.S.-flag tankers, which have a proven safety record, would minimize losses due to accidents.

The loophole in the Jones Act, which allows foreign-flag vessels to engage in commerce between the Virgin Islands and the U.S. mainland, should be closed. Oil accounts for 99 percent of the outbound shipments from the Virgin Islands to the United States. As a result of the loophole, this oil is carried in foreign-flag ships. The loophole encourages dependency on foreign ships for transportation of vital energy sources.

The control of domestic energy prices is a legitimate responsibility of the federal government. Controls protect the American people from sudden, adverse economic effects of huge energy price increases which bear no relation to the cost of production. There is no reason to allow U.S. domestic energy prices to be determined by OPEC. Similarly, the government must act to halt the monopolistic nature of the oil and gas industries and to discharge those industries from transferring their escalating energy profits into investments in non-energy industries. Oil and gas are national resources, and their production is a public trust. It is time that the government acted to assure the responsible performance of that trust through antitrust and antimerger legislation.

For more than two decades, the AFL-CIO has supported national efforts to protect and restore the environment through policies and programs that meet both the nation's employment and energy needs. While the deepening energy crisis has resulted in governmental policies aimed toward greater development and use of domestic coal and synthetic fuels in order to reduce America's dependence on foreign oil, expanded research and development in using these fuels must proceed hand in hand with developing technologies which can prevent environmental deterioration and protect the health and safety of workers who work in the industry.

Runaway inflation in energy costs, resulting from OPEC price increases and the Administration's decision to decontrol domestic crude oil and natural gas prices, has forced many retirees and low and moderate-income families to make the cruel choice between heat and food, transportation to work and medical care. The federal government has a responsibility to assure that the poor and those living on fixed incomes do not bear an unfair share of the burden of foreign and domestic policy.

Assistance to low-income individuals and families should be more equitable and sufficient to offset price increases for such essentials as home heating and gasoline needed to get to work. Therefore, the AFL-CIO urges enactment of measures such as energy assistance allowances

to low-income households and a special energy crisis program for those needing emergency assistance to pay energy bills but who may not qualify for other types of aid.

These are the steps the United States can and must take to assure the nation a strong energy base and to assure every American necessary energy supplies. For too long, our national energy policy has been a response to industry complaints that profits are inadequate to warrant increased development of conventional fuels and market prices too low to merit development of alternative fuels. Spiraling prices and profits make these complaints hollow. It is time for Congress and the Administration to take the initiatives which will assure this generation and those to follow of a plentiful energy supply at reasonable prices.

STATEMENT OF C. J. WADELICH, PRESIDENT, CITIES SERVICE CO.

I. ADEQUACY OF EXISTING FOSSIL FUEL AND RENEWABLE ENERGY
PRODUCTION INCENTIVES

A. Fossil Fuels

Although price controls still exist on crude oil and natural gas, action taken to phase out these controls is government's single greatest contribution thus far to stimulate the search for new energy supplies. Significant increases have been reported this year in capital and exploration budgets, as well as in the number of seismic crews in the field, drilling rigs at work and wells completed.

While a dramatic turnaround cannot be achieved overnight, the sharp rate of decline in proven reserves is moderating; and figures for both oil and gas production show a slight increase over those of a year ago. In addition to stimulating exploration for new fields, higher prices for domestic producers are encouraging the production of oil and gas which could not have been produced economically under the old federal price ceilings. Improved pricing is also allowing producers to use advanced technology to increase oil recovery from existing fields.

Additional actions government could take to further enhance investment in new supplies include:

(1) Adopting tax policies which would encourage exploration for oil and gas both domestically and in non-OPEC countries. For example:

(a) The adverse impact of the Windfall Profits Tax should be reassessed; new oil should be exempted from the tax; and there should be no comparable tax placed on natural gas.

(b) The foreign tax credit should be retained, with no further impairment, to avoid double taxation on foreign source income.

(c) Depreciation schedules should be accelerated to permit more rapid recovery of capital investments.

(2) Allowing industry reasonable access to promising public lands both onshore and offshore for energy exploration and development.

(3) Reviewing and revising existing environmental laws and other regulatory requirements that excessively block, delay, or unnecessarily add to the cost of energy projects.

(4) Accelerating the phaseout of natural gas and crude oil price and allocation controls.

B. Renewable Energy Resources

Although we are increasingly using renewable energy resources, including solar, geothermal and biomass energy, new technology is required to lower the cost and increase the competitiveness of most of these resources.

At the present time, government support of renewal sources through research grants, purchase agreements and tax subsidies is adequate.

II. CONSIDERATION OF EXISTING CONTINGENCY PLANS TO DEAL WITH AN INTERNATIONAL OIL SHORTFALL

(A) Cities Service Company firmly believes that the free market system is best suited to determine the price, volume and distribution of crude oil and refined products under normal supply conditions or during periods of brief supply interruptions, i.e., the Iranian shut-down of 1979.

It is important to note that even though crude oil price and allocation controls are scheduled to expire on September 20, 1981, the Administration will retain sufficient legislative authority to continue and/or implement some price and allocation controls after that date. Demand can be restrained and available supplies can be allocated by government during emergencies under the Energy Policy & Conservation Act, the Trade Expansion Act of 1962, the Energy Emergency Conservation Act of 1979 and the Defense Production Act.

(B) Beyond existing contingency plans, Cities Service Company recognizes that there is a need to formalize a program to deal with crisis situations as follows:

(1) At the first sign of an impending crisis, petroleum industry experts and government energy personnel should *mutually* evaluate the shortfall, determining its likely magnitude and duration. After this evaluation, if action is mandatory, it should be based on the severity of the shortfall and should rely on market forces to the maximum extent possible.

(2) If it is determined that the shortage is "critical," government should exercise its *existing* authority under the aforementioned Acts to allocate available supplies. Government could also supplement its emergency powers by extracting supplies from the Strategic Petroleum Reserve and by redistributing crude oil to maximize its productive use to efficient refiners that:

(a) Are able to distribute refined products to markets where they are most needed;

(b) Can produce the most essential products with preference given to "full-slate" refiners who can produce maximum quantities of aviation fuel, gasoline, home heating fuels and other essential products; and

(c) Are not able to maintain secure access to foreign supplies.

Crude should not be diverted from a refinery with a low utilization rate to an inefficient refinery with a high utilization rate. Additionally,

refineries which yield primarily bottom of the barrel products such as residual oil should be given a very low priority.

III. TECHNIQUES FOR SUBSTANTIALLY INCREASING COAL AND SYN FUEL PRODUCTION IN AN ENVIRONMENTALLY ACCEPTABLE FASHION

A. Coal

As the nation's most abundant fossil fuel, coal has perhaps the greatest potential for contributing to the solution of the nation's energy problems in the long-term. Its production and use thus far, however, have been severely impeded by the effects coal has on the environment.

Government policy toward coal has been, and remains, ambiguous. On the one hand, the Administration calls for an increase in coal production, while on the other it limits access to coal reserves and restricts surface mining. The government urges utilities and industrial users to convert to coal, yet imposes harsh anti-pollution standards which render conversion economically impractical. Due to political pressure, the government has not passed "eminent domain" legislation which will be necessary for the construction of coal slurry pipelines. To protect eastern coal mines, customers in those areas have been ordered to use high-sulfur coal mined in that region, despite the fact that the use of low sulfur western coal would be far less expensive and more environmentally acceptable. These ambiguities must be resolved and a stable government policy established if the production and use of coal are to increase significantly.

The easing of environmental restrictions will do more to encourage coal development than any other type of incentive. Modification of the Clean Air Act will be essential to encourage utilities and industrial users to convert to coal. Relaxation of current strip mining laws will be necessary to allow full development of low sulfur coal.

B. Synthetic Fuels

The same environmental restrictions that frequently delay conventional energy projects will impede the production of synthetic fuels from coal and shale. Under current conditions, the lead time required for most synthetic fuels projects averages seven to eight years: Two to three years for obtaining permits and five years for construction. If synthetic fuels are to have an impact in the 1980's, government will need to examine and reform the regulatory process, especially with regard to environmental regulations. Modifications in the Clean Air Act and other laws can cut the red tape and speed the process of review and approval required for synfuels development.

Much still remains to be learned about the environmental hazards posed by synfuels projects before they reach the commercial stage. But the benefits to the public of developing alternative energy sources dictate that the U.S. press prudently ahead. In the short term, synthetic fuels cannot be counted on too heavily before 1990. However, in the long term, they could provide an abundant and secure supply of energy.

IV. OPTIONS FOR INCREASING THE SECURITY OF PERSIAN GULF OIL FLOWS AND FOR BACKING UP OPEC IMPORTS WITH OIL FROM NON-OPEC SOURCES

The current Iran-Iraq war emphasizes again the dangers of U.S. dependence on foreign oil, especially oil from the Persian Gulf area. The United States will spend close to \$80 billion this year to obtain foreign oil. Only by developing alternatives to foreign oil can Americans reduce this drain on their economy and achieve greater energy security.

Fortunately, the United States *can* reduce oil imports if we accelerate the production of the vast energy resources available to us domestically. Government and industry studies indicate that the U.S. may have oil and gas resources equal to 40 years of production at today's levels. This constitutes more petroleum than has been produced to date. In addition, the U.S. has three times more coal than oil and gas, and twice as much shale oil.

But to produce more energy from these resources, government will have to modify current policies. To increase our alternatives to foreign oil, thereby reducing imports, the federal government should:

(A) *Allow more energy production on federal lands* which hold an estimated 37 percent of our undiscovered oil, 43 percent of our undiscovered natural gas and 40 percent of our remaining coal;

(B) *Develop more flexible environmental laws and regulations.* With our knowledge and technology, we can balance continued environmental progress with increased energy production;

(C) *Reach consistent decisions that encourage safe and orderly growth of nuclear power.* Nuclear power will fall short of its potential contribution unless government soon establishes consistent policies on enrichment, storage of spent fuel, licensing and safety;

(D) *Promote private development of a commercial synthetic fuels industry;* and

(E) *Rely more on market incentives* to encourage increased efficiency in both energy consumption and production.

If government takes these five steps, the United States could reduce oil imports by perhaps as much as 50 percent, or 4 million barrels per day, by 1990.

V. THE DIRECTION OF NUCLEAR ENERGY POLICY IN THE 1980's

Nuclear energy has a substantial role to play in the overall energy picture. In the early 1970's, forecasts for nuclear energy were quite optimistic, predicting levels of 7 million barrels a day of oil equivalent or higher by the late 1980's. Predictions about nuclear's potential contribution have become far less certain, however, since the Three Mile Island incident.

Our nuclear plants currently provide about 12 percent of the electricity produced in the United States or 1.3 million barrels a day of oil equivalent. If all 110 plants now under construction or ordered were allowed to become operational by 1990, nuclear's contribution to the nation's energy supplies would increase to nearly 4.5 mbde during this decade.

If nuclear energy is to contribute substantially during the 1980's, public attitudes and the widely recognized delays in licensing will have to change.

VI. TECHNIQUES FOR STIMULATING FURTHER COST-EFFECTIVE ENERGY CONSERVATION

The single greatest stimulator of further energy conservation would be realized through the free market system. While price controls still exist on crude oil and natural gas, the gradual lifting of these controls has already resulted in significant reductions in oil and gas usage.

Americans are using energy more efficiently in their homes, businesses, industrial processes and transportation modes. Conservation by business and industry has been, in large part, a free market response to increased prices. Conservation by consumers in their residential and transportation needs has been further enhanced by various government-mandated programs and incentives.

Some public policy groups are suggesting that government impose stricter measures—beyond the free market—to spur conservation. These include subsidies that go far beyond those now in effect, new regulations and new taxes. Cities Service Company believes that government-developed energy conservation programs should be simple, market-oriented, and encourage widespread participation while minimizing costs to the taxpayers. In such programs, government should:

(A) Remove or minimize institutional barriers to increased energy conservation. Such barriers include price controls on oil and natural gas which have encouraged energy use by holding prices at artificially low levels.

(B) Support information programs that encourage consumers to choose energy-efficient goods and to consider the relative total costs of these products.

(C) Avoid mandates to achieve energy conservation. Mandates can create inefficiencies and unintended side effects. Generally, it is preferable to let individuals freely determine the appropriate amount of energy conservation.

Cities Service Company further believes that continued conservation is essential to U.S. energy security, but conservation alone will not solve our energy problems. The vigorous development of domestic energy resources is also essential.

IX. ADDITIONAL STATEMENTS

STATEMENT OF MICHAEL AHO, DIRECTOR, OFFICE OF FOREIGN ECONOMIC RESEARCH, BUREAU OF INTERNATIONAL LABOR AFFAIRS, DEPARTMENT OF LABOR

Recently my office prepared the Administration's review of U.S. competitiveness mandated by Section 1110(b) of the Trade Agreements Act of 1979. As background for that review, we conducted five empirical analyses on different aspects of the competitiveness of U.S. industry in world markets. The Administration's report was submitted to Congress in September. The Government Printing Office recently published it together with the background papers. The following is a discussion of the results we obtained in preparing the review.

Over the past two decades, the United States has suffered an erosion in its competitive position in world markets and in the domestic market. This conclusion is based upon extensive empirical research which analyzed the trade of thirty-four countries in over one hundred commodities. The increased international competition facing U.S. producers is mainly the result of changing world resource supplies and technological capabilities. Because of higher rates of growth in investment and expanded research activity in other countries, the United States has experienced a relative decline in its trade performance over the past two decades.

To some degree this is to be expected because the United States emerged from World War II with its industrial base intact, giving it a unique position in the world economy. That unique position has disappeared with the more rapid growth of investment, skilled labor, and most recently, research and development efforts by other countries. For example, as a result of the more rapid growth of capital abroad, the United States fell from first to sixth among countries in terms of capital per worker between 1963 and 1975. This rapid growth has narrowed the range of products in which the United States has a decided competitive advantage.

Every day we read about increased competition in traditional industries like steel and autos that has caused adjustment problems for workers, firms and their communities as some plants have been forced to close down or reduce production as a result of increased import competition. At the same time, the United States is also experiencing increasing competition in high-technology industries like aircraft and computers which have historically been our strength. Furthermore, it is likely that this competition will continue and increase in the 1980s because of the higher rates of investment and the increased technical effort by our major competitors.

We at the Labor Department are very concerned about the long-run competitive structure of the U.S. economy. The decline in U.S.

trade performance increases our concern about the competitive position of U.S. industry because changes in trade performance are a leading indicator of changes in the competitiveness of our domestic economic base.

In conducting our research we examined, at both an aggregate and a highly detailed commodity level, the competitiveness of U.S. producers in world markets. We examined both the short-term, and the more subtle long-term, changes in this competitiveness. A variety of measures and indicators were used to examine and assess changes in competitiveness and the structure of trade.

Our findings collaborate what is well known: that during the past ten to fifteen years trade has become one of the more important forces shaping the U.S. economy. The number of manufacturing jobs directly and indirectly related to manufactures export rose from one in fourteen in 1964 to one in seven in the latter 1970's. Exports as a percentage of final sales rose from 9 percent in 1970 to over 17 percent in 1979. In many products the dependence upon export sales has risen dramatically. In power generating machinery, the ratio of exports to shipments rose from 19 percent in 1964 to over 41 percent in 1976. In aircraft, the ratio rose from 8 percent in 1964 to 24 percent in 1976.

At the same time, increases in imports have had a significant effect on the structure of the U.S. economy as the increased competition has been felt throughout most of our industrial sectors. The increases in the import penetration ratios in steel and autos are well known but other key sectors including many of the higher technology sectors like electric apparatus for medical purposes (from 6 to 22 percent), inorganic chemicals (from 8 to 23 percent), and electric power machinery (from 1 to 11 percent) have also had large increases in their import penetration ratio.

Our results also provide statistical support for many of the assertions made in the popular press that the United States has suffered a deterioration in its competitive position and that Japan is one of the principal sources of increased competition in many key U.S. export products. However, like most issues, there is evidence showing positive as well as negative developments. Therefore, let me present some evidence on both sides.

Among the positive developments in the international competitive position of the United States are the following:

Over the decade of the 1970s the volume of total U.S. exports increased by the same amount (80 percent) as the average of the other seven major industrial countries. The volume of manufacturing exports expanded by 79 percent compared to 85 percent for the other major industrial countries.

Capital goods showed a record trade surplus of \$32.6 billion in 1979.

Agricultural goods also had a record trade surplus of \$18 billion in 1979.

Manufacturing exports increased by 23 percent in 1979, compared to 17 percent for our major competitors.

Among the negative developments:

Deterioration in net trade position.—The United States had a trade balance deficit for six years during the 1970's and a de-

ficit in manufacturing for three years. On a disaggregated commodity level, net trade is theoretically the best indicator of competitiveness. Of the major export categories, the United States has gone from being a net exporter to a net importer in several important categories including automobiles, telecommunications apparatus and inorganic chemicals.

In 1979 five of the seven major industrial countries had larger trade surpluses in manufacturing than the United States. Among the major industrial countries, we maintain a bilateral trade surplus in manufacturing than the United States. trade surplus in manufactures only with Canada. The bilateral deficits in manufactures trade are largest with Japan (-\$17 billion) and Germany (-\$5 billion).

Loss of export markets shares.—Although trade is becoming increasingly important to the U.S. economy, the United States is playing a relatively smaller role in the world economy. Our analysis of U.S. export market shares for 102 manufactured commodities indicated that since the 1960s, the United States had trend declines in 71 percent of the commodities compared to 26 percent for Japan and 24 percent for West Germany.

Among the top five U.S. manufacturing export earners (road motor vehicles, nonelectrical machinery, aircraft, other electrical machinery, and office machines (computers)), only aircraft had an increase in its export market share. In many of the traditionally strong U.S. exports, the decline in share has been greater than the decline in the share of overall manufacturing.

Increased competition from foreign producers in the domestic market.—Import penetration ratios have increased in many of the important manufacturing sectors including inorganic chemicals, electric power machinery, power generating machinery and automobiles.

Erosion of our competitive position in formerly strong export commodities in third market areas.—A comparison of U.S. export performance with that of four major competitors (France, Germany, Japan and the United Kingdom) in common third markets showed that of the top seventeen U.S. export commodities, fourteen experienced share losses in the world market between 1962 and 1969, and all seventeen showed losses to these competitors between 1970 and 1977.

The research also focused upon trade performance in high technology products which, along with certain agricultural products, have traditionally been a principal source of strength in the U.S. trade balance. High technology products include aircraft, computers, and many chemical and machinery products.

Our findings indicated that the United States still has a comparative advantage in technology-intensive products in world markets. In particular, when compared to its major competitors, the United States still has: (1) a greater concentration of high-technology exports; (2) one of the largest export market shares in high-technology products; (3) the greatest technological content in its exports, and, thus, more high-technology products among the products which characterize its comparative advantage.

There are several indications, however, that U.S. dominance in world trade of high-technology products is being eroded. This is troublesome because these are the sectors which contribute the most to productivity growth and holding down inflation. The indications of this erosion are:

The U.S. export market share in technology-intensive commodities has fallen over time. In 1977, the U.S. share fell to second behind Germany, whose share had remained roughly constant since the early 1960s. During that period Japan's share quadrupled to a point where it was just behind the United States and Germany.

The decline in the U.S. share and the improved performance by Japan and Germany were present throughout the entire period even after exchange rate realignments began in 1971.

Many high technology products show continuing increases in their import penetration ratio that are more rapid than for manufacturing as a whole. Several of the technology-intensive products had such a rapid growth of imports relative to exports that the United States became a net importer of those products.

The United States is losing out to competitors in some of its traditionally strong products in third market areas.

Among the major U.S. competitors, Japan exhibits the most dramatic change in trade performance in technology-intensive commodities. Between 1962 and 1977, the share of technology-intensive products in total Japanese exports and the technological content of Japan's exports more than doubled. Japan now has the largest trade surplus in technology-intensive products. In the 1960s Japan's trade performance in high technology products ranked low among the OECD countries. Since then, Japan has risen almost to parity with the United States and Germany as an exporter of technology-intensive products.

Finally, the most compelling evidence of Japan's ability to compete successfully in technology-intensive products with the United States and other countries was its performance in third markets, where all competitors faced the same market conditions. The U.S. share of the developing country market in technology-intensive products went from 46 percent in 1962, to 31 percent in 1970, to 25 percent in 1977. Japan's share rose from 6 percent in 1962, to 13 percent in 1970 and to 22 percent in 1977.

The rapid growth of Japanese exports of technology-intensive goods, and the growing share of Japan's exports to markets that were traditionally dominated by U.S. producers, demonstrate that Japanese competitiveness in technology-intensive goods is increasing. Consequently, Japan has joined the United States in having a competitive advantage in technology-intensive products, and this implies that competition between the two countries in these products will increase in the future.

What Factors Are Responsible for This Decline in U.S. International Competitiveness?

The factors which can affect the international competitive position are manifold. They include: (1) the longer term factors which affect

cost, investment in newer capital equipment and innovation and technical change; (2) input costs, including the effects of taxation policy and energy costs; (3) labor-management relations; (4) policies of other nations such as trade barriers and industrial policy; (5) a number of largely nonquantifiable factors related to the product, including quality, delivery time, servicing; (6) managerial initiative and objectives, including entrepreneurial effort in developing new markets, devotion to quality control, etc.; (7) finally, U.S. export promotion policies as well as policies which inhibit exports.

A consistent explanation emerging from our analysis is that the decline in U.S. trade performance since the early 1960s is the result of changing world resource supplies and technological capabilities. These changes are the result of differences in the rates of growth across countries of net investment in equipment and research activity, and the acquisition of skills through education and other training.

Capital available per worker in the United States grew at an annual rate of 1.7 percent between 1963 and 1975, well below that of other developed countries and many of the major developing countries. As a result, the United States fell from first to sixth in terms of capital available per worker. The percentage of skilled workers in the U.S. labor force grew at an annual rate of 1.3 percent between 1963 and 1975, also below that of most countries. Consequently, the United States fell from second to seventh among countries in terms of the percentage of skilled workers in the labor force.

This relatively slower growth in U.S. capital and skilled labor, along with differences in the growth of these resources in other countries, has altered the distribution of resources among countries and has thereby expanded the capabilities of many countries to supply products to the world market.

The U.S. share of world capital fell from 42 percent in 1963 to 33 percent in 1975. By comparison, Japan's share of world capital increased twofold over the same period, from 7 to 15 percent. The U.S. world share of skilled labor fell from 29 percent to 26 percent; its world share of arable land, however, increased from 27 to 29 percent.

The decline in the U.S. share of the world's capital stock is the result of slower real growth in the United States combined with the fact that the United States allocates a smaller proportion of its national income to investment than its major competitors. In 1978, the United States allocated only 7.3 percent of its GNP to gross fixed capital formation in machinery and equipment whereas Japan allocated 10.9 percent, Germany 8.9 percent, France 9.1 percent, and the United Kingdom 9.2 percent. In terms of total gross fixed capital formation, the United States allocated 18.1 percent, Japan 30.2 percent, Germany 21.5 percent, France 21.5 percent, and the United Kingdom 18.1 percent. The share of U.S. output devoted to research and development declined from 2.97 percent to 2.27 percent between 1964 and 1977. Japan's share rose from 1.48 to 1.94 percent; Germany's rose from 1.57 to 2.26 percent. In civilian research and development

expenditures as a percentage of GNP, Japan (1.91) and Germany (2.09) now lead the United States (1.39).

Research and development and investment in skills and capital equipment are factors which affect the long-run competitive position of a country and they are also the major sources of productivity growth. In recent years, U.S. productivity growth has slowed in manufacturing and it lags behind that of all our major foreign competitors, except the United Kingdom. Over the last decade, manufacturing productivity in the United States increased by an average of 2.5 percent per year. In Japan, the average increase was 5 percent, in West Germany, 5.5 percent, in France, 4.5 percent, and in Canada, 4 percent.

This more rapid growth of capital, skilled labor, and technical resources by other countries relative to the United States has intensified competition in traditionally strong U.S. export products and has narrowed the range in products in which the United States has a competitive advantage. This competition will continue and increase in the 1980s because the United States continues to lag behind other countries in net real investment growth and because of the relative decline in our research and development effort.

With these results in mind, let me raise a few policy issues.

Industrial policy

The United States does not have an explicit industrial policy, but to the extent that our major competitors adopt industrial policies, and target their industrial development, we are faced with the results of their industrial policy. For example, the focus of Japan's industrial strategy for the 1980s is to develop high technology industries as their next source of industrial strength. If this industrial targeting is successful, then the competition from Japan we are currently experiencing will increase. The semiconductor industry has already become a source of some concern.

It is imperative that our policies be directed toward enhancing the competitiveness and flexibility of U.S. industry so that we can respond to this challenge. Enhancing the competitiveness of high technology, export-oriented firms will increase the demand for higher skilled and more productive workers. But we cannot overlook the adjustment problems created by the internationalization of our economy.

Adjustment problems

In order to export, the nation has to import. If policies were to be adopted to restructure industry and to encourage the production and export of high technology products, we need to recognize and deal with the adjustment problems created by such a policy. Our research shows that the workers in more traditional, import-competing industries are on average less skilled, less educated, lower paid, older and more likely to be female or members of minority groups. In short, those workers who would have to bear the brunt of the adjustment burden are least able to afford it. They are also the least occupationally mobile. This contrasts sharply with the higher skilled and better educated workers needed in the higher technology industries and suggests that training and adjustment programs may be necessary to facilitate the transfer of displaced workers.

Unlike foreign countries where training is more institutionalized in society and is supported by government programs, the United States has not focused as much attention on the retraining of workers who have been permanently displaced. Idle workers or underemployed workers mean less output and less income for the nation as a whole. Currently, the U.S. tax code provides writeoffs for obsolete physical capital, but no such writeoffs are available for workers whose skills have become obsolete. More should be done to retrain and to help these workers to adapt their skills to new occupations in other industries.

International trade agreements

The nontariff barrier codes, particularly on government procurement and subsidies, which were agreed to during the Multilateral Trade Negotiations, need to be implemented and the ensuing developments closely monitored. In industries such as telecommunications and information processing, the governments in other countries often serve as the purchasing agent. Since the United States has traditionally had a competitive advantage in these industries, we must ensure that U.S. firms have access to foreign markets on an equal footing with local competitors in these markets. There are many potential problems involved with trade in higher technology products which may require new negotiations and new negotiating strategies. In order to learn more about the problems, the Department of Labor is cosponsoring a research project with the Office of the U.S. Trade Representative to examine the potential for negotiations.

Labor, management, and government cooperation

Some influences on the competitive position of the United States lie outside the immediate realm of policy. One of these areas is labor-management relations. Differences among nations in the degree to which labor and management cooperate with one another can have an effect on the international competitiveness of their firms and industries. This seems to be the case in Japan and Germany, which have had the best trade performance in recent years and where labor and management cooperate closely with one another.

Close cooperation between labor and management can allow them to address mutual problems which interfere with productivity growth and adjustment. The United States should encourage joint efforts on the part of labor and management to improve productivity which in turn can have a direct effect on U.S. competitiveness in world markets. Joint efforts could also help to smooth the process of adjustment to economic change.

An effort in tripartite cooperation among labor, management and government has been begun in the steel industry with the formation of Steel Tripartite Advisory Committee. The Committee is concentrating its efforts on community adjustment, productivity improvement and industrial modernization. A similar tripartite effort is included as part of the President's economic program for the automobile industry. As these efforts proceed, they should provide the experience needed to assess the applicability of cooperative approaches for U.S. industry. In order to obtain a more in-depth look at labor management relations and adjustment policies in other countries, the Department of Labor is cooperating with the Japanese Ministry of

Labor on a research project which involves cross-national comparisons and on site visits.

Let me conclude by observing that competitive advantage does not remain constant. Research and development and investment in capital equipment and labor skills are key factors which affect the long-run competitive position of a country and they are also the major sources of productivity growth. To the extent the United States undertakes less real investment and devotes less resources to research and development than its major competitors, then the long run international competitiveness of U.S. industry will be reduced.

Over time, larger capital expenditures overseas in new facilities will enhance the competitiveness of foreign firms. Increased R&D will enable them to develop newer products and processes with which U.S. firms will have to compete. Although depreciation of the dollar will make U.S. products look more attractive in world markets, this will reduce our real income and overall welfare at home. Not doing enough to lower costs and develop newer, higher quality products may lead to a long-run structural decline in the U.S. competitive position in manufactures and even in high-technology manufactures.

The United States needs to encourage investment and research to prevent such a decline. Expanded investment and innovative activity would not only affect U.S. long-run competitive advantages, but would also contribute to the productivity growth which is necessary for the nation to enjoy real income gains in the future.

The subtle but important impact of changes in these long-term factors which determine U.S. competitiveness and our economic welfare underscore the need to focus on the long-term consequences of economic and trade policy. Unfortunately, despite the importance of such factors, current U.S. economic policy does not pay much attention to the long-term consequences of deficient investment or innovation. More needs to be done to increase the public's awareness of the implications of the competitive decline of U.S. industry. Perhaps the development of an institutional framework for debate among business, labor, government and the academic community would serve to focus attention upon the long-term consequences of economic change and the adjustment burden that it will entail.

U.S. INDUSTRIAL COMPETITIVENESS IN THE 1980'S AND THE NEED FOR AN EXPANDED POLICY HORIZON

By C. Michael Aho and Harry P. Bowen*

Concern over the future path of the American economy has stimulated proposals to revivify the U.S. industrial base. This concern has grown as the previously dominant position of the United States in the world economy has eroded and as U.S. producers face increased competition in both domestic and foreign markets. That competition will continue to increase in the 1980's unless there is a change in the adverse trends of the underlying factors which determine industrial competitiveness.

As the United States becomes increasingly integrated into the world economy, the necessity of conducting economic policy with recognition of its impact on the nation's long-term competitive advantage becomes of great importance. Un-

*Office of Foreign Economic Research, Bureau of International Labor Affairs, U.S. Department of Labor. This article is based upon research the authors conducted when they were preparing the Congressionally mandated "Review of U.S. International Competitiveness" which President Carter transmitted to Congress in September.

fortunately, the United States does not have a forum where discussions of the long-term economic consequences of alternative economic policies can be analyzed and tradeoffs debated. Lacking such a forum, we may continue the slide which has plagued our industrial sector over the past two decades.

There can be little doubt that the United States has declined as a dominant force in the world economy. For example, the U.S. share of manufactures exports declined from 22.8 percent in 1960 to 15.5 percent in 1979. Based on the findings of recently completed research,¹ a principal reason for this decline is the more rapid accumulation of capital and highly-skilled labor abroad and a concomitant increase in the technological capabilities of certain major developed countries. These factors have served not only to reduce the U.S. share of world trade, but have also caused U.S. exports to become more concentrated in a few key sectors. In turn, these shifts have led to adjustment problems for workers, firms and communities associated with previously competitive sectors.

Of the changes that have occurred in the factors which determine competitiveness, the most dramatic has been the decline in capital availability in the United States relative to other countries. Between 1963 and 1975, capital available per worker in the United States increased by 1.7 percent per year. This was the smallest rate of increase among the developed countries and smaller than the rate achieved by most of the developing countries. In contrast, capital per worker increased by 10.1 percent per year in Japan; by 11.9 percent in Korea, and by 4.2 percent in Germany. As a result, the United States dropped from a rank of first to sixth among countries in capital available per worker.

Although the differences in the growth of skilled labor were less dramatic, the United States did have the lowest rate of growth among the developed countries.² Consequently, the United States dropped from a rank of second to seventh among countries in terms of the proportion of the work force that is highly-skilled.

The net result of the relatively slower growth in U.S. capital and skilled labor has been a reallocation of these resources around the world. Between 1963 and 1975, the percentage of the world's capital located in the United States fell from 42 percent to 33 percent. In contrast, Japan's world share more than doubled, from 7 to 15 percent. For highly-skilled labor the U.S. share of the world's supply fell from 30 percent to 26 percent as Japan's share rose from 8 percent to 9 percent over the same period.

The implications of this resource reallocation among countries are two-fold. First, the rapid growth of capital has expanded the capacity of other countries to supply world markets. Second, the changed pattern of resource availability has led to changes in the structure of production and trade. In particular, the composition of output of many developed countries has shifted toward greater production of goods which utilize more capital and skilled labor relative to other inputs in production. Whereas the increased capacity of other countries is a major factor behind the decline in the overall U.S. share in world trade, it is the compositional shifts in output brought about by the relative changes in resource availability that are a primary explanation of the increased competition facing U.S. industry.

This latter effect arises because the competitiveness of any one sector depends not only upon its costs of supplying additional units of its output to world markets compared to its counterparts abroad but also upon that sector's ability to compete with other sectors for scarce domestic resources. Given the increased availability of capital and highly-skilled labor in other developed countries, the sectors in those countries which intensively use capital and skilled labor have become more competitive in bidding for domestic resources. But it is precisely these sectors in which the United States has had a comparative advantage and has been a major supplier to world markets. Thus, as the industrial structure of other developed countries has shifted toward greater production of such goods, the United States has been met with increased competition.

The decline in U.S. research and innovative activity is another important factor explaining the decline in U.S. trade performance and the increased competition being experienced. Between 1964 and 1977 the share of U.S. output devoted to

¹ This research was conducted as background for the Congressionally mandated review of U.S. competitiveness submitted by the President in September, 1980. Copies of the study as well as background research papers have just been released as a book ("The Report of the President on U.S. Competitiveness") by the U.S. Government Printing Office.

² Highly-skilled labor is defined as those workers whose occupations are classified as either professional or technical.

R&D declined from 2.97 percent to 2.27 percent. Japan's share rose from 1.48 to 1.94 percent; Germany's rose from 1.57 to 2.26 percent. Even more striking, in civilian R&D expenditures as a percentage of GNP, Japan (1.91) and Germany (2.09) now lead the United States (1.39).

These data indicate that the United States is lagging in terms of two important factors which determine industrial competitiveness. Because changes in trade performance are to some degree a leading indicator of changes in the competitiveness of a nation's industrial base, further insight into the U.S. competitive position can be gained by examining the trade performance of key U.S. export sectors.

Technology-intensive goods such as electrical machinery and aircraft have traditionally been the source of strength in the U.S. trade balance, but there are strong signs that the United States is facing increasing competition in these products. Although the United States continues to be a net exporter of technology-intensive products, the trends in the technological content of U.S. manufacturing exports are ominous. Since 1971 there has been a significant decline in the technological content of U.S. manufacturing exports to the developed countries. Even though the technological content of U.S. manufacturing exports to developing countries has continued to increase, it has done so only slightly. This suggests that the developed countries have expanded their capabilities to develop and produce technology-intensive products and are now able to compete successfully with the United States for the sale of such products, both in their home market and in third country markets of the developing countries. Furthermore, in many of these products, foreign producers are making significant inroads into the U.S. market.

The most compelling evidence of increased competition to the United States in technology-intensive products is found by examining the exports of such products by the major countries to a third market region in which everyone faces the same market conditions. In 1962 the U.S. share of exports of technology-intensive products to developing countries was 46 percent. By 1970 the U.S. share had dropped to 31 percent and it fell further to 25 percent in 1977. In contrast, Japan's share rose from 6 percent in 1962 to 13 percent in 1970 and to 22 percent in 1977. Thus, although the United States has maintained the lead in exports of technology-intensive products, its competitive advantage is being eroded particularly with respect to Japan.

The above indicates that the relative decline of the United States in world trade is largely the result of a changing distribution of world resources along with increased technical effort by our major competitors. What are the implications of these findings for economic policy? Clearly, these changes are not solely the result of economic failures on the part of the United States. They are, in part, the result of successful rebuilding programs and industrial policies in other countries.

The most important implication for U.S. economic policy is that the outlook for the 1980s is for the deterioration in U.S. competitiveness to continue. One of the most dynamic elements in the world today is the growth of the upper tier developing countries, the NICs. All of them are and will continue to accumulate the capital and expand their industrial base faster than in the United States. But even Japan and Germany continue to invest and devote resources to research at a greater rate than the United States. To the extent the United States continues to undertake less real investment and devotes less resources to research and development than its major competitors, both U.S. export and import-competing industries will face increased competition in the 1980s.

Competitive advantages do not remain constant. Over time, larger capital expenditures overseas in new facilities will enhance the competitiveness of foreign firms. Increased R&D will enable them to develop newer products and processes with which U.S. firms will have to compete. Not doing enough to lower costs and develop newer, higher quality products will lead to a further long-run structural decline in the U.S. competitive position in manufactures and even in high-technology manufactures.

The prospect of increased competition does not concern some observers who maintain that depreciation of the dollar can always restore the competitiveness of U.S. products in world markets. But this view overlooks the cost associated with dollar depreciation: we have to sell more exports in order to obtain a given amount of imports.

To prevent further decline in its competitive position the United States needs to expand investment, to modernize its industrial base, and to encourage research and innovation. Expanded investment and innovative activity would not only help prevent further decline by making U.S. products more competitive, but would also contribute to the productivity growth necessary for real income gains in the future. At the same time, the United States needs to adopt a more comprehensive adjustment policy to facilitate the transfer and employment of permanently displaced factors of production. Clearly, real income gains and an expanding employment base will make these transitions easier to accomplish.

The subtle but important impact of changes in the long-term factors identified above as determining U.S. competitiveness underscore the need to focus on the long-term consequences of economic and trade policy. Unfortunately, despite the importance of such factors, current U.S. economic policy does not pay much attention to the long-term consequences of deficient investment or innovation. Perhaps the development of an institutional framework and a forum for debate among business, labor, government and the academic community would serve to focus attention upon the long-term consequences of economic change and the adjustment burden that it will entail.

As a first step, a forum might be the appropriate vehicle for achieving consensus among the affected parties on questions of productivity, modernization and adjustment. Consensus building is the approach taken by other countries such as Japan and Germany which have been more successful competitors in international markets than the United States. If we fail to work toward a consensus, the more coordinated policies of our competitors together with their higher rates of investment and increased technical capabilities will further expand their competitive successes, largely at our expense.

SUMMARIES OF RECENT ANALYSES ON U.S. INTERNATIONAL COMPETITIVENESS AND THE CHANGING STRUCTURE OF U.S. TRADE*

List of papers

Facts Sheet for the Study of U.S. Competitiveness.

Trends in U.S. Trade: 1960-79. (Reprinted as Office of Foreign Economic Research Economic Discussion Paper 7.)

Changes in the International Pattern of Factor Abundance and the Composition of Trade: A Multi-Country Analysis of Changing Comparative Advantage in Manufactured Goods with Special Reference to the United States. (Reprinted as Office of Foreign Economic Research Economic Discussion Paper 8.)

Trends in Technology-Intensive Trade: With Special Reference to U.S. Competitiveness. (Reprinted as Office of Foreign Economic Research Economic Discussion Paper 9.)

A Constant Market Share Analysis of U.S. Export Growth. (Reprinted as Office of Foreign Economic Research Economic Discussion Paper 10.)

Assessing the Changing Structure of U.S. Trade in Manufactured Goods: An Analysis and Comparison of Various Indicators of Comparative Advantage and Competitiveness. (Reprinted as Office of Foreign Economic Research Economic Discussion Paper 11.)

FACT SHEET FOR THE STUDY OF U.S. COMPETITIVENESS

This study is a detailed and comprehensive report on the position of U.S. producers in world markets and an examination of the factors which affect that position. The study reviews the long-term trade performance of the United States through 1979 at both an aggregated level and at a highly detailed level.

The study examines the key factors affecting the competitiveness of U.S. exports in world markets including: changes in capital and skilled labor resources, investment, technological innovation; productivity and unit labor costs, tariff and nontariff barriers to U.S. exports, foreign investment and technology transfer, tax measures, energy and other factors, including labor-management relations, and the role of engineering and services in the export of capital goods.

*Prepared by the Office of Foreign Economic Research, Bureau of International Labor Affairs, U.S. Department of Labor.

The study does not focus on any single industry, but rather considers within a broad framework those factors that affect performance of all U.S. producers and the position of the United States within the world economy. The analysis examines both the short-term factors and the more subtle long-term factors that underlie changes in the competitive position of the United States in world markets.

The study put issues surrounding U.S. competitiveness into perspective by analyzing the macroeconomic variables (e.g., exchange rates, inflation, aggregate demand, capital flows, etc.) which affect trade flows. But, more importantly, the study also considers the impact of variables which alter the composition and direction of trade flows at a detailed level.

The study constitutes the most comprehensive analysis of U.S. trade performance ever conducted by the U.S. government because of: (1) the level of disaggregation of the trade data; (2) the length of the time interval studied; (3) the number of countries and trading partners analyzed; and (4) the scope and detail of the industry and country characteristics used to assess and explain relative trade performance. The detailed information used allowed the analysis of export performance to be conducted over time (by commodity and by partner region) and relative to major competitors.

The study identifies those industrial and agricultural sectors that have had the best trade performance in recent years and attempts are made to explain the causes for their differential performance compared to those industries which did not perform as well. Special attention is given to the traditionally strong U.S. export sectors—agriculture and high-technology products.

The summary report is based, in part, upon a number of background analytical papers which analyze U.S. export performance and the factors affecting that performance in great detail. Those papers are available from the Office of Foreign Economic Research and will eventually be appended to the report.

Major conclusions of the study are the following:

Many indicators of U.S. trade competitiveness such as export market shares suggest that there has been an erosion of U.S. competitiveness in world markets. The increased international competition facing U.S. producers is mainly the result of changing world resource supplies and technological capabilities. Because of higher rates of growth in investment and expanded research activity in other countries, the United States has experienced a *relative* decline in its trade performance over the past two decades even though the level of U.S. exports has increased substantially in recent years.

The United States has suffered a decline in its competitive position in certain product areas since the late 1960s as a result of improvement in the competitive position of other countries. The products involved are primarily consumer goods and automobiles. The countries which have tended to displace U.S. exporters' sales (and, also, U.S. producers' sales in the domestic market) have been Japan and certain of the more advanced developing countries.

Notwithstanding recent trade deficits the United States still retains a substantial degree of competitiveness in important export products in world markets. While the composition of U.S. exports has altered in response to changes in world conditions, the U.S. trade balance has been helped by large surpluses in three product categories: capital-equipment goods, high-technology products (many of which are also capital goods), and agricultural products.

However, several of the factors that are important for maintaining U.S. competitiveness show trends that are cause for concern. These are:

Investment.—U.S. industrial capital expansion has lagged behind that of our major foreign competitors. Through the 1960s and 1970s, capital resources available per worker in the United States grew by less than 2 percent per year. In contrast, capital available per worker in Japan and Korea increased by more than 10 percent per year. In Europe and many developing countries the growth in capital per worker was more than 4 percent.

As a result, the United States dropped from first to sixth place in the ranking of countries according to the amount of capital per worker available. This more rapid growth of capital per worker by other countries has expanded their capabilities to supply and compete in those markets for traditionally strong U.S. exports. Thus, the absolute role of the United States in world trade has declined and it is meeting increased competition for the sale of its traditional export products.

Technological development.—The absolute size of expenditures on research and development in the United States still constitutes a majority of such expenditures of the developed countries. However, other countries, especially Japan

and West Germany, have increased their R&D efforts substantially in proportion to their GNP, while U.S. R&D expenditures as a percentage of GNP have declined in recent years. Because U.S. exports of manufacturers are dominated by high technology products, a future decline in U.S. R&D expenditures in absolute terms or even relative to foreign competitors would threaten the United States with a loss of foreign markets for U.S. manufactures exports. Already, Japan has joined the United States in having a competitive advantage in a number of high-technology products, and competition between the two countries will likely increase in the future.

Productivity.—U.S. productivity growth in manufacturing has lagged behind that of all of our major foreign competitors, except the United Kingdom. Over the last decade, manufacturing productivity in the United States increased by an average of 2.5 percent per year. In Japan, the average increase was 5 percent; in West Germany, 5.5 percent; in France, 4.5 percent; and in Canada, 4 percent. The comparatively high productivity growth rates in Japan and most of Europe have permitted more rapid increases in real wage rates in these countries than in the United States. These changes in productivity are consistent with more rapid growth of capital and technological capabilities abroad.

Foreign trade barriers.—Many U.S. businessmen and labor leaders cite foreign tariff and nontariff barriers to trade (NBT's) as serious impediments to increases in U.S. exports. The recently concluded Tokyo Round of Multilateral Trade Negotiations resulted in agreements to substantially reduced tariff barriers and to liberalize or, in some cases, eliminate major NTBs. Nevertheless, a number of barriers to U.S. exports of agricultural and manufactured products remain. Restrictive foreign government policies concerning public purchases of some types of high technology products have not been completely covered by the Tokyo Round agreements.

To the extent the United States undertakes less real investment and devotes less resources to research and development than its major competitors, then the long run international competitiveness of U.S. industry will be reduced. Although depreciation of the dollar could make U.S. products look more attractive in world markets, this tends to reduce our real income at home. Expanded investment and innovative activity would not only help prevent this decline by making U.S. products more competitive, but would also contribute to the productivity growth necessary for real income gains in the future.

Policies to Strengthen Competitiveness

While a number of other factors that have an important influence on the competitive position of the United States are discussed in the report, the policy directions considered most important in strengthening the relative competitive position of the United States pertain to the several factors discussed above. The policy directions considered relate to (1) an expansion of domestic investment; (2) the need to promote domestic labor and capital adjustments to shifts in industry competitiveness; and (3) trade policies to strengthen U.S. competitiveness.

Probably the most important policy direction to strengthen the competitive position of U.S. producers is to expand private investment expenditures on plant and equipment. A substantial expansion in the domestic investment of the economy would reduce domestic inflation, improve productivity growth and accelerate the rate of technical and product innovation, all of which would have direct and positive consequences for U.S. trade performance.

Cost effective policies should be further developed to foster the adjustment of productive resources, especially labor, to changed internal competitive conditions in various industries. In sustaining a long-term expansion of U.S. exports, imports will also tend to grow as U.S. incomes rise. To maintain a liberal trade policy in the face of the increasing pressures on import-competing industries, it would be desirable to facilitate further the adjustment of displaced workers.

The Tokyo Round trade agreements will tend to strengthen the competitive position of U.S. exporters in world markets. The final outcome for U.S. export interests will depend on U.S. efforts to see that the agreements are enforced and that trade concessions are implemented by foreign countries. In addition, efforts to expand the country and product coverage of the agreements in the coming years must be vigorously pursued. A code on safeguard actions should be negotiated which increases international discipline over governmental actions to restrict trade.

Detailed studies of the long-term trends in the competitive position and barriers to trade of individual U.S. industries should be undertaken. These studies should be designated to identify industries for which additional efforts should be made to achieve further liberalized access for their potential exports. The studies should be followed by new trade negotiation initiatives to seek improved access.

Of course, not all of the factors that affect the competitive position of the United States in world markets are best dealt with by changes in Federal policy alone. One such factor is the cooperation between labor, management and government. The productivity and competitive position of some foreign countries appear to have benefited from a greater degree of such cooperation. Closer cooperation between labor, management, and government could lead to higher productivity, smoother adjustments to changed economic conditions and, therefore, enhanced international competitiveness.

TRENDS IN U.S. TRADE: 1960-79

By Thomas O. Bayard

Executive Summary

International trade is becoming increasingly important to the U.S. economy. A common measure of the domestic significance of foreign trade, the ratio of U.S. exports plus imports to GNP, has risen from 10 percent in 1960 to almost 22 percent in 1979. This report summarizes the most important trends in U.S. trade since 1960 and attempts to assess the impact of changes in macroeconomic factors such as real GNP growth, inflation, and exchange rate changes on U.S. trade flows.

Although trade is becoming increasingly important to the U.S. economy, the United States' role in the world economy is becoming smaller. The U.S. share of total world exports declined from 18 percent in 1970 to 14 percent in 1979. The U.S. share of world exports of manufacturers fell from 21 percent to 17 percent in the same period. The United States experienced a substantial loss of market share in the import markets of Japan and the developing countries, but increased its share of centrally planned economies' imports in the 1970's.

The United States had small surpluses in its agricultural trade in the 1960s. Agricultural exports soared in the 1970s, mainly on the strength of increased exports to the developed countries and, especially, to the centrally planned economies. The surplus averaged well over \$10 billion since the mid-1970s. In 1979, the U.S. agricultural trade surplus reached a record of \$17.9 billion.

Because of the importance of U.S. manufactured exports and imports in total trade, the manufactured goods trade balance has tended to coincide with the movements in overall trade balance and to be influenced by the same macroeconomic trade factors. The surplus in manufactures declined through the late 1960s and a deficit emerged in 1972. Since then, there have been wide fluctuations in the manufactures trade balance. In 1979, the United States had a surplus of more than \$4 billion in manufactured products.

The United States trade position in manufactures has been particularly strong in capital equipment and high-technology products. Both of these designations frequently apply to the same product category (e.g., advanced electrical machinery). In 1979, the United States trade balance in capital goods reached a record surplus of \$32.6 billion. There is evidence, however, that the United States is losing its lead in high technology exports in recent years; in large part to Japan. Although U.S. exports of consumer and automotive products have grown rapidly in recent years, import gains have kept ahead of those of exports and the trend since the 1960's has been toward greater trade deficits in these products.

The United States ran small trade deficits in petroleum and petroleum products through the 1960s. The emergence of OPEC as a successful cartel was in part due to the growth in U.S. (and Western) dependence on energy imports. Both the volume and the price of oil imports tended to increase in the early 1970s, although the volume of imported oil has dropped significantly over the last two years. Recent declines in U.S. oil import volumes have been more than offset by rapid price increases. The oil deficit grew from \$3 billion in 1971 to \$55 billion in 1979 and has had a dampening effect on U.S. economic growth.

The U.S. trade surplus with the developed countries (DCs) declined through the 1960s. Deficits emerged in the late 1960s and early 1970s. In 1979, however,

a large improvement took place in the U.S. trade position vis a vis developed countries because of a substantial increase of U.S. exports to these countries.

The less developed countries supplied 45 percent of total U.S. imports in 1979 compared with only 26 percent in 1972, primarily because of the rapid rise in oil imports. The LDC's share of U.S. exports rose from 31 percent in 1972 to 37 percent in 1979.

CHANGES IN THE INTERNATIONAL PATTERN OF FACTOR ABUNDANCE AND THE COMPOSITION OF TRADE: A MULTI-COUNTRY ANALYSIS OF CHANGING COMPARATIVE ADVANTAGE IN MANUFACTURED GOODS WITH SPECIAL REFERENCE TO THE UNITED STATES

By Harry P. Bowen

Executive Summary

This paper assesses the role of changes in relative resource supplies across countries as an explanation of the changing structure of U.S. trade and the growing competition to United States producers in international markets since the early 1960s. Although focusing primarily on the United States, the analysis also considers the impact of changing resource supplies on the trade structure of thirty-three other countries. In so doing, the analysis provides a basis for understanding the impact of relative resource changes on U.S. comparative advantage within the world economy.

The analysis first examines the changes that have occurred in the availability of resources (capital, labor of differing skills and land) across the thirty-four countries over the period from 1963 to 1975. Next, using traditional input-output methods, an analysis of the relationship between changes in resource structure and changes in the composition of trade as reflected in the changes in a country's implicit exchange of these factors' services is conducted. Finally, a formal statistical analysis of the resource determinants of U.S. comparative advantage is conducted at five points in time over the period from 1963 to 1975.

Overall, the analysis indicates that a consistent explanation for the decline in U.S. trade performance since the early 1960s is the result of changing world resource supplies. These changes are the result of differences in the rates of growth across countries of net real investment in equipment and the acquisition of labor skills through education and other training.

The data on resource supplies indicate that there have been substantial changes in resource structure across countries. In particular, it is found that the capital abundance position of the United States has been substantially eroded since the early 1960s. The capital available per worker in the United States grew at an average rate of 1.7 percent per year between 1963 and 1975, outpacing only two countries: Ghana and Yugoslavia, both of which showed a decline. In comparison, Japan's capital per worker grew at an average annual rate of 10.1 percent, second only to Korea whose relative capital endowment grew at the surprisingly rapid rate of 11.9 percent per year. Other countries showing relatively rapid rates of growth in capital per worker include Greece, Spain, Hong Kong, Brazil and Mexico. As a result of this differential growth, the United States fell from first to sixth on the basis of the ranking of capital available per worker. This relative decline is also found, to a lesser degree, with respect to the U.S. availability of skilled labor.

When resource structure was assessed on the basis of a country's world share of each resource, similar declines for the United States were found. In particular, the U.S. share of world capital fell from 44 percent in 1963 to 33 percent in 1975. By comparison, Japan's share of world capital increased twofold over the same period, from 7 to almost 15 percent. The U.S. world share of skilled labor fell from 29 percent to 26 percent, its world share of arable land, however, increased from 27 to 29 percent.

Examining the changes in the composition of a country's trade and its exchange of factor services, the results indicate that changes in the availability of resources in the United States relative to the rest of the world have had a major impact on the structure of U.S. trade. In particular, the structure of U.S. trade since the late 1960s has been significantly influenced in the capital-intensive sectors and the composition of U.S. trade has shifted such that its relative exchange of capital services with the rest of the world has declined. This finding is consistent with the decline in the capital abundance position of the United States relative to the rest of the world.

When U.S. exports going to developed and developing countries are examined, the results suggest that the accumulation of skilled labor and capital in the developed countries has contributed to a decline in the absorption of these factors from the United States and that, therefore, these countries have expanded their ability to compete in those sectors representing major U.S. manufactures exports. The results also suggest that the accumulation of capital in the less developed countries has reduced their absorption of capital services from the United States but that they continue to absorb increasing amounts of skilled labor.

The formal statistical analysis of the resource determinants of U.S. comparative advantage indicates that the changes in the resource availability of the United States relative to other countries provide a significant explanation of the changes in U.S. trade structure and the increasing competition to the United States in world markets. It is found that skilled labor and capital remain important determinants of the commodities in which the United States has a comparative advantage. But given this, what matters for changes in trade performance in such products among countries is the rate at which these resources are accumulated.

In this regard, the findings indicate that the relatively more rapid growth of physical capital, and to a lesser degree, skilled labor by the developed countries has enabled them to become increasingly competitive in those commodities representing U.S. comparative advantage. The results further indicate that the increasing accumulation of physical capital and semiskilled labor by the developing countries has enhanced their ability to compete in those commodities representing U.S. comparative disadvantage. Therefore, the results suggest that both U.S. export and import-competing industries will face increasing competition in the 1980s. The likely consequence of this increased competition in world markets will be to narrow the range of products representing U.S. comparative advantage.

TRENDS IN TECHNOLOGY-INTENSIVE TRADE: WITH SPECIAL REFERENCE TO U.S. COMPETITIVENESS

By C. Michael Aho and Howard F. Rosen

Executive Summary

Recently there has been a decline in U.S. research effort both relative to its trading partners and relative to past efforts. Consequently, the question arises whether the United States will lose its competitive advantage in those technology-intensive commodities which have traditionally characterized its comparative advantage.

This paper examines recent trends in the pattern of trade in technology-intensive products to see whether there has been an erosion of the U.S. competitive position in these products. The analysis is basically descriptive and uses a variety of measures to compare U.S. trade performance in technology-intensive commodities with that of other major industrial countries for the period from 1962-1977.

The analysis employs and compares all of the methodologies and indicators normally used to examine competitiveness and comparative advantage. These include: largest export earners, net exports, export-import ratios, "revealed" comparative advantage indices and exports and imports relative to domestic production and consumption. The analysis also examines U.S. export performance relative to major competitors in important commodities in third markets where all producers face the same market conditions.

The analysis shows that, in recent years, there has been a noticeable shift in the pattern of trade in high-technology products. The United States still maintains a strong competitive (and comparative) advantage in technology-intensive products, but U.S. competitiveness in those products in world markets has been deteriorating. The primary source of increased competition is Japan.

Several indicators revealed that high-technology products have been the source of strength in the overall U.S. manufacturing trade balance. Technology-intensive products comprise an increasing proportion of U.S. exports. Every year since 1962, the United States has had a trade surplus in technology-intensive products.

Relative to its major competitors, the United States still has (1) a greater concentration of high technology exports; (2) one of the largest export market shares in high technology products; (3) the greatest technological content in its exports; and (4) more technology-intensive products among the products which

comprise its comparative advantage. However, there are several indications that U.S. dominance in trade of high-technology products is beginning to erode.

The U.S. export market share in these commodities has fallen over time. In 1977, the U.S. share fell to second behind Germany, whose share had remained roughly constant over the fifteen-year period. During that period Japan's share quadrupled to a point where it was just behind the United States and Germany. The decline in the U.S. share and the improved performance by Japan and Germany were present throughout the entire period even after the exchange rate realignments began in 1971.

Another indication of a decline in U.S. competitiveness is the sustained increase in the import penetration ratio in high technology products. For many of the products the increases in their import penetration ratio was more rapid than for manufacturing as a whole. On a net export basis, several of the technology-intensive products had such a rapid growth of imports relative to exports that the United States became a net importer of those products. Finally, the United States is losing out to competitors in some of its traditionally strong products in third market areas.

Japan exhibits the most dramatic change in trade performance in technology-intensive commodities. Between 1962 and 1977, there was a remarkable shift in the structure of Japanese exports towards the higher technology industries. The share of these products in total exports more than doubled over the 1962-1977 period. Japan now has the largest trade surplus in technology-intensive products. In the 1960s Japan's trade performance in high technology products ranked low among the OECD countries. Since then, Japan has risen to second, behind only the United States as an exporter of technology-intensive products. The amount of technology embodied in Japan's exports has more than doubled between 1962 and 1977. Finally, Japan has begun to compete very favorably with the United States and other major countries in third market areas, where all competitors face the same market conditions.

The fact that U.S. exports remain more technology-intensive than exports from other major industrialized countries indicates that the United States has not lost its comparative advantages in technology-intensive goods. But the rapid growth of Japanese exports of technology-intensive goods and the growing share of Japan's exports to markets that were traditionally dominated by U.S. producers, demonstrate that Japanese competitiveness in technology-intensive goods is increasing. If these trends continue, competition between the two countries will increase in the future as both countries specialize on exporting similar products.

Research and development is one of the factors which affects the long-run competitive position of a country. To the extent the United States devotes less resources to research and development than its major competitors, then the long run international competitiveness of U.S. industry will be reduced. Increased R&D by firms in other countries will enable them to develop newer products and processes with which U.S. firms will have to compete. Although depreciation of the dollar will make U.S. products look more attractive in world markets, this will reduce real income at home. Not doing enough to lower costs and develop newer, higher quality products could lead to a long-run structural decline in the U.S. competitive position. To prevent such a decline the United States may need to put more resources into research activity.

A CONSTANT MARKET SHARE ANALYSIS OF U.S. EXPORT GROWTH

By Harry P. Bowen and Joseph Pelzman

Executive Summary

This paper examines the movements of U.S. world market export shares between 1962 and 1977. It also evaluates the performance of U.S. exports in particular subperiods over the 1962-1977 period rising the Constant Market Share (CMS) model. The particular subperiods analyzed are 1962-1969, 1970-1973 and 1974-1977. The entire analysis was performed for 102 manufacturing commodities defined at the 3-digit SITC level. In the main body of the paper an indepth analysis of the performance of the top eighteen U.S. manufacturing export earners over the entire 1962-1977 period is conducted as is a CMS analysis of the growth of total U.S. manufacturing exports.

An appendix provides a comprehensive and concise summary of U.S. export performance for each of the 102 commodities. For each 3-digit group, a brief

written summary is given indicating the changes in U.S. relative export performance, a brief list of the major competitors in each commodity, and a summary of the CMS results. Further information on U.S. trade performance is provided in the form of a graph indicating the movement in both the U.S. world share of exports and U.S. net exports over the 1962-1977 period.

Although trade is becoming increasingly important to the U.S. economy, the United States is playing a relatively smaller role in the world economy. An analysis of U.S. export market shares for 102 manufactured commodities indicated that the United States had trend declines in 71 percent of the commodities compared to 26 percent for Japan and 24 percent for West Germany. Most of the U.S. decline occurred in the 1960s with the 1970s representing mostly a period of stabilization.

Among the top five U.S. manufacturing export earners (road motor vehicles, nonelectrical machinery, aircraft, other electrical machinery, and office machines (computers)), only aircraft had an increase in its export market share.

The Constant Market Share model facilitates the analysis of this export performance by enabling one to attribute U.S. export growth to four specific sources: The growth of world trade; the commodity composition of U.S. exports; the market distribution of U.S. exports; and a residual representing the difference between the actual increase in a country's exports and the increase that would have occurred had the country maintained a constant share in each market and in each commodity.

This model allows one to address the following questions: (1) What would U.S. exports have been if they had expanded at the same rate as world trade? (2) What is the influence of performance? (3) What is the effect of the relative growth in demand for U.S. exports in key country or regional markets? (4) What portion of U.S. export growth is unexplained by these factors? The changes in this last component are usually attributed to changes in competitiveness.

The CMS results for total U.S. exports indicated that:

Over the entire 1962-1977 period the United States experienced a decline in its competitiveness as reflected by the CMS residual with most of this decline occurring in the 1962-1969 period.

During the 1962-1969 subperiod the United States export performance was enhanced by the relatively faster growth in key markets but this was not sufficient to offset major declines in competitiveness.

During the 1974-77 subperiod a positive source of U.S. export growth was the favorable commodity composition of its exports.

The decline in the competitiveness component of the CMS equation may not necessarily imply a general loss in U.S. competitiveness for two reasons:

A comparison of the various countries' export unit values over the 1962-1977 period demonstrated that during the 1970-1977 period the growth in U.S. export unit values was far smaller than its major competitors with the exception of Japan during 1974-1977.

A comparison of growth rates of gross domestic product (GDP) indicated that in each of the three subperiods the growth of U.S. GDP was less than that of competitors.

Therefore, it is possible that the decline in U.S. competitiveness as captured by the CMS analysis may, in part, be attributed to differences in GDP growth rates and differential increases in export unit values among major trading partners not reflective of actual changes in competitiveness.

To substantiate the conclusions based on the analysis of total U.S. exports, and to determine if major shifts across commodities had occurred during the 1962-1977 period, the CMS analysis was performed separately for each of the 102 manufacturing commodities. The results of this analysis indicated that:

In most cases the decline in U.S. export shares in the 1960's and early 1970's was due to residual competitiveness factors.

The growth of U.S. exports in the 1974-1977 period was retarded by both the slower growth in key U.S. export markets as well as competitiveness factors.

Whereas the 1960's represented primarily a period of decline in U.S. competitiveness, the latter part of the 1970's appears to have been a period of realignment in response to major changes in international trade.

Under ideal circumstances, the CMS analysis would allow for separate identification of each of the above effects. In practice, however, this procedure is subject to a number of biases on both conceptual and empirical grounds. Therefore, to determine the extent to which the CMS results generated were suscep-

tible to identifiable biases, three sensitivity tests were conducted. In particular, variations in the overall CMS estimates were examined as a result of changes in: the choice of base year; the level of aggregation of commodities; and the definition of the world market.

The results of the various sensitivity tests indicate that:

The CMS component estimates were not severely affected by the commodity aggregation but did appear highly sensitive to both changes in the base year chosen and to variations in the definition of the world market.

Its high sensitivity to base year changes supported the conclusion that major structural changes have occurred in the U.S. export sector.

ASSESSING THE CHANGING STRUCTURE OF U.S. TRADE IN MANUFACTURED GOODS:
AN ANALYSIS AND COMPARISON OF VARIOUS INDICATORS OF COMPARATIVE ADVANTAGE AND COMPETITIVENESS

(By C. Michael Aho, Harry P. Bowen, and Joseph Pelzman)

Executive Summary

This paper examines the growing importance of international trade to the U.S. economy and attempts to determine those commodities in which the United States has increased, maintained or lost a comparative and competitive advantage. The analysis focuses on the changes in the trade structure of the United States over the period from 1962 to 1977. The analysis is conducted at a highly disaggregated level using 102 manufacturing categories as defined at the 3-digit level of the Standard International Trade Classification (SITC).

A major contribution of this paper is that the analysis of U.S. trade structure and trade performance is based on an extensive list of indicators normally used to measure a country's performance in world markets. These indicators are first used to examine the changes that have occurred in the structure of U.S. comparative advantage and that of its major competitors. Cross-tabulations of the indicators at specific points in time as well as their change over time are then used to examine the relationships between the indicators and to determine a consistent list of commodities (based on all the measures) in which the U.S. has maintained or lost a comparative and/or competitive advantage.

Having established that international trade is playing an increasing role in U.S. economic activity, a determination of the specific commodities accounting for this growing interdependence was then made. This was accomplished using two measures, the ratio of exports to domestic shipments and the ratio of imports to apparent consumption.

Among the commodities with a high ratio of exports to domestic shipments and which therefore play an important role in the U.S. export sector are: machinery and appliances—other than electric, aircraft, power generating machinery—other than electric, and chemicals.

The commodities demonstrating a high import to apparent consumption ratio include musical instruments, pottery, textile and leather machinery, iron and steel tubes, silver and footwear.

A number of different measures were then used to determine the structure of U.S. comparative advantage and U.S. trade performance. These measures were:

Indexes of revealed comparative advantage.—Two indexes were used. One is defined as a country's world market share of a particular commodity divided by the country's share of total world manufacturing exports. The second index is the ratio of a country's exports to imports of a particular commodity divided by the ratio of its total manufacturing exports relative to its total manufacturing imports.

Net exports (divided by domestic shipments).

Import penetration ratio (divided by the overall manufacturing import penetration ratio).

Constant market share residual.—At a commodity specific level, the CMS procedure identifies two component effects contributing to export growth. One is due to the increase in world trade of the commodity and the other is due to the regional or market distribution of the country's exports of the commodity. Once these two effects have been determined the residual effect is measured as the difference between the actual increase in exports and that which would have occurred had the country maintained its market share of the commodity in each regional market. When this residual effect is negative it is interpreted as a de-

cline in competitiveness. Conversely, when the residual effect is positive it is taken to mean that the country has increased its competitiveness.

Based on the changes in the two indexes of revealed comparative advantage between 1962 and 1977, changes in U.S. trade performance across the 102 manufacturing commodities were examined. The results of this analysis indicated that:

Five commodities showed improved performance based on both indexes of revealed comparative advantage. These were: other inorganic chemicals, manufactured fertilizers, cotton fabrics-woven, glass and miscellaneous nonferrous base metals.

Three commodities revealed a disadvantage on both indexes. These were: articles of rubber, n.e.s. (representing mostly rubber tires), telecommunications apparatus and miscellaneous manufactures.

Seventeen commodities maintained an advantage on the basis of both indexes. These included: explosives, tools for use in the hand or in machines, electric power machinery, and electrical medical apparatus.

Twelve commodities maintained an advantage on the basis of one index and revealed a disadvantage on the other. Noteable among these twelve are: inorganic chemicals, road motor vehicles, medical and pharmaceutical products, plastics and metalworking machinery.

The above results were based only on changes in the indexes between two years, 1962 and 1977. As an indication of overall changes, the trend changes in three of the more important indicators (net exports, revealed comparative advantage and import penetration) were computed based on annual data and lists of the commodities showing either consistent positive or consistent negative performance across those indicators were compiled. These are presented below.

Commodities showing consistent positive performance were:

Organic chemicals.
Other inorganic chemicals.
Essential oils, perfume and flavour materials.
Fertilizers, manufactured.
Explosives and pyrotechnic products.
Leather.
Veneers, plywood boards.
Paper and paperboard.
Textile fabrics, woven other than cotton.
Tulle, lace, embroidery.
Special textile fabrics and related products.

Floor coverings, tapestries, etc.
Glass.
Rails and railway track of iron or steel.
Nickel.
Lead.
Tin.
Miscellaneous nonferrous base metals.
Machines for special industries.
Equipment for distributing electricity.
Scientific measuring and controlling instruments.
Photographic supplies.

Commodities showing consistent negative performance were:

Inorganic chemicals.
Manufactures of leather.
Articles of rubber, n.e.s.
Pig iron.
Universals, plates and sheets of iron or steel.
Zinc.
Wire products (excluding electric).
Nails, screws, nuts and bolts.

Manufactures of metals, n.e.s.
Telecommunications apparatus.
Domestic electrical equipment.
Road motor vehicles.
Furniture.
Clothing (except fur clothing).
Fur clothing.
Footwear.

Overall, the cross-tabulations indicated that the measures most often agreed as to the commodities with declining international performance. When net exports was used as the base indicator of trade performance, the indicators showing most agreement as to changes in trade performance were first the two indexes of revealed comparative advantage and then the constant market share residual.

Lastly, the results indicate that the United States has improved its performance in many of its key export products including scientific instruments and certain chemical products. But the United States has also suffered an erosion in its international performance in the key export earning sectors of the telecommunications apparatus and road motor vehicles. These changes reflect changes in the composition of U.S. trade in response to changes in world trade

and international competition. Continuing adjustments are likely to occur as resources are reallocated toward those sectors showing improved performance.

STATEMENT OF JACK CARLSON, EXECUTIVE VICE PRESIDENT AND CHIEF
ECONOMIST, NATIONAL ASSOCIATION OF REALTORS

The United States is currently suffering from accelerating inflation, high interest rates and unemployment rates, and slow growth in productivity and real incomes. Consumer price inflation between 1947 and 1970 averaged just 2.4 percent per year. Between 1970 and 1980, inflation will average almost 7.8 percent per year and without prompt government action, consumer prices will increase nearly 9 percent per year over the next decade. The deteriorating inflationary performance is matched by declining productivity growth in recent years. While output per worker grew at an average 2.4 percent per annum between 1947 and 1970, over the last ten years this had fallen to a mere 1 percent average annual growth and is likely to remain in the 1 to 1½ percent range during the next decade. Largely as a result of this poor productivity performance, real incomes for most wage and salary earners have grown only slowly during the last ten years.

In addition to these widely recognized problems, the nation is also suffering from a related problem with similar causes—a shortage of owner occupied and rental housing. Because of demographic and sociological trends, the demand for new housing to meet the needs of new household formation and depreciation of existing housing stock averaged over 2.2 million units per year during the 1970's. The supply of new housing however did not keep up with the rapidly growing demand over this period, with a cumulative shortfall of over 300,000 units emerging by 1979. The same forces which reduced new housing supply during the 1970's also prevented many existing home owners from upgrading to more adequate housing and reduced the geographic mobility of the population.

Without a significant change in government economic policies, the outlook for housing in the 1980's is even gloomier. High interest rates and slow growth in people's incomes will keep the supply of new housing in 1980 over 900,000 units below the underlying demand. Under present government policies, another shortfall of 700,000 units is expected next year and by the end of the decade the cumulative shortfall for housing could reach 10 million units, equivalent to 5 years' housing starts. This will only exacerbate the already emerging shortage of rental housing and push up housing prices and rents in the future.

While the explosion of world oil prices since 1973 has undoubtedly contributed to the current economic malaise, for the most part our present economic difficulties have been caused by the actions of government. For example, excessive growth in Federal deficit spending and taxation that discourages savings and investment, too rapid growth of the money supply in the 1970's followed by the current tight credit policies and the massive growth in costly straitjacketing government regulations has been responsible for over half the acceleration in inflation since 1976, while OPEC oil price hikes have been the cause of about only one-third of this acceleration.

Similarly, excessive increases in government spending have not only pushed-up interest rates directly diverting resources away from productive investment in new structures, equipment and housing, but also forced the Federal Reserve Board to lean against inflationary pressures through tight credit policies which further hampered investment. In addition, increases in effective corporate tax rates on profits from current production because of inadequate capital consumption allowances have reduced new investment, slowed productivity growth and have led to stagnant personal savings for most wage earners.

There is a growing awareness that part of the solution to these economic problems must include efforts to stimulate productivity growth through tax incentives to encourage further growth of new structures and equipment and additional new housing construction. There is also a need to release resources from the government sector and to encourage a shift by Americans toward greater personal savings. This would allow larger increases in investment to be achieved in a non-inflationary manner.

To stimulate investment in productivity-increasing new structures and equipment and housing we recommend the following tax relief measures be initiated effective January 1, 1981:

Allow 15-year tax lives on a *straight-line* basis for all structures: *rental housing*, commercial, industrial and agricultural structures;

Allow five-year depreciation on equipment (other than automobiles and light trucks);

Allow current expensing of construction period interest and taxes;

Eliminate the \$10,000 ceiling on interest cost deductibility of investment interest expense;

Increase the allowable amount of interest and dividend income excludable from Federal individual income taxes to \$500 (or \$1,000 for joint returns) to *encourage additional personal savings*; and

Adjust the personal income tax rates to *offset the increase in taxes* that will be caused by inflation during the next 12 months.

We estimate that the first year gross revenue cost of this package is \$32 billion in 1981 prices with 45 percent of the tax relief directed at increasing investment and another 17 percent going to stimulating savings directly.

An important part of this tax relief package involves equal tax lifetimes for all structures, including rental housing. Proposals to lower tax lives on non-residential structures by more than those for residential structures would siphon funds out of housing and reduced future rental housing construction.

We also recommend that this tax relief be accompanied by restraint on the growth of Federal spending. Specifically, we urge that:

The new Congress slow Federal spending growth by at least 2 percentage points during the remainder of the current fiscal year (FY 1981);

After FY 1981, Congress restrict Federal spending growth to 2 percentage points less than the growth in people's incomes; and

The new Congress and the Administration encourage the Federal Reserve Board to achieve a steadier growth of the money sup-

ply and to place more emphasis on fiscal policies rather than tight credit policies to fight inflation.

Slowdowns in spending growth of proportions outlined here would allow even larger tax relief to be directed to encouraging savings and investment to be considered in the future and allow interest rates to trend downward to further encourage investment.

An even more significant slowdown in Federal spending growth would be required to commit now to a 3-year largely consumption-stimulating personal income tax reduction such as the Kemp-Roth proposals. Without a spending slowdown of this magnitude to accompany large and immediate reductions in personal tax rates, inflation could be increased rather than decreased, interest rates driven up and new housing starts could be reduced by over 200,000 units per year.

While the fiscal policies we have outlined here will not solve all of the country's economic problems overnight, we believe that they could bring about a substantial improvement in the economic health of the nation.

Specifically, if these recommendations are followed, we estimate that:

Accelerating inflation and interest rates would reverse direction and decline shortly after the announcement of a credible program and decline significantly during the next 12 months.

The underlying or core rate of inflation could be reduced by at least 2 percentage points by 1982.

Long term interest rates could be 1 to 2 percent points lower in 1982.

Inflation could trend downward 7 percent or less by the mid-1980's.

Investment in productivity-increasing commercial and industrial structures and equipment could increase by over 20 percent by the mid-1980's.

Productivity could increase by over 2 percent by the mid-1980's. Employment could increase by over 1 million additional jobs by the mid-1980's.

Average spendable income per household could increase by \$900 by the mid-1980's.

New housing construction each year could increase by over 400,000 units by the mid-1980's.

One million additional households could upgrade to better housing each year.

STATEMENT OF DONALD F. REILLY, DEPUTY EXECUTIVE DIRECTOR,
NATIONAL COUNCIL ON THE AGING, INC.

Mr. Chairman and members of the Committee, thank you for providing this opportunity for the National Council on the Aging to share with you our views on what changes, if any, are needed in the social security system.

NCOA is a private, non-profit organization which, since its founding more than 30 years ago, has advocated a better life for older Americans. Composed of individuals and groups, NCOA has been in the forefront as a professional, technical and advocacy organization for

the elderly. From its beginning, NCOA has had as a central policy concern the level of income received by older people.

Social Security has proven, over four decades, to be the linchpin to income maintenance through social insurance. Without it, twelve million people above the poverty line would slip below it. For practically everyone, the expectation of social security benefits is the foundation of retirement security, and family security in the event of the worker's death or long-term disability. According to the NCOA/Louis Harris Study, *The Myth and Reality of Aging in America*, social security benefits are a current source of income to 89 percent of those age 65 and over, and the largest source of income to 58 percent.

Yet the recent past has brought this centerpiece of America's aging policy into almost constant scrutiny. In the short run, the system is in imminent danger of bankruptcy. In the long run, we are offered a choice of disasters: Either social security will consume 70 percent of the federal budget in the next century, or, alternatively, it will be short hundreds of billions of dollars to meet its obligations. Or both.

There is no doubt that the financial straits of the system are real. Simultaneous high unemployment and high inflation have reduced the trust fund and contributions and swelled the price tag for cost-of-living adjustments. The need for additional revenue over the longer range is attributable primarily to demographic factors with which the Committee is familiar. But both the extent of that need and the projections that social security payments would account for two-thirds of the federal budget, rest on what must be described as speculative assumptions about the state, 75 years from now, of such factors as fertility rates, mortality rates, labor force participation, productivity rates, inflation, unemployment levels, and immigration policy—among others.

In the short run, Congress should be commended for passage of legislation reallocating revenue from the Disability Insurance (DI) trust fund to the troubled Old Age and Survivors Insurance (OASI) trust fund. Further, Congress refused to forestall the tax increase scheduled to go into effect in January. But it seems clear now that additional action will be required next year, to avoid cash flow problems by mid-1982 in OASI.

NCOA has consistently supported the use of general revenues to meet part of the cost of financing the system. Introduction of major amounts of general revenue could come in several forms, all of which would be acceptable to NCOA:

Half of the Medicare Hospitalization Insurance (HI) program could be financed through general revenues, with reallocation of HI funds to OASI. As the Committee knows, more than 70 percent of the cost of Part B Medicare, Medical Insurance, is now met through general revenues.

One-third of the system's full cost could be met from general revenues, with a phase-in period to avoid major budgetary dislocations.

Authority could be put in place for transfers from general funds when unemployment or inflation reached certain trigger points.

Whether one of these methods or another, or some combination of them is settled in, it is clear that the First Session of the 97th Con-

gress, in concert with the Administration, must be prepared to act swiftly and decisively to shore up the OASI fund.

One argument frequently heard against the infusion of general revenue funds into social security is that it would remove the "fiscal brake" that now constrains irresponsible benefit expansions. The Committee should note that whatever short-run problems the system has have developed despite the presence of the "brake." Moreover, to assert that Congress would enact whopping benefit increases without giving a thought to paying for them, simply because the money would come from general revenues instead of trust funds, is to deny today's reality of budgetary sensitivity by both Congress and the Executive Branch, regardless of party.

Over the long term, NCOA urges the Committee to study the chasm carefully before attempting to bound across it. If we look before we leap, we may find the gap less intimidating, or we may find less, coercive ways of closing it than some of the draconian suggestions that have been made.

The uncertainties mentioned above make accurate predictions quite difficult. But if recent projections of a long-run deficit on the order of $1\frac{1}{2}$ -2 percent of payroll are accurate, increasing taxes to meet that shortfall is not a solution to be dismissed without thought. No program generates such support, from Americans of all ages. About two-thirds of those surveyed by Peter Hart for the National Commission on Social Security said they would be willing to bear greater taxes to maintain benefits from the social security system.

NCOA has had no objections to steps that would persuade workers to voluntarily delay retirement; our objections are fundamental and vigorous to steps that would coerce workers into staying on the job. Raising the age for entitlement to full benefits from 65 to 68 is just such a coercive step. If the long-run deficit persists, and if tax increases to compensate fully are not possible, several steps could be taken to induce workers to remain in the labor force. Among them are these:

End mandatory retirement.—Some substantial number of older workers who wish to stay on the job, and are fully competent to do so, are forced to retire each year solely because of age.

Promote older worker retention.—Encourage employers to devise ways to keep older workers employed through job-sharing, peak period call-backs, phased retirement, and other devices.

Discourage early retirement.—Both within and outside social security, incentives could be put into place to reverse the long-standing decline in labor force participation for older workers. Tax treatment of pension contributions is one likely area to investigate, as is the "bonus" for working past age 65.

Retraining efforts.—Where older workers lack current skills, programs could be developed—most efficiently, perhaps, through title V of the Older Americans Act—to equip them with those skills and place them in new positions.

Unemployment laws that penalize workers with *any* retirement income should be repealed. NCOA welcomes the charges enacted this year, and looks forward to further progress.

One other major concern of NCOA is the treatment of women under the system. This concern is heightened by changes that have occurred in our society: The extent to which women participate in the labor force; the impact of employment discrimination and other factors (including child bearing) that have restricted women's average earnings and, therefore, social security benefits; increases in divorce rates, leaving more women with less than adequate social security protection; growing recognition of the economic value of a woman's work in the home, and growing dissatisfaction with eligibility for benefits that is based on a dependency status. While social security is surely not responsible for those societal shifts, NCOA believes that a number of changes can and should be made to improve the way the program works for women.

We have no magic solutions to these knotty problems, but serious consideration should be given to changes in the system which recognize that marriage represents an economic partnership. The "earnings sharing concept" deserves special study. We must take care, though, not to endanger present dependency-based benefits unless some better alternative is put into place. The fact that more women now participate in the work force cannot be used as an excuse for robbing other women—and many of the workers—of protection now provided by social security.

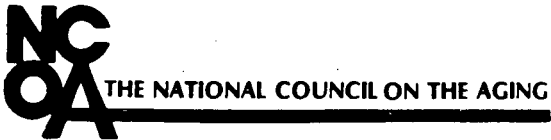
Let me address, finally, the notion that we should reduce older people's benefits, since they receive a large and growing share of the federal budget. Yes, millions of older people have been lifted from poverty over the last 20 years. But many have not been lifted very far: one in four persons over 65 (compared to one in six in the general population) were classed as "near poor" in 1979, with an income of less than \$4,340 a year for an individual older person, or \$83 a week. From 1978 to 1979, 700,000 Americans of all ages slipped below the official poverty threshold; of that number, 400,000 were 65 or over.

Needless to say, the situation of women, and of minorities among the elderly is even more desperate.

As this Committee considers alternatives in social security policy—the central social policy this society has for its older citizens, NCOA urges that the approach be one of problem-solving in a context of retraining and building upon the social gains that have been made.

NCOA PUBLIC POLICY AGENDA 1980-81

RETIREMENT INCOME



RETIREMENT INCOME

Despite the fact that officially defined poverty among the elderly has been decreasing faster than among the population as a whole, older Americans remain a low-income group. Fourteen percent of the elderly live on incomes below the poverty level, compared with 11 percent of all Americans. Almost one-fourth (23.4%) of the elderly are "near-poor," living at or below 125 percent of the poverty line, a rate half again as large as the share of near-poor (15.8%) in the general population. Some elderly persons were poor before retirement, but many fall into poverty for the first time in old age.

The Supplemental Security Income (SSI) program was designed to guarantee a minimum income to America's elderly, blind and disabled citizens. Yet seven years after enactment of SSI, one of every seven of the nation's elderly still lives in poverty, with widows and members of minority groups suffering the greatest deprivation.

The elderly poor cannot continue to survive on subsistence payments that become more meaningless as the cost of essential items soars. The poverty level itself fails to provide the minimal standard of living for an older couple as determined by the Bureau of Labor Statistics. The author of the official standard, Mollie Orshansky, estimates that shifting to a more realistic measure of economic hardship would double the number of elderly poor. The fact that 14 percent of the aged live below the poverty level is a national disgrace.

The prevalence of poverty is more shocking among subgroups, especially older women and minorities. The median income of elderly black families or individuals in 1974 was two-thirds the already inadequate income of their white counterparts. Older women are likely to subsist on half the income of older men. Almost three of every four SSI recipients are women, and unmarried older women account for three of every four poor elderly persons.

Further, while the poverty rate for older people has been decreasing over the past two decades, an older family's income has remained 50 percent of a younger family's. A few living expenses may drop in old age, but others may increase. An older person's economic needs are certainly not reduced by half in retirement. In fact, the largest expenses are those most heavily affected by inflation: Food, housing, medical care and drugs.

A major effort must be made to bring the nation's elderly out of poverty. Such an effort should include full employment options and improvements in retirement income and public assistance programs. NCOA recommendations for employment options are dealt with elsewhere.

Social Security

Social security has proven, over four decades, to be a highly effective method of income maintenance. Without social security, about twelve million people who are above the poverty line would be counted as poor. For practically everyone, the expectation of social security benefits is the foundation of retirement security and security for the family in the event of the worker's long-term disability or death. According to the NCOA/Louis Harris study, *The Myth and Reality of Aging in America*, social security benefits are a current source of income to 89 percent of those age 65 and over, and the largest source of income to 58 percent.

NCOA believes that changes should be made (a) in the method by which the social

security program is financed, (b) to improve in several ways the protection the program affords, especially for women, (c) to remedy several gaps and inadequacies in the program, and (d) to insulate the program more effectively against political pressures.

Financing. Questions have been raised in many quarters about the adequacy of social security's financing provisions, especially in light of recent and current economic factors and in light of demographic and other projections into the long-range future. Contrary to much popular belief, there is no danger that social security will be unable to pay benefits as due. The increases in financing that may be required over what is provided by present law for meeting both short-term and long-term costs are relatively small. For example, employee tax rates in the 25-year period beginning 25 years hence may—if the system continues to be financed solely through payroll taxes—need to be higher by about six-tenths of one percent of payroll than the rate scheduled in present law. But the social security expenditures for that period would represent only a little over five percent of gross national product, or a little over one-quarter of one percent of GNP more than is represented by expenditures for 1981. Since there will be substantially fewer children than today, the higher tax rates will be paid by a population that spends substantially less (in constant dollars) than is spent today for the support and education of children.¹ Financing of social security, even if based solely on payroll taxes, should actually be less of a burden in the early decades of the 21st century than it is now. Given that, and given the stake that practically the whole country has in social security at any given time, it is all but inconceivable that any Congress will allow the system to become unable to pay benefits as due.

NCOA believes, however, that the system should not continue to be financed solely through payroll taxes. The cost of weighting benefits in favor of low earners, and of other social elements of the program, should be met through graduated taxes, via general revenues, and not entirely through a flat-rate tax on payrolls.

With a contribution to the program from general revenues (such as is provided in the social insurance programs in most other industrial countries) contribution rates in the 21st century will probably not need to be raised much, if at all, above the 1981 rate, even though costs are increased by reason of benefit changes such as we are recommending.

Women. In recent years, social security has been the object of increasing scrutiny with regard to how it affects women. In part, this scrutiny reflects changes that have occurred in our society: The extent to which women participate in the labor force; the impact of employment discrimination and other factors (including child bearing) that have restricted women's average earnings and, therefore, social security benefits; increases in divorce rates, leaving more women with less than adequate social security protection; growing recognition of the economic value of a woman's work in the home, and growing dissatisfaction with eligibility for benefits that is based on a dependency status.² While social security is surely not responsible for these societal shifts, NCOA believes that a number of changes can and should be made to improve the way the program works for women.

The Federal Budget. Social security is not just a tax program and not just a benefit program; it is a system of contributory social insurance. Contributions are paid by employees, and by employers in their behalf, and benefits are paid that reflect those contributions. Yet social security trust fund expenditures are sometimes included in calculations used to support assertions that older people are getting more than their "fair share" of the Federal budget. This distortion has hampered efforts to improve other aspects of the lives of older Americans.

NCOA makes the following specific recommendations:

- Part of the cost of the social security system, as much as one-third in the long run, should be met from general revenues, that is, primarily from graduated taxes that extend to upper levels of income and are derived from sources beyond wages, salaries and self-employment income.
- Social security primary benefits should be increased by one-eighth and spouses' benefits, except in the case of a divorced spouse, should be reduced by one-third, so that the combined benefit for a one-earner couple continues to equal one and one-half times the present primary benefit. Benefits would thus be increased for, among others, the two classes of beneficiaries—single women and widows—who generally get the lowest benefits and are the least well off. Also, benefits would be significantly in-

creased for two-earner, as against one-earner, couples. A divorced spouse would receive 45 percent of the increased primary benefit, or about 50 percent (as now) of the present primary benefit.

- Provisions of current law liberalizing the earnings or "retirement" test should be retained.
- Proposals to deliberalize social security by raising the age for full retirement benefits should be rejected. Such a change would break an implicit promise to social security contributors, would cause hardships to those unable to work after 65 or unable to get a job, and is wholly unnecessary for purposes of making the program financially sound.
- Persons regularly covered under social security, even at minimum wages, for most of their work lives should be assured of benefits at least sufficient to keep them out of poverty.
- The benefit formula should be adjusted so that for each added dollar of contributions paid, the worker who has high earnings can expect, as can all other workers, at least an additional dollar of benefits.
- Additional "drop out" years should be allowed in figuring the benefits of persons who remain out of the work force while they have young children in their care.
- A special benefit should be paid for one year to assist widows in entering or reentering the work force.
- Benefits should be paid to disabled spouses of retired or disabled workers and benefits to disabled widows or widowers should be paid at any age and without reduction because of age.
- The present 5-month waiting period for disability benefits should be reduced to 3 months.
- Disability benefits should begin after the waiting period, without any requirement that the disability be expected to last 12 months or until the worker's death.
- For workers age 55 and over, disability should be defined in terms of inability to perform one's usual occupation rather than, as at present, inability to do any substantially gainful work. The revised definition would be similar to that used in present law in the case of blindness.
- Cost-of-living adjustments in benefits should be made, when prices rise rapidly, every six months, instead of, as at present, on an annual basis.
- Serious consideration should be given to changes in the system which recognize that marriage represents an economic partnership. The so-called "earnings sharing" concept is deserving of special consideration. Care must be taken, however, not to endanger present dependency-based benefits unless some better alternative is put into place.
- The Social Security Administration should be established as an independent agency, and the transactions of the social security trust funds separated from the unified Federal budget.
- Social security benefits should be adjusted, not only for changes in the cost of living, but also to reflect increases in the standard of living in the country.

STATEMENT OF GEORGE A. STRICHMAN, CHAIRMAN, COLT INDUSTRIES, INC. ON BEHALF OF THE COMMITTEE FOR EFFECTIVE CAPITAL RECOVERY

The *Committee for Effective Capital Recovery* is a voluntary coalition of 519 business firms and 54 business associations (see app. A).

Formerly called the *Ad Hoc Committee for an Effective Investment Tax Credit*, the Committee has long been active in efforts to improve, strengthen, and make permanent capital cost recovery allowances working initially on the investment tax credit.

In confirmation with its work on the investment tax credit, the Committee has always had the improvement and restructuring of depreciation allowances as one of its key objectives. Indeed, in late 1978 the Committee changed its name to the *Committee for Effective Capital Recovery* to reflect more accurately the scope of its policy goals.

I. The Economic Justification for Improved Capital Recovery

A. LOW RATES OF SAVINGS

1. Personal Savings

Table I shows that Americans are saving a far smaller proportion of their disposable income than are the citizens of the five major industrialized nations. Moreover, the rate for the United States has declined over the past decade, while the rate for the other countries, except West Germany, has increased.

TABLE I.—PERSONAL SAVINGS AS A PERCENT OF DISPOSABLE PERSONAL INCOME

Country	1970	1977
United States.....	8	6
Canada.....	6	11
Britain.....	6	11
West Germany.....	15	13
France.....	12	13
Japan.....	17	21

Source: United Nations, "Yearbook of National Accounts Statistics," 1978, vol. b 1, tale 16.

The most recent statistics for the United States provide no encouragement under present tax policies. In 1978, the rate of savings fell to 5.3 percent; in 1979, there was a further drop to 4.5 percent; and in the fourth quarter of 1979, the rate was 3.5 percent, the lowest savings rate since 1951.

2. Business Savings

When business savings are added to the equation, the United States still ranks far behind its trading partners, with the exception of the United Kingdom, as shown in table II.

TABLE II.—Total national savings as a percent of gross national product, 1978

	(Percent)
United States.....	6
United Kingdom.....	7
West Germany.....	12
France.....	12
Japan.....	17
Canada.....	9

Source: United Nations, *Yearbook of National Accounts Statistics*, 1979.

One of the principal reasons why the United States ranks last in rates of personal savings is that our tax policy discourages savings and productive investment. Individuals find themselves moved for tax reasons to invest in other type of investments. Or they may place their savings in tangible, nonfinancial investments, such as gold, real estate, antiques, silver, art, rare stamps, and other assets which appreciate rapidly in value, but on which taxes can be deferred.

Japan, West Germany, France, Canada, and the United Kingdom all have formal and informal tax policies which provide significant encouragement for private saving. The fact that the United States lags in such incentives explains in part our comparatively dismal performance with respect to capital investment and rates of productivity growth.

3. Relationship Between Capital Recovery Allowances and Total National Savings

Based on Department of Commerce statistics, business saving as a percent of total national savings was 75.8 percent in 1979. Consequently, business saving is now the largest factor to be considered in an examination of the issue of total national savings.

In turn, the major factors in business saving are the capital recovery allowances of the Internal Revenue Code. According to the Commerce Department figures, these allowances accounted for 88.0 percent of total business savings in 1979.

It therefore becomes clear that the most effective means of increasing national savings would be to improve our capital recovery allowances. To achieve this goal, I strongly urge enactment of the "10-5-3" capital cost recovery proposal embodied in H.R. 4646 and S. 1435. It is estimated by Dr. Allen Sinai of Data Resources, Inc. that the increase in savings in the nonfinancial corporate sector resulting from enactment of the "10-5-3" proposal would range from \$5.5 billion in 1980 to \$48 billion in 1984.

B. LOW RATES OF CAPITAL INVESTMENT AND PRODUCTIVITY

The direct relationship between personal savings and investment and productivity growth is described in the Joint Economic Committee's midyear review of the U.S. economy: "Personal saving is a major source of funds for investment and productivity increases."

Having noted the low rate of savings outlined above, it should come as no surprise that the United States ranks last among the major industrialized nations in investment as a percent of gross domestic product, indeed having a ratio of approximately half that in Japan. This is shown in table III.

TABLE III.—Average annual ratio of capital investment as a percent of output¹
1960-78:

Japan	28.0
Canada	19.6
Germany	19.4
France	19.0
United Kingdom.....	17.0
United States.....	14.7

¹ Capital investment, excluding residential dwellings, as a percent of gross domestic product at factor cost, in current prices for the total economy.

Source: U.S. Department of Labor, Office of Productivity and Technology, Division of Foreign Labor Statistics and Trade, July 1980.

C. LOW RATES OF PRODUCTIVITY GROWTH

Low rates of savings and capital investment lead inevitably to low rates of productivity growth. The U.S. ranks last among its major trading partners in this important respect. Table IV shows the average annual percentage change in productivity for the U.S. compared with those trading partners.

TABLE IV.—Average annual increases of output per hour in manufacturing

1969-79:		
Japan	-----	8.3 percent
France	-----	5.6 percent
Germany	-----	5.4 percent
Canada	-----	4.0 percent
United Kingdom	-----	3.2 percent
United States	-----	2.5 percent

Source: U.S. Department of Labor, Office of Productivity and Technology, Division of Foreign Labor Statistics and Trade, July 1980.

Moreover, the trend for U.S. productivity is ominous. From 1955 to 1965, U.S. productivity increased at an average annual rate of 3.1 percent; from 1965 to 1973, at a rate of 2.3 percent; from 1973 to 1979, 1.2 percent. During 1979, output per hour in the private business sector actually *decreased* by 0.9 percent. This is only the second time since 1947 that we have seen a decline in the annual rate of productivity growth in this country.

There are some who argue that the United States is going through an inevitable period of low productivity. The truth is that there is nothing inevitable about the decline in American productivity. We have caused it ourselves by discouraging investment while our partners in the free world have been growing in productivity at rates two to three times ours.

Continuation of this trend threatens to destroy America's position as a competitive industrial power.

D. IMPORTANT EFFECTS OF LOW RATES OF SAVINGS, CAPITAL INVESTMENT, AND PRODUCTIVITY GROWTH ON KEY ELEMENTS OF THE UNITED STATES ECONOMY

1. Inflation and Growth of Real Income

a. Economic Report of the President.—The Committee for Effective Capital Recovery strongly agrees with the statement made by President Carter in his 1979 Economic Report to the Congress:

With slower productivity growth, our living standards individually and as a Nation cannot rise as fast. Slower productivity growth means that the resources available for carrying out governmental programs becomes scarcer. It means that large increases in wages and other incomes put greater upward pressure on costs and prices. If we ignore the realities of slower productivity growth—if governments continue to press forward with unabated claims on resources, and private citizens continue to demand large gains in money incomes—our inflationary problem will worsen.

b. Analysis of the Council on Wage and Price Stability.—The Council on Wage and Price Stability, in *A Special Report on Inflation* (April, 1978), highlighted the relationship between productivity and inflation:

Trends in labor productivity are important elements of the inflation process. Improvements in output per man hour reduce unit labor costs and provide a wedge between wage increases and higher prices. Thus, productivity growth is a means of improving living standards for all participants in the economy. In its absence increased incomes for some can come only at the expense of reduced real earnings for others.

A sharp falloff in productivity growth has been an important cause of the disappointingly small gains in real income over the last decade and it has exacerbated the inflation * * *. The effect of this slowdown [of productivity] has been to reduce total real incomes by 19 percent in 1977 (the equivalent of \$280 billion in today's prices) compared to what would have been achieved by a sustained growth of productivity at the rate of the prior two decades.

c. Relationship between capital investment, productivity, wages, and prices.—There is a striking correlation between capital investment and wage rates by industry in this country. Table V shows the most recent data from the Department of Labor on this subject. It shows 1971 capital investment data and compares it with production worker average earnings by related industry group.

TABLE V.—CAPITAL INTENSITY AND WORKER EARNINGS

Industry	Capital per employee		Production worker average earnings	
	CPE	Rank	Per hour	Rank
Group 1:				
Petroleum and coal.....	\$87, 190	1	\$4. 57	1
Chemicals.....	36, 450	2	3. 94	3
Primary metals.....	35, 060	3	4. 23	2
Paper.....	29, 440	4	3. 67	4
Stone, clay, and glass.....	20, 550	5	3. 66	5
Food.....	14, 160	6	3. 38	7
Rubber/plastics.....	14, 140	7	3. 40	6
Tobacco.....	12, 690	8	3. 15	8/9
Lumber.....	10, 270	9	3. 15	8/9
Miscellaneous.....	6, 490	10	2. 97	10
Furniture.....	5, 210	11	2. 90	11
Leather.....	2, 530	12	2. 60	12
Apparel.....	2, 110	13	2. 49	13
Group 2:				
Transportation equipment.....	12, 080	1	4. 41	1
Nonelectric equipment.....	11, 440	2	3. 99	3
Fabricated metals.....	11, 540	3	3. 74	5
Ordnance.....	10, 560	4	3. 84	4
Instruments.....	9, 410	5	3. 52	6
Electrical equipment.....	8, 830	6	3. 48	7
Printing.....	8, 580	7	4. 20	2
Group 3: Textiles	10, 840		2. 57	

Source: Department of Labor (1971).

Reviewing this data during his testimony before the Joint Economic Committee in mid-1975, then-Secretary of Labor Dunlop concluded:

* * * creation of jobs through investment capital broadens opportunities, thus allowing more upward mobility in salary and skills as people are promoted and new jobs created * * * the most basic and far-reaching objective for national policy in this context should be to encourage development of new technologies and the formation of new capital * * *. Also, the increase in output and income implied by new capital formation means a higher level of living and income for all Americans, whether or not they are employed by the industries involved with new capital formation and productivity gain.

d. International comparison: Productivity and wage rates.—There appears to be an inescapable correlation between growth in productivity and improvements in a nation's standard of living and in wage rates. Table VI compares the United States with five industrialized

nations in terms of productivity increases and increases in the wages received by workers in those countries. There is a striking similarity in the rankings in each category.

TABLE VI.—COMPARISON OF PRODUCTIVITY AND INCREASES IN HOURLY WAGES

	Average annual increase of output per hour in manufacturing, 1960-79		Average annual compound rate of change in hourly wage for production worker, 1960-78	
	Percent	Rank	Percent	Rank
Japan.....	8.3	1	14.9	1
France.....	5.6	2	11.9	2
Germany.....	5.4	3	9.9	4
Canada.....	4.0	4	8.2	5
United Kingdom.....	3.2	5	11.9	2
United States.....	2.5	6	6.5	6

Source: U.S. Department of Labor, Office of Productivity and Technology, Division of Foreign Labor Statistics and Trade, July 1980.

2. U.S. Balance of Trade

In its days of ever-improving productivity, the United States was not only a major exporter but was also able to keep its imports and exports in a favorable balance. Unfortunately, this is no longer the case. Table VII shows the discouraging trends with respect to the U.S. trade deficit, which reached a level of \$29 billion in 1979.

TABLE VII.—U.S. BALANCE ON MERCHANDISE TRADE

[Dollar amounts in millions]

Year	Amount	Year	Amount
1960.....	\$4,892	1970.....	\$2,603
1961.....	5,571	1971.....	-2,260
1962.....	4,521	1972.....	-6,416
1963.....	5,224	1973.....	911
1964.....	6,801	1974.....	-5,343
1965.....	4,951	1975.....	9,047
1966.....	3,817	1976.....	-9,306
1967.....	3,800	1977.....	-30,873
1968.....	635	1978.....	-33,759
1969.....	607	1979.....	-29,469

Source: Survey of Current Business, June 1980, U.S. Department of Commerce.

Underlying this trend is the decline in the U.S. share of total manufactured exports worldwide. As a nation, we are falling further behind in international economic competition. To reverse this decline, we simply must act boldly to improve our productivity performance.

In recent years, policymakers have begun to pay closer attention to the relationship between our trade deficit and the value of the dollar, domestic inflation, and the overall strength of our economy. There is now a widespread consensus that we need a strong, coherent, and effective export program. Improved capital recovery allowances can and should be an important ingredient of that program.

E. IMPACT OF INFLATION ON REAL VALUE OF DEPRECIATION ALLOWANCES

In January of 1979, Martin Feldstein and Lawrence Summers published a paper on "Inflation and the Taxation of Capital Income in the Corporate Sector." The paper examined the effect of inflation

on the taxation of capital used in the nonfinancial sector of the U.S. economy. It concluded that:

... the effect of inflation with the existing tax laws was to raise the 1977 tax burden on corporate sector capital income by more than \$32 billion, an amount equal to 69 percent of the real after tax capital income of the nonfinancial corporate sector. . . . This extra tax raised the total effective tax rate from 43 percent to 66 percent of capital income in the nonfinancial corporate sector.

The paper concluded that the principal reason for this increase in the effective tax rate on capital income is that the historic cost method of depreciation causes a major overstatement of taxable profits.

Specifically, Messrs. Feldstein and Summers found that inflation reduced the depreciation allowed on existing plant and equipment by \$39.7 billion in 1977. Thus, the impact of inflation on depreciation allowances alone increased corporate tax payments by \$19 billion or almost one-third of the \$59 billion of corporate tax liabilities for 1977.

The increased taxes resulting from inflation in 1977 should be compared with the revenue cost of the "10-5-3" capital cost recovery proposal. It will be seen that the revenue "losses" resulting from this proposal are far less than the increase in corporate taxes due to inflation described and, although a start in the right direction, do not fully restore business profits to the level necessary to offset inflation.

F. INTERNATIONAL COMPARISON OF CAPITAL RECOVERY SYSTEMS

As indicated earlier, one of the key results of improved capital recovery allowances would be to bring our system in line with the most progressive of our trading partners.

Based on the implications of productivity data and other information, it is widely assumed that some of our trading partners (Japan and West Germany, for example) already have relatively more modern plants and equipment than does the United States. One of the principal reasons for this situation is the fact that for years Japan and West Germany provided capital recovery allowances which were far more realistic than those in the United States.

The United Kingdom and Canada, which have had levels of plant and equipment modernization far closer to those of the United States than the levels of Japan or Germany (see productivity data above), have come to recognize the importance of adequate depreciation. They liberalized their depreciation systems and are now far more effective in providing for more adequate capital formation than is the United States.

Specifically, the United Kingdom permits 100 percent of the cost of machinery to be written off in the year of purchase. Similarly, Canada permits machinery and equipment to be written off over a two-year period. By these standards, the United States is obviously far out of date.

A full comparison of the major industrialized nations has been provided by Price Waterhouse and it is attached as appendix B.

II. The "10-5-3" Capital Cost Recovery Proposal

Clearly, there is overwhelming evidence of the need for improved capital recovery allowances in our tax system. Although there are other ways to move toward this goal, the "10-5-3" capital cost recovery proposal seems to be the most practical and effective approach.

"10-5-3" proposal would greatly simplify our capital recovery system and accelerate the recovery. It would remove at last the useful life concept from our tax code and replace it with a more reasonable and simpler method of computing depreciation allowances. It would remove the factor of salvage values in capital recovery computations. It would strengthen the investment tax credit. Capital recovery allowances and the investment tax credit would no longer be deferred until the property is placed in service but rather would be allowable in the taxable year in which funds are expended to acquire the property. The "10-5-3" proposal would also remove the distinction between investments in new and used property for purposes of capital cost recovery allowances.

The "10-5-3" proposal would substantially benefit small businesses by replacing the current complexity of the Asset Depreciation Range system. A Treasury Department study completed in 1974 (the most recent data available) found that only one-half of one percent of all corporations with less than \$5 million in total assets elected the ADR system. Thus, even the modest benefits of the last major improvements in depreciation (20 percent ADR) are readily usable for only a small portion of American businesses. By way of contrast, the "10-5-3" proposal is simple, direct, and can be used by large and small businesses alike. Table VIII shows the results of the Treasury study.

TABLE VIII.—USE OF ADR BY U.S. CORPORATIONS

Size of total assets	Total number of firms in population	Firms electing ADR	
		Number	Percent
\$1 to \$500,000.....	1,493,000	5,482	0.4
\$1,000,000 to \$5,000,000.....	5,000	1,788	5.0
\$5,000,000 to \$10,000,000.....	5,000	665	13.0
\$10,000,000 to \$50,000,000.....	4,000	991	38.0
\$50,000,000 to \$100,000,000.....	625	804	49.0
\$100,000,000 to \$200,000,000.....	396	242	61.0
\$200,000,000 to \$300,000,000.....	156	107	69.0
\$300,000,000 to \$600,000,000.....	203	167	82.0
\$600,000,000 to \$1,000,000,000.....	88	80	91.0
Over \$1,000,000,000.....	166	152	94.0
Total.....	1,601,634	11,042	.7

Source: 1974 Statistics of Income, Department of Treasury.

A. EFFECTIVENESS OF "10-5-3" IN STIMULATING INVESTMENT

There appears to be a growing consensus that enactment of legislation along the lines of "10-5-3" would be an extremely effective and efficient way to stimulate increased capital investment. The following items are submitted as evidence of this view:

Action taken by the Senate Finance Committee on September 15, 1980, in reporting H.R. 5829 which included a "2-4-7-10" capital cost recovery provision. The Report accompanying the bill included the following statement regarding the reasons for the committee's action:

The committee believes that the present rules relating to depreciation and the investment credit—the principal means of recovering costs of tangible personal property—require substantial revision. Because of current rates of inflation, the present timing of deductions, even when coupled with the investment credit, often is inadequate to reflect recovery of the original cost

of an asset expressed in terms of the purchasing power which was invested in that asset. This is particularly true of longer-lived assets. Reductions in the real value of depreciation deductions can seriously impair the ability of businesses to finance the replacement [sic] of old equipment with newer, more modern equipment which reflects recent technology. In addition, the committee believes that it is important to provide business with additional incentives to make investments in equipment because additional investments are required to improve productivity.

Unanimous report of the Joint Economic Committee, March 1979: "Some of the tax changes in the Revenue Act of 1978 will stimulate investment, but these are not sufficient. The Committee believes that per dollar of revenue loss, liberalization of depreciation allowances would be the most efficient stimulant.

Statement by the Honorable G. William Miller, then-Chairman of the Federal Reserve Board, before the Commonwealth Club of California, July 19, 1979: "My own proposal has been that we endorse a simple formula: 1-5-10. 1-5-10 stands for a new policy of liberalized depreciation under which all mandated investments for environment, safety and health would be written off in one year; all new investments for productive equipment would be written off in five years; and all capital in structures and permanent facilities would be written off in 10. This acceleration of the depreciation allowance offers the most direct and efficient way to boost investment, for two reasons: first, accelerated depreciation ties each dollar of revenue loss *directly* to capital investment; and, second, because this formula reduces risk and thus gives strong incentive for investment in the cost-saving and modern production facilities. Our estimates indicate that 1-5-10, after five years, could raise the investment share of output close to 1 per cent higher than what it would otherwise have been."

Statement by Allen Sinai before the Committee for Effective Capital Recovery, September 13, 1979: "Of the various tax incentives to capital formation most often considered, the impacts from the accelerated capital recovery rank near the top in terms of instrument effectiveness. Only the investment tax credit would produce an equivalent or greater bang-for-a-buck."

In addition, the "10-5-3" proposal has been cosponsored in the 96th Congress by over 300 Members of the House and by over 55 Members of the Senate and is supported by the National Association of Manufacturers, Business Roundtable, Chamber of Commerce, National Federation of Independent Business, and the American Council for Capital Formation and virtually every business organization in the United States which has studied the matter.

B. APPLICATION OF THE "10-5-3" PROPOSALS TO STRUCTURES

Notwithstanding the evidence in support of the "10-5-3" proposal, a degree of controversy has arisen with respect to a provision of the proposal which would require a ten-year write-off for nonresidential buildings and structures.

The Committee for Effective Capital Recovery believes that the ten-year depreciation schedule is an extremely important component

of the "10-5-3" bill. We subscribe to the views outlined by then-Secretary of the Treasury Michael Blumenthal in his testimony before the House Ways and Means Committee on January 30, 1978:

... a particularly weak aspect of the current economic recovery is the low rate of business investment in long-lived structures; investment in structures reached its peak almost four years ago and is now 11 percent below that level. The tax preference for depreciation of structures has been reduced through the operation of the "recapture" rules and the minimum tax. . . .

While Secretary Blumenthal's statement was in support of the Administration's proposal to have structures qualify for the investment tax credit, the argument applies equally well to the need for improved depreciation allowances for buildings and structures. In the case of the "10-5-3" proposal the recapture rule for buildings has also been tightened.

C. ECONOMIC IMPACT OF "10-5-3"

Allen Sinai, Vice President and Senior Economist of Data Resources Inc., prepared an analysis of the "10-5-3" proposal¹ using the DRI Model of the U.S. economy. The DRI analysis assumes that the "10-5-3" proposal is enacted and will be effective for taxable years ending after December 31, 1979. The DRI analysis is attached to this testimony as appendix C.

Of the tax incentives for capital formation most often considered, Data Resources, Inc. found that the accelerated capital recovery proposal is particularly effective. The program would provide strong stimulus to business fixed investment, real economic growth, productivity, and employment, without a significant rise in inflation.

The analysis done with the DRI model (see table IX) indicates that the "10-5-3" proposal would raise real business fixed investment by \$10 billion per year between 1980 and 1984, would boost the growth of real GNP by 0.3 percent annually, and would increase productivity growth by 0.7 percent. An additional 500,000 persons would be employed by 1984 who would not be employed without enactment of the "10-5-3" proposal.

TABLE IX.—INCREMENTAL ECONOMIC EFFECT OF THE 10-5-3 ACCELERATED CAPITAL RECOVERY PROGRAM; 10-5 PHASE-IN, DRI MODEL SIMULATION RESULTS

[Billions of dollars, relative to baseline]

	1980	1981	1982	1983	1984
Real business fixed investment.....	0.2	4.1	9.8	15.3	20.9
Real equipment spending.....	0.2	3.2	7.4	11.7	16.3
Real plant spending.....	0.1	0.9	2.4	3.6	4.5
Revenue losses:					
With feedback.....	4.2	9.8	11.8	14.6	16.1
Without feedback (i.e., static).....	4.8	12.6	19.2	26.3	32.9
Productivity growth (percent) increase over current law.....	0.1	0.6	0.7	1.0	0.9
Additional growth in real GNP (percent).....	0	0.4	0.3	0.4	0.4
Added employment (millions).....	0	0.1	0.2	0.4	0.5

¹ One difference between the simulation and the "10-5-3" proposal, is that the latter uses a five-year transition period for Class I property (buildings) and the DRI analysis assumed a ten-year period. Thus, both the stimulus from the measure and revenue loss are somewhat underestimated.

Because of the stimulus to the economy which careful calculations show would result from this proposal, it would be partially self-financing. The study shows revenue costs both with and without feedback from other parts of the economy. The benefits of cash flow are partly paid for by increases in employment, productivity, and GNP.

The large cash flow generated by the improved capital recovery provide financing for a higher rate of capital expenditures. The ratio of cash flow to capital outlays of nonfinancial corporations should rise five to six percentage points higher than the baseline case, yielding a much stronger financial position for the nonfinancial corporate sector as a result of the measure. Particularly in view of the very high interest rates business is facing, every extra dollar of internally generated capital means a reduction in interest costs that can either be passed along to consumers in the form of lower prices or recycled again within the company in the form of additional investment.

The DRI concludes that apart from the investment tax credit the "10-5-3" plan would have a more favorable impact on the economy (more "bang for the buck") than would occur from any other tax policy change studied.

D. COMPARISON OF THE CAPITAL COST RECOVERY PROPOSAL WITH THE SIMPLIFIED COST RECOVERY PROPOSAL

Three months ago the Senate Finance Committee approved a capital cost recovery proposal known as the "Simplified Cost Recovery" ("SCR") proposal. Although that proposal represents an improvement over present law the Committee for Effective Capital Recovery believes that any economic agenda for the 1980's should include the "10-5-3" proposal rather than the "SCR" proposal.

Both proposals replace the existing depreciation rules with systems which provide accelerated methods of depreciation and useful lives which are generally substantially shorter than the useful lives provided under present law. However, substantial differences exist between the two proposals. More specifically, the proposals differ in the recovery periods provided for machinery and industrial buildings; the recovery methods utilized; the carryover of depreciation deductions; and the treatment of gains and losses on the disposition of recovery property.

The "SCR" proposal in general, retains a useful life concept for the depreciation of machinery and real property. In the case of machinery the "SCR" proposal utilizes recovery periods of 2, 4, 7 and 10 years. In contrast, "10-5-3" uses a single recovery period of 5 years for all machinery. The use of 4 recovery periods in the "SCR" proposal raises two significant problems. First, the use of different periods continues the present tax bias against longer-lived assets. Second, the use of different recovery periods produces a "cliff" effect for taxpayers. For example, an asset having an ADR midpoint life of 16.5 years would be assigned a 7 year recovery period. On the other hand, an asset with an ADR midpoint life of 17 years would be assigned a recovery period of 10 years. The "cliff" effect would also exist with respect to the investment tax credit. For example, an asset with an ADR midpoint life of 7 years would be eligible for a 6 percent investment tax credit, while an asset with an ADR midpoint life of 6.5 years would only be eligible for a 2½ percent investment tax credit.

Although, the effect of the reduction in the investment tax credit would to some extent be ameliorated through the shorter recovery period allowed the asset having an ADR midpoint life of 6.5 years, the shorter recovery period would be of less benefit to small businesses in lower marginal tax brackets.

The "10-5-3" proposal avoids the "cliff" effect and the bias against longer-lived assets through the use of the single 5 year recovery period for machinery. However, in certain cases the "10-5-3" proposal provides a longer recovery period than the "SCR" proposal or present law. However, the existence of the longer recovery is offset to an extent through the allowance of a 10 percent investment tax credit and through the 3 year recovery period for up to \$100,000 of trucks and automobiles.

The two proposals also differ significantly in the recovery period provided for industrial buildings. Under the "SCR" proposal industrial buildings would be depreciable over 20 years using straight-line depreciation or, if owner-occupied, over 15 years using the 150 percent declining balance method of depreciation. Under the "10-5-3" proposal industrial buildings would be depreciable over 10 years. The recovery deduction is determined under a statutory percentage which utilizes a hybrid double declining balance and the sum-of-the-year's-digits method of depreciation. In addition, the "10-5-3" proposal would allow a 10 percent investment tax credit for industrial buildings.

We believe that the greater benefits provided in the "10-5-3" proposal for industrial buildings are a vital element in any effort to restore the health and competitiveness of the American economy and therefore endorse the "10-5-3" proposal in this regard. We also would point out that the "10-5-3" proposal embodies a significant tax reform in that it provides for the recapture of all depreciation with respect to real property. In contrast, under the "SCA" proposal and under present law no depreciation recapture would occur where real property is depreciated under the straight-line method.

The "10-5-3" proposal also provides a significant benefit to business in the allowance of an unlimited carry-forward or unused depreciation deductions. In this regard the "SCR" proposal utilizes two elections and the existing net operating loss rules which, in general, allow a 7 year carryforward and 3 year carryback. The two elections allow a taxpayer to choose a 200 percent, 150 percent or 100 percent declining balance method of depreciation and to place assets in the recovery account having the next longer recovery period than the recovery period otherwise prescribed. Although, these elections provide some flexibility to taxpayers and may prevent the loss of depreciation deductions, we believe that the "10-5-3" proposal offers a simple method of achieving these objectives.

The two proposals also utilize the different asset grouping principles and recovery methods. The "10-5-3" proposal uses "vintage accounts" for depreciable personal property. Under this procedure assets acquired in the same year are placed to a single account. The recovery deduction for each year's account (i.e. each "vintage account") is determined by applying a statutory percentage to the capital cost in the "vintage account." The "SCR" proposal utilizes a pooled asset account concept with respect to depreciable personal property. Under

this procedure the capital cost of each asset is assigned to one of 4 open-ended recovery accounts (representing the 2, 4, 7 and 10 year recovery periods assigned to the assets). The recovery deduction would then be computed by applying one of the allowable declining balance methods of depreciation to the account balance. This procedure would not require the use of yearly ("vintage") accounts since the accounts are open-ended. However, because the declining balance method of depreciation must be used, the cost of an asset will not be recovered over the recovery period. For example, assume that a 4 year recovery account has an account balance of \$1,000 and the Taxpayer elects the 200 percent declining balance method of depreciation. During the first 4 years of use the account would produce the following recovery deductions and account balances.

Year 1:		
Account balance.....		\$1,000.00
Recovery deduction.....		500.00
Year 2:		
Account balance.....		500.00
Recovery deduction.....		250.00
Year 3:		
Account balance.....		250.00
Recovery deduction.....		125.00
Year 4:		
Account balance.....		125.00
Recovery deduction.....		62.50
Year 5:		
Account balance.....		62.50

Therefore at the end of the recovery period a portion of the assets capital cost will remain unrecovered. This effect known as the "tailing" effect is avoided under the "10-5-3" proposal through the use of "vintage accounts."

The use of pooled asset accounts under the "SCR" proposal also produces a distortion on the sale of assets. Because separate basis computations are eliminated under the pooled asset account procedure gains and losses on the disposition of assets are deferred. Thus if a loss is realized on the sale of an asset the loss will not be recognized and will be deductible only through the normal recovery deductions allowed with respect to the asset. On the other hand, if a gain is realized on the sale of an asset the gain will reduce the balance in the account. If the gain realized reduced the balance in the account to a negative amount, that amount will be recaptured as ordinary income even though the gain would be treated as Section 1231 capital gain under present law.

The "SCR" proposal also contains an election which allows businesses to expense up to \$25,000 in the cost of machinery and equipment. This provision was designed to benefit small businesses and replaces the additional first year depreciation allowed under present law. However, where the election is made no investment tax credit is allowed.

Although this provision of the "SCR" proposal was designed to benefit small business, in some instances a small business would receive greater benefits under present law. For example a taxpayer in a low marginal tax bracket would receive greater benefits through depreciation deductions and an investment tax credit.

The final area of difference between the "SCR" proposal and the "10-5-3" proposal is with respect to revenue loss. The staff of the Joint Committee on Taxation determined that the revenue loss under the two proposals is as follows:

Year	10-5-3		SCR	
	Calendar year	Fiscal year	Calendar year	Fiscal year
1981.....	5.6	2.4	10.1	4.3
1982.....	14.9	9.6	18.5	13.7
1983.....	25.6	19.5	18.8	18.6
1984.....	40.6	32.1	19.3	19.0
1985.....	57.7	48.0	20.1	19.7

These tables show that during 1981 and 1982 the "SCR" proposal produces a greater revenue loss than the "10-5-3" proposal and in 1983 the losses under "10-5-3" are somewhat higher. During 1984 and 1985 the cost of "10-5-3" is greater than the cost of "SCR." However, we believe that all the losses shown in the tables are too high in that they fail to take into account the feedback which would be produced under a capital recovery program.

In light of the above discussion, we believe that the differences in the two proposals are significant and the "SCR" proposal would be harmful to many businesses. As a whole, we believe the "10-5-3" proposal would do more to simplify the tax law, increase savings and enhance our nation's economic health than would the "SCR" proposal. In this regard our views coincide with the views of Senators Dole, Roth, Ranforth, Chafee, Heinz, Wallop and Durenberger, who stated in the Senate Finance Committee Report on the "SCR" proposal that the "SCR" proposal is "more complicated and contains less of a liberalization" in the depreciation than the "10-5-3" proposal.

III. Conclusion

For all of these reasons, the Committee for Effective Capital Recovery supports prompt enactment of the "10-5-3" capital cost recovery proposal.

It should be remembered that what is involved here is not tax *forgiveness* but rather *deferral* of tax revenues. At a reasonable cost in terms of deferred corporate tax payments, passage of this legislation will constitute a significant step in the direction of improving the productivity performance of our nation's economy. This improved productivity will mean a higher standard of living for American families, an enhanced competitive posture in world trade, a fiscally healthier business community, and, ultimately, will hold the key to breaking the inflation spiral that threatens us all.

Appendix A

COMMITTEE FOR EFFECTIVE CAPITAL RECOVERY

Membership

- AMCA International Corp.
 AMP, Inc.
 ASARCO, Inc.
 A-T-O, Inc.
 Acme-Cleveland Corp.
 Air Products and Chemicals, Inc.
 Airco, Inc.
 Akzona Inc.
 Albany International Corp.
 Allegheny Ludlum Industries, Inc.
 Allegretti & Co.
 Allen-Bradley Co.
 Allied Products Corp.
 Allis-Chalmers Corp.
 ALUMAX, Inc.
 Aluminum Casting & Engineering Co.
 AMAX, Inc.
 Amerace Corp.
 American Brands, Inc.
 American Can Co.
 American Financial Corp.
 American Greetings Corp.
 American Hoechst Corp.
 American Hoist & Derrick Co.
 American International Group, Inc.
 American Natural Service Co.
 American Petrofina, Inc.
 American Thread Co.
 Ampex Corp.
 Amtel, Inc.
 Anchor Hocking Corp.
 Apache Corp.
 Arcata National Corp.
 Arkansas Best Corp.
 Arrow Gear Co.
 Arvin Industries, Inc.
 Ashland Oil, Inc.
 Atlantic Metals Corp.
 Atlantic Richfield Co.
 Automatic Catering, Inc.
 Avnet, Inc.
 Avon Products, Inc.
 Bache Halsey Stuart Shields, Inc.
 Ball Corp.
 Baltimore Gas and Electric Co.
 BankAmerica Corp.
 Barry Wright Corp.
 Bartlett-Brainard & Eacott, Inc.
 Baxter Travenol Laboratories, Inc.
 Bear Creek Corp.
 Beard Oil Co.
 Beatrice Foods Co.
 Beech Aircraft Co.
 Belden Corp.
 Bell & Howell Co.
 Bemis Co., Inc.
 Beneficial Corp.
 Betz Laboratories, Inc.
 Big V Supermarkets, Inc.
 Black & Decker Manufacturing, Co.
 Blandin Paper Co.
 Bloom Engineering Co., Inc.
 Blue Bell, Inc.
 Blue Ridge Stone Corp.
 Boeing Co.
 Bowater, Inc.
 Brunswick Corp.
 Bucyrus-Erie Co.
 The Budd Co.
 Bunker Ramo Corp.
 Burlington Industries, Inc.
 Burroughs Corp.
 Bush Bros. & Co.
 Butler Manufacturing Co.
 CBS, Inc.
 CCI Corp.
 C/E Construction Co.
 CF Industries, Inc.
 California Casualty Insurance Group
 Carlisle Corp.
 Carnation Co.
 Carolina Freight Carriers Corp.
 Carpenter Technology Corp.
 Carrier Corp.
 Casa Grande Valley Newspapers, Inc.
 Castle & Cooke, Inc.
 The Ceco Corp.
 Cessna Aircraft Co.
 Champion International Corp.
 Chart House, Inc.
 Chemetron Corp.
 Chesapeake Corp. of Virginia
 Chesapeake & Ohio Railway Co.
 Chesebrough-Pond's, Inc.
 Chicago Bridge & Iron Co.
 Chicago Pneumatic Tool Co.
 Chloride, Inc.
 Christie Electric Corp.
 Chromalloy American Corp.
 Cincinnati, Inc.
 Cincinnati Mine Machinery Co.
 Citibank N.A.
 Cities Service Co.
 Citizens & Southern National Bank.
 City Investing Co.
 Clark Equipment Co.
 Clearprint Paper Co., Inc.
 Clow Corp.
 Coachmen Industries, Inc.
 Coastal States Gas Corp.
 Coats & Clark, Inc.
 Coca-Cola Bottling Co. of New York,
 Inc.
 Coca-Cola Bottling Co. of South
 Arkansas
 Collins & Aikman Corp.

Membership—Continued

- Colt Industries, Inc.
 Columbia Gas System Service Corp.
 Columbus McKinnon Corp.
 Commercial Shearing, Inc.
 Comtel Corp.
 ConAgra, Inc.
 Concise Casting Corp.
 Congoleum Corp.
 Connecticut General Insurance Corp.
 Conoco, Inc.
 Consolidated Foods Corp.
 Consolidated Freightways, Inc.
 Consolidated Papers, Inc.
 Consumers Power Co.
 Consumers Steel Co., Inc.
 Container Corp. of America
 Continental Group, Inc.
 Continental Illinois Corp.
 Continental Machines, Inc.
 Continental Telephone Corp.
 Cooper Industries, Inc.
 Cooper Tire & Rubber Co.
 Copper Range Co.
 Crankshaft Machine Co.
 Crocker National Bank
 Crompton & Knowles Corp.
 Crouse-Hinds Co.
 Crutcher Resources Corp.
 Cubic Corp.
 Cyclops Corp.
 Cyprus Mines Corp.
- Dana Corp.
 Dart Industries, Inc.
 Dataproducts Corp.
 Daylin, Inc.
 Dearborn Rubber Corp.
 Deere & Co.
 De Kalb Agresearch, Inc.
 DeLaval Turbine, Inc.
 Delsteel, Inc.
 Delta Brick & Title Co., Inc.
 Delta Steamship Lines, Inc.
 Dennison Manufacturing Co.
 Detroitbank Corp.
 Diamond Shamrock Corp.
 Dibrell Bros., Inc.
 A. B. Dick Co.
 Di Giorgio Corp.
 Digital Equipment Corp.
 Dixie Yarns, Inc.
 DoAll Co.
 Dominion Mortgage & Realty Trust
 Donaldson Company, Inc.
 R. R. Donnelley & Sons Co.
 Dover Corp.
 Dresser Industries, Inc.
 Dynamics Corp. of America
- ESB Ray-O-Vac Corp.
 E-Systems, Inc.
 Eagle Picher Industries, Inc.
 Earth Resources Co.
 Eastern Gas & Fuel Associates
- Jas. D. Easton, Inc.
 Eaton Corp.
 The Echlin Manufacturing Co.
 Economics Laboratory, Inc.
 Edwards Bros., Inc.
 EL-GE Potato Chip Co., Inc.
 Elgin National Industries, Inc.
 Elk Cotton Mills
 Davis H. Elliot Co., Inc.
 Eltra Corp.
 Emerson Electric Co.
 Entelco Corp.
 Erb Lumber Co.
 Erie Castings Co.
 Esmark, Inc.
 Eubanks Engineering Co.
 Evans Products Co.
 Everett/Charles, Inc.
 Ex-Cell-O Corp.
- FMC Corp.
 Fairfield Manufacturing Co., Inc.
 Farmland Industries, Inc.
 Federal-Mogul
 Federal Paper Board Co., Inc.
 Federated Department Stores, Inc.
 First American Bank, N.A., Washington
 First Bank System, Inc.
 First National Bank of Chicago
 Flintkote Co.
 Ford Motor Co.
 Foxboro Co.
 Franklin Electric Co., Inc.
 Fruehauf Corp.
 Fuqua Industries, Inc.
 Furnas Electric Co.
- GK Technologies, Inc.
 Gamble-Skogmo, Inc.
 Gannett Co., Inc.
 Gast Manufacturing Corp.
 General Care Corp.
 General Cinema Corp.
 General Dynamics Corp.
 General Foods Corp.
 General Portland, Inc.
 General Signal Corp.
 General Telephone & Electronics Corp.
 Getty Oil Co.
 Giddings & Lewis, Inc.
 Gifford-Hill & Co., Inc.
 Globe-Union, Inc.
 Gould, Inc.
 W. R. Grace & Co.
 Grafton Foundry Co.
 Great Northern Nekoosa Corp.
 Green Bay Packaging, Inc.
 Greif Bros. Corp.
 Greyhound Leasing & Financial Corp.
 S. J. Groves & Sons Co.
 Grow Group, Inc.
 Guardian Life Insurance Co. of America
 Gulf Oil Corp.

Membership—Continued

- H. & H. Industries, Inc.
 Hannaford Bros. Co.
 Harnischfeger Corp.
 Harris Corp.
 Harris Trust & Savings Bank
 Harsco Corp.
 Hart Schaffner & Marx
 Hayes-Albion Corp.
 Walter E. Heller International Corp.
 Hesston Corp.
 Hewlett-Packard Co.
 Hillyer Corp.
 Edward Hines Lumber Co.
 Houdaille Industries, Inc.
 Household Finance Corp.
 Harvey Hubbell, Inc.
 S. E. Huffman Corp.
 Hughes Tool Co.
 Hurco Manufacturing Co., Inc.
 Hyster Co.
- IC Industries, Inc.
 IU International Corp.
 Iandoli's Super Markets, Inc.
 Ideal Basic Industries, Inc.
 Illinois Tool Works, Inc.
 Ingersoll-Rand Co.
 Inland Steel Co.
 Intel Corp.
 International Business Machines Corp.
 International Minerals & Chemical Corp.
 International Multifoods Corp.
 International Paper Co.
 International Telephone & Telegraph Corp.
- JLG Industries, Inc.
 Jewel Co., Inc.
 Johns-Manville Corp.
 Johnson & Johnson
 Earle M. Jorgensen Co.
 Josten's Inc.
 Joy Manufacturing Co.
- Kaiser Cement Corp.
 Kaman Corp.
 Keebler Co.
 Kennametal, Inc.
 Kennecott Copper Corp.
 Kerr-McGee Corp.
 Kingsbury Machine Tool Corp.
 Kirsch Co.
 Kraft, Inc.
 Kuhlman Corp.
 Kysor Industrial Corp.
- The LTV Corp.
 Laclede Steel Co.
 Lakeview Forge Co.
 Lampert Lumber Co.
 Lance, Inc.
 Land O'Lakes, Inc.
- Lear Siegler, Inc.
 Leaseway Transportation Corp.
 K. O. Lee Co.
 Lehigh Portland Cement Co.
 Edward C. Levy Co.
 Liggett Group, Inc.
 Lockheed Corp.
 Longyear Co.
 Louisiana Land & Exploration Co.
 Louisiana-Pacific Corp.
 Lucky Stores, Inc.
 Ludlow Corp.
 Lukens Steel Co.
- McCall Oil & Chemical Corp.
 McGraw-Edison Co.
 McJunkin Corp.
 McKee Baking Co.
 McQuay-Perfex, Inc.
 MBPXL Corp.
 MCA, Inc.
 Macmillan, Inc.
 Marathon Manufacturing Co.
 Marathon Oil Co.
 The Marmon Group
 Marquette Co.
 Marriott Corp.
 Maryland Cup Corp.
 Masonite Corp.
 Massachusetts Mutual Life Insurance Co.
 A. T. Massey Coal Co., Inc.
 Mead Corp.
 Medical Mutual of Cleveland, Inc.
 Melville Corp.
 Memorex Corp.
 Menard, Inc.
 Merrill Lynch, Pierce, Fenner & Smith, Inc.
 Mesa Petroleum Co.
 Michigan General Corp.
 Michigan National Corp.
 Microdot, Inc.
 Midland-Ross Corp.
 Milliken & Co.
 Mitchell Energy & Development Corp.
 Modern Industrial Engineering Co.
 Modine Manufacturing Co.
 Mohasco Corp.
 Monsanto Co.
 Moore-McCormack Resources, Inc.
- NCR Corp.
 NL Industries, Inc.
 NVF Co.
 Nabisco, Inc.
 Nalco Chemical Co.
 National Automatic Tool Co.
 National Distillers & Chemical Corp.
 National Gypsum Co.
 National Presto Industries, Inc.
 National Semiconductor Corp.
 National Starch & Chemical Corp.
 Newmont Mining Corp.
 Norris Industries, Inc.

Membership—Continued

- Northwest Industries, Inc.
 Northwestern Steel & Wire Co.
 Northern Natural Gas Co.

 Oak Industries, Inc.
 Ogden American Corp.
 Olin Corp.
 Otis Elevator Co.
 Owens-Illinois, Inc.
 Oxford Industries, Inc.

 Pantasote Co.
 Parker-Hannifin Corp.
 Parker Pen Co.
 Peabody International Corp.
 Pechiney Ugine Kuhlmann Corp.
 Pennsylvania Power & Light Co.
 Pepsico, Inc.
 Perkin-Elmer Corp.
 Peter Paul, Inc.
 Phelps Dodge Corp.
 Phillip Morris, Inc.
 Phillips Petroleum Co.
 Pitney-Bowes, Inc.
 Pittsburgh-Des Moines Steel Co.
 Pittsburgh Forgings Co.
 Pittsburgh & Lake Erie RR.
 Pittway Corp.
 Portec, Inc.
 Porter Paint Co.
 Potlatch Corp.
 Processed Plastic Co.
 Public Service Electric & Gas Co.
 Purex Corp.

 Raybestos-Manhatan, Inc.
 Red Wing Shoe Co., Inc.
 Reeves Brothers, Inc.
 Reliance Electric Co.
 Republic Corp.
 Riegel Textile Corp.
 Ring Power Corp.
 H. H. Robertson Co.
 Roegelien Co.
 A. H. Robins Co., Inc.
 Rockwell International Corp.
 Rogers Corp.
 Rohm & Haas Co.
 Rohr Industries, Inc.
 Roper Corp.
 Roto-Finish Co.
 Royal Industries
 Rubbermaid, Inc.
 Russell Corp.

 SPS Technologies, Inc.
 Safeguard Industries, Inc.
 Safeway Stores, Inc.
 St. Joe Minerals Corp.
 St. Regis Paper Co.
 Sangamo Energy Management
 Santa Fe Industries, Inc.
 Scientific-Atlanta, Inc.
 Scott, Foresman & Co.

 Scott Paper Co.
 Scovill Inc.
 Seaboard Coast Line Industries, Inc.
 Sea-Land Service, Inc.
 G. D. Searle & Co.
 Sears, Roebuck & Co.
 Seattle-First National Bank
 Signal Co., Inc.
 Signode Corp.
 SmithKline Corp.
 Snap-on Tools Corp.
 Soundesign Corp.
 Southern Railway System
 Southwest Forest Industries
 Southwestern Portland Cement Co.
 Sprague Electric Co.
 Stanadyne, Inc.
 Standard Brands, Inc.
 Standard Oil Co. of California
 Standard Oil Co. (Indiana)
 Standard Oil Co. (Ohio)
 Standard Register Co.
 Standex International Corp.
 Stanley Home Products, Inc.
 Stanley Works
 Stauffer Chemical Co.
 Steiger Tractor, Inc.
 Sterling Drug, Inc.
 J. P. Stevens & Co., Inc.
 Storage Technology Corp.
 Sun Company, Inc.
 Sunbeam Corp.
 Sundstrand Corp.

 TRW, Inc.
 Tandy Corp.
 Technicon Instruments Corp.
 Tecumseh Products Co.
 Telautograph Corp.
 Texaco, Inc.
 Texas Commerce Bancshares, Inc.
 Texas Eastern Corp.
 Texas Industries, Inc.
 Texasgulf Inc.
 Thiokol Corp.
 Thomas & Betts Corp.
 Tiger International, Inc.
 Time Inc.
 Times Mirror Co.
 Timken Co.
 Todd Shipyards Corp.
 Transamerica Corp.
 Transamerica Interway, Inc.
 Transcontinental Gas Pipe Line Corp.
 Travelers Insurance Co.
 Tropicana Products, Inc.
 Tyler Corp.
 Ty-Miles, Inc.

 UAL, Inc.
 UOP, Inc.
 UV Industries, Inc.
 Uarco, Inc.
 Unarco Industries, Inc.

Membership—Continued

Union Camp Corp.	Warner & Swasey Co.
Union Carbide Corp.	Wawa, Inc.
Union Pacific Corp.	Wean United, Inc.
United States Borax & Chemical Corp.	Western Electric Co., Inc.
United States Filter Corp.	Western Publishing Co.
United States Shoe Corp.	Westinghouse Electric Corp.
U.S. Tobacco Co.	Weyerhaeuser Co.
United Telecommunications, Inc.	Wheelabrator-Frye, Inc.
Universal Leaf Tobacco Co.	Whirlpool Corp.
	White Castle System, Inc.
VF Corp.	Williamhouse-Regency, Inc.
VSI Corp.	Williams Cos.
Valeron Corp.	Wilsey Bennett Co.
Van Dorn Co.	Winn-Dixie Stores, Inc.
Van Pelt Corp.	Woodward Governor Co.
Varo Inc.	Woolrich, Inc.
Vollrath Co.	F. W. Woolworth Co.
Vulcan Materials Co.	Wm. Wrigley Jr. Co.
	Wylain, Inc.
Walker Magnetics Group, Inc.	Wyman-Gordon Co.
Wallace Murray Corp.	
Ward Foods, Inc.	Xerox Corp.
Warner-Lambert Co.	

Supporting Associations

Air-Conditioning & Refrigeration Institute
 American Boiler Manufacturers Association
 American Chamber of Commerce Executives
 American Consulting Engineers Council
 American Dental Association
 American Feed Manufacturers Association
 American Iron & Steel Institute
 American Land Development Association
 American Machine Tool Distributors Association
 American Meat Institute
 American Pipe Fittings Association
 American Textile Machinery Association
 Apartment Owners & Managers Association of America
 Associated General Contractors of America
 Association of American Railroads
 Cast Metals Federation
 Concrete Plant Manufacturers Bureau
 Dairy & Food Industries Supply Association
 Edison Electric Institute
 Expanded Shale Clay & Slate Institute
 Ferroalloys Association
 Foodservice & Lodging Institute
 Foreign Credit Interchange Bureau
 Gummed Industries Association, Inc.
 Imported Hardwood Products Association, Inc.
 International Quorum of Motion Picture Producers
 Mechanical Contractors Association of America
 Meat Machinery Mftrs. Institute
 Narrow Fabrics Institute, Inc.
 National Air Transportation Association
 National Association of Home Manufacturers
 National Association of Business & Educational Radio, Inc.
 National Association of Coin Laundry Equipment Operators
 National Association of Manufacturers
 National Food Processors Association
 National Concrete Masonry Association
 National Industrial Distributors Association
 National Ocean Industries Association
 National Paper Box Association

National Ready Mix Concrete Association
 National Tank Truck Carriers, Inc.
 National Wool Growers Association
 Northeastern Lumber Manufacturers Association
 Packaging Machinery Manufacturers Institute
 Portland Cement Association
 Printing Industries of America, Inc.
 Railway Progress Institute
 Rubber Manufacturers Association
 Screen Printing Association International
 Shipbuilders Council of America
 Truck Mixer Manufacturers Bureau
 United Fresh Fruit & Vegetable Association
 Woodworking Machinery Distributors Association
 Woodworking Machinery Manufacturers of America

Appendix B

The following table summarizes a comparison of cost recovery allowances for industrial machinery and equipment in leading industrial countries with similar allowances in the United States. The capital cost recoveries for each of the countries have been computed on the assumption that the investment qualifies for any special allowances, investment credits, grants or deductions generally permitted.

It is practice in some foreign countries, prior to investment in fixed assets therein, for investors to agree with the tax authorities as to the rate of depreciation and other benefits available. Such agreements would, in many cases, have the effect of substantially increasing the cost recovery allowances presented in the table below.

COMPARISON OF COST RECOVERY ALLOWANCES

	Representative cost recovery periods (years)	Aggregate cost recovery allowances (percentage of cost of assets)		
		1st taxable year	1st 3 taxable years	1st 7 taxable years
United Kingdom.....	1 1	100.0	100.0	100.0
Canada.....	2 2	60.1	108.3	108.3
	3 2	64.2	111.7	111.7
	4 4	48.2	86.2	118.2
Sweden.....	6 6	25.0	75.0	100.0
Italy.....	6 6	50.0	70.0	110.0
Australia.....	7 8	30.0	50.0	90.0
	8 8	37.2	65.6	96.8
Japan.....	8 8	31.3	67.6	94.6
France.....	10 8	36.0	56.0	96.0
Netherlands.....	11 9	24.0	44.0	84.0
	12 10	25.0	57.8	86.7
Germany.....	12 10	26.0	54.8	86.3
Belgium.....				
United States:				
1962 law.....	14 15 10	30.7	56.1	86.1
1969 law.....	10 12	16.7	42.1	72.1
1971 law.....	14 17 8	35.1	64.8	97.0
1975 law.....	16 18 7	41.1	70.8	103.0
1978 law.....	18 19 7	42.8	72.5	104.7

¹ Full cost recovery the 1st taxable year.

² Canada has an investment tax credit of 5 percent of the cost of new buildings, machinery and equipment to be used in manufacturing and processing and other specified activities. The cost of the property acquired is reduced for Federal tax purposes by the investment tax credit received. Canada permits 50 percent of the cost of machinery to be recovered the 1st yr and the other 50 percent in the following year.

³ Assumes that the 7-percent investment credit as proposed by the 1979 budget will be enacted.

⁴ Sweden has a 25-percent investment allowance. The investment allowance, which does not affect the basis of the asset for depreciation purposes, is deductible for State corporation income tax purposes but not for municipal corporation income tax purposes. This results in an effective additional investment allowance of 18.2 percent.

⁵ 40 percent of a Swedish corporation's taxable income may be allocated to a reserve for future investment in fixed assets. Where the acquisition is deemed to have been made from this reserve, full cost recovery occurs before the investment is made.

⁶ Straight-line depreciation with 15 percent additional depreciation in each of the 1st 3 taxable years.

⁷ Depreciation in Australia is based on an estimate of "effective life" and taxpayers may elect to use either the prime cost (straight-line) method or the 150-percent diminishing value (declining-balance) method. In addition, a 40-percent investment allowance for new property may be deducted from the tax base in the year the property is ready for use. This investment allowance is reduced to 20 percent for assets acquired pursuant to a contract entered into after June 30, 1978, or placed in service after June 30, 1979 (regardless of the date the contract was entered into). This calculation assumes the machinery was purchased prior to June 30, 1978, and therefore eligible for the 40-percent allowance.

⁸ Assumes the machinery is eligible for the 20-percent allowance (see footnote 6).

⁹ A declining balance method of depreciation is used. The current rate is 206 percent on an asset with a 10-yr life. The computation assumes that the 10-percent investment tax credit (equivalent to a 16.6 percent deduction at the present national and local maximum tax rate) is available. This investment credit, however, may be abolished in 1979.

¹⁰ 250-percent declining-balance depreciation, which is switched to straight-line after the 5th yr. Although not considered effect may be given to multiple shift operations by reducing the service life of the assets.

¹¹ Straight-line depreciation. A 7-percent premium for new investments in fixed assets is given in the form of an investment tax credit. If the total of the premiums exceeds the tax liability, the excess of the premium over the tax liability is payable in cash to the taxpayer.

In addition, bonus premiums from 0.25 to 6 percent for small investments up to Dfl 800,000 (\$398,000) is available. This calculation assumes machinery is eligible for this 6-percent bonus premium. The tax benefit for the premiums is computed using a 48-percent corporate tax rate.

¹² Assumes machinery is only eligible for the 7-percent premium for investment (see footnote 10).

¹³ 250-percent declining-balance depreciation.

¹⁴ Double-declining depreciation which is switched to straight-line after the 5th year. As a temporary measure to promote investments, a 1-time special deduction of 15 percent is allowed on certain acquisitions of fixed assets made during 1979 and 1980. The special deduction will be allowed to the extent that 1979 or 1980 investments in fixed assets exceed the average annual investments for the years 1974 to 1976. The 15-percent deduction is only applicable to a maximum of 40 percent of the total new investments.

¹⁵ The tax benefit of the investment credit is computed using a 50-percent corporate tax rate. Therefore, the investment credit increases the capital cost recovery by 14 percent the 1st yr for a 7-percent credit and by 20 percent the 1st yr for a 10-percent credit. The credit does not reduce the recoverable base cost.

¹⁶ Guideline life of 12 yrs and 7-percent investment credit. Double-declining balance depreciation, which is switched to straight-line after the 6th yr.

¹⁷ Guideline life of 12 yrs but no investment credit. Double-declining balance depreciation, which is switched to straight-line after the 6th yr.

¹⁸ ADR life of 9.5 yrs and 7-percent investment credit. Double-declining balance depreciation, which is switched to straight-line after the 5th yr.

¹⁹ ADR life of 9.5 yrs and 10-percent investment credit. Double-declining balance depreciation, which is switched to straight-line after the 5th yr.

²⁰ The tax benefit of the investment credit is computed using a 46-percent corporate rate. Therefore, the investment credit increases the capital cost recovery by 21.7 percent for the 1st yr. Computation assumes that the assets do not qualify for the additional 10-percent investment credit for energy savings property or the 1-percent ESOP credit.

*Appendix C***Economic Impacts of
Accelerated Capital Cost Recovery**

by Allen Sinai*

During the past twenty years, Federal tax policy has been used in several ways: first, as a contracyclical tool to stabilize the economy; second, to promote spending in socially desirable areas; and third, to improve the structure of the tax system. In the decade of the 60s, tax policy was designed primarily to stimulate economic growth and close the gap between potential and actual output. In the 70s, a series of adjustments to limit the drag of a tax system buffeted by inflation and measures to enhance household and business saving have been put into place.

What tax policies are appropriate for the 80s? What are the goals to be accomplished? Does "accelerated capital recovery" fit into the "optimal" tax policy framework of the 80s? In particular, how would the Capital Cost Recovery Act of 1979 impact on the U.S. economy? What would be its benefits and costs? And, how does the accelerated depreciation that is the hallmark of the Capital Cost Recovery Act rank in the range of potential tax actions that could be undertaken?

In brief:

- Tax policy for the 1980's should be concerned with promoting capital formation and increasing productivity to help lessen the severe inflation that is plaguing the U.S. economy. This means tax measures favoring saving and business investment spending are preferable to more typical aggregate demand policy stimuli, such as across-the-board cuts in personal income taxes. A measure such as the Capital Cost Recovery Act of 1979 should be seriously considered for implementation, since both capital formation and business saving would be enhanced by its enactment.

*The research reported here was based on work done with the DRI Model of the U.S. Economy, in a series of studies prepared for the Committee for Effective Capital Recovery. Terry Glomski of Data Resources collaborated in the studies that were performed.

¹Tax policy to stabilize the economy was employed in 1964 (rate reductions for both personal income and corporate profits taxes), 1968-70 (tax surcharge on personal income and elimination of the investment tax credit), and in 1978 (personal income and corporate profits tax reductions). Tax incentives to promote business investment were enacted in 1962 (investment tax credit and shorter equipment lifetimes), 1971 (reinstatement and liberalization of the investment tax credit and ADR service lifetimes for machinery and equipment), 1975 (higher investment tax credit), and 1979 (liberalization of the investment tax credit). Changes in the exemptions for personal and corporate income taxes were enacted in 1970, 1971, 1972, and 1978, offsetting to some extent the "bracket" effect of inflation, as did the per capita tax credits of 1975, 1976, and 1977. Earned income credits were instituted in 1975. Household and business savings were aided by a reduction to 50% in the maximum tax on the earned income of persons in 1972, the 1978 reduction in capital gains taxes, the liberalized depreciation of 1971, and corporate profits tax reductions in 1971, 1975, and 1978.

- In the current environment of near full employment and high inflation, public policy should be concerned with measures to restrain growth in demand while at the same time promoting a more rapid rise in potential supply. In this way, the inflation potential for the U.S. economy in the 1980s can be limited. The U.S. economy of the late 70s is vastly different from the early 60s, when aggressive measures to stimulate aggregate demand were needed. Now, a policy mix of restraint in government spending combined with tax policies that simultaneously enhance investment demand, potential supply, and the flow of savings would be preferable.
- The Capital Cost Recovery Act of 1979, also known as the "10-5-3" program, would provide a strong stimulus to business fixed investment, real economic growth, productivity, and employment at almost no cost in additional inflation. Analysis with the DRI model of the U.S. economy shows that the Conable-Jones proposal would raise real business fixed investment by \$10 billion per annum between 1980 and 1984, raise the growth in real GNP by 0.3% per year, and increase productivity growth by 0.7 percentage points compared to a situation with existing tax laws. Employment gains would range between 100,000 and 500,000 persons over the next five years. No significant rise of inflation would result.
- The net cost of the Capital Cost Recovery Act as simulated in the DRI model would be \$11.3 billion per year over 1980 to 1984, ranging between \$4.2 billion in 1980 and \$16.1 billion during 1984. The simulated program assumes: 1) a phase-in of new structures lifetimes over a 10 year period toward a 10 year lifetime; 2) a phase-in of new equipment lifetimes, except for autos and light trucks, over a five year period toward a five year lifetime; and 3) a 10% tax credit on all equipment except autos and light trucks, which receive a 6% credit.² These figures are gross of all Federal tax receipts after taking account of the stimulus to the economy generated by the measure. Given the tax structure, the higher GNP that would result from the Capital Cost Recovery Act will induce additional Federal tax revenues that offset the static revenue loss obtained when considering the program in isolation from its effects on the economy.
- The Capital Cost Recovery Act is self-financing to a degree, both for the Federal Government and for corporations. Because of the stimulus provided to the economy, induced personal income and corporate profits tax receipts should offset \$7.8 billion per annum of the expected tax loss, a return of \$0.41 per dollar per year of the ex-ante or static revenue loss. In addition, the huge cash flow generated by the reduced lifetimes will provide much of the financing necessary to carry out a higher rate of capital expenditures. The ratio of cash flow to the capital outlays of nonfinancial corporations rises 5 to 6 percentage points higher than in the baseline case, indicating a much stronger financial position for the nonfinancial corporate sector as a result of the measure.
- The "bang for a buck" from the Capital Cost Recovery Act, defined as the rise in real business fixed investment per dollar of revenue loss, would be \$0.53 per year between 1980 and 1985, before economy feedback is considered. This is a significantly greater impact than would occur from equivalent reductions in corporate profits taxes. When allowance is made for the full feedback effects of the economy stimulus on tax receipts, the bang for a buck of the accelerated capital recovery measure is even greater.

²The actual proposed legislation, H.R. 4646, the Jones-Conable bill, uses a 5 year transition for structures. The net cost is \$2 to 3 billion a year compared with a 10 year phase-in.

- Of the various tax incentives to capital formation most often considered, the impacts from the accelerated capital recovery rank near the top in terms of instrument effectiveness. Only the investment tax credit would produce an equivalent or greater bang-for-a-buck. In addition, there are side benefits to productivity and the financial markets from the improved corporate liquidity that would result. There is also essentially no rise in inflation from the highly stimulative measure, given the rises in productivity and potential output that occur.

The organization of the statement is as follows: Section I discusses the changing economic environment and its effect on tax policy. In Section II, the relation between the poor performance of capital formation, productivity growth, and inflation is indicated. Section III deals with the notion of accelerated capital recovery. In Section IV the economic impacts of the Jones-Conable Capital Cost Recovery Act of 1979 are presented and discussed. The final section summarizes the benefits of the program to the economy, as simulated in the DRI model of the U.S..

I. The Backdrop for Tax Policy in the 80s

The focus of fiscal policy is radically changing as a result of 15 years of intensifying inflation in the U.S. economy. Whereas most previous major tax measures were designed to promote economic stability and growth, the severe inflation, low productivity, and high unemployment that have been occurring suggest the need for a different approach. Regardless of the source of inflation, continually rising prices reduce the effective purchasing power of households through the bracket effect of rising nominal incomes under a progressive income tax structure. In the case of business, there is an analogous effect that arises because of historic replacement costs and FIFO inventory accounting. The inflation drag on expendable cash flows in a period of rapid inflation thus is a deterrent to private sector spending. If the spending category is business capital formation, then growth in productivity is also hampered and inflation worsened further. In addition, a high inflation environment is suggestive of excess demand pressure against supply. Tax measures designed to increase the supply of work effort, capital, and new technology appear to be warranted in light of the need for a more rapid rise in the potential supply of the economy.

Thus, tax policy in the current, highly inflationary environment must be different from what was employed in the slack economy of the 60s. Continued raises in exemptions and reductions in nominal tax brackets may be needed to sustain purchasing power. More importantly, without measures designed to promote capital formation and productivity, the inflation process will continue to be self-generating, with rising inflation dragging down capital spending, cutting the growth in productivity, raising labor costs, and bringing on more inflation. To break this loop, creative approaches to Federal taxation are required, including methods that would accelerate the depreciation writeoffs of business. Policies that stimulate the after-tax return to savings, supply of work effort, and capital formation are more appropriate if the goal is to limit inflation and reduce unemployment simultaneously.

This backdrop for tax policy in the 80s suggests measures designed to promote a balanced growth in demand and potential supply, along with enhancing the savings flows of households and business. Hints of a tendency toward such measures have already appeared, starting with the maximum tax on earnings in 1972, the reduction in capital gains taxation during 1978, and the swelling interest in measures to promote business capital formation and saving. Further evidence of the emerging trend also appears in proposals to increase the after-tax return on savings by households, through exemption or deductions of some interest earnings from taxes.

II. Capital Formation, Productivity, and Inflation

The spiraling inflation in the U.S. economy since 1966 is a national crisis. The undesirable economic and political effects of continuing high rates of inflation are well documented. Like a cancer, the ingredients of inflation are multi-dimensional. No single cure exists for the problem, the effects of which are exacerbated by secularly rising rates of unemployment. Between 1966 and 1979, inflation of the implicit GNP deflator has varied from 3% to an estimated 8.8% for this year. In only three years were the inflation rates below 5%; 1967 and 1968, and in 1972. In this last year, the low rate of inflation was the result of the wage-price freeze and Nixon Administration guidelines.

At the same time inflation has exhibited a secular rise, the rate of capital formation and growth in productivity have shown a secular decline. Table I shows the proportion of GNP devoted to non-residential fixed investment during the postwar period and, aside from a burst in the early 70s, currently reflects a lower ratio than previous peaks. In addition, expenditures on pollution and abatement equipment have taken about 0.3 to 0.4% of this ratio, with perhaps more accounted for by government mandated requirements on business capital formation.

Table I
Capital Formation in the U.S. Economy
(Business Fixed Investment Relative to GNP)

	(1) Nonresidential Business Investment/GNP	(2) (1) Less Spending on Pollution and Abatement/GNP
1953	9.4	
1954	9.3	
1955	9.6	
1956	10.4	
1957	10.5	
1958	9.3	
1959	9.3	
1960	9.4	
1961	9.0	
1962	9.1	
1962	9.1	
1963	9.0	
1964	9.4	
1965	10.4	
1966	10.8	
1967	10.3	10.2
1968	10.3	10.2
1969	10.6	10.4
1970	10.2	10.0
1971	9.8	9.5
1972	10.0	9.6
1973	10.4	10.0
1974	10.7	10.3
1975	9.8	9.4
1976	9.7	9.3
1977	10.0	9.6
1978	10.4	10.1
1979E	10.7	10.3
1980E	10.6	10.2
1981E	10.6	10.2

E - DRI forecasts.

Growth in labor productivity has been steadily declining, falling to 2.3% per annum in 1965-73 after the 3.2% growth from 1947 to 1965, and plummeting lower in recent quarters. The downward trend has contributed greatly to inflation and shows no signs of a reversal.

Table 2
Growth of Labor Productivity
(Average Annual Rates of Change)

	1947-65	1965-73	1973-78	1978:4 - 1979:4
<u>Sector</u>				
Private Business	3.2	2.3	1.1	-3.3
Nonfarm Business	2.6	2.0	1.0	-4.3
Manufacturing	3.2	2.4	1.6	0.6
Nonfinancial Corporations	3.7*	1.9	1.1	-1.8**

* 1953-65; Data not available for years prior to 1958.

** 1978:4 to 1979:1

Source: Bureau of Labor Statistics

The coincidence of reductions in productive capital formation and productivity with rising inflation is suggestive of an interlocking process in the U.S. economy. Though the starting point may be hard to define, growth in capital for a given labor force raises productivity, reduces unit labor costs, and therefore lowers inflation. A more rapid pace of capital formation thus is one means to raise labor productivity and mitigate inflation. Though not the only possibility, the effect of newly formed capital on potential supply, the quality of capital, the marginal productivity of labor, and the pace of innovation is likely very significant. Indeed, the periods of most rapid formation of capital, 1962 to 1966 and 1975 to 1977, were associated with a relatively strong performance in productivity, and improved results on inflation.

At the same time, higher inflation hurts business capital formation.³ First, higher inflation causes reductions in real economic growth as purchasing power drops, interest rates rise, the stock market weakens, higher debt burdens restrain spending, and unemployment moves up. These events, which unfold with time lags, affect expectations of final sales and business plant and equipment spending through the "accelerator." Second, a more rapid rate of inflation reduces the ratio of product price to the effective price of capital, or the "profit margin" on new plant and equipment. The combination of a higher supply price of capital goods,

³ See "Inflation and Business Capital Spending", Testimony before the Joint Economic Committee, U.S. Congress, Hearings on Aspects of Inflation, "The Fixed Investment Decision," Washington, D.C., June 21, 1978.

increased nominal costs of financing capital expenditures, and a lower present value for the tax deductible depreciation expenses, causes the rental price of capital goods to grow more rapidly than business can increase product prices. The lower marginal return on new capital goods negatively affects business fixed investment. Third, higher inflation raises both short- and long-term interest rates. Bond yields rise through the effect of inflation on the premium demanded by investors for supplying savings. Short-term interest rates rise through the pressure of increased nominal loan demands against the liquidity of the commercial banking system and as a result of the tighter monetary policy that is instituted to fight inflation. Rising interest rates impact business fixed investment by raising the rental price of capital goods, and by increasing the debt service burden of nonfinancial corporations relative to cash flow. Fourth, the higher interest rates damage the stock market, causing a rise in the cost of equity financing and an increase for the rental price of capital. Fifth, business profits and the internally generated funds available to finance capital outlays are sharply diminished during periods of rapid inflation, because of illusory inventory profits and the rising replacement costs for capital goods. Corporate profits are typically overstated during periods of inflation because of FIFO methods of inventory accounting and historical cost expensing for depreciation. In both cases, actual cash outlays for replacement of inventories and capital goods are much higher. After correction for these factors, the cash flow for nonfinancial corporations is sharply reduced. Sixth, higher inflation causes the nominal external financing requirements of business to grow and increases bank loan indebtedness, commercial paper issues, and the mortgage and bond financing necessary to fund desired capital outlays. This rising indebtedness raises the debt service burden of corporations and eventually restrains spending through the increased financial risk of corporate balance sheets. Finally, an autonomous acceleration of inflation can cause reductions in capacity utilization by limiting aggregate demand. Reducing the intensity of use of existing capital lowers replacement investment.

Together, these factors make for sizeable reductions in the rate of business capital formation during periods of rapidly rising prices. To the above endogenous influences must be added the potential restraining effects on aggregate demand from tighter fiscal and monetary policies. The effects of restrictive stabilization policies on expected sales can be quite substantial and sharply diminish the planned rate of capital outlays by business.

III. Accelerated Capital Recovery

Accelerated capital recovery refers to a shortening of tax allowable or useful lifetimes to reduce the period over which capital outlays are fully expensed. While used to a high degree in some of our trading partners, U.S. tax policy has never embraced the concept. Although tax allowable lifetimes have progressively been reduced in a marginal fashion over the years, a switch to accelerated capital recovery would constitute a much greater change. The notion that capital assets should be depreciated for tax purposes as real economic depreciation occurs is well entrenched. Accelerated capital recovery departs from this traditional approach, recognizing the need to stress capital formation and business saving as a primary goal.

Accelerated capital recovery would stimulate the demand for physical capital, the supply of money capital, and potential output. The "income" and "relative price" effects of such a measure are highly potent in the DRI model framework where cash flow, interest charges on outstanding debt, stock market effects, and replacement investment loom so importantly for business capital formation. In

particular, the cash flow and interest rate impacts, both short- and long-term, combine to make policies for accelerated depreciation quite powerful. The provision of additional business saving from accelerated depreciation at the same time incentives to capital formation are being legislated is particularly appropriate in an economy that is near full employment. In addition, a program of more rapid capital recovery would move the economy closer to replacement cost depreciation and away from the anachronistic historical cost depreciation that currently exists.

IV. A Simulation Analysis of the Capital Cost Recovery Act of 1979

The accelerated capital recovery program considered was a "10-5-3" shortening of lifetimes on newly purchased plant and equipment, whether new or used.⁴ The program consisted of the following elements:

- 1) a reduction in the tax allowable lifetimes for buildings to 10 years from the current 23 year average;
- 2) a reduction to five years in the tax allowable lifetimes for equipment, except autos and light trucks;
- 3) a three year tax allowable lifetime on investment in autos and light trucks;⁵
- 4) a uniform investment tax credit of 10% on all equipment, except for autos and light trucks, to which a 6% credit would apply;
- 5) the capital recovery is based on tables constructed using accelerated methods of recovery, i.e., double declining balance with a switch to sum-of-the-years digit methods.

Given the potential large revenue loss from this "10-5-3" accelerated capital recovery program, a transition program was instituted where equipment lifetimes, except for autos and light trucks, were phased-in toward a five year lifetime over a five year period. New 10 year lifetimes for buildings were phased-in over a 10 year period. The uniform tax credit was immediately put into effect, along with a 6% credit for autos and light trucks.

⁴H.R. 4646; also introduced in the Senate by Senators Nelson, Bentson, Packwood, and Chafee. One difference between the accelerated capital recovery program simulated and the proposed legislation is the transition period for buildings or Class I property. The bill uses five years; the analysis assumed 10 years. Thus, both the stimulus from the measure and revenue loss are somewhat underestimated; approximately \$3 to 4 billion a year in revenue loss calculated on a static basis and \$2 and \$3 billion on a net, full economy-feedback basis.

⁵Assets that are not autos or light trucks and that currently have lifetimes shorter than five years would be changed to five years.

Table 3 shows the revenue loss from this "10-5-3" accelerated capital recovery program, on an ex-ante (static) basis. The ex-ante (static revenue loss) corresponds to the Federal corporate tax receipts that would be lost under given assumptions on the pace of plant and equipment spending for the next five years.⁶ The expected revenue loss can be seen to vary from \$4.8 billion in 1980 to \$32.9 billion in 1984, averaging \$19.1 billion per annum.

Table 3. "10-5-3" Accelerated Capital Recovery Program:
"10-5" Phase-In Static Revenue Losses
(Billions of Dollars, Seasonally Adjusted Annual Rates, Relative to Baseline)¹

Year	1980	1981	1982	1983	1984	Avg.
Class I	0.7	2.2	3.7	5.4	7.4	3.9
Class II & III ²	3.3	9.5	14.6	19.9	24.3	14.3
Uniform Tax Credit ³	0.8	0.9	0.9	1.0	1.2	1.0
Total	4.8	12.6	19.2	26.3	32.9	19.1

¹Business fixed investment is assumed to grow at 9% for the baseline. Equipment lifetimes, except autos and light trucks, are phased in towards a 5 year lifetime over a 5 year period. The baseline assumes an 11 year average lifetime for equipment. Structures lifetimes are phased in over a 10 year period toward a 10 year lifetime, while the baseline assumes an average lifetime of 23 years.

²Class I is the National Income and Product Accounts counterpart to Sec. 1250 property (structures) including corporations, proprietorships, and partnerships. Class II is the National Income and Product Accounts counterpart to Sec. 1245 property (equipment), including corporations, proprietorships, and partnerships, except cars and light trucks. Class III property contains autos and light trucks.

³The investment tax credit for autos and light trucks is raised from 3.33% to 6%. All Class II property receives a 10% credit.

⁶The assumption for the growth of nominal fixed business investment was 9% per year, based on estimates by the Joint Committee on Taxation. This assumption was imposed on the baseline solution of the DRI model used in simulations of the accelerated capital recovery program.

⁷The actual revenue loss from the Jones-Conable bill would be somewhat higher because of the five year phase-in compared with a ten year lifetime for structures. Table 3 assumes a 10 year phase-in process. Doubling the Class I revenue loss would change the figures to range between \$6.2 billion in 1980 and \$47.7 billion in 1984. The average would be \$23.0 billion instead of the \$19.1 billion reported. In ex-ante or static terms, the expected revenue losses over the five year period make this tax policy one of the most expensive in the postwar period.

In Table 3, the tax loss for Federal corporate tax receipts without economy-wide feedback, averaged \$14.3 billion over the five year period and was \$3.4 billion for structures.⁸ The loss due to the uniform tax credit and new 6% investment tax credit on autos and light trucks was \$1 billion per year. A total of \$4.8 billion of Federal corporate tax receipts was lost in the first year of the program, and \$32.9 billion in 1984. Appendix Tables A.7 to A.10 show the calculation of the ex-ante revenue losses in Table 3.

The basic methodology used to calculate the static revenue loss was a computation of the difference between the assumed depreciation rates under the capital cost recovery program and the DRI baseline solution. This difference was then multiplied by the relevant investment series based on growth assumptions in nominal terms from the Joint Committee on Taxation, producing increased depreciation expense over the baseline simulation. When multiplied by an assumed effective tax rate, a static or ex-ante revenue loss was produced.

The "phase-in" or transition program considered used the "10-5-3" lifetimes but phased them in over a 10 year period (for structures) and 5 year period (for equipment), i.e.,

- 1) Class I property was allowed a tax lifetime of 10 years, with the new lifetimes phased in over 10 years. Appendix Tables A.2 to A.6 contain the phase-in schedules for each year of investment from 1980 to 1984. This class of assets coincides with Section 1250 property, including all tangible real property (such as leases of land), but exempts Section 1245 property, buildings and their structural components.
- 2) Class II property has a tax lifetime of 5 years, except for certain exceptions, with the new lifetimes phased in over 5 years. Appendix Tables A.2 to A.6 contain the phase-in schedules for each year of investment between 1980 and 1984. This property coincides with Section 1245 property. Section 1245 property is depreciable property which is either personal property (tangible and intangible), or 2) other tangible personal property (not including a building or its structural components), used as an integral part of a) manufacturing; b) production; c) extraction; and d) the furnishing of transportation, communications, electrical energy, gas, water, or sewage disposal services. The research facilities used in connection with these activities are also included.
- 3) Class III assets were allowed a lifetime of 3 years. Class III assets are the classifications of Section 1245 property that are either automobiles or light trucks.
- 4) Class II property received a 10% investment tax credit. There was a 6% tax credit for Class III assets.
- 5) All categories of eligible assets used a combination of double declining balances (DDB) and sum-of-the-years digits (SYD) depreciation methods.
- 6) A half-year convention was included. All assets purchased in a given year were depreciated as if bought at mid-year.

⁸Corporations, proprietorships, and partnership tax revenues were simulated via corporate tax revenues in the DRI model. Reference to "corporate" taxes therefore includes proprietorships and partnerships.

The transitional schedule operated as follows. For the first year of the program, Class II property was broken into 5 lifetime categories, each based on ADR lower limits. These categories were 1) 5 year-or-less, 2) 6 year, 3) 7 year, 4) 8 year, and 5) 9 years, or more. Depreciation was then calculated, using the double declining balance and sum-of-the-years digits based on these lifetimes. For subsequent years, the lifetime categories were shortened so that in each successive year the average lifetime of all subgroups moved toward 5 years, ultimately reaching so by the fifth year of the program. Capital purchased in any specific year of the phase-in period was depreciated using these lifetimes and associated depreciation rates. This procedure was continued until 1984, when all Class II lifetimes reached a 5 year span. Appendix Tables A.2 to A.6 display the subgroups for Class II assets and their depreciation schedules for the first few years of their lifetimes. Table 4 shows the final capital cost recovery table in the Jones-Conable bill.

Table 4
Capital Cost Recovery Table
(In percent)

Ownership year	Class of investment		
	I	II	III
1	10	20	33
2	18	32	45
3	16	24	22
4	14	16	
5	12	8	
6	10		
7	8		
8	6		
9	4		
10	2		
	100	100	100

The accelerated capital recovery program described was then simulated in the DRI Quarterly Econometric Model of the United States. The DRI Model is particularly well suited for simulating the impacts of tax incentives on business fixed investment, capital formation, productivity, real output and inflation, given its detailed treatment of business flow-of-funds, the integration of tax policy parameters into the investment equations, and the role of cash flow along with other financial ingredients on investment spending, capital formation, real economic growth, and productivity.

⁹ For other studies on tax incentives and capital formation using the DRI model, and a description of the mechanism and framework behind the results, see Andrew F. Brimmer and Allen Sinai, "The Effects of Tax Policy on Capital Formation, Corporate Liquidity and the Availability of Investment Funds: A Simulation Study," *Journal of Finance*, May 1979, pp. 287-308; Christopher Caton, Otto Eckstein, and Allen Sinai, "Tax Reform and Capital Formation in the U.S. Economy," *Data Resources Review*, August 1977; Allen Sinai and Terry Glomski, "The Carter Tax Proposal: Is It Needed?" *Data Resources Review*, January 1978, pp. 11-17; Allen Sinai, "Tax Expenditures and Business Capital Spending," Testimony presented at the Hearings on Tax Expenditures Committee on Ways and Means, Subcommittee on Oversight, March 27, 1979, and Otto Eckstein and Allen Sinai, eds., *The Data Resources Model of the U.S. Economy*, (Amsterdam: North-Holland, forthcoming), ch. 7.

Each element of the accelerated capital recovery program was translated to changes in the parameters for tax policy represented in the DRI model. This included the baseline or Control values for equipment lifetimes, structures lifetimes, the depreciation rule assumed, and the investment tax credit. The baseline case assumed that the lifetime for Class I assets (structures) was 23 years, with the combined Classes II and III (equipment) at 11 years. The baseline depreciation rules were sum-of-the-years digits in Class II and a weighted average of 40% straight line and 60% 1.5 declining balances for Class I.

The method employed was to calculate the difference in depreciation rates between each program and the baseline, then to derive the additional depreciation expense by multiplying these differences by the relevant investment stream. The greater depreciation expense was then entered into the DRI model solution as an increase in book value capital consumption. This caused, without considering feedbacks, a rise in cash flow equal to the average corporate tax rate multiplied by the rise in depreciation, which was also the static revenue loss. The shorter lifetimes for Class I and combined Class II and III assets were entered explicitly into the DRI model, as the main channel of influence to business fixed investment for the Capital Cost Recovery Act. The vehicle for this effect was the lessened price of capital relative to product prices. The tax credit effects were entered by changing the value for the effective investment tax credit to a level that would produce the additional tax losses associated with the program's new 6% tax credit for autos and light trucks without model feedback.

Table 5. "10-5-3" Accelerated Capital Recovery Program:
"10-5 Phase-In", DRI Model Simulation Results
(Billions of Dollars, Seasonally Adjusted Annual Rates, Relative to Baseline)

	1980	1981	1982	1983	1984	Average
Real Business Fixed Investment*	0.2	4.1	9.8	15.3	20.9	10.0
Real Equipment Spending*	0.2	3.2	7.4	11.7	16.3	7.7
Real Plant Spending*	0.1	0.9	2.4	3.6	4.5	2.3
Revenue Losses						
Total	4.2	9.8	11.8	14.6	16.1	11.3
Corporate	4.1	10.0	14.6	20.6	26.8	15.2
Personal	0.1	0.0	-1.4	-3.3	-6.0	-2.1
Social Security	0.0	-0.3	-1.2	-2.5	-4.3	-1.6
Excise	0.0	0.0	-0.1	-0.2	-0.4	-0.2
Productivity Growth(%)						
10-5 Phase-In	2.7	1.8	2.2	2.9	3.2	2.6
Baseline	2.6	1.2	1.4	1.9	2.3	1.9
Difference	0.1	0.6	0.7	1.0	0.9	0.7
Growth in Real GNP(%)	0.0	0.4	0.3	0.4	0.4	0.3
Employment(Millions)	0.0	0.1	0.2	0.4	0.5	0.2
Ratio: Increase in Real Fixed Investment to Corporate Tax Loss	0.06	0.42	0.68	0.74	0.78	0.53

The results are shown in Table 5, relative to the baseline case, i.e., as increments to the baseline, except for the productivity figures. These reflect the dynamic simulation and feedback from the effects of the tax stimulus on the economy, inflation, corporate finance, and capital stock. In the real world, the full impacts of any change in a tax policy instrument include both autonomous and induced effects. In evaluating the strength of the various tax expenditures, the full endogenous response of tax receipts to the various changes in the economy should be taken into account. Monetary policy was assumed neutral, operating to keep nominal short-term interest rates constant.¹⁰

In this "10-5-3" phase-in case, the loss in corporate tax receipts averaged \$15.2 billion per year. The gain in real business fixed investment averaged \$10 billion per annum. Growth in real GNP was 0.3% higher per year, and employment averaged 200,000 persons above the baseline solution over the five year period. Growth in productivity was 0.7 percentage points a year above the baseline value of 1.9%, averaging a respectable 2.6% for the period. The "bang-for-a-buck" was \$0.53 under this accelerated capital recovery program, before feedback.¹¹

Other results indicate that there would be little change for inflation from the accelerated capital recovery program. Whereas most programs to stimulate capital formation have been inflationary as the stimulus to demand outpaces the rise in supply, the effects of the Capital Cost Recovery Act on inflation were minimal. Neither the All Urban Consumer Price Index nor implicit GNP deflator showed any significant change from the baseline simulation. The inflation of wholesale prices, on the other hand, did show a slight increase in 1982 to 1984, when the program was most stimulative. The rise in the inflation of commodity prices was 0.1 to 0.2% during those years. However, the benefit to unemployment was much greater, with 0.2 to 0.4% declines in the overall unemployment rate relative to the baseline solution.

This minimal effect on inflation from the strong stimulus to business capital formation arises because the increased capital formation and improved cash flow promote a sizeable rise in productivity, declines in unit labor costs, and rises in potential output. Other tax policies, e.g., the investment tax credit, have been found to be more inflationary. Thus, the cost of the program in terms of additional inflation is essentially nil with considerable benefits to capital formation, productivity growth and employment.

¹⁰The huge injection of additional cash flow from the accelerated capital recovery program caused a drop of interest rates in the DRI model as business external financing requirements eased and excess funds in the near-term flowed into short-term investments. Since corporate spending lagged the stimulus, the early effects pressed interest rates lower. Treasury financing of the additional deficit did not increase as much because of the extra tax receipts induced by the program. To eliminate any extra stimulus from this source, the Federal Reserve was assumed to cut bank reserves to raise short-term interest rates to their baseline values.

¹¹The "bang-for-a-buck" refers to the rise in real business fixed investment per dollar of corporate tax revenue lost. It is the gain in real capital outlays per dollar of revenue cost to the Federal government. Of course, the loss in business taxes is less after allowing feedback than when the extra tax receipts generated by higher corporate profits is included. If all induced tax receipts from the stimulus are accounted for, corporate and otherwise, the gain per dollar of revenue loss would be even greater.

¹²See A. Sinai, *ibid*, "Tax Expenditures and Business Spending."

V. Concluding Comments

The salient features from the simulation of the Capital Cost Recovery Act of 1979 in the DRI model suggest a string of benefits to enactment of such a measure.

- 1) The accelerated capital recovery program has a powerful effect on business fixed investment. In real terms, business spending rises a total of \$50 billion over the five year period, with increasingly larger impacts into the mid-80s. Few policies to promote business capital formation would be so stimulative, while at the same time generating a means of financing and virtually no additional inflationary pressure.
- 2) The net cost of the Capital Cost Recovery Act is considerably less than the pre-enactment static estimates. Taking account of the full feedback effects from the stimulus on the economy, the revenue loss is only \$11.3 per annum, varying from \$4.2 billion in the first year to \$16.1 billion in the fifth year. Taking account of the induced tax revenues, both personal and corporate, that arises from the policy stimulus, is necessary for a realistic assessment of the program costs. Fully \$0.41 of the initial cost of the accelerated capital recovery program is recaptured because of its beneficial impacts on the economy.
- 3) The accelerated capital recovery program is self-financing, both for the government and for corporations. The induced tax revenues diminish the amount of deficit financing that must be undertaken and the huge rise in cash flow provides a means for business to finance the higher rate of capital spending. Few other tax policies would provide this degree of financing.
- 4) Growth in productivity is enhanced, rising 0.7% percentage points above the baseline. Thus, instead of the forecasted 1.7% per annum growth in labor productivity for 1980 to 1984, a respectable 2.6% pace of growth occurs. The increased productivity arises from the effects of the induced capital formation on potential output and productivity. It is primarily the large rise in the pace of business capital spending that generates the better performance on productivity.
- 5) The inflation costs from the accelerated capital recovery program are minimal, with virtually no change in key inflation rates arising from the policy stimulus. Most other tax stimuli push demand up faster than supply, giving rise to inflationary effects. The path for demand and supply would be more balanced under the Capital Cost Recovery Act, permitting rising employment and increased economic growth without a serious reacceleration of inflation.
- 6) There are substantial benefits to business liquidity from the accelerated capital recovery program, stemming from the large rise in cash flow that occurs. Some of the increased cash flow is used to finance capital outlays. Other portions are directed toward reductions in debt and improvement in the asset side of the corporate balance sheet. To the extent that these feedback effects occur, the "financial risk" of the corporate sector is diminished and a more aggressive posture on capital spending can be undertaken.

In this time of high inflation, low productivity growth, and rising unemployment, the time may well have come for implementation of a decidedly different tax policy from what has been used in the decades of the 60s and 70s. Simulation of the Capital Cost Recovery Act of 1979 with the DRI model suggests significant beneficial effects on real economic growth, capital formation, productivity, employment, and the financial position of corporations. These benefits are obtained at little cost in terms of additional inflation. Along with other advantages, such as simplification of the tax code, these quantitative impacts on the economy from accelerated capital recovery suggest the measure is well worth serious consideration instead of the more typical expansive fiscal policies that have been used to bring the U.S. economy out of past recessions. History indicates that each round of these efforts has brought more inflation and further economic instability. For the revenue loss associated with accelerated capital recovery, the potential gain appears to be substantial.

APPENDIX

Table A.1 Baseline Depreciation Schedule in DRI Model*
(Percent)

Year of Asset Lifetime	Class I	Class II, III
1	8.4	2.9
2	16.0	5.6
3	14.4	5.3
4	12.9	5.1
5	11.4	4.8

*Assumes a 23 year lifetime for Class I, 11 years for combined Classes II and III. Sum-of-the-years digits was the depreciation rule for Classes II and III, while 40% straight-line and 60% 1.5 declining balances were assumed for Class I assets. A half-year convention was assumed.

Table A.2 Phase-In Depreciation Schedule - "10-5" Program
(First Effective Year)
For Investment Made in 1980

Lifetime	Class of Investment					Class I (19)
	Class II					
	(5)	(6)	(7)	(8)	(9)	
Year After Asset Purchased						
1	20%	17%	14%	13%	11%	5%
2	32%	28%	25%	22%	20%	10%
3	21%	20%	19%	17%	16%	9%
4	15%	15%	15%	15%	14%	9%
5	12%	11%	12%	12%	12%	8%

Table A.3 Phase-In Depreciation Schedule "10-5" Program
(Second Effective Year)
For Investment Made in 1981

Lifetime	Class of Investment			
	Class II			Class I
	(5)	(6)	(7)	(18)
Year After Asset Purchased				
1	20%	17%	11%	6%
2	32%	28%	20%	11%
3	21%	20%	16%	10%
4	15%	15%	14%	9%
5	12%	11%	12%	9%

Table A.4 Phase-In Depreciation Schedule - "10-5" Program
(Third Effective Year)
For Investment Made in 1982

Lifetime	Class of Investment			
	Class II			Class I
	(5)	(6)	(7)	(17)
Year After Asset Purchased				
1	20%	17%	14%	6%
2	32%	28%	25%	11%
3	21%	20%	19%	10%
4	15%	15%	15%	10%
5	12%	11%	12%	9%

Table A.5 Phase-In Depreciation Schedule - "10-5" Program
(Fourth Effective Year)
For Investment Made in 1983

Lifetime	Class of Investment		
	<u>Class II</u>		<u>Class I</u>
	(5)	(6)	(16)
Year After Asset Purchased			
1	20%	17%	6%
2	32%	28%	12%
3	21%	20%	11%
4	15%	15%	10%
5	12%	11%	9%

Table A.6 Phase-In Depreciation Schedule
For Investment Made in 1984

Lifetime	Class of Investment	
	<u>Class II</u>	<u>Class I</u>
	(5)	(15)
Year After Asset Purchased		
1	20%	7%
2	32%	13%
3	21%	11%
4	15%	10%
5	12%	10%

Table A.7 takes the subgroups of Class II assets and creates a single depreciation schedule for each year by taking the average across the subgroups.

Table A.7 Aggregate Depreciation Schedule for Class II Assets - "10-5" Program
(Phased-In Method, Percent)

Year After Asset Purchased	1980	1981	1982	1983	1984
1	15	17	18	19	20
2	25	27	30	31	32
3	19	19	20	21	21
4	15	15	15	15	15
5	12	12	12	12	12
Average Lifetime	8.4	8.3	6.7	5.7	5.0

Since there is only one Class I lifetime assumed for each year, it is not necessary to aggregate Class I depreciation rates. Table A.8 displays these depreciation rates, derived from the lifetime assumptions for each year of the phase-in.

Table A.8 Depreciation Schedule for Class I Assets - "10-5" Program
(Phased-In Method, Percent)

Year After Asset Purchased	1980	1981	1982	1983	1984
1	5.3	5.6	5.9	6.3	6.7
2	10.1	10.6	11.2	11.8	12.5
3	9.3	9.7	10.2	10.6	11.2
4	9.7	9.1	9.5	9.9	10.4
5	8.2	8.5	8.9	9.2	9.6

The DRI baseline depreciation rates were then subtracted from the new program schedules (Tables A.7 and A.3). The resulting differences in depreciation rates (Tables A.9 and A.10) were then multiplied by the relevant investment series to calculate the increased depreciation expense under the various programs. When the additional depreciation expense was then multiplied by the average effective corporate tax rate, ex-ante corporate tax losses could be computed.

Table A.9 Differences in Depreciation for Class I Assets in 10 Year Phase-in Plan and Baseline (Percent)

Year After Asset Purchased	1980	1981	1982	1983	1984
1	2.4	2.7	3.0	3.4	3.8
2	4.5	5.0	5.6	6.2	6.9
3	4.0	4.4	4.9	5.3	5.9
4	3.6	4.0	4.4	4.8	5.3
5	3.4	3.7	4.1	4.4	4.5

Table A.10 Difference in Depreciation Rates for Class II Assets in 5 Year Phase-in Plan and Baseline (Percent)

Year After Asset Purchased	1980	1981	1982	1983	1984
1	6.6	3.4	9.8	11.0	11.6
2	9.4	11.4	13.8	15.2	16.0
3	4.2	5.0	6.0	6.6	6.6
4	1.9	1.9	2.1	2.1	2.1
5	0.4	0.4	0.4	0.4	0.6

STATEMENT OF THOMAS S. WATSON, JR., PRESIDENT, WATSON RICE & CO.

We should now put our emphasis on productivity with the hope that it will impact inflation and employment. To do that, we need leadership from the President, Congress, business, labor and academia to focus the nation's attention and emphasis on productivity.

This kind of leadership has worked before. President John F. Kennedy, with his early leadership, moved our entire country's focus toward health and fitness. As a result, we have an entire new industry of entrepreneurs promoting health foods, exercise equipment, health and exercise facilities, diet books, etc. He started this movement in 1960 by his emphasis on health and an appointment of a Presidential Commission to keep the thought in the minds of the American people.

President Dwight D. Eisenhower, with his emphasis on the scientific, moved an entire country to give attention to mathematical and scientific education. Entire schools and school systems changed their educational focus and an industry of entrepreneurs and consultants developed to support the scientific programs and discoveries which put us into the space race.

We have a tried and proven way of moving this society. It is to provide leadership and direction and let the resourcefulness of our entrepreneurial society move us there.

We have similar resources and creativity among our young and they must also be included in this process. We must find ways to bring the importance of their input into the fore again.

Our interest in Japan's accomplishments is good. But, we must remember that Japanese productivity was fired by an economy that was young and developing. As we make analogies, we should compare their activity with that of the U.S. from 1860 through 1920, for a fair and reasonable comparison. They now seem to be entering a mature economic stage and are experiencing some of the same problems and declines in productivity which began to show up in the U.S.A. after the post-civil war surge.

We are presently overlooking the real and substantial human resources in our small business and minority communities, in favor of a "quick fix" to resolve a long-developing problem. If President Elect Reagan follows that approach, we will find ourselves compounding the problem rather than correcting it. Our political, business, labor and academic leadership must emphasize *long-term, systematic* solutions for there to be a lasting effect.

We do not need to look overseas to find solutions to our current problems. Small and minority entrepreneurs can find the answers if provided the direction and encouragement. The statistics support this. More than 50 percent of U.S. inventions come from small business; 86 percent of the changes in unemployment statistics comes from changes in the small business workforce; 40 percent of the gross national product is produced by small business. These numbers are inclusive of the minority business impact.

Minority unemployment is more than twice the national average and is even higher among Afro-American youth and young adults. This is unproductive talent being wasted, left to dissipate. Our source of strength, energy, creativity and ambition is there. We should find ways to develop it, cultivate it and harvest it.

My specific recommendations for immediate action are:

(1) A Presidential emphasis on productivity in the work place with public statements, a *Presidential Commission* and all the appropriate support. A part of this effort must include involvement from business (large and small), Congressional, labor, academic and minority leaders to make it effective.

(2) Amend the current tax proposals to include specific *incentives* which encourage the development of *small and minority business*. A tax credit which would encourage compliance with the subcontracting provisions of PL 95-507 would be a good start. (See proposal submitted to Rep. Parren J. Mitchell by Watson, Rice & Co., Inc.)

(3) Reinstatement of the *jobs credit*. This has particular and substantial benefits for small and minority businesses.

