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**A Symposium Sponsored By**  
**The Federal Reserve Bank of Kansas City**

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INDUSTRIAL  
CHANGE  
AND  
PUBLIC POLICY





# INDUSTRIAL CHANGE AND PUBLIC POLICY

A Symposium Sponsored by the  
Federal Reserve Bank of Kansas City

Jackson Hole, Wyoming  
August 24-26, 1983



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## Foreword

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It has been our purpose in the series of annual symposia sponsored by the Federal Reserve Bank of Kansas City to identify issues that would emerge within a few years on the nation's major public policy agenda. Thus, our first symposium addressed agricultural trade policy, another addressed alternative solutions to the coming crunch in water availability and use, and just last year we addressed the process of making monetary policy in an environment of deregulated financial markets and increased international linkages.

This year, however, events have almost overtaken us. Industrial Change and Public Policy, the subject of our 1983 symposium, seems likely to be one of the most important public policy debates of this decade. Indeed, that debate has already begun. I cannot think of a more timely or challenging subject for this conference.

Our symposium series has always drawn together on the program the most knowledgeable people available on the subject. I'm sure you will agree that we have done so again.

This symposium was organized by Marvin Duncan, vice president and economist in our Economic Research Department, with assistance from Marla Borowski, research associate.

A handwritten signature in cursive script, reading "Roger Guffey". The signature is written in dark ink and is positioned above the printed name and title.

President  
Federal Reserve Bank of Kansas City

## **Symposium Series**

### **Federal Reserve Bank of Kansas City**

*World Agricultural Trade:  
The Potential for Growth, 1978*

*Western Water Resources: Coming Problems  
and the Policy Alternatives, 1979*

*Future Sources of Loanable  
Funds for Agricultural Banks, 1980*

*Modeling Agriculture  
for Policy Analysis in the 1980s, 1981*

*Monetary Policy Issues  
in the 1980s, 1982*

*Industrial Change and Public Policy, 1983*

## The Contributors

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**C. Fred Bergsten**, director, Institute for International Economics

Dr. **Bergsten** is the first director of the newly formed Institute, which published its first studies this year. He was Assistant Secretary of the Treasury for International Affairs from 1977 to 1981 and Under Secretary for Monetary Affairs in 1981. In those capacities, he had responsibility for U.S. policy in the international monetary, trade, investment, and development areas. Dr. **Bergsten** also served for three years as Assistant for International Economic Affairs to Henry Kissinger on the senior staff of the National Security Council, and has been a senior fellow at the Brookings Institution. He has authored 11 books and numerous articles on a wide range of international and economic issues.

**Barry P. Bosworth**, senior fellow, Economic Studies Program, the Brookings Institution

Dr. **Bosworth** first joined Brookings in 1971 as a research associate. He assumed his present responsibilities in 1979 after serving for two years as Director of the Council on Wage and Price Stability. He also has served as staff economist on the Council of Economic Advisers, assistant professor at Harvard University, and visiting lecturer at the University of California-Berkeley. Dr. **Bosworth**, a member of the American Economic Association, has co-authored two books, written several articles, and is an active lecturer.

**William Diebold**, senior fellow, Council on Foreign Relations

Associated with the Council since 1939, Mr. **Diebold's** work has involved continuing research and writing on international economic matters, participation in the shaping of the Council's studies program, cooperation with visiting scholars, and the organization and

conduct of study and discussion groups. From 1943-1947, he served with the Office of Strategic Services and the State Department. Since returning to the Council staff in 1947, he has held several senior positions, including Director of Economic Studies.

**George C. Eads**, professor, School of Public Affairs, University of Maryland

Dr. Eads joined the University's newly established School of Public Affairs in December of 1981 after serving for a year as a senior economist in the Rand Corporation's Washington office; he remains a consultant to Rand. Before that, he was a member of President Carter's Council of Economic Advisers, where he was especially active in regulatory reform issues and supervised CEA's participation in energy, agricultural, industrial, and international trade policies. Earlier, Dr. Eads headed Rand's research into regulatory policies and institutions, a program which he founded. He also served as executive director of the National Commission on Supplies and Shortages, assistant director for Governmental Operations and Research of the Council on Wage and Price Stability, and as special assistant in the antitrust division of the Justice Department. He has taught at Harvard, Princeton, and George Washington universities.

**Robert E. Hall**, professor of economics at Stanford University and senior fellow with the Hoover Institution

Dr. Hall specializes in research on inflation, unemployment, taxation, and monetary policy. Before coming to Stanford in 1978, he was professor of economics at the Massachusetts Institute of Technology and assistant professor at the University of California-Berkeley. He is a fellow of the **Econometric Society** and served as chairman of its program committee in 1981. Dr. Hall also serves as the director of the Research Program on Economic Fluctuations of the National Bureau of Economic Research. He is chairman of the **NBER's** Committee on Business Cycle Dating, and he has advised a **number** of government agencies on national policy, including the Treasury Department and the Federal Reserve Board. He served on **President-elect** Reagan's Task Force on Inflation Policy and is a member of the National Presidential Advisory Committee on Productivity.

**Jerry Jasinowski**, senior vice president and chief economist, National Association of Manufacturers

Dr. Jasinowski provides overall direction to the NAM staff responsible for policy development and legislative affairs, as well as providing economic analysis on the relationship between public policy and the industrial sector. He has been a spokesman for tax, trade, and technology measures to increase economic growth, improve industrial productivity, and maintain U.S. world competitiveness. Prior to joining NAM, he was assistant secretary for policy at the U.S. Department of Commerce. In 1976, Dr. Jasinowski served as director of the economic policy transition group for the Carter Administration in the departments of Treasury, Commerce, and Labor, the Council of Economic Advisers, and the Federal Reserve. From 1972 to 1976, he was senior research economist for the Joint Economic Committee of the Congress.

**Lawrence R. Klein**, Benjamin Franklin professor of economics and finance, University of Pennsylvania, and chairman of the professional board of Wharton Econometric Forecasting

Professor Klein pioneered the development of econometric forecasting models in the United States and abroad, and in 1980, he was named the Nobel laureate in economics for his work in this field. He is the principal investigator for Project LINK, the first large scale integrated system of models of many countries' economies. During the 1976 presidential campaign, he was the principal economic adviser to Jimmy Carter. Dr. Klein is a fellow of the American Academy of Arts and Sciences, a member of the American Philosophical Society, and a member of the National Academy of Sciences.

**Paul R. Krugman**, international policy economist, President's Council of Economic Advisers

Since 1978, Dr. Krugman has served as a research associate with the National Bureau of Economic Research. He has done consulting work for a number of organizations, including the Bank of Portugal and the National Academy of Science's Panel on advanced technology competition. In addition, he served in 1980 as consultant on industrial policy to the State Department. While serving at the Council of Economic Advisers, Dr. Krugman is on leave from his teaching post at the Massachusetts Institute of Technology, where he is associate professor of management and economics. He has written a number of publications, papers, and articles.

**Robert Kuttner**, contributing editor, *The New Republic*

Kuttner is the author of the book, *Revolt of the Haves*, a study of the taxpayer revolt, and he has recently completed a new book, *Economic Growth/Economic Justice*, which examines the relationship between economic efficiency and distribution equity. Kuttner has served as editor of the bimonthly journal, *Working Papers*, as chief investigator for the Senate Banking Committee, as a Kennedy fellow at Harvard University, and as a national staff writer for *The Washington Post*. He is the author of a number of scholarly articles on taxation, banking, planning, and comparative economic policy.

**Robert Z. Lawrence**, senior fellow at the Brookings Institution

A specialist in international economics, Dr. Lawrence has been assistant editor of *Brookings Papers on Economic Activity*, a member of the Special Study on Economic Change by the Joint Economic Committee of the Congress and on the Brookings' Panel on Economic Activity. He is currently a consultant at the Federal Reserve Bank of New York. He was a professorial lecturer at the School of Advanced International Studies at Johns Hopkins University for three years. Before joining Brookings as a research associate in 1976, he was an instructor at Yale University. He has published a number of papers, reviews, and economic essays.

**George C. Lodge**, professor of business administration at the Harvard Graduate School of Business Administration

Professor Lodge, a graduate of Harvard, teaches *Business, Government, and the International Economy* in the Harvard Business School's advanced management program and related courses in the school's MBA program. He was a political reporter and columnist for the Boston Herald before entering government service as Director of Information of the U.S. Department of Labor and Assistant Secretary of Labor for International Affairs. He also served as U.S. delegate to the International Labor Organization and chairman of the ILO's governing body. He was appointed lecturer at the Harvard Business School in 1961, and a year later was the Republican candidate for the U.S. Senate from Massachusetts before rejoining the faculty.

**Edwin Mansfield**, professor of economics at the University of Pennsylvania

Before joining the University of Pennsylvania, Dr. Mansfield

taught at Carnegie-Mellon, Yale, Harvard, and the California Institute of Technology. He has been a consultant to many public agencies and was appointed to the advisory committee for the president's Domestic Policy Review on Industrial Innovation, the National Science Foundation's Advisory Committee on Planning, the Economic Advisory Committee to the Bureau of the Census, and the Governor's Science Advisory Committee. Dr. Mansfield is a fellow of the American Academy of Arts and Sciences and the Econometric Society. He was appointed U.S. chairman of the U.S.-U.S.S.R. Working Party on the Economics of Science and Technology. He is the author of 19 books and in 1979 was the first U.S. economist invited by the People's Republic of China to lecture there.

**Ray Marshall**, Bernard Rapoport centennial chair in economics and public affairs at the University of Texas

Dr. Marshall served as Secretary of Labor in the Carter administration. Currently, in addition to his responsibilities at the University of Texas, he is president of the National Policy Exchange in Washington, D.C., and a member of the steering committee and cochairman of the productivity panel of the Economic Policy Council of the United Nations Association and the National Council for Employment Policy. Dr. Marshall also has served on a number of boards and panels, including the Industrial Relations Research Association, Southern Economic Association, and the National Rural Center. The author or co-author of 22 books and monographs and approximately 100 articles in professional journals, he has written about economic policy, rural development, industrial relations, employment of minorities and women, cooperatives, education, and productivity.

**J. David Richardson**, professor of economics at the University of Wisconsin

Dr. Richardson has been with the University of Wisconsin since 1970. In 1972 he was honored with the Standard Oil Corporation Award for Teaching Excellence. In addition to his teaching, Dr. Richardson has served as a consultant to the Institute for Policy Analysis and the Economic Council of Canada. Currently, he is chairman of the Committee of Examiners for the Advanced Test in Economics, Graduate Record Program. For the last four years he has been a research associate with the National Bureau of Economic Research, and in 1978 he was a visiting scholar with the international finance division of the Board of Governors of the Federal Reserve System.

Dr. Richardson is the author of a number of published books, papers, reviews, and critiques.

**Jeffrey D. Sachs**, professor of economics at Harvard University

In addition to his responsibilities at Harvard, Dr. Sachs is a research associate with the National Bureau of Economic Research, a member of the Brookings Panel of Economists and a consultant for the Organization for Economic Cooperation and Development. He also has done consulting work for the International Monetary Fund and the London School of Economics. Dr. Sachs worked as a research associate with the Falk Institute of Economic Research in Jerusalem, was a junior fellow in the Harvard Society of Fellows, and a visiting scholar at the Institute for International Economic Studies in Stockholm. He is the author of numerous publications.

**Lawrence Summers**, professor of economics at Harvard University

Before joining Harvard in September 1983, Dr. Summers had served as domestic policy economist with the President's Council of Economic Advisers. He previously taught economics for two years at the Massachusetts Institute of Technology. Dr. Summers has published more than 20 articles concentrating on the economics of employment and capital formation.

**James Tobin**, Sterling professor of economics at Yale University

Dr. Tobin, the 1981 Nobel laureate in economics for his work in portfolio theory, has been affiliated with Yale since 1950. He has served as a director of the Cowles Foundation and as chairman of the Economics Department. Dr. Tobin was a member of President Kennedy's Council of Economic Advisers and has served as president of the American Economics Association, the Econometric Society, and the Eastern Economics Association. He is also a member of the National Academy of Sciences, American Philosophical Society, American Statistical Association, and the American Academy of Arts and Sciences. He has received several honorary degrees and published a number of books and professional journal articles.

**Michael L. Wachter**, professor of economics and management at the University of Pennsylvania

Dr. Wachter has served as a consultant to the Joint Economic Committee of the Congress, the Department of Labor, and the Coun-

cil of Economic Advisers, and as a member of the Minimum Wage Study Commission. He has been a member of the University of Pennsylvania's faculty since 1969 and is currently a member of the National Council on Employment Policy and a senior adviser to the Brookings Panel on Economic Activity. Dr. Wachter is the author of numerous articles on inflation, unemployment, industry wage and price determination, productivity, and the industrial framework of the product and labor markets.

**William L. Wascher**, research economist with the Board of Governors of the Federal Reserve System

A 1983 graduate of the University of Pennsylvania, Dr. Wascher recently assumed his responsibilities with the Federal Reserve Board in Washington, D.C. He received his B.A. degree from the University of Delaware and his M.A. and Ph.D. from the University of Pennsylvania. His first published paper, coauthored with colleague Dr. Michael L. Wachter, concerns generalized manpower policies and was written for presentation during this symposium.

## The Moderators

**Robert C. Holland**, president, Committee for Economic Development.

Before joining the CED, Dr. Holland served as a member of the Board of Governors of the Federal Reserve System from 1973 until 1976, where he had earlier held several staff positions. He has also taught money and banking at the Wharton School of the University of Pennsylvania and served on the staff of the Federal Reserve Bank of Chicago, and he is a member of the board of directors of the National Bureau of Economic Research and the board of overseers of the Wharton School.

**George L. Perry**, senior fellow at the Brookings Institution.

Dr. Perry, who is co-director of the Brookings Panel on Economic Activity and co-editor of its journal, *Brookings Papers*, specializes in the study of inflation and labor market theory, economic policy, and analysis of business conditions. Before joining Brookings, he served as senior economist with the President's Council of Economic Advisers in the Kennedy Administration and as professor of economics at the University of Minnesota.



# Identifying the Effects of Structural Change

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*Lawrence R. Klein*

## **A conceptual point of view**

It would be folly to analyze the economy from a static framework. The understanding of change is the essence of proper appreciation of what is going on in the economy, whether on a national, subnational, or supra-national perspective. But oftentimes economic analysts invoke aspects of change as a convenient cover-up for the proper understanding that would come with deeper analysis. My own bias would be to argue that there is more persistence and less change in the basic structure of the economic system than is commonly believed. I do not think that we should, when confronted with difficult questions, simply throw up our hands and exclaim that things are changing too much for the satisfactory application of usual economic reasoning.

A view of an economic system, which reflects my own biases, is that of a large equation system that has its own laws of dynamics. Sources of change in this system are from:

1. changes in values of external (or exogenous) variables
2. changes in legal rules or institutional practices
- 3.** changes in random disturbances
4. changes in technology
5. changes in parameters of economic behavior

Outcomes and performance characteristics surely change, but our analytical capabilities will be greatly affected by our assignment of sources of change to one of these five items. If the basic parameters in (5) remain stable, and if technical progress in (4) takes place smoothly, we may be able to go far in economic analysis with time-honored methods and systems of thought and without assuming that

things have changed so much that quite different approaches and perspectives must be used.

It is my feeling, as in applied econometrician, that structure remains relatively steady through time and that the main changes, under (1)-(3), can be isolated, within the concept of a system with stable patterns for assigning degrees of importance to particular sources of change.

There is a great deal of evidence that many fundamental economic patterns of saving behavior, spending behavior, price formation, and others can be formulated in sufficiently general terms to have survived upheaval of world wars, political revolutions, and many natural disasters. Engel's Law, for example, looks as sound today as it did when first discovered more than 100 years ago, and it can be used in a system with stable structure for useful economic analysis. All such stable relationships are not so general, simple, and elegant as Engel's Law, but there is much to rely upon from our inventory of statistical economics for the analysis of economic change.

## **The Problem**

Some major economic difficulties have led economists to assert that structural change has occurred. The macroeconomic events of the 1970s are considered to be evidence for structural change, after more than two decades of strong growth in a stable environment — a period that may well be considered, retrospectively, to have been a golden era of advancement. The 1970s were mainly a period of stagflation and culminated in a crisis of world proportions in 1982-83 — the LDC financial crisis. Perhaps we are still in this crisis situation, and in trying to find a stable recovery path, we encounter structural change. This is a statement of the problem.

In the period after 1976, we brought down unemployment (the "stag" part), only to find prices rising rapidly (the "flation" part). Price rises are now checked, considerably, but unemployment is very high. In addition, in the process of combatting inflation, interest rates were driven so high that heavy debt burdens were placed on developing countries that had borrowed large sums for growth programs.

In the world recession that ensued after the drive against inflation, some traditional industries were especially depressed — steel, autos, farm equipment, shipbuilding — and new service-oriented sectors are areas of expansion. This industrial shift is part of the problem of a structural change.

Other aspects of the problem of structural change are the persistence of large public deficits and wide swings in international currency values. The change in terms-of-trade between energy-exporting and energy-importing areas of the world is also an important aspect of structural change. I would, personally, rate its importance very high, but many economists regard it as a change that can be dealt with adequately by normal market forces.

An alternative interpretation of the last 15 to 20 years of economic history, which does not rely heavily on the concept of structural change, proceeds as follows: The failure to finance the Vietnam War generated significant inflationary pressures in the United States. The war was so costly in external spending that it also flooded the world with dollars. U.S. deficits in the face of German and Japanese surpluses led to a breakdown of the Bretton Woods system of fixed parities, to dollar depreciation, and to further worsening of inflationary pressures. Unusual combinations of food and fuel shocks produced widespread inflation in the United States and many other industrial nations. By adopting orthodox restrictive economic policies to combat inflationary pressures, large industrial countries generated recessions and high unemployment. In the beginning of the 1970s, unemployment resulted from the food and fuel price rises, but later, in the recession of 1981-83, unemployment was used in true Phillips-curve fashion to bring down wage increases and inflation.<sup>1</sup>

The unemployment rise was exacerbated in the United States during the second half of the 1970s by a rapid expansion in labor force growth, caused by the coming of working age of the baby-boom generation and an increasing desire to work on the part of women. In the early 1980s, labor force growth has slowed in the United States but remains high in Europe, where birth rates were high in the 1960s. These labor force developments are significantly affecting present unemployment rates and their expected future movements, but they are more in the nature of cyclical swings than structural changes. These cyclical swings also had impacts on the Phillips curve, temporarily obscuring its most simplistic manifestations, but they were not structural shifts, merely cyclical aberrations that can be accounted for in multivariate extensions of the underlying behavioral pattern.

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1. Many economists had prematurely discounted the very existence of the Phillips curve, but I believe that it is an example of structural stability that the Phillips curve persisted through a great deal of economic turbulence.

The run-up in oil prices, which contributed markedly to inflation after 1973, also led to the cumulation of extraordinary exchange reserves by OPEC nations, which did not want to bear the risk of investing all the funds, and so deposited them in the world's commercial banking system, where they were then to be invested at the bankers' risks. They were promptly, perhaps even hastily, loaned, in large measure, to a few developing countries, which then proceeded with their development programs. Many of these loans were at variable rates, and when rates escalated, many of the borrowers could not pay interest or cover amortization. The associated recession and weak oil prices made the problem unbearable for some borrowers. This explanation of the present financial crisis is straightforward and does not rely on appeal to structural change, but it does alter the "initial conditions" for the recovery process.

The change in terms of trade between the oil exporting and oil importing countries did have another effect on industrial performance. It forced many countries, especially the United States, to become more energy-efficient. In the process of making this adjustment — through insulation, down-sizing of cars, improvement of motor efficiency, reducing of speed limits, lowering of thermostats — the economy slowed and productivity deteriorated. This effort seems to have taken a decade or so in the United States. In the process, it slowed the overall economy and lowered productivity growth. The main thrust of the adjustment is completed, and the present recovery shows signs of bringing about a revival of productivity growth.

Investment, in total or as a fraction of GNP, did not fall during the adjustment period but spent its effort to a large extent in dealing with energy and environmental issues; therefore, it did not contribute much to productivity growth. At the present time, however, fresh investment should do more to enhance productivity and less to adapt to the energy situation.

The legal and institutional restraints in the economy have been changed in such a way that they are having a noticeable impact on the functioning of the economy. Tax laws have undergone three fundamental types of change:

- Capital gains rates have been lowered.
- The overall rate structure is lower.
- Capital accounting for tax purposes has been liberalized.

These legal changes have consequences for current and prospec-

tive performance. The lowering of capital gains rates has stimulated venture capital expansion. This augurs well for investment in the new technologies. But the lower overall rate structure achieved by the successive tax cuts of 1981, 1982, and 1983 have so eroded the revenue base of the federal government that it is going to require several years of steady expansion to get back to balance. It used to be a property of the tax system that full employment policies consistent with a balanced budget could readily be found; now it is extremely difficult to find such a policy mix.

Provisions for accelerated depreciation have created the potential for accumulation of large funds by business for capital expansion. This is a major factor in counteracting any tendency of large federal deficits to crowd out private investment.

In another sector of the economy, legal change has had a large impact on aggregate performance — namely, in the financial sector through deregulation. **Deregulation** so obscured the definition of money, the stability of the money demand function, and understanding of the functioning of money markets that attempts at monetarist control caused large fluctuations in conventional monetary aggregates and interest rates. The large run-up in rates caused damage as indicated already.

This short survey brings us up to date on some of the major issues related to the concept of structural and other change that has been taking place in the economy. Changes have occurred, and the economy of the future is likely to be quite different from that of the past, but I believe that most of the major events associated with these changes are not truly structural changes; they are changes in input values (some exogenous variables), in the legal restraints, and in some cyclical factors.

### **Projections of some changes**

The consensus forecast for the United States and for the industrial democracies, in general, is for slower growth by about 1.0 percentage point, higher unemployment by about 3 percentage points, and more inflation by about 3 percentage points than in the decades of the 1950s and '60s. The reasons for this poorer performance may be thought to be a structural change.

When simulation experiments are performed with the Wharton Model of the United States to try to obtain a balanced growth path for the 1980s, it is found that attempts to break out of the pattern of

slower growth with more inflation tend to generate imbalances in the form of internal deficits, external deficits, or inflationary pressures. The balanced growth path is one in which equality is found between real growth and real interest rates, with the budget deficit gradually declining towards zero. This type of incompatibility between balanced growth and an attempt to reach old targets has been characteristic of our decade projections ever since 1970. At first, it was simply because of an evident physical need for expanded oil imports, with little price rise contemplated. After 1973, it was because of a combination of price rises and larger import volume of oil. Labor market pressures added to the difficulties. These latter changes were perceived to be a shifting multivariate Phillips curve that was based on demographic shifts.

TABLE 1

The World Series, History and Forecast  
(percentage change)

	1950-60	1960-70	1970-80	1981	1982	Forecast			
						1983	1984	1985	1986
GDP world total	4.9	5.3	4.3	1.7	0.9	1.9	3.3	3.0	2.3
OECD	4.1	5.3	3.5	1.5	-0.3	1.8	3.6	3.1	2.0
Developing	4.9	5.6	5.7	1.8	1.1	-0.2	2.9	2.4	2.1
Centrally planned	6.0	5.0	5.5	2.1	3.6	3.5	3.0	3.1	3.4
World trade volume	7.2	8.3	5.6	1.1	-1.0	1.9	4.9	4.5	3.5
Inflation OECD	2.9	4.6	8.2	12.2	10.0	8.7	8.2	8.4	8.3

TABLE 2

Ten-Year Average Growth, United States  
(percent per year)

	1951-61	1961-71	1971-81	Forecast
				1981-91
GNP	2.7	4.0	3.0	2.6
Productivity	1.8	2.1	0.6	1.0
Employment	0.9	1.9	2.4	1.6
Labor force	1.3	1.8	2.6	1.5
Population	1.8	1.2	1.0	1.0
Inflation (GNP deflator)	2.0	3.3	7.4	4.9
Wage rates (all industries)	4.3	5.9	7.9	6.2
Real wages	2.3	2.6	0.5	1.3
Real per capita income	0.9	2.8	1.9	1.6

In Table 2 the growth slowdown in the 1980s is clearly discernible. To some extent, the decade averages are sensitive to particular starting and ending points, depending on their cyclical standings; nevertheless, the high rates of growth during the 1960s stand out as clearly dominant over the performance of the 1970s and the forecast for the 1980s. A partial recovery of productivity, a slowing of labor force growth, and downturns in wages and prices are all evident in this table of trends.

The forecast with some more detail, year by year, is summarized in Table 3. Here we find the growth rate near 3.0 percent at the end of the projection period, with an inflation rate of about 4 percent. The long-term interest rate settles down to about 8.0 percent and the short-term rate at a figure just above 6.0 percent. This puts the real interest rate at about 2 to 4 percent, just about in line with the overall growth rate. The after-tax real rate, which might be more relevant, is even lower, closer to zero, which is not far from its value some 25 years ago.<sup>2</sup>

Shifts in OPEC pricing, demographic swings, tax changes, and banking deregulation are major factors in explaining what happened in the 1970s and what is expected for the 1980s. It is also important to note that the business cycle downturns contributed significantly to the restraint of medium-term averages, especially since recoveries were generally weak or mild. The present recovery is expected to be milder than the historical average of recoveries, and the projection for the rest of the decade contains an estimated cyclical correction at about 1986.

If we probe more deeply into the composition of the Wharton forecast for the decade of the 1980s, we can find some interesting patterns. First let us look at the macroeconomic structure of sources and uses of funds. An important problem to be considered in this connection is whether a normal *timing* pattern of business cycles can be expected to prevail. Will the presence of a very large federal deficit in 1983 and beyond, crowd out private investment, causing interest rates to rise again and the cyclical recovery to abort? Some cynics believe that a new business cycle pattern prevails and that the short succession of recessions of 1980-1981 will be repeated. This would, indeed, appear to be a structural change, but I believe that the analysis of such structural shifts in the cycle are ill-founded.

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2. John D. Paulus, "How High are Bond Rates?" *Economic Perspectives* (New York: Morgan Stanley, June 1983).

**TABLE 3**

**The Wharton Long-Term Model  
(June 1983 forecast, United States, Selected Indicators)**

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Gross National Product (Cur \$) .....	3058	3292	3634	4011	4255	4682	5063	5432	5675	6153	6598
%Change	4.1	7.7	10.4	10.4	6.1	10.0	8.1	7.3	4.5	8.4	7.2
Gross National Product (72 \$) .....	1476.7	1520.4	1600.4	1671.1	1685.0	1753.2	1808.6	1862.1	1873.2	1945.2	1999.8
%Change	- 1.7	3.0	5.3	4.4	.8	4.1	3.2	3.0	.6	3.8	2.8
Gross Nat. Prod. Deflator (1972 = 100.0) .....	207.1	216.5	227.1	240.0	252.5	267.1	279.9	291.7	302.9	316.3	329.9
%Change	5.9	4.6	4.9	5.7	5.2	5.7	4.8	4.2	3.8	4.4	4.3
Population (Millions) .....	232.90	235.57	238.21	240.74	243.22	245.62	247.94	250.19	252.33	254.44	256.50
%Change	1.1	1.1	1.1	1.1	1.0	1.0	.9	.9	.9	.8	.8
Labor Force (Millions) .....	110.25	112.67	114.74	116.85	118.18	119.97	121.54	123.27	124.62	126.21	127.77
%Change	1.5	2.2	1.8	1.8	1.1	1.5	1.3	1.4	1.1	1.3	1.2
Participation rate .....	63.8	64.4	64.7	65.2	65.2	65.5	65.7	66.0	66.1	66.3	66.5
%Change	- .1	.9	.6	.7	.0	.5	.3	.5	.2	.4	.3
Employment (Millions) .....	99.53	101.38	104.47	107.67	108.01	110.58	112.89	114.93	115.41	117.58	119.30
%Change	- .9	1.9	3.0	3.1	.3	2.4	2.1	1.8	.4	1.9	1.5
Wage rate per week, all industries ...	358.6	377.7	403.8	436.8	466.0	500.3	530.6	556.4	582.9	615.8	650.6
%Change	5.9	5.3	6.9	8.2	6.7	7.4	6.1	4.9	4.8	5.6	5.6
Productivity — all industries .....	14.836	14.996	15.320	15.520	15.600	15.855	16.020	16.202	16.231	16.544	16.764
%Change	- .9	1.1	2.2	1.3	.5	1.6	1.0	1.1	.2	1.9	1.3
Productivity — all manufacturing....	17.888	18.656	19.353	20.052	20.268	20.777	21.393	22.043	22.307	22.961	23.638
%Change	.5	4.3	3.7	3.6	1.1	2.5	3.0	3.0	1.2	2.9	3.0
Real per capita GNP (thou 72 \$) .....	6.340	6.454	6.719	6.941	6.928	7.138	7.294	7.443	7.423	7.645	7.797
%Change	- 2.8	1.8	4.1	3.3	- .2	3.0	2.2	2.0	- .3	3.0	2.0
Real per cap disp inc (thou 72 \$) .....	4.530	4.653	4.744	4.850	4.841	4.939	5.023	5.103	5.137	5.217	5.303
%Change	.0	2.7	2.0	2.2	- .2	2.0	1.7	1.6	.7	1.6	1.6

Lawrence R. Klein

Corporate profits before taxes .....	174.0	212.6	296.0	354.9	300.8	360.0	368.0	390.6	348.3	442.6	488.1
% Change	-25.0	22.2	39.3	19.9	-15.2	19.7	2.2	6.1	-10.8	27.1	10.3
Moody's corporate bond rate,											
avg (%) .....	14.94	12.00	10.08	9.89	9.63	9.90	9.59	9.19	8.59	8.14	7.94
Lrg time dep (negot CD's), avg (%) .	12.27	8.41	8.53	8.91	7.82	8.30	7.44	7.07	5.86	6.53	6.35
Money supply, M2 basis (current \$).	1878.0	2133.0	2331.5	2525.6	2711.3	2953.3	<b>3212.8</b>	3458.6	3640.4	3904.6	4198.4
% Change	9.4	13.6	9.3	8.3	7.4	8.9	8.8	7.7	5.3	7.3	7.5
Unemployment rate (%) .....	9.72	10.01	8.95	7.85	8.60	7.83	7.11	6.77	7.40	6.84	6.63
Savings rate (%) .....	6.60	7.13	6.20	5.89	5.34	5.23	5.15	5.14	5.41	5.11	5.14
Surplusordeficit, Federal (cur \$)....	-149.3	-192.0	-171.5	-147.6	-159.1	-126.0	-100.7	-99.0	-130.7	-92.2	-74.0
Surplus or def, state & loc (cur \$)....	32.4	50.2	60.3	71.2	66.3	73.6	<b>74.1</b>	80.6	73.7	83.6	75.1
Compen. to employees to											
nat. income .....	76.2	75.0	73.8	73.7	74.6	74.5	74.7	74.4	75.4	74.8	74.9
Profits to national income .....	6.6	8.5	10.9	11.9	10.2	10.7	10.2	10.2	8.9	9.9	10.0

**TABLE 4**  
**Sources and Uses of Gross Saving**

	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
Gross saving .....	414.6	458.4	537.5	623.0	612.6	727.3	808.3	882.0	875.6	1006.9	1093.2
Gross private saving .....	531.5	600.2	648.7	699.4	705.4	779.8	834.9	900.5	932.6	1015.5	1092.0
Personal saving .....	143.2	167.1	157.1	162.8	156.8	166.6	175.6	186.4	205.9	207.1	221.5
Undistributed corporate profits .....	36.6	63.0	100.6	119.6	83.6	106.0	108.3	118.6	88.5	123.9	134.5
Capital consumption allowances....	<b>351.7</b>	370.2	391.0	417.0	465.0	507.2	551.0	595.5	638.2	684.5	736.0
Governmentsurplusordeficit .....	-116.9	-141.9	-111.2	-76.4	-92.7	-52.4	-26.6	-18.4	-57.0	-8.6	1.1
Federal .....	-149.3	-192.0	-171.5	-147.6	-159.1	-126.0	-100.7	-99.0	-130.7	-92.2	-74.0
Stateandlocal .....	32.4	50.2	60.3	71.2	66.3	73.6	74.1	80.6	73.7	83.6	75.1
Gross investment .....	416.3	458.4	537.5	623.0	612.7	727.3	808.3	882.1	875.6	1006.9	1093.2
Gross private domestic											
investment .....	420.6	472.3	561.8	640.7	620.5	740.5	823.2	903.6	865.5	1011.8	1099.5
Net foreign investment .....	-4.3	-13.9	-24.3	-17.8	-7.8	-13.1	-14.9	-21.5	10.1	-4.9	-6.3
Less: statistical discrepancy .....	1.6	<b>.0</b>									

A main reason that the Wharton forecast shows a normal cyclical recovery, as far as timing is concerned, is that adequate sources of funds are expected to be available to finance the joint requirements of deficit spending and private investment without excessive upward pressure on interest rates. The sources and uses table shows how corporate retained earnings increase by large amounts in those periods when there is more concern about the size of the federal deficit, 1983-1985. The business cycle recovery of 1983 would, under ordinary circumstances, support large profit gains because of the greater amplitude of profits relative to wages over the course of the cycle. In addition, the present cyclical phase is associated with an unusual amount of wage moderation, brought about by the high unemployment rate. Right after the profit surge, there is an increase in capital consumption allowances, phased in beautifully to supply funds when retained profits are expected to recede. The surge of capital consumption allowances occurs at the right time because of the accelerated depreciation allowances that were approved in 1981, applied to an expansion in fixed capital during the business cycle recovery.

These developments in corporate funding are aided in the overall approach to avoiding crowding out by the fact that the Wharton forecast is considerably more bullish, and slightly more inflationary than official forecasts on which official deficit figures are based. Our estimates show a cresting of the deficit near \$200 billion and then a gradual fall below official numbers, except in the periods of cyclical slowdown in 1986 and 1990. For many months it has been a case of the federal government's forecasts being raised to be more in line with actual developments, but steadily lagging and creating undue budgetary fears.

By reversing fiscal and monetary policies, the budget could be reduced and the level of unemployment cut to about 6 percent by 1986, but the calculated deficit would not reach balance before the end of the decade. In any event, a structural change in fiscal parameters would be needed, together with a more expansive monetary policy.

The preceding analysis deals with macroeconomic issues. Next, let us look at **sectoral** composition of the projected expansion for the decade. This involves an analysis of industrial structure generated by the input-output module of the Wharton model. Growth rates of output, employment, and labor productivity are presented in historical perspective and in extrapolation.

Some highlights of the industrial structure are that manufacturing grew faster than the economy-wide average in the 1960s and is now expected to conform more to the average pattern. Communications and finance insurance and real estate (FIRE) were also relatively high growth sectors, historically, and are expected to be so in the future. Among services, medical services are projected at a comparatively high growth rate. It would have been unwise to have rated the coal sector's performance on the basis of its relative decline in the 1950s, for it is now rebounding at a rate above average.

Government, as measured by value-added, was not a relatively fast-growing sector, contrary to much popular opinion. In employment, the fast-growing part was in state and local governments, not the federal government. For the future, however, government growth is restrained in the forecast.

In the 1960s, lumber (for housing), steel, aluminum, electrical machinery, and automobiles expanded rapidly. In this group of durables, metals should recede relatively, while the others hold their own or gain in industry as a whole. In the nondurables group, rubber (for cars), textiles (synthetics), and chemicals all expanded rapidly during the 1960s. They are expected to slow down for the forecast period, but rubber may hold its relative position.

Except for coal mining, there should be a drop in growth rates below the average, for the future, and agriculture is also kept on a fairly slow path. The latter is probably deliberate, in order to maintain farm prices and incomes.

While manufacturing output should meet average growth performance of the whole economy, the same is not true for jobs. Consequently, there should be a rise in labor productivity in manufacturing, a good sign for inflation restraint, but it will require shifts in the work force through retraining, attrition, and natural attraction of the new growth sectors.

As far as productivity is concerned, we can expect to see both a cyclical and a secular gain. Agriculture, manufacturing, and communications look like sectors of improvement in work efficiency. Commercial services and government are not leaders in this projection. Productivity, on average, should improve, but much more could be expected, and this is the point at which economic policy should become more specific, more structural, and more finely targeted to achieve results in certain industry groups and certain demographic groups.

TABLE 5  
 Real Value-Added Output  
 (percentage change, 1972 dollars)

	1951 1961	1961 1971	1971 1981	1981 1991
All industries .....	2.7	4.0	3.0	2.6
Statistical discrepancy .....	-2.2	2.6		
Sum of real outputs.....	2.7	4.0	3.1	2.5
<b>Agric.</b> forestry and fisheries .....	1.1	1.2	1.9	2.2
Mining .....	1.1	3.1	1.9	.2
Metal mining .....	2.4	1.6	.1	-2.7
Coal mining.....	-3.5	2.6	3.6	4.0
Crude petroleum and natural gas..	2.3	3.4	1.8	-1.1
Mining of nonmetallic minerals...	3.3	3.4	1.3	1.3
Manufacturing .....	1.7	4.5	3.0	2.7
Durable goods .....	1.0	4.6	3.2	3.1
Nondurable goods .....	2.6	4.3	2.7	2.1
Transportation .....	-.1	3.5	1.8	2.1
Communications.....	6.2	8.0	7.4	6.3
Synfuels .....				
Utilities, private .....	6.9	5.9	2.4	1.6
Electric .....		6.4	2.9	2.5
Natural gas.....		4.7	.3	-1.2
Sanitary.....		7.1	6.1	1.4
Public & private electric .....		6.2	3.0	2.8
Commercial and other .....	3.8	4.1	3.5	2.5
Commercial.....	3.8	4.1	3.3	2.6
Contract construction.....	3.7	2.2	-1.1	1.7
Residential .....		5.0	-4.7	3.2
Nonresidential.....		-1.0	-.5	.6
Other.....		2.7	1.5	1.5
Finance, insurance, & real estate	4.9	4.2	4.1	3.0
Services.....	3.6	4.9	4.4	2.6
Nonmedical.....	3.2	3.4	4.1	2.5
Medical.....	4.9	5.9	5.1	2.9

*Identifying the Effects of Structural Change*

Wholesale and retail trade .....	3.0	4.6	3.0	2.3
Rest of world .....	4.3	5.4	10.3	.3
Government .....	2.2	3.3	1.5	1.6
General government .....	2.3	3.3	1.3	1.4
Federal enterprises .....	2.4	3.7	1.3	2.2
Other federal enterprises .....		3.4	1.1	2.0
State and local enterprises .....	.5	2.5	3.6	2.5
Other S&L enterprises .....		1.8	3.7	1.7
Dummy industries .....				
Imports of goods and services .....				
Inventory valuation adjustment ...				
Manufacturing .....	1.7	4.5	3.0	2.7
Durable goods.....	1.0	4.6	3.2	3.1
Lumber .....	-.2	6.3	2.9	3.1
Furniture .....	1.3	3.6	4.0	2.5
Stone, clay and glass .....	1.7	2.9	1.5	2.2
Cement.....		1.4	2.2	1.9
Stone, clay, & gl. excl. cement .		3.0	1.4	2.2
Primary metals .....	-2.6	2.4	-.2	1.3
Iron and steel .....		4.2	-3.3	2.1
Aluminum .....		14.3	.5	1.2
Other nonfer. metals .....		-1.5	5.3	.3
Fabricated metal products .....	2.0	3.9	2.2	2.4
Nonelectrical machinery .....	.0	4.5	5.4	3.5
Electrical machinery.....	5.6	7.2	5.5	2.6
Motor vehicles.....	-.9	8.1	1.5	4.4
Nonauto. trans. eq., & misc.				
manufacturing .....	4.9	2.5	2.3	3.9
Nonauto trans. equip.....	5.9	2.1	2.0	4.6
Aircraft .....		.3	1.0	4.7
Other trans. equip.....		5.7	3.3	4.5
Instruments .....	4.2	5.5	6.0	4.3
Miscellaneous manufacturing ...	2.2	3.7	3.1	1.7
Nondurable goods .....	2.6	4.3	2.7	2.1
Food and beverages.....	2.5	3.2	2.7	2.1
Tobacco .....	1.8	1.5	1.4	1.9
Textiles.....	.7	7.0	1.6	1.9

Apparel.....	1.1	2.7	3.3	2.2
Paper.....	2.2	4.3	2.5	1.8
Printing and publishing .....	3.1	3.4	2.4	1.9
Chemicals.....	5.6	6.9	4.0	2.4
Organic and inorganic .....		6.0	-1.9	1.4
Other .....		7.4	6.0	2.6
Petroleum .....	3.6	3.9	.1	1.2
Rubber.....	2.2	7.0	3.6	3.0
Leather .....	-.7	.3	-.3	1.8
Transportation .....	-.1	3.5	1.8	2.1
Local and highway passenger .....	-5.1	-2.8	-.7	1.5
Motor freight and warehousing .....	5.0	5.5	2.5	2.2
Railroads .....	-2.0	.6	-.9	1.9
Water .....	-2.6	1.2	2.8	.6
Air.....	10.5	11.2	3.2	2.8
Pipeline.....	4.4	6.6	2.5	.6
Transportation services .....	-1.5	1.0	3.5	2.2

TABLE 5A  
Employment  
(Millions, percentage change)

	1951	1961	1971	1981
	1961	1971	1981	1991
All industries .....	.93	1.90	2.38	1.59
Farm.....	-2.540	-4.177	-.077	-.074
Mining .....	-3.187	-.980	6.395	-.016
Manufacturing .....	-.041	1.325	.803	.163
Durable goods .....	-.021	1.606	1.312	.507
Lumber .....	-3.420	.854	-.003	.271
Furniture .....	.287	2.398	.522	.316
Stone, clay and glass .....	-.086	1.028	-.101	-.619
Primary metals .....	-1.709	.627	-.435	-1.404
Fabricated metal products .....	.193	2.281	.734	.090
Nonelectrical machinery .....	-.264	2.496	3.282	1.029
Electrical machinery.....	2.815	1.912	1.835	.739
Motor vehicles .....	-2.862	3.132	-.789	.745
Nonauto trans. equip. & misc. manu. ....	1.999	-.159	1.382	.938
Miscellaneous manufacturing .....	-.707	.852	-.024	-2.073
Nonauto trans. equip.....	3.318	-.581	1.963	1.875
Instruments .....	1.938	1.677	3.918	1.625
Nondurable goods .....	-.066	.964	-.086	-.374

Food and beverages.....	-.268	-.053	-.530	-.626
Tobacco .....	-1.336	-1.657	-.977	-.098
Textiles .....	-3.207	.666	-1.479	-.693
Apparel.....	.068	1.008	-.760	-.738
Paper.....	1.637	1.266	.086	-.870
Printing and publishing .....	1.798	1.656	1.591	-.056
Chemicals .....	1.595	2.011	.917	.122
Petroleum .....	-1.350	-.388	1.051	-.704
Rubber .....	1.161	4.458	2.403	.542
Leather .....	-.589	-1.787	-2.466	-1.135
Regulated industries .....	-.790	1.379	1.426	.558
Transportation.....	-1.675	.692	1.037	.169
Utilities.....	.904	1.275	2.015	.575
Communications .....	.978	3.269	1.930	1.329
Synfuels .....				
Commercial and other .....	2.070	2.406	3.310	2.391
Commercial.....	2.112	3.518	3.453	2.405
Contract construction .....	.812	2.623	1.207	1.953
Finance, insur., real estate .....	3.230	3.446	3.461	2.397
Services .....	3.226	4.468	4.654	3.189
Wholesale and retail trade.....	1.528	3.078	2.960	1.745
Self-employed workers. nonag .....	.836	-1.676	2.910	2.063
Unpaid family workers. nonag.....	5.252	-2.002	-2.873	-1.959
Conceptual diff., hf vs. estab. ....	-6.351	10.554	3.654	.291
Government .....	3.009	4.130	2.207	1.177
Federal .....	-.100	1.694	.278	1.313
State and local.....	4.447	4.896	2.668	1.148

TABLE 5B

Real Output Per Person  
(Thou 1972 dollars/person, % change)

	1951	1961	1971	1981
	1961	1971	1981	1991
All Industries.....	1.8	2.1	.6	1.0
Farm .....	3.8	5.6	2.0	2.3
Mining.....	4.5	4.1	-4.2	.3
Manufacturing.....	1.7	3.1	2.2	2.6
Durable goods .....	1.0	3.0	1.9	2.6
Lumber .....	3.4	5.4	2.9	2.8
Furniture.....	1.0	1.2	3.4	2.2
Stone, clay and glass.....	1.8	1.9	1.6	2.8

Primary metals .....	-2.5	1.8	.2	2.7
Fabricated metal products .....	1.8	1.6	1.5	2.3
Nonelectrical machinery .....	.3	2.0	2.0	2.5
Electrical machinery .....	2.7	5.2	3.6	1.9
Motor vehicles .....	2.1	4.8	2.3	3.6
Nonauto trans. equip. & misc. manu.	2.9	2.7	.9	2.9
Instruments .....	2.2	3.6	2.0	2.6
Nondurable goods .....	2.7	3.3	2.6	2.5
Food and beverage .....	2.8	3.2	3.2	2.7
Tobacco.....	3.2	3.2	2.4	2.0
Textiles .....	4.0	6.3	3.1	2.6
Apparel .....	1.0	1.6	4.1	3.0
Paper .....	.5	3.0	2.4	2.7
Printing and publishing .....	1.3	1.7	.8	2.0
Chemicals .....	3.9	4.8	3.1	2.3
Petroleum.....	5.1	4.3	-.9	1.9
Rubber .....	1.0	2.4	1.1	2.5
Leather .....	-.1	2.2	2.3	3.0
Regulated industries .....	3.4	3.8	2.3	3.2
Transportation .....	1.6	2.4	.7	1.9
Communications .....	5.2	4.6	5.4	4.9
Utilities .....	5.9	4.9	.3	1.0
Commercial and other .....	1.7	1.6	.2	.1
Contract construction .....	2.8	-.4	-2.3	-.2
Finance, insurance & real estate.....	1.6	.8	.6	.6
Services.....	.4	-.4	-.3	-.6
Wholesale and retail trade.....	1.5	1.4	.1	.5
Government .....	-.8	-.5	-.7	.4

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From this analysis it can be seen that there have been structural changes in the industrial composition of output and employment in the American economy and that additional changes of a similar sort are projected for the coming decade, but it is important to note that these changes are generated from a statistical model in which parametric structural change is largely absent. There are many changes in exogenous variables and legal restraints. These, when combined with the dynamics of a system with stable parametric structure, are capable of generating an economy in which industrial composition undergoes a great change — great enough to induce people to invest their funds or supply their services quite differently than in the past.

The input-output configuration of the total model has stable parameters but not fixed ratios of inputs to outputs. These ratios vary accordingly as relative prices vary. High energy prices, changing prices of other basic materials, and wages guided by productivity growth single out certain sectors that are favorably situated for the coming decade within the context of the Wharton model. While the model is stable, as a mathematical-statistical system, it produces a picture of an economy in transition. The transition of the 1970s, to more efficient use of energy, is emerging in the 1980s into an economy that favors certain service and high technology sectors — communications, health care, machinery, and some chemicals.

### **Some international dimensions**

The composition of production has been and is undergoing change throughout the world on much the same basis as is taking place in the United States. The service sectors, high technology sectors, and energy sectors are receiving worldwide attention. These changes have major implications for the developing countries and also for the centrally planned countries, some of which are in a stage of pre- or early industrial development. The figures for world growth in Table 1 show some significant changes in store for the international composition of production.

Almost all sectors of the world economy are in a slow-down pattern in this transitional era. Not only are the industrial countries expected to grow more slowly than in the past, but the same is true of the other main aggregates, the developing and the centrally planned economies. These aggregates mask underlying variances, and there are exceptional cases, but for the most part, the whole world econ-

omy is slowing down. Moreover, there is a changed international composition of growth in prospect, in the form of relatively slower growth for the developing countries and very average growth for the socialist countries. The former will probably grow more slowly than the world average, while the latter will probably grow at about the world average. If the Peoples Republic of China were to be excluded from the calculation of the total for the centrally planned economies, we would find below-average growth performance. This is a very different experience for countries that formerly dominated the average growth statistics.

Consider the problem of the developing countries. They aspire to strong economic performance in order to deliver improving living conditions to their citizens, but they are now restrained by debt burdens and poor export markets. Those that are primarily producers of basic materials have fared poorly since 1973, except for the oil exporters, and even some of the major oil producers are in economic trouble for the duration of this projection. With modest growth being forecast for the industrial countries, it is unlikely that developing countries that are primary producers of materials can expect to have export markets large enough to finance the capital imports that are essential for growth improvement. Among the developing countries, however, are a group known as the "newly industrialized countries" (NIC's). Many of these countries are already gearing up for a thrust in microprocessing, health care delivery system, bio-engineering, and some new agricultural products. They may purchase or license some parts of the technology from major industrial countries, but many are well situated for making their own way in some **particular** niches for these growing industries.

The NIC's have a good chance to grow on a relatively fast track, and some in the Pacific Basin are already doing so, in both the new lines of activity and in more traditional lines such as textiles, apparel, conventional electronics, and plastics. But in order to be competitive in the future and to grow, they will have to try to develop the new technologies. Given their well-educated population, their dedication to productivity, and work ethic, there are good prospects for progress. In some respects, they are lined up more evenly in the competitive effort to gain a foothold in the new sectors than they were in the 1960s and 1970s, when they had to develop the traditional lines in which Japan and other industrial nations were beginning to mature. Now they have a better chance to compete in the world as a whole and

also to participate in the potential expansion of South-South trade, not to mention their home markets. The extent to which developing countries as a group can trade more among themselves, they will increase trade in raw materials and spread some of the grain from the NIC's to the primary producing nations too.



## Commentary

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*Jeffrey Sachs*

Professor Klein has written a thoroughly appealing paper to start off our discussion. The paper is lucid and to the point. In a few pages, Klein summarizes a rich view of the stagflation process and gives us a forecast of the next decade based on that view. Klein's views are particularly cogent when compared to the welter of interpretations that are now coming forward to explain our economic malaise. If Klein's views may be termed eclectic Keynesianism, the major competitor in the public debate might be called "Pogoism," for holding, like the cartoon character, that "we have met the enemy and they is us." Milton Friedman, Martin Feldstein, Robert Lucas and President Reagan all view our economic failings as the result of our own economic policies, rather than of the external shocks and exogenous demographic changes that Klein emphasizes. A third, and more pernicious, view holds that our malaise results from the unfair practices of other countries, particularly Japan. Paul Krugman will make some level-headed remarks about this view in a later paper.

I agree with Klein's assessment that external shocks, demographics, and plain bad luck have had more to do with the stagflation experience than have over-expansionary Keynesian policies, to which the Pogoists point. But since Klein pretty much sticks to his own position without comparing it to other views, we don't really get a good feeling for the evidence one way or the other. In my comments, I will draw on some cross-country data that supports, in broad outline, the position in Klein's paper. Using that evidence, I'll also try to move one step further, to suggest an area where government support of structural change might contribute to enhanced macroeconomic stability.

Since Klein's views are so aptly summarized, I can skip directly to

the competing views of stagflation. In the influential interpretations of Feldstein and Friedman, mistakes in demand management alone account for much of the stagflation in the 1970s. In their view, policymakers pursued expansionary policies out of the mistaken belief in a downward sloping long-run Phillips curve. Higher inflation rather than reduced unemployment resulted. Because of institutional rigidities, such as unindexed tax systems, and because of uncertainties surrounding relative prices in a highly inflationary environment, the argument goes, higher inflation actually reduced potential output growth and led to secular stagnation. In this interpretation, reduced inflation would lead to a higher growth, so that a stable low rate of money growth is seen as a major long-run stimulative measure.

Both Friedman and Feldstein recognize explicitly that the simultaneous increase in inflation and unemployment might result from independent third factors, e.g., the oil shocks as Klein suggests, but both play down that possibility. Feldstein could have had Klein's paper in hand when he wrote:

In trying to identify more basic causes of inflation, it has been common for nonmonetarists to emphasize the series of particular events that were associated with spurts of inflation during the past two decades. There is no doubt that if these events had not occurred or had occurred differently, the path of inflation would also have evolved in a different way. Nevertheless, it would be wrong to put too much emphasis on these specific events. It was not events but *ideas* that propelled the increasing rate of inflation. The upward drift of the inflation rate was the result of a fundamental set of beliefs about the economy and about macroeconomic policy that were shared by economists and policy officials during the past two decades. (Feldstein, 1982)

Lucas added luster to this view by showing how alleged instability in the equations of large macroeconomic models could be explained by the private sector's reactions to the "misguided" macroeconomic policies. His models also contained the comforting thought, explicitly argued by Sargent (1982), that a policy of disinflation could be virtually costless, as long as it was convincingly applied and widely advertised. According to Lucas and Sargent, cost calculations based on *historical* experience were next to useless because of the likelihood of instability in wage and price behavior in response to policy shifts.

**Some evidence**

There is now a wide array of evidence in support of Klein's eclectic approach, and against the Friedman-Feldstein-Lucas critique. The recent U.S. data directly belies the more radical assumptions of the Lucas-Sargent rational expectations models. Not only has the disinflation been costly, but the costs have turned out to be almost exactly what a mainstream Phillips-curve approach would have predicted! Wage-price dynamics display great stability in recent years.<sup>1</sup>

Other aspects of the critique are also hard to maintain in the U.S. data. As **Bosworth's** paper will demonstrate, the interactions of inflation and unindexed taxes do not explain much if any of the growth slowdown in the U.S.; and indeed, that hypothesis raises more questions than it answers. For example, pre-tax rates of return to capital have declined, not risen, as the capital shortage hypothesis would hold. Also, Stanley Fischer has largely debunked Milton Friedman's assertion that high inflation has led to greater variability of prices and, thereby, to reduced growth. Fischer shows that the correlation of inflation and price variability is mostly spurious, since the oil shocks of 1974 and 1979 account for almost all of the increased price variability in U.S. data, and for much of the rise in inflation in the 1970s. Once the oil price shocks are included in a regression of GNP on price variability, the latter term loses its explanatory power.

In international data, Klein's position is similarly vindicated. The Friedman-Feldstein view suggests that inflation control is the key to avoiding stagnation, but the international experience refutes this claim. All 24 countries in the OECD experienced a slowdown in real GNP growth after 1973, and the magnitude of that slowdown is not clearly related to any acceleration in inflation. Switzerland, for example, experienced a huge slowdown in growth with no rise in average inflation after 1973. As a simple check of the inflation-stagnation hypothesis, I have compared, for all OECD countries, the rise in inflation after 1973 with the slowdown in growth after 1973, find-

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1. Gordon (1983) estimates a quarterly Phillips curve equation by regressing current inflation on a distributed lag of past inflation, a demographically weighted unemployment rate, and supply variables (e.g., food and oil prices). The equation is estimated through the end of 1980. He finds the following out-of-sample behavior:

	<u>Four quarters of 1981</u>	<u>Four quarters of 1982</u>
Actual inflation	8.5	4.9
Predicted inflation	7.5	5.1
Equation error	1.0	- 0.2

ing that high-inflation countries did no worse than low-inflation countries in growth performance.<sup>2</sup>

FIGURE 1. Slowdown in GNP growth.

		Larger than Median	Less than Median
Rise in Inflation	Larger than Median	5	7
	Less than Median	6	6

In fact, controlling for country characteristics, I have found a clear Phillips curve in the data: slower growth on a cross-country basis was necessary to achieve a larger slowdown in inflation.

Finally, there is little support for the view that **variability** in money growth has been particularly harmful. In a recent study, Milton Friedman (1983) has presented the following standard deviations of quarterly money growth for 1973-1980 ( $M1$ , at annual rates):

Canada	7.86
France	4.76
Germany	6.47
Italy	8.88
Japan	7.73
Switzerland	10.26
United Kingdom	10.09
United States ( $M1/A$ )	2.86

There is no obvious ranking between macroeconomic success and variability of money growth. The U.S. stands as the outstanding case of monetary stability by Friedman's measure, but a mediocre performer on most macroeconomic measures. In the low-inflation countries of Germany, Japan, and Switzerland, the monetary authorities understand that price stability may require accommodation of money demand shocks rather than a simplistic adherence to a money growth rule.

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2. The rise in inflation is measured as the average **annual growth** of the consumer price index during 1973-1981 ( $P_{73-81}$ ), minus the rate for 1960-73 ( $P_{60-73}$ ). The GNP slowdown is measured as  $\dot{Y}_{60-73} - \dot{Y}_{73-81}$ , where  $Y$  is real GNP.

### Implications of the cross-country experience

Though I endorse Klein's basic position that common worldwide shocks were decisive for the 1970s, I do not endorse his analysis at every point. His view, for instance, that the energy shocks explain the bulk of the productivity slowdown has found little support in formal econometric analysis.

Perhaps more important, his diagnosis of stagflation suggests little in the way of treatment. While he correctly counsels prudence in macroeconomic management, and offers some hope that inflation expectations and demographic changes are now moving in our favor, he offers few structural remedies for the continuing global slump. It is in this area that the cross-country experience offers particular guidance.

At a fundamental level, successful macroeconomic performance in the past decade has required a *social consensus* on sharing the burdens of slower growth and higher real import costs. In countries with a tradition of consensual wage bargaining and low strike activity, such as Austria, Norway, and Sweden, the social consensus has been most easily achieved and stagflation has been modest, if present at all. In economies with fractious labor markets, such as Australia, France, Italy, and the U.K., the absence of consensus has led to particularly virulent stagflation. Using objective indicators of wage-bargaining relations, I have shown in a recent study (Sachs, 1983) that consensual systems (often called "corporatist" systems) outperformed the others on key macroeconomic variables. Figure 2 is reproduced from that study. Macroeconomic deterioration is measured as the post-'73 rise in inflation plus the post-'73 slowdown in growth (the sum is called the change in the "misery index,"  $\Delta MI$ ).<sup>3</sup> We can see in the figure a clear link between low corporatism and high "misery" on a cross-national basis.<sup>4</sup>

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$$3. \Delta MI = (\dot{P}_{73-81} - \dot{P}_{60-73}) + (\dot{Y}_{60-73} - \dot{Y}_{73-81}).$$

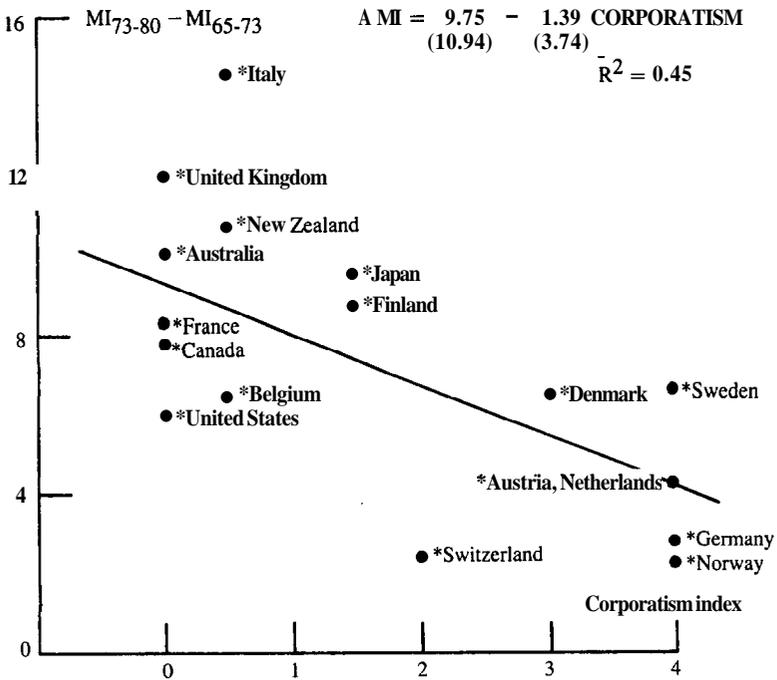
4. There is a second structural characteristic of great importance, on which the U.S. ranks very high. Countries like the U.S., with low indexation and long-term wage agreements, were able to achieve necessary real-wage moderation more easily than others. Using objective indicators of contract length and indexation, I have created an index of "nominal wage rigidity" (NWR). Both the corporatism and NWR indices are important in explaining  $\Delta MI$ :

$$\Delta MI = 6.43 + 0.93 \text{ NWR} - 1.53 \text{ CORPORATISM} \quad \bar{R}^2 = 0.64$$

(4.83)      (2.97)      (4.99)

Policies to encourage a national consensus on distributional norms might therefore offer a structural change of immense importance. The German "concerted action" policies, or Austrian tripartite bargaining, seem like promising models on which to build a sounder macroeconomic structure. I hope that we turn to these possibilities for positive structural change later in our discussion.

FIGURE 2



Source: Sachs (1983), p. 17

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# Changes in U.S. Industrial Structure: The Role of Global Forces, Secular Trends and Transitory Cycles

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*Robert Z. Lawrence*

## **Introduction**

For the first time in postwar history, employment in U.S. manufacturing has fallen for three consecutive years. The 10.4 percent decline in the number of workers in U.S. manufacturing from 1979 to 1982 is the largest since the wartime economy was demobilized between 1943 and 1946. The current slump is also unusual because international trade has made an important contribution: normally the volume of manufactured goods imports falls steeply in a recession — yet from 1980 to 1982, it rose by 8.3 percent; normally U.S. manufactured exports reflect growth in export markets abroad — yet despite a 5.3 percent rise in these markets from 1980 to 1982, the volume of U.S. manufactured exports dropped 17.5 percent.

Are these developments the predictable consequences of three years of demand restraint and a strong dollar, or do they result from deep-rooted structural changes?

There are widely held views that the recession has simply dramatized a secular decline in the U.S. industrial base. One of these views blames U.S. producers for the trend. Americans fail to produce quality goods because managers are myopic and care only about short-term profits, workers lack discipline and are shackled by work rules, and labor and management look on one another as adversaries. Others blame the U.S. government. On the one hand are those who fault it for excessive interference — for restrictive regulatory practices

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which have raised production costs, for faulty tax rules which have discouraged investment, savings, and innovation, and for trade protection, which has slowed adjustment to international competition. On the other hand are those who blame government neglect. The U.S. has failed to plan and coordinate its industrial evolution. It ought to have policies to promote industries with potential and to assist those in decline. Finally, there is also the more fatalistic view of the decline in U.S. manufacturing as the inevitable result of the rapid international diffusion of U.S. technology.

While some argue that particular U.S. deficiencies have become worse over time, others point to changes in the environment which have made U.S. structural flaws increasingly costly. As long as competition was primarily domestic, U.S. weaknesses were obscured. As global trade expanded, however, U.S. firms were forced to meet foreign competitors staffed with superior workforces and managers and backed by superior government policies.

Even before the recession and the recent decline in the U.S. manufactured goods trade balance, the erosion of the U.S. international competitiveness had become a national obsession. As an award-winning article in *Business Week* observed in 1980, "U.S. industry's loss of competitiveness has been nothing short of an economic disaster."

The perceived effect of international competition has now grown to the point that it is frequently cited as the major source of structural change in the U.S. economy and the primary reason for the declining share of manufacturing in U.S. employment. This shift of U.S. production away from manufacturing is viewed with some alarm, both because manufacturing activity is considered intrinsically desirable and because of the adjustment costs associated with the shift. In addition, some argue that this decline in comparative advantage does not result from an inevitable process of technological diffusion or from changes in factors of production, but rather from the industrial and trade policies adopted by other nations. Without similar policies, some contend that the United States will eventually become an economy specialized in farm products and services — "a nation of hamburger stands."

Yet, while the role of the deficiencies in U.S. policies and practices in retarding U.S. productivity growth over the past decade remains unresolved, the links between these deficiencies, U.S. trade performance and shifts in our economic structure have not been con-

vincingly demonstrated.

There are several implicit assumptions in the current discussion about U.S. industrial performance that I will show to be inappropriate. First, the policy discussion often presumes that rapid productivity growth will increase the share of resources devoted to an activity, that "higher productivity will create jobs." It assumes implicitly the existence of elastic demand. As the experience of U.S. agriculture has demonstrated, however, rapid productivity growth in the face of limited markets may have the opposite effect. Indeed, as I will indicate, the declining employment in Japanese manufacturing in the 1970s and the contrasting rise in U.S. employment suggests manufacturing productivity and employment were negatively associated.

Second, the discussion presumes that a decline in international technological lead in a particular area will reduce the resources devoted to that activity. It assumes implicitly that an erosion in absolute advantage will lead to an erosion in *comparative* advantage. Yet, as I will show below, even though foreign productive capacities are converging to those of the United States, the U.S. comparative advantage in high technology products has actually increased.

Third, the discussion presumes implicitly that the trade balance can decline indefinitely. It ignores the automatic adjustment mechanisms that tend to keep the trade balance in goods and services within fairly narrow bounds. An increase in imports eventually leads to an increase in exports. When global demand shifts away from U.S. products, it creates an excess supply of American goods and an excess demand for foreign goods. Since the relative price of U.S. goods may have to fall to restore the trade balance, this will *increase* the resources developed to export production, for a decline in the terms of trade entails providing more exports for any given volume of imports. Indeed, as I will argue below, the decline in U.S. terms of trade associated with the real devaluations of the dollar between 1973 and 1980 contributed to the rise in U.S. employment due to trade over that time period.

Fourth, international trade is neither the only nor the most important source of structural change. And, as I will demonstrate, in many cases trade has simply reinforced the effects of demand and technological change. At least five factors have had important effects on the U.S. industrial base. First, the share of manufactured products in consumer spending has declined secularly because of the pattern of demand associated with rising U.S. income levels. Second, some of

the long-run decline in the share of manufacturing in total employment reflects the relatively more rapid productivity growth in this sector. Third, because the demand for manufactured goods is highly sensitive to the overall growth rate of GNP, manufacturing production has been slowed disproportionately by the sluggish overall economic growth in the global economy since 1973. Fourth, shifts in the pattern of U.S. international specialization have arisen from changes in comparative advantage that, in turn, result from changes in relative factor endowments and production capabilities associated with foreign economic growth and policies. And fifth, short-run changes in U.S. international competitiveness have come from changes in exchange rates and cyclical conditions both at home and abroad.

The appropriate choice of policy depends crucially on the relative impacts of these various factors on current U.S. industrial performance. If the slow rate of U.S. industrial growth is the inevitable result of economic development, changes in international comparative advantage, or the post-1973 world economic malaise, policies to assist in the allocation of U.S. resources away from industry may be required. If foreign trade and industrial policies are the reason, the United States may try to change the trade system or its own behavior within it. If exchange rate changes are important, factors such as the monetary-fiscal policy mix or exchange rate intervention policies might merit attention. If transitory cyclical forces are the cause, there might be no need for a new industrial policy, but rather, a change in macroeconomic policies or an acknowledgement that the slump brought about by current policies is the unavoidable cost of reducing inflation.

Given the radical changes in the world economy after 1973, the period from 1973 to 1980 is the most relevant sample for current policy discussions. The data for this period measure performance in the new international environment that is marked by stagnation, volatile exchange rates, and increasing government intervention in trade; and it is during this period, it is alleged, that foreign industrial policies have damaged the U.S. manufacturing base. The data for this period also allow a comparison of U.S. industrial performance with those of other major industrial countries in a period in which comparative performance is less heavily influenced by relative stages of development.

**Observations** for the 1973-80 period, however, may be unduly influenced by the different cyclical positions prevailing in the end-

point years. Because capacity utilization in manufacturing was similar in 1970 and 1980, U.S. data for the entire decade are used to provide a second, cyclically neutral, measure of structural changes.<sup>1</sup> Observations for 1970-80 are still influenced by changes in the real exchange rate of the dollar in these years. As measured by the International Monetary Fund, relative U.S. export prices for manufactured goods were 13.5 percent lower in 1980 than in 1970. In evaluating the results, therefore, it should be kept in mind that the U.S. trade performance during the 1970s depended in part upon this price-adjustment process.

In this paper I analyze the changing role of manufacturing in the U.S. economy and structural change within U.S. manufacturing. Section I reviews the growth of inputs and outputs in U.S. manufacturing and the myth that the U.S. has been deindustrializing. Section II compares U.S. industrial performance over the 1970s with that of other major industrial nations. Section III examines the impact of trade upon U.S. manufacturing employment over the periods 1970-80 and 1980-82. Section IV measures the extent of structural change within U.S. industry and analyzes some of its determinants. And Section V presents some conclusions and implications for policy.

### The myth of U.S. deindustrialization

The contention that declining U.S. international competitiveness has induced the deindustrialization of America is wrong on two counts. First, in the most relevant sense, the United States has not **been undergoing** a process of deindustrialization; and second, over the period 1973 to 1980; the net impact of international competition on the overall size of the U.S. manufacturing sector has been small and positive.

The term "deindustrialization" requires further elaboration for precise communication. First, what is industry? Does it, for **example**, include the construction and mining sectors or refer more narrowly, as we will interpret it here (partly for reasons of data availability), to the manufacturing sector alone? Second, does "deindustrialization" refer to a drop in the **output** of industry, or to the **inputs** (e.g., capital **and/or** labor) devoted to industry? And third, does "deindustrialization" refer to an **absolute** decline in the volume

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1. Capacity utilization in U.S. manufacturing, measured by the index of the Federal Reserve Board, was 79.3 percent in 1970 and 79.1 percent in 1980.

of output from (or inputs to) manufacturing, or simply a *relative* decline in the growth of manufacturing outputs or inputs as compared to outputs or inputs in the rest of the economy?

Since industrial policy is generally concerned with facilitating adjustment, absolute deindustrialization with respect to factors of production would probably be the definition appropriate to current policy concerns about the manufacturing sector as a whole. While a declining *share* of output or employment could change the relative power of industrial workers, or the character of a society, an absolute decline in industrial employment entails much greater adjustment difficulties. Absolute deindustrialization at rates in excess of normal voluntary quits by workers and depreciation of capital requires the reallocation of workers and capital to alternative sectors in the economy with all of the attendant costs associated with such dislocations. Relative deindustrialization, on the other hand, is far less costly to accomplish, for it may entail simply devoting less resources to manufacturing in the **future**.<sup>2</sup>

As indicated in Table 1, these distinctions are relevant for characterizing U.S. deindustrialization:

Measured by the size of its manufacturing labor force, capital stock and output growth, the U.S. has not experienced absolute deindustrialization over either 1950-73 or 1973-80. Employment in U.S. manufacturing increased from 15.2 million in 1950 to 16.8 million in 1960, 19.4 million in 1970, 20.1 million in 1973 and 20.3 million in 1980.<sup>3</sup> The capital stock in manufacturing grew at an annual rate of 3.3 percent from 1960 to 1973, and 4.5 percent between 1973 and 1980. And output in manufacturing increased at a 3.9 percent annual rate between 1960 and 1973, and a 1.1 percent annual rate from 1973 to 1980.

Judged by the output share of goods, the United States was virtually no more a service economy in 1980 than it was in 1960. In 1960, 1973, and 1980 the ratio of goods to GNP measured in 1972 dollars was 45.6, 45.6, and 45.3 percent respectively. Similarly, the ratio of value added to manufacturing (in 1972 dollars) was actually somewhat higher in 1973 than it was in 1950. Nonetheless, from 1950 to

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2. Of course, as we will show later in this study, absolute declines of employment in individual industries may entail considerable adjustment difficulties, even when offset elsewhere by employment gains in other manufacturing industries.

3. By contrast, the nation has experienced an absolute decline in agricultural employment from 8.6 million in 1945 to 3.3 million in 1980.

1973, the *shares* of expenditure, employment, capital stock, and R&D devoted to the manufacturing sector declined. Factors on both the demand and the supply side account for manufacturing's diminishing share. As incomes have risen, Americans have allocated increasing shares of their budgets to items in the service sector such as **government** services, education, medical care, finance, and real estate services. At the same time, productivity in manufacturing has increased more rapidly than elsewhere in the economy. Although the **more** rapid growth in manufacturing productivity has resulted in slower increases in manufacturing prices, the demand stimulated by the relative decline of manufacturing goods prices has not been sufficient to offset the fall in the share of resources devoted to value added in manufacturing. As a result, overall real industrial output has

TABLE 1  
Share and Size of U.S. Manufacturing Sector

	Total						Shares			
	GNP (1)	IPMAN (2)	EMP (3)	EMPMAN (4)	NCAP (5)	NCAPMAN (6)	Real out- put	Em- ploy- ment	Cap- ital	Expen- diture*
1950	535	131	42.50	15.24	n.a.	n.a.	24.5	35.9	n.a.	29.2
1960	737	172	54.19	16.80	543.2	104.4	23.3	31.0	25.8	28.4
1965	939	237	60.77	18.06	662.9	158.1	25.5	29.7	23.8	28.6
1970	1086	261	70.88	19.37	860.1	202.2	24.0	27.3	23.5	25.4
1973	1255	325	76.79	20.15	971.1	215.3	25.9	26.2	22.2	24.5
1975	1232	290	76.94	18.32	1033.7	232.7	23.5	23.8	22.5	23.1
1979	1479	367	89.82	21.04	1184.6	275.1	24.8	23.4	23.2	23.3
1980	1474	351	90.56	20.3	1226.3	293.6	23.7	22.4	23.9	22.1
1981	1503	359	91.54	20.2	1268.5	311.8	23.7	22.1	24.6	21.9
1982	1477	338	89.62	18.9	n.a.	n.a.	22.9	21.1	n.a.	20.7

Sources: National Income Accounts: Bureau of Economic Analysis; *Employment and Earnings* Bureau of Labor Statistics (March 1972); *Statistical Abstract of the United States*, 1981, U.S. Department of Census, 1981, p. 562; and *Survey of Current Business*, October 1982.

GNP = GNP (in billions of 1972 dollars)

IPMAN = Value-added in manufacturing (in billions of 1972 dollars)

EMP = Employees on nonagricultural payrolls (in millions)

EMPMAN = Employees in nonagricultural payrolls, manufacturing (in millions)

NCAP = Net fixed nonresidential business capital (in billions of 1972 dollars)

NCAPMAN = Net fixed nonresidential business capital in manufacturing (in billions of 1972 dollars)

\* = Ratio of GNP to value-added in manufacturing in current dollars

risen about as rapidly as GNP, but the share of employment and capital in manufactured goods has declined.\*

From 1973 to 1982, there was a marked acceleration in the rate at which the share of manufacturing in output and employment has declined. But this should have been expected, given the slow overall growth in GNP and the fact that labor productivity growth (output per man-hour) fell less in manufacturing than in the rest of the economy. (See Table 2.) The demand for manufacturing output is particularly sensitive to fluctuations in income. The demand for goods, particularly durables, is inherently more sensitive to short-run income fluctuations than the demand for services because many such purchases

TABLE 2

Bureau of Labor Statistics Estimates of Average **Annual** Rates of Growth in Output Per Hour, the Contribution of Capital Services per Hour and Multifactor Productivity **1948 to 1980\***

	(1) <b>1968</b> to <b>1973</b>	(2) <b>1973</b> to <b>1980</b>	(3) Slow down (1)–(2)
Private Nonfarm Business			
Output per hour	2.5	0.5	– 2.0
Minus:-Contribution on capital services per hour†	0.8	0.5	– 0.3
Equals: Multifactor productivity\$	1.7	0	– 1.7
Manufacturing: Output per hour of all persons	2.9	1.3	– 1.6
Minus: Contribution of capital services‡	0.7	1.0	+ 0.3
Equals: Multifactor‡ productivity	2.2	0.3	– 1.9

Source: United States Bureau of Labor Statistics USDL-83-153

\* Average annual rates leased on compound rate formula.

† Change in capital per unit of labor weighted by capital share of total output.

‡ Output per unit of combined labor and capital input.

4. There are two measures of manufactured output which provide somewhat different growth rates. The industrial production index of the Federal Reserve Board consistently suggests more rapid increases than the deflated value of manufactured goods output in the GNP accounts.



decline in productivity growth in manufacturing since 1973, given rates of output growth are now associated with somewhat higher rates of employment and capital growth. A regression analysis indicates that, taking manufacturing output as given, manufacturing employment growth has been about 1.36 percent per year higher than it would have been in the absence of the decline in manufacturing productivity. Thus employment has actually held up better than might have been anticipated from past relationships.

Probably the most commonly provided reason for poor U.S. manufacturing performance is the failure of U.S. business to invest in new plant and equipment. Yet, while there has been a marked decline in the growth of the capital-labor ratio in the economy overall since 1973, the measured growth of the net capital stock in manufacturing has been remarkably rapid. (Compare the contribution of capital services to productivity in manufacturing before and after 1973 as reported in Table 2.) Although the ratio of the net capital stock to full time equivalent employees in manufacturing grew at about 2.03 percent per year from 1950 to 1973, it grew at 3.8 percent per year from 1974 to 1980. There is therefore support for the view that automation has accelerated. And, while historically the ratio of the net capital stock in U.S. manufacturing to the net stock in the rest of the economy declined (from 0.30 in the 1950s to 0.26 in the 1960s to 0.237 in 1973), since 1973 the capital stock in manufacturing has actually grown more rapidly than in the rest of the private economy. (See Table 1.)

In the 1970s, there has been a much publicized decline in the growth of real R&D expenditures.<sup>7</sup> While real R&D spending increased 3.1 percent per year from 1960 to 1973, it fell to a 2.5 percent annual growth rate from 1973 to 1980. But this decline does not reflect a similar drop in real R&D spending in U.S. industry. Between 1960 and 1972 spending in manufacturing grew 1.9 percent per year. From 1972 to 1979 (the latest data available), it accelerated to 2.4 percent. A similar pattern is evident in industry hirings. While the number of scientists and engineers employed in industry R&D grew at 1.6 percent between 1960 and 1973, from 1973 to 1980

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7. The decline in U.S. growth of R&D spending as a share of GNP was a reflection of the very slow increase in government-financed R&D. Civilian R&D has grown from 1.2 percent of GNP in 1961 to 1.43 percent in 1973 and 1.63 percent in 1980. Source: Science Indicators, Appendix Table 1-4.

growth averaged **3.2** percent per year.<sup>8</sup>

The increased commitment of plant, equipment, and **R&D** expenditures makes the decline in productivity growth in U.S. manufacturing since 1973 particularly puzzling. One question is whether the capital stock is accurately measured. One reason for **mismeasurement** could be an increase in capital and **R&D** devoted to meeting regulatory requirements such as safety and pollution, which do not show up as output. Subtracting Commerce Department estimates of the net capital stock devoted to reducing air and water pollution from the net capital stock in manufacturing lowers the growth in manufacturing capital from 4.5 to 4.2 percent per year.<sup>9</sup> A second reason might be the premature retirement of capital, which has become economically obsolete in changed economic conditions.<sup>10</sup>

Nonetheless, as these data make clear, there has not been an erosion in the U.S. industrial base. The decline in employment shares have been the predictable result of slow demand and relatively more rapid labor productivity growth in manufacturing because of an acceleration in capital formation. Paradoxically, the slow absolute growth in productivity has required unpredictably large increases in employment plant and equipment and **R&D**.

### **The myth of inferior U.S. international comparative performance**

A comparison of the performance of U.S. manufacturing with that of other major industrial countries should be useful for separating the problems that are shared by other countries, and are therefore reflective of broader global forces, from those unique to the United States. A comparison might also assist in gauging comparative U.S. strengths and weaknesses. Proponents of a radical change in industrial policies contrast the *ad hoc* and *laissez-faire* policies of the United States with the systematic, interventionist practices abroad. While conceding that there are marked differences in the degree to which foreign practices have succeeded, they argue that the conscious policy of managing the decline of older industries and the rise of new industries has been superior to the U.S. approach, which has

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8. All these data are taken from Science Indicators 1980.

9. See Survey of Current Business, November 1982.

10. See, for example, Martin Neil Bailly, "Productivity and the Services of Capital and Labor," Brookings Papers on Economic Activity (1981:1), pp. 1-67.

been marked by malign neglect. Similarly, the broader provision of social services in European economies, the more extensive rights to their jobs enjoyed by workers, and the greater restrictions on plant closings have all been held up as worthy of emulation. On the other hand, opponents of such policies argue that they will delay adjustment, for the government is most likely to be captured by forces seeking to preserve the status quo, and strictures on mobility are likely to retard adaptation.

It is particularly important that international comparisons be made on the basis of performance since 1973, for policies that enjoyed success in an environment of strong global growth and economic expansion might not be appropriate for the current era of stagnation.

The 1972-74 commodity boom and the inflation that accompanied it ushered in a new era. All developed countries have been plagued by low rates of investment, slow growth, and inflation. The problems associated with high inflation and energy shocks have destroyed the confidence of investors. They have learned from their experiences in 1973 (and again in 1979) that at any time a political disruption in the Middle East or a sudden increase in domestic inflation may force their governments to adopt policies that bring on a recession, leaving them with excess capacity. As reported in Table 3 the rate of investment has slumped, the growth of the heavy manufactured industries has been cut, and consumption expenditures have risen as a share of GDP. Industries with long gestation periods for investment, such as steel and shipbuilding, have been particularly hard hit by the post-1973 slump. There is insufficient demand for the products of plants that were built on the basis of overoptimistic projections of market growth in the late 1960s.

By a wide variety of indicators, the relative performance of U.S. manufacturing since 1973 has improved. The declines in the growth of manufacturing production, productivity growth, employment, and investment in manufacturing were all smaller in the U.S. than in other industrial nations. In Table 3, I report rates of growth for GNP and manufacturing production in the major industrial economies. While U.S. growth was among the slowest prior to 1973, since that time U.S. growth has been quite typical for a developed country." From 1973 to 1980, the overall increase in U.S. GDP of 17.3 percent

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11. In fact, according to United Nations data, North American industrial production from 1973 to 1980 grew as rapidly as that in all market economies.

TABLE 3  
Real Growth of Output and Trade in Market Economies, 1960-1979  
(1975 prices - average annual rates of change\*)

	Gross domestic product	Government final consumption expenditures	Gross fixed capital formation	Private final consumption expenditures	Exports	Imports	Manufacturing			Manufactured goods traded <sup>b</sup>	
							Total manu- facturing	Heavy manu- facturing	Light manu- facturing	Exports	Imports
Developed countries											
1960-1973	5.0	3.8	6.0	4.9	8.0	8.5	6.0	6.7	4.6	10.9	12.4
1973-1978	2.5	2.8	1.3	3.1	5.3	3.4	2.1'	2.3'	1.6 <sup>c</sup>	2.8'	2.1'
Developing countries											
1960-1973	6.1	6.9	7.5	5.0	7.7	5.9	6.9	5.9	8.2	10.1	5.3
1973-1978	5.2	9.1	10.8	4.6	2.3	10.5	4.9'	5.6'	4.0'	6.7 <sup>c</sup>	6.2'
United States <sup>d</sup>											
1960-1973	4.1	2.8	4.5	4.2	6.7	7.6	5.3'	5.7'	4.2'	6.4	8.7
1973-1979	2.7	2.1	0.7	3.1	4.0	3.6	3.4	3.4	3.3	5.8	4.8
Japan <sup>f</sup>											
1960-1973	10.4	5.8	14.4	9.4	13.7	14.3	N.A.	N.A.	N.A.	16.4	17.3
1973-1979	3.7	4.5	2.1	3.5	10.1	4.3	N.A.	N.A.	N.A.	8.2	4.1
OECD - Europe <sup>g</sup>											
1960-1973	4.8	4.1	2.8	4.8	8.0	8.5	5.5'	6.2'	4.4'	12.1	14.2
1973-1979	2.5	3.2	3.2	2.7	5.0	4.3	2.0	1.6	1.5	4.7	6.0

Sources. *National Accounts, 1951-1980*, Vol. 1, OECD, *UN Yearbook of Industrial Statistics*, 1977, 1980 editions, *International Economic Indicators*, March 1981, U.S. Department of Commerce; *UN Monthly Bulletin of Statistics*, March 1977, March 1983, *UN Statistical Yearbook, 1979-1980*; *International Financial Statistics*, Statistical Yearbook, 1982, and *International Trade*, 1960, 1980/181, GATT.

N.A. Not available.

a. Rates of change compounded annually.

b. Estimated using the U.N. manufactured goods export unit value index.

c. 1973-1979.

d. Available data for manufacturing production include Canada.

e. 1962-1973.

f. Revision of Japanese data may make years before 1965 incomparable.

g. Available data for manufacturing production and manufactured goods trade are for European community.

was about the same as that in the rest of the developed countries (up 19.1 percent in the OECD), and U.S. manufacturing production grew at about the same rate as that in the OECD as a whole (13.0 vs. 12.8). Although trailing behind that of Japan, U.S. industrial production grew more rapidly than in Germany, France, or the United Kingdom.

It is in Europe rather than in the United States that employment is undergoing absolute deindustrialization. Compared with historical trends, industrial production in Japan was abnormally strong while industrial production in Europe was unusually weak. Regressions relating industrial production to GNP in European countries from 1960 to 1973 substantially overpredict the level of industrial production in 1980. In the case of Japan, they underpredict industrial production (by 12 percent in 1980).

In Table 5, I report growth rates in industrial output for several industries:

With the exception of basic metals, U.S. output growth from 1973 to 1980 for food, textiles, apparel, chemicals, glass, and fabricated metals products was more rapid than that of either Germany or Japan. Although U.S. growth lagged behind Japan in the various engineering categories, it trailed German growth only in basic metals production and transportation equipment.<sup>12</sup>

**Employment.** The employment record of the U.S. manufacturing sector may come as an even greater surprise to those concerned about U.S. deindustrialization: From 1973 to 1980, the United States increased its employment in manufacturing more rapidly than any other major industrial country including Japan. (See Table 6.)

Moreover, since, as indicated in Table 6, the average workweek declined more rapidly abroad, the relatively larger growth in U.S. manufacturing employment is even more conspicuous. A comparison between U.S. and Japanese employment growth indicates that from 1973 to 1980, Japanese employment in sectors such as transportation, electrical machinery, iron and steel, non-electrical machinery, chemicals, and nonferrous metals grew less rapidly or declined more than that in the United States (Table 7).

As the case of Japan makes clear, in the current global environ-

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12. 1980 was a recession year in the United States. Comparisons over the period from 1973 to 1979 show U.S. non-electrical growth of 24.2 percent was considerably faster than the 18.7 percent rise recorded in Japan.

ment of relatively slow growth in demand, rapid increases in output do not necessarily increase employment. Indeed, compared with the United States, the faster increases in Japanese productivity have entailed the more rapid process of labor-force deindustrialization. In the case of Europe, **employment** opportunities in manufacturing have decreased because faster productivity growth has been combined with relatively slower growth in output.

**Capital formation.** In Table 8, I contrast data for gross fixed investment in manufacturing in the United States with that in industrialized European countries.

The sluggish growth of such investment in Europe is apparent; only in France was it above its 1970 levels in 1979. Compare the ratios of European investment in manufacturing to overall gross fixed investment in those countries: In contrast to the United States, most of the European economies are allocating proportionately less of their new capital formation to industrial production than they did in 1970.

Just as an automobile may be decelerating and yet going faster than another, so one country may have a declining growth rate for investment with a capital stock growing at a relatively faster rate. Thus capital stock measures are required. In Table 9, I report such estimates gathered by the United Nations. They indicate that in contrast to its previous performance, the U.S. capital stock in manufacturing grew as rapidly as those in Europe.

TABLE 4  
Growth in Gross Domestic Product and Manufacturing Production  
in Major Industrial Economies  
(1960-1980, average annual rates of change)\*

Country	Gross Domestic Product <sup>†</sup>		Manufacturing production <sup>‡</sup>	
	1960-1973	1973-1980	1960-1973	1973-1980
United States	4.0	2.3	5.4	1.8
Germany	4.5	2.3	5.2	1.1
France	5.6	2.8	5.0	1.3
Japan	9.2	3.8	12.5	2.9
United Kingdom	3.1	0.9	3.0	-2.2
OECD	5.0	2.5	6.0	1.7

Sources: *National Accounts, 1951-1980*, Vol. 1, OECD; *Main Economic Indicators — Historical Statistical, 1960-1979*, OECD; and *Indicators of Industrial Activity, 1982-IV*, OECD.

\* Rates are annually compounded.

† GDP data calculated at the 1975 price level.

‡ Industrial production index for manufacturing, 1975 = 100.

**TABLE 5**  
Growth in Industrial Output — Selected Developed Economies

		United States	Japan	Germany	OECD Europe	OECD total
Textiles	63/73	2.7	5.7	1.5	1.7	2.6
	73/80	-0.3	-1.6	-1.7	-1.1	-0.7
Chemicals	63/73	7.9	13.7	9.0	8.8	8.9
	73/80	4.0	2.4	1.4	1.7	2.7
Basic metals	63/73	4.2	14.2	4.8	4.9	5.6
	73/80	-2.9	1.0	-0.7	-0.3	-0.9
Iron and steel	63/73	3.7	14.5	4.9	4.2	5.4
	73/80	-3.9	-0.7	-1.5	-1.4	-1.7
Nonferrous metal	63/73	5.3	13.2	5.8	4.7	6.2
	73/80	-1.6	31.5	1.8	0.9	-0.3
Metal products	63/73	5.4	14.9	4.7	3.7	6.1
	73/80	1.0	-0.1	0.8	0.1	0.5
Non-elec. machinery	63/73	7.0	14.3	3.5	3.4	6.8
	73/80	2.9	3.2	1.8	1.9	2.7
Elec. machinery	63/73	6.5	18.1	8.5	6.8	7.9
	73/80	2.8	8.2	1.9	1.8	3.5
Transp. equipment	63/73	4.6	18.0	5.9	4.6	6.3
	73/80	-0.1	3.5	1.4	1.1	1.2
Professional	63/73	7.4	8.7	4.5	n.a.	n.a.
Scientific equipment	63/73	3.1	19.5	1.1	...	...

Source: OECD *Industrial Production*, various issues.

### **Research and development**

Since 1972, the United States has maintained its share in R&D spending among industrial countries, reversing the relative decline in U.S. spending that occurred in the late 1960s and early 1970s, when government-funded R&D was cut back while R&D spending in other major countries advanced rapidly. From 1972 to 1980, the growth in business-funded R&D in the United States has been similar to that of France, Germany, and Japan; and while government-funded R&D in the U.S. has not grown at the Japanese pace, it has exceeded the rise in support provided by the governments of France, Germany, and the United Kingdom.<sup>13</sup>

13. See Rolf Piekartz, Eleanor Thomas, and Donna Jennings, "International Comparisons of Research and Development Expenditures," National Science Foundation (mimeo), 1982.

According to estimates made by the OECD by a wide variety of indicators the U.S. continues to dominate other industrial countries in its commitment to R&D. In 1977, for example, spending on R&D in U.S. manufacturing was equal to about 6.5 percent of the domestic U.S. industrial output. By contrast, spending on manufacturing R&D in Japan, the United Kingdom, and Germany amounted to 3.7, 5, and 4.0 percent of the industrial output. Indeed, privately funded U.S. R&D alone was equal to 4.4 percent of manufacturing product. In absolute terms in 1979, measured at purchasing power parity levels, the U.S. spent about 1.5 times as much as Japan, Germany, France, and the United Kingdom combined and employed about 1.3 times as many scientists and engineers. By contrast, in 1979 manufacturing employment in these countries was 1.5 times that in the U.S. The OECD has also ranked industrial countries according to the percentage of manufacturing output spent on R&D in a variety of industry groups during the 1970s. The U.S. ranked first in manufacturing overall as well as in the electrical, aerospace, machinery, and transportation categories.

As this brief comparison suggests, if U.S. manufacturing performance since 1973 is considered to have been relatively poor, this should not be ascribed to a relative failure to commit resources either to capital formation or to R&D. While the use made by U.S. manufacturers may or may not have been inefficient, the U.S. capital stock and real R&D in manufacturing have grown as rapidly as those abroad.

**Productivity.** Measured both in terms of the ratio of total output to all inputs and in output per man-hour, U.S. productivity growth in manufacturing, as in the economy as a whole, has slowed down in the period since 1973. Over the same period, however, there has been an even larger slowdown in foreign productivity growth, both in manufacturing and in the whole economy. Careful studies have been unable to provide convincing explanations for these slowdowns.<sup>14</sup> And I will not attempt an investigation of them here. It should, however, be noted that, despite some convergence in the period since 1973, the U.S. productivity growth rate in manufacturing remain the slowest of any major industrial country (Table 10).

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14. See for example, Assar Lindbeck, "The Recent Slowdown of Productivity Growth," a paper presented at the Conference of the Royal Economic Society, London, July 22, 1982, and E.F. Denison, *Accounting for Slower Economic Growth: The United States in the 1970s*, Washington: The Brookings Institution.

**TABLE 6**  
 Changes in Employment and Hours in Manufacturing for Seven Countries, 1960-80  
 (average annual changes, in percent)\*

Year	United States	Canada	Japan	France	Germany'	Italy	United Kingdom	Eight European countries†	Ten foreign countries‡
Aggregate hours:									
1960-80	0.9	1.0	0.8	-0.1	-1.3	-0.3	-1.7	-1.1	-0.5
1960-73	1.6	1.7	2.1	0.6	-0.2	-0.1	-1.2	-0.4	0.4
1973-80	0.7	-0.3	-0.7	-2.1	-2.6	-0.1	-2.9	-2.3	-1.7
Employment:									
<b>1960-80</b>	<b>1.0</b>	<b>1.3</b>	<b>1.6</b>	<b>0.6</b>	<b>-0.4</b>	<b>1.2</b>	<b>-0.9</b>	<b>-0.1</b>	<b>0.4</b>
1960-73	1.5	1.9	3.0	1.2	0.5	1.4	-0.5	0.5	1.1
1973-80	0.6	0.3	-0.8	-1.2	-1.8	0.1	-2.2	-1.5	-1.3
Average hours:									
1960-80	0.0	-0.3	-0.8	-0.7	-0.9	-1.5	-0.8	-1.9	-0.8
1960-73	0.1	-0.2	-0.9	-0.5	-0.8	-1.5	-0.7	-0.9	-0.8
1973-80	-0.1	-0.5	-0.1	-0.9	-0.9	-0.3	-0.8	-0.8	-0.5

Source: Bureau of Labor Statistics, *Monthly Labor Review*, December 1981, p. 15.

\* Rates of change computed from the least-squares trend of the logarithms of the index numbers.

† France, Germany, Italy, United Kingdom, Belgium, Denmark, the Netherlands, and Sweden.

‡ The eight European countries plus Canada and Japan.

Measured by output per man hour, however, the United States continues to be the world's most productive manufacturing nation. According to Roy, for example, in 1980 output per employed worker-year in United States manufacturing was about 16 percent higher than in Japan, 21.7 percent higher than in Germany, and 31.3 percent higher than in France.<sup>15</sup> To be sure, the United States no longer leads in all industries. According to the 1981 White Paper on International Trade issued by the government of Japan, Japanese productivity levels in 1979 were above those of the United States in steel (108 percent above U.S. levels), general machinery (11 percent higher), electrical machinery (19 percent), transportation equipment (24 percent), and precision machinery and equipment (34 percent).

### *Accomplishing structural change*

The U.S. failure to promote industrial adjustment has been unfavorably contrasted with the explicit adjustment policies followed in Europe and Japan. It is therefore of some interest to compare the shifts in the U.S. industrial structure with those in other major economies to determine whether in fact U.S. industrial adaptation has been lagging. To explore this question I have used the matched set of data collected by the United Nations. These provide fairly disaggregated information on industries at the three-digit ISIC level. First, I selected the group of industries that are generally considered to have high-growth potential. They are characterized by relative intensity in R&D and by rapid rates of technological innovation. The sample includes chemicals, plastic products, machinery, and professional instruments and typically made up to about 35 percent of manufacturing employment in major industrial nations. Next, I calculated the share of total manufacturing employment these industries accounted for in the U.S., Germany, and Japan and compared growth in these shares between 1973 and 1979. (See Table 11.)

Although employment shares in all three countries increased, the 8.9 percent rise in the U.S. share far exceeded those of both Japan (up 0.6 percent) and Germany (up 3.0). A similar analysis was performed for a group of slow growers which consisted of a group of labor-intensive industries such as textiles, apparel, leather, footwear,

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15. Overall U.S. GDP per man-year in the U.S. was 49 percent above that in Japan, 13.3 percent above that in Germany, and 7.7 percent above that in France. A.D. Roy, "Labor Productivity in 1980: An International Comparison," *National Institute Economic Review* No. 101, August 1982, p. 29.

and furniture, and capital-intensive industries such as metals, metal products, and ship-building. This group also typically accounted for between 30 and 35 percent of total employment. In this case, Germany had the most rapid decline in the share of employment (−9.2 percent), whereas Japan and the U.S. had shifts quite similar in magnitude (−5.9 and −6.4 percent respectively). While the U.S. moved out of labor-intensive industries faster than Japan, the drop in the Japanese share of the capital intensive group exceeded that of the United States.

These results should, of course, be treated with some caution because of the relatively aggregate nature of the industry divisions and possible discrepancies in national classification schemes.<sup>16</sup>

TABLE 7

Employment by Three-Digit ISIC: United States-Japan  
(average annual rates of change, compounded annually)

ISIC			1960-1973	1973-1980
321	Textile products	United States	2.1	−2.5
		Japan	−1.1	−4.7
341	Paper	United States	0.9	−0.0
		Japan	0.7	−0.5
342	Printing	United States	1.3	2.2
		Japan	3.7	−0.1
351 and 352	Chemical products	United States	−0.7	0.3
		Japan	−3.0	−1.9
371	Iron and steel	United States	0.4	−2.0
		Japan	1.7	−2.9
372	Nonferrous metal	United States	N.A.	−0.3
		Japan	N.A.	−2.0
381	Metal products	United States	2.1	0.9
		Japan	5.1	−1.5
382	Nonelectrical machinery	United States	3.0	2.7
		Japan	4.5	−1.4
383	Electrical machinery	United States	2.2	1.2
		Japan	5.2	−0.7
384	Transportation	United States	1.0	−0.9
		Japan	4.5	−1.2
3	All manufacturing	United States	1.8	0.3
		Japan	2.6	−1.2

Source: *United Nations Yearbook of Industrial Statistics*, 1967, 1977, 1980, 1981 editions.

16. Nonetheless, the shares in U.S. high tech obtained in this exercise are similar to these of the more detailed analyses described below.

**TABLE 8**  
Gross Fixed Investment in Selected OECD Countries (1973 = 100)

	1963	1970	1973	1978	1979
United States total	<b>64</b>	83	100	105	107
manufacturing	63	93	100	133	144
Germany total	<b>64</b>	91	<b>100</b>	99	107
manufacturing	71	118	100	88	n.a.
France total	46	82	100	102	106
manufacturing*	n. a.	89	100	101	101
Belgium total	62	92	100	110	110
manufacturing	72	103	100	74	72
Netherlands total	54	95	100	102	103
manufacturing†	60	109	<b>100</b>	102	105
United Kingdom total	62	92	100	98	97
manufacturing	90	122	100	112	113

Source: *OECD National Accounts*. 1951-80.

\* Mining, manufacturing, and utilities.

† Mining, manufacturing, and utilities plus construction.

**TABLE 9**  
Manufacturing Growth Rates of Capital Stocks in  
Selected Industrial Countries  
(average annual rates of change)

	Real Capital Stock Growth	
	1960-73	1973-79
United States	<b>3.1</b>	<b>3.8</b>
Austria	<b>5.0</b>	<b>4.3</b>
Germany	<b>6.9</b>	<b>2.6*</b>
Sweden	4.3†	<b>3.4*</b>
United Kingdom	<b>3.5</b>	<b>2.4</b>

Source: Economic Survey of Europe in 1981 United Nations.

\* 1973-78.

† 1963-73.

**TABLE 10**  
**Growth of Productivity and Output in Manufacturing in Seven Countries, 1960-80**  
 (average annual changes, in percent)\*

Year	United States	Canada	Japan	France	Germany	Italy	United Kingdom	Eight European countries†	Ten foreign countries‡
<b>Output per hour:</b>									
1960-80	2.7	3.8	9.4	5.6	5.4	5.9	3.6	5.4	5.9
1960-73	3.0	4.5	10.7	6.0	5.5	6.9	4.3	5.9	6.4
1973-80	1.7	2.2	6.8	4.9	4.8	3.6	1.9	4.2	4.7
<b>Output:</b>									
1960-80	3.7	4.9	10.2	5.5	4.0	5.6	1.8	4.2	5.4
1960-73	4.7	6.3	13.0	6.6	5.3	6.8	3.0	5.4	6.8
1973-80	2.5	1.9	6.1	2.7	2.1	3.4	-1.1	1.8	2.9

Source: Bureau of Labor Statistics, *Monthly Labor Review*, December 1981, p. 15.

\* Rates of change computed from the least-squares trend of the logarithms of the index numbers.

† France, Germany, Italy, United Kingdom, Belgium, Denmark, the Netherlands, and Sweden.

‡ The eight European countries plus Canada and Japan.

Nonetheless, they contradict assertions about the relative failure of the U.S. to shift resources towards high-growth sectors. And they indicate that the United States has been about as successful as Japan in reducing the role of the low-growth group.

### ***Concluding remarks***

In this section I have pointed to the marked contrast in European economic performance before and after 1973, a contrast that is particularly evident in data on European industrial performance. European manufacturing production has declined by more than might have been expected, given GNP. Employment has fallen, and productivity growth slowed down. While Germany has been relatively successful in shifting out of slow-growing industries, it has been less successful in moving into new ones. In fact, just as Americans have responded to the slowdown in manufacturing by decrying the short-sighted nature of their decisionmakers, in Europe the concern stems from excessive rigidity.

European governments have assumed much greater responsibility than those in Japan or the United States for providing steady increases in standards of living, and a much greater degree of job tenure is provided in Europe than is common in the United States. In the 1950s and 1960s, these guarantees were relatively costless, for rapid demand growth facilitated job retention, and rising productivity growth made higher wages affordable. With the shocks and slow growth in the 1970s, however, governments were forced to make good on the guarantees. Partly because they were backstopped by generous social payments by schemes such as indexation, growth in European real wages exceed the paced warranted by changes in productivity and the terms of trade. This squeezed profits, discouraged investment, and slowed growth." With slow growth and high wages, firms wished to reduce their work forces. Governments were forced both to support employment by job subsidies, trade protection, schemes for job-sharing, reductions in work hours and early retirement and to provide extensive unemployment benefits. While manufacturing employment declined, the services sectors in Europe were unable to provide employment for new labor force entrants and those displaced from manufacturing.

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17. See, for example, Jeffrey Sachs, "Wages, Profits, and Macroeconomic Adjustment, A Comparative Study," *Brookings Papers on Economic Activity*, 1979:2, pp. 269-319.

Whereas European unemployment rates have been considerably lower than those in the United States for most of the postwar period, by 1982 the average unemployment rates in the United States and the European community (EC9) were 9.7 and 9.5 percent respectively. Although they stand at similar levels, structural unemployment seems much higher in Europe. According to the OECD, in the United States in 1982, about 16.6 percent of the unemployed had been unemployed for more than six months. By contrast, in Germany, France, and the United Kingdom, the long-term unemployed were 38.1, 55.8, and 45.7 of the unemployed.<sup>18</sup> In 1979, males over the age of 45 constituted 36 percent of all unemployed German males, whereas in the United States, older males were 17 percent of all unemployed males. Similarly, older women were 29 percent of the unemployed in Germany, and 15 percent in the United States.

There is, therefore, overwhelming evidence that the structural problems facing European economies far exceed those in the United States. As the Commission of the European Communities noted in a recent report:<sup>19</sup>

It is in particular apparent that the Japanese and United States examples have in common a positive employment creation record, a more positive record of enterprise profitability, of labor cost adaptability to economic circumstances, and — for reasons linked to social structure — of less onerous labor regulations that place constraints on the use of production capacity. By comparison, enterprise profitability has fallen to much lower levels over the past decade in Europe (especially in the United Kingdom and Belgium, but elsewhere, too, in lesser degree). The adaptability of labor costs to macroeconomic conditions and those of enterprise is less in Europe.

### **Trade and manufacturing employment**

In this section, I estimate the role that manufacturing trade flows have played in aggregate U.S. manufacturing employment. First, I introduce a simple accounting framework and estimate the contribution of trade flows to employment in the 1970s. Next, I extend the analysis to the period from 1980 to 1982. The second part of the analysis accounts for the role of changes in relative U.S. price competi-

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18. OECD *Economic Outlook*, 1983.

19. European Economy Annual Report 1982-3, No. 14, November 1982.

tiveness in affecting these trade flows. I argue that both the positive record over the 1970s and the declines from 1980 to 1982 were heavily influenced by the relative prices of U.S. manufactured products.

A separation of the effects on the economy of foreign trade and domestic forces begins with the identity  $P = U + X - M$ , where  $P$  = production,  $U$  = domestic use (consumption plus investment, including inventories),  $X$  = exports, and  $M$  = imports.

Given data on total shipments, exports, and imports, any change in overall production can be decomposed into change due to domestic use and a change due to the foreign balance. But the use of raw data on trade flows and output would fail to incorporate the indirect impact of trade. When, for example, an airplane is exported from the United States, it embodies inputs from a wide variety of other industries such as aluminum, tires, and computers. So the ratio of total export shipments to total shipments in manufacturing understates the impact of exports. Similarly, when an import replaces a domestic product, it entails the reduction in demand for the products of domestic manufacturing sectors other than that of the sector competing directly with the import. A complete accounting of the impact of trade should incorporate these indirect effects.

The indirect effects of trade were estimated for this study with the aid of the 1972 85-sector input-output table. Data on manufacturing output, exports and imports for 1970, 1972, 1973, and 1980, available at the four-digit SIC code level, were converted into 1972 dollars and arranged to correspond with the industrial coding structure of the 52 manufacturing sectors of I-O table.<sup>20</sup> Next, the input-output table was used to estimate direct and indirect output requirements. Thus for the output, exports, and imports of each manufacturing industry, we obtained an estimate of value-added requirements from the originating industry and from all other industries. These were then used to estimate the proportions of total value added in each industry that could be related to 1) all manufactured goods exports, 2) all manufactured goods assumed to be displaced as a result of manufactured goods imports, and 3) as a residual value-added related to domestic use. Employment effects were estimated under the assumption that productivity growth in the exports and domestic products of each industry was identical, so that employment proportions corresponded

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20. The concordance provided by the Department of Commerce was used. See *Origin of Manufactured Exports 1980 Annual Survey of Manufactures, M80 (AS)-6*, Bureau of the Census, January 1982.

to those of value added.

Some caution is necessary in interpreting our results. It should be stressed that this is an exercise with ex post data, rather than a simulation with a full-scale behavioral model. In relating growth to domestic use, exports, and imports, we say nothing about why these configurations should have occurred, nor do we account for the possible interactions between forces resulting in the behavior of these endogenous variables. And the analysis entails making the usual assumptions required for input-output exercises.<sup>21</sup>

In Table 12 we report our estimates of value added and employment related to trade and domestic use in U.S. manufacturing for a number of years in the 1970s.<sup>22</sup>

First compare 1980 with 1970. Since in both these years the capacity utilization levels in manufacturing were similar, the data for these years will be less contaminated by business cycle effects.<sup>23</sup> In 1970, value added related to manufacturing exports amounted to 8.5 percent of overall value added in manufacturing, while the production of manufactured imports at home would have raised value added in manufacturing by 8.3 percent. By 1980, these shares had grown considerably to 15.1 percent in the case of exports and 14.4 percent in the case of imports.<sup>24</sup> Thus, over the period from 1970 to 1980, the increase in the net value added due to the trade balance raised value added in

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21. For discussion of the methodological issues associated with exercises such as this, see Walter Salant, "The Effects of Increase in Imports on Domestic Employment; A Clarification of Concepts," Brookings Institution, and Charles Pearson, "Trade Employment and Adjustment," draft prepared for the Institute for Research on Public Policy, April 1981.

22. There have been a number of studies similar to this with somewhat different emphasis. Krueger estimates, for example, that between 1970 and 1976, the average two-digit industry experienced an annual decline in job opportunities resulting from increased imports of about 0.37 percent. See Anne O. Krueger, "Protectionist Pressures, Imports, and Employment in the United States," Working Paper No. 461, *N.B.E.R.*, p. 20.

Baldwin has decomposed employment by industry into an effect attributable to income elasticities at home and abroad, and a second impact, which he calls a competitiveness effect, attributable to changes in relative prices, etc. See Robert E. Baldwin et al., *U.S. Policies in Response to Growing International Trade Competitiveness, Final Phase I Report*, mimeo, 1972, Appendix A.

23. According to the Federal Reserve Board, capacity utilization in U.S. manufacturing in 1970 and 1980 was 79.3 and 79.6 percent respectively.

24. This is somewhat higher than the 13.7 percent estimate of direct and indirect export related employment of the U.S. Department of Commerce. See *Origin of Manufactured Exports 1980 Annual Survey of Manufactures*, M80 (AS)-6, U.S. Department of Commerce, Bureau of the Census, January 1982.

manufacturing (in 1972 dollars) by 0.5 percent.<sup>25</sup> Although net value added due to trade was 0.6 billion dollars in 1970, it amounted to 2.6 billion dollars in 1980 (both figures in 1972 dollars). Because products making up U.S. manufactured imports have lower output per worker when produced in the U.S. than products making up U.S. exports, net jobs relating to trade were negative in each year in Table 12. However, although there was a decline of 10,000 jobs due to trade between 1970 and 1980, the contributions of trade over the periods 1972-80 and 1973-80 were positive. Trade raised job opportunities in U.S. manufacturing by 390,000 from 1972 to 1980, and by 280,000 over the period from 1973 to 1980. This can be compared

TABLE 11

Changes in Employment Shares in Manufacturing of High and Low Growth Sectors: United States, Germany, and Japan

Shares	United States	Germany	Japan
Selected high growth industry*			
(1) 1973	30.4	39.7	31.0
(2) 1979	33.1	40.9	31.2
Percent changes in share†	8.9	3.0	0.6
Low growth industries‡§			
(1) 1973	34.0	32.8	37.5
(2) 1979	32.0	29.8	35.1
Percent change in share	-5.9	-9.2	-6.4
Labor intensive industries*			
(1) 1973	19.2	15.1	21.6
(2) 1979	17.3	13.1	20.4
Percent change in shares	-9.9	-13.2	-5.5
Capital intensive industries§			
(1) 1973	14.8	17.6	15.9
(2) 1979	14.7	16.7	14.7
Percent change in share	-0.7	-5.1	-7.5

Source: *United Nations Yearbook of Industrial Statistics*, 1977 and 1980 editions.

\* Industrial chemicals, other chemical products, plastic products, machinery, electrical machinery, and professional goods.

† Percent change in share calculated:  $\frac{(1-2)}{1} \times 100$ .

‡ Textiles, apparel, leather, footwear, wood products, and furniture.

§ Iron and steel, nonferrous metals, metal products, and shipbuilding.

25. Note in Table 13 that because products making up U.S. manufacturing imports are more labor-intensive (have lower output per worker) when produced in the U.S. than those making up U.S. exports, in 1973 net job opportunities relating to trade were negative even though net value added relating to trade was positive.

TABLE 12

Value Added and Employment in U.S. Manufacturing Due to Foreign Trade and Domestic Use, Selected Years, 1970-80

Item	1970	1972	1973	1980
Value added (billions of 1972 dollars)				
Total	262.7	295.3	318.9	349.5
Foreign trade	0.6	-5.3	-3.3	2.6
Exports	22.4	24.0	30.1	52.9
Imports	-21.8	-29.3	-33.4	-50.4
Domestic use	262.1	300.7	322.2	347.0
Employment (millions)				
Total	19.34	19.10	20.11	20.24
Foreign trade	-0.05	-0.45	-0.34	-0.06
Exports	1.57	1.45	1.78	2.93
Imports	-1.62	-1.91	-2.12	-2.98
Domestic use	19.38	19.56	20.45	20.30
<b>Addenda</b>				
Percentage due to exports				
Value added	8.5	8.1	9.4	15.1
Employment	8.1	7.6	8.8	14.5
Percentage due to imports				
Value added	-8.3	-9.9	-10.5	-14.4
Employment	-8.4	-10.0	-10.5	-14.7

Sources: Author's calculations using data from U.S. Department of Commerce, Bureau of Economic Analysis, input-output tape; Bureau of Industrial Economics, data base for manufacturing output exports, and imports; and U.S. Department of Labor, Bureau of Labor Statistics, employment and earnings tape.

Note: Estimates of direct and indirect requirements based on the input-output table were used to calculate the proportion of value added related to manufactured exports and to manufactured goods displaced by imports. Value added related to domestic use was calculated as a residual and employment allocated to foreign trade and domestic use in proportion to value added in each two-digit I-O industry.

with the corresponding total rise in manufacturing employment over these periods of 1.14 million and 0.13 million respectively.

It is certainly hard to reconcile these findings with the widespread notions that foreign trade was having a major negative effect upon U.S. industrial employment in the 1970s. These perceptions can in part be explained by the inappropriate use of statistics and in part by the particular attention commanded by a few large industries, e.g., steel and automobiles.

As I will show below, several real-dollar devaluations in the 1970s were important in determining these trade flows.

*1980 to 1982*

A substantial proportion of the decline in U.S. manufacturing employment from 1980 to 1982 was due to changes in trade flows, particularly exports. Between these two years, the volume of **U.S.** manufactured goods exports declined 17.5 percent. The volume of manufactured goods imports rose 8.3 percent. As estimated above, employment due to manufactured exports in 1980 was 2.93 million. Since output per employee in manufacturing was similar in 1980 and 1982, employment and output due to trade most likely declined proportionally. This suggests an employment decline of 513,000 people, or about 34 percent of the total 1.51-million decline in manufacturing employment from 1980 to 1982, was due to the fall in manufactured exports.

The jobs lost to imports can be estimated on two alternative assumptions. As estimated above, imports were displacing 2.9 million U.S. jobs in 1980. If one assumes rising import volumes added proportionately to this job displacement, the 8.3 percent rise in import volume between 1980 and 1982 displaced an additional 240,000 U.S. jobs. Alternatively, if the value of U.S. demand is assumed to rise with domestic prices and the value of U.S. production is reduced by an amount equal to the higher value of imports, the estimated job loss is negligible since import values and domestic prices both rose by about 14 percent.

In the first section, I noted that U.S. industrial production from 1980 to 1982 was quite precisely predicted given **GNP**. A regression fitted through 1980 forecasts a decline of industrial production of -6.8 percent. In fact, the decline was -6.2 percent. This finding creates a puzzle, for given the impact of manufactured trade, a larger decline in manufacturing production might have been expected. Apparently, there are unusually large offsetting sources of strength in the domestic economy. One of these is the production of defense and space equipment, which increased by 11.4 percent from 1980 to 1982 and had a weight of about 0.075 percent in total value added in manufacturing. Thus, industrial production **unrelated** to either defense or exports declined by 6.0 percent, close to what should have been expected.

*Explaining manufactured goods trade*

What lies behind the recent erosion of U.S. international competitiveness? No single measure can adequately **capture** the numerous

factors that determine a country's success in international markets. Some of the factors that complicate the task of explaining performance are the heterogenous nature of the goods entering international trade; differences in marketing, servicing, or reputation for quality; and the availability of trade financing and other forms of government support. Nonetheless, these factors are unlikely to change radically in the short run in which fluctuations in the business cycle and in relative product prices are the major determinants of fluctuations in trade volumes. Accordingly, I have estimated a set of simple econometric equations which explicitly models the major short-run determinants of trade flows and captures the long-run effects in trend variables.

### *Equations*

The volume of U.S. exports is explained in these estimates by a set of variables which capture the growth in overall global economic activity plus the current and lagged values of the relative prices of U.S. manufactured goods exports. Global economic activity is proxied by a time trend, the volume of exports of the major industrial countries besides the United States, and the level of industrial production in the "rest of the world" (Europe, Japan and Canada); The relative price variable is the ratio of the prices of U.S. manufactured goods to the prices of manufactured exports of other major industrial nations as computed by the International Monetary Fund.<sup>26</sup> All variables (aside from the time trend) are entered logarithmically so that the coefficients can be interpreted as elasticities.

The equation tracks U.S. export behavior over the sample period quite precisely (it has a standard error of 3.4 percent), and the coefficients are generally statistically significant with the appropriate signs (Table 13). Trade flows are responsive to both the activity and price variables. With no change in the relative price of U.S. exports, increases in world manufactured goods trade and rest-of-the-world industrial production at their 1973-1980 averages of 4.5 and 1.7 percent entail an annual growth in U.S. exports of 4.0 percent. Over the long run, (three and a half years) each one percent rise (fall) in U.S. export prices (relative to export prices in the other major industrial countries) lowers (raises) the volume of U.S. exports by 1.5 percent. After eighteen months only about half the long-run impact will have

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26. An alternative specification using industrial production in other major industrial nations and a cyclical variable was also experimented with but provided poorer results.

occurred. (The absolute values of the price coefficients are largest and most significant between six months and two and a half years, but the effect continues to grow even after three years.)

The import equations relate the volume of U.S. manufactured imports to the growth in U.S. GNP, a proxy for the business cycle (the ratio of actual to potential GNP in the United States), a time trend, and distributed-lagged values of the ratio of import unit values of manufactured goods to the prices of domestic manufactured goods. All variables in the equation are significant, and the specification fits the historical behavior of manufactured import values fairly well (the standard error of the equation is 4.4%). The equation indicates that if the economy grows along its potential path (of about 3.2 percent per year from 1973 to 1982), with no change in relative import prices, manufactured imports will rise at about 9.1 percent per year. For each percent deviation of GNP from this path, imports will deviate by about 1.43 percent in the same direction. The long-run price elasticity of 1.8 for imports is somewhat higher than that for exports. The mean lags are similar. The most powerful effects again come after a year to eighteen months. And imports continue to be affected by price changes three years previously.

When the activity variables take on recent average values, these equations imply annual growth of export and import volumes of 4.0 and 9.1 percent respectively. Starting from a position of balanced trade, the manufactured goods trade balance would decline secularly absent a fall in the relative prices of U.S. manufactured goods. However, an improvement of 2.0 percent per year in relative U.S. prices would suffice to ensure balanced trade in manufactured products.

Over the decade, U.S. relative exports as measured by the IMF declined by 13.8 percent. In the absence of this decline, the equations imply that U.S. export volumes in 1980 would have been about 20.0 percent lower than they actually were. Similarly, without the rise in the relative prices of imports of 22 percent, the dollar value of U.S. manufactured imports in 1980 would have been 21.5 percent higher. Thus the improvements in relative prices of U.S. manufactured products were an important part of the growth in U.S. employment due to trade, particularly from 1973 to 1980. But this adjustment had its costs: Compared with 1970, in 1980 any given volume of imported manufactured products required 13 percent greater volume of manufactured exports to pay for it.

### *Manufactured goods trade from 1980 to 1982*

When the equations are estimated through 1980 and used to forecast trade volumes through 1982, they predict U.S. trade flows with reasonable accuracy (Table 12). This suggests that trade flows have retained their previous historical relationships to the variables in the equations, and that the underlying system has not undergone a substantial structural change in the period under consideration. In the second half of 1982, the equation for exports has an error of only 0.7 of one percent; on average, the out-of-sample predictions for exports are no larger than the within-sample standard error. The import equation tracks very accurately until the last quarter of 1982, when it shows that imports were 9.4 lower than might have been expected. This is probably due to unusually large inventory de-stocking that occurred during the trough of the recession.

The equations for the full sample period can also be used to indicate the relative contributions of the independent variables to more recent trade flows. Relative price effects have played the dominant role: From 1980 to 1982, the export equation indicates that the change in U.S. relative price competitiveness induced an 18.9 percent fall in U.S. export volumes. Trend and seasonal factors and the expansion in world trade and demand added about 2.4 percent to export volumes. The import equation suggests that imports were raised by 8.9 percent because of the relative increase in U.S. prices, raised 9.3 percent because of trend factors, and reduced by 7.2 percent because of the drop in the ratio of actual to potential GNP (the U.S. recession).

Actual change °	1980 to 1982				
		Forecast Change			
		Prices	Due to Activity	Trend	Error
Exports:	-17.5	-18.9	-0.7	3.1	-1.0
Imports:	+8.7	8.9	-7.2	9.3	-2.3

The equations also suggest a somber prognosis: Only about half of the long-run impact of the erosion in the U.S. price competitiveness from 1980 to 1982 had been felt by the second half of 1982. In the absence of an improvement in U.S. price competitiveness over its levels in the second half of 1982, our equations predict an additional 24.4 percent drop in manufactured export volumes and a 10.7 percent rise in import volumes in 1983 and 1984 due to changes in relative

price factors between 1980 and 1982.

In summary, the recent decline in U.S. exports was primarily the result of the erosion in U.S. price competitiveness and despite its rise U.S. import growth in 1982 remained depressed because of the U.S. recession. Economic recovery in the U.S. and a continuation of 1982 relative prices would induce very substantial further declines in the U.S. trade balance.<sup>27</sup>

In one sense the results of this section, particularly those for the 1970s, confirm the judgment of those who believe U.S. competitiveness declined in that period: A decline in the U.S. terms of trade for manufactured products was part of the adjustment process for maintaining U.S. external equilibrium. The exchange rate system was able to effect this adjustment by channeling resources into U.S. manufacturing to help offset this erosion of competitiveness. But the magnitude required to effect this adjustment was fairly modest.

One interpretation of the recent strength of the dollar is that the U.S. has changed its international role from a net lender to a net borrower, a change that has resulted primarily from the large government deficits. The strength of the exchange rate reflects the need to channel foreign goods into the United States to meet the rise in domestic absorption. In this sense, the growth in the manufactured goods trade deficit is a response to change in economic structure. But it is not a change that has resulted from shifts in U.S. or foreign industrial policies or prowess; it is rather a change that reflects the budgetary decisions of the U.S. government

### **Myths about the size and sources of structural change**

Has there been an increase in the degree of structural change in U.S. manufacturing?

To measure the degree of structural change in the economy over time, I have used an index based upon changes in the employment shares of industries and regions. This index,  $I$ , is formed by summing the changes in the shares over the period of comparison. Specifically,  $I$  is half the sum of the absolute value of the differences between sector shares; i.e.,  $I = \frac{0.5}{n} \sum_i |a_{i1} - a_{i2}|$  where  $a_{i1}$  and  $a_{i2}$  are the percentage shares of sector  $i$  in time periods 1 and 2,

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27. For similar conclusions, see Robert A. Feldman, "Dollar Appreciation, Foreign Trade, and the U.S. Economy," *Federal Reserve Bank of New York Quarterly Review*, Summer 1982, pp. 1-9.

TABLE 13

Equations for the Volume of **U.S.** Exports and Imports of Manufactured **Goods**, 1964-1982  
(t-statistics in parentheses)

Estimation period, dependent variable	Con- stant	Independent variables								Prediction errors				Summary statistics	
		$x$ ROW	$i$ PROW	PRPX	T	GNP	GNP*	$\Sigma$ RPM	DS	8101	8102	8201	8202	SE	DW
1. 1st half 1964 to	7.5	.41	.40	-1.50	.0071	.	...	...	- .048	...	...	...	...	.034	1.61
1st half 1982, QXM	(7.5)	(2.9)	(1.6)	(-6.3)	(2.5)	...	...	...	(-4.2)	...	...	...	...	...	...
2. 1st half 1964 to	6.9	.42	.36	-1.4	.0077	...	...	...	- .046	.028	-.047	-.053	-.007	.035	1.64
2nd half 1980, QXM	(5.8)	(2.6)	(1.3)	(-4.4)	(2.0)	...	...	...	(-3.7)	...	...	...	...	...	...
3. 1st half 1964 to	-75.8	...	...	...	- .163	1.43	11.59	-1.8	...	...	...	...	...	.044	1.64
1st half 1982, QIM	(-5.8)	...	...	...	(4.9)	(3.8)	(5.3)	(-10.1)	...	...	...	...	...	...	...
4. 1st half 1964 to	72.8	...	...	...	- .155	1.21	11.45	-1.90	...	-.021	.028	-.021	-.094	.047	1.71
2nd half 1980, QIM	(-4.6)	...	...	...	(-3.9)	(2.7)	(4.7)	(8.1)	...	...	...	...	...	...	...

Note: Estimation of all equations uses semiannual data. All variables except T and DX appear as logarithms. Price coefficients are estimated as seven-period Almon lags using a two-degree polynomial.

Explanation of variables and sources:

QXM: Quantity of U.S. exports of manufactured goods (SITC 5-8) from the Foreign Trade Division of the U.S. Bureau of the Census.

QIM: Quantity of U.S. imports of manufactured goods (SITC 5-8). See QXM for source.

$x$ ROW: Total quantity of exports in manufacturing (SITC 5-8) from the "rest of the world" (developed market economies excluding the U.S.); from United Nations, *Monthly Bulletin of Statistics*, various March issues.

$i$ PROW: Industrial production in the "rest of the world" (OECD Europe, Canada, and Japan), from OECD, *Main Economic Indicators*.

RPX: Relative price of U.S. exports in manufacturing (price of U.S. exports divided by the price of foreign competition); from IMF, *International Financial Statistics* (data tape).  $\Sigma$ RPX is the sum effect of RPX lagged over seven periods (the current and the six most recent periods).

T: Trend variable (increasing by 1.0 each time period).

GNP: Gross National Product of the U.S. in 1972 dollars; from the Bureau of Economic Analysis, Department of Commerce.

GNP\*: Potential GNP of the U.S. in 1972 dollars; from the Council of Economic Advisors.

RPM: Relative price of U.S. imports in manufacturing (unit value index of imports divided by the wholesale price index); from the Foreign Trade Division of the U.S. Bureau of the Census and the Bureau of Labor Statistics. HRPM is the sum effect of RPM lagged over seven periods.

DS: Seasonal dummy: 0. for the first half and 1. for the second half of each year.

8101,

8102,

8201: Out-of-sample prediction errors for the dependent variable (true value minus predicted value) in the first half of 1981, second half of 1981, and first half of 1982, respectively.

SE: Standard error of the equation

DW: Durbin-Watson statistic.

respectively.<sup>28</sup>

For the purposes of making these comparisons, data on U.S. manufacturing in 1960, 1970 and 1980 are particularly suitable because of the similar levels of capacity utilization in these years.<sup>29</sup> When computed across the two-digit industries that make up the manufacturing sector, this index indicates a remarkably similar degree of structural change in the 1960s and 1970s. (See Table 14.) Compositional shifts in the 1970s were less than those in the 1950s. The indices for the overall economy show a slight rise in **sectoral** employment shifts between the '60s and the '70s and a somewhat greater increase in regional shifts in the 1970s. While the overall shifts in **sectoral** employment remain below that of the **1950s**, there has been a greater rise in regional shifts in the **1970s**.<sup>30</sup>

TABLE 14  
Measure of Structural Change in U.S. Employment, Average Annual Changes in Structural Change Index\*

Period	Total employment	Manufacturing employment	Total regional employment	Manufacturing regional employment
1950-60†	0.77	0.86	0.45	0.60
1960-70	0.54	0.58	0.33	0.49
1970-80	0.60	0.47	0.61	0.70
1973-79	0.67	0.50	0.55	0.64
1974-80	0.51	0.65	0.58	0.75

**Total employment** measured in full-time equivalent employees in eleven one-digit sectors: agriculture, forestry, and fishery; construction; finance, insurance, and real estate; **government** and government enterprises; durable manufacturing; mining; nondurable manufacturing; transportation; services; retail trade; and wholesale trade.

**Manufacturing employment** measured in full-time equivalent employees in 21 two-digit manufacturing industries.

**Regional employment** measured as number of employees on payrolls of **nonagricultural** establishments in ten regions.

**Manufacturing regional employment** measured as number of employees on payrolls of manufacturing establishments in ten regions.

Sources: DRI tape and 1982 *Employment and Training Report of the President*, pp. 255-58.

\* $I = \frac{0.5}{n} \sum_i |ai1 - ai2|$  where  $ai1$  and  $ai2$  are the shares of sector  $i$  (region) in period 1 and 2, respectively, and  $n$  for the number of years between observations.

† 1952-1960 for regional employment.

28. Absolute values **are** used to provide equal weight to growing and shrinking sectors. The sum is divided in half so that if there is a total reversal of structure the index will register 100 percent. If there is no change in structure, it will register zero. For the application of similar measures see *Economic Survey of Europe*, United Nations, New York, 1981.

29. The manufacturing capacity utilization index of the Federal Reserve Board registered 80.2 in 1960, 79.3 in 1970, and 79.1 in 1980.

30. For a discussion of regional shifts in employment, see James **Medoff**, "U.S. Labor Markets: Imbalance, Wage Growth, and Productivity in the 1970s" *Brookings Papers on Economic Activity*, 1983:1, pp. 87-128.

A second exercise confirms the stability in the shifts in industrial employment structure over the two decades. A sample of 57 three- and four-digit SIC was assembled. The industries chosen constituted about 85 percent of 1980 employment. For each decade, industries were split into quarters on the basis of employment growth. While the average growth rate declined between the 1960s and 1970s, the dispersion across industries remained the same. In both the '60s and '70s, the range between the first and fourth quarters was about 50 percent. The decline in the mean growth of 11.6 percent from the '60s to the '70s was very close to the decline in each of the quartiles.

Quartile:	U.S. industrial sectors grouped by growth rate in employment			
	I	II	III	IV
1960 to 1970	44%	22%	10%	- 5.6%
1970 to 1980	34%	8.2%	-2.8%	- 15.4%

Thus, this analysis points to the impact of slow employment growth rather than a speed-up in the pace of structural change as the primary source of the difficulties facing U.S. industry."

Sources of Change. While much of the discussion about U.S. deindustrialization has been couched in terms of the manufacturing sector as a whole, in fact it reflects a concern about a few specific industries. Several of these industries have a number of characteristics which are likely to make employment loss particularly conspicuous: Adjustment is particularly difficult and costly in sectors in which capital investments are long lived, workers earn wage premiums that reflect non-transferable benefits (such as seniority, monopoly rents, and the impact of strong unions), and production occurs in large plants that are important for the economic health of the areas in which they are located.

The erosion of employment has occurred in industries in which it is likely to be most vocally resisted because the industries are likely to be politically powerful and the burdens of adjustment on the workers are likely to be especially great. It has been especially concentrated among unionized workers, in large plants, and in large industries.

In 1980, based on a disaggregation of industries of two-digit SIC codes, 58 percent of U.S. workers were in a two-digit industry which

31. Of course I measure here only ex post structural change. In fact, if the economy has had more ex ante shocks, the lack of change might reflect increased rigidities.

had experienced an overall decline in employment since 1973. In addition, four of the industries with slow employment growth (tobacco, autos, primary metals, and textiles) are among the five industries which have the largest average plant size.

Indeed, a **comparison** of the features of the industries which grew rapidly in the 1960s with those growing rapidly in the 1970s indicated two important differences. Industries with large plant size and with high concentration ratios were more likely to grow **slowly** in the 1970s than in the 1960s. Both these variables suggest a declining importance of economies of scale, the predictable result of slow overall market expansion,

To get behind the structural shifts in manufacturing, the 52 industries of the input-output categories have been classified by production process.

In the trade literature it is customary to group goods into three categories: goods that require the relatively intensive use of natural resources (terms Ricardo goods), goods that require high proportions of research and development or employ scientists and engineers fairly intensively (product-cycle or high-technology goods), and goods that use relatively standardized production technologies (Hecksher-Ohlin goods). In this paper, for the process categories I adopt the Ricardo (resource-intensive) and product-cycle (high-technology) groupings and divided the Hecksher-Ohlin group according to relative capital-labor ratios into capital- and labor-intensive categories.<sup>32</sup>

The data in Table 15 highlight the change in the composition of U.S. output and employment in manufacturing. They indicate the long-run shift toward high-technology sectors in both output and employment. The employment shift proceeded at about the same pace between 1970 and 1980 as during the previous decade, although the shift measured by valued added accelerated somewhat. But from 1973 to 1980, the shift toward high technology accelerated by both measures. In the thirteen years from 1960 to 1973, the share of **high-technology** products in total value added increased from 27 to 32 percent. In the next seven years it rose from 32 to 38 percent. The accel-

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32. The ratio of employment to gross capital stock in 1976 at the three-digit SIC level was used to divided the Hecksher-Ohlin group. The detailed classification scheme used by Sterr and Maskus has been matched with the 52 I-O categories as indicated in Table A-3 of the Appendix. See Robert M. Stem and Keith E. Maskus, "Determinants of the Structure of U.S. Foreign Trade, 19578-76," *Journal of International Economics*, Vol. 11, May 1981, pp. 207-24.

eration in employment share in high-technology sectors is even more dramatic: After increasing from 27 percent in 1960 to 29 percent in 1973, it rose to 33 percent by 1980.

Table 16 breaks down the striking divergence of the high-technology sector from the rest of manufacturing into the parts accounted for by domestic use and foreign trade. Between 1973 and 1980, output of high-technology products increased by 30.6 percent and employment rose by 15.7 percent; in industries characterized by other production processes, output grew sluggishly and employment declined. The compositional changes were related to growth resulting from both trade and domestic use. Although most of the employment growth in the high-technology sector can be ascribed to the rise in domestic use, growth in employment from foreign trade was greater in this sector than in any other. Foreign trade also raised employment in resource-intensive industries, where domestic demand was sluggish. Stagnant or falling domestic demand, combined with a reinforcing decline in net foreign demand, thwarted growth in both capital- and labor-intensive industries.

TABLE 15  
Shares of Value Added and Employment in U.S. Manufacturing,  
by Production Characteristics of Industries  
(selected years, 1960-80, by percent)

Item	1960	1970	1972	1973	1980
Value added*					
High-technology	.27	.31	.31	.32	.38
Capital-intensive	.32	.30	.31	.32	.27
Labor-intensive	.13	.13	.14	.13	.12
Resource-intensive	.28	.25	.24	.23	.23
Employment†					
High-technology	.27	.30	.28	.29	.33
Capital-intensive	.29	.30	.30	.30	.28
Labor-intensive	.21	.20	.21	.21	.19
Resource-intensive	.23	.21	.21	.20	.20

Sources: Same as Table 14.

\* Value added computed for each input-output(I-O) industry by multiplying gross output in 1972 dollars by the ratio of value added to output in the 1972 I-O table.

† Employment is derived from the Bureau of Labor Statistics series on employment and earnings. The series has been aggregated to the two-digit I-O industry and then to the process categories.

Despite smaller changes due to trade than those due to domestic use, public perceptions may be exaggerating **the role** of trade because the effects of trade and domestic use have been positively correlated. For reasons unrelated to international trade, the U.S. manufacturing sector has been undergoing major structural shifts in output and employment because of domestic demand and technology. The impact of trade has in some cases reinforced these domestic changes; in other cases, industries experiencing employment losses because of domestic use have had only minor offsets as a result of trade. This correspondence between trade and domestic use is apparent at the relatively disaggregated level of the 52 I-O industries. From 1973 to 1980, for example, there was a 0.49 correlation between the contributions to value added of domestic use and those of foreign trade. The correspondence between growth related to domestic use and growth related to trade can be seen clearly when the 52 industries are aggregated according to the nature of the production process.

#### ***Patterns of domestic use: Why high-tech?***

Explanations of the accelerated shift toward high-technology production since 1972 often cite the influence of foreign trade or a speed-up in the pace of technological change. But neither of these explanations seems sufficient. As shown in Table 16, the accelerated shift is present even when the effects of trade are excluded. Thus trade is certainly not all of the story. As for faster technological change, Table 17 shows that employment, output, and productivity (output per employee) in high-technology industries grew more slowly from 1973 to 1980 than they did in the 1960s. In fact, as measured by the growth in output per employee, the slowdown in productivity growth in the high-technology industries has been quite similar to the productivity slump elsewhere in manufacturing and the value-added deflators for high technology products have not fallen relative to those of manufacturing in general. This makes it doubtful that faster technological change is the explanation.

What other explanations might account for the relatively strong output gains in high-technology products during 1973-80? One might be the relatively high income-elasticity of demand for these products and the low income-elasticity of demand for older commodities. Wealthy consumers devote declining shares of their incomes to basic needs such as clothing, footwear, furniture, and simple electrical appliances. Conversely, they increase the share devoted to com-

TABLE 16

Percentage Change in Value Added and Employment in U.S. Manufacturing Due to Foreign Trade and Domestic Use, by Production Characteristics of Industries (1970-80 and 1973-80)\*

Item	1970-1980			1973-1980		
	Total	Domestic use	Foreign trade	Total	Domestic use	Foreign trade
<b>Value Added</b>						
Total	33.1	32.3	0.8	9.6	7.8	1.9
High-technology	61.9	54.7	7.2	30.6	25.2	5.4
Capital-intensive	18.4	22.2	-3.8	-7.3	-6.7	-0.6
Labor-intensive	16.5	20.7	-4.1	-2.1	-0.2	-1.9
Resource-intensive	23.4	22.6	0.8	10.7	8.2	2.5
<b>Employment</b>						
Total	4.7	4.7	0.0	0.7	-0.7	1.3
High-technology	16.4	12.9	3.5	15.7	11.1	4.6
Capital-intensive	0.3	2.3	-1.9	-6.0	-5.9	-0.1
Labor-intensive	-1.8	1.8	-3.6	-8.2	-6.3	-2.0
Resource-intensive	0.5	-0.6	1.1	-1.5	-4.1	2.6

Sources: Same as Table 1.

\* See notes to Tables 14 and 15.

TABLE 17

Growth of Employment, Value Added, and Productivity in U.S. Manufacturing, High- and Low-Technology Goods, Selected Periods, 1960-82 (average annual growth rates, in percent)

Item	1960-70	1970-80	1973-80	1980-82
<b>Employment</b>				
High-technology	2.5	1.5	2.1	-2.4
Low-technology	1.0	0.0	-0.8	-4.2
<b>Value added*</b>				
High-technology	5.7	4.9	3.9	n.a.
Low-technology	3.2	1.8	0.0	n.a.
<b>Productivity?</b>				
High-technology	3.1	3.4	1.7	n.a.
Low-technology	2.2	1.9	0.8	n.a.

Sources: Same as Table 14.

\* In 1972 dollars.

† Value added divided by employment.

puters, aircraft, and communications equipment. Thus, with the expansion of income, basic commodities can be expected to have declining shares. But if income elasticities have the dominant effect, the share of high-technology industries increases more rapidly in periods of high rather than low income growth.<sup>33</sup>

Perhaps, however, it is precisely because income effects have been so small during this period that the share of high-technology products has grown. In explaining the demand for a product, it is customary to distinguish between income and substitution effects. In the absence of price declines, since their qualitative nature changes very little, the market for standardized commodities will only expand in the face of income growth. Thus, under depressed cyclical conditions, the demand for the products of U.S. industries such as textiles, iron and steel, other basic metals, fabricated metals products, and automobiles will be particularly sluggish. On the other hand, income growth is likely to be less important as a determinant of the demand for a new product. It might be possible to increase the output of Sony Walkmen in the midst of a recession, for example, whereas it is not possible to raise the output of steel. Substitution effects due to quality changes are likely to dominate income effects. A second source of substitution effects over this period could of course be the demand for more energy-efficient products. The close correspondence between the high-technology and the equipment groupings are suggestive of possibilities along these lines (Table 18). A third would be the rise in expenditures on defense industries at the end of the sample period.

The other conspicuous shift in the structure of U.S. output from 1973 to 1980 was the decline in the share of capital-intensive goods from 32 percent of value added in 1973 to 27 percent of value added in 1980. The decline in the share of automobiles from 8 to 5 percent was the major source of this change. My analysis suggests that of the 19.2 percent decline in employment in the automobile industry over this period, 6.4 percent was due to trade and 12.8 percent to the slump in domestic use. Over the period from 1980 to 1982, a similar analysis suggests that of the 12.5 percent decline in automobile employment, 10.7 percent was due to domestic use, and 1.9 percent was due to trade. Of the total fall in U.S. automotive employment of

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33. If, for example, income growth rates were infinite, commodities with elasticities of less than 1.0 would tend to have zero shares; if growth were zero, shares would remain constant. Thus the more rapid is the growth rate, the faster the shares of products with high-income elasticities expand.

29.3 percent from 1973 to 1982, therefore, 7.9 percent was due to trade and 21.4 percent to the fall in domestic use. Clearly, even without the problems associated with higher import penetration, the increase in gasoline prices, high real interest rates, and depressed cyclical conditions would have created considerable difficulties for the U.S. automotive industry.

### *The role of U.S. trade*

The growing importance of high-technology trade to the United States is illustrated by Chart 1, which contrasts the U.S. trade balances in **R&D** and **non-R&D-intensive products**.<sup>34</sup>

The literature disputes the precise sources of the U.S. advantage in high-technology manufactured goods. Does it result from the relative abundance of engineers and scientists, the relatively large amounts spent on **R&D**, or the market inducements to innovate a rich economy? The strong interactions among these factors inhibit quantification of the contribution of **each**.<sup>35</sup> However, it is quite possible to provide a snapshot of the kinds of manufactured goods the United States succeeds in exporting and those in which import penetration has been the greatest.

U.S. export industries have made large investments in **R&D** and are at the technological **frontier**.<sup>36</sup> The products are often novel, require specialized production methods, and benefit during their development from being close to the market in which they are sold. Staying ahead requires continual innovation to offset the inevitable standardization of the production process and the international diffusion of technology. Conversely, U.S. imports, especially those from developing countries, are by and large mature and standardized products that can be mass-produced using skills that can be quickly acquired. They may be manufactured products requiring unskilled labor (such as apparel and footwear) or products requiring capital relatively intensively (such as steel).

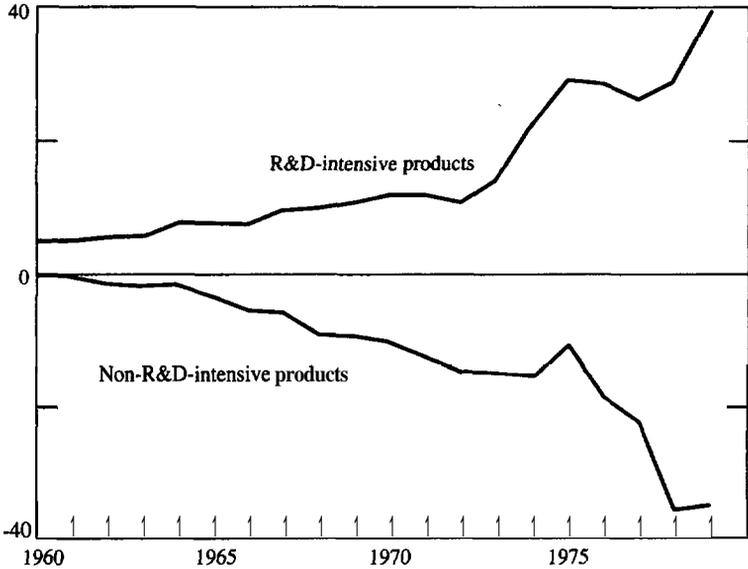
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34. The United States has maintained its share in world trade of high-technology products far better than in more routine goods. See Bela Balassa, "U.S. Export Performance: A Trade Share Analysis," Working Papers in Economics, 24, Johns Hopkins University, 1978.

35. On this question, see Thomas C. Lowinger, "The Technology Factor and the Export Performance of U.S. Manufacturing Industries," *Economic Inquiry*, Vol. 3, June 1975, pp. 221-36.

36. The classic generalization among these lines is Vernon's product-cycle theory. See Raymond Vernon, "International Investment and International Trade in the Product Cycle," *Quarterly Journal of Economics*, Vol. 80, May 1966, pp. 190-207.

**CHART 1**  
U.S. Trade Balance in **R&D-Intensive** and  
**Non-R&D-Intensive** Manufacturing,  
1960-79



Source: National Science Foundation. *Science Indicators 1980* (U.S. Government Printing Office 1961), p. 32

In summary, therefore, the impact of trade has not been to shrink the U.S. manufacturing sector, and the United States has not lost its comparative advantage in manufacturing as a whole. The United States has been developing a comparative advantage in **high-technology** (and resource-intensive) products, while its comparative advantage in labor-intensive and capital-intensive products manufactured with standardized technologies has been eroding. There is, therefore, a correspondence between the U.S. industries experiencing slow economic growth because of sluggish domestic use and those experiencing declining comparative advantage.

The direction of structural change in U.S. domestic markets and in U.S. comparative advantage may well be causally linked. The shift toward the demand for high-technology products domestically may be an important source of the growth in comparative advantage of the

**TABLE 18**  
 Classification Scheme for the 52 Input-Output Categories in U.S. Manufacturing

<i>End use</i>	<i>High-technology industries</i>	<i>Capital-intensive industries</i>	<i>Labor-intensive industries</i>	<i>Resource-intensive industries</i>
<b>Equipment</b>	43. Engines and turbines		13. Ordnance and accessories	
	44. Farm and garden machinery		23. Other furniture and fixtures	
	45. Construction and mining machinery		61. Other transportation equipment	
	46. Materials handling machinery and equipment			
	47. Metal working machinery and equipment			
	48. Special machinery			
	49. General industrial machinery			
	51. Office, computing, and accounting machines			
	52. Service industry machines			
	56. Radio and television equipment			
	60. Aircraft and parts			
	62. Scientific instruments			
<b>Consumer durables</b>	63. Optical equipment	54. Household appliances	19. Miscellaneous fabricated textiles	
			22. Household furniture	
			64. Miscellaneous manufacturing*	
<b>Consumer nondurables</b>	29. Drugs, cleaning preparations		18. Apparel	14. Food and kindred products
			34. Footwear	15. Tobacco
			64. Miscellaneous manufacturing*	

Intermediate goods	<p>27. Chemicals and selected chemical products</p> <p>28. Plastics and synthetics</p> <p>50. Miscellaneous machinery</p> <p>53. Electrical and industrial equipment</p> <p>55. Lighting equipment</p> <p>57. Electrical components and accessories</p>	<p>16. Fabrics, yarn, thread</p> <p>17. Miscellaneous textiles</p> <p>25. Paperboard containers and boxes</p> <p>26. Printing and publishing</p> <p>30. Paints and allied products</p> <p>32. Rubber products</p> <p>35. Glass products</p> <p>37. Iron and steel</p> <p>39. Metal containers</p> <p>41. Screw machine products</p> <p>42. Other fabricated metal products</p>	<p>40. Heating and plumbing products</p> <p>58. Miscellaneous electrical machinery, equipment, supplies</p> <p>64. Miscellaneous manufacturing*</p>	<p>20. Lumber and wood products</p> <p>21. Wood containers</p> <p>24. Paper products</p> <p>31. Petroleum refining and related industries</p> <p>33. Leather products</p> <p>36. Stone and clay</p> <p>38. Nonferrous metals</p>
Automobiles		<p>59. Motor vehicles and equipment</p>		

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Sources: Categories for production characteristics of industry are based on Robert M. Stem and Keith E. Maskus, "Determinants of the Structure of U.S. Foreign Trade, 1958-76," *Journal of International Economics*. Vol. 11 (May 1981), pp. 207-24, end-use categories are taken from the 1976 revisions of industrial production by the Board of Governors of the Federal Reserve System. See *Survey of Current Business*, Vol. 59 (February 1979), p. 54, for a complete description of the I-O categories.

\* The category "64. Miscellaneous manufacturing" is divided into end-use categories in the following proportions: consumer durables, 0.2; consumer nondurables, 0.4; and intermediate goods, 0.4.

United States in these products; and conversely, the shifts away from older products may have contributed to their relative decline. **Burenstam Linder** stresses the availability of markets and associated **scale-economies** rather than of factors of production such as capital or labor as the major determinant of comparative advantage and requests that countries export goods that are demanded in their home markets."

### Summary and conclusions

In the 1970s, the share of manufacturing employment in total U.S. employment continued its secular decline as a consequence of the revealed preference of U.S. consumers for services and the more rapid increase of productivity in the manufacturing sector. U.S. industrial growth has been sluggish, but it has been what would have been expected, given the slow growth in GNP. From 1973 to 1980, the share of manufacturing in total employment declined rapidly because GNP grew slowly and labor productivity growth in manufacturing fell less than labor productivity growth in the rest of the economy. Nonetheless, the U.S. did not experience absolute **deindustrialization** in the 1970s. U.S. employment in manufacturing expanded and, given the growth rate of output, investment and R&D spending in manufacturing were remarkably strong. In contrast to its decline from 1960 to 1973, the share of manufacturing in total U.S. fixed business capital increased from 1973 to 1980. The growth rate of the capital labor ratio in manufacturing actually accelerated.

The finding that capital formation and R&D spending in manufacturing has accelerated should give pause to those who believe that channelling additional capital towards manufacturing is an appropriate remedy for our industrial problems. There is no evidence that on average U.S. manufacturers have failed to invest. The evidence points rather to the important role of aggregate demand in constraining manufacturing growth. If growth is resumed, job creation and investment in manufacturing will be stimulated, and **reindustrialization** will occur automatically. In the absence of demand for particular products, however, policies should facilitate the movement of resources **away** from activities in which they are no longer needed.

The manufacturing slump is a worldwide phenomenon. The increase in U.S. manufacturing output since 1973 has been about the same as the average of all industrial countries. The capital stock in

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37. Staffan Burenstam Linder, *An Essay on Trade and Transformation*, New York, 1961.

manufacturing grew as rapidly in the United States as in Europe, and real R&D spending increased at similar rates here and abroad. Although employment in U.S. manufacturing grew modestly, in other major industrial countries it declined. In fact, in virtually every major industrial sector, employment in the U.S. grew faster than in Japan. Although U.S. labor productivity growth was not as rapid as productivity growth in other industrial countries, U.S. productivity levels in manufacturing overall remain the highest in the world, as does the U.S. share of R&D spending in value-added in manufacturing.

Compared with its postwar track record since 1973, the U.S. manufacturing sector has fared relatively better in comparisons with other industrial countries. This might have been expected given the relative exhaustion of catch-up gains that others could enjoy by adopting U.S. techniques. The U.S. performance may also be ascribed to its greater flexibility in a period marked by external shocks. In particular, U.S. real wage growth has been more adaptable and labor more mobile. The U.S. share of manufacturing employment in high-growth industries has increased more rapidly than those of Germany or Japan. There are, therefore, strengths as well as weaknesses in the U.S. industrial system.

Flexible exchange rates have been important to U.S. trade performance. From 1973 to 1980, partly because of the real devaluation of the dollar, foreign trade provided a net addition to output and jobs in U.S. manufacturing. From 1980 to 1982, the erosion in relative price competitiveness has been the source of the declines in employment due to manufactured goods trade. Changes in the real exchange rate are effective in moving the current account towards equilibrium determined by expenditure patterns. In 1970 and 1980, the current account was a similar percentage of GNP. This stability was accomplished in part by growth in the manufactured goods trade balance because of real devaluation. In the 1980s, the shift towards large full-employment government deficits unmatched by lower private absorption entails a current account deficit as foreign savings help finance the government deficit. This is accomplished in part by a manufactured goods trade deficit achieved through real appreciation. If these trade deficits are viewed as undesirable, policies to lower full-employment government deficits should be considered.

The decline in the manufactured goods trade balance over the past two years is not the result of a sudden erosion in U.S. international

competitiveness brought about by foreign industrial and trade policies. It is predictable given previous trends and current levels of economic activity and relative prices. A continued erosion in the balance is in prospect in **1983** and **1984**.

The evidence does not support the contention that major shifts in **U.S.** industrial and trade policies are required to maintain external equilibrium. Given a continuation of trends in **U.S.** and foreign trade policies and growth patterns, in the absence of relative price changes, the **U.S.** trade balance in manufactured goods would register small annual declines. If required for overall external equilibrium, these declines could be offset by minor **improvements** in relative **U.S.** prices.

There has not been increased turbulence in the demand for industrial workers across manufacturing industries.

The recent rise in dislocation is principally related to the slow overall growth in employment rather than an increase in structural change at any given growth rate.

The perceptions of an absolute decline in the **U.S.** industrial base and the belief that foreign competition has made a major contribution to that decline stem from the reinforcing effects of **U.S.** trade and domestic growth and the nature of adjustment difficulties associated with declines in industries adversely affected. The trouble industries are large and highly unionized, and the average plant size is large. Workers displaced from several of these industries face the prospect of considerably lower wages.

The **U.S.** comparative advantage in unskilled-labor and standardized capital-intensive products has been declining secularly. And, because of slow domestic economic growth, the home market for those products has not expanded rapidly. But our comparative advantage in high-technology products has strengthened, while the demand for high-technology products has grown relatively more rapidly in a climate of stagnation. In general, however, structural changes in the **U.S.** economy during this period arose mainly from domestic factors.

I have tried, in this paper, to distinguish the sources of **U.S.** industrial performance. The conclusion that demand fluctuations and exchange rates have had the dominant effects recently should not be interpreted to imply that this performance has been satisfactory, nor that there is no scope for improvement in **U.S.** structural **policies**.<sup>38</sup> But if changes in such policies are adopted, they should be made on

**the grounds that they improve productivity and stimulate economic growth. They should not be undertaken on the basis of fears, based largely upon confusion about the sources of economic change, that policies which appear inadvisable on domestic grounds are required for the purposes of competing internationally.**

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38. For a discussion of the policies I would recommend, see Robert Z. Lawrence, *Can America Compete?* Brookings Institution (forthcoming).



## Commentary

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*Lawrence H. Summers*

President Guffey introduced this conference by noting that "Industrial policy is one of the most important public policy issues that we face in the 1980s." I fear that he is correct. Pervasive industrial policy discussions do probably presage adoption of some sort of industrial policy. But as almost every economist at this conference has argued, specific micro-oriented industrial policies are likely to be mistakes. Indeed, the conference volume might profitably be **retitled *Why Industrial Changes do not Call for Public Policy Changes***. Lawrence's paper addresses many of the claims about our recent economic history that provide the basis for industrial policy recommendations. He debunks a number of myths about the reindustrialization of America. I agree with the thrust of his analysis, so I will digress briefly to discuss the general industrial policy debate.

Limited economic knowledge has many costs. Our inability to control, predict, or even explain economic events has contributed to secular stagnation, and to the recurrent cyclical downturns which have plagued us in recent years. A more subtle cost is borne by both the economics profession and the public. When experts can promise nothing more arresting than doubt, uncertainty, and incremental minor improvements, others will not fear to tread. There are no popular quack cures for polio or broken bones, but quack cures abound for cancer, arthritis, and the common cold. It is only when established professions fail that the ducks come out.

The simple fact is that we as a profession do not have any clear idea of how to reverse the productivity slowdown, which dramatically reduced worldwide growth in prosperity. Nor are we united in a view as to how price stability and acceptably high levels of employment can be reconciled. This ignorance has provided the fertile soil in

which the twin supply side movements of the right and left have taken root. It is minimally accurate to say of the early supply side movement that the view that tax cuts would be self-financing helped elect a president, but was never endorsed by any respected professional economist. If the original supply side economics was, as Bill Nordhaus once charged, "economic laetrile," then much of what flies under the banner of industrial policy is chiropractic economics — at best ineffectual and more likely wrenching. As with chiropractors, the false hopes of miracle cures deters the search for real solutions.

The parallel between the supply side and industrial policy movements is very close. Both promise rapid gain with little pain. Both derived from idealogues only to become politically acceptable when endorsed by serious presidential candidates of the opposition party. Both were supported by highly selective analyses of foreign experiences — Hong Kong and Singapore in the supply side case and Japan in the industrial policy case. Both proceeded with little or no enthusiasm from professional economists. One policy has already failed; the other waits in the wings. There is, however, one important difference between supply side and industrial policies. The excesses of the supply-siders can in due course be corrected by recognizing the costs of large deficits and raising taxes. The costs of an activist industrial policy are potentially much greater. The government, even should it desire to do so, is likely to find it almost impossible to extricate itself from entanglements in the allocation of capital across industries. Indeed, the record of public economic activity provides very few examples of withdrawal from activities that benefit significant interest groups.

I turn now to Robert Lawrence's excellent paper. While I am in broad sympathy with his analysis, I want to record two potentially important caveats. First, the link between evidence on the **de-industrialization** of America and policy inferences is a weak one. Suppose we could accurately target industries where the market was allocating too little capital. This would be desirable even if there were no evidence that our manufacturing industries were in decline. Conversely, even if industrial problems had only domestic roots, protectionist policies might be appropriate if policies addressing true causes were not feasible. One does not pump air into the part of a flat tire that is leaking.

The second limitation on Lawrence's work is that he relies **exclu-**

sively on aggregate national income accounts statistics. This is all that we have available, but I wonder whether they miss some of what American industry is good at. Before flying out here I played tennis further into the dusk that I could have a decade ago, before the invention of the yellow tennis ball. I hit the ball better with my oversized tennis racket. My trip here was more convenient because sophisticated technology enabled the airline to provide me with boarding passes and seat assignments for all legs of the trip at the first stop. It was more productive because of the calculator and dictaphone I carried in my shirt pocket. It was more pleasant because the jetway shielded me from the thunderstorm that raged as I left Boston. All of this represents progress since 1970. My guess is that none shows up in the national income accounts. Taking account of quality changes would probably only strengthen Lawrence's conclusion that the manufacturing sector has held up surprisingly well.

Lawrence's empirical analysis shows that many of the arguments advanced by those **who** favor industrial policy do not stand up to empirical testing. He properly emphasizes five important truths. First, traditional relationships between U.S. manufacturing and GNP have held up recently. Manufacturing output and employment are no more depressed than one would expect in a deep recession. Second, U.S. manufacturing has fared better than manufacturing in most other nations. Employment growth has been more rapid than in any other major industrial country and output growth has been more rapid than in any of the European nations. Third, we remain No. 1. U.S. productivity exceeds that of all our foreign competitors by about 15 percent. Fourth, until the very recent upsurge in the exchange rate, the foreign trade sector has created more jobs in export industries than have been eliminated by imports. Fifth, the rate of structural change as measured by the dispersion in industrial growth rates has not increased during the 1970s.

Given these five facts, an important question remains. Why, with manufacturing performing so robustly, with exports playing a positive role, and without particularly rapid structural change, has a crisis been so widely perceived? One answer that contains a lot of truth is that the current wave of hysteria reflects a confusion of macro and micro issues. On this view, the apparently structural problems we see are really just the consequences of deficient aggregate demand. In a less depressed economy, apparently structural problems would melt away. The risk, though, is that prices will not remain stable in an

economy strong enough to eliminate structural difficulties.

There is a second important answer to the question of why, given Lawrence's data, U.S. competitiveness has attracted such great concern. We may still be producing as much as we were before, but production is occurring on much less favorable terms. Had Lawrence looked at the data on profitability and real wages in manufacturing, he would have found much more cause for concern. Real wage growth and profitability performed dismally in the 1970s as the terms of trade shifted against U.S. manufacturing. In part, this reflected erosion by competition from foreigners of monopoly power enjoyed by U.S. firms. Autos and steel are examples here. Note that such competitive pressures will encourage production while simultaneously lowering factor returns. In part it reflected shifting world patterns of comparative advantage, as other nations caught up with the United States. Whatever the reason for the change, the pain caused has been real, and has appropriately attracted attention.

A third reason for the recent upsurge of concern about American competitiveness is the changing nature of our public institutions. As the bailouts of **Chrysler**, **Lockheed**, **New York**, and now the big banks attest, our society is becoming increasingly attentive to squeaky wheels. This development increases the incentive of those hurt by economic change to publicize their plight. The importance of this phenomenon is evidenced by the explosive growth of the trade association industry during the 1970s.

A fourth reason for the furor is also rooted in the dynamics of the political process. Foreigners do not vote. Blaming our woes on international competition is politically inexpensive. Pressures to promote U.S. competitiveness imposes visible costs only on foreigners. The domestic costs of protection — higher prices for U.S. consumers and less pressure on American firms — are not readily apparent.

What then should be done? As others have stressed, the most important thing we can do is to put our macro house in order. Economic recovery and a more balanced policy mix will do more to promote desirable industrial change than any conceivable package of microeconomic policies. If we do attempt structural policies, we should adhere to two principles. First, policies should be general rather than specific in promoting objectives. We should strive to encourage desirable activities which the market may underfund, such as basic research or worker retraining, rather than trying to pick winning industries. We have some hope of doing the former; the govern-

ment's record in breeders and synfuels shows that we cannot do the latter. Second, we should design policies that are not susceptible to political manipulation. Economic policies are not made solely or even significantly on the basis of economic efficiency. Political factors inevitably enter and their influence is seldom benign. Where identifiable groups of individuals or companies are to be singled out for special treatment of either a positive or negative sort, the potential for political manipulation is greatest.

Robert Lawrence's paper is a valuable weight on top of the **Pandora's** box of industrial policy. We can only hope that its message is heeded by the gurus of the industrial policy movement, and by the eager politicians who form their congregation. Following Lawrence's important work, future industrial policy advocates will have to begin with a demonstration of what for too long has been an undocumented premise — the existence of industrial problems which go beyond those that could be expected to result from current macro-economic policies.



# Macroeconomic Policy Under Structural Change

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*Robert E. Hall*

The U.S. economy is undergoing important structural changes. Some of these are the continuation of long-standing trends. Others started after the discontinuity in the evolution of the economy that seems to have occurred around 1973. Even others started at the end of the 1970s. No doubt other important changes will occur in the next few years whose character we can't even guess today.

Monetary and fiscal policies must be formulated with structural change in mind. Economists have been good at deriving optimal macro policies for laboratory economies with known, unchanging structures, but their advice for the U.S. economy has been deficient. To take a simple example, most economists in the 1960s subscribed to the proposition that monetary and fiscal policy should turn expansionary when the economy is noticeably below full employment. Of what value was this advice in late 1974, when unemployment jumped but inflation was still raging?

This paper starts with a catalog of structural changes that have occurred recently in the U.S. economy, with emphasis on the changes that have most complicated the task of formulating macro policy. I draw attention to the problem that in practice we cannot make a sharp distinction between cyclical and structural change. For example, the slowdown in productivity since 1973 and a number of other phenomena may have resulted in part from the slack conditions that have prevailed since then. In a sense, the entire past decade has looked like a prolonged recession.

The paper argues that macro policy ought to be conducted with highly specific, quantitative goals. Congress should set the goals, and the executive should be responsible for **carrying** out a policy to

achieve them. Structural change much complicates the choice of goals. I make the case that the goals of policy cannot be stated in terms of output, unemployment, inflation, or interest rates, because all of these are so strongly influenced by current and possible future changes.

For monetary policy, I think the policy rule whose performance would be most satisfactory in the presence of structural change is to manipulate the portfolio of the Federal Reserve as necessary to keep nominal GNP on a prescribed growth path. I join numerous other economists in making this suggestion.

For fiscal policy, I point out the vulnerability of the current tax system to changes in interest rates and the rate of inflation. The system is generally biased against capital formation, but certain types of investment — those eligible for high leveraging in tax shelters — are actually subsidized. The change toward higher interest rates over the past few years has exacerbated this problem. A complete tax reform involving the elimination of the corporate and personal income taxes and their replacement by a broad-based, low-rate consumption tax would solve the problems of anti-capital bias and sensitivity to economic change.

Throughout, I stress the implications of the growing integration of the U.S. economy with the rest of the world. A more open economy has increased the influence of monetary policy on economic activity and decreased the influence of fiscal policy. I examine the question of whether growing integration has made it desirable for the U.S. to coordinate its policies with those of its major allies. My answer is basically negative. U.S. policy has been a major destabilizing element in the world economy for the past 20 years. The biggest contribution the U.S. could make would be the adoption of stable policies, with monetary policy keeping nominal GNP on a predetermined path or keeping prices on target in the long run, and fiscal policy keeping the deficit at reasonable levels. The U.S. should encourage other nations to adopt similar policies. It is not desirable for the U.S. to alter its policy goals in response to events in the rest of the world.

### **Structural changes in the U.S. economy with macro consequences**

Of the many changes occurring in American life, certain ones have particular importance for the conduct of macroeconomic policy. The

ones I want to discuss are:

- The declining role of the goods-producing sector.
- The rising importance of foreign trade and the increasing integration of world capital markets.
- The rising fraction of the population that is retired or disabled, and the consequent increase in the share of national income going to their support.
- The reduction in productivity growth.
- The rising fraction of national income devoted to consumption.
- The decline in federal revenue as a fraction of national income and the consequent federal deficit.
- Deregulation of the financial sector.
- Declining inflation.
- High interest rates.

Some of these are long-standing, fundamental trends in the economy — the decline in goods production, the rise in foreign trade, and the growth of the dependent population. Others are more recent developments and less well understood — declining productivity, falling saving, and high interest rates. Yet others can be traced to recent deliberate changes in national policy — declining federal revenue, financial deregulation, and declining inflation.

It will be worthwhile for the discussion of macro policy in the face of these developments to lay out some of the facts about the changes in the U.S. economy.

### ***The declining role of the goods-producing sector***

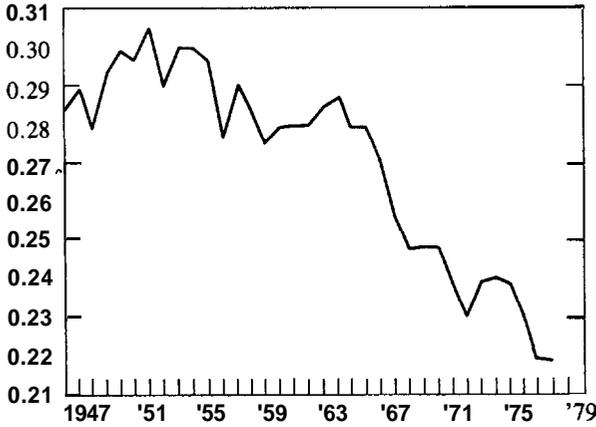
The production of goods accounts for a steadily declining fraction of U.S. economic activity. Distribution and marketing of goods and the production and delivery of services are the growing parts of the economy. Chart 1 shows the decline in the fraction of GNP originating in manufacturing, which is the major goods-producing industry.

Because goods production is more unstable than other types of activity, the trend away from goods has simplified macroeconomic policymaking. A sharp cyclical contraction in goods production, which is typical of most recessions, has a smaller total impact on the economy today than it did in past decades. In particular, goods pro-

### CHART 1

The fraction of GNP originating in manufacturing has declined from about 30 percent in the early 1950s to 22 percent

Manufacturing as a percentage of GNP



### CHART 2

Exports have risen as a fraction of GNP from about 6 percent to around 12 percent

Exports as a percentage of GNP

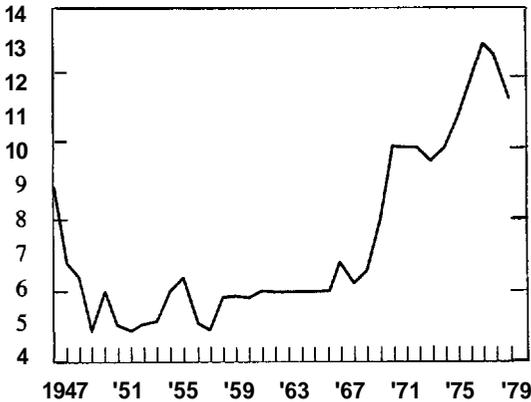
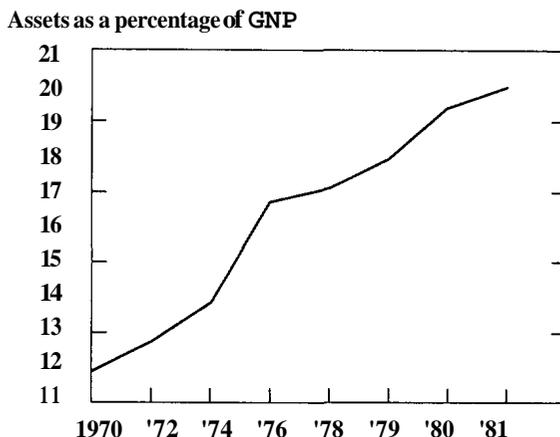


CHART 3  
U.S. ownership of foreign assets rose relative to GNP from 12 percent of GNP in 1970 to 20 percent in 1981



duction is more sensitive to interest rates than are other components of total output. Today's economy can tolerate financial gyrations more calmly than before.

### *Rising trade and integration of world capital markets*

Another important long-standing trend is toward greater participation in the world economy. First, trade in goods and services is growing relative to GNP. Chart 2 shows exports as a fraction of GNP.

U.S. investors are also more deeply involved in the economy of the rest of the world. U.S. ownership of claims on foreign businesses and governments have risen dramatically relative to GNP. Chart 3 shows foreign assets held by Americans as a fraction of U.S. GNP.

Increasing openness of the U.S. economy has a number of important implications for macro policy. For monetary policy, it enhances the effects of policy changes on real activity and the price level. When monetary contraction raises U.S. interest rates, the dollar appreciates in order to limit the flow of foreign funds into the U.S. credit market. A higher value of the dollar means a lower dollar price of imports. The U.S. price level responds quickly to monetary policy through this channel, whereas the response of domestic prices to

monetary contraction is sluggish. Further, a lower price of imports diverts demand from U.S.-produced goods to foreign goods, in both U.S. and overseas markets. Aggregate demand falls when the dollar appreciates. The influence of monetary policy on aggregate economic activity is strengthened as a result. The effects through the international value of the dollar augment the direct effects through interest rates on investment and consumer durable spending.

On the other hand, fiscal policy becomes less potent as an economy becomes more open. An expansionary policy of deficit spending contributes to aggregate demand in other countries and correspondingly less to U.S. aggregate demand. Further, deficits raise U.S. interest rates, causing dollar appreciation and contraction in economic activity. Policies of deficit spending are still expansionary in an open economy, but less so than in a closed economy.

Increasing openness has altered macro policymaking in another important way. Whatever steps the U.S. takes to control its economy have important repercussions everywhere else in the world. When the U.S. raises its interest rates to try to control inflation, interest rates are pushed upward everywhere else as well, and economic activity is altered. The U.S. has become keenly aware of its role as the interest-rate setter for the entire world. Political pressure from its major allies produces a distinct limitation on its choice of macro policy.

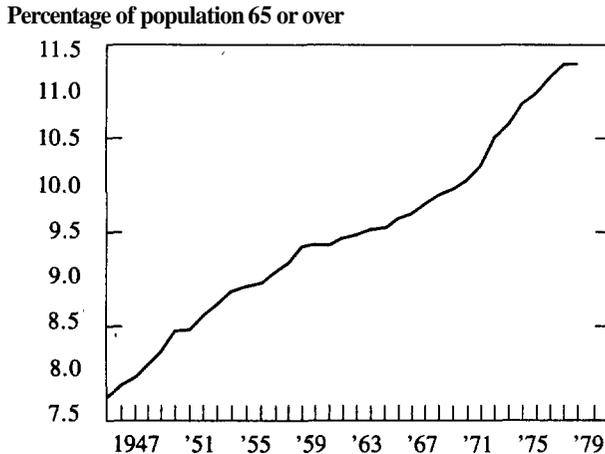
### *The rising dependent population*

A third major trend in the U.S. economy is the growing fraction of the adult population dependent on support from outside the immediate family. As medical advances have dramatically reduced mortality from heart disease and cancer, many more people are surviving for many years without being able to support themselves through work. Diabetes, arthritis, and other disabling conditions are replacing the fatal diseases of the past as the major medical problem of the U.S. population. By some estimates, the number of disabled individuals below retirement age has tripled in the past two decades. Chart 4 shows one simple indicator of the growth of the dependent population, the fraction of the population aged 65 or over.

The U.S. public has shown overwhelming support for a government rather than a family solution to the problem of supporting a much larger non-working adult population. Most of the steady upward trend in the government's share of national income comes

## CHART 4

The fraction of the population aged 65 or over has risen from below 8 percent to over 11 percent in the postwar period. It is projected to continue rising



from the Social Security programs that support the disabled and retired. **Because** the trend toward a larger dependent population will continue in the coming decades, macro policy must be combined with a long-term solution to the problem of providing the revenue to pay for Social Security. Each year, tax increases will be required to keep up with the growth of dependency; in years of recession, the need for long-run tax increases will have to be balanced against need for the stimulus from tax cuts.

### *The drop in productivity growth*

The 1950s and '60s saw steady improvement in output per worker in the U.S. economy. Since the early 1970s, productivity growth has proceeded more slowly. Chart 5 shows the slowdown since 1955. The reasons for the decline in productivity growth have so far escaped good economic explanation, so there is no widespread agreement on policies for restoring higher growth. Fluctuations in productivity growth from one decade to the next have been common in U.S. history. Macro policy needs to be formulated so as to deal with uncertainty in future productivity growth. It would be a mistake, for example, to set a goal for growth in real output. Even if we can specify rea-

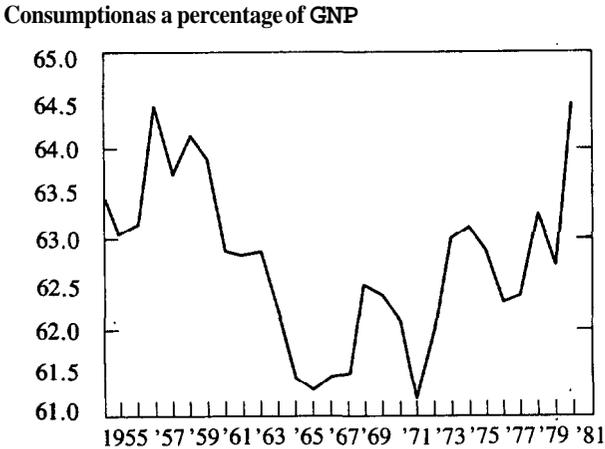
### CHART 5

Productivity growth measured at annual rates over 5-year periods has declined from rates around 3 percent before 1970 to rates of 1-2 percent since 1970



### CHART 6

As a fraction of GNP, consumption has risen from its low of just over 61 percent in 1972 to a high of over 64 percent



sonable targets for growth in labor and capital inputs, we cannot predict how much output will or should be produced from the inputs.

### *Rising consumption relative to GNP*

Over the past ten years, the U.S. economy has devoted an increasing share of its output to consumption. Figure 6 shows consumption as a fraction of GNP.

The proportion of GNP going to government purchases of goods and services (not counting income transfers) and to net exports has been almost exactly constant over the same period. All of the increase in consumption has come from declining capital formation.

The tilt toward consumption and against saving has been the subject of a good deal of attention. Many economists and policymakers have called for corrective policy in the form of a forthright consumption tax or added investment and savings incentives that would make the income tax more like a consumption tax. The tax legislation of 1981 added a number of incentives for capital formation and saving.

### *The recent decline in federal revenue*

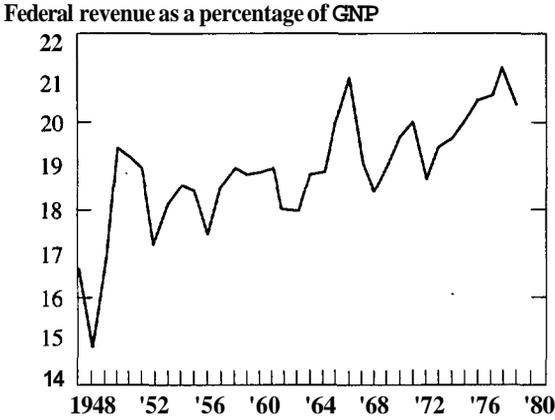
As Chart 7 shows, federal revenue generally grew as a fraction of GNP during the postwar period. The growth in requirements for federal income support programs more than exhausted the growth in revenue over the period. As mentioned above, the government's own use of resources in the form of purchases of goods and services did not grow at all relative to GNP.

Chart 7 shows that federal revenue declined in 1982 relative to GNP, a direct result of the tax cuts enacted in 1981. The tax cut came at a time of rapid increases in total government spending, for income support and other purposes. Even though the tax cut was modest by historical standards, it produced a substantial federal deficit. No more than half the deficit can be attributed to the recession of 1982—the rest is permanent in the sense that federal revenues would not pay for total federal spending even at full employment.

The struggle to eliminate the permanent part of the deficit will dominate fiscal policy in the coming years. Two intellectual forces favor policies of low taxes: concern about the restrictive effect of higher taxes on aggregate demand, which will continue for several years, until the economy reaches full employment, and concern about the adverse incentive effects of higher tax rates. On the other hand, there is almost complete agreement that, sooner or later, the

CHART 7

In relation to **GNP**, federal revenue has grown from about 18 percent to about 20 percent since the 1950s



government must start paying its bills in full. Deficits at current levels cannot be sustained forever.

**Financial deregulation**

Major legislation enacted in 1980 has brought profound change to U.S. financial institutions. The changes have been most important for narrow concepts of the money stock. Longstanding prohibitions against paying interest on checking accounts have been almost completely eliminated. The sharp distinction between money and other forms for holding wealth has virtually disappeared. Though these changes are desirable from the point of view of economic efficiency, they have created confusion about the conduct of monetary policy. The doctrine that the money stock should be kept on a smooth growth path, which has some appeal in an economy with an unchanging financial structure, has proven unworkable during the period of deregulation.

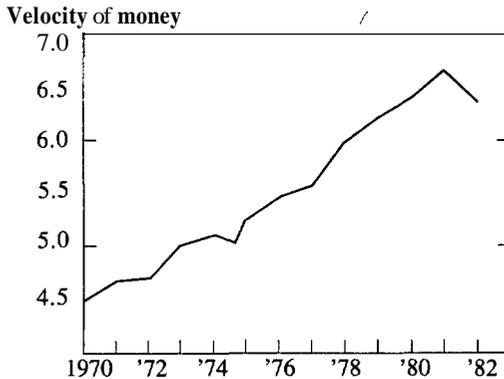
Chart 8 shows the velocity of the narrow monetary aggregate, M1 comprising currency and checking accounts. Until 1982, velocity grew along a reasonably predictable path — each year, a somewhat larger volume of transactions was mediated by each dollar. In 1982, the situation changed abruptly. The public suddenly held more cash per dollar of income than in 1981, a reversal of the earlier trend. A massive switch into interest-bearing checking accounts was part of the change. Another part, less predictable under the circumstances,

was an increase in the public's holdings of currency.

The process of adjustment to deregulation is far from complete. We can expect further shifts in monetary aggregates, and not just in the narrow money stock. Banks have recently acquired the right to offer federally guaranteed savings accounts paying market rates. These accounts are exempt from reserve requirements. Potentially they could draw funds from many other types of investments into banks. If so, the broader aggregates that include savings accounts will shift upward relative to GNP.

### CHART 8

Velocity grew smoothly from a level of about \$4.50 of GNP per dollar of money in 1970 to over \$6.50 in 1981, before falling dramatically in 1982



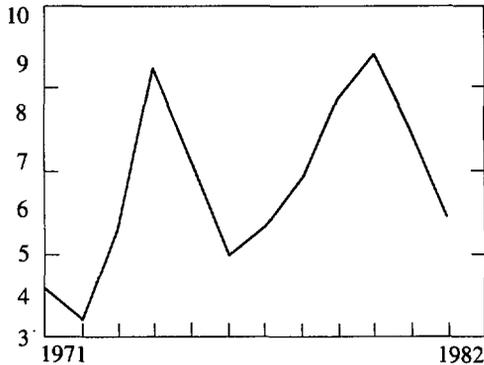
### *Declining inflation*

Inflation reached its recent peak in 1980 and has declined substantially since then. Chart 9 gives the data for the most reliable single measure of inflation, the implicit deflator for consumption. As the graph makes clear, inflation in the past decade was closely related to the two jumps in world oil prices in 1973-74 and 1979-80. Though the aggressive anti-inflation policy of the past two years has made an important contribution to declining inflation, stabilization of oil prices has probably been even more important. It is safe to predict that inflation will continue to fluctuate in response to outside forces; it is far from being directly controlled by monetary policy. The design of macro policy should keep in mind the likelihood of favorable and unfavorable developments in world commodity markets.

## CHART 9

The rate of inflation, as measured by the annual change in the deflator for consumption, peaked at close to 10 percent in 1980 and fell to 6 percent in 1982; a further decline in inflation is likely in 1983 and later years

Rate of inflation, percent per year



### *High interest rates*

High interest rates have been one of the most conspicuous features of the U.S. economy in the past few years. Interest rates remained unusually high throughout the period of slack of the recessions of 1980 and 1981-82. The anomaly is particularly evident if interest rates are corrected for inflation. The real interest rate, measured as the nominal rate on commercial paper less the rate of increase in the consumption deflator, is shown in Chart 10.

### **The interaction of structural and cyclical change**

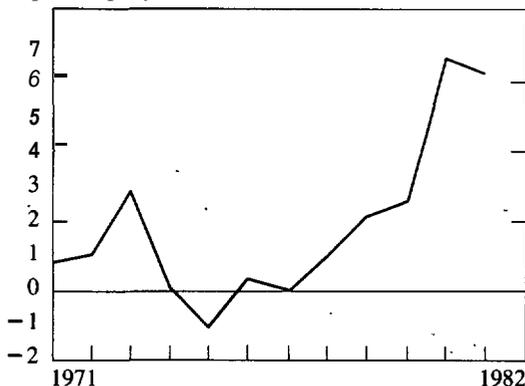
Many discussions of macroeconomic policy make a clean separation between cyclical phenomena and structural change. The most extreme manifestation of this view appears in econometric models of the U.S. economy. In those models, structural change is portrayed as time trends in many equations and, occasionally, as time trends in coefficients. The model expresses certainty about the current structure of the economy and about its future structure.

Within an econometric model, we can be quite specific in defining the state of full employment. Departures from full employment represent the operation of the business cycle. Designing an optimal macro policy in this setup is straightforward once we have agreed on the weights to be assigned to the objectives of full employment and

## CHART 10

The real interest rate averaged around one percent per year in the 1970s, and in 1981 and 1982 it rose to above 6 percent

Real interest rate, percent per year



Note: The real rate is computed as the nominal rate on prime commercial paper less the rate of increase of the consumption deflator.

price stability. Given the weights and the model, the computer can grind out the optimal settings of the instruments of monetary and fiscal policy.

Exercises of this kind are still carried out by the proprietors of econometric models, but the events of the past decade have made clear the extreme limitations of the approach. The plain truth is that we don't know the current structure of the economy, and we know even less about the changes in the structure of the economy.

The issue of separating cyclical and structural change is important because there is an influential body of opinion holding that much of what appears to be structural change over the past decade is really just a prolonged cyclical slump. Going with this diagnosis is a policy recommendation: What the **U.S.** economy needs for rejuvenation is no more than a good strong dose of stimulus.

A number of the items in my list of apparent structural changes may fit into this view. Productivity growth has always tended to be weak during slumps. **Consumption** has tended to be high and saving low during slumps. And, of course, the high unemployment of the past decade fits in well with this view.

### The targets of monetary and fiscal policy

Macroeconomic policy in a democracy requires the clear statement

of targets. Under the U.S. Constitution, Congress establishes the goals of policy and the executive branch carries out the steps necessary to achieve the goals. But structural change in the economy requires great care in choosing the goals. Under the right choice, Congress can hold the executive branch strictly accountable for macro policy. When the economy is off target, the executive is plainly at fault.

So far, Congress has failed to set the right kind of goal for macro policy. A number of laws stating broad goals are on the books, including most recently the Humphrey-Hawkins Act, but their goals are wishful thinking. Low unemployment rates and low rates of inflation are simultaneously invoked. The president escapes accountability because everyone recognizes that the **goals** are unrealistic.

Making the goals specific and attainable is not enough, however. Congress has considered legislation on several occasions to require a strict money growth rule. But events of the past two years have shown that such legislation would never stick. When an inappropriate policy rule like fixed money growth gets into trouble, as it did in 1982, the rule will be broken. Fixed money growth is not tenable under conditions of rapid structural change.

I want to stress the importance of continuing to seek a good policy rule in spite of the bad examples of Humphrey-Hawkins and fixed money growth. The U.S. economy operated without any consistent macro policy rule over the past two decades, and the result was completely unacceptable — far too much expansionary policy early in the period and a decade of contraction and recession afterwards to try to get back on track. The economy today resembles the economy of the early 1960s in combining low inflation with excess slack. At all costs, we must avoid repeating the excess expansion and long contraction that followed the early 1960s. Establishing a reasonable policy rule to which the executive can be held strictly accountable year by year seems the best hope for continuing stability.

Structural change in the U.S. economy precludes stating the goals of macro policy in terms of many of the measures of economic performance that suggest themselves. It is worthwhile going over the list and spelling out the reasons why output, unemployment, inflation, and interest rates are ruled out as ways to express the goals of macro policy. Many past and current discussions of the conduct of macro policy have advocated goals based on these variables without coming to grips with the problem of structural change. Goals that have to be

revised every year or two because the economy has changed will not function as goals at all.

**Output goals.** Congress could require that output grow 3 percent per year. If output growth fell short of or exceeded the goal, the president and the chairman of the Fed would be required to take immediate remedial action. But we cannot know in advance that the economy is capable of growing 3 percent year after year. If productivity grows only 1 percent per year, and the labor force grows 1 percent, it is asking the impossible for output to grow 3 percent. Macro policy might be able to attain the extra growth by superheating the economy for a few years, but ultimately the attempt would collapse in an inflationary explosion. This argument against a real as against nominal target for macro policy was made effectively by **Milton Friedman** in 1967 and has held up well ever since.

A more subtle output target would call for output to grow at its potential rate. The president and the chairman of the Fed would figure out how much productivity and the labor force were going to grow and then adjust policy so as to achieve that rate of output growth. In practice, this would amount to no policy at all. The executive would announce productivity and output projections at the level needed to validate whatever policy they wanted.

**Unemployment.** It is commonplace to state the goal of macro policy as full employment. In terms of statistical measures of economic performance, this inevitably becomes a quantitative target for the unemployment rate. Targets of 3, 5, or even 7 percent have been proposed. Compared to an output target, an unemployment target does have the advantage of eliminating guessing about productivity and labor force growth. With an unemployment target, unexpectedly low productivity growth or low labor force growth will automatically bring lower output growth without any modification in the unemployment target. But unemployment is subject to structural change itself. A recent paper by James **Medoff** has documented an important upward shift in unemployment relative to all other indicators of conditions in the labor market. Such a shift absolutely requires an increase in the unemployment target, else the same type of inflationary explosion could occur as in the case of an over-ambitious output goal. Or, on the other side, a decision to try to hold the unemployment rate at too high a level could bring accelerating deflation in the longer run. A fixed goal for the unemployment rate is simply untenable. Modifications in the goal are necessary as new information

becomes available, but once modifications are permitted, the goal becomes meaningless.

**Inflation.** A rate of inflation of no more than a few percent per year is the second major goal of macro policy as conventionally expressed. A number of economists have proposed elevating the inflation goal to a precise standard to **which** the executive should be held strictly accountable. There is a good deal of agreement about the desirability of price stability in the longer run. The public would be in a far better position to make lifetime **financial plans** if the purchasing power of the dollar were reasonably certain over the next 30 or 40 years. The most severe distortion from inflation comes from the confusion it creates for financial planning. When inflationary expectations are high, for example, the apparent return from bonds, annuities, and other assets whose returns are fixed over time at the same dollar level is overstated. Chronic inflation severely inhibits the stock market as an allocator of credit, as a result.

Setting a strict goal of zero inflation each year is not the way to achieve long-run price stability, however. As we learned in the **1970s**, a burst of inflation can hit the U.S. economy from world commodity **markets**. Because wages in the U.S. are not very flexible from one year to the next, the overall price level jumps upward when the price of an important raw material jumps. When macro policy reacts only cautiously, as in **1974 and 1979**, inflation can be severe. Moreover, real activity declines as the price level rises. At its most basic level, the reason for the decline in output and employment is the following. Macro policy controls nominal GNP. If policy is held constant and an outside event raises the U.S. price level, U.S. output must fall in proportion to the increase in prices in order to hold nominal GNP constant.

If macro policy were guided by the principle of year-by-year price stability, it would have to turn sharply contractionary in the face of an increase in world raw materials **prices**. **Policy** would be exacerbating the contractionary effects of the price increases themselves. The recessions set off by the two oil price shocks of the 1970s would have been far deeper under a policy of zero inflation each year.

A "price rule" would have an adverse effect in the happy event of a decline in raw materials prices as well. As the U.S. price level fell, policy would be required to be expansionary to try to keep inflation up to the target rate of zero. A situation of over-full employment could result.

Achieving the important goal of price stability from one decade to the next requires a more subtle statement to policy makers than simply to do what is required to keep the price level constant each year. I will return to this topic in the next section.

**Interest rates.** Friedman's case against policy rules based on interest rates looks far stronger today than it did in 1967. We are not capable of specifying a target for either nominal or real interest rates. If we pick a target that is too low, and try to keep rates at that level through monetary expansion, we risk an inflationary explosion. As with other ill-chosen policies, we will probably abandon the policy before it brings catastrophe. Still, given the strong interest of politicians today in imposing an interest-rate rule on the Fed, economists should be vocal in pointing out the consequences of such a rule.

The spectacular rise in nominal and real interest rates since the late 1970s has escaped an explanation that is widely accepted among economists. Some would attribute high interest rates primarily to contractionary monetary policy. As a matter of macroeconomic theory, this opinion is on firm ground in that the standard IS-LM model does predict that a leftward shift of the LM curve raises interest rates and lowers real activity, and these are two major changes that have occurred over the period.

Many economists, especially those most widely quoted in the financial press, have stressed the role of fiscal policy in bringing high interest rates. Huge federal deficits have coincided with high interest rates. But macro theory implies that when the government adds to aggregate demand by spending in excess of revenue, it *stimulates* real activity at the same time that it raises interest rates. The deficit theory of high interest rates needs to come up with some explanation for the low levels of real activity of the period of high interest rates.

It remains entirely possible that high interest rates reflect a deeper structural change in the U.S. or the world economy and are not just the outcome of changes in monetary and fiscal policy. Some of the other important changes noted at the beginning of the paper, especially the decline in saving, may be related.

Because we are still in the dark about the causes of high interest rates in recent years (or, for that matter, low interest rates in earlier years), we are not in a position to state a policy goal in terms of interest rates. I do not mean to say that interest rates can never have a role in good macro policy making, but rather that the final goal of policy cannot be a particular level of interest rates.

## Prescriptions for monetary policy

There is reasonable agreement that the task of monetary policy is to look after the purchasing power of the dollar in the longer run and not interfere excessively with real activity in the shorter run. Today, the Fed is operating with instructions no more precise than these. Its quantitative targets are self-imposed, and the public is fully aware that they will be discarded whenever the Fed decides they are unsuitable.

I find the case compelling for a strict, quantitative policy rule for the Fed. We need a simple criterion for deciding if monetary policy is too contractionary or too expansionary. The criterion needs to be formulated carefully to take account of everything we know about likely structural changes in the economy. It should be simple. It should be related in an obvious way to the goal of long-run price stability. It should make monetary policy roll with the punch in the short run, so that monetary contraction does not amplify other contractionary or expansionary influences on the economy.

I will give an example of a monetary policy rule with good properties. I am not sure it is the best rule, but it would make sense as a permanent statement about the conduct of monetary policy. Under the rule, Congress would always know at a glance where the economy stood relative to the criterion set forth in the rule.

**The nominal GNP rule.** An idea pushed by a number of economists, recently endorsed, in the Economic Report of the President, states the goals of monetary policy in terms of nominal GNP — the dollar value of U.S. output and the dollar value of total U.S. income. Once and for all, Congress would adopt a target path for nominal GNP. In the future, if nominal GNP were above the path, monetary policy would be judged excessively expansionary and would be required to contract as necessary to bring nominal GNP back to the path. If the economy slipped below the path, monetary expansion would be called for.

Why is it desirable to keep nominal GNP on a prescribed path when it would not be desirable to keep either the price level or real output on a predetermined track? The answer is that targeting nominal GNP is the best compromise between price targeting and real targeting. Price targeting gives a guarantee against inflation, but can bring severe fluctuations in real activity and unemployment. Real targeting can bring unlimited inflation. Nobody has yet come up with a monetary policy that guarantees perfect price stability and a full-

employment economy, especially in the face of important structural change. The best we have available is a "fail-soft" policy — that is, one that guarantees that the situation won't be too bad no matter what happens.

Nominal GNP targeting is a fail-soft policy. With respect to inflation, it does not promise perfectly stable prices, but it does guarantee that we cannot enter a serious inflationary spiral. The inflation of the 1970s and early 1980s could not have occurred under nominal GNP targeting. If a little inflation got started, nominal GNP would exceed its target. The Fed would immediately begin to lean against the inflation. If inflation persisted, contractionary policy would strengthen. Within a year or two, inflation would respond to monetary contraction, just as it responded from 1981 to 1983. Persistent inflation would be impossible. In fact, the policy promises something even better than the absence of inflation in the longer run. If some force perturbs the price level upward, eventually prices will come back down to their original level. A period of inflation will be followed by a period of deflation as necessary to keep the price level approximately stable.

On the real side, nominal GNP targeting is also fail-soft. Again, the policy does not promise that we will never have another recession. It does say that monetary policy will act to offset recessions and prevent them from becoming deep. In a recession, when output falls, nominal GNP falls by at least as much. The value of output falls because output falls, and may fall some more if prices fall as well. Expansionary policy is set in motion automatically during a recession if a nominal GNP target is in effect.

### ***Prescriptions for fiscal policy***

In discussing fiscal policy, I will assume that a monetary policy of the type just discussed is in place — the Fed is looking after the price level in the long run in a way that is not disruptive to real activity in the short run. Fiscal policy has three tasks in such an economy:

- Raising the revenue necessary to pay for government programs.
- Influencing the mix of output between investment and consumption.
- Possibly offsetting fluctuations in employment and output.

### ***Raising revenue***

It is absolutely essential that the government be on a long-run path

where revenue is close enough to spending that the accumulation of debt is proceeding no more rapidly than is the growth of the economy. If the public and the world perceive that chronic deficits are above that level, market valuation of the government's debt will decline. Moreover, the market value of the dollar will decline as well or, to put it the other way around, inflation will become severe. History has recorded the collapse of a number of weak governments under conditions of excess deficits.

Though the growth of the U.S. government debt has exceeded the growth of the economy in recent years, the world has not shown any signs of lack of confidence in its soundness. U.S. debt sells at record premiums over other types of debt, and the dollar is exceptionally strong abroad and losing value at home at a far slower rate than in earlier years. The people who count are showing no signs of panic over the U.S. government deficit.

Still, in due time it is important that the deficit be reduced somewhat. Government debt is about a trillion dollars currently. Nominal GNP should be growing at about 7 percent per year in the steady state at current rates of inflation. Thus a "structural deficit" of 7 percent of a trillion, or \$70 billion per year, is consistent with keeping the growth of the debt at the same rate as the growth of nominal GNP. Current estimates of the structural deficit are about \$100 billion, so revenue increases or spending cuts of about \$30 billion are needed to bring the deficit down to an acceptable level for the longer run. Moreover, large increases in spending for retirement, disability, and medical benefits are projected over the coming decades for the reasons mentioned in the first section of this paper. Continuing increases in revenue will be necessary to keep the deficit under control.

### *Consumption versus investment*

The tax system influences the allocation of output between investment and saving. The response of U.S. savers to incentives is a matter of controversy among economists. Certainly the high real interest rates of the past few years have not depressed consumption as they would have if saving were highly sensitive to incentives and nothing else had changed in the economy. But in an open economy, investment is not determined by domestic saving alone. Capital flows freely between the U.S. and the rest of the world. If the U.S. taxes the earnings of capital heavily, investment will decline as investors seek better after-tax returns in other countries. At a minimum, fiscal pol-

icy controls the allocation of investment among nations.

Taxation of capital in the U.S. has received much attention in the past few years and important changes in capital taxes were made in **1981**. But capital is still taxed in a remarkably helter-skelter fashion. Some investments are taxed heavily while others are **subsidized** just as heavily. Grossly unequal taxation remains true even though the revenue from the corporate income tax has fallen from **2.7** percent of GNP in **1979** to an estimated **1.1** percent in **1983**. The corporate tax is quickly becoming an economic monster that taxes some activities in order to subsidize others, with little net yield in revenue.

The investments most heavily subsidized by the tax system are those where businesses take full advantage of the deduction for interest permitted under the tax law. An investment **financed largely** with borrowed money, with the investment tax credit and accelerated depreciation, earns its owners a return several times greater than its before-tax earnings. The rest of the after-tax earnings **are tax** benefits. As inflation recedes, the problem of tax subsidies to certain types of investment will worsen, because inflation will no longer diminish the real value of depreciation deductions.

The tax system puts heavy taxes on the earnings of other types of investments. If a corporation makes an investment **financed entirely** from retained earnings, takes the investment credit and accelerated depreciation, and pays out the earnings of the investment as dividends to shareholders who are taxed at the 50 percent personal rate, the effective tax rate from the corporate and personal taxes can be as high as 60 percent.

The existing tax system is sensitive **to** some of the types of structural change listed in the first section of the paper. Rising interest rates have made the system **even more vulnerable** to abuses based on the interest deduction. Falling inflation has helped reduce excessive tax rates in some cases, by boosting the value of depreciation deductions, but simultaneously worsened the subsidies **paid to highly leveraged** shelters. **Increasing** openness of the economy has increased the sensitivity of U.S. investment to U.S. tax laws.

Because leveraged investment is only a small part of total investment, the principal distortion of the tax system has **been** to depress investment below its efficient level. A subsidiary effect has been to divert investment into the areas where high leveraging is feasible. Tax shelters have boomed while total investment has weakened.

### *Stabilization*

The use of fiscal policy for stabilization has been the centerpiece of U.S. macro policy since the Depression. Every recession has seen spending increases to stimulate activity, and since the early 1960s, tax cuts have been an important stabilization tool as well. There remains a question, however, whether fiscal stabilization policy is really a good idea.

In particular, were the U.S. to adopt a stable, sensible rule for monetary policy, so that swings in monetary policy were no longer a source of instability, there would be a strong argument against the use of taxes and spending for stabilization.

There are four elements to the argument against explicit countercyclical fiscal policy:

- Spending is automatically linked to the state of the economy already through unemployment insurance and other programs where payments rise when the economy softens.
- Changes in purchases of goods and services — direct government employment and public works programs — take too long to put into effect.
- Changes in taxation and spending have little influence on total economic activity in an open economy.
- Consumption is not very responsive to temporary changes in taxes.

### *The automatic stabilizers*

The American public is reasonably well insulated against recessions thanks to the many income support programs whose payments rise automatically when the need for them rises: On the average over the postwar period, changes in the real disposable income of the public have been only about half as large as the changes in the real income of the economy. The federal government has absorbed the difference.

### *Lags in spending programs*

In spite of numerous emergency job and public works programs, the postwar history of U.S. government spending reveals no general pattern of increased real purchases of goods and services during recessions. Studies of specific countercyclical job programs have

confirmed the government's inability to crank up programs quickly enough to contribute to aggregate demand before the recovery is well underway. The record is fairly convincing that countercyclical fiscal policy should not include programs of government employment or purchases.

### ***Fiscal policy in an open economy***

The more open an economy, the weaker is the relation between domestic aggregate demand and domestic employment and output. The pronounced movement toward greater integration with the rest of the world has diminished the influence of fiscal policy on economic activity in the **U.S.** When the government contributes to aggregate demand by raising its own purchases, or by adding to the incomes of consumers, the extra resources tend to be drawn in from other economies instead of coming from added production in the **U.S.** The exchange rate has an important role in the process. Fiscal stimulus raises **U.S.** interest rates. As a result, the dollar appreciates, imports become cheaper to Americans, and **U.S.** goods become more expensive to the rest of the world.

### ***The ineffectiveness of temporary tax cuts***

The administrative difficulties of cranking up countercyclical spending programs have led fiscal stabilization policy to put most of its emphasis on tax cuts to provide stimulus during recessions. The most aggressive tax cut occurred in early **1975**; its net effect was to depress federal revenue by more than a full percentage point of GNP (see Chart 7). The government also attempted to cool off the economy in **1968** with a temporary income tax surcharge amounting to about 2 percent of GNP.

Economists have criticized temporary tax measures on the grounds that consumers are aware that their incomes have changed only temporarily. They adjust their consumption only a fraction of the amount they would if the same income change were known to be permanent. This criticism is well grounded in the theory of consumer behavior. A study of the influence of temporary tax changes by Alan Blinder reached the conclusion that consumers were less responsive to temporary taxes than to permanent changes in income, but still responded reasonably vigorously. A reasonable summary of all the evidence on this point is that there is large uncertainty about the magnitude of the response of consumption to temporary taxes.

### ***Recommendations for fiscal policy under structural change***

It seems to me that we should put in place a simple, clean tax system that generates the level of revenue required by federal spending commitments and is robust under structural change. In particular, it should totally eliminate the pattern of excess taxation of some activities and subsidies of others. Further, it should have a uniform pro-investment influence on every consumption-investment choice.

There is widespread agreement that a broad-based consumption tax with low marginal rates would satisfy all of these requirements. In my work with Alvin Rabushka, I have developed a plan for a consumption tax which solves many of the transition problems and overcomes some of the political obstacles to a consumption tax. Our plan involves a flat rate of 19 percent on all consumption, but the flatness of the rate is not essential to the plan. Rather, it is a progressive tax at low rates on all consumption.

The best way to think about the Hall-Rabushka plan is the following: Consider a national sales tax at a uniform rate on all consumption goods. This is a broad-based consumption tax, but it is not progressive. To make it progressive, we first change the administration of the tax from a sales tax to a value-added tax with a deduction for investment. Instead of paying the tax only for their sales to final consumers, businesses pay the tax on all sales. But purchasers of goods for resale get a tax deduction for their purchases, as do purchasers of investment goods. Then we break up the value-added tax into two parts. Businesses pay the tax on the part of value added that is not contributed by their workers — in other words, they receive a tax deduction for wages as well as purchased goods and investment. The workers themselves pay the value added tax on their own earnings. However, to make the system progressive, workers receive a rebate for the taxes they pay on their consumption, up to about \$8,000 in consumption for a family of four. This rebate is subtracted from the payment they make for the value added tax on their own earnings.

Though this system is a thorough-going consumption tax with no compromises, it looks very much like the current tax system with some desirable reforms. Businesses pay a tax that looks like the corporate income tax. There is no deduction for interest payments, but investment receives first-year writeoff. Individuals pay a tax that looks like the personal income tax. There are no deductions for interest or other items except the standard deduction, but there is no tax on interest or dividends. Both tax forms are immensely simpler than

their existing counterparts.

Hall-Rabushka has been severely criticized as inadequately progressive. It is true that switching to a 19 percent rate is on net a good deal for the wealthy, though it will raise taxes for many who are using shelters aggressively today. But a modification of our proposal offers the best hope for a true consumption tax. To make the tax more progressive, the business rate could be raised to, say, 27 percent. Then the wage tax could have two brackets, with marginal rates of 14 and 27 percent. The net effect is to tax consumption at a uniform rate of 27 percent, with a rebate whose magnitude is related to wage earnings. No other consumption tax proposal has gone as far in solving the administrative and political problems as this one.

Because the Social Security system is already a large part of the federal fiscal system, and will become even a larger part in the coming decades, no fiscal reform is complete without inclusion of Social Security financing. I favor the proposal made by Martin Feldstein, Laurence Kotlikoff, and others to split Social Security into two components. One is an **actuarially** fair disability and retirement system, financed by mandatory contributions. These contributions would not be labeled as taxes and would not have the economic distortions of taxes — a dollar of contributions would buy benefits with a present discounted value of a dollar. The redistributive part of Social Security would be financed by the comprehensive federal consumption tax. I see no case for any major reductions in Social Security benefits — the public has made it unambiguously **clear** that it wants benefits at their current level and is willing to pay for those benefits.

### **Policy coordination with other countries**

My discussion has repeatedly emphasized the integration of the U.S. economy with the rest of the world, but it has treated U.S. policy as completely unilateral. U.S. macro policy influences other economies, and their policies influence us. Aren't there advantages **to be** gained from coordinating policies, at least among the big three of the OECD, Germany, Japan, and the U.S.?

If U.S. macro policy continues to be conducted by granting the executive branch wide discretion and relying on their judgements to make good decisions in the light of current circumstances, then policy coordination is a necessity. It would be naive for the U.S. to embark on a policy, for example, whose effect was to raise U.S. interest rates without recognizing that other countries will feel

obliged to copy our policies.

The general approach to macro policy advocated here has quite a different flavor, however. For monetary policy, the top priority is to eliminate swings in **U.S.** policy as a disruptive influence in the world economy, which is clearly what it has been since the 1960s. In its place, we should install a stable policy precommitted to a path for nominal GNP or a long-run target level for **U.S.** prices. Such a policy should not **try** to react to events in the world economy any more than it should react to events in the **U.S.** economy. The type of policy coordination that fits in with this kind of monetary policy is to convince other nations to adopt similar policies of precommitment to a nominal GNP path or price level. Or, especially for smaller countries, a policy of manipulating the monetary instruments as necessary to maintain a fixed exchange rate with the dollar would be a sensible counterpart to the proposed type of policy in the **U.S.**

For fiscal policy, one of the most telling arguments against unilateral **U.S.** action to offset the business cycle is that the openness of the economy vitiates the action. This argument does not apply to concerted action by all the major economies; the world economy is closed. However, it is hard enough to get the **U.S.** political system to act quickly enough to time the stimulus correctly. I see little prospect that a coordinated fiscal program could be launched in the major economies of the world in time to push even in the right direction, much less at the right moment.

### **Concluding remarks**

**U.S.** monetary and fiscal policy should be precommitted to simple, feasible, quantitative goals. Continuing important structural changes in the economy make it essential to choose the goals carefully. For monetary policy, a goal of keeping nominal GNP on a prescribed growth track or of keeping the price level at a target level in the long run, according to a specific short-run strategy, emerge as good choices. Goals for monetary policy based on concepts of the money stock have been rendered useless by major changes in the financial structure of the **U.S.**

For fiscal policy, we need to eliminate the bias of the system against capital formation and remove provisions which make effective tax rates sensitive to inflation and interest rates. A broad-based consumption tax with low marginal rates would achieve these goals. The level of tax rates should be set in such a way that the growth of the

national debt does not exceed the growth of the economy as a whole except in times of recession.

These reforms in the conduct of macro policy would provide a stable background for private economic activity in the U.S. and the world economies. They would not eliminate recessions and brief episodes of inflation, but they would prevent extended episodes of bad macroeconomic performance.



## Commentary

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*James Tobin*

### **Diagnoses and prescriptions: macro vs. micro**

Diagnoses of maladies afflicting the economies of the United States and other developed countries fall into two distinct classes. For convenience I give them the shorthand labels "macro" and "micro." Prescriptions differ correspondingly. Of course the physicians of each camp have plenty of disagreements among themselves. And some manage to inhabit both camps.

The common feature of macro diagnoses is the view that the central problem, today as in the past, is to reconcile high employment of labor and capital with stability of prices or, at least, of inflation rates. Conflict between these goals has been the basic dilemma of macroeconomic policy in advanced democratic capitalist economies for nearly 40 years, especially the last 10. Failure to resolve the conflict by monetary and fiscal policies has been the principal source of business fluctuations and of interruptions to economic growth. Its resolution is the key to prosperity and progress for the rest of the century.

Macro physicians do not deny that the economies of the United States and the rest of the world also face some challenging microeconomic adjustments. They do, however, deny that these are of such unusual magnitude that, given a clement macro climate, they could not occur via the normal processes of private and public initiative in our mixed economies. The impression that problems of structural adjustment are of a new, high order of magnitude reflects from two optical illusions. One is to overlook the dramatic structural changes — in the technology, composition, and location of production and employment — that have occurred in the past. The other is to misidentify as micro-structural the numerous cases of economic distress that are the natural consequences of *macro* policies and events.

The common feature of micro diagnoses is just the reverse: The recent depression, the previous stagflation, the slowdown in productivity growth, the rise of unemployment — these are much more than symptoms of macro cyclical fluctuations. They betray deep-seated structural maladies — of accelerated technological and industrial change to which increasingly arteriosclerotic rigidities impede adjustment, and of institutional obsolescence in governments, business managements, and trade unions. The diseases are new, and so must be the remedies. Without novel cures, the employment-inflation problem is likely impossible to solve. At best, macro policies can never reemploy most of the currently unemployed labor and capacity.

Robert Hall, I would say, is squarely in the macro camp. The bulk of his paper concerns the conduct of macro policy, especially monetary policy. He appears confident that if monetary policies are credibly committed to judiciously chosen targets the economy is capable of performing quite satisfactorily. He cites favorably the interpretations of productivity slowdown and related disappointments in real economic performance as symptoms of prolonged cyclical slump.

Hall does, it is true, begin his paper with a list of structural changes and trends, presumably an obligatory bow to the title of this symposium. But his list offers no support for micro diagnoses. Some of the items are long-standing trends in demography, industrial composition, and international economic integration. (As to demography, I was disconcerted to learn from Chart 4 that I am now a member of the dependent population, though my two-year-old granddaughter evidently is not.) **Other** items are not as billed "structural changes . . . with macro consequences," but according to Hall himself, the consequences and symptoms of macro difficulties. Still others result from tax and regulatory reforms deliberately motivated by micro diagnoses of the ills of the economy.

I am in the macro camp too. I observe that, with some notable exceptions, most economists will be found there. On the other hand, most practical men and women explicitly or instinctively go for structural explanations and solutions, probably because microeconomic phenomena are most salient in their experience. The idea that, in Hall's words, "what the U.S. economy needs for rejuvenation is no more than a good strong dose of [demand] stimulus" is strongly resisted by almost all non-economists. They cannot, I guess, believe that such serious ills could be so easily cured. They couldn't believe it

in 1936 or 1961 either.

Many economists, including Hall, also resist that Keynesian prescription, but their reasons are internal to the macro camp. They are worried about renewed price acceleration, the risk of lowering unemployment below its current natural rate. Hall manfully tries to base his rejection of old-fashioned demand management on the difficulties of distinguishing cyclical phenomena from structural change. But he doesn't even try to make the case that such uncertainty is extraordinarily acute right now. Knowing what he thinks he knows now and what macroeconometricians don't know, he would likewise have rejected countercyclical macro policy 10 or 20 years ago.

Before discussing further Hall's macro policy stance, I would like to offer a few brief, provocative remarks on the micro diagnoses. These come from both **right and left**. On the right, Reaganomics blames government: the size and growth of spending, the weight of taxation, the welfare state, the burden of regulation. The case was never convincingly made. The remedies have, to say the least, not yet begun to bring the promised results. Countries with bigger governments shared the pre-1973 prosperity and growth, as did those few with smaller governments. None have been spared the recent stagflation and stagnation.

On the left, prophets of the euthanasia of the worker have reappeared — a coincident indicator of every depression. Remember the Technocracy movement of the 1930s and the automation scares of 1960-61. In both cases subsequent cyclical expansion, aided by demand stimulus, created jobs in an abundance that had seemed arithmetically impossible to these and other pessimists. Pessimists? On productivity they are extravagant optimists; the problem they see is not a slowdown in its growth but an incredible spurt.

Somewhere in the center are advocates of industrial policy, some combination of national planning and government-business collaboration. One motivation is the widespread impression that the United States is losing its ability to compete internationally in all goods and services. The record of our export growth, in manufactures as well as other commodities, refutes this view. In the past, the composition of national output has adjusted to shifts of comparative advantage; it can do so again. Currently our own monetary policy and our prospective monetary-fiscal ~~mix~~ are handicapping our producers in international competition by appreciating the dollar against foreign currencies. It would be a tragic irony if to bandage these self-inflicted wounds we

adopted protectionist measures or industrial policies to subsidize either "winners" or "losers:"

The second motivation is that new technologies and investment opportunities involve more risks than American businessmen can be expected to bear and American investors can be expected to finance. We have the most sophisticated financial and capital markets in the world. Why should a government development bank be required to raise funds for socially viable projects within the private sphere? Let governments concentrate on public goods, human capital, and basic research, where social returns to the nation exceed private returns. These have been neglected in the anti-government supply-side revolt, with its excessive emphasis on business physical capital as the sole way to provide for the nation's future.

I have, I admit, drawn too sharply the lines between micro and macro diagnoses, and between demand management and structural policies. Micro structure determines the terms and durations of inflation-unemployment tradeoffs and the location of the natural rate of unemployment, or what is more neutrally called the non-accelerating-inflation-rate-of-unemployment (NAIRU). From this viewpoint, the important structural shocks and trends are those that shift the NAIRU or alter the relative responses of prices and outputs to dollar spending. The major uncertainties facing macro policymakers today concern these features of the economy. And the major structural reforms needed for prosperity and growth are ones that promise to lower the NAIRU and mitigate price responses to demand stimuli from whatever sources.

The macro orientation thus suggests quite a different agenda from those of supply-siders or advocates of industrial policy. There are large differences of opinion about these reforms. Some of us advocate incomes policies. Some, not necessarily excluding the proponents of income policies, favor pro-competitive reforms in collective bargaining legislation, increased incentives for flexible labor compensation systems, removal of government regulations that establish floors, but not ceilings, for wages and prices, subsidies for training or retraining on and off the job, and for relocation.

The NAIRU, it is generally agreed, has drifted upward since 1965. The possibility that it is now still higher than the 6 percent unemployment rates achieved at the peak of recovery in 1978-79 is the underlying risk that inhibits expansionary macro policy today. The main evidence, however, is the inflation of the 1970s itself. As Hall points

out, there is some independent indication in the rise of overall unemployment rates relative to other measures of labor market tightness. But drift in this relation cannot account for today's high unemployment rates or for prevailing rates of excess industrial capacity. I suspect that the NAIRU follows with lag the history of actual unemployment. High unemployment since 1974, generated by anti-inflation policies, has denied many young workers and others the job experiences that are the most reliable creators of human capital.

There is considerable danger, I think, of misreading the experience of the 1970s. The bursts of inflation that terminated and spoiled the recoveries of 1971-73 and 1975-79 were far from wholly endogenous consequences of those recoveries. They had more to do with OPEC and Middle Eastern wars and revolutions than with American labor and product markets. If they told us about any "natural rate," it was the then operable natural rate of oil consumption. It is remarkable that Hall's catalogue of structural change and his account of recent macro history ignore oil and energy. A favorable trend is the adaptation of oil and energy consumers and producers to the post-1973 price and supply situation. The likelihood is small that a recovery in the 1980s will encounter the same stagflationary shocks as those of the 1970s. But caution bred by the 1973-74 and 1978-79 events will doubtless induce governments and central banks, here and elsewhere, to charge in excess points of unemployment a heavy premium for insurance against inflation.

### **Hall's recommendations for monetary policy**

Hall's major recommendation is that monetary policy be committed by mandate of Congress to a *permanent, nominal, quantitative* target. He seeks a rule which will limit fluctuations of prices and quantities in the face of our inevitable uncertainties about the structure of the economy and the shocks to which it will be subject. He rejects rules committing the central bank to predetermined paths of its immediate instruments or of intermediate monetary aggregates. Stability of these measures will not stabilize variables of macroeconomic importance, as recent events have dramatically illustrated. Hall subordinates instruments and intermediate indicators to targets of macroeconomic performance. In this respect, I agree and applaud.

However, I do not believe that Congress can or should bind the Federal Reserve to *any* permanent target path.. Hall's proposals are ostensibly motivated by the observation that policies must cope with

structural uncertainties and shocks. There is significant probability that any simple, irrevocable rule will force the Fed to take the economy into regions of dangerously poor performance for long periods of time. To forbid the Fed to diagnose unexpected events and revise target paths could be as suicidal as it would have been to forbid Paul Volcker and his colleagues to rescue the economy in 1982 from the unintended consequences of obsolete M targets. To forbid Congress to amend the target path in such circumstances is politically impossible and therefore incredible from the start.

Neither do I believe that Congress and the Fed can or should confine themselves to nominal targets. Real **performance** is, after all, the name of the game of political economy. Elected officials and their servants are judged by the electorate by real outcomes — unemployment, production, growth — and not just by price or inflation stability. Properly so. The notion that since monetary instruments are nominal magnitudes they can and should be geared only to nominal outcomes is a facile play on words. The proposition that monetary policies are neutral with respect to real outcomes does not withstand either theoretical analysis or empirical test. This is not to say that the Fed should be committed, on its own or by Congressional mandate, to any permanent numbers for unemployment or real GNP growth. Nothing should be permanently pegged.

One of Hall's two favorite target variables is nominal GNP. I like it too, provided the numerical targets are subject to annual revision. Each year a five-year projection of nominal GNP, agreed upon by the administration, Congress, and the Fed, would announce the intentions of the policymakers. The first year of the projection would be a firm commitment. The implied one-to-one price-output **tradeoff** may not accord perfectly with social priorities, but its simplicity is a major compensating advantage. But let the longer-run target path be reconsidered annually in the light of experience and the state of the economy.

Hall's alternative suggestion is a permanent target for the level of the Consumer Price Index. His proposal also includes a rule for monetary policy designed to correct gradually deviations from the permanent target. As we would expect from the fertile mind and pen of the author, this is an imaginative, ingenious, and provocative recommendation. As you and he would expect, I have strong objections.

First, I do not understand the implicit welfare economics. Why should the absolute level of a price index be an argument, let alone

the argument, in anybody's social welfare function? Why, in particular, should it be there for neoclassical economists who in other contexts repeatedly assert the neutrality of money? From a less doctrinaire perspective, why should movement of the price level be ruled out as one way, frequently one of the least costly ways, of adjusting to shocks? Consider as examples changes in factor productivity, supplies and prices of internationally traded goods, and indirect-taxes. Keynes argued that increase of domestic prices could be the least disruptive way of making necessary reductions in real wages. When Chancellor of the Exchequer Churchill disregarded his warnings in 1925, Britain was plunged into long depression. Following the OPEC shock of 1973-74, a Keynesian adjustment occurred in the United States. The nominal wage path responded quite incompletely to the price shock; in 1975-78 real wages fell, relative to previous trends, more than enough to pay the nation's higher cost of imported oil.

Second, if any price index were to be a policy target, it should surely not be the CPI, subject as that index is to fluctuations from specific commodity prices, taxes, exchange rates, import costs, interest rates, and other idiosyncracies. It should be some index of domestic value added at factor cost.

Third, I worry about the path of real interest rates that will accompany deviations of actual price from the target. When upward deviations are due to excess demand shocks, it is true, the rise in the real rate will be in the right direction. It may be excessive because the Fed will also be raising nominal rates in order to keep the futures-market expected price index on Hall's prescribed return path. The serious problem arises when the upward deviation results from a stagflationary shock, like the OPEC shock of 1973-74. Then the Fed would have to generate actual deflation at a time when aggregate demand is already being reduced by the shock. Just imagine how much worse the recessions of 1974-75 and 1980-82 would have been had the Fed been bound by Hall's price level rules.

The answer, I anticipate, will be that the behavior of unions, workers, and managers in setting wages and prices would be wholly different if they understood the new policy regime. This is a popular point in theoretical ivory towers, on the Stanford campus and elsewhere, but it has scant empirical support, far too thin to bet the future of the economy on it. Actual economic distress, not the threat of it, still seems to be the main discipline of prices and wages, in Thatcher's

Britain and in Volcker's America. Why? As I mentioned above, it is hard to make threats credible given that Congresses, Presidents, and central bank governors cannot bind their successors, and maybe not even themselves. Art Okun's village fire department, exasperated by a careless citizenry, will not really carry out its threat to answer no more alarms for a month. Anyway, the inflation control game is not a two-person contest between government and an unruly economy. It is an  $n + 1$ -person game, in which the government's threat is addressed to everybody in general and nobody in particular. Consider, as a metaphor in the Okun tradition, a highway police force frustrated by chronic speeding, threatening to close the freeway for a week if the *average* speed of motorists the previous week exceeds 55. In a decentralized system of wage- and price-setting, as Keynes pointed out long ago, every local group will resist nominal reductions because they appear to each group as a loss of relative income. It is naive to expect nominal inertia to disappear on the announcement of a new monetary regime, whether Hall's, the monetarists', or the gold bugs'.

Fourth, I question the desirability of a stable price level even over the long run, with deflationary and inflationary episodes occurring symmetrically. One reason is that reductions in nominal wages and other incomes are harder and slower to come by than raises. In addition, as I think Scitovsky and/or Vickrey observed many years ago, a stable or declining price trend invites Keynesian liquidity trap problems, given the impossibility of negative nominal interest. There have been times, and may be again, when real interest rates on safe assets need to be very low or negative.

Fifth, I wonder how Hall's new regime would start. He mentions for illustration a numerical target about 3 percent above the present CPI. Should Congress adopt that target right now, inertia and bad luck on food or other items could easily force the Fed into deflationary policies before a year is out. Would Congress adopt a target allowing more room and time? Wouldn't those who voted for it be accused of officially sanctioning inflation?

Sixth, it is by no means as clear to me as it is to Hall how his feedback mechanism would work. Let me remind you of the mechanism. The Fed would be required to keep the expected future CPI, quoted today on the Coffee, Sugar, and Cocoa exchange for a year hence, one quarter of the distance between the latest actual CPI report and the permanent target. If the target were 310, the current reading 314,

"the Fed would change its portfolio as necessary to keep the expected level of the CPI a year hence at 313."

What does the Fed do to induce traders to arrive at 313 on the CSC exchange? Maybe the Fed need do nothing. The traders know the formula, and the market clicks as automatically as forward exchange rates preserve interest rate parity. But there is no arbitrage here. The Fed does not itself buy or sell CPI futures (except, Hall says, possibly to get information from an otherwise thin market). Moreover, the Fed will not be buying or selling CPI commodity bundles or proxy commodities; the FOMC will not have the power to directly determine actual CPI outcomes. So the futures price will not go to 313, in the example, unless and until traders observe the Fed taking such actions as will in their opinion indirectly make 313 a good prediction. In effect, short-run monetary operations will depend, not on the judgment of the Fed **and its** expert staff as to what actions will do the trick, but on the judgments of an anonymous and ever-shifting set of futures market traders. The performance of markets in foreign exchange, gold, interest rate futures, and stock market indexes does not give me great confidence in this method of making monetary **policy**. Whatever may be the monetary rule, I would rather trust the Fed and its staff to implement it and forget the futures market except as one of many sources of information to them.

### **Hall on fiscal policy and international coordination**

The paper, though mainly devoted to monetary policy, treats fiscal policy too. Hall downgrades its importance and value in demand management. I have space for only two brief comments.

The first concerns Hall's main point, that international integration and floating exchange rates have diluted the effects of any single country's fiscal measures on local aggregate demand. Yes, but the reason is that the demand effects spill into other economies. Fiscal expansion throughout the OECD would raise demand throughout the OECD and the world. The same openness that dilutes the local effects of fiscal measures increases the leverage of monetary stimulus. But the reason is that exchange depreciation pulls in demand from the rest of the world; the worldwide effect of a single country's monetary policy is smaller than its local effect. Coordinated monetary stimulus would raise demand everywhere. Hall's use of the **small-open-economy-in-a-big-world** model is in any case out of place for the United States. American and foreign assets are imperfect substitutes in

American portfolios, and the United States is still the most powerful locomotive of the world economy. Hall's emphasis on international openness makes illogical his perfunctory dismissal of the problem of coordinating the macro policies of the United States, Germany and the European Community, and Japan.

My second comment concerns Hall's plug for his particular proposals for tax and fiscal reform. None of his arguments against the use of taxes and spending for macro stabilization, which I regard as overstated anyway, support those proposals. They must be judged by criteria of allocational efficiency and distributional equity, not by macroeconomic considerations. That, not agreement with the proposals, is the reason I do not discuss them here

In conclusion I shall state briefly views I have elaborated elsewhere. Macro policies should aim openly at announced paths of important real and nominal variables over a horizon of five years. These paths should be reconsidered annually. The nominal GNP target, firm for a year ahead, should be consistent with the five-year goals. Instrument settings and intermediate variable targets within a year should be consistent with the nominal GNP target for the year. By coordination among administration, Congress, and Federal Reserve, monetary, and fiscal policies should be aiming at the same longer and shorter-run targets. International coordination of macro policies among the three world-class locomotives is needed to prevent **beggar-my-neighbor** policies with respect to either demand or prices. In the United States, income policies — wage and price guideposts with tax-based inducements to comply with them — would be a useful adjunct to fiscal and monetary instruments. They would be a less costly way of insuring against renewed acceleration of inflation than extra points of unemployment and excess capacity.

# Targeted Industrial Policies: Theory and Evidence

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*Paul R. Krugman*

At some point in the next decade, the U.S. will probably adopt an explicit industrial policy. This policy may include general incentives for capital formation, **R&D**, retraining of labor, and so on, but it will also almost surely involve "targeting" of industries thought to be of particular importance. By targeting I mean an effort to change the allocation of investment — as opposed to its overall level — so as to favor particular industries in which the private market is believed to underinvest. There may be **other concepts** of targeted industrial policy, but the question of the government's role in the allocation of investment is surely the most important and controversial one.

Support for some kind of targeted industrial policy comes from a remarkably wide political spectrum. The idea is favored by nearly all Democrats and many Republicans, nearly all liberals and many conservatives, nearly all unions and many businesses. The only fairly unified opposition comes from professional economists. It is a tribute to the force of free-market ideology that we have resisted industrial targeting as long as we have.

The breadth of support for targeting is, however, partly a consequence of the fact that the specifics have not yet been defined. Which industries are to be targeted? Many advocates of targeting are, to put it bluntly, slippery on this point. They call for a coherent industrial strategy backed by new government institutions, but do not define the substance of that strategy. Presumably the details are to be worked out later. Yet there is a wide range of opinion about which industries should be targeted, and very little agreement about the criteria to be used to settle these disputes. If we can agree in advance, in more or less academic forums, on criteria for selecting target industries, it may be reasonable to expect government agencies to fill in the seven-

digit detail. If we cannot devise such criteria, the prospects for success are slim. For the problem of criteria for targeting is a deep one — and deep analysis is not something that government agencies do well.

The case for a targeted industrial policy therefore stands or falls on the issue of criteria for selection. Can we devise criteria for choosing targets which will by and large pick the right industries? If we can, can we devise an institutional framework which will actually act on these criteria and not degenerate into a system of political payoffs? The answers I will suggest are not encouraging. Most criteria for targeting suggested by the advocates of industrial policy are poorly thought out and would lead to counterproductive policies. While there are more sophisticated criteria suggested by economic theory, we do not know enough to turn the theoretical models into policy prescriptions. Indeed, we find it hard to tell whether industrial policies have been successful even after the fact. Given this lack of clear guidelines, it is very naive to suppose that government agencies can somehow intuit their way to appropriate policies.

This paper is in two main parts. The first part is a discussion of criteria for selecting target industries. It begins with an analysis of "popular" criteria which have been advanced in publications aimed at a large audience, then turns to more sophisticated criteria suggested by economic theory. The second part examines the other side of the coin, the evaluation of actual industrial policies. It discusses the difficulties in determining, even after the fact, whether an industrial policy "worked." These problems are then illustrated with two examples, the steel industry and the semiconductor industry.

### Criteria for industrial targeting

Even a skeptical discussion of targeted industrial policies should admit at the outset that there is no question that an optimal policy of industrial targeting would be beneficial. Markets are not perfect, and the numerous market failures and distortions in the real world surely lead to too little investment in some industries, too much in others. The question is, which ones? Markets aren't perfect, but they are probably not so imperfect that random interventions are liable to improve on them.

Unfortunately, most discussions of industrial targeting are vague about what we should target. There is a good deal of emphasis on the importance of detailed study of industries, but even the most detailed study will not help us formulate policy if we don't know what we're

looking for. There is also frequent **assertion** of the need for a coherent strategy; but a coherent, wrong-headed strategy may be worse than no strategy at all.

The absences of clear criteria for choosing targets makes discussion difficult. What I will try to do in this section is to **analyze** criteria which are explicit in some discussions and implicit in many others. These criteria fall into two **groups**. First are what I will call "popular" criteria. These are criteria which are frequently advanced in books and articles aimed at a large audience rather than at professional economists. The criteria which I have found most often in this literature are high value-added per worker; linkage to the rest of the economy; the prospect of future international **competitiveness**; and targeting by foreign governments. From an economist's **perspective**, all of these criteria are badly flawed. It is possible to show both by abstract "thought experiments" and by concrete example **that** an industrial strategy which uses any of these criteria to choose target industries is likely to reduce economic growth, not promote it.

While the public debate on industrial policy is dominated by these simplistic criteria, however, there is also an economist's case for targeting. This case **emphasizes the** role of targeting in the face of imperfect markets, resulting in particular from economies of scale, externalities, and the incentive-distorting effects of the government policies. These concepts furnish a valid basis for targeting — **if** the theoretical concepts can be turned into measurable **factors in practice**, and **if** one believes that the machinery of industrial policy will actually work in the way we intend.

### ***Popular criteria for industrial targeting***

Most writing about industrial policy is vague about **the content** of such a policy. Any attempt to analyze, specific ideas is therefore risky. If the analyst isolates a particular concept and **criticizes** it, he is likely to be told that he is oversimplifying. Yet there must be some specific concepts in the minds of the advocates of industrial targeting. My own reading of recent discussions suggest that the most important criteria **envisioned** by advocates of industrial **targeting** are the following:

**High value-added per worker.** Some authors have **pointed** to the wide range of value-added per worker across industries and suggested that countries can raise their national income — to some extent at other countries' expense — by deliberately shifting their economic

structure into the high value-added industries.

**Linkage industries.** Many authors have also suggested that there is a special payoff to investment in "linkage" industries, such as steel and semiconductors, whose outputs are used as inputs by other industries.

**Future competitiveness.** It is often argued that the government has a valuable role to play in targeting industries in which a country is not currently competitive on world markets, but in which it will be or can be made to be competitive in the future.

**Responding to other governments.** A final argument which has become very popular is that industrial targeting must be used to counter other governments' industrial policies, lest our country's industrial structure become determined by other countries' targeting.

**High value-added per worker.** In their admirably clear tract on industrial policy, *Minding America's Business*, Magaziner and Reich immediately lay out their basic criteria for industrial targeting:

"We suggest that U.S. companies and the government develop a coherent and coordinated industrial policy whose aim is to raise the real income of our citizens by improving the pattern of our investments rather than by focusing only on aggregate investment levels. Our country's real income can rise only if (1) its labor and capital increasingly flow toward businesses that add greater value per employee and (2) we maintain a position in these businesses that is superior to that of our international competitors."<sup>1</sup>

Leaving on one side the issue of competitiveness, to which we return below, this passage clearly states two features of the proposed policy: a reliance on reallocation of investment rather than an increased flow, and direction of investment toward sectors with high value-added per worker.

There is great plausibility to the idea that reallocation of workers into high value-added sectors will raise national income. There is a wide range of value-added even among quite aggregate groups of industries. Other things equal, a higher share of workers in the high-value-added industries would mean higher national income per capita.

But would other things be equal? The crucial question to ask is *why* there is so much variation among industries in value-added per

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1. Magaziner and Reich (1980), p. 4.

worker. Why doesn't labor move into the high value-added sectors without special encouragement? The answer, of course, is that by and large high output per worker reflects high input per worker: large quantities of capital and extensive training and education. Sending a garment worker to a refinery does not by itself make him as productive as the existing refinery workers — you also have to equip him with several hundred thousand dollars' worth of capital equipment. Sectors with high value-added per worker generally have low value-added per unit of capital or per skilled worker.'

Suppose that the government were to follow a policy of encouraging investment in high value-added sectors — that is, in sectors with high ratios of physical and human capital to labor — without at the same time increasing the overall rate of investment. It is easy to pursue a "thought experiment" to see the consequences. Since the capital-labor ratio in high value-added industries is higher than in low value-added industries', a given amount of investment would employ fewer people. Employment growth would slow, and unemployment would rise. At the same time, since the capital-output ratio is also higher in value-added industries, the rate of economic growth would actually be reduced. This may seem paradoxical, since output per worker would be rising more rapidly than before, but the paradox is resolved by the fact that the slowdown in employment growth would more than offset the rise in productivity growth.

Over time, if they are allowed to operate, market forces would tend to correct some of these effects. Rising unemployment would put downward pressure on real wages, and lower real wages would lead firms to move towards more labor-intensive techniques. In the long run, employment would be restored, with more workers in high value-added sectors but lower productivity in each sector — and probably lower output per worker in the economy as a whole. At least some advocates of high value-added targeting, however, would try to prevent this adjustment:

"As a national strategy, the substitution of lower real relative wages for productivity improvements would eventually make America a relatively poor country, albeit one with a healthy balance of payments. Accordingly, a rational industrial policy

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2. For example, the chemical industry has a value-added per worker which is more than three times that in textiles, but its capital-labor ratio is also more than three times as high. (Numbers from *Statistical Abstract of the United States*.)

should encourage **firms** to invest in productivity improvements and increased output rather than reduce real wages.'<sup>3</sup>

In other words, as unemployment rose, real wages would be sustained through government legislation or less formal suasion.

In short, a strategy of encouraging investment in industries with high value-added per worker appears, in our thought experiment, to have very poor results: slower growth, and rising unemployment. But would it actually work out that way in practice? As it happens, there is abundant experience with this kind of policy. For much of the postwar period, encouragement of capital-intensive, high **value-added** industries was a key element of development strategy in many less-developed countries. It is generally acknowledged now that such policies were misguided. They tended to produce dualistic economies, divided between high-wage, capital-intensive, but economically inefficient favored sectors and a low-wage, high unemployment **residual**.<sup>4</sup> The success stories of the less developed world have been exactly those countries which, instead of prematurely developing their capital-intensive industries, exploited their comparative advantage to export labor-intensive products. Thus the proposal to foster high value-added industry amounts to a suggestion that we adopt a strategy which looks like a bad idea in theory and has worked poorly in practice as well.

**Linkages.** A second criterion for industrial targeting which is frequently advanced is that special encouragement should be given to industries which are important "linkage" sectors, in the sense that their output is in turn used as an input by a number of other industries. A representative view on this is that of Eleanor Hadley, who writes in explaining the success of Japanese industrial policy that:

"Japanese target industries have been selected not only for their own importance but for their ramifying effect on other industries. For example, steel was chosen because, in an industrial economy, steel is the basic building block. **Have** cheap, good-quality steel, and the products made of it — ships, automobiles, rails, locomotives, heavy electrical equipment — will enjoy a price advantage.<sup>5</sup>

Similar views recur through much of the industrial policy literature.

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3. Magaziner and Reich (1980), p. 339.

4. See, for example, Little, Scitovsky, and Scott (1975).

5. Hadley (1983), p. 6.

Magaziner and Reich offer a view which is identical to Hadley's; Mueller and Moore (1983) similarly argue for a need to target "basic industries, such as steel, which have important multiplier consequences throughout the economy."

On the surface, the idea of a special significance to the production of linkage industries seems highly plausible. If capital and labor are used to produce a final good — say dishwashers — than that is all they produce. If they are instead used to produce steel, the steel can in turn be used to produce many different items. So it is natural to suppose that other things equal it is more productive to allocate more capital and labor to steel.

On reflection, however, the argument is not so clear. Saying that steel is used in many industries conveys the impression of multiple returns to output. But while steel is used in many industries, a particular ingot of steel is used only once. A linkage of industry's products can be made to sound like "catalysts" for the rest of the economy, but unlike a real catalyst, steel does not get to be reused many times.

What does formal economic theory have to say? In textbook economic models, the fact that some industries are inputs into other industries is not in and of itself a source of market failure. In the absence of other distorting factors, the market will in theory produce exactly the appropriate amount of investment in linkage industries.

These textbook models, in which all "marginal whatnots" are equal, are of course poor approximations of reality, and it could easily be that the ways in which the world is different from the models do make extra investment in linkage industries desirable. For example, there could be external economies in the linkage sector. But it is equally possible to conceive of cases in which it is the final goods sectors which should be encouraged — e.g., if they are more labor-intensive and unemployment is a problem.

The fact that an industry provides inputs into other industries does not in and of itself mean that markets underinvest in that industry. There may be market failures which do make it desirable to promote a linkage industry, but the fact that an industry provides inputs to the rest of the economy gives us no help in deciding whether or not it should be targeted.

**Future competitiveness.** Some proponents of industrial policy have realized that the differences of criteria for selection of targets represents a problem. An answer which has been proposed by some, such as Diebold (1980), is the criterion of eventual international com-

petitiveness. Adams (1983) argues that restricting targeting to industries which can eventually become competitive on world markets is a relatively hard-nosed criterion for selection:

"The criterion of present or future competitiveness on world markets . . . is a difficult market test. If the industry can meet that test, we can presume that resources are being allocated efficiently . . . [but the] world-market test must be applied with a dynamic view since industries presently in need of assistance may ultimately be competitive."<sup>6</sup>

There is a strong appeal to the notion that an industry is worth supporting if it will eventually be able to stand on its own feet in the face of international competition. We know that this is not a toothless criterion: many industries have received protection and support without ever becoming self-sustaining. (Indeed, there may well be industries deserving of support which would fail to pass the test, as discussed below.) The criterion of eventual competitiveness also has an honorable intellectual lineage, having been propounded by no less an economist than John Stuart Mill.

But it is a fallacious criterion. There are at least two ways in which an industry might meet the criterion of eventual competitiveness yet in fact not be a proper candidate for targeting.

The most obvious way in which an industry might meet the criterion of eventual competitiveness is if comparative advantage is shifting in the industry's direction for reasons independent of industrial policy. Suppose, for example, that a country has a small capital stock but a very high savings rate. Over time, as the country accumulates capital, its comparative advantage will shift capital-intensive industries, simply as a result of market forces. In the economist's imaginary world of perfect markets, the shift in industrial structure would occur at exactly the right rate. In the real world, the pace is bound to be wrong; but there is no presumption that markets are too sluggish — they could equally well move too quickly.<sup>7</sup>

The important point is that in our example — which is of course meant to be suggestive of postwar Japan — targeting of **capital-intensive** industries will meet the criterion of eventual competitiveness,

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6. Adams (1983), p. 413.

7. An interesting point in this connection is that "growth stocks," whose value depends on anticipated future rather than current earnings, have historically been bad investments. This suggests that financial markets tend if anything to lay too much stress on future as opposed to present returns.

regardless of whether or not it actually promotes economic growth. It may be desirable to accelerate the movement into more **capital-intensive** industries, or it may not — it depends on the precise nature of capital market imperfections. Certainly it is possible to build an industry too soon. Singapore is now building personal computers; should it have tried to develop a computer industry in 1965? Adjusting too fast is as economically irrational as not adjusting at all.

Our first case, then, is where the eventual competitiveness of an industry essentially happens for reasons independent of industrial policy, something **Corden** (1974) has called the case of the "pseudo infant industry." A second case arises when industrial **targeting** is responsible for eventual competitiveness, but at excessive cost. Suppose that there is an industry with worldwide excess capacity and little new investment. By subsidizing the cost of capital, a country could induce its firms to resume investing, building more modern, capital-intensive plants than their competitors. These plants might well have lower operating costs than those in other countries, so that even after the capital subsidy is ended the targeted industry will be able to export and operate at higher capacity utilization than other countries' industries. Yet in the absence of any other special reason for supporting the industry, such as technological spillovers, the social rate of return on investment in an industry with excess capacity is bound to be quite low. Again, that is not an argument drawn out of thin air; as argued below, the apparent success of Japanese industrial policy in steel may be partly of this kind.

The last example stressed subsidy of capital. It is also possible that by subsidizing the acquisition of knowledge in an industry — either by subsidizing R&D or by protecting an industry while it moves down the learning curve — industrial targeting can sometimes create industries which are self-sustaining thereafter. As with a subsidy to capital, the eventual competitiveness does not show that the policy was justified. There is an enormous literature on the infant industry issue, which boils down to this: having the industry grow up healthy is not enough; its existence must generate enough extra national income to compensate for the initial cost. Suppose, for example, that a costly subsidy program creates an industry which is competitive, but not by a wide margin, so that it would be nearly as cheap to import the industry's products. Then the policy meets the criterion of eventual competitiveness, but it was nonetheless a mistake.

What these examples demonstrate is that eventual competitiveness

is not a useful guide to selecting targets. No doubt there are industries that will eventually be competitive and that should be targeted; there are also without question future competitive sectors that should not be targeted, and for that matter there are sectors worth supporting that will never be able to stand on their own feet. Unfortunately, knowing that an industry will or might become competitive tells us nothing about whether it should be promoted.

**Response to foreign targeting.** One of the most influential arguments for industry targeting is that it must be used to counter foreign competition. On this argument, our criterion for selection of industries ought to be essentially defensive. We should support industries which have been targeted by foreign governments, in order to avoid letting our industrial structure be determined as the "obverse of other countries' industrial policies." There is great appeal to the idea that the policies of foreign governments should not be allowed to distort our industrial **structure**. As one recent report argues:

"[The] concept that the U.S. must reduce production in any sector — such as steel, automobiles, or semiconductors — as a result of decisions taken by foreign governments, is tantamount to resigning ourselves to having our economy shaped by the policies of others rather than by the impersonal operation of the marketplace. Our adherence to a laissez-faire philosophy under these conditions would mean that the structure of American industry would be determined, not by market forces, but by the industrial policies of other governments."<sup>8</sup>

Should the U.S., then, fight fire with fire — meet targeting with countertargeting? We probably will, but like our other **popular criteria**, this one does not stand up too well under analysis.

The problem is that in economics two wrongs do not make a right. A distortionary foreign policy may reduce U.S. **welfare**,<sup>9</sup> but countering it with an equivalent U.S. policy will often merely make things worse.

Suppose, for example, that foreign countries subsidize exports of an agricultural commodity, say, wheat. This is undeniably a **distort-**

8. Labor Industry Coalition for International Trade, p. 15.

9. Or it may increase over welfare. If Colombia were to subsidize its coffee exports, this would distort the international trading pattern — but in a way which benefits us. One economist remarked that when the U.S. government determined that European governments were subsidizing their exports of steel to the U.S. the appropriate response should have been to send a note of thanks.

ing policy, and since the U.S. exports wheat, it lowers the price of U.S. exports and reduces our national income. Yet a program of countersubsidy by the U.S. would depress prices still further, compounding the damages. Here the plausible idea of meeting foreign targeting turns out to be a very bad criterion. **The example**, of course, not hypothetical: this is exactly what has happened.

The response of advocates of a policy of meeting foreign competition would presumably be that wheat is a bad example. Foreign industrial targeting should not be matched in a mindless fashion, but only when it threatens key sectors.

But what defines a key industry? If we can find criteria which make an industry particularly crucial, then we should target that industry regardless of whether other countries choose to target it. If the industry does not meet their criteria, foreign targeting gives no reason to change our judgment.

In practice, an industrial policy aimed at meeting foreign competition would probably lead to government encouragement of investment precisely where the returns to investment are depressed by the targeting of other governments. A case in point is steel. Steel is almost universally regarded as an industry worth targeting, and partly as a result is an industry with low returns. In meeting foreign policies, the U.S. would thus be targeting an industry where the market returns are bound to be low. The only justification would be if there were other reasons to target steel. As already suggested and argued at greater length below, this is a dubious proposition.

In general, meeting foreign industrial policy seems to be almost a recipe for picking sectors where there is excess capacity and low returns.

**Conclusions.** We have examined four popular criteria for selecting targeted industries, and found them wanting. These criteria are not straw men. They are the criteria which have been proposed by some of the best-known advocates of industrial targeting, and are at least as sophisticated as the ideas which shape most public debate.

Of the four criteria, two would probably be quite disastrously counterproductive. Targeting of high value-added industries is both in theory and in practice a recipe for slower growth and higher unemployment; defensive targeting to meet foreign policies will often be a way of insuring that investment is funneled into areas with excess capacity and depressed rates of return. The other criteria, linkages and future competitiveness, are less obviously destructive; but they

are not likely to be beneficial, either.

I am sure that some advocates of industrial targeting will deny that they have in mind anything as simplistic as the concepts just described. The proponents of these criteria, however, do not think they are being simplistic. And when the time to choose industrial targets comes, it will be a break with all past experience if the criteria for selection are more sophisticated than these.

Nonetheless, it is possible to suggest some more sophisticated criteria for targeting which might be used to carry out a successful industrial policy. I find it hard to believe that they can serve as useful guides for policy, but in fairness they ought to be described.

### *More sophisticated criteria*

Only the most die-hard believer in the functioning of free markets would deny that a government planner with sufficient information and freedom of action could increase national income by targeting certain industries. The idealized model in which free markets lead to a perfectly efficient outcome relies on extreme assumptions, particularly about returns to scale and the ability of firms to fully capture all the benefits of their activities. Since these assumptions are visibly violated, there clearly exists a set of government policies — including activities we would describe as industrial targeting — which could raise national income.

The problem is that knowing that a useful industrial policy exists does not necessarily help us implement it. To be helpful, an advocate of industrial targeting must be able to describe operational criteria for choosing target industries. This task may not be hopeless, but it is not simple. What I will do is to analyze the way three types of deviations from the idealized competitive model might give rise to a case for targeting, and discuss the difficulties in formulating actual policies on the basis of existing knowledge.

***Economies of scale and imperfect competition.*** The most obvious failing of conventional economic models is their assumption of constant returns to scale and the associated assumption of perfect competition. In view of most businessmen and many economists, the norm — at least in manufacturing — is some degree of increasing returns and a market structure which is more or less oligopolistic. Of particular importance for many discussions of industrial policy are "dynamic" economies of scale, resulting both from the role of R&D and from the experience cure.

It makes a great deal of difference whether these economies of scale are internal or external to firms. For **example**, does each firm in the industry have its own experience curve, or is there an industry experience curve which reflects output nationwide (or worldwide)? The case where the economies of scale are largely at the level of the industry rather than the firm is quite different from the case of **firm-specific** scale economies and is dealt with below.

In the case of internal economies of scale, the starting point for a discussion of policy is the realization that markets will not be **perfectly** competitive. An industry will consist of a small group of **firms**, or if it consists of many firms they will be producing differentiated products. Prices will be above marginal costs; firms will often act strategically, taking actions aimed at influencing the decisions of other firms. The range of possible behavior, and of response to government policies, is much wider than in the standard competitive model.

In the U.S. the traditional concern of government has been with protecting consumers from the exercise of market power by firms. The response has been antitrust and, in cases of very powerful scale economies, regulation. Only with the growing importance of trade has focus shifted to the protection or promotion of domestic firms against foreign competitors. There is definitely room for activist policy here, but deciding what to do is not straightforward. Theoretical models can be devised in which an industry with economies of scale should be targeted, but others can be devised in which it should not.

Let us begin by sketching out one sort of situation in which targeting might be advantageous. Suppose there is an industry in which there are only two serious competitors, a U.S. firm and a Japanese firm, and that each knows that its costs will fall sharply as it gains experience. Each firm will tend to follow a "Boston Consulting Group" strategy, initially setting its prices low in order to move down the experience curve. If it could, each firm would like to convince the other that it will follow a very aggressive policy, so as to encourage its competitor to pull back; but the **firms** may have no credible way of making such a commitment.

In this context, a targeted industrial policy could serve the purpose of helping domestic firms play their strategic game. A government subsidy, for example, could make credible the intention of the domestic **firm** to pursue an aggressive pricing policy, deterring its competitor. The withdrawal of the competitor could raise profits by

more than the **amount** of the subsidy, in effect **transferring** monopoly rents from foreigners to domestic residents. Thus there is at least the possibility of a successful predatory industrial policy.<sup>10</sup>

Unfortunately for **policymakers**, small variations in the situation could reverse the conclusion. Suppose, for example, that there are not one but several U.S. firms, and that the industry concerned is one in which we are a net exporter. Then it still might be the case that an output subsidy could benefit the U.S. by deterring foreign competition. **But it** could also be the case — and this becomes more likely, the **more U.S. firms there are** — that the opposite is true. In competing **with** each other, U.S. firms may be setting their export prices too low **and investing** too much for their **own** collective good; their collective **profits** might be improved if they could be induced to pull **back**. This is the classical argument for exploitation of market power in trade: you **should raise** the price of your exports, not lower it.

Which of these stories is right? The answer surely varies across industries. To act with any hope of success would require a deep study of each industry in question — a deeper study than any which has ever been **carried out**.

*External economies.* Even in textbook analyses, external economies are acknowledged to be a justification for government intervention. If the output of **firms** generates experience which is useful to other firms, or if the results of one firm's research and development can be "reverse engineered" by other firms to improve their own technology, then there is a clear opening for government action. The question becomes one of political economy: can the government act with enough wisdom to do more good than harm?

The obvious examples of external economies are in innovative industries. Developers of new products or processes cannot help conveying valuable information to competitors. Even if some details of an innovation can for a time be closely held — for example, a manufacturing-process — the simple knowledge that something can be done is often highly valuable to competitors.

Some discussions of industrial targeting also seem to suggest that there are external economies in the relationships between innovative industries and their customers. Such a view appears to be the implicit

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10. This analysis is based loosely on Brander and Spencer (1982), as well as on Krugman (1983).

model in this recent statement by the Semiconductor Industry Association:

"The U.S. advantage in semiconductors has . . . enabled the U.S. to maintain a competitive lead in most other high technology fields."<sup>11</sup>

Presumably the idea is that close proximity to suppliers makes it easier for the users of the high technology products to pick up ideas which are "in the air," enabling them to keep abreast of and exploit the latest advances in technology. The case for believing in important inter-industry externalities of this sort does not seem as compelling as the case for intra-industry externalities; but there are doubtless some examples.

Externalities are clearly important in innovative industries. If that were the whole story, these externalities would mean that firms underinvest in technology, and would provide a clear case for government subsidy of R&D and promotion of industries on the early part of their learning curve. Unfortunately, this is not the whole story. Recent theorizing on competition in **innovative** industries has suggested that there are some **other** reasons why firms may overinvest in **technology**.<sup>12</sup> There are two main reasons. First, there may be wasteful duplication of research. There may be six firms trying to develop a process when there should be only two or three. An **R&D** subsidy would encourage each firm to invest more, but it would also encourage entry, encouraging further duplication of work. Second, established firms may try to use heavy investment in **R&D** to deter potential competitors. This may lead them to develop technologies "too soon," leading to a situation where the social returns to more **R&D** are actually quite low.

For these reasons, a simple policy of subsidizing high technology industries is not necessarily a good idea. In principle one could devise a better policy, one which combines some subsidy elements with industry restructuring to reduce the number of firms, encourage them to do joint research, etc. It is possible that Japanese industrial policies actually do in some degree approach this model. All one can say from a U.S. perspective is that to successfully select targeted industries, back them with subsidies, restructure them, and do all this in an

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11. Semiconductor Industry Association (1983), p. 1.

12. See Dasgupta and Stiglitz (1982).

objective way would require that government officials show a depth of understanding and subtlety of action unprecedented in U.S. history — and that they do it on a routine basis.

**Other government policies.** It is arguable that the most important reason why the idealized model of a competitive economy is wrong is that we in fact have a large, intrusive government. The government imposes taxes and regulations which are not neutral across industries; it offers unemployment insurance and imposes minimum wages; it protects declining industries and bails out firms in trouble. All of these actions distort incentives in the market.

It is a familiar proposition from the literature on economic development that distortions due to government action may make other offsetting government actions desirable. For example, protection of imports can lead to an overvalued exchange rate, which in turn may imply that export subsidies can raise national income. Similarly, if the government tends to promote or protect labor-intensive sectors, it may be able to undo some of the damage by simultaneously promoting capital-intensive projects.

In general, however, the appropriate response to government-induced distortions is to try to minimize them, not to target particular industries in which the country underinvests. The interaction of the tax system with inflation during the 1970s probably led the U.S. to invest too much in housing, too little in plant and equipment; surely the right response was reform of the tax system, not targeting of particular capital-intensive industries.

It is sometimes argued that existing government policies, though not explicitly targeted, do have differential effects across industries, and that this means that we should respond with targeted offsetting policies. The answer, however, probably is that we should respond with policy reforms which are also not explicitly targeted, even though they too may in fact differentially favor certain sectors.

**Conclusions.** There is a theoretical case for industrial targeting. There may come a time when economists are sufficiently knowledgeable to make concrete policy recommendations based on that theoretical case. As it stands now, however, the theory does not look very operational. If we must have a targeted industrial policy, it would probably be best to target the high technology industries, which have both important dynamic scale economies and important externalities. But we have no assurance that this is actually the right policy. There

are arguments, and not outlandish ones, suggesting that targeting of these industries might well lower national income.

### **Evaluating targeted policies**

There is no lack of **experience** with targeted industrial policies. Japan, of course, has pursued a policy of targeting throughout the postwar period. France has also made **fairly** consistent efforts to target particular industries. Other countries, including Germany, Britain, and indeed the U.S. have at times targeted individual sectors. One might be inclined, then, to sweep aside the theoretical discussion of the previous part of this paper with a call for a look at the evidence. What has worked in practice?

Unfortunately, this is not so simple a question as it seems. In the first place, simply ascertaining what a country's industrial policies have been is often quite difficult. In the modern world, governments rarely use clean, transparent tools like flat subsidies or tariffs to promote targeted industries. Instead they use a variety of **hard-to-measure** instruments — tax incentives, credit allocation, procurement policies, recession cartels, red-tape barriers to imports, and so on. The extent of effective targeting is not only hard for observers to **ascertain**; it is a fair bet that even the officials administering the programs don't know how much support they are providing.

Above and beyond this difficulty is the problem of evaluation. Even if we are sure that a country did in fact target a particular industry, there is no simple way to tell whether that policy raised national income. The issue of evaluation is similar to the problem of selecting targets in the first place, and is similarly difficult.

The plan of this part of the paper is to review the problem of evaluating targeted industrial policy, then **illustrate** the difficulties with brief **discussions** of the two most famous cases of industrial targeting: the Japanese successes, real or alleged, in steel and semiconductors.

### **The problem of evaluation**

Most studies of industrial policy do not worry explicitly about the problem of evaluating a policy's success. The attitude of most authors seems to be that they will recognize success or failure when they see them. In practice, this usually leads to evaluation based on one of two criteria: the overall success of economies whose governments use targeted industrial policies, or the eventual competitiveness of targeted industries.

The argument from overall success in its basic form is the statement that "Japan has a targeted industrial policy, and Japan has a high growth rate, so Japanese-style targeting must work." I may be accused of caricaturing the position of advocates of targeted policies, but in fact this is the main argument of many advocates of targeting:

"How did Japan manage for 20 years to have real per annum growth of 10 percent? Inasmuch as no one else has achieved that, it strikes me that something other than market forces is an element in explaining it."<sup>13</sup>

The problem with the argument from overall success is that industrial policy is only one of many ways in which countries differ. Table 1 shows, for example, some readily quantifiable reasons for the disparity between U.S. and Japanese rates of productivity growth during the 1970s. Japan had a far higher saving rate than the U.S., together with a much lower rate of growth in employment; thus, capital per employee rose much more rapidly in Japan than in the U.S. At the same time, Japan was rapidly accumulating human capital, as indicated by the growing proportion of high skilled workers. Together with these readily quantifiable factors are qualitative factors remarked by many observers: an educational system which does a better job than ours of teaching basic literacy and mathematical skills; a better climate of labor-management relations; the advantage of being able to borrow technology from a U.S. economy which is still in many respects more advanced; and, hard to prove but supported by many anecdotes, a higher level of motivation generally.

The point is that there is no lack of possible explanations for Japan's rapid productivity growth, and no reason to presume that everything Japan does contributes to that growth. Japan's agricultural policy almost surely is a drain on the economy, yet the economy has **performed** well. It is entirely possible that Japanese industrial policy has also been unproductive or counterproductive, but has been outweighed by favorable factors. Argument from aggregates does not work; only an examination of the specifics of targeting can be used to evaluate its effectiveness.

But what specifics should be examined? In practice, most authors end up using the criterion of eventual competitiveness. If a targeted industry ended up as an effective competitor on world markets, the

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13. Eleanor Hadley, quoted in *High Technology* (1983), p. 20.

**TABLE 1**  
Quantifiable Factors in Japan's Faster Productivity Growth

	Japan	<u>U.S.</u>
Net saving as percent of GDP, 1974-80	19.5	6.5
Rate of Growth of Employment, 1973-80	0.7	2.1
Full-time school enrollment %		
Ages 15-19: 1960	39.4	64.1
1975	76.3	72.0
Ages 20-24: 1960	4.8	12.1
1975	14.5	21.6

*Sources: OECD, Main Economic Indicators, Historical Statistics, and Bureau of the Census, Social Indicators III*

policy is judged a success. Japanese steel and semiconductors are held up as examples of success based on the growth in Japanese market share, rather than on any careful calculation of costs and benefits. As we have already pointed out, however, eventual competitiveness does not necessarily provide any justification for industrial targeting, and it also is no evidence that targeting was a good idea. It may instead either reflect forces which had nothing to do with industrial policy, or it may represent a victory achieved at excessive cost.

In order to evaluate targeted industrial policies, we must make a careful analysis based on the same criteria we would use to select industrial targets. In particular: did the policy give domestic firms a useful strategic advantage? Did it generate valuable external economies? Did it offset a distortion caused by other government policies? Hardest of all to determine, were these benefits worth the cost?

### *The success that wasn't: the case of steel*

If the U.S. ever does adopt a strategy of industrial targeting, it is almost inevitable that steel will be one of the chosen industries. Japan's rapid emergence as a massive exporter of steel in the '60s and '70s is still the most widely cited example of successful industrial policy (although semiconductors have recently begun to share the honor). The decline of the U.S. industry is correspondingly held up as an example of the adverse consequences of the lack of a U.S.

response. In the terms of the popular criteria for choosing a target examined in the **first** part of this paper, steel has everything: high value-added per worker, thanks to its capital intensity; linkages, due to its status as a basic material; in the Japanese case, eventual competitiveness on world markets; and in the case of the U.S., the fact that at least some of the industry's problems could be attributed to foreign targeting.

But we have seen that these are not valid criteria. Looking at the industry's experience more critically suggests a quite different conclusion. Remarkably, this most famous of successes for industrial targeting was no success at all.

*Background on the steel industry, 1960-1980.*<sup>14</sup> To understand the dynamics of competition in the steel industry requires an appreciation of four factors: the "maturity" of steelmaking technology, the internationalization of raw material supply, the persistent differential between U.S. and Japanese employment costs, and the unexpectedly slow growth in demand after 1973. These factors, more than industrial policy, determined the basic outline of shifting market positions.

The technology of making steel is a mature one. That is, it is fairly standardized and not changing too rapidly. As a result, the most advanced nations do not have a significant technological advantage over only moderately advanced countries. From the 1950s on, new steel plants in Japan, Europe, and the U.S. have all been roughly comparable in their labor and materials efficiency. More recently, advanced developing countries such as Korea have also shown their ability to borrow this technology.

It should be noted, however, that while new plants have been roughly comparable in different countries, there is a strong vintage effect: new plants have higher labor productivity than older plants. This is important in explaining relative U.S. and Japanese productivity performance.

There was a time when the world distribution of steelmaking was largely determined by the location of raw materials. Steel production was located on top of coalfields which were not too far from sources of iron ore. By 1960, however, the advantages of traditional locations had evaporated. On one hand, traditional raw material sources were becoming increasingly worked out. On the other hand, falling ocean transportation costs made it possible to exploit new sources,

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14. This exposition is based on Crandall (1981).

such as Brazilian iron ore and Australian coal. The result was to turn steel into a "footloose" industry: any coastal location with a good harbor would do. The critical determinants of location became the cost of capital and labor.

In spite of the rapid rise in real wages in Japan over the past twenty years, the compensation of U.S. steelworkers has consistently been far higher than those of their Japanese counterparts. In the mid-1960s U.S. steelworkers received wages and benefits about six times those of Japanese workers; in 1981 they still received about twice as much. During the 1960s the major reason for this differential was the higher level of U.S. wages in general, which in turn reflected general U.S. economic advantages: superiority in high technology industries, a higher level of capital per worker, greater self sufficiency in natural resources. As these advantages have narrowed, the differential in the steel industry has been sustained through a sharp rise in the wages of U.S. steelworkers relative to the U.S. manufacturing average, from 38 percent above the average in 1967 to a 71 percent premium in 1977. (It is curious though perhaps not surprising that many discussions of the competitive problems of the U.S. steel industry — such as that of Magaziner and Reich — do not even mention the exercise of market power by the steelworkers as a possible source of difficulty.)<sup>15</sup>

Finally, the state of the steel industry in all countries has been powerfully conditioned by the slow growth in consumption since 1973. From 1968 to 1973, world steel output grew at an annual rate of 5.7 percent, but after 1973 the combination of higher energy prices and slower growth in industrial countries brought a sharp slowdown, even before the worldwide recession of recent years. From 1973 to 1978, world output of steel rose at an annual rate of only 0.5 percent.

**Market forces and steel competition.** Before proceeding to analyze the role of industrial policy, it is worth asking what the effect of these factors would have been if there had been no government intervention. Otherwise we may be attributing to MITI developments which would have happened in any case.

The first critical point is that by the early 1960s the Japanese steel industry would have had a competitive advantage over the U.S. industry even if the Japanese government had kept hands off. The same technological "book of blueprints" was available to both coun-

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15. Data on steelworker compensation from Crandall (1981).

tries, access to raw materials was no longer a crucial factor, and labor costs were much higher in the U.S. Capital was becoming steadily more available in Japan, thanks to a high saving rate. Quite independent of industrial targeting, Japan was gaining a comparative advantage in steel while the U.S. was losing one.

Given this underlying shift, the rational investment strategies of the two industries were quite different. Japanese firms naturally built new "greenfield" plants. U.S. firms could have built such plants, but could not have made them pay, since their labor costs would still have been far higher than those of their Japanese competitors. The rational strategy — in terms of long-run profit maximization, not just short-term advantage — would have been to invest only to maintain existing capacity or to take advantage of special opportunities to add capacity cheaply through "roundout" additions at existing sites. (The greenfield plants built in the U.S. during the '60s yielded a disappointing rate of return.)<sup>16</sup>

Because of its increasing relative proportion of newer plants, the Japanese industry eventually was bound to outstrip the U.S. in labor productivity. This would *not* have been a sign of failure on the part of either U.S. workers or managers, simply a reflection of the newer vintage of the Japanese plants. The U.S. could keep up, but only at excessive capital cost. The productivity of capital is as important an economic consideration as the productivity of labor.

Finally, with the sharp slowdown of world demand after 1973, there would have been excess capacity in the steel industry whatever the policies of government. In this excess capacity environment the plants which stayed open would be newer plants with lower operating costs — in other words, Japanese capacity utilization would be higher than that of U.S. firms.

What should be clear from this exposition is that the broad picture in U.S.-Japanese steel competition is not too different from what it would have been without Japanese targeting. This is not to deny a role to MITI, but we should not overstress its importance.

*Japan's targeting of steel.* From the 1950s to the early '70s, steel was a targeted industry in Japan. This meant several things. First, and probably most important, the Japanese steel industry became a favored claimant in a rationed capital market in which interest rates were below market-clearing levels — an important, if *hard-to-meas-*

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16. Magaziner and Reich (1982), p. 161

sure, subsidy. Second, the industry received tax breaks. Third, the industry received some subsidies and low interest loans, although these were relatively unimportant. The combined effect was basically to give Japan's steel industry a low cost of borrowed capital. At the same time, the assurance that in recessions the industry's profits would be protected by cartelization probably made firms more willing to risk having excess capacity.

The result was that from the mid-1960s through the early 1970s, the period of most rapid growth, the Japanese industry had a distinctive pattern of financing and rates of return, as shown in Table 2. Investment was overwhelmingly financed by the issue of debt, hardly at all out of retained earnings. The rate of return was well below the average for Japanese manufacturing.

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TABLE 2  
Financing of Japanese Steel Investment

Retained earnings as % of net investment 1967-71	1.5
Long term debt as % of capital employed	
1964	46.1
1971	67.7
Rate of return in steel, 1971	10.7
Rate of return, all Japanese manufacturing, 1971	17.5

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Sources: International Iron and Steel Institute, *Financing Steel Investment, 1961-1971*, and Organization of Economic Cooperation and Development, *Profits and Rates of Return, 1979*

The eventual return on this investment was even lower than this table suggests. After 1973, the growth of world steel demand fell off sharply, and Japanese steel production peaked in this year. Although Japanese firms have low operating costs and have thus managed to maintain higher rates of capacity utilization than their competitors, steel prices have been low enough that profits have been low — certainly not high enough to have made investing in steel profitable. In fact, little new investment has taken place since 1973. It is only thanks to the prevalence of low-interest loans and the capital gains from subsequent inflation that the Japanese steel industry has remained solvent. To caricature the Japanese industry's position, in

the '70s the steel companies were willing to operate the capital-intensive plants the government built for them.

*Did targeting of steel help Japan?* The crucial question now becomes, was targeting of steel a wise policy? Did it in fact raise Japan's growth rate?

On the test of market returns, the targeting of steel does not look at all like a good idea. Because of the unexpected steel glut of the '70s, the heavy investments in steel between 1965 and 1972 turned out to yield very low rates of return. By encouraging these investments, targeting funneled resources into a sector with low private rates of return. Only if social rates of return were much higher than private rates can the policy be justified.

The most common reason advanced why there may have been extra social returns is steel's role as a linkage industry. This is the justification offered by **Hadley** (1983) and **Magaziner and Reich** (1982); it is also suggested by some professional economists, e.g., **Adams** (1983). But as we have seen, linkages by themselves do not create a divergence between social and private rates of return. A true market failure is required.

As we have argued, targeting can create strategic advantages which enable domestic firms to capture rents from foreign competitors. In this case, however, with a depressed world industry, there were no rents to capture.

It is also possible for a targeted industry to generate useful technological externalities. But the mature technology of steelmaking makes such externalities unlikely; indeed, the **U.S.** and Japanese industries seem to have had rough technological parity from **1960** on.

If there is another argument for the usefulness of Japan's targeting of steel, it is not prominent in the literature. Heresy though it may seem, it is hard to avoid the conclusion that the most famous of industrial policy successes was no success at all. It encouraged Japanese industry to invest in an activity with low returns, and it generated no visible side benefits.

*Should the U.S. have targeted steel?* If the **U.S.** had targeted steel in the '60s and '70s, the results would have been similar to the Japanese results, but even less favorable. The **U.S.** could have built new greenfield plants as productive as Japan's, but because of higher **U.S.** labor costs they would have had lower capacity utilization and lower profit rates than Japan's. In other words, the private rate of return on any targeted investment in the **U.S.** steel industry would have been

low indeed.

Arguments for extra social returns in steel in the U.S. are similar to those for extra returns in Japan, and are similarly dubious. The one exception we might make is an argument rarely mentioned. There *is* a market failure in steel: the market power of the steelworkers. This provides a possible though risky justification for intervention. Because steelworker wages are above their free-market levels, it makes sense to offset this distortion by subsidizing the steel industry's labor costs. The problem is of course that this might only encourage wages to go still higher. Ideally the government could strike a bargain: employment subsidies in return for wage restraint. The problem is that politically such a bargain is almost inconceivable.

**Conclusions.** The experience of the steel industry is usually cited as an example of the favorable consequences of industrial targeting in Japan and the unfavorable consequences of U.S. inaction. In fact it is a poor example. Japanese targeting was probably not crucial in determining the course of **U.S.-Japanese** competition, and to the extent it was ineffective, it probably reduced Japanese national income.

### *The success that may have been: semiconductors*

In recent years, the semiconductor industry has acquired much of the aura once associated with steel as a symbol of national economic prowess. As was once the case with steel, a semiconductor industry is something possessed only by the most advanced countries; like steel, **semiconductors** are an input into other advanced industries; like steel, semiconductors are closely connected with a country's military potential. In the **1950s**, a national presence in steel was a political must for every country that could afford it; in the '80s and '90s, semiconductors will play much the same role.

**More** important for our economic analysis is the indisputable fact that the semiconductor industry is about as far as one can get from the classical model of a perfect market.

**Background on the semiconductor industry.** The key feature of the semiconductor industry is its extremely rapid pace of technological change. **The** real cost of a given amount of computing capacity is cut in half every few years. This means a very short product cycle, which in turn has two major consequences: strong dynamic scale economies and important external economies.

The shortness of the product cycle makes dynamic scale econo-

mies important in two ways. First, the costs of R&D cannot be amortized over many years' production. As a result, R&D is a large part of a firm's cost, and the per-unit cost depends strongly on a firm's sales. Second, because product cycles do not last very long, firms are always in the early, steep part of the experience curve. So for each individual firm, average costs fall quite sharply with cumulative output.

In addition to the dynamic scale economies at the level of the firm are additional, external economies that spill over between firms. Some of these spillovers seem to operate through personal contact — hence the high-tech clusters of Route 128 and Silicon Valley. Others operate through the possibility of "reverse engineering" or more general forms of imitation, and may apply at a national or even a world level.

*Determinants of international competition.* In an industry with strong dynamic scale economies, international competition is somewhat more complex than in conventional models of international trade. There is an important element of simple comparative advantage, but history and market access can also be crucial. And the importance of the experience curve makes it normal for shifts in market position to occur suddenly rather than gradually.

Comparative advantage in high technology industries is largely determined by access to human capital of the right kind. The countries and regions which have done well in high technology competition are those with relatively abundant supplies of highly educated workers. Labor costs in production are not 'as important as the ability to maintain close links between production and R&D'; so as to keep abreast of changing technology.

As Table 3 suggests, a once-overwhelming U.S. lead in highly educated labor has been narrowed over time by other countries, especially Japan. Even in the absence of industrial targeting by other countries this would lead us to expect some reduction of U.S. market share in high technology industries, including semiconductors.

How would this fall in market share come about in the absence of targeting? One recent study has argued that in the absence of targeting the process would be gradual:

"In an open market American firms would lose market share slowly when Japanese production began . . . the overall pattern of trade in a range of semiconductor products in an open market should see American producers losing market share slowly to

Japanese producers but retaining a permanent market position based on their initial advantage.''<sup>17</sup>

TABLE 3  
Human Capital Indicators for High Technology Industries

	<u>Japan</u>	<u>U.S.</u>
Scientists and engineers engaged in R&D per 10,000 workers		
1970	33.4	63.6
1978	49.4	58.3
Electrical engineering graduates per 1,000,000		
1970	133	85
1977	185	66

Sources: National Science Board, *Science Indicators*, 1980, and Borrus, Millstein, and Zysman (1982)

This argument is, however, almost surely wrong, because of the importance of the experience curve. The basic situation in high technology industries is that Japan is acquiring a comparative advantage in areas in which U.S. firms have historically had dominant market shares. U.S. firms thus have the initial advantage of greater cumulative experience, but Japanese firms have lower input costs. It makes no sense in this situation for Japanese firms to try to increase their market share gradually across the board, since this would fail to overcome the U.S. advantage in experience. Instead, the natural strategy of a Japanese firm — regardless of whether or not the government is involved — is one of rapid penetration of a narrow market segment. This involves aggressive pricing to gain market share and move down the learning curve. Thus "surges" involving a Japanese willingness to take initial losses and a rapid increase in Japanese market share in a narrow product line are probably endemic to the process of Japanese catch-up to the United States.

This is not to say that targeted industrial policies could not also play a role. Subsidies to R&D could obviously promote a particular industry. More subtly, a protected domestic market could serve as a springboard for exports. By providing a secure base, a protected

17. Borrus, Millstein, and Zysman (1982), p. 147.

domestic market can encourage domestic firms to invest in R&D and to move down the learning curve, while at the same time deterring foreign competition from doing the same. This can lead to a larger market share for domestic firms even in unprotected markets." The allegation of the U.S. semiconductor industry is that it is a combination of subsidies and the advantage of a protected domestic market, rather than market forces, which have led to the rapid growth in Japanese semiconductor exports.

*Japanese targeting of semiconductors.* Japan's targeting of semiconductors contains one well-documented but probably not too important element — government-subsidized, collaborative research — and one disputed but possibly crucial element — closure of the domestic market. Several major studies have alleged that these two policies in conjunction have been the prime cause of Japanese success,<sup>19</sup> but it remains possible that policy was actually a minor factor.

The undisputed part of Japanese policy has been the encouragement of joint research projects supported by government subsidy of which the best known is the Very Large Scale Integration (VLSI) program. Relative to the size of the industry, the subsidies do not appear to have been very large. The Semiconductor Industry Association estimates a total subsidy of \$507 million from 1976 to 1982; i.e., about \$75 million per year. At the same time, Japanese sales of integrated circuits in 1981 were valued at nearly \$3 billion.<sup>20</sup> So the extent of subsidy by itself was almost certainly not enough to give Japanese firms a decisive advantage. More uncertain is whether encouragement of joint research and market-sharing allowed Japanese firms to avoid duplicative research, thus making their R&D more efficient than that of U.S. competitors. U.S. industry executives tend to be doubtful about this. In general, the allegations of predatory Japanese targeting focus less on subsidized research than on the effects of a closed domestic market.

Until the mid-1970s, Japan had overt protection of its semiconductor industry, through tariffs and quantitative restrictions. After dismantling of these barriers, however, the share of imports in Japanese consumption did not rise. Indeed, it showed a downward trend during

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18. See Krugman (1983, forthcoming).

19. Borrus, Millstein, and Zysman (1982) and Semiconductor Industry Association (1983).

20. Subsidy figure from Semiconductor Industry Association, sales figure from Borrus, Millstein, and Zysman.

the period 1975-82, except for a temporary reversal following the massive appreciation of the yen in 1978. The argument of U.S. critics has been that the structure of the Japanese industry allows de facto closure of the market through formal guidance without any explicit controls on imports.

The key feature of Japan's industry structure is that the major producers of semiconductors are also the major consumers. These firms are not, however, vertically integrated in the usual sense of the term. Each firm sells most of its output on the open market, while buying most of its semiconductors from other firms. It is argued, however, that these are really not arm's-length transactions. In effect, Japanese firms may be colluding to buy only from each other, with this collusion promoted by discreet guidance from MITI.

Is this really the case? The prime piece of evidence usually cited is the low share of imports in the Japanese market. Although U.S. semiconductor firms make about two-thirds of the world's integrated circuits, they account for only about a sixth of the Japanese market. One might point out, however, that a similar though less striking disparity exists between Japan's share of the world and U.S. markets: Japan accounts for nearly 30 percent of world IC production, but only 12 percent of U.S. consumption.<sup>21</sup> Japan does run a substantial surplus in semiconductor trade with the U.S., but this need not be taken to demonstrate protection. More significant but less objective is anecdotal evidence of a "buy-Japanese" mentality among Japanese firms. Whether this represents a hidden official policy is much less clear.

In any case, is the combination of subsidy and market closure the basic explanation of Japan's rising market share in semiconductors, particularly its leading position in memories? The answer is probably not. As we have argued, a rising Japanese market share in high technology industries generally would be happening in any case, and the rapid penetration of narrow market sectors is exactly what we would expect. Government policy may have helped determine that memories rather than some other type of product were the market segment selected, but the general character of what has happened probably has little to do with official targeting.

***Was Japanese policy a success?*** To the extent that Japanese industrial policy has been responsible for the growth of the semiconductor

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21. Figures from *Business Week*, May 23, 1983

industry, was that policy a success? The basic criteria for success would be either (1) capture of substantial rents from U.S. firms, or (2) external economies benefiting other industries. In both cases the returns are not yet in.

The rents from semiconductor targeting, if there will be any, lie in the future. Although numbers are not available, it seems clear that Japan's export of 64K RAMs has not yet earned a return sufficient to justify the investment. The large Japanese market share was won through a price war which led to substantial losses for U.S. firms and is unlikely to have been marked by Japanese profits. There has been no sustained breathing space for the Japanese to exploit their market dominance, since a similar costly battle for the 256K RAM is now looming. If there are to be big profits for the Japanese firms, they still lie several years in the future.

The external economies from semiconductor production are also yet to be seen. It is often asserted that a country which has a decisive advantage in production of semiconductors will thereby gain a comparable advantage in "downstream" products such as computers, but there is no solid evidence that this is true. The U.S. is far from being out of the semiconductor business and retains leadership in many other high technology areas. Thus it will be years before the alleged adverse effects of Japanese targeting on U.S. economic performance become clearly visible.

*Conclusions.* In contrast to the fairly clear case of steel, the effects of industrial targeting in semiconductors are enveloped in fog. We do not know clearly the extent to which the industry was really targeted, we do not know how important the targeting was in international competition, and we do not know whether the policies of the Japanese government, whatever they were, raised or lowered Japanese national income.

Semiconductors are a classic example of a non-classical industry. Nearly every market failure that one can think of is present. So if any sector is suitable for government intervention, this is the one. Yet it is unclear whether the government intervention which has taken place was either crucial for the industry or beneficial from a national point of view.

### *General conclusions*

The advocates of industrial targeting generally claim that targeting has worked in other countries and is a major reason for better eco-

conomic performance abroad than in the U.S. While the discussion just presented is far from a conclusive rejection of this assertion, it certainly raises questions.

The crucial point is that evaluating the success of targeted industrial policies is a very difficult task. Most authors do not realize this. They go into painstaking detail on the technology and history of an industry, then become sloppy and casual when they come to the truly difficult task of economic evaluation.

We have examined briefly two industries in which most people believe that targeted industrial policy scored major successes. In one case, that of steel, it is hard to find any reason to call the policy a success — unless one reverts to the view that because Japan is a successful economy, everything Japan did must have been well-conceived. In the other case, semiconductors, we are not sure what Japanese policy was — and the payoffs to that policy, whatever it was, are still matters of the uncertain future.

### Prospects for successful industrial targeting

It would be foolhardy to say that there is no case for a targeted industrial policy. Market imperfections are legion. Given sufficient information, enough power, and enough freedom from political pressures, a MITI-type agency might make a significant contribution to national income. But in the real world, the prospects for such gains are poor. We have noted a series of negative points:

- The most commonly cited criteria in **popular** discussions of targeting — criteria which are at least as sophisticated as the criteria likely to govern **actual targeting** — are misconceived, in some cases disastrously so.
- While **there** is a valid case for targeting grounded in economic theory, the theoretical basis is too complex and ambiguous to be useful given the current state of knowledge.
- We are not easily able to evaluate the costs and benefits of industrial targeting even after the fact. In spite of the huge literature on industrial policy, the criteria generally used for evaluation are crude and can easily be misleading.
- There are no clear-cut cases of successful industrial targeting. Of the two most famous **examples**, **Japanese** targeting of steel probably reduced national income, while the returns are not yet in on Japan's targeting of semiconductors.

In some respects this paper has loaded the dice in favor of target-

ing. The examples surveyed were the apparent successes, not the obvious failures: steel and semiconductors, not synfuels and the Concorde. Yet the verdict still has to be that there is very little support for the idea that industrial targeting is a desirable policy.

It is already clear from Congressional hearings and popular discussion what the elements of a U.S. program of industrial targeting are likely to be. The key element will probably be a development bank which will provide low-interest loans and loan guarantees to favored firms. These firms will mostly be of two types. First will be firms in mature, linkage industries — in other words, the troubled, high wage, unionized, politically powerful traditional heavy industries. The second will be key emerging industries — in other words, the glamorous and prestigious high technology areas. Whatever the intentions, in the U.S. political system it is inevitable that political factors will weigh heavily on the choice of favored firms.

It is hard to believe that such a policy will accelerate U.S. economic growth. Its direct effect will probably be to slow growth and raise unemployment. More important, the easy answer of targeting will help postpone our coming to grips with the real sources of disappointing U.S. performance.

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## Commentary

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*George C. Eads*

Reading Paul Krugman's paper reminded me of the old story of the drunk and the street lamp. A drunk is spotted one night searching on his hands and knees underneath a street lamp. A friend spots him and asks what he is doing. "Looking for my car keys," is the reply. The friend offers to help and gets down on his hands and knees to join the search. "Oh, the keys aren't here," the drunk says. "They're over there," motioning to a spot some distance away. "Then why are you searching here?" the friend asks. "That's where the light is," is the reply.

An observer of this exchange asked to comment on it faces a dilemma. Should he confine himself to such matters as the thoroughness of the drunk's search? Or should his comments also note the obvious problem **created** by confining the search for the keys to an area where they clearly are not located?

I believe that he should do both, and so I will remark not only on the quality of Paul's paper (which I believe to be high) but also upon the extent to which it addresses the sort of issues that are likely to be of interest to policymakers as they struggle with the issue of whether the United States ought to undertake a program of explicit industrial targeting. Indeed, since I find very little to disagree with in what Paul wrote, I will devote the bulk of my time to the latter.

For I believe that the particular street lamp that Paul (and, indeed, all of us economists) employ — the lamp of "economic efficiency" — will have little or nothing to do with the outcome of this debate. While the efficiency consequences of targeted industrial policies are, of course, enormously important for the performance of the econ-

omy, it is not really a belief that current policies and policymaking processes are *inefficient* that has motivated the current level of interest among politicians on this issue. To be sure, the word "efficiency" is sometimes used, but it bears about as much relationship to what is going on as the light did to the proper location of the drunk's search for his keys.

It may be helpful to remind ourselves of an analogy. During the middle and late 1960s, when the nation was beginning to debate the wisdom of undertaking major programs of social regulation (the control of air and water pollution, workplace health and safety, product safety, etc.), economists spent a great deal of time and space in the professional journals arguing about the extent to which these problems were a result of something we called "market failure." We also developed our ideas concerning how these market failures might "properly" be dealt with. Our favored solutions usually involved some form of pollution tax or permit.<sup>1</sup>

There was, of course, nothing wrong with this literature. It was perfectly correct technically. It also helped provide a vocabulary for the policy debate. Unfortunately, since economists failed to understand what the debate about social regulation was about, vocabulary was about all that they contributed to deciding *where* we as a nation would regulate and, more importantly, *how* this regulation would be conducted.

What *was* the debate over social regulation really about? It was about such things as "rights" and "equity" and "fairness." Solutions were chosen not because they were "efficient" but because they protected such rights or were perceived as fair. It has only been in recent years, after the nation has spent enormous sums of money on social regulatory programs, often with minimal results, that the consequences of treating social regulatory issues this way have become clear. The notion of treating social regulation as an issue in which efficiency is seen as an important — but still not the sole — operating criterion is slowly gaining currency. Yet even now, the failure of economists to participate in this debate in an effective way is hampering this development. We may have been willing to move out of the direct glare of the street lamp of economic efficiency, but

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1. For an outstanding example of an especially clear statement of the economist's approach to the issue of pollution and to its control, see the article with this name by Robert Solow in the August 6, 1971, issue of *Science*.

we have been afraid to move too far into the shadows.

The academic economist might shrug his shoulders and declare that he cannot control the political process. If politicians choose systematically to ignore his advice, then they and their constituents deserve the trouble they get into as a result. Such a view may help the academic keep a clear conscience, especially when (as with social regulation) events eventually prove him correct. But it cannot be satisfying for one who hopes to influence policy and — hopefully — help society avoid making costly and hard to rectify policy mistakes. Since I know Paul Krugman — and most of the people at this conference — to be of the latter school of thought, I hope that both he and you will understand the spirit in which these criticisms and comments are offered.

To be fair to Paul, he does recognize that how any targeted industrial policy would operate would be determined by factors other than those preferred by economists. For example, the next to last paragraph of his paper reads:

It is already clear from Congressional hearings and popular discussion what the elements of a U.S. program of industrial targeting are likely to be. The key element will probably be a development bank that will provide low-interest loans and loan guarantees to favored firms. These firms will mostly be of two types. First will be firms in mature, linkage industries — in other words, the troubled, high-wage, unionized, politically powerful traditional heavy industries. The second will be key emerging industries — in other words, the glamorous and prestigious high-technology areas. Whatever the intentions, in the U.S. political system it is inevitable that political factors will weigh heavily on the choice of favored firms.

I agree totally with this assessment. Indeed, I wish that he had chosen this last paragraph for the text of his sermon on the dangers of targeting, rather than the sentence on page two which reads:

The case for targeting industrial policy therefore stands or falls on the issue of criteria for selection.

After this sentence, he proceeds to present and evaluate proposed criteria solely with regard to their impact on economic efficiency.

Yet his paper is extremely valuable in that it effectively explodes several of the widespread myths about how several of the more prominently mentioned targeting criteria would operate. It also helps drive another nail into the coffin of that other prevalent myth — the omnip-

otence of Japanese industrial policy.

Unfortunately, for all its persuasiveness, this message is not likely to make much difference to many of those advocating a targeted American industrial policy. As I have already noted, their goals have little to do with the attainment or nonattainment of economic efficiency. They have seen the market work, and they don't like its results. The proponents of targeted industrial policies are not interested in perfecting the market (to use the economist's jargon) but in preventing its operation. To influence them (and, more importantly, the politicians whom they are seeking to influence), economists will have to show (as Paul does, though only indirectly) that the adoption of their proposed criteria will fail to create additional employment or enhance our international competitiveness or lead to "fairer" (if less efficient) outcomes. This I believe economists can do. But it requires us to turn the light of our analysis in the direction of where the lost keys are actually located, not bemoan the fact that the light and the keys are not in the same place.

How can we do this? Consider the example that Paul cites at length, Japanese steel. Though I might differ with him on some of the details (steelmaking technology is not nearly as homogeneous as he alleges; the Japanese have made some important contributions here), the broad outlines of his story are consistent with what I understand to be true; that Japan's support for its steel never generated the economic returns that its government had hoped for and that it produced instead an overgrown industry that eventually had to be shrunk at the cost of a great deal of time and energy. (By the way, I consider the story of Japan's *shrinking* certain industries like shipbuilding and — to a lesser extent — steel to be the true industrial policy miracle.)

However, as useful as examples drawn from the Japanese experience might be, I believe that we would do better to analyze, from an industrial policy perspective, some domestic examples of the application of industrial policy and their consequences. These will provide a better clue as to how such policies, if expanded substantially, might work in this country.

As the supporters of an explicit, targeted American industrial policy correctly observe, this country *has* had an industrial policy for some time. They argue that, except in a few cases — commercial aircraft and agriculture are two favorite examples — this policy has been *ad hoc*, implicit, and non-targeted. They cite these two cases as ones in which a targeted domestic industrial policy has produced ben-

official results.

I happen to think that they have seriously misrepresented these two cases, though time prevents me from laying out my case in full.<sup>2</sup> But that is beside the point. What I want to do is take a case that they argue proves the necessity of a targeted industrial policy and use that case to argue the reverse. My case — the steel industry in the United States.

Contrary to what is generally alleged, we have had a targeted steel policy in this country. It goes back to the year 1900 when the president of the United States agreed to withhold the application of the antitrust laws in the case of the massive consolidation that created the United States Steel Corporation. It continued as, after having eventually filed such a case, the government essentially took a dive in the face of overwhelming evidence of anticompetitive conduct on the part of both U.S. Steel and other industry members. Its high point was reached in the government's decision after World War II to dispose of the massive capacity it built in a manner that strengthened existing firms, not (as in the case of aluminum) in a manner that increased competition. The government's explicit steel policy continued during the early and middle 1950s when, in order to expand the industry's capacity even further, special depreciation policies applicable specifically to this industry were adopted. Unfortunately for this industry's later history, the capacity added during this buildup was obsolescent at the time it was installed. (Proponents of a targeted industrial policy will doubtless argue that a truly farseeing government would have coupled its aid with a requirement that the industry adopt specific steelmaking technologies. In my view, this objection implies a degree of industrial wisdom that I find impractical to expect of any government, least of all ours.) And, throughout much of this 50-year period, defense procurement — especially naval procurement — was directed at building up the strength of the American steel industry.

The ostensible rationale for all this assistance? National security, broadly defined.

What went wrong? I have already suggested one thing. Any time an industry is "force fed" as our industry was during the '40s and '50s (and as the Japanese industry was during the '60s), there is a

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2. My argument in the case of commercial aircraft is made in some detail in "U.S. Support for Civilian Technology: Economic Theory Versus Political Practice." *Research Policy*, Summer 1974, pp. 2-16.

danger of a "vintage problem" developing. If, due to government's having looked the other way regarding competition for 50 or so years, the industry has grown very inbred, this danger is compounded. Having become used to following the leader (traditionally the U.S. Steel Corporation) in most important business decisions, industry is unlikely to question critical technology choices.

Getting locked in to the wrong technology was one problem. Another was the industry's not recognizing that, at least in the American political system, and unlike what the critics of our current industrial policy charge, there is a quid pro quo. What was it in the case of steel? Help in the politically important issue of price stability. Having given the steel industry so much aid, it is not surprising that President Kennedy in the early 1960s expected the industry to be forthcoming when he needed a bit of price moderation. In this case, however, the industry pleaded to be treated just like any other industry — in other words, *not* to be expected to behave differently in exchange for differential treatment.

Another instance where the government expected — and did not get — help from the industry was when it came to dealing with another important political and social problem, the control of air and water pollution. Steelmaking (especially the steelmaking technologies chosen by our industry) is a tremendous generator of conventional pollutants — especially particulate emissions into both air and water. The geographic concentration of steelmaking facilities accentuated this problem. Given the economic prominence of our steel industry, and the knowledge that it had been the recipient of extensive federal assistance, it was only natural for it to be singled out for special attention when the nation decided that it would at last mount a serious attack on the problem of environmental pollution. How did the industry respond? By dragging its heels as much as possible. Steel — especially Big Steel — became known among environmentalists as perhaps the most recalcitrant of industries. Little wonder that innovative pollution control techniques, when proposed to be applied to steelmaking facilities, were viewed with special skepticism by the environmental community.

What would those who favor targeted industrial policies have had the country do? Exempt the steel industry from pollution control laws? Probably not. Instead their favored solution — and certainly the industry's and its labor unions' — probably would have been to grant import protection, thereby enabling the industry to pass on any

higher costs due to pollution control to its customers without the fear of being undercut by imported steel (which, in many cases, was also being subjected to pollution controls at least as stringent as those being applied domestically). Indeed, the government did eventually grant the industry, either explicitly or implicitly, a considerable degree of import protection. But before this, the industry developed its own solution — and, in the course of doing so, compounded its eventual adjustment problems.

Before the late 1960s, steel's import problem was primarily confined to the ground gained — often temporarily — by imports during periodic nationwide steel strikes. To solve this problem, the industry negotiated with its principal union, the United Steelworkers, a no-strike contract. In exchange for agreeing not to strike, the USW received an extremely generous package of pay and other benefits that eventually helped to make the domestic industry totally **uncompetitive** internationally. In short, the private solution that was undertaken in response to what was perceived as a temporary import problem created the need for either long-run and increasing import protection or for a drastic shrinkage of the domestic industry.

What do the proponents of a targeted industrial policy suggest that the government should have done when the industry was negotiating the no-strike agreement that turned out to have such disastrous long-run consequences? Should it have somehow blocked the approval of the contract? Or do they believe that merely pointing out the contract's possible longer-run implications would have been enough to prevent its being entered into? (This would have required them to have correctly anticipated future inflation rates.) Or would they have been willing to undermine the need for the contract by blocking the import of foreign steel during a domestic steel strike?

The clincher to my story is that there is another steel industry in this country, one that generally has been too small to be favored by government industrial policy. This industry is composed of the so-called mini-mills which, in fact, have become quite large and quite sophisticated producers. This portion of the industry has been technologically innovative, has remained much more competitive internationally than Big Steel, and has, on average, been much more profitable. Indeed, one of the major threats to its success has been the efforts by the government to protect Big Steel in the mistaken belief that somehow Little Steel doesn't exist or is unimportant.

I hope that I have made my point by now. I cannot think of a single

domestic industry (other than perhaps those that directly produce weapons) that has been the subject of more continued governmental interest than Big Steel. Throughout much of the industry's history, this attention was directed almost solely at strengthening the industry, regardless of the eventual consequences. To be sure, in later years, the government asked for — and generally did not receive — what it viewed as an appropriate *quid pro quo* for this assistance. But still, it gave the industry important support. (I am reliably informed that a recent study conducted by a reputable consulting firm for the domestic industry found that the current level of implicit and explicit subsidies the industry receives equals, and in some cases exceeds, the foreign subsidies about which the industry complains so vociferously. Needless to say, this study was never published.)

I have no difficulty in believing — as apparently does Paul — that an omnipotent, omniscient, benevolent dictator could have developed a better steel policy than the one our government actually developed and executed from 1900 to the present. I also have no problem, with the benefit of hindsight, in identifying instances where this policy clearly went wrong. What I would like the proponents of targeted industrial policy to show is how, given the sort of information government could reasonably be expected to have had and the sort of political pressures that they clearly would have been operating under at the time, any other steel policy would have turned out significantly better. I also would like these individuals to candidly acknowledge the extent to which the industry's current difficulties can be directly traced to the government's attempt to promote this industry and, at the same time, extract a bit in the way of political return.

I could cite other cases. For example, there is much current interest in improving the competitiveness of the domestic machine tool industry. The Japanese example has again been held up before us as one worthy of emulation. But here, even perhaps more than in steel, the domestic machine tool industry has been the beneficiary of so much targeted domestic assistance (primarily on the grounds of its contribution to the national security) that it is hard to conceive of what more the government might reasonably do. The remedies that currently are being tossed around — such as additional import relief — will, I believe, weaken rather than strengthen the industry and regard the adjustment it so clearly needs.

These two cases (as well as others that I could name) lead directly to the central question that those who argue for widespread adoption

of targeted industrial policies by this country would do well to face: how would such policies actually work, not in some sort of idealized world of perfect information and disinterested decisionmakers, but in the American political and social context. Since my time is limited, I will confine myself to a few broad assertions that I would be willing to defend.

- *Any targeted American industrial policy would be extremely non-transparent.* It would rely not on cash grants but on our tax system, our system of trade restrictions, and the differential application of our government procurement policies, our antitrust laws, and our environmental and occupational health and safety laws.

Why do I argue this? Because it is important to our political system — and will remain so — not to be seen as writing checks to any domestic industry, no matter its importance. Our political process puts a tremendous additional cost on cash grants that have to be openly voted for by the Congress and approved by the president.

What does this imply? For one thing, that the costs of such a policy would be considerably larger than its proponents acknowledge. Since we do not have a parliamentary system, bills providing for special tax or trade or antitrust or regulatory relief assistance to a targeted industry would be broadened, also giving assistance to nontargeted industries whose entrepreneurs were skillful enough to discover ways of making them appear to qualify for such assistance. This would not only raise the budgetary costs of any program of targeting (in terms of tax revenues foregone, for example). It also would strengthen the current tendency in business to hire and promote "paper entrepreneurs" — individuals skilled in selecting investments because of their particular tax advantages or other politically favored characteristics. Ironically, it is the growth of such paper entrepreneurship that one prominent proponent of targeted industrial policy, Robert Reich, has advanced his remedy as a cure for. It would be the opposite.

- *Industries that might be attracted to a targeted industrial policy on the grounds that it would consistently promote their interests (as they see it) would be in for a shock.* As the story I told earlier in steel showed, no government — and especially not our government — could ever be expected to unabashedly promote a given narrow set of interests over a long period of time. Furthermore, as we have seen so recently with respect to synthetic fuels, government interests can change. One minute the government can be smothering an industry with excessive attention and support; the next minute it can turn its

back totally. (Those who point to the Japanese as an exception should acknowledge the possibility that the long dominance of the Liberal Democratic Party, coupled with the strong tradition of bureaucratic continuity, might have something to do with any differences that are observed. In the United States, the one institution with a shorter-run view than business is clearly government, and this problem cannot be solved by a few minor bureaucratic fixes.)

What this means is that the political risks of doing business in this country would increase. This would strengthen incentives for business to hire and promote individuals skilled in dealing with these political risks, further sapping the spirit of entrepreneurship.

● *An American industrial policy would overwhelmingly be concerned with seeing to it that no one is harmed too much.* In other words, like the political system it reflects, it would be essentially conservative. I recognize that a number of the more prominent of the industrial policy proposals make a big thing out of avoiding concentration on "protecting losers." I argue that, given the way our political system operates, that is impossible. (Paul seems largely to agree with me, though he appears to believe that we also would end up supporting a large number of technological novelties. He may be correct. But to the extent that budgetary and other resources were limited, the losers would get the first claim on them.)

Why is this? Because, as economists and political scientists who study these things rightly observe, in America (and probably elsewhere), existing losses are weighed much more heavily than prospective gains. Put another way, as Charles Schultze has stated, the motto of the American political system is "Be seen as doing no direct harm." This is a system that is best suited at protecting against the effects of rapid change and compensating its actual and feared victims — though usually not in the form of direct cash payments.

There is no reason to expect a targeted U.S. industrial policy to operate any differently. Indeed, if you want to see the most complete and consistent description of how such a policy would operate, turn not to the writings of Robert Reich or Lester Thurow — they assume away the operation of the U.S. political system — but to the writings of Barry Bluestone.<sup>3</sup> Bluestone's industrial policy vision is of a system of change-retarding and change-buffering incentives. I do not

3. The best single statement of Bluestone's views is to be found in an article he and Bennett Harrison published in the September 11, 1982, issue of *The Nation* titled "Radical Reindustrialization: Plan for People — Not Profits."

share his views about what is desirable, but he has accurately described what likely will happen. Given this, I can certainly see why organized labor finds the targeted industrial policy concept attractive. What I find harder to see is why some of the sunrise industries like semiconductors find the policy appealing.

What would such an industrial policy mean for the country? Here I am in complete agreement with Paul:

It is hard to believe that such a policy will accelerate U.S. economic growth. Its direct effect will probably be to slow growth and raise unemployment. More importantly, the easy answer of targeting will help postpone our coming to grips with the real sources of disappointing U.S. performance.

That is a message that politicians who stay up all night reading Reich's manuscript would do well to ponder.

It is at this point that the supporters of targeted industrial policies are likely to say — as Lester Thurow has said to me — "well, what's your alternative?" There is one, of course, and it doesn't require a blind adherence to the free market. It's consistent with almost any size of government sector. It undercuts any tendency toward the encouragement of paper entrepreneurship. It's even consistent with what I increasingly am coming to believe is the true lesson of the Japanese postwar experience. It's called "de-targeting." How would it work? That's the subject of another paper, but anyone who is interested in the beginnings of the argument should read my July 29 testimony before the Joint Economic Committee.



*Robert Kuttner*

### **Theory and evidence**

Despite his title, Krugman's paper attempts to debunk industrial policy primarily by extrapolating from assumptions, not by offering persuasive evidence. If we assume, *ex hypothesi*, that markets are the optimal allocators of capital, that economies are at or near full employment, and that other nations do not rely on mercantilist approaches, then there is no need for industrial policy. For that matter, no need for evidence, since the case for planning is mooted by the assumptions. If the textbook assumptions of neoclassical economics were a fair proxy for reality, politically determined interventions in the allocation of investment, by definition, would have to make things worse.

But in practice, these assumptions are highly misleading. Macroeconomically, the economy is far below full capacity. Microeconomically, we know that investors often strive for short-run profit-maximization that often fails to serve long-run industrial well-being; we know (or we should know) that the sum of individual returns does not always equal the best social return. In international trade, we also have exchange-rate distortions, and politically driven decisions by other nations to give priority to particular sectors where we otherwise might enjoy comparative advantage; the normative ideal of Ricardian trade is not a good description of the way much trade is actually conducted. Thus, the question of whether to plan or not to plan needs to be resolved by careful sifting of evidence, not by tautological manipulation of *a priori* axioms. In an ideal world of near-perfect competition, Ricardian trade might be the best alternative. But the world in which we live offers hard choices between second bests and third bests. In such a world, an illusory quest for an imaginary first best can be the worst choice of all.

## The trade context

Choices about industrial targeting, like it or not, are forced on policymakers by trade-injury questions. The pressures of trade back the United States into de facto industrial policymaking. But because planning is ideologically illegitimate, we typically make industrial policy with inadequate information, poorly defined goals, and something less than a full kit of tools.

Consider the recent Harley-Davidson case, which presents the practical dilemmas in microcosm. In July 1983, the Reagan administration agreed to give Harley-Davidson, America's last remaining motorcycle manufacturer, relief from Japanese competition in the form of sharply higher tariffs (from 4.4 to 49.4 percent). This was the rare case where tariffs were raised, not based on a finding of dumping, but because of a finding of injury to the domestic manufacturer. The tariff surcharge will gradually be reduced over a five-year period, during which time Harley is supposed to restructure and recover.

Why was this remedy chosen? In its complaint to the International Trade Commission, Harley contended that it was well along in the process of developing a new, state-of-the-art engine and redesigning its product line; that its new line could effectively compete with Japanese products; but that it desperately needed to retain market share in order to stay viable and raise adequate capital in the interim. Rightly or wrongly, government officials were ultimately persuaded by Harley. The decision to grant protection was preceded by bitter infighting between the more pragmatic officials of the Commerce Department and the free trade ideologues of the CEA.

Like it or not, even the Reagan administration was committing economic planning. Whether the Japanese had improperly subsidized their motorcycle industry was not at issue. As far as this case was concerned, the Japanese were following the rules of free trade. They were driving the last U.S. motorcycle producer out of business mainly on the basis of a superior product. But, rightly or wrongly, this was not considered an acceptable outcome. So trade officials, forced to adjudicate an injury case, found themselves making seat-of-the-pants industrial policy. Officials, in short, were presuming to outguess the market. The market was telling Harley to scrap its capital and its labor, or to make something else. But Harley executives and government officials concluded that given some restructuring Harley might re-emerge as a viable competitor. The U.S. government was playing MITI — but with one hand tied behind its back.

To a great extent, the tiny motorcycle industry (which could well be expendable) is a metaphor for far more important industries — old-line ones like steel, autos, and chemicals, as well as advanced ones like semiconductors, N.C. machine tools, and fiber optics, all under pressure from competitors who are far less sanguine about Ricardian purity. In such a world of administered trade and neo-mercantilism, it is rather too glib to say, as Krugman does, that when a domestic industry falters it is nothing more than the global free market playing taps. Failing to have a deliberate and affirmative industrial strategy in these key industrial sectors invariably leads us to the worst sort of defensive, *ad hoc* protectionism.

To pursue the Harley case a moment longer, let us reflect on the difference between our *de facto* industrial policy and Japan's. The United States cannot admit, ideologically, to having an industrial policy. Therefore, there is no mandate for policymakers to consider whether the country needs a motorcycle industry (or steel, or autos, or chemicals). There is no mandate to look into the value of linkages between, say, motorcycles and metallurgy or machine tools. Nor is there an array of policy tools, save trade restraints and perhaps some tax favoritism. But officials did not have the option of offering Harley subsidized loans, or subsidizing applied research into high-stress metallurgy, or brokering a restructuring agreement with Harley's workforce.

What a self-defeating limbo. The practice of free trade has been abandoned; we protect industry after industry. But the ideology of free trade lives on. As the Harley case illustrates, the force of the ideology is no longer sufficient to keep us fully loyal to the conduct of free trade, but just powerful enough to deny us the tools of competent planning. It is a bit like the teenage girl whose scruples lead her to forego birth control, but not sex.

Krugman laments the absence of scientific criteria for industrial targeting. The image is of policymakers, with their *tabula rasa*, trying vainly to decide which industry is a possible winner. But that is not how life works. These practical dilemmas do not arise in a vacuum. The task for policymakers is not to dream up some hypothetical high-value-added industry, but to decide when someone else's mercantilist targeting should be allowed to consign a viable American industry to oblivion. Sometimes, it may be appropriate to let a whole industry die. Sometimes, it should be assisted to restructure and develop. The absence of perfect criteria is no reason to deny that these choices will

continue to arise, nor is the fact that policymakers dwell in a world tainted by political influence. "Not to decide is to decide."

### **Employment and productivity**

The argument that high-value-added (high-productivity) fields require fewer workers is always true, whether such fields are identified by markets or by planners. But nonetheless, we all want high-productivity industries. The issue of how to reconcile full employment with rapid productivity gains is conceptually a separate issue from the question of whether planning can work. I happen to believe that a modicum of planning — what the Swedes call "active labor market policies" — can take some of the social pain out of productivity gains without depressing the efficient market allocation of capital. The claim that planning is bad because it accelerates productivity and therefore unemployment is a red herring.

Moreover, the contention that productivity gains therefore would, however paradoxically, produce a lower rate of aggregate growth is surprisingly Luddite. It reflects a static, Newtonian view of how the economy digests productivity gains and re-equilibrates. It ignores the impact of the technological advance associated with high-value-added industries. It ignores real gains in output. By Krugman's standard, productivity gains would have the same paradoxically negative effect on well-being, even when brought about by market-determined patterns of capital investment. The remedy to the productivity1 unemployment problem is Keynesian full-employment policy, not resistance, to productivity gains. Ironically, Krugman's argument against labor-saving productivity gains is precisely the one that primitive protectionists employ against free trade.

### **Linkage criteria**

Krugman's attempt to define away linkage industries sets up a straw man. Issue is not whether steel is re-used. Surely steel has more genuine forward and backward linkage effects than, say, fast food. Of course in theory the market will always produce exactly the right amount of investment in linkage industries, in the absence of other distorting factors (e.g., the tax code, OPEC, labor unions, Japan, inflation, idle capacity). In theory, the market is a marvel — but in theory is not where we live.

## **Eventual competitiveness**

Krugman contends (tautologically) that only if comparative advantage is moving our way anyway does targeting make any sense. This totally rules out the possibility of created comparative advantage, or of technological advances stimulated by targeted investment. Did the U.S. have a "natural" comparative advantage in synthetic rubber or in civilian jetliners or in lunar landers before those technologies were invented? Of course not. They were invented, thanks largely to applications of government capital and government-generated demand. Once that intervention spawned the new technologies, it gave us an effective comparative advantage. Not until the French and German governments subsidized the airbus did they attain an equivalent comparative position in airframes.

Worldwide excess capacity is indeed a problem, but it is a hoary problem of capitalism that was around long before planning reared its ugly head (*viz.*, Marx, Keynes, Schumpeter, et al). Consumer electronics is due for a massive shakeout, not because of targeting, but because of over-investment by the market. Free-market agriculture is the extreme example where stable markets cannot exist without government intervention to prevent overproduction that results when each producer, atomistically, pursues narrow self interest.

Excess capacity problems are probably exacerbated by collision of mercantilist Japan with Ricardian America. In general, overcapacity problems again call for Keynesian and managed-trade and market-sharing remedies, not a disdain of planning.

## **Response to foreign targeting**

The issue is really whether we can be successful Ricardians when others are successful mercantilists. Steel is a very good example. Because of other countries' targeting, returns on steel (by market criteria) are low indeed. But is the market sending the right signals? Can we give up the steel industry entirely? If so, how to explain recent administration policy? What happens when apparent market signals to quit an industry are the result of other countries' subsidies, especially when those other countries happen not to share Krugman's ideological assumptions and they believe that targeting can produce positive-sum gains? Do we mistake those price signals for a free market? Do we try to market our ideological assumptions? Is there an effective demand for our ideology in the global marketplace of ideas?

The real question is whether defensive protectionism is adequate, or whether we'd be better off with protection-cum-restructuring, as per Japanese recession cartels and EC's Davignon plan. Even Secretary Baldrige seems to think so; he's revived the steel tripartite.

### **More sophisticated professional economists' criteria**

Krugman's learning curve hypothetical leaves out the case of subsidized research, or subsidized capital, or market creation (procurement) intended to benefit industry as a whole (e.g., semiconductors, textile industry R&D, aviation technology). Static calculation of optimal return on capital misses the point utterly: Gains are dynamic.

The discussion of external economies confuses over-investment by duplication (market waste again) with aggregate over-investment or under-investment in particular sectors. If the market return on steel is inferior, it's a safe bet that industry is not investing in the state-of-the-art metallurgical research for steel. But that may be just what we need to restore the industry to efficiency.

Conversely, there may be wasteful duplication in pharmaceutical research solely because the returns are exorbitant. There is also the case where industry doesn't spend much on R&D because the market does not yet exist (photovoltaics). Subsidized pre-competitive research may be the best compromise between state and market.

### **Other government-induced distortions**

Yes, indeed, the tax code is an abomination. But was it government-induced or lobbyist-induced? (Don't blame 10-5-3 and Charls Walker on the industrial policy crowd.)

### **Japanese targeting**

This analysis deserves the Pangloss Award for perfect tautological reasoning. The argument is that Japanese targeting couldn't have made any difference, by definition. Either they didn't really target (The Cline-Saxonhouse hypothesis), or if they did try to target it didn't matter, since only natural comparative advantage can produce real gains (again by definition). Remember *Candide*: This is the best of all possible worlds, because if it could have been different, it would have; human intervention can't improve on nature. This line of reasoning eliminates the need for evidence. What conceivable evidence would persuade Krugman that Japan successfully targeted? If none, then this is pure tautology.

Is Japan's impressive gain in human capital a tribute to Heckscher-Ohlin comparative advantage, or to targeting? Having advanced industries in which to train and employ advanced workers is one good way to maintain a highly skilled workforce. We trained 300,000 skilled machinists during World War II, mainly because we needed them to build several hundred thousand planes and Liberty ships. Why train American metallurgists if there's no metal industry? Is this perhaps another externality not calculated by market return?

### **Steel: the refutation that wasn't**

Krugman argues that Japan forged ahead in steel because the preconditions were right: cheap labor, cheap capital, transferrable technology, and declining demand. But how does that prove that industrial policy made no difference? These preconditions were arguably necessary, but were they sufficient? The Japanese industrial system is typically financed by relatively cheap, highly leveraged capital. In general, the Japanese banking system (which is the main source of finance) takes a chance only on a big new venture (like steel) when there is government backing for it. Otherwise, the debt-equity ratio would be plainly imprudent. In the case of steel, there was also government subsidy, as well as substantial protection from imports (the usual MITI targeting formula). What evidence does Krugman have for the proposition that development of a Japanese steel industry would have happened anyway (and at the same pace)?

The most obvious benefit of Japanese steel targeting is that it gave Japan relatively cheap inputs for other major exports (cars, ships) and that it provided a winning export product in steel itself. Steel may be just a low-yield product, but the Japanese seem justifiably pleased with it. (As Crandall points out, nowhere does steel earn a market rate of return. So what?)

### **Implications for the U.S.**

Is the villain really high wage costs? Wages are 12 to 15 percent of steel production costs. In fact, a bargain involving wage restraint traded for capital subsidy and job security is very possible, only nobody is proposing it. The absence of any forum in which to broker that bargain is another reason why an industrial policy for steel might produce positive-sum gains.

## Semiconductors

In fact, MITI's policy did not include just subsidized cooperative research. It aggressively kept U.S. firms out of the Japanese market, except where MITI could coerce technology transfer concessions and joint ventures. MITI also guaranteed markets for semiconductor producers during the trough in the business cycle, while our de facto industrial policymaker for semiconductors — the Pentagon — did not. As Krugman indicates, MITI also links development of Japanese computer industry to Japanese semiconductor production, so that emerging semiconductor capacity has a big, assured domestic market. The conclusion that none of this mattered is a heroic leap; it is deduced from theory, not from any substantial evidence.

## My conclusions

Debunkers of industrial policy need to pay more attention to evidence, especially to comparative institutions. There are indeed serious caveats for industrial policymakers in the American context. One is that we are not a corporatist society. Bargaining is much messier and more diffused here than in Japan. Politics do intrude. Politically influential industries will undoubtedly get protection under an industrial policy regime. But they get protection anyway, and under the present regime it is the worst sort of protection. In 1955, this issue would not have arisen. But today, trade forces the issue; we cannot duck it by pledging allegiance to the market.

A second caveat: Industrial targeting is the last 10 percent of sound economic policy. The first 90 percent is good macroeconomic policy, and above all a policy of full employment. Liberals who have latched onto the industrial policy theme as a new agenda, when the old agenda hasn't been completed, make a disastrous error. As Krugman hints, if unemployment is 10 percent and we restructure steel to make it more competitive and productive, unemployment will just rise to 11 percent. For restructuring to work, there have to be jobs to shift the relocated workers to. A measure of targeting is not beyond the competence of government, and it's probably necessary. But it's the frosting, not the cake.

The real world, as opposed to the world of abstract models, is a world in which institutions count, and in which statecraft can sometimes make positive gains. To believe otherwise is not only to hide in the arrogant certitude of dogma, it is to be deeply cynical about democratic institutions.

## Labor Market Policies in Response to Structural Changes in Labor Demand

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*Michael L. Wachter and William L. Wascher*

### Introduction

The United States economy is about to complete its tenth year of secular stagnation. It will celebrate that anniversary in an atmosphere of a strong economic recovery, but a recovery that began with the unemployment rate at a new post-Great Depression high of over 10 percent. One result of this growth slowdown has been the emergence of a new structural unemployment issue: high rates of unemployment among semi-skilled and skilled workers who had previously exhibited a record of employment stability. In this paper we shall focus on this issue and examine its short- and long-run manifestations and policy implications.

The displaced worker problem has clearly been exacerbated by the current recession. To what extent, however, will the ongoing recovery, if sustained, provide a complete cure? That is, will the equilibrium unemployment rate be higher over the next several years as a consequence of increased structural unemployment among displaced workers? Some argue that the number of displaced workers, reflecting trends in technological change and international trade, is on a long-run **uptrend**. According to this view, the displaced worker phenomenon is an early warning indicator of a mismatch problem, particularly in manufacturing, between the available supply of and demand for production workers.

Typically, a discussion of labor market problems and policies,

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especially when **unemployment** rates are high, focuses on training and job creation **policies**. We shall do this to some degree, but the essence of our **argument** is somewhat different.

First, in the **summer** of 1983, it is difficult to recommend a new round of **employment and training policies**. The implications of the budget deficit for employment over the longer run make it more likely that **government** expenditures should be decreased rather than increased. In **addition**, the record of the 1970s suggests that labor market policies **tend** to be pro rather than countercyclical, perhaps even more so than other stabilization policies. As the current recession again proves, policy debate over cyclical unemployment tends to begin in **earnest** about the time that the economy reaches its recession trough. **Funding** for new jobs thus begins at the time that private sector employment is growing strongly. Of course, there is always the chance that the **current** recovery will be short lived, so that 1983 versions of **employment** policy would fortuitously prove to be timely. The perverse timing of employment programs, however, appears to be endemic rather than simply bad luck in forecasting.<sup>1</sup>

Secondly, the underlying problem facing displaced workers does not involve **employment** difficulties or a shortage of jobs; rather, it involves wages. **Displaced** workers, by definition, have accumulated a certain amount of **job-specific** human capital and/or have been paid a union wage **premium**. This means that the displaced workers have opportunity wages that are lower — and at times considerably lower — than the wages attained in their last jobs. Their jobs can be restored, but **not** their old wage rates. The mismatch in the labor market is thus due to a **mismatch** of displaced workers' wages on their past jobs with their opportunity wages on new jobs.

The record of the past decade suggests that the American economy has no difficulty creating jobs that **fit** the labor force. Although the 1970s compare unfavorably with the 1960s with respect to almost all economic indicators, one exception has been employment growth. While employment increased at an average of 1.9 percent per year during the high-growth, low-inflation **1960s**, it grew at an average of 2.4 percent per year during the low-growth, high-inflation **1970s**. The problem **area** of the last decade has not been job creation but rather real wage growth. In 1979, even before the two recessions of

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1. This issue is discussed in Wachter, "The Training Component of Growth Policies." We do not deal **with** this topic here.

of the 1980s, real wages were no higher than they had been in 1971. By 1982, real wages had fallen to levels first attained in 1967.

The U.S. labor market has also exhibited another trait over the past decade: a high variance in interindustry wage changes. The time series of wages across industries exhibits an increasing coefficient of variation over time. The increased variance that has been occurring since the early 1970s has resulted in a widening of the interindustry wage structure. Whereas union-nonunion or high wage-low wage industry wage differentials exhibited little secular change between the early 1950s and the late 1960s, they have increased persistently over the 1970s.

As a consequence, although real wages have declined for most American workers, some groups have either avoided or mitigated the decline. In a number of manufacturing industries, for example, real wage growth has been well above that achieved by other American workers. It is likely that the severity of the displaced worker phenomenon is an outgrowth of the intersection of the recession and the increased variance in the employment and wage structures.

Specifically, the income loss to displaced workers is greater the larger the wage premium they enjoy over their opportunity wage. Moreover, the higher the union wage premium, or the premium not dictated by job-specific human capital, the greater the likelihood that workers will be displaced. In fact, the pulling apart of the wage structure has been quantitatively large enough to explain much of the displacement that has occurred in several of the declining industries.

To what extent will the displaced worker problem grow over the next decade? Over the near term, the outlook is favorable since spikes in the variance of interindustry employment tend to occur during recessions. If the economic recovery continues through 1985, manufacturing employment, even in the long-run declining industries, will increase; that is, the cycle effect will outweigh the trend effect. Employment in some of the declining industries is unlikely, however, to reach peak levels attained in 1979:IV.

Over the longer run, concerns about a growing mismatch between unskilled workers and high skill job requirements appear to be unfounded. Future business cycle recessions will generate displacement, as occurred during 1980-82, but increased rates of technological change are likely to improve the ability of the economy to absorb the available labor supply.

Moreover, labor supply factors should be highly favorable over the

next decade. The percentage of young workers in the labor market will be decreasing as an increasing percentage of the baby boom cohort enters its early career stage. The increasing labor force participation rate is likely, at least, to slow its ascent. Perhaps most important, however, is that the percentage rate of increase of the total labor force will decline sharply. This labor market environment, if it does develop, should make the task of dealing with displaced workers more manageable.

Policy approaches for displaced workers must be understood in the context of the specific nature of the problem and the outlook for the 1980s. First, there are likely to be fewer displaced workers over the next several years than there are today, but more than there were during the tranquil 1960s. Given the stage of the business cycle and the past record of employment programs, it is too late to mount major new federal initiatives in this area. Secondly, although the displaced worker can be reabsorbed into new employment, the wage loss cannot be undone. Some offset, however, is possible.

Labor market policies that can be used in dealing with the problems posed by worker displacement include special income transfer programs of the type currently in use, the extension of CETA on-the-job training efforts, and employment tax credits or vouchers specifically targeted toward these workers. The degree to which these programs can be relied upon, however, should be strongly influenced by the fact that government policy remedies can efficiently provide only a limited offset to the losses suffered by workers.

This suggests that employers and labor unions give greater attention to collective bargaining initiatives that would minimize job displacements, even at the **tradeoff** of real wage objectives. That phenomenon is already apparent in a recession environment, as workers "give back" wages in return for improved job security. During an economic upturn, if the threat of displacement remains, continued willingness to trade off gains for increased job security in collective bargaining is needed. In other words, the parties may find it necessary to narrow the wage structure differentials that have emerged during the 1970s.

### **Defining the displaced worker problem**

The displaced worker phenomenon is difficult to measure, partly because of the lack of consensus as to what is meant by the term "displaced worker." Some appear to use the term interchangeably with

individuals who have permanently lost their jobs during the current downturn. However, for analytical purposes, this categorization is not useful since it overlaps with traditional measures of cyclical unemployment.

In order to focus on structural changes in the labor market, we adopt a definition which confines the problem to forces that affect the equilibrium rather than the cyclical rate of unemployment. Specifically, the term displaced worker is used in this paper to refer to those workers who suffer a permanent loss of their current job in an industry with a negative trend rate of employment growth and for whom a change in jobs will prove costly. Displaced workers are thus people who have made an investment in seniority and job-specific training and/or who have received a union wage premium that cannot be recovered in the next cyclical upturn by being reemployed in a new job.

Since there is no way of knowing whether any given worker will be rehired in the next upturn, the number of displaced workers can only be measured by adopting some proxy variables that approximate the definitional characteristics. For purposes of this paper, the displaced worker is defined as one who held previous employment with some length of job tenure in a declining industry.<sup>2</sup>

Declining industries are those industries that have experienced structural employment declines due to either reduced output levels or reduced manhour requirements at any given level of output. The structural as distinct from cyclical employment decline has been attributed largely to long-term trends in international trade competition and the adoption of labor-saving technologies, in particular those based on microelectronics.

The length of job tenure criterion is adopted to distinguish between those who have settled into what had promised to be their lifetime or career jobs and those who did not have jobs with much tenure at the time they were discharged. The latter group has made less of an investment in training specific to their previous jobs and are younger on average. As a consequence they can typically change jobs at lower cost to themselves.

The Congressional Budget Office (CBO) has compiled statistics showing the number of displaced workers as of January 1983, based

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2. The term can also be defined as involving declining occupations rather than declining industries.

on 1982 data. Defining a declining industry as one in which employment levels fell from 1978 to 1980, they found that 1.290 million of the unemployed were from declining industries, and that 280,000 of those workers also had 10 or more years of job tenure.<sup>3</sup> (See Table 1.) The industries that contributed the most to the displaced worker population were the automotive, primary metals, textiles, wearing apparel, and lumber industries.

TABLE 1  
Estimated Numbers of Dislocated Workers in January 1983  
Under Alternative Eligibility Standards and Economic Assumptions  
(in thousands)

Eligibility criteria	Base on 1982 Data*
Single criterion	
Declining industry	1,290
10 years or more of job tenure	870
More than 45 years of age	1,160
Multiple criteria	
Declining industry and	
10 years or more of job tenure	280
45 or more years of age	280

Source: Congressional Budget Office estimates based on tabulations from U.S. Bureau of the Census, *Current Population Survey* (March 1982).

\* Assumes that the number of dislocated workers in each category decreases proportionately with the projected change in the aggregate number of unemployed workers between the first quarter of 1982 and the first quarter of 1983, a reduction of nearly 5 percent.

Reflecting a broader definition of displaced workers, higher estimates are obtained by the National Council on Employment Policy. The council defined displaced workers as those who (1) were previously employed in stable jobs, (2) had been laid off with little chance of recall, and (3) were unlikely to find new employment using their familiar skills at near their customary rates of pay.<sup>4</sup>

As in the CBO example, this definition cannot be quantified with-

3. The Congressional Budget Office presented various calculations based on different forecasts of the economy between 1980 and January 1983. The numbers in Table 1 are based on the forecast that turned out to be most relevant to the actual state of the economy in January 1983. *Dislocated Workers: Issues and Federal Options*, Congressional Budget Office (July 1982).

4. *The Displaced Worker in American Society: An Overdue Policy Issue*. National Council on Employment Policy (February 1983), p. 1.

out adopting proxy measures. The council notes that, "According to the December 1982 BLS release, of the 12.0 million unemployed, 7.3 million had lost their last job. Only 2.5 million of these considered themselves to be on layoff with expectations of recall by their former employers, and even for many of these the hope will prove illusory. In the broadest sense, if all those who have lost jobs to which they do not expect to be recalled are considered displaced, this would make the number of displaced workers close to 5 million."<sup>5</sup>

These estimates are much larger than the CBO estimates because they do not restrict displaced workers by job tenure, or as losing jobs in industries with a negative long-run employment trend. Rather, the council accepts the workers' assessment of their recall possibilities as indicating displacement. As a consequence, the 5 million number is likely to combine both cyclical and long-run displacement, and includes those who may suffer a considerable wage loss as well as those whose opportunity wage is approximately equal to their last wage.

As indicated above, we adopt the CBO estimate since their construct is geared to structural rather than cyclical forces. Our interest is in the effect of displacement on structural or equilibrium unemployment rather than cyclical unemployment. Of course, cyclical and structural problems are interrelated. The displaced worker problem, and structural problems in general, emerge during the recession stage of the business cycle.

Recessions are associated with a speedup in structural changes that are occurring in the economy. High-cost or uncompetitive industries (from an international trade perspective) can prosper when economic activity is strong, but suffer disproportionately when the economy turns downward. That is, periods of high aggregate demand tend to mask longer-run negative trends in firms' product demand. In addition, cyclical excess demand conditions will generate prices that can cover the high cost producers. As demand slackens and product prices decline, it is the highest cost producers who suffer first and foremost. These producers are more likely to close plants or shut down operations during a recession. Thus, although the underlying long-run trend is steadily downward for the declining industries, observed labor demand will stagnate during expansions and ratchet downward during successive periods of weak product prices.

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5. *The Displaced Worker* (1983), p. 2.

### *The economic nature of the problem*

The underlying labor market mechanism appropriate for displaced workers indicates that the problem is more of a wage than an employment problem.<sup>6</sup> From the vantage point of the workers, the jobs that are lost are those in which the workers have invested in specific training, acquired the benefits of seniority, and/or received a wage premium due to unionization. Starting a new job compromises those gains. In addition, whereas seniority is a benefit to workers on established jobs, that age factor is a liability when searching for a new job.

A worker, before being displaced, can be viewed as having a potential flow of wage income shown by the age-earnings profile in Figure 1. The age-earnings profile slopes upward since workers tend to receive higher wages as they age (curve AA'). This can be attributed to a return on specific training and/or a seniority system in which the length of job tenure is itself rewarded. If jobs are unionized and the union succeeds in raising wages, the age-earnings profile can be depicted as BB'.

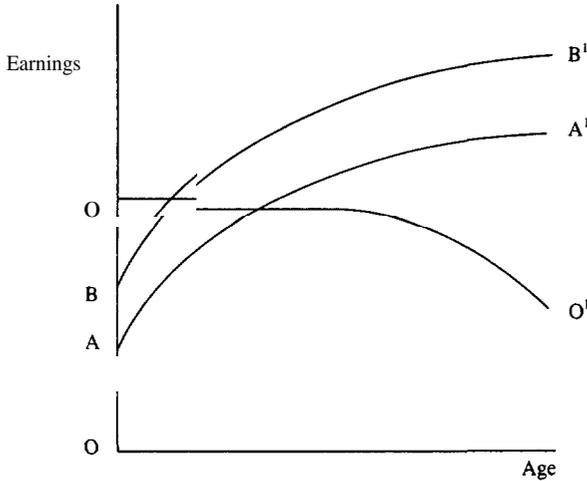
Workers who are displaced can, after some time, find a job. In this new job, the workers can be assumed to lose the benefits of unionization, job seniority, and any investments in specific training. The "opportunity" wage or the wage on the new job is shown by the curve OO'. This curve depicts the beginning wage on the new job for displaced workers of different ages. It is shown to decline with age, at least after a certain point in the life cycle. The decline reflects a number of factors ranging from institutional customs or hiring practices to declining skill with age. The older workers, precisely because of their age, find it more difficult and less profitable to invest in new specific training.

The difference between workers' rising age-earnings profiles (BB') and the declining opportunity wages (OO') yields the annual wage loss to the displaced workers. That annual loss increases significantly with age. The lifetime as distinct from the annual earnings loss would be the area between the two curves beginning at the time of displacement. Clearly, the oldest workers, although they have the largest annual loss, will not have the largest lifetime earnings loss. That distinction is more likely to befall displaced workers who are in their late forties or early fifties. There is no unique age at which the

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6. The treatment in this section is drawn from Wachter (1983).

FIGURE 1  
LOSS OF EARNINGS OF DISPLACED WORKERS



- AA' = average earnings profile for the blue collar worker after he retains employment.
- BB' = average earnings profile for the union member.
- OO' = opportunity wage for the **displaced** worker; that is, the wage that they can obtain on a new job in a competitive labor market.
- AA' - OO' is the annual earnings loss to a nonunion displaced worker.
- BB' - OO' is the annual earnings loss to a displaced **union** worker.

loss would be a maximum; rather, it would vary with the nature of the industry and occupation and the quantity of specific training. It is this potential, *permanent* lifetime income loss — a loss that is worse for older workers who are too young for early retirement — that is at the heart of the displaced worker problem.

Newly displaced workers are likely to begin their job search looking for jobs that can use their specific training skills and that pay a wage rate comparable to the wage paid on the lost job. Consequently, even in an expanding economy, they are likely to face a lengthy bout of unemployment until their reservation wage — that is, the wage at which they will accept a new job — falls to their opportunity wage. The higher the wage on the lost job, the longer the period of unemployment. For some workers, the earnings replaced by unemployment insurance may be close to the earnings available on the alternative jobs.<sup>7</sup>

7. Although displacement has been defined in terms of declining industry employment and

Empirical studies based on plant closings in the early 1970s support the conclusion that workers permanently displaced, unlike those on temporary layoffs, may suffer substantial losses in earnings for prolonged periods of time. Clearly, however, the size of the earnings loss is much higher for unionized workers in high-wage industries than for workers in low-wage industries. Earnings losses over 25 percent can be found for automobile and steel workers. For those in apparel and textiles, the losses are more likely to be under 10 percent.'

## Relative wages

### *The increasing union wage premium*

Although an analysis of the causes of the ongoing structural change is beyond the scope of this paper, one aspect of the topic is of central concern. In the discussion above, it was argued that the cost of displacement is a function of the difference between individuals' wage rates on their last job and their opportunity wages. To the extent that individuals' wage rates represent a union wage premium, the opportunity wage on new jobs in different firms will be lower by that amount.

Wage rates, however, not only play a pivotal role in defining the problem of displacement, they also are crucial as a causal element in explaining the extent to which displacement is likely to take place. Specifically, any job with an increasing wage premium, that is, a wage above the market clearing wage, has a higher risk of displacement than a similarly situated job that pays the equilibrium wage.

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length of job tenure, a regional dimension can also be introduced. The declining industry base is largely in the industrial north central and northeastern states. Since some towns and cities in these regions have a heavy concentration of employment in declining industries, alternative employment opportunities are limited. As a consequence, job displacement requires geographical mobility

The human capital framework analyzes migration as a type of investment decision, where discounted benefits and costs are equilibrated. The older the worker, the fewer the number of post-migration years in which to garner the benefits of the geographic move and the greater the fixed investment in the original community in terms of social and psychological relationships. The fact that other family members may still be employed adds another cost dimension to geographical mobility.

Fixed investment in specific training, union wage premium, and housing all become obsolete and, like the plants in which they worked, must be simply written off. The policy issue for the truly displaced worker is not how to regain those lost fixed assets but rather how best to make new investments at a time when remaining worklife expectancy is short.

8. A summary of these results is presented in Marin (1983).

The existence of increasing wage premiums in certain industries is shown by increases in the coefficient of variation of average hourly earnings of production workers in manufacturing industries. (See Table 2.) Of particular interest is the steady rise in the coefficient of variation since 1970.

TABLE 2  
Wage Dispersion in Manufacturing  
1947-1982

Year	Coefficient of variation in average hourly earnings	Year	Coefficient of variation in average hourly earnings
1947	13.36	1965	18.53
1948	14.47	1966	18.47
1949	15.43	1967	17.69
1950	14.96	1968	17.24
1951	15.12	1969	17.33
1952	15.87	1970	17.01
1953	16.41	1971	18.06
1954	16.78	1972	19.12
1955	17.52	1973	19.26
1956	17.16	1974	19.43
1957	17.50	1975	20.44
1958	18.16	1976	21.35
1959	18.77	1977	21.85
1960	18.73	1978	22.32
1961	18.88	1979	22.44
1962	18.87	1980	22.61
1963	19.06	1981	23.59
1964	18.74	1982	24.05

The coefficient of variation is the variance in the level of average hourly earnings across industries divided by the mean value. Average hourly earnings are obtained from U.S. Bureau of Labor Statistics, *Employment and Earnings*, various issues.

Studies of the dispersion in wages between high- and low-wage or union and nonunion industries have indicated that the wage structure should vary systematically over the business cycle.<sup>9</sup> In particular, the wage setting process in high-wage or unionized industries responds to market conditions with a longer time lag than does wage setting in

9. See, for example, Wachter (1970).

low-wage industries. This longer lag means that the time series of wage changes in high wage industries should tend to be relatively acyclical. With their relatively fixed profile of wage increases, the high-wage industries should experience an increased wage premium during downturns in business activity, but give back those gains during the subsequent upswing.

Through the mid-1970s, the empirical evidence on the cyclical behavior of wage differentials supported this theory. High wage premiums, after growing through most of the 1950s, tended to decline during the 1960s. Again, as anticipated, wage premiums grew during the high unemployment years of 1970 and 1971.

The breakdown in the cyclical behavior of the interindustry wage structure began during the expansion of the early 1970s. Whereas wage gains in the low-wage industries were predicted, by the theory, to be higher than in the high-wage or unionized industries, the reverse occurred. The coefficient of variation in wages among industries continued to grow, reflecting the large wage gains in the already high-wage industries. This development has been associated with the spread of COLA clauses in collective bargaining contracts. Before adoption of these clauses, unanticipated high inflation rates caused union wage increases to lag nonunion increases. With these clauses in effect, union wages responded more quickly to the higher inflation rates. The percentage of workers under major collective bargaining agreements with COLA coverage jumped from 27.8 percent in 1972 to 61.2 percent in 1977.<sup>10</sup>

The impact of COLA clauses on relative wages was heightened by two unanticipated factors. The first was that a large component of the inflation increases during the 1970s was caused by supply shocks. This was unlike the inflation of the 1960s, which emanated from domestic excess demand conditions and thus caused nonunion wages to increase by the same amount. During the 1970s, nonunion wages trailed behind the inflation rate as real wages declined. Since the COLA clauses did not differentiate between external supply and domestic demand inflation processes, the unionized workers were equally protected against both contingencies. The result was that

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10. Wachter and Wachter (1978) discuss the implications of COLA for the breakdown in the cyclical pattern of relative wage increases. For a discussion of COLA provisions, see Hendricks and Kahn (1983) and Ehrenberg (1983). For the data on the growth of COLA provisions in union contracts, see Davis (1983).

inflation resulting from supply shocks caused the interindustry wage dispersion to increase.

The second factor was that the CPI-W, the primary index in COLA clauses, overstated the inflation rate. Although the problems created by the CPI formula in use during the 1970s are well known and are not repeated here, the flaws in the CPI-W provided an overkill in cost-of-living protection. To see the magnitude of the problem, we have worked out an example in which the personal consumption deflator (PCE) is used as a true measure of the cost of living. The coverage rate most frequently found in COLA clauses provides for an increase of 1 cent for every 0.3 rise in the index. Between 1973 and 1982, the CPI-W increased by 155.5 points, from 133.1 to 288.6. If, on the other hand, the CPI-W had only increased as rapidly as the PCE during that period, then it would have only reached 268.2 by 1982. The difference in annual wage levels is \$1,414." That represents an increase of more than 20 percent based on 1973 wage levels and an increase of slightly under 10 percent based on 1982 wages.

Although the COLA overkill could account for much of the puzzling increase in the wage dispersion among industries, we cannot explain why firms did not offset COLA increases by granting lower straight wage adjustments. Institutional and industry-specific factors and information lags probably explain some of the inability of firms to adjust relative wages. One example is the steel industry's experimental no-strike agreement.

### *The potential impact of increase wage dispersion*

It is likely that the increased wage dispersion was one factor which caused the job displacement problem. Employment displacement effects caused by high relative wages should be traced out by a downward movement along the industries' demand curve for labor as well as by an inward shift of the curve.

To examine the potential magnitude of the problem, we estimated a cross-sectional relationship between the relative wage performance and relative employment change of 45 two-digit industries between

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11. Using the CPI-W measure, model COLA provisions accounted for a \$5.18 increase in hourly wages. Had the PCE been used instead, the increase would have been \$4.50. The difference is \$0.68. The annual difference given in the text is based on a figure of 2,080 hours per year. In addition, all of these calculations are for straight-time pay. Fringe benefits that are determined by straight-time salaries would increase by the same rate.

1973 and 1982. The results are the following:

$$e = -0.116 + 0.972 q + 0.646 p - 0.566 w \quad R^2 = 0.76 \quad (1)$$

(0.71)      (8.66)      (8.53)      (2.26)

The equation was estimated in log linear form and included all of the two-digit industries for which data were available. The dependent variable is the relative employment change between those two years for each industry, while the independent variables are the relative output, relative price, and relative wage changes for the respective industries.

The results indicate that relative employment responded negatively to relative wage increases with an elasticity of 0.57. The wage elasticity is computed holding relative output constant and so represents an own wage substitution effect. Since the wage variable measures the percent change in wages in excess of the average for the private economy, it is not surprising that the elasticity is fairly high.

It is interesting to note that the industries used in the CBO calculations as the home base for the most displaced workers did have increasing relative wages over the 1973 to 1982 time period. Wages in the lumber industry, for example, increased at a 0.72 annual percentage rate, faster than for the overall economy between 1973 and 1982. The comparable figure for primary metals is a 1.59 annual percentage growth in the wage premium, and for motor vehicles it is a 0.97 annual percentage growth premium. Since the textile industry increased its wages at an annual percentage rate of only 0.17 faster than the overall economy, it can be viewed as somewhat of an exception.

Relative wage levels, of course, are only part of the story, a point which is illustrated by the predicament of the textile industry. Moreover, the rising value of the dollar has had a larger quantitative effect on the American wage level relative to its trading partners than domestic relative wage changes. In fact, real wage growth in the United States has been below that of other OECD countries.

In terms of comparative advantage, however, those domestic industries with increasing relative wages will always be more vulnerable than will those with declining relative wages. Economy-wide negative output effects associated with the rising value of the dollar, on the other hand, are likely to be self-limiting and will be dominated by increasing scale effects in the expansion phase of the business

cycle. The point concerning increasing industry-specific relative wages is that that effect is permanent and not self-limiting without corrective measures on the part of the industry wage-setting mechanism.

In order to estimate the total employment displacement effect in manufacturing due to rising relative wages, it is necessary to have an estimate of the wage elasticity for employment that *includes the scale effect*. Unfortunately for our purposes, most existing econometric estimates of the demand curve for labor on the industry level measure only the substitution effect; that is, output is used as an independent variable along with the various factor input prices. The literature suggests an elasticity of approximately 0.30 for this substitution effect, holding output **constant**.<sup>12</sup>

The data show that of 21 manufacturing industries, 17 increased their wages for production and other nonsupervisory personnel relative to those wages paid elsewhere in the (private, nonagricultural) economy. If we assume that the elasticity of 0.3 is correct, then it is possible to compute the employment loss due to the increase in relative wages for those industries with high relative wages. The decline in **manhours** is shown in Table 3, column 3.

Employment elasticities with respect to wages, not holding output constant, are likely to be considerably higher (in absolute value) than the numbers reported in Table 3, column 3. For example, in competitive industries, wage elasticities can be close to infinite if the higher wage causes those firms to have higher costs than other firms in the industry. Calculating these elasticities with respect to internationally traded goods is particularly difficult because of the need to have accurate price information for foreign competitors. An attempt at estimating these wage elasticities is beyond the scope of this paper. Moreover, there is surprisingly little in the way of an academic literature to draw upon.<sup>13</sup>

In columns 4 and 5, we provide disemployment effects based on wage elasticities of employment of 0.6 and 1.0, respectively. An elasticity of 1.0, when output is not held constant, would seem to be quite reasonable. In this latter case, one finds that a high percentage of the displacement effect can be attributed to rising relative wages.

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12. See, for example, Hamermesh (1976, 1983) and Clark and Freeman (1980).

13. An exception is the recent study by Grossman (1982). He calculates employment elasticities with respect to import prices for nine industries.

**TABLE 3**  
 The Displacement Effect of Relative Wages  
 1973 to 1982  
 (millions of manhours)

Industry	Annual percent change in relative wages	Actual change in manhours	Change in manhours with 0.3 wage elasticity	Change in manhours with 0.6 wage elasticity	Change in manhours with 0.1 wage elasticity
Lumber	0.72	-362.12	-30.45	-60.30	-99.22
Furniture and fixtures	-0.15	- 197.42	4.22	8.45	14.12
Stone, clay, and glass	0.85	- 355.79	- 35.47	- 70.14	- 115.14
Primary metals	1.59	- 925.90	- 117.03	- 229.11	- 371.22
Fabricated metals	0.55	631.10	- 53.23	- 105.67	- 174.37
Machinery	0.40	- 63.61	- 49.49	- 98.44	- 162.91
Electrical machinery	0.78	- 27.44	- 86.95	- 172.07	- 282.79
Motor vehicles	0.97	- 755.70	- 57.18	- 112.87	- 184.90
Other transportation equipment	1.73	185.60	- 90.85	- 177.56	- 287.08
Instruments	1.13	274.22	- 35.87	- 70.65	- 115.39
Miscellaneous	0.03	- 146.15	- 0.66	- 1.32	- 2.20
Food	0.57	- 225.68	- 55.11	- 109.38	- 180.44
Tobacco	3.17	- 26.61	- 12.95	- 24.83	- 39.13
Textiles	0.17	- 687.29	- 9.69	- 19.34	- 32.13
Apparel	- 0.41	- 594.61	29.61	59.54	99.97
Paper products	1.44	- 138.33	- 60.55	- 118.76	- 192.91
Printing and publishing	- 0.64	267.41	37.90	76.45	128.91
Chemicals	1.41	28.86	- 85.06	- 166.91	- 271.27
Petroleum	2.12	46.78	- 23.86	- 46.38	- 74.46
Rubber	0.31	- 42.46	- 12.52	- 24.93	- 41.31
Leather	- 0.21	- 169.29	3.16	6.34	10.61

The calculations compute the changes in manhours from their 1973 values using the actual relative wage change between 1973 and 1982. Wages are average hourly earnings and are obtained from U.S. Bureau of Labor Statistics, *Employment and Earnings*, various issues. Manhours are the product of average weekly hours and employment adjusted to an annual basis, and are obtained from the same source.

In lumber, for example, if the wage elasticity is 1.0, 22 percent of the **manhours** decline between 1973 and 1982 would be due to rising relative wages. For primary metals, the corresponding figure would be 40 percent, and for motor vehicles it would be 24 percent. For textiles, on the other hand, only 5 percent of the employment loss would be explained by wage effects (given an elasticity of 1.0).

The above figures are in terms of manhours. It is interesting to convert those numbers into employment. Suppose that the average full-time worker has a 35-hour week for 50 weeks per year. Dividing the total **manhour** loss in the above four industries by 1,750 yields a job or employment loss of 396,829. This is quite close to the total number of displaced workers in those industries estimated by the CBO. Although the calculations reported here are quite rough, the order of magnitudes would probably not be greatly affected by alternative calculation schemes.<sup>14</sup> Relative wage increases in manufacturing have the potential to explain an important component of the displaced worker phenomenon.

### **The outlook for the 1980s**

The public debate with respect to worker displacement addresses future as well as current concerns. To what extent is this problem likely to be a continuing difficulty that contributes to an ongoing mismatch between the available workers and the available jobs and, thus, to an increase in the economy's equilibrium unemployment rate?

Two aspects of this problem need to be considered. The first concerns the near-term outlook for displaced workers as the economy recovers. The second concerns the degree of job displacement that is likely to occur, on average, over the next decade.

#### ***The near-term outlook***

We argue that the count of displaced workers is likely to be considerably lower in the future than it is today — that is, the number of newly displaced workers should be lower than the number absorbed into employment. Although displaced workers stay unemployed longer than the average unemployed worker, they eventually do find new jobs. Studies of past plant closings suggest that the 50-year-old

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14. For example, using a 40-hour week for 52 weeks yields an employment loss of 333,871.

will be unemployed twice as long as the 25-year-old."

The displaced worker phenomenon is a byproduct of divergent employment growth across industries. This interindustry employment variance tends to be particularly high during recessions. Table 4 depicts the variance of employment (or **manhour**) changes across industries over time.

The data highlight three related facts. First, divergent interindustry employment behavior has been associated with the downside of the business cycle. Spikes in employment instability occurred in 1973-1975, 1980, and 1982. Secondly, reflecting the different cyclical episodes, interindustry employment variance was higher in the 1970s than during the 1960s. (The 1950s also had periods of divergent employment growth, especially around the Korean War and the recession of 1958.)<sup>16</sup> Thirdly, the lower employment variance during recoveries indicates that at least some of the industries with declining **manhours** during the downturn do not catch up by registering unusually large gains during the subsequent upswing.

To test whether the seeds of this historical pattern can be found in current data, we estimated a series of reduced form industry **manhours** equations and projected **manhours** through the next recovery. The equations were constructed so as to contain aggregate output and unemployment, industry trends, and autocorrelated components. The dependent variables were the log level of **manhours** for each of the two-digit manufacturing industries. The exogenous variables were limited to those for which forecasts through 1985 were available from a range of econometric models. The equation form chosen contained a time trend, two lagged dependent variables, and current and two lagged values of both aggregate output and a cyclical unemployment measure adjusted for demographic changes." The forecast for aggregate unemployment and output was from **Wharton Econometrics**. Details are presented in the appendix.

Pushed by a projected overall economic recovery, manufacturing labor demand should rise strongly between 1982:IV and 1985:IV.

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15. See, for example, Gordus, Jarley, and **Ferman** (1981), and **Lipsky** (1970).

16. **Sectoral** shifts as a cause of unemployment were explored by **Lilien** (1982). Based on an increase in "job losers and leavers" for any given level of aggregate demand, he argued that a **significant** portion of unemployment that had been labeled cyclical should be reclassified as noncyclical.

17. Several forms of the equation were estimated. Although specific industry forecasts differed in a few cases, projections of total **manhours** were not sensitive (at the level of accuracy that we used) to the individual equation specification. For the projections, the same equation was used for each industry.

TABLE 4  
 Variance in Interindustry Employment Changes  
 Two-Digit Manufacturing Industries  
 1950 to 1982

Year	Employment	Manhours
1950	27.96	47.91
1951	44.42	66.79
1952	20.55	20.11
1953	25.53	30.30
1954	21.74	27.72
1955	17.31	30.81
1956	15.81	24.69
1957	8.26	8.71
1958	27.24	35.60
1959	16.33	25.72
1960	6.46	7.78
1961	9.92	12.55
1962	9.42	18.47
1963	5.59	6.42
1964	4.01	5.67
1965	12.38	19.01
1966	17.13	19.74
1967	8.24	10.25
1968	6.24	13.02
1969	5.65	7.92
1970	12.00	17.11
1971	15.26	20.71
1972	11.06	15.38
1973	17.24	23.37
1974	12.93	19.67
1975	17.63	19.42
1976	8.36	17.63
1977	16.64	20.07
1978	6.65	7.10
1979	8.30	11.29
1980	25.82	31.18
1981	6.68	11.66
1982	17.74	25.43

Calculations represent the variance in the quarterly rate of change across industries. Data are from U.S. Bureau of Labor Statistics, *Employment and Earnings*, various issues.

**Manhours** are projected to increase from 37.0 billion to 41.2 billion. Because our simulation begins at the recession trough, 1982:IV, and contains lagged dependent variables, the values in Table 5 should be viewed as conservative estimates of **manhours** for a recovery lasting through 1985. Since the economy is not projected to be at its potential output and/or equilibrium unemployment rate level as of 1985:IV, further cyclical recovery is possible. This, however, is not a guaranteed result for all industries since the negative trend offsets the declining (although still positive) aggregate output growth rate for some industries even before 1985:IV.

Manufacturing manhours, although exceeding 1982:IV levels, are not expected to recover back to 1979:IV peak levels by 1985:IV. Although all industries are expected to have higher **manhour** levels in 1985:IV, compared with trough readings in 1982:IV, the degree of recovery varies widely. Strong employment gains are forecast for electrical machinery and instruments in the durable goods sector and for printing and petroleum in nondurable goods. For these industries, **manhours** in 1985:IV are far beyond the 1979:IV levels. The weakest recoveries are projected for primary metals; textiles; stone, clay, and glass; machinery; leather; and lumber. Hence, the declining industries are projected to maintain their long-run decline.

The calculations in Table 5 support the contention that the magnitude of the displaced worker problem is likely to lessen over the next several years. Economic recovery, as currently projected, will make a large dent in the problem. Although manufacturing will not regain prior levels, this reflects only a slight worsening of trends already underway for most of the past decade. As shown in Table 6, employment growth in manufacturing had largely ceased by 1970. Although economy-wide employment growth throughout the 1970s was more rapid than it had been during the 1960s, the new jobs were very heavily concentrated in services, wholesale and retail trade, and state and local government.<sup>18</sup>

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18. The shifting pattern of employment by industry also masks greater stability in the skill distribution of the population. Individuals with the education and skill levels that would have led to employment as operatives in the 1950s are becoming **service** workers or clerical workers in the 1980s. Thus a tilt in the distribution of employment across skill categories, as would be implied if the long-run mismatch story were to hold, is not apparent in the data.

The Bureau of Labor Statistics' employment by industry and occupations projections to 1990 are based on extrapolations of current levels and observable trends. Although they do project that the highest percentage growth occupations will be in some computer-based fields, the total

**TABLE 5**  
**Industry Manhours Simulations**  
**Trough-Based Scenario**  
 (millions)

Industry	1979:IV	1982:IV	1985:IV
<b>Manufacturing</b>	<b>43,743.16</b>	<b>37,008.00</b>	41,241.45
<b>Durable goods</b>	<b>26,819.07</b>	<b>21,633.82</b>	24,649.27
Lumber	1,538.49	1,231.73	1,336.59
Furniture and Fixtures	996.00	849.97	943.60
Stone, clay, and glass	1,511.34	1,166.25	1,244.72
Primary metals	2,632.14	1,650.28	1,756.19
Fabricated metals	3,613.53	2,779.17	3,183.88
Machinery	5,338.96	4,317.33	4,444.43
Electrical machinery	4,500.21	4,016.60	4,798.53
Transportation equipment	4,304.26	3,454.38	4,345.54
Motor vehicles	1,913.85	1,341.00	1,696.94
Instruments	1,490.70	1,415.61	1,777.82
Miscellaneous	893.44	752.50	817.97
<b>Nondurable goods</b>	<b>16,924.09</b>	<b>15,374.18</b>	16,592.18
Food	3,594.07	3,361.64	3,403.19
Tobacco	135.14	124.33	124.55
Textiles	1,864.46	1,458.17	1,493.45
Apparel	2,359.71	2,075.27	2,151.48
Paper products	1,571.84	1,412.39	1,576.26
Printing and publishing	2,429.07	2,441.18	2,780.80
Chemicals	2,420.81	2,251.95	2,496.31
Petroleum	479.54	469.83	506.68
Rubber	1,607.72	1,399.51	1,662.30
Leather	461.73	379.90	397.16

Values for 1979:IV and 1982:IV are actual manhours on an annual basis for each quarter. The values for 1985:IV are simulated using a cyclical manhours regression for each industry and aggregate projections of GNP and unemployment rates from Wharton Econometrics. Details are given in the appendix.

TABLE 6  
 Change in Wage and Salary  
 Workers in Nonagricultural Establishments  
 1970 to 1981

	Employment change (millions)	Percentage of 1973 level in each industry*	Percentage of 1970-1981 change from each industry?
Total	20.225	100.0	100.0
Manufacturing	0.806	27.3	4.0
Mining	0.509	0.9	2.5
Construction	0.588	5.1	2.9
Transportation and public utilities	0.642	6.4	3.2
Wholesale and retail trade	5.511	21.2	27.2
Finance, insurance, and real estate	1.656	5.1	8.2
Services	7.044	6.3	34.8
Government			
federal	0.041	3.9	0.2
state and local	3.430	13.9	17.0

Source: *Economic Report of the President* (February 1983).

\* The percentage of total employment in 1970 that was employed in each industry.

† The percentage of the change in employment between 1970 and 1981 that is accounted for by each industry.

### *The long-run mismatch*

Some researchers have argued that the number of displaced workers will grow dramatically over the remainder of this decade due to technological innovations. For example, recent studies argue that the introduction of microelectronic (high-tech) technologies could cause a job loss of 3 million during the 1980s and up to 7 million by the year

number involved is quite small. Examples are data processing machine mechanics, computer system analysts, and computer operators. In addition, certain low skilled occupations and labor-intensive industries are also expected to grow rapidly. Examples are food preparation and service workers, child care attendants, and nurses' aides and orderlies. These latter projections clearly reflect employment growth due to the high income elasticities of those fields. Whereas data processing machine mechanics will grow rapidly due to technological innovations, nurses' aides and orderlies will grow rapidly because society will be wealthier.

The results for the broadly defined occupational groups support these conclusions. The fastest growth sector is likely to remain the service sector with total growth to 1990 of 31.4 percent. Support for the contention that the shift out of traditional blue collar work will continue is also found in the BLS projections, as those occupations are projected to grow only by 18.6 percent.

Detailed occupational projections can be found in Carey (1982).

2000.<sup>19</sup> The latter figure would mean a loss of one-third of the manufacturing jobs currently in existence. These numbers have been used by some researchers to reach the pessimistic conclusion that job growth in low-skilled, blue collar (and, perhaps, white collar) employment will be insufficient over the next decade to match the increased numbers of workers needing jobs. In the worst case, the mismatch could cause ongoing problems of technological-based job displacement for already employed older workers.

Our argument is that the mismatch scenario is a very low probability event.

Our contention with the mismatch scenario is basic and concerns the application of the economic model of technological change. The mismatch view is based on a partial rather than a general equilibrium view of the economy. Several issues are crucial here. First, is technological change labor saving, labor using, or neutral? Second, in each case, how will technological change affect aggregate employment and wages?

To address these issues, it is useful to refer to a simple model of technological change.<sup>20</sup> Assume a general neoclassical production function of the form

$$O = F(K, L; t) \quad (2)$$

where  $O$  is output,  $K$  is the capital input,  $L$  is the labor input, and  $t$  is a time index. In per capita terms, this is

$$q = f(k; t). \quad (3)$$

Under the usual efficiency conditions with output as the numeraire, the real wage rate and rental rate are

$$w = F_L(K, L; t) \quad (4)$$

$$r = F_K(K, L; t). \quad (5)$$

The direct effect of technological change is that fewer inputs than had previously been the case are needed to produce a given output **quan-**

19. See, for example, Ayers and Miller (1982) and "The Impacts of Robotics," Carnegie Mellon University (1981).

20. Burmeister and Dobell (1970) present a detailed discussion of technological change.

tity. However, technological change may result in a substitution effect among the inputs of production that alters relative usage and/or factor prices. Technological change is considered to be neutral if, and only if, the relative shares

$$\frac{S_L}{S_K} = \frac{wL}{rK} \tag{6}$$

remain constant; is labor saving if the relative share of labor falls; and is labor using if the relative share of labor rises.

The definition of technological change used here is in terms of a constant capital-output ratio. If the relative shares remain constant, then technological change is referred to as Harrod neutral.

In Figure 2, the production function shifts between time  $t_0$  and  $t_1$ , while the capital-output ratio remains constant. Capital's share

$$S_K = \frac{rK}{Q} = \frac{rk}{q} \tag{7}$$

must also remain constant for the technological change to be neutral. Since  $k/q$  is a constant, this implies that the profit rate,  $r = f_k$ , must also be constant.

To see what this implies for wages, we need only examine the relative share equation (6). Since  $K$  increases and  $r$  is constant, labor income,  $wL$ , must increase in order for the relative shares to remain constant. If employment remains constant, then the real wage rate will increase. In particular,

$$w = \frac{S_L}{S_K} k f_k \tag{8}$$

so that  $w$  increases linearly with  $k$  at a rate of  $f_k(S_L/S_K)$ .

If the profit rate,  $f_k$ , were increased after the technological change, then the technological change would be designated as labor saving. It is this latter case that researchers seem to fear with respect to the microelectronic technology.

In Figure 3, the production function shifts so that at the constant capital-output ratio, the slope,  $f_k$ , is greater at  $t_1$  than at  $t_0$ . This means that capital's share,  $S_K$ , is now greater and the relative share

FIGURE 2.  
Harrod-Neutral Technological Change

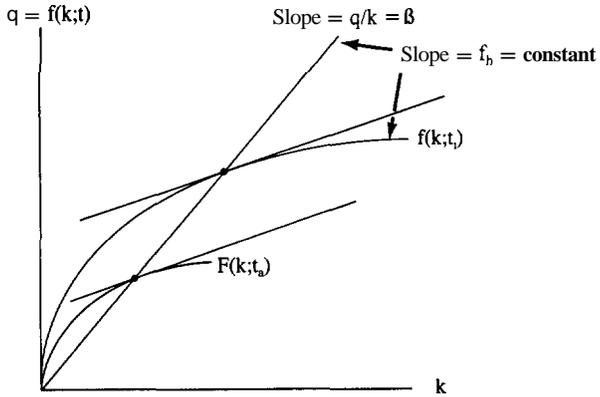
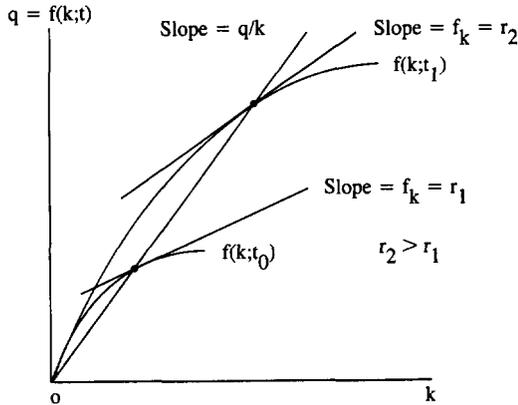


FIGURE 3.  
Labor Saving Technological Change



of labor has fallen.

Although labor's share declines when technological change is labor-saving, the real wage rate may still increase. In (8), all three left-hand terms have now changed.  $S_L/S_K$  is lower, but  $k$  and  $f_k$  are now higher. The result is that the change in the wage rate is indeterminate. Only if the new technology were extremely labor-saving would the real wage rate actually decrease. In less extreme cases, the real wage would simply grow less rapidly than output, and labor's share of national income would decrease.

Labor-saving technological change also need not imply an increase in the unemployment rate. In the disequilibrium short run, of course, frictional unemployment may result as workers search for new jobs. Over time, the extent of unemployment reflects the downward rigidity of real wages. Since real wages decline only when technical change is extremely labor-saving, the downward rigidity issue is moot.

Outside the single good model, the aggregate impact of (labor-saving) technological change becomes more complex. For example, in a two-sector model, the sector in which the technological change occurs determines the effects on the real wages and on labor's share of total income. If the seemingly labor-saving technological change (in terms of the parameters of the sector's production function) occurred in the labor-intensive sector, the price decline in that sector would yield a shift in consumption that would favor the labor-intensive sector. The result could be actually to increase the demand for labor and, hence, labor's share. In addition, given that income elasticities tend to be higher for labor-intensive products, output effects are likely to work against any adverse real wage effects of labor-saving technological change.

In a model with more than two sectors, the general equilibrium effects of technological change in one sector become even less obvious. Basically, the partial equilibrium observation that a technological change is labor-saving in one sector is not sufficient to argue that it will be labor-saving in the aggregate.

The above discussion highlights the difficulties in assessing the effects of the current wave of microelectronic-based technological change (or any type of technological change), even when one can determine that the change is labor-saving in the affected sector. More problematical, however, is the original assumption that the technical change is labor-saving. The critical issue here is to determine the boundaries of the industry that has experienced a shift in its production function.

At an aggregate level, there seems little reason to fear the labor-saving scenario. Historically, broad classes of technological change, once the output effect is considered, have been neutral, tilting toward neither labor nor capital in their net effect. To the extent that the current type of technological change does not mark a sharp break with the recent past, the behavior of labor's share for the past 15 years should allay concerns that the underlying process of technological

change is labor-saving.

A final observation on the potential for a future mismatch problem involves changes in the growth rate of the labor force over the next decade. Since displaced workers may be viewed as structurally unemployed, their degree of labor market difficulty will be strongly affected by changes in actual and equilibrium employment rates.

A strongly positive factor with respect to excess demand conditions in low-wage labor markets over the next decade will be a decline in the rate of overall labor force growth. Whereas the labor force grew at slightly over 2.2 percent per year between 1970 and 1982, it will grow at only 1.5 percent between 1983 and 1990. This drop in the rate of growth of the labor force means that 6.85 million fewer workers will be entering the labor market than would have been the case if the old labor force growth rate were in effect.

In addition, since labor force growth rates are closely tied to the size of the 16- to 24-year-old population group, the change in the composition of the labor force will be a shift away from younger workers. The result will be excess demand conditions that favor youth and related unskilled labor markets and an associated increase in the relative wages of these workers. The demographic labor supply effects, tilting the labor force heavily toward job-stable older workers and away from youth workers, and the slower increase in the rate of growth in the labor force, should contribute to a decline in the equilibrium unemployment rate.

The decrease in the equilibrium rate of unemployment and the associated relative improvement in excess demand conditions in unskilled labor markets will improve the fate of displaced workers. They will find jobs more quickly and at higher wages than would have been true during the depressed low-skilled labor markets of the 1970s.

We conclude that the displaced worker problem is not so bleak as is generally believed. Although technological change may result in short-run displacement of some workers, it is also associated with periods of high economic growth. Income effects associated with an expanding economy should ease employment problems of displaced workers. In addition, the labor market in which displaced workers are likely to search for new jobs will improve during the 1980s due to a decline in labor force growth. Workers operating in these markets will experience better employment opportunities than displaced workers have in the recent past.

The potential problem area identified in this paper concerns inter-industry relative wage differentials. The recovery in manufacturing employment is likely to be strongly affected by the future course of relative wages.

### **Policies for displaced workers**

There are three broadly defined policy approaches to the problems posed by displaced workers." The current policy is to use "special protection programs" to provide transfer payments that are more generous to displaced workers than those received by other unemployed workers. That policy approach has been criticized because, by providing supplementary benefits, it discourages workers from finding new jobs. It also does not provide the training that could better equip displaced workers for new jobs.

An alternative approach would be to make use of training programs, either by including displaced workers in the CETA-eligible population or by instituting new training programs. Currently, some of the special protection programs include provisions for training, but these are rarely utilized. The third approach would be to use vouchers or employment tax credits to make displaced workers more attractive to new employers. Employers would receive cash directly or would be able to deduct a percentage of salaries paid to eligible workers from their tax liability.

The special protection programs are specifically designed to provide supplemental aid to displaced workers when **government-initiated** action causes loss of seniority and firm-specific human capital through unemployment. Rather than having only one umbrella policy, numerous disjointed programs exist, each targeted at separate worker or interest groups. The best known special protection program is Trade Adjustment Assistance. TAA is an open-ended program targeted toward workers in industries that are designated as adversely impacted by import competition. Transfer payments (in the form of an extension of UI benefits), training, and relocation benefits are available. To date, only the transfer payments have been widely

Because of its large and expanding size, TAA has come under increasing scrutiny. The novel conceptual feature of TAA is that it is

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21. Parts of this section are drawn from Wachter (1983).

22. For an excellent study of special protection programs, see Martin (1983).

designed to compensate affected workers not only for their earnings losses (which are covered by UI) but also for their loss of seniority and other job-related rights that result from *government-initiated actions*, including free trade. Currently, workers judged eligible for the TAA program continue to receive benefits equal to unemployment insurance after the UI benefits (UI and TAA) have been received for 52 weeks. Twenty-six additional weeks of benefits are available for those workers participating in training programs.<sup>23</sup> This approach, however, has three serious flaws.

First, at the time that workers are dismissed, the workers, the policymakers, even the firms do not know which workers might eventually be recalled and which are, in fact, permanently displaced. Thus, from an economic vantage point, the unemployment and related income loss of those who eventually regain their jobs are difficult to distinguish from other temporary bouts of cyclical unemployment.

For workers who are judged eligible for TAA and are eventually recalled to their previous jobs, TAA acts as income maintenance that extends the unemployment insurance benefits normally received by unemployed workers.<sup>24</sup> Since studies of unemployment insurance have provided evidence that increased UI benefits increase the optimal duration of unemployment, the effect of TAA on temporarily displaced workers will be to increase unemployment rather than to provide incentives to find new employment.<sup>25</sup>

Secondly, Trade Adjustment Assistance does not distinguish among workers with respect to their tenure on the job. As noted earlier, the primary problem for displaced workers is a loss of wages due to a loss of seniority, job-specific skills, and/or a union wage premium rather than a loss of employment. Displaced workers are likely to find employment at lower wages in other sectors of the economy.

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23. Amendments to the TAA program were enacted in August 1981. The amendments reduced the amount of benefits received and altered TAA to be an extension of UI benefits rather than a supplement to UI. In addition, TAA offers search and relocation benefits to workers looking for new jobs. Search benefits offer a maximum of \$600 with workers paying 10 percent of their total search costs. Relocation benefits have a nonmonetary limit. Workers pay 10 percent of relocation costs and receive a "settling-in" grant of up to \$600.

24. One of the early criticisms of TAA was that the administrative task of **determining eligibility** took so long that many workers had been recalled by the time they received their first benefit payment. Our argument is that such workers should not have been **eligible** for TAA at all if the program had been aimed at **permanently** displaced workers.

25. For a **review** of the unemployment insurance literature, see Welch (1977). According to Welch, there is no evidence that increased unemployment insurance benefits **lead** to improved new employment **opportunities**.

For younger workers, this does not present a severe loss due to their junior status in their previous job as well as their longer expected working life at the new job. As a consequence, relatively junior workers who have not made large investments in specific training **and/or** seniority are being compensated for a loss that they have not actually incurred.

Thirdly, the distinction between unemployment caused by government policy, generally interpreted, and other types of unemployment is difficult to make. Although some types of unemployment may be a very specific result of some specific government policy, most if not all unemployment can be viewed as being affected, to some extent, by general government policies. It becomes a question of political clout as to which workers are labeled eligible for TAA benefits. The special protection program approach thus serves to construct artificial distinctions among unemployed workers and to pay extended benefits to certain groups that have no greater claim on those resources than other unemployed workers.

Some of these problems could, at least conceptually, be resolved, while others are inherent in the concept of special protection. For example, a minimum length of tenure could be written directly into the eligibility criteria. This would resolve the problem of paying extra benefits to junior employees. In fact, as has been done for disadvantaged workers, programs could be targeted to certain groups of workers according to predetermined traits. Other issues, such as the categorization of some workers as unemployed because of government-initiated action, are unresolvable. This problem could be lessened if benefits were made available to tenured workers in declining industries rather than to workers displaced by government action. A battle would still take place over defining the parameters of the tenured workers in a declining industry, but the criteria could then be applied evenly to all workers.

In fact, TAA did fortuitously identify the major declining industries (see Table 7). The major beneficiaries of TAA have been workers in the automobile industry, accounting for 58 percent of the total recipients and 72 percent of the benefits between 1975 and 1981. Steel and apparel have also had a large number of workers eligible for TAA.

Although reaching the right industries, TAA did not distinguish between displaced workers and those on temporary layoff. After prior recessions, most TAA recipients were recalled by their old

TABLE 7  
Trade Adjustment Assistance Outlays by Industry

Industry	Workers	Benefits (millions of dollars)
Auto	685,113	\$2,217.1
Steel	137,319	350.6
Apparel	150,593	189.7
Footwear	76,176	92.2
Electronics	60,387	90.1
Fabricated metals	29,899	74.0
Textiles	26,075	44.0
Coal	7,355	17.7
		<u>\$3,075.4</u>

Source: Philip L. Martin, *Labor Displacement and Public Policy* (Lexington, Mass.: D.C. Heath, 1983), p. 69; and U.S. Department of Labor, Office of Trade Adjustment Assistance, unpublished tabulations.

Cumulative totals, April 1975 to September 31, 1982.

firms.

The alternative is simply to fold the transfer payment provisions of these programs into the UI system. In that way, all unemployed workers would have their benefits calculated according to the same formula. This, of course, leaves unresolved the question of the degree of impact of UI benefits on the duration of unemployment. It does, however, make the problem equally sticky for all unemployed workers eligible for UI.

Providing training, as distinct from transfers, for displaced workers does not have the above limitations. If a group of workers indicates a willingness to be retrained in place of receiving supplementary unemployment benefits, then there is a presumption that they are indeed displaced and not simply on temporary layoff. Indeed, the notion of retraining for displaced workers is currently popular. One policy recommendation is to make existing training programs available to them. Many of the displaced workers would not be currently eligible for programs targeted toward disadvantaged workers, because their past wages and family income would be too high.

To what extent, however, can existing programs that were designed for disadvantaged workers deal with the unique problems posed by displaced workers? The impact of current training programs on the earnings of program participants (largely disadvantaged work-

ers) yields the following conclusions: (a) they increase the earnings of program participants, but accomplish this by increasing hours of work more than wages; (b) they train workers with marginal labor market and job attachment to hold relatively low skilled jobs; (c) they have relatively limited effect on improving job skills other than those gained through work **experience**.<sup>26</sup>

The displaced workers, however, are quite different from disadvantaged workers. In particular, displaced workers have an established work history marked by a strong job attachment and the proven ability to learn (at least certain types of) job skills. A greater percentage of them have a high school diploma or better (66.2 percent), and a smaller percentage are from the minority population than is true for the low-income family. (See Table 8.) The major differences, however, involve the considerably higher economic status of displaced workers in the year prior to being displaced. One-quarter of them came from families with income of at least \$15,000, one-half were covered by employer pension plans, and more than half had one or more other family members employed.

The problem of most displaced workers is neither too few hours of work nor marginal skills; rather, it is that their previous job paid a high wage relative to the opportunity wage that they face on alternative employment. On this basis there is reason for skepticism as to the potential success of extending coverage of existing training programs.

The one possible exception to this is on-the-job training. This program can be administered as a type of voucher or employment tax credit system targeted toward displaced workers. That is, the government compensates employers directly for extra training costs associated with specially targeted workers (i.e., those eligible for the program).

The virtues of using vouchers and/or employment tax credits are several. First, they can be targeted toward the group that the government decides to aid. For example, the government could avoid extra compensation for those on temporary layoffs in declining industries (as is currently done in TAA) by using the multiple criteria listed in Table 1. In addition, only those displaced from jobs on which they

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26. For a review of training and employment programs, see *CETA's Results and Their Implications* (1981), Borus (1980), and Taggart (1981). For a negative assessment of training programs, see Kiefer (1979).

TABLE 8

Characteristics of Displaced versus Disadvantaged Workers

	Displaced worker*	Low-income family†
Percent with a high school diploma or better	66.2	55.9
Percent minority	30.6	42.7
Percent female	35.0	37.2
Percent with pension plan coverage in at least one job held during past year	50.3	13.3
Percent with family income \$15,000+ in last year	24.5	0.2
Percent in family with one or more additional workers	55.8	29.2

Source: Marc Bendick, Jr., and Judith Radlinski Devine, "Workers Dislocated by Economic Change: Do They Need Federal Employment and Training Assistance," *Seventh Annual Report of the National Commission for Employment Policy* (Washington, D.C.: National Commission for Employment Policy, 1981), pp. 175-226.

\* Workers from industries in which employment change was negative between 1978 and 1980 and who were unemployed for more than eight weeks. Job tenure and age were not defining characteristics.

† Low income households were defined as those whose total family income from all sources in 1979 was less than 1.5 times the Bureau of the Census' poverty threshold for a family of that size and location.

Data are for March 1980.

had 10 or more years of tenure could be made eligible.

Secondly, the special training problems posed by these workers would be handled flexibly by the new employers through on-the-job training. This is particularly useful since many of the displaced workers are readily trainable in production level skill jobs, while others may have been unskilled laborers. The former group can be readily integrated into new jobs without remedial off-the-job training.

Thirdly, the placement function, matching employers and workers, could be performed. This component would only apply, however, if the current training format were retained. In this case government counselors would influence the new career path followed by the displaced workers. With a voucher system, unless modified to introduce counseling, the workers themselves would determine the path,

limited only by the value of their particular voucher.<sup>27</sup>

Questions have been raised as to whether employers would participate actively in employment tax credit or voucher systems. Some argue that government paperwork and the stigma associated with workers who need government assistance would dissuade employers from hiring those workers. However, the results from the use of employer tax credits, both in this country and abroad, are reasonable and promising. Ultimately, the success of the programs depends upon the size of the financial incentives provided to companies that participate in the program.

Whereas replacing lost wage rates would be very difficult, finding new employment for displaced workers in an expanding economy would be manageable. Since this would require only retooling and placement, on-the-job training could facilitate the training process. The purpose of the program, however, is not to increase long-run employment; rather, it is to reduce the time spent unemployed and to increase the wage rate of workers in their new jobs. With this in mind, the current on-the-job training program would have to be restructured to be better adapted to older workers with an established work history.”

The three approaches above share the assumption that the displaced worker phenomenon represents a distinguishable labor market policy problem. The fundamental question concerning the displaced worker issue is what are the damages suffered by these workers that should be viewed as compensable.

For example, suppose that the displaced workers had enjoyed a wage premium resulting from collective bargaining agreements. Making the workers whole could be interpreted as providing them with a voucher or employment tax credit of sufficient value so that

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27. Conceptually, these types of programs act as wage subsidies, driving a wedge between the wages received by the workers and the unit labor costs borne by the employers. By enabling workers to receive a higher wage during an initial training period than dictated by skill or productivity considerations, the subsidy generates positive work incentives. For firms, the subsidy functions as a decrease in the wage rate. Empirical data on employment functions indicate an own wage elasticity greater than one; that is, firms increase employment by more than 1 percent for every percent decrease in the wage rate.

28. New initiatives with respect to employment tax credits or vouchers would not be suited to the problem if it were decided that displaced workers should not be given special programs to compensate them for job losses. Rather, they would need to make use of programs generally available to all unemployed workers regardless of the presumed cause of their unemployment. In addition, attention would need to be given to the problems posed by the higher fringe benefit costs that are frequently associated with older workers. This topic is beyond the scope of this paper.

they could eventually earn, as a return on their skills, the wage premium paid on their lost jobs.

There is, of course, the question as to whether any combination of vouchers or on-the-job training could be successful enough to fully compensate workers. The evidence on earnings gains from training, as indicated above, suggests that the gains are relatively small and largely occur through increased hours of work at relatively low skilled wage rates.

Even if the extra training could be accomplished, there is still the question as to whether it should be attempted. Suppose, for example, that the union wage on the lost job did, in fact, represent a wage above that dictated by competitive labor market forces. Based on a collective bargaining agreement with the past employer, the displaced unionized workers were receiving a higher wage than similarly skilled workers in nonunion firms. Although the government might want to assist the displaced workers in finding jobs at the competitive wage earned by most other workers, funding extra training to support the wage premium itself would be more difficult to justify.

Some researchers have argued that the union wage premium is actually a compensating differential for the fact that the unionized jobs are in those sectors where employment is particularly sensitive to cyclical layoffs or employment uncertainty in general. In this sense, the observed high wage is not precisely a wage premium; rather, it is a compensating wage differential for the higher risks of unemployment. If this were the case, the employment loss from the high variance employment industry would reflect the realization of a relatively high probability event (compared, for example, to being displaced from a job in the finance sector). The placement of a displaced worker in a new job — in a lower employment variance industry — could be made at the competitive, nonunion wage since the compensating risk differential would no longer be required.

A separate but even more intractable issue is posed by the notion that the government should consider some mechanism for compensating displaced workers for their lost investment in job-specific training. For example, if the government were to treat human and physical capital symmetrically, the loss of a human capital investment could yield an income tax write-off for its owner. The difficulty is that that type of training is inherently unquantifiable. Attempting even a rough estimate of its monetary value would be too speculative to serve as a guide for policymakers.

Thus, one can argue that the displaced workers' loss of a wage premium should be noncompensable from a societal perspective. What government policy could still accomplish is a reduction in the transition costs associated with finding a new job. That is, the government would attempt to restore *a job at the competitive or prevailing labor market wage* for workers with similar, broadly defined skill levels.

The degree to which the displaced worker's job and income loss are **compensable** is directly related to the question of the degree to which the displaced worker problem is different from that of the average unemployed worker. If it is decided that for either conceptual or practical reasons there is no difference, then the current array of policy programs, to the extent that each displaced worker is eligible, would be the correct policy approach.

A final policy option would be to view the problem as essentially a private-sector problem. Suppose, for example, one concludes that displaced workers are a separate category of unemployed workers but that their uniqueness is tied to the wage loss they suffer when displaced. In this case, one might be forced to rely on private-sector parties to restructure the employment relationship so as to slow the rate at which workers are displaced.

In particular, job security — that is, the protection of job-specific investments and wage premiums — is more fully an **employer-employee** problem that requires a private-sector solution. Extra attention must be given to avoiding the job loss in the first place. Where workers are unionized, they can bargain collectively with employers with respect to job protection. For example, labor unions could trade off some of their wage premium for greater worker job security.

The recent pattern of give-backs is a reflection of increased concern over job security. Give-backs have occurred in industries under considerable product market pressure emanating either from international trade competition (e.g., autos and steel) or nonunion sectors in newly deregulated industries (e.g., trucking and airlines). Most of the declining industries have been involved in the give-backs as well as several industries with stagnant employment that might be future candidates for the declining industry classification.

Although it is widely believed that these give-backs will be terminated once the economy recovers, some are written into contracts lasting for three or more years. As a consequence, although the give-backs may not be repeated, in these industries the new wage levels

will create a lowered base for the next round of negotiations. Hence, the interindustry wage structure should narrow over the next several years.

## **Conclusion**

To summarize, based on CBO estimates, it appears that the structural component of the displaced worker problem is approximately 300,000 workers. As the economy recovers and employment in even the declining industries increases above 1982 trough levels, that number will decline. Hence, the problem, although severe for affected individuals, is not large in size. Contrary to some popular, pessimistic scenarios concerning long-run technological displacement in industrial employment, it can be argued that faster technological change will increase real wage growth and not unemployment.

Policies to assist those workers who are displaced must focus on the fact that those workers can be found new jobs. Most have exhibited the ability to learn marketable skills and have had a history of solid job attachment. Their problem is not so much their temporary unemployment as it is the permanent gap between their old wage level and their opportunity wage in new employment.

Government labor market policy measures can reduce the size of this gap but not eliminate it. Training and employment vouchers can return displaced workers to new jobs and probably raise their future wages somewhat above what they would have been absent government assistance. Trade Adjustment Assistance-type cash transfers can reduce the burden of the transitional period of unemployment. There is no evidence, however, to suggest that any of these measures can have a large quantitative effect in closing the wage loss gap created by job displacement.

The result is that the loss to displaced individuals can only be managed, to any significant extent, by avoiding the job loss in the first place. In terms of government policy, direct employment protection afforded to declining industries would be necessary. Tariff protection is the obvious remedy, although the enormous costs of that approach are equally obvious. Absent this radical government policy departure, the solution to job displacement rests with private-sector parties.

The evidence, although preliminary, suggests that rising union wage premiums during the 1970s and early 1980s have contributed to the displaced worker problem. First, the increase in the wage premi-

ums is likely to have been a factor in the long-run decline in employment in certain industries. Secondly, the increased premium has led to a larger gap between past and opportunity wages of displaced workers. If this is the case, collective bargaining initiatives to trade off wage premiums for enhanced job security could be an important element in any strategy to reduce the scope of the problem.

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## Appendix

The variables are defined as follows:

UGAP: A measure of labor market tightness. It is defined as the aggregate unemployment rate divided by a demographically adjusted measure of the equilibrium unemployment rate  $U^*$ .

$$UGAP = (U/U^*) \cdot 0.25.$$

Q: Real Gross National Product for the aggregate U.S. economy.

MH: **Manhours** in each industry.

Each variable includes two-quarter lags on the right-hand side of the equation. A time trend is also included in each equation.

We formulated quarterly projections of **manhours** for each industry by using forecasts of real GNP and the aggregate unemployment rate provided by **Wharton** Econometrics. The forecasts imply a gradual recovery through 1985. Unemployment rates are assumed to remain above 8 percent as the recovery slows.

The method used is simply to use the forecast values of the endogenous variables in a separate equation for each industry in order to obtain the projected **manhours** series. The values for 1985:IV are presented in Table 5.

## Commentary

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*Ray Marshall*

Wachter and Wachter raise some very important issues in their paper. Their analysis of the problems of displaced workers (based on a very restrictive definition) gives that concept precise definition, and they document their point of view very thoroughly. They take an optimistic view of unemployment, based on the belief that technological displacement will not be as great as the pessimists assume, and that economic growth and declining labor force growth will reduce the magnitude of the structural unemployment problem in the future.

Their policy prescriptions from this are not as clear, though presumably they would favor on-the-job training and a voucher system, but no large-scale expansion of selective labor market policies, because these cause budget increases, have tended to be "pro rather than countercyclical," and because the "underlying problem facing displaced workers is not employment difficulties or a shortage of jobs; rather it involves wages." In particular, the U.S. labor market "has exhibited a high variance in interindustry wage changes." They argue that job growth during the 1970s "suggests that the American economy has no difficulty creating jobs that fit the labor force."

Unfortunately, the nature of both the transitional economic period we are in and the limitations on our data and analytical techniques make it difficult to test the contrary point of view, but, in keeping with my role as a discussant, let me at least lay it out. In the first place, of course, while the displaced worker problem narrowly defined probably is not a very serious quantitative problem, the *structural* unemployment problem is much larger and, the evidence suggests, has become more serious with succeeding cyclical downturns. Moreover, the real issue is an *adjustment problem*, not simply measures to deal with displaced workers. In other words, the *fear* of displacement and the absence of a positive adjustment program to cause a more equitable sharing of the benefits and costs of change creates resistance to change that can be very costly in terms of economic effi-

ciency. The authors point out, quite correctly, that the largely ad hoc adjustment program we now have is mainly an income maintenance system and not one that facilitates adjustment.

However, there is evidence that positive adjustment programs can work. Incidentally, the Job Training Partnership Act (JTPA) of 1982, which replaced CETA, has a displaced worker component that does not have the same income limitations as most of CETA. Moreover, there have been a number of positive adjustment demonstration projects that provide some insight into how a successful adjustment project might be constructed. The tripartite steel committee, organized in 1978 (and to be rechartered in 1983) sponsored adjustment pilot projects which provided some lessons, as the Downriver Community Conference Readjustment Activity Program in Wayne County, Michigan, which was funded by the Labor Department in 1980 as one of a series of adjustment demonstration projects. Unfortunately, while the Reagan Administration allowed Downriver to continue, it discontinued the other pilots. I believe these flexible, localized activities, based on specific problems and administered by labor, management, and community representatives, avoid many of the program uncertainties mentioned by Wachter and Wascher. For one thing, we avoid definitional difficulties (which lead to great administrative problems, as well as inefficiencies and inequities) by making a flexible array of services available to local projects based on an assessment of their needs. The probability that workers have been permanently displaced is a judgment that is more appropriately made by local labor market actors than by Congressional or administrative formula. It has never made much pragmatic, let alone equity, sense to try to determine why people have been displaced. It is in the national interest for adjustment to take place, whatever the reason for displacement. Moreover, workers and communities can receive whatever services they need for adjustment. Some workers need only job-search assistance to find new jobs; this is even true of some older workers with industry-specific training and long tenure. Others need relocation and retraining assistance, while others need basic education. Incidentally, it is not true that displaced workers are not also disadvantaged, because many of these workers, even those in relatively high-paying basic industries, have one or more disadvantages related to race, education, sex, or age. Functional illiteracy is a special problem for many workers, adults as well as young people. Indeed, by one estimate, about 20 percent of the American work force and about

half of all minority 17-year-olds are functionally illiterate. In any event, the main point is to tailor programs to individual requirements rather than to tigh a *priori* definitions.

The Downriver project is illustrative. The first phase of that project (July 1980-September 1981) provided reemployment services to 1,500 workers laid off from automotive supply plants in southwest-em Wayne County, Michigan. The second phase (November 1981-September 1983) included 500 additional workers affected by the closure of a number of automobile supply plants, including Pennwalt, Ford Michigan Casting, and Firestone. The main objective of this project was to help the displaced workers find reemployment. All participants were tested and given job-search training. Other services were provided as needed, especially classroom and on-the-job training and relocation assistance. A sample of 76 percent of all males laid off between June 1979 and December 1980 who remained in the Detroit area found the following characteristics: average age was 40 years, 30 percent were black, 40 percent had less than high school education, average work experience was 25 years (14 with the company from which they were laid off), the participants were mostly operative and craft workers earning over \$9 an hour when laid off, and average unemployment benefits (including adjustment assistance) were 50 percent of wages.

During the first phase of the project, 49 percent of eligible workers participated, though participation was higher among younger, better-educated workers with less than 30 years experience. Fifty-seven percent of all participants received some form of retraining, approximately a third in classrooms. The average length of training was eight months, with high-tech courses somewhat longer, 50 percent of enrollees used local educational institutions, and one-fifth had on-the-job training.

When contrasted with a comparison group, Downriver raised the reemployment rate from 50 to 60 percent without the program to 75 percent with it, had a larger impact on the groups that would have had lower reemployment rates, and greatly increased access to training opportunities. Participants' reemployment wages averaged \$8.20 per hour, 10 percent less than their last jobs, but \$1 to \$2 an hour more than they would have earned without the program. Moreover, the program "increased participants' average weekly earnings from an estimated \$60 in the absence of the program to \$124 with the program . . . with program costs averaging \$1,750 per participant . . .

implies that the benefits accruing to participants alone exceed the social costs within a year.'"

I believe that these and other selective labor market programs are much more significant components of a policy to deal with structural unemployment than Wachter and Wascher imply. In the first place, structural unemployment problems are likely to get worse, not better, during the rest of the 1980s. The demographic figures the authors cite are incomplete from a structural point of view. For example, the youth unemployment program never involved all young people, but involved dealing with the labor market problems of a hard core who had such multiple labor market disadvantages as race and sex discrimination, broken families, teenage pregnancies, poverty, criminal records, sustained unemployment, limited educational attainment, female-headed households, and heavy geographic concentrations in high-risk areas. There is strong evidence that selective activities like the youth entitlement program of the Youth Employment and Demonstration Projects Act of 1977 (YEDPA) and the Job Corps are cost-effective ways to deal with those problems. In other more difficult areas, such as teen pregnancies and the rehabilitation of people with criminal records, we need to develop specific programs to try to prevent problems and to salvage as many people as possible who already have been damaged. There is, in my opinion, no substitute for carefully constructed and evaluated local projects based on cooperation between the private sector and local communities to deal with these problems. Unfortunately, however, the prohibition of public service jobs for people who cannot find jobs in the regular economy makes it very difficult to continue some of the most successful of these programs — like the successful youth entitlement program, which provided jobs to make it possible for young people to stay in or return to school. There is also a need to improve labor market information systems.

This is not to argue, of course, that these programs were always successful or that they alone could solve the unemployment problems. These programs have had serious management and programmatic problems, but they have, on balance, been good investments for the country. We should continue to improve those with promise, eliminate those that don't work, and improve the management of all

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1. D. Alton Smith and Jane Julik, "Impact Findings from the First Phase of Operation," Abt Associates, May 20, 1983, pp. 7-8.

of them. All of this can be done on the basis of the lessons we have learned from such programs in the United States and other countries. I believe, for example, that while inadequate in terms of resources, the JTPA makes what could be a major programmatic improvement by shifting more responsibilities to the states; previous experience demonstrated the inadequacies of too much decentralization (CETA) and too much centralization (MDTA). Moreover, the 1978 CETA amendments created a private-sector initiative, which is given a larger role in the JTPA.

Nor do I agree that selective labor market policies (jobs, training, labor market information, and other activities to improve the operation of labor markets) are necessarily pro-cyclical. I think it can be demonstrated that with all of their program delivery and management problems, the employment and training programs of the 1970s were initiated in a timely fashion, were cost effective, and therefore did not cause much, if any, inflationary pressure. Moreover, when unemployment declined after 1978, public service employment programs were phased down by the Carter administration with minimal political opposition. Indeed, in my view, they were phased out by the Reagan administration with too little political opposition. Selective labor market programs are much less inflationary than all of the alternatives (welfare, unemployment compensation, illegal activities) except regular jobs. Experience shows that these programs are much less expensive than tax cuts, which cost at least three times as much per job created. Moreover, I believe program improvements are possible to make public service employment programs much more cost effective and more countercyclical.

It is not appropriate, of course, to relate the timing of these programs to *aggregate* unemployment, but to the unemployment in the *markets on which they are targeted*. For example, three-fourths of the job growth of blacks between the summer of 1977 and the spring of 1979 were in YEDPA. This was the first job growth of young black males during the 1970s. The black youth unemployment rate was reduced from about 50 percent to just over 30 percent, while the overall unemployment rate declined from almost 8 percent to 5.6 percent. The fact that the overall unemployment rate was 5.6 percent did not mean that programs targeted on markets that still had over 30 percent unemployment were pro-cyclical. While it is true that the American labor market created more jobs during the 1970s than any other OECD country, in absolute and relative terms, jobs were not created

in the places where blacks are concentrated and jobs were not provided fast enough for all who wanted them, which is one reason that both employment and unemployment grew as jobs were created. Moreover, as the authors point out, there is a structural aspect of cyclical unemployment, so it makes sense to expand targeted jobs programs as unemployment rises and to reduce these programs as it declines. Triggers to unemployment can make these programs more like automatic stabilizers. Selective programs can overcome bottlenecks, improve labor market information, generally improve the operation of labor markets, and facilitate recovery at lower rates of inflation. They also provide for greater equity by making it possible to target resources on groups and places with the highest levels of unemployment.

However, these are not the main policies to reduce cyclical unemployment; that is the job of macroeconomic policy. But I would argue, on the basis of experience in the United States and abroad, that macroeconomic policy can be more effective if complemented by selective policies to deal with structural inflation and unemployment problems not reached very effectively with these general policies.

Wachter and Wascher could be right about the effects of technological change. It is clear that the fear of technological unemployment has been exaggerated in the past. It also is correct that engineering studies alone provide insight *into* the possibilities of displacement, but not the probabilities. Market forces obviously will control the rate of technological change, which is one of the reasons the Japanese use more robots, absolutely and relatively, than we do. In Japan, capital costs have been kept low while real wages have been rising, making it expedient to substitute capital for labor. The pattern in the United States has been the reverse: real capital costs have risen while real wages have declined, encouraging the substitution of labor for capital, a trend accelerated by rising energy costs, economic uncertainty, and the availability of low-cost, female, immigrant, youth, and minority labor pools.

There are, however, a number of cautions about the authors' optimistic projections. One uncertainty is immigration. With Third World unemployment and underemployment at 50 percent and little prospect for improvement over the rest of this decade, we cannot be sure that increased immigration — which probably accounted for at least 20 percent of the U.S. labor force growth during the 1970s — will not more than offset the decline in the number of young people in

the work force during the 1980s. Moreover, I would give careful attention to arguments of people like Wassily Leontief, 1973 Nobel laureate in economics, who warns that the technological changes related to information technology are different from those of the 1950s and 1960s, when we had faster growth and much less international competition. Moreover, according to Leontief, information technology is more ubiquitous and does not just displace low-wage physical labor.<sup>2</sup> During the 1950s and 1960s, technological changes in agriculture displaced people who could get better jobs because of growing employment in other sectors. Leontief doubts that we will have enough jobs at acceptable wages for all who wish to work. Moreover, the new technology could reduce skill requirements more than it increases them, contributing to a widening in income gaps. We do not have the information to resolve this problem, but I think Leontief raises important points.

Finally, let me make a few comments about the author's concentration on relative wages as a factor in displacement. There is no question that many of the workers displaced from relatively high-wage basic industries, like steel and autos, will have difficulty regaining their real wages. However, we should not infer too much about the total economy from the steel and auto experiences, as important as they are. It seems to me that the appropriate program objective should be to reduce the income loss of displaced workers as much as possible, which the Downriver project suggests can be done with direct program intervention. However, as the authors emphasize, it is unlikely that all of the wage loss can be maintained. Adjustment programs also must provide incentives for people to participate in positive adjustment activities.

I think, moreover, that an analysis which attributes the displacement problem only to relative wages is incomplete. It is not just relative wages that caused the problem in the United States during the 1970s. Except for a few conspicuous exceptions, real wages declined in the United States relative to other industrialized countries, at the very same time some of our manufacturing industries were losing their competitive position in international markets. The important consideration was not wages, but *unit labor costs* (wages adjusted for productivity growth or decline). American unit labor costs were accelerated by declining relative productivity growth and rising

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2. "Inquiry," *USA Today*, Thursday, Aug. 4, 1983.

money wages. The reasons for the declining productivity were broader than labor markets. I think the most important problem was that some of our basic non-competitive firms have been forced to adopt to international competition and have had great trouble achieving their traditional profit thresholds and therefore would not reinvest in their basic industries. In addition, some internal management systems in these industries were more appropriate to mass production of goods than they were to high value-added goods, where information technology and quality are more important. The Japanese have lower profit thresholds and different internal cost structures and are therefore much more competitive in some markets. Moreover, since Japanese companies tend to maintain employment and capacity during downturns, they have much better ability to respond to increasing demand during recovery. The consequence of this, along with the overvalued dollar and undervalued yen, probably is to cause some American companies to permanently lose market shares. Though most American companies, even in manufacturing, are still competitive in international markets, some companies in industries like steel have found it easier to shift capital to more profitable activities than to continue to try to compete. This is partly a wage problem, because industrial relations systems were built on older, less **competitive** economic realities. But this is also a public policy program, because productivity is influenced by regulations, economic stability, and public investments, as well as management and industrial relations systems. In fact, it remains to be seen whether Caterpillar, which had a fairly successful global strategy in competing with Komatsu, can survive the multiple blows dealt by its industrial relations system, the worldwide recession (resulting in part from our national and international economic policies), an overvalued dollar, an undervalued yen (resulting from Japanese policies), and the economic embargo of the Soviet Union, all of which made it possible for Komatsu to overcome the competitive constraints that Caterpillar's global strategy had imposed upon that company before 1982.<sup>3</sup> Caterpillar had been so successful in keeping prices low in Japan that Komatsu had difficulty deriving the cash flow to compete in international markets. But the boycott and economic difficulties have helped Komatsu relative to Caterpillar.

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3. See Thomas Hout, et al, "How Global Strategies Win Out," *Harvard Business Review*, Sept.-Oct. 1982, pp. 100-102.

Moreover, the need for systemic flexibility and adaptability requires greater attention to capital and product as well as labor markets.

Thus, management systems probably have been less important determinants of productivity and international competitiveness than *overall economic policy*. Indeed, I am persuaded by the evidence that American *private managers* have done a better job than American *public managers*. It would take much greater improvements in productivity than we are likely to achieve to overcome the consequences of exchange rate differentials, which automobile industry officials estimate to be about two-thirds of the cost differential between the United States and Japan.<sup>4</sup> The undervalued yen and the overvalued dollar are the consequences of economic policies in Japan and the United States. Without a stable economic environment created by comprehensive and coordinated economic policy, the so-called Japanese management system, which has caused high productivity and competitiveness in key industries, would be very hard to maintain.

Also, I believe the Japanese industrial policy has played an important role in the so-called Japanese miracle. However, the term industrial policy has lost some of its meaningful communication because it means different things to different people, and many critics do not define industrial policy as I would. It is especially inappropriate to judge the consequences of industrial policy in a country like Japan by comparing it with a neo-classical competitive profit-maximizing model, because that is not the model that most Japanese companies use for decisionmaking. Their model of maximizing market share might be considered irrational from a profit-maximizing view. But in Japan, size carries considerable prestige and tangible benefits.

There are, however, a number of obstacles in evaluating the relative importance of industrial policy in the Japanese context.

- Japanese economic policy has been systematic and comprehensive, making it difficult to separate "macroeconomic" or monetary and fiscal policy from targeted policies to influence particular industries. For example, throughout most of the period of rapid growth, there was no independent monetary policy because there were poorly developed securities markets and the Bank of Japan was an arm of the ministry of finance. The government therefore used credit as a means

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4. See *New York Times*, Sept. 11, 1983, p. F-4.

of encouraging particular industries. Other policies were designed to increase savings, reduce consumption, and encourage investment in industries with the best growth opportunities. Japanese policy has contained a flexible mix of macro and selective policies.

- Moreover, Japanese objectives are based on elaborate consensus-building processes, are dynamic in the sense that they have changed through time (from building basic industries, to rapid economic growth, to the present policy of more balanced growth and the development of new technology) and contain such important non-economic objectives as national pride and overcoming national humiliation resulting from defeat in war and the realization that "made in Japan" was a mark of inferiority during the 1940s and 1950s.

- The Japanese system is not a case of the government picking winners and losers. It is the case of public-private consensus forecasts of industries with varying growth potential. Government policy based on these forecasts has been to use credit and regular government policies to encourage growth and provide an equitable means to phase down those industries with little growth potential. The Japanese consider their system to be one that facilitates orderly adjustment.

- There is no sharp dichotomy between public and private activities. The consensus process attempts to establish flexible and changing relationships between the public and private sector. The Japanese think there is a natural and mutually beneficial organic relationship between the public and private sectors. This belief tends to avoid the adversarial relationship predominating in the United States. The consensus process tends to provide better information to the parties in that process and to encourage cooperation where that is appropriate, but intense competition within Japan and in international markets for market share.

- One of the weakest arguments against industrial policy is to point to examples of specific industrial policy failures in other countries. If infallibility has to be a criterion for success, then we are all doomed to failure. Critics point to the famous case where MITI attempted to dissuade Honda from remaining in the automobile industry as an example of failure. On the contrary, it is an example of how the system works. If the Japanese system had really been planning, they would have kept Honda out of the automobile business. But an industrial policy based on consensus is not planning. Japanese

firms can and have ignored consensus industrial estimates. The system is consensual, not oppressive. The parties to the consensus process continue to make their own decisions, but on the basis of much better information, especially about the motives and behavior of the principal economic interests involved in the consensus process.

Similarly, the fact that actions are taken on the basis of consensus forecasts facilitates the correction of mistakes. For example, the Japanese steel industry built excess capacity during the 1960s and 1970s on the basis of an overly optimistic consensus growth forecast. The fact that the forecast was based on public-private consensus made it possible to reduce capacity without a lot of the adversarial blaming that goes on in the United States about who is responsible for the steel industry's problems.

- The Japanese have shifted policies through time and currently incline more to selective policies (i.e., education, training, improved information systems, a stable economic environment) that affect all industries, rather than to those that are industry-specific, as was the case in earlier times. Moreover, the government's power relative to the private sector has diminished as private enterprises have become more affluent.

However, higher Japanese savings, flexible institutions, and well-trained workers didn't just happen — they were the consequence of Japanese policies. A very strong case can be made that without close public-private cooperation in establishing and implementing economic objectives, the Japanese could not have established their present strong economic position in the world. Judged from a static, neo-classical profit-maximizing model, the Japanese policies might have appeared to be irrational at any given point in the process. But judged against their own objectives, it is hard to argue that they have not succeeded. Moreover, it is **hard** to argue that they could have achieved their impressive economic results without comprehensive public policies.

After all, the Japanese had no comparative advantage in steel, autos, electronics, and other industries in the 1950s. Without governmental protection from foreign competition, heavy investments in human resources, credit allocation, and other assistance to industry, the Japanese believe they still would be the relatively underdeveloped country they were in the 1950s. It is true that the Japanese had an advantage in catching up with American technology, but they did more than catch up in management and public policymaking institu-

tions. It also is true that the Japanese probably will have more trouble in the future, but I think their consensus decision processes and flexible institutions give them important advantages in dealing with change in an internationalized information world. The U.S. has overwhelming capital, productivity, and resource advantages, but we have limited means to coordinate and cooperate in public policy area.

As noted, it is hard to assign a relative weight to the importance of Japanese industrial or targeted policies because these policies are closely integrated with other public and private activities. There can be little doubt that the outcome of the total process has been impressive.

Finally, while the Japanese experience is more of an argument for industrial policy than against it, this does not mean that such policies would work in the very different American institutional environment. However, I believe we must adopt more coordinated and comprehensive economic policies, in which macro policies are supplemented by selective activities, including adjustment policies to facilitate an equitable sharing of the benefits and costs of change, and especially measures to shift resources out of industries with limited competitive potential. We cannot pick growth industries and those that will decline. But we can forecast them, and labor, management, and government can adapt their regular activities to these forecasts — including disagreeing with them, as the Japanese do. It would be irresponsible to leave all of these activities to market forces alone because of the market defects conceded by even the most conservative free market supporters.

Clearly, the government will inevitably take actions that will affect markets. It seems to me that it would be much better to make these actions more coordinated and less *ad hoc*. Moreover, it is hard to avoid the need for a logical division of labor between public and private actions. Clearly, public interventions that might distort a perfect market can improve the markets we are likely to have. In the real world, the United States does not have the option of deciding whether or not to adopt policies that have differential impacts on industries. The federal government already does that, including almost a trillion dollars in loans and loan guarantees. The question is whether or not a more coordinated approach to focus these resources more on national objectives would improve our overall economic performance.

I believe we could do a lot better with means to improve coordination and consensus-building. This will not be easy to achieve in our

political and institutional environment, but we should improve our political and governmental processes as well as our markets. Economists too easily assume that the political process is inherently flawed and that **markets** are more perfectable, but I am not sure that the case can be made.

As noted, I believe selective labor market and other interventions have a role to play as part of an overall, more effective, more comprehensive policy to create the economic environment to make it possible for American labor and management to be more competitive, whatever we call those selective interventions. However, change will be a continuing process, so we not only need to train and educate our people so they can adjust to change, we need also to develop new and more flexible product and labor market institutions to achieve a more equitable sharing of the benefits and costs of adjustment and reduce resistance to change by those who are afraid they will bear the costs while others reap the benefits.

In sum, displaced workers constitute a small part of the structural unemployment problem. Measures to deal with that problem should be part of a larger effort to make our economy adapt to change more readily. This requires comprehensive economic policies where selective policies complement macroeconomic policies.



## Capital Formation, Technology, and Economic Policy

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*Barry P. Bosworth*

The sharp deterioration in productivity growth since the early 1970s has been a major motivation behind the renewal of interest in economic policies to expand aggregate supply. The public discussion has emphasized an accelerated accumulation of physical capital as a major goal of policy, and particular importance has been attached to increased tax incentives for private saving as a primary means of achieving that objective. Yet in several respects, the attention directed both to the slowing of physical capital accumulation as a cause of the previous shortfall in productivity growth and the importance attached to tax incentives to promote private saving as the cure seem misplaced. It has also contributed to an excessively narrow view of the actions that could be taken by government to accelerate the growth of productivity. In fact, it can be argued that the net outcome of the policy actions to date will likely be to retard rather than to promote future growth.

The first section of this paper reviews the empirical studies of the productivity growth slowdown with particular emphasis on the role of capital. The second section examines the behavior of saving and investment and trends in capital income taxation. The third section is directed toward the policy actions that might be taken to promote a faster rate of productivity growth in the future.

## Capital and the productivity slowdown

There are several problems in attributing to capital a major role in the slower growth of productivity.<sup>1</sup> First, since 1973 the contribution of slower growth in the capital-labor ratio accounts for only a few tenths of a percentage point of the shortfall of multifactor productivity growth (output per unit of labor and capital input).<sup>1</sup> That fact is very apparent in the new data on multifactor productivity prepared by the Bureau of Labor Statistics and reproduced in Table 1.

The contribution of capital to output is a product of two factors: the rate of accumulation of capital and its share of total factor income. The slower growth of the capital input that has occurred has been as much due to a fall in its share of income as to a slower rate of physical accumulation. That highlights the second problem: the average before-tax rate of return on capital fell sharply throughout the 1970s. Even after adjusting for the influence of recession, the real return on business capital has fallen by 3 percentage points — from 11 percent to 8 percent — since the mid-1960s. That is not consistent with the usual notion of growing capital scarcity. It also casts doubt on the usual argument that the effective tax rate on capital income increased during the 1970s, a situation which would be expected to produce a higher before-tax rate of return.

The major conclusion that emerges from the growth-accounting studies of recent years is that the productivity slowdown is, in large part, a mystery. Those studies have achieved important results in quantifying the contribution of a large number of potential explanations for the slowdown. Among the contributing factors identified are a younger and less experienced workforce, government regulation,

1. There is a large literature on this subject. I have relied most heavily on the following articles: Martin Neil Baily, "Productivity and the Services of Capital and Labor," *Brookings Papers on Economic Activity (BPEA)*, 1:1981, pp. 1-50; Edward F. Denison, "The Interpretation of Productivity Growth in the United States," paper presented at the Conference of the Royal Economic Society, London, July 22, 1982; Barbara M. Fraumeni and Dale W. Jorgenson, "The Role of Capital in U.S. Economic Growth, 1948-76," in George M. von Furstenberg, ed., *Capital, Efficiency and Growth*, Cambridge: Ballinger, 1980, pp. 9-250; John W. Kendrick, "International Comparisons of Recent Productivity Trends," in William Fellner, ed., *Essays in Contemporary Economic Problems*, 1981-82 edition, American Enterprise Institute, 1981, pp. 125-70; and J. R. Norsworthy, Michael J. Harper, and Kent Kunze, "The Slowdown in Productivity Growth: An Analysis of Some Contributing Factors," *BPEA*, 2:1979, pp. 387-421.

2. Capital is defined to include land, plant, equipment, and inventories.

3. Barry P. Bosworth, "Capital Formation and Economic Activity," *BPEA*, 2:1982, pp. 291-95.

higher energy prices, and reduced research and development. Each of these factors, however, can contribute only a few tenths of a percent annually. Other common explanations, such as a shift to a service-based economy, have been dismissed. Studies of productivity growth in other countries reach similar conclusions. In many of these countries the decline in multifactor productivity is greater than in the United States.<sup>4</sup>

Another hypothesis is that the 1970s were an unusual period of economic disruptions, and as a result much of the capital stock became obsolete.<sup>5</sup> That is, a measure of the capital stock calculated by cumulating past investments overstates the effective stock during the 1970s. The evidence on the obsolescence hypothesis is, at best, ambiguous, but it appears unlikely that it can account for such a large and sustained slowing of productivity growth.

Unexpected obsolescence does offer an appealing explanation for the decline in the rate of return on capital — the value of the denominator is overstated. But the decline in the rate of return began in the early 1970s. Even if as much as 25 percent of the equipment stock became obsolete in the 1973-74 period, normal depreciation and retirements would reduce its effect on the value of capital stock, and thus the rate of return, to about 2 percent by 1981, which would increase the rate of return only by a few tenths of a percentage point. Thus, accelerated obsolescences would have to be very large and continuing to explain the behavior of the return on capital.

More recently, studies have focused on a slowing of advances in knowledge, rather than changes in the quality or quantity of the inputs, as the most likely cause of the productivity slowdown. The term "knowledge" is used in a general sense to include improvements in management skills as well as the introduction of new technology. Dale Jorgenson in particular has argued that reallocations of output among sectors (such as might follow a period of economic dislocation) actually made a small positive contribution to growth after 1973, and that the decline thereafter was caused by slower rates of technical change in individual industries.<sup>6</sup> The difficulty with such an

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4. Kendrick, "International Comparisons."

5. Baily, "Productivity and the Services of Capital and Labor."

6. See, for example, Dale W. Jorgenson, "Taxation and Technical Change," *Technology in Society*, vol. 3 (1981), pp. 151-71, and the references cited there.

Measure	Private business*			Nonfarm business			Manufacturing		
	1948-73	1973-81	Slow-down	1948-73	1973-81	Slow-down	1948-73	1973-81	Slow-down
Output per hour of all persons	3.0	0.8	-2.2	2.5	0.6	-1.9	2.9	1.5	-1.4
Minus contribution of capital/hour†	1.0	0.7	-0.3	0.8	0.6	-0.2	0.7	1.1	0.4
equals:									
Multifactor productivity‡	2.0	0.1	-1.9	1.7	0.0	-1.7	2.2	0.4	-1.8
Output	3.7	2.2	-1.5	3.9	2.1	-1.8	4.0	1.2	-2.8
Hours of all persons	0.7	1.4	0.7	1.3	1.5	0.2	1.1	-0.2	-1.3
Capital services	3.6	3.2	-0.4	3.6	3.3	-0.3	3.5	4.0	0.5
Combined capital and labor inputs	1.7	2.0	0.3	2.1	2.1	0.0	1.8	0.9	-0.9

Source: Bureau of Labor Statistics, U.S. Department of Labor.

\* Excludes government enterprises.

† Change in capital per unit of labor weighted by capital's share of total output.

‡ Output per unit of combined labor and capital input.

explanation is that the contribution of advances in knowledge is only a residual measure in the growth accounting, which makes it difficult to analyze in any systematic fashion.

The results of a recent study of trends in output and productivity growth in different regions of the U.S. add to the argument for a general change in the residual. While rates of output growth have varied substantially among the regions, those differences are almost fully explained by different rates of growth in the capital and labor inputs, and there are not major differences in the growth of multifactor productivity. Multifactor productivity has grown at least as rapidly in the Snow Belt as in the Sun Belt, despite a significantly slower rate of capital accumulation. Furthermore, the slowdown in productivity growth after 1973 is common to *all*.<sup>7</sup>

At times, it is argued that technological innovation is embodied in new capital in order to support a view that capital is of greater importance in the growth process than is implied by the growth accounting studies. However, several authors, in examining the importance of the embodiment hypothesis, have pointed out that there is insufficient variation in the age structure of the capital stock to make it an important source of change in the nation's growth rate.<sup>8</sup> Under such circumstances gross investment is the relevant concept, rather than the net capital stock, and gross investment has increased as a share of GNP during the 1970s.

It is also important to avoid confusion between the argument that new technology may require new capital, and a different argument that increased investment will significantly alter the pace of a technological innovation. In any period there is always a large volume of investment with substantial variation in the expected returns on the individual projects. Those that are most profitable, supposedly embodying the most significant technical advances, will be undertaken first. In each period, investment will be undertaken to the point where the expected return on the marginal investment, inclusive of any return on embodied technology, is equal to the cost of funds. Thus, the embodiment of technology does not imply any extraordinary return on an additional unit of investment at the margin.

Investment was heavily concentrated in areas of rapid technologi-

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7. Charles R. Hulten and Robert M. Schwab, "Regional Productivity Growth in U.S. Manufacturing: 1951-78," February 1983 (*American Economic Review*, forthcoming).

8. Denison, *Accounting for Slower Economic Growth*, pp. 57-58.

cal innovation during the 1970s. Expenditures (measured in 1972 dollars) on computers and communication equipment rose from 12 percent of total equipment purchases in 1960 to 17 percent in 1970 and 32 percent in 1981. Nonetheless, there is little evidence that these high-technology investments had a significant impact on any economy-wide measure of productivity. The increase in productivity should be even more evident if, as is often claimed, investment in such equipment is understated by the use of price deflators based on resource cost. The investments in information systems were supposed to improve business decisionmaking, but there is little evidence that they have done so.

### **Saving and investment**

The previous section outlined some reasons for skepticism about the degree of emphasis being placed on physical capital accumulation as a cause of the slowdown in productivity growth.

It is not necessary, however, to argue that reduced capital formation was the cause of the productivity slowdown in order to advocate increased investment as a means of accelerating productivity growth in the future. Although the before-tax return on capital has declined, it has remained in the range of 8-10 percent. An increase in the share of net investment in net output of one percentage point would, in the near term, raise the growth of output by about 0.1 percentage point annually. If the share of net business output going to investment could be doubled (from an average of 4-5 percent in the 1970s) the growth of output would rise by about 0.4-0.5 percentage points annually. A rise in the net investment share does not have a permanent effect on the rate of productivity growth, but in the long run the *level* of output is increased by about 5 percent for each one percentage point rise in the investment share. These gains are substantial, but they also imply that truly heroic actions would be required to restore the postwar trend in productivity by an expansion of capital formation **alone**.<sup>9</sup>

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9. The hypothesis of a slower rate of technical change has ambiguous implications for future capital formation. Under some circumstances, a slower rate of labor-augmenting technical change reduces the benefits of capital investment. Capital that embodies old technology lasts longer, and less capital is required to equip future entrants to the workforce. On the other hand, a continued slow growth of technology lowers future income and that could argue for a compensating reduction of current consumption and increase of Investment in order to shift consumption to future periods.

There are, however, several significant issues of how best to achieve that objective. The policy conflicts are particularly evident in the tax area, where major new initiatives have been undertaken to expand incentives for both private saving and investment, and additional actions are under consideration for the future.

The main issues can be highlighted by asking whether government policies should focus on expanding incentives for saving or for investment. In an idealized world of full employment, competitive markets, and no foreign trade there would be little relevance to such a distinction. Saving and investment can be viewed as opposite sides (supply and demand) of the same market, with the interest rate serving as the equilibrating price. In the idealized world it makes little difference whether incentives are extended to savers or investors, since the interest rate adjusts to maintain a balance. In practice, there are many pitfalls in this process.

### *Saving*

Much of the discussion concerning the need for expanded incentives for saving implied that private saving has declined in the United States. Yet the private saving rate has remained very stable throughout the postwar period at about 16-17 percent of GNP, and there is no evidence of a decline during the 1970s (Table 2). What has changed is the composition of that saving: corporate saving (retained earnings and capital consumption allowances) has increased, while saving attributed to the residual sector of households, nonprofit institutions, and unincorporated business has declined. In part, this compositional change may be associated with the sharp fall in income of noncorporate business, but any interpretation is complicated by the problems of allocating interest income among sectors of the economy during a period of high variable inflation, and accounting for capital gains and losses in estimating net wealth." In any case, it is not clear that it has any particular significance for the issue of capital formation. The composition of government saving has also changed as a tendency toward larger deficits at the federal level is offset by larger surpluses of the state and local governments' employee retirement funds.

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10. Some of the ambiguity of **emphasizing** trends in saving of individual sectors is illustrated by the argument of some economists that state and local pension funds should be assigned to personal savings as is done with private employee pensions. That simple change would **raise** personal saving by over 20 percent and shift the private saving rate from a historical constant to a rising **trend**. Government dissaving would rise by an offsetting amount.

**TABLE 2**  
**Saving and Investment Shares of Gross National Product, 1951-82**  
 (average annual percentage share)

Period	Private saving		Government saving			Investment			Net saving and investment*		
	Total	Personal	Total	Federal	State and local	Nonresidential	Residential	Net Foreign	Private saving	Private investment	Capital consumption
1951-60	16.2	4.7	-0.3	-0.2	-0.2	10.4	5.2	0.3	8.0	7.3	8.9
1961-70	16.3	4.7	-0.4	-0.5	0.1	11.1	4.3	0.5	8.6	7.6	8.4
1971-75	17.2	5.6	-1.2	-1.8	0.6	11.1	4.6	0.3	8.7	7.0	9.3
1976-80	17.1	4.2	-0.7	-2.0	1.2	11.9	4.6	-0.2	7.4	6.7	10.5
1981	17.1	4.4	-1.0	-2.0	1.1	12.5	3.6	0.1	6.6	5.4	11.2
1982	17.4	4.6	-3.8	-4.9	1.0	10.6	3.1	-0.2	6.5	2.4	11.6

Source: U.S. Department of Commerce, *National Income and Product Accounts of the U.S.*

\* Percent of net national product

Some economists prefer to deduct from gross saving the flow of depreciation on capital to get net saving, and they observe that the net saving rate has declined (see Table 2). But the rise in depreciation that led to the decline reflects a shift in the pattern of investment rather than saving behavior. The composition of business investment has moved toward shorter-life capital — equipment relative to structures — with a consequent rise in depreciation, and the stock of depreciable capital has grown more rapidly than output. Whether that shift provides a basis for increasing private saving incentives depends upon the factors that caused it. If it is due to a distorting change in the relative taxation of short- and long-life capital or if it reflects the often-discussed short-term planning horizon of U.S. business, the shift is not desirable. On the other hand, it may simply reflect the changing nature of current investment opportunities — less need for offices, shopping centers, and industrial plants relative to short-life assets such as computers. We are passing on a smaller capital stock to future generations, but if the social return on that type of capital is declining, the reduction is appropriate. Either way, it is not clear that new incentives for saving are the appropriate response to a changing mix of domestic investment — particularly when that increased saving could flow to many other uses.

The United States is one of a group of countries that stands out in any international comparison as having relatively low rates of private saving (Table 3). Those differences, however, do not appear to be related to differences in the rate of after-tax return on capital.<sup>11</sup> Many of the empirical studies have emphasized the importance of differences in rates of income growth, and, in fact, that explanation was appealing in comparing the United States, Europe, and Japan in the 1960s. However, private saving rates have remained relative constant in these countries despite a large deceleration of growth in Europe and Japan after 1973. Substantial differences remain that may be related to differing social and institutional arrangements. In any case, the international differences in business investment rates are significantly less than those for private saving. There is a substantial variation in rates of government saving or dissaving that tend to offset differences in private saving, and other countries devote more resources to homebuilding than does the United States.

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11. For a survey of the work in this area, see "International Differences and Trend Changes in Saving Ratios," unpublished paper prepared by the Secretariat for Working Party No. 1 of the Economic Policy Committee, Organization for Economic Cooperation and Development (CPE/WP1 (81) 9, October 1981).

TABLE 3  
Private Saving and Its Uses in Major Industrial Countries, 1970-79  
(percent of gross domestic product, half-decade averages)

Country	Period	Private saving	Uses of private saving					Inventory change	Statistical discrepancy
			Business investment	Government deficit	Net foreign investment	Residential construction			
Canada	1970-74	17.8	13.0	-0.8	-0.2	5.3	0.9	-0.4	
	1975-79	19.6	13.9	2.0	-2.4	5.8	0.5	-0.2	
United States	1970-74	16.4	10.5	0.6	0.1	4.6	0.9	-0.2	
	1975-79	17.3	10.9	1.3	0.0	4.6	0.7	-0.1	
Japan	1970-74	31.5	22.3	-1.8	1.0	7.6	2.1	0.3	
	1975-79	29.3	18.1	3.0	0.6	7.5	0.6	-0.6	
France	1970-74	20.9	13.1	-1.2	-0.3	7.0	2.2	n.a.	
	1975-79	20.4	12.4	0.7	-0.3	6.7	0.9	n.a.	
Germany	1970-74	21.1	13.6	-1.7	1.1	7.3	0.9	n.a.	
	1975-79	21.0	11.9	1.5	0.7	6.0	1.0	n.a.	
Italy	1970-74	26.8	11.4	7.0	-0.4	5.7	2.1	n.a.	
	1975-79	27.2	11.1	8.5	0.7	5.2	1.8	n.a.	
Netherlands	1970-74	22.3	13.8	-0.9	1.7	5.8	1.9	n.a.	
	1975-79	19.9	11.7	1.2	0.8	5.5	0.6	n.a.	
Sweden	1970-74	14.2	11.1	-4.0	0.7	5.1	1.2	n.a.	
	1975-79	14.0	11.6	-1.2	-1.5	4.3	0.8	n.a.	
United Kingdom	1970-74	14.8	10.7	-0.1	-0.8	3.5	0.9	0.5	
	1975-79	17.3	11.4	3.2	-0.9	3.5	0.5	-0.4	
Australia	1970-74	20.5	15.3	-1.2	-0.5	4.9	1.0	0.9	
	1975-79	19.5	13.9	1.8	-1.8	4.8	0.5	0.4	

Source: Computed by the author from Organization for Economic Co-operation and Development, *National Income Accounts of OECD Countries, 1962-1979*, vol. II (Paris, 1981).

The question of adequate saving to support a specific level of investment is only relevant to a fully employed economy in which resources for increased investment must be achieved by foregoing private or public consumption. In the presence of unemployment, an increase in investment can be financed by utilizing idle resources. The increase in investment raises production and incomes, providing higher levels of both saving and consumption.

Even commencing from a situation of full employment, it is paradoxical that an increase in planned saving may not lead to an increase in investment — at least in the short run. The increased supply of saving will lower interest rates and serve as a positive inducement to investment. At the same time, the decline in consumer spending will reduce current demand and business perceptions of the need for additional capital. The increased planned saving will translate into increased investment only if wages, prices, and interest rates adjust quickly to offset the initial decline in demand. Under normal circumstances adjustment lags will lead to a transitional period of depressed output. If that transition is to be avoided, it will be necessary to coordinate changes in saving incentives with direct actions to raise investment.

While both of these concerns about an exclusive emphasis on saving incentives raise only short-run issues of transition, the longer-term view that Americans save too little and that the low saving rate constrains domestic investment ignores the important role of world capital markets. In a situation of international capital markets, domestic saving and domestic investment are not necessarily equal: an increment to private saving could easily flow abroad if the return on foreign investment is above that of domestic investment, and domestic investment can draw on a pool of world-wide saving." In fact, the sharp rise in world saving rates, embodied in the surplus of the OPEC countries after 1973, provides an illustration of the mechanism as the funds flowed primarily through U.S. financial institutions to finance investment in the developing countries. Therefore, the adequacy of domestic private saving is not necessarily relevant to answering the question of why investment in the United States is so low relative to other countries.

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12. A more extensive discussion of the issues, with citations, is given in Bosworth, "Capital Formation and Economic Policy," pp. 313-17.

There are, of course, political and institutional limits on a country's ability to finance domestic investment on a sustained basis from foreign capital inflows. In view of these constraints, while higher domestic saving may not be sufficient to ensure increased domestic investment, it is an appropriate long-term element of a program that does do so. Government can increase national saving either indirectly by reducing taxes in such a way as to expand private saving incentives or directly through reducing its own dissaving. The difficulty with an emphasis on tax incentives for private saving is that the policy relies on an aspect of economic behavior about which economists are very uncertain of the likely effects.

A reduction in tax rates affects private saving behavior in two ways. First, it increases the attractiveness of future relative to current consumption — the substitution effect. But the tax reduction (higher after-tax return) also raises expected future income from previously planned saving and individuals may actually increase current consumption in anticipation of the higher lifetime income — the income effect. This offsetting income response is of particular importance in the short run because of the increased income from previously accumulated wealth of older generations (they receive a windfall gain on prior saving which stimulates consumption). The net effect on saving is ambiguous from a theoretical perspective and the empirical evidence is not convincing on either side of the issue.<sup>13</sup>

In any case, much of the discussion of tax incentives to promote saving ignores the role of the government budget. In a fully employed economy a tax reduction to expand private saving, if not matched by an equal reduction of government expenditures, requires the private sector to save the entire tax cut simply to leave the national saving rate unchanged.

Given the uncertainties surrounding private saving behavior, direct actions to shift the government budget toward a surplus are a

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13. The long-term effect on saving is less uncertain for a shift in the structure of the tax system. A change from an income to a consumption tax that raises the same total revenue, for example, is very likely to raise the private saving rate. The income effect is of limited relevance, and the important point is that the price of future consumption is reduced. But a consumption tax is effectively the same as a wage tax and it will change the supply of labor and total wage income. In addition, while there is a small aggregate income effect associated with a shift in the tax structure, the distribution of the tax burden is altered dramatically between earners of wage and capital income. If their saving behavior is disparate, there may be a significant aggregate effect. As a result, there is some uncertainty about the effect on total saving.

more certain means of increasing saving. Yet there is not complete agreement that a rise in government saving will augment national saving. Some economists argue that variations in the government debt, a negative bequest to future generations, lead to compensatory adjustments in private saving and investment.<sup>14</sup> The empirical evidence on the more extreme versions of this hypothesis is not very convincing, however. The general conclusion is that national saving would rise, although probably not on a one-for-one basis.<sup>15</sup>

### *Investment*

The evidence that government policies can have a direct effect on business investment is significantly stronger than the evidence for private saving incentives. One reason is that the direction of the effect of a change in taxes or interest rates is not ambiguous from a theoretical point of view. The major issue under dispute is the potential for substitution between capital and labor in production. For example, given the decision to build a new plant, as determined by expectations of future demand, to what extent will business choose a more capital-intensive process in response to a reduction in the cost of capital relative to that of labor. For more than 20 years the discussion has been led by Dale Jorgenson, who believes that the possibilities for substitution are high, and Robert Eisner, who believes they are low. To date, neither has convinced the other, but I think it is fair to summarize the consensus of the profession that the truth is roughly an average of the two extremes. One convenient rule of thumb that emerges from the major econometric models is that the investment induced by a tax incentive limited to new investment (such as the investment tax credit) is roughly equal to the loss of tax revenue — a bang-for-the-buck of about unity.

A second major finding of the empirical studies is that a change in the cost of capital has a bigger effect on residential construction and consumer durables than on business investment. Thus, a decline in

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14. Robert J. Barro, "Are Government Bonds Net Wealth?" *Journal of Political Economy*, vol. 82 (November-December 1974), pp. 1095-1117. A second variant of the argument is that public expenditures financed by taxes substitute for private consumption and debt-financed expenditures substitute for private investment. Paul A. David and John L. Scadding, "Private Saving: Ultrarationality, Aggregation, and Denison's Law," *Journal of Political Economy*, vol. 82 (March-April, 1974), pp. 225-50.

15. Willem H. Buiter and James Tobin, "Debt Neutrality: A Brief Review of Doctrine and Evidence," in George M. von Furstenberg, ed., *Social Security Versus Private Saving*, Cambridge: Ballinger Press, 1979, pp. 39-63.

interest rates, for example, increases total investment but shifts it in the direction of housing and consumer durables. That is a significant issue that I will return to in a later discussion of policy options.

If we accept the hypothesis that government policy can significantly affect investment demand through changes in the after-tax price of capital, the evaluation of past government support for investment depends upon trends in the taxation of capital income and the cost of funds. To date, the public discussion has concentrated on the tax issue. Yet, the economic analysis tends to argue that, if there was an increase in the cost of capital in the 1970s, it was the result of increased financing costs rather than higher taxes.

*Taxes and investment.* On the tax side, the discussion seems to have been confused by the failure to distinguish adequately between average tax rates on capital income and the marginal tax rate relevant to investment. While the various studies seem contradictory, I believe they are consistent once we adjust for differences in what is being measured.

First, the *average* tax rate on the income from corporate capital was high and increased due to inflation in the 1970s.<sup>16</sup> Inflation affected tax liabilities in several distinct ways. The effective tax rate increased because depreciation allowances were not adjusted for inflation within the corporate tax system. Additionally, corporation taxes were reduced by the deduction of nominal interest payments, which were also not adjusted for inflation. While the inflated interest payments were taxed under the personal income tax, the tax rate on corporate income is higher than that on personal capital income; so that the value of the deduction to corporations exceeded the tax paid by individuals, the treatment of interest actually reduced the net cost of debt finance during the 1970s. Thus, while the effects of inflation on the taxation of interest largely canceled in an integrated view, the failure to adjust depreciation remains a significant source of variation in the tax on the income from corporate capital. Finally, there was a large nominal capital gain on the revaluation of physical assets that potentially may raise tax payments in future years if it is realized in higher earnings.

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16. Martin Feldstein, James Poterba, and Louis Dicks-mireaux, "The Effective Tax Rate and the Pretax Rate of Return," Working Paper No. 740, National Bureau of Economic Research, 1981.

Second, the *average* tax rate on all capital income (calculated at the margin above labor income) within the personal tax system alone is quite low — about 10 percent — because so much of the income is exempt from taxation (residential housing) or deferred (pensions and capital gains.)<sup>17</sup>

For investment, it is more relevant to examine trends in the effective *marginal* tax rates on an additional unit of capital. That has been done in several studies of the corporate tax and the general conclusion is that effective rates of taxation fell throughout the 1970s because of liberalization of depreciation allowances, the investment tax credit, and the deductibility of nominal interest payments. A recent study reports a fall in the effective tax rate from 53 percent in 1960 to a low of 26 percent in 1965, a rise to 55 percent in 1969, and a subsequent decline to 33 percent by 1980.<sup>18</sup> As a result of the 1981 and 1982 tax acts, that rate will continue to fall about 15 percent in the 1983-86 period. It also is apparent that the effective tax on equipment is substantially lower and has declined more than that for structures; it is thus consistent with the previously mentioned shift toward short-term assets.

These analyses of the effective tax on new corporate investment did not, however, take account of property and personal income taxes. That issue has been examined in a recently completed study of capital income taxation in four countries.<sup>19</sup> The study found that the overall marginal tax on capital income from the corporate sector was about 32 percent in 1983, and that it had declined from 48 percent in 1960 and 47 percent in 1970. As reported for studies of the corporate tax alone, equipment is taxed much less heavily than other types of investment. The study also concluded that elimination of the corporate tax would, in its present configuration, have very little effect on the expected tax for the average new investment. One interesting result of the study was the finding that the marginal tax rate on capital income is lower in the United States than in Germany, about the same

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17. Eugene Steuerle, "Is Income from Capital Subject to Individual Income Tax?" *Public Finance Quarterly*, vol. 10, July 1982, pp. 283-303.

18. Charles R. Hulton and James W. Robertson, "Corporate Tax Policy and Economic Growth: An Analysis of the 1981 and 1982 Tax Acts," unpublished working paper, the Urban Institute, Washington, D.C., December 1982. They assume a 4 percent real after-tax return in making their calculations and a 6 percent inflation rate for 1983-86.

19. Don Fullerton and Mervyn A. King, eds., *The Taxation of Income from Capital: A Comparative Study of the United States, United Kingdom, Sweden, and West Germany*. University of Chicago Press, forthcoming.

as in Sweden, and far higher than in the United Kingdom.<sup>20</sup> The differences in capital taxation certainly do not correlate well with differences in rates of capital formation for these countries.

Thus, the conclusion drawn from the analysis of tax rates is not so much that the tax on capital income has increased but that tax rates are highly variable by type of capital asset and owner. Corporate capital is one type that is particularly heavily taxed. That is a potentially serious source of a misallocation of capital. Yet one has to ask why the corporate share of capital has grown so rapidly if it is so disadvantaged by the tax system? Apparently, the tax doesn't exceed the value that incorporation extends to the owners of capital.

One conclusion that emerges from these studies is, regardless of whether the tax on capital income is too high or too low, the effective tax on new investment has declined throughout the 1970s. That is to say, tax policy has generally been stimulative to private investment, and at least in some studies, the implication is that there is little more that government can do at the corporate level unless it wishes to provide a tax subsidy. There is, however, a wide *disparity* of tax rates on different types of capital.

*Cost of funds.* The uncertainty about the net direction of change in investment incentives results from questions about what happened to the real cost of funds. That cost is a weighted average of the cost of equity and debt finance. The real cost of debt finance appears to have declined as the studies agree that market interest rates did not rise in step with any available measure of expected inflation of capital goods prices. There is greater uncertainty about the cost of equity finance or, in other words, the risk premium, on investment during the 1970s. The price-earnings ratio fell very sharply, which implies a sharp increase in the cost of equity finance. **However**, some interpret the decline in market value as a reflection of unexpected obsolescence of existing capital and not as an implication of an increased cost of financing new investment. That is, the present value of future income from existing capital really had declined and existing stockholders were not surrendering large amounts of future income to obtain new equity financing.

Others have interpreted the decline in share values as reflecting confusion by investors in valuing future earnings in an inflationary

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20. The major reason for the low tax rate in the United Kingdom is immediate expensing of depreciation combined with the full deductibility of nominal interest payments.

TABLE 4  
Effective Marginal **Tax** Rates on Income  
From Corporate Capital, 1960-83  
(percentage)

Category	1960	1970	1980	1983
<b>Asset</b>				
Machinery	59.3	48.5	17.6	11.0
Buildings	45.0	47.1	41.1	33.2
Inventories	45.6	46.3	47.0	47.0
<b>Finance</b>				
Debt	- 3.6	- 0.2	- 16.3	- 23.5
New share issues	96.5	92.9	91.2	87.7
Retained earnings	73.1	69.7	62.4	57.3
<b>Overall</b>	48.4	47.2	37.2	31.5
Zero inflation	44.9	43.8	32.0	28.7
10% inflation	48.3	47.4	38.4	33.0
Contribution of: *				
Property tax			6.2	
Corporate tax			1.9	
Personal tax			29.5	

Source: Fullerton and King, *The Taxation of Income From Capital*, chapter 6. The basic calculations assume a constant 10 percent before-tax real rate of return for all investment projects with a 6.8 percent inflation rate. Alternatively, if the real rate of return before tax to the saver is equal for all projects, the effective tax rates for the four years are 59, 57, 50, and 45 percent, respectively.

\* Because of interrelationships between the taxes, such as deductibility of property taxes, the components do not add to the total. Instead, they show the decline in the tax rate that would occur if the specific tax were eliminated.

situation. According to this view, the 1970s might have been a period of high financing costs, but I would then expect the policy issues to revolve around means of strengthening investor confidence — controlling inflation in an economic environment of sustained expansion.<sup>21</sup>

This issue takes on even greater importance in interpreting events of recent years. The 1981-82 tax changes sharply lowered the effective tax on new investments. At the same time, however, the rise in the real interest rate appeared to offset fully any net stimulus to domestic investment.

21. An example of the importance of stock market conditions for the financing of new issues is provided by the recent explosion of new stock issues from \$82 million in July of 1982 to \$1.6 billion in June of 1983. See Mark Potts, "New Issues," *Washington Post*, July 17, 1983, p. H1.

## Policy options

The decline in productivity growth is an issue that should be of great concern to public policy. While the concept is often confusing to the general public and carries with it negative connotations of automation and robots destroying jobs, it is the source of the rise in real incomes. If the post-1973 slowdown had never occurred, the real income of the average worker would today be over 20 percent higher than it is.

The discussion of potential policy actions reflects two extremes. In focusing so heavily on tax incentives for private saving, the supply-side debate in the United States has ignored actions in other areas that would make important contributions. Furthermore, the pressure for tax reductions, without a coordinated scaling back of expenditures, has led to large deficits that are likely to discourage investment in future years.

Alternatively, much of the current public discussion reflects a belief that the United States needs to develop an industrial policy. That would require the government to develop an explicit plan of what the future structure of the economy ought to be, and to adopt a combination of tax, loan, trade, and regulatory policies to channel investment and output in the desired direction.

A more conventional view of a pro-growth strategy would give greater weight to the traditional responsibilities of government policy. Stabilization policies are the subject of another paper at this conference. Yet the resolution of those issues is likely to be of greater importance to the future growth of the economy than any of the more microeconomic policies that might be suggested. The creation of a favorable environment for domestic investment and innovative activity involves more than tax policy alone. It is equally important that government restore business confidence in sustained future expansion of the overall economy, reasonable availability of financing, and exchange rates that are reflective of underlying competitive conditions relative to other nations.

Beyond these macroeconomic policy concerns, there are two major areas where changes in government policies might have significant benefits. First, the wide variation in effective tax rates on different types of investments indicates that the current tax system could be seriously distorting the allocation of capital. Second, there is evidence that research and development earns a private rate of return substantially above that of physical capital. And, evidence that the

full benefits of R&D are not captured in private returns, such that the social return exceeds the private return, creates an argument in favor of some public role to increase **R&D**.

### *Stabilization policy*

Government could make a substantial contribution to the potential for future growth if it performed better in managing the overall economy so as to avoid the extremes of inflation and recession. This is an obvious point but it is often overlooked in current discussions. For example, the expected return on new capital is a function of its expected utilization as much as of taxes and the cost of funds. A sustained expansion would increase the utilization and thus the return of existing capital, and raise expectations of future needs. Thus, restoring private-sector confidence in a sustained expansion of overall economic activity is a strong pro-investment measure.

In addition, there is substantial evidence that the mix of fiscal and monetary policies has important effects on the allocation of output between investment and consumption. In recent years there has been a shift toward a more expansive fiscal policy with a consequent increase in the burden placed on monetary policy as a restraining anti-inflation influence. In future years, this pattern is expected to be accelerated as the budget deficit is projected to rise even with economic recovery.

This mix of policy may have an impact on capital formation in several ways. As the economy recovers there will be an increasing tension between the fiscal stimulus and the inflation concerns of the monetary authorities with a consequent upward pressure on interest rates. That is, if concerns about inflation on the part of the monetary authorities place a ceiling on national output, similar to that which would exist at full employment, government borrowing in capital markets could crowd out private investment. Thus, it is argued that a shift in the mix of policy toward fiscal restraint with an offsetting easing of monetary policy would lower interest rates, raise investment, and provide the required financing through higher government saving.

This argument is tempered by noting that both residential construction and consumer durables spending appear to be more sensitive to interest rates than business investment. Therefore, if personal taxes were raised, with an offsetting change in monetary policy in order to keep the path of GNP unchanged, most of the increment to national

saving would be reflected in housing and durables. If the tax increase were concentrated in areas that directly affect investment, nonresidential capital formation might actually decline.

The conflict between an expansionary fiscal policy and a restrictive monetary policy will also affect the foreign balance and the competitive position of U.S. goods in world markets. High domestic interest rates will attract foreign capital and maintain a high value of the dollar. In part, the large government deficit will be offset by a substantial foreign account imbalance. The direct effect of the budget deficit and tight money on business investment is reduced, but the depressive effects on U.S. export and import-competing industries would limit their demand for investment goods.

### *Capital income taxation*

Views about the appropriate rate of taxation of capital income relative to labor income are heavily influenced by equity considerations — how tax burdens should be distributed. But the recent studies have highlighted other less controversial issues. First, the system may seriously distort the allocation of investment because of widely disparate effective tax rates for investment of different durabilities, methods of financing, and ownership. For corporations, some categories of equipment investment, financed by debt, are heavily subsidized under the current tax system, while equity-financed structures are taxed at a very high rate. Under the personal tax system, many forms of capital income escape taxation altogether, while others pay very high rates. Second, within both the corporate and personal tax systems, the rate of taxation on capital income is highly sensitive to variations in the rate of inflation. Third, the value of the investment tax incentives is dependent upon the individual firm having sufficient tax liabilities from other operations against which to charge deductions and tax credits. That means that the system may discriminate against investments by new firms. And, fourth, the problems of measuring the income from capital are responsible for most of the administrative complexity of the current tax system. While recent changes in the tax laws have reduced the effective tax on the average new investment, they have aggravated some of the distortions in the allocation of investment.

There have been two major lines of suggested reform. The first would attempt to fix up the system by moving back toward a comprehensive income tax with inflation adjustments and economic depreci-

ation. The second would abandon efforts to tax capital income and move to a consumption tax, which is equivalent to a tax on wage income alone under some circumstances.<sup>22</sup>

At the corporate level these contrasting views are reflected in two proposed reforms. The first, suggested by Jorgenson and Auerbach, would continue to tax capital income, but would give firms the full present value of depreciation, based on economic useful lives, at the time the investment is undertaken, thus, eliminating the problem of adjusting depreciation for inflation.

The alternative plan, suggested by Robert Hall, among others, would convert to a system of current expensing for all investments, thus eliminating the administrative machinery of depreciation accounting. In addition, the tax would be applied to the total income of corporate capital: interest expenses would no longer be deductible. Current expensing does not imply the elimination of the corporate tax. Taxes would still be paid on any income in excess of the cost of capital — infra-marginal returns. It does imply a zero tax on the opportunity cost of capital. Current expensing also results in a substantial increase in the tax on interest income unless it is combined with a consumption tax concept at the personal level.

Both proposals would create a corporate tax that is neutral in its treatment of investments of differing durability and the elimination of the interest deduction under current expensing would remove any distorting effects induced by variations in the method of financing — equity versus debt. Firms would earn the full before-tax return on assets and they would pay the full before-tax cost of funds. The Jorgenson-Auerbach proposal would retain the interest deduction at the corporate level, however, because the underlying concept is still that of a tax on income. Thus, there would still be a difference in corporate taxation of capital financed by different means.

Both proposals still encounter the possibility that a firm may have negative tax liability in some years. Thus, there would be a possibility of a variation in the tax on investments of different firms. One solution would be to provide an unlimited carry-forward of unused deductions.<sup>23</sup> Alternatively, firms would be paid out of the Treasury

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22. These two contrasting approaches are outlined in more detail, with citations, in Harvey Galper, "Tax Policy," in Joseph A. Pechman, ed., *Setting National Priorities: The 1984 Budget*, Brookings Institution, 1983, pp. 173-200.

23. To maintain equal treatment, the amount of negative tax liability carried forward to future years should earn a market rate of interest.

for the amount of any negative tax liability, or they could sell unused credits to other firms as with the current system of safe-harbor leasing.

These alternative proposals for reform of the corporate tax illustrate an issue that is confronted more directly in discussions of the personal tax system: should tax liabilities be based on income or consumption? The Jorgenson-Auerbach proposal maintains income as the tax base, but it adjusts the measure of capital income for the effects of inflation. Current expensing of investment at the corporate level, with elimination of the interest deduction, is equivalent to a consumption tax for individuals.

The current personal tax system is a hybrid between an income and a consumption-based tax, and it is responsible for much of the variation in effective tax rates on different types of investment. On the one hand, many forms of capital income are either exempt from taxation (housing) or the tax liability can be deferred to the point where the effective tax rate is near zero (capital gains and pension funds). On the other hand, interest income is taxed at high and variable rates because of the failure to index the tax base for inflation.<sup>24</sup>

There are two alternative means of implementing a consumption tax. The first would simply exclude the income of capital from the tax base and eliminate the deduction of interest expenses. The second approach would measure total income (capital plus labor) on a cash-flow basis but allow a deduction for saving. The two concepts are equivalent for investments which earn the market rate of return: it makes little difference whether the funds are excluded from taxation when they are put into the savings account (the deduction approach) or when the income is earned (the exclusion approach). Thus, in the simplest case, any consumption tax is a wage tax. The approach of deducting saving, however, maintains taxation of the inframarginal returns to capital — similar to the treatment of business investment as a current expense. In addition, the deduction of saving involves fewer transitional problems when it is introduced because the exclusion of capital income completely would involve large windfall gains to existing wealth holders.

The deduction of saving is not as simple as the exclusion of capital

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24. The severity of this problem is reduced for corporate capital when the interest payment is deducted, but there are many situations when the tax rates are not equivalent for the payment and receipt of interest.

income, but it still results in a simplification of tax reporting because it would use cash-flow accounting. There is no need to measure capital gains or losses because if the funds are not withdrawn from the account they are saved and can be excluded from the measure of income. The use of cash-flow accounting also eliminates the need to adjust the income measure for inflation.

If the United States were to shift from its current personal income tax to a consumption or wage tax of equivalent revenue, there would be an increase in private saving incentives. The greater gain, from the perspective of domestic capital formation, however, is likely to result from the equalization of taxation on different types of capital.

Nonetheless, the consumption tax is controversial. It would initiate a substantial redistribution of tax burdens and the increased effective tax on labor income may cause offsetting reductions of labor supply and work effort. In addition, the consumption-tax advocates assume that wealth has no value beyond its ability to support future consumption. Others believe that wealth confers power, security, and access to opportunities that are not reflected in consumption. Therefore, on equity grounds they prefer to use income as the basic measure of tax liability. One compromise is to combine the consumption tax with an inheritance tax aimed at preventing the concentration of wealth among a few. Because such a combined tax system does imply a positive tax on capital income, we cannot be certain of the net effect on saving.

The opponents of the consumption tax normally advocate a broadening of the current tax base to move in the direction of a comprehensive income tax and use of the proceeds to reduce effective tax rates. In this way, they would equalize the tax on alternative investments by bringing back into the definition of income many of the components that are now excluded, and they would index the tax base to adjust for inflation. Some argue that the failure to index interest is not a major distorting factor as long as the tax rates paid by borrowers (who deduct the payments) and lenders (who include them in income) are roughly equivalent. Indexation would be required for depreciation and capital gains (which would then be taxed as ordinary income). The revenues raised by the base-broadening measures could then be used to reduce marginal tax rates.

The income tax that emerges may be more complex than a consumption tax; but that is a compromise its advocates accept to achieve their equity objectives. Moreover, the consumption tax is

unlikely to emerge, in practice, in the pure form that has been suggested. Most of the tax preferences that exist under the current system are likely to exist under either a consumption or an income tax. These preferences reflect explicit decisions to favor specific groups and activities, rather than difficulties of measurement or concept. Likewise, a consumption tax would encounter its own problems of distinguishing between saving and consumption, education being a particularly important example.

In summary, either a consumption tax or a comprehensive income tax could eliminate most of the distortions in the current treatment of different types of capital income. The comprehensive-income tax is aimed at eliminating tax preferences; the consumption tax extends them to all forms of capital income. The consumption tax would increase saving incentives, but the magnitude of the effect on actual saving is uncertain. More important, an increase in national, rather than private, saving should be the major objective of policy, and that goal could be achieved with greater certainty by simply reducing government dissaving.

### *Research and development*

A large number of studies over the last two decades have provided strong evidence of a high return to R&D expenditures. Those studies have utilized a variety of different techniques. Griliches has used a production function framework to estimate the contribution to output from time series data of individual firms and industries. He finds a significant effect on output that would correspond to a gross private rate of return (that is, including depreciation) of about 20-25 percent.<sup>25</sup> Mansfield and his associates evaluated the return on specific innovations. They also found an average private before-tax rate of about 20-25 percent, and then went on to estimate the social return, which appears to be much higher.<sup>26</sup> The social return would be expected to be higher because of the ability of competitors to imitate

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25. See, for example, Zvi Griliches, "Returns to Research and Development Expenditures in the Private Sector," in John W. Kendrick and Beatrice N. Vaccara, ed., *New Developments in Productivity Measurement and Analysis*, University of Chicago Press for the National Bureau of Economic Research, 1980, pp. 419-54.

26. See Edwin Mansfield, et al, "Social and Private Rates of Return from Industrial Innovations," *The Quarterly Journal of Economics*, vol. 91, May 1977, pp. 221-40. They report average private and social rates of return of 25 and 56 percent for a sample of 17 innovations. The variability of the estimated returns also illustrates the high risk associated with such investments.

the innovations. There is less evidence of a high return for publicly-financed R&D, but that may be because of its concentration in defense and basic research where the link to output are less immediate and direct.

The magnitude of the gap between the social and private return does create a strong argument for a public role in R&D, but the large difference between the private return for R&D and that for physical capital raises a question about why the private sector does not spend more on R&D. In part, the explanation may involve the riskiness of such investment, but it should be possible to pool R&D projects so as to reduce the risk associated with the individual project.

There are also many questions about the most effective form that public incentives for R&D should take. Before 1981, the tax laws allowed firms to deduct all R&D costs as a current expense." The 1981 tax act assigned all capital used for R&D to the three-year recovery class regardless of its expected rate of economic depreciation.\* Furthermore, qualified R&D expenditures (essentially labor and other nondepreciable costs) in excess of a base period amount are eligible for a 25 percent tax credit. The net effect of these changes is to provide a net tax subsidy to labor and other nondepreciable costs of R&D, a net tax subsidy to capital expenses that are financed by debt (because of the deduction of interest costs) and an effective tax of 5-10 percent on the opportunity costs of R&D capital that is equity financed.<sup>29</sup> It is too early to evaluate the effect of these measures, but there is a concern that firms will simply inflate the category of expenditures that they classify as R&D because of the tax advantages.<sup>30</sup>

The tax system may favor investment in risky activities such as R&D, but the magnitude of the effect, and even its direction, are subjects of continuing controversy. The simple view is that income taxation shifts the distribution of investments toward more risky projects

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27. Capital equipment used for an R&D project was subject to normal depreciation, but that is equivalent to expensing of the R&D asset.

28. Because the investment tax credit is limited to 6 percent in the three-year recovery category compared to the 10 percent credit on longer life assets, this change had a minor effect on the net incentive for R&D equipment with an economic useful life of 7-8 years.

29. This assumes an after-tax required real return of 4 percent and that the firm has sufficient tax liabilities from other activities to absorb the tax deductions.

30. As an illustration, preliminary analysis of 1982 tax returns indicates that the biggest reported increase in R&D expenditures was in the advertising industry.

because the government shares in the losses as well as the gains — reducing the variance of after-tax returns. Government thereby becomes a partner in the activity. In practice, however, the situation is more complex for several reasons. First, firms (particularly new firms) may not have sufficient tax liability from other sources to absorb the tax deductions. Second, the progressivity of the personal tax yields an asymmetric treatment of income gains and losses. Third, in a situation where individuals can diversify their portfolios to avoid all but social risk (business cycles, for example) they don't need the government as partner. And fourth, the analysis depends upon individual attitudes toward risk."

The special treatment of capital gains provides a more clear-cut example of a positive tax incentive. For these purposes R&D constitutes a natural deferral activity in the sense that the costs can be passed through to the partners in the venture and be offset immediately against ordinary income. Meanwhile, the return can be translated into a capital gain, delayed, and then taxed at 40 percent of the rate on ordinary income. Problems arise because the law applies equally well to a wide range of other activities, and it is difficult to design a capital gains incentive for R&D that is not subject to abuse.

Finally, it is sometimes argued that tax incentives for physical investment are an indirect means of encouraging innovation because an expansion of demand in the capital goods industry stimulates its R&D activity.<sup>32</sup> This demand-pull argument should apply equally to increases in the demand of any industry, and, as far as I know, there is little evidence that R&D in the capital goods industry has a higher return than elsewhere. The argument should reinforce the observation that a sustained economic expansion raises productivity. In fact, a reduction in the tax on physical capital alone reduces the relative advantage of R&D and may equally well lead to a reduction of such efforts.

It may be a mistake, however, to focus so heavily on tax incentives for private R&D. While total R&D expenditures have fallen as a share of GNP since the 1960s, the decline was due solely to cutbacks in federal government outlays for defense and space (see Table 5).

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31. These issues are elaborated on and citations provided in Anthony B. Atkinson and Joseph E. Stiglitz, *Lectures in Public Finance*. New York: McGraw Hill, 1980, pp. 97-127.

32. J. Smookler, *Invention and Economic Growth*, Cambridge: Harvard University Press, 1979.

Although that research did benefit the civilian economy, the benefits were less than if the funds had been spent directly on civilian R&D. Both total civilian and private R&D have steadily risen as a share of GNP over the last two decades. Government still accounts for half of all R&D funding and the defense and space component has declined from about 80 to 60 percent of its spending. If the divergence between social and private returns is the primary justification for a government role, the case is strongest for an expansion of funding for basic research where there is little direct value to the supporting firm. Private industry directs only 15-20 percent of its spending to basic research while it represents 40-50 percent of the federal outlays and two-thirds of the spending by universities and other nonprofit institutions.

TABLE 5  
SHARES OF GNP DEVOTED TO RESEARCH AND DEVELOPMENT, 1961-81  
(percent)

Period	R&D expenditures by source		
	Total	Civilian*	Private
1961-70	2.8	1.4	1.0
1971-75	2.4	1.5	1.1
1976-80	2.3	1.6	1.1
1981	2.4	1.7	1.2

Period	Type of research†		
	Basic research	Applied research	Development
1961-70	0.4	0.6	1.9
1971-75	0.3	0.5	1.5
1976-80	0.3	0.5	1.5
1981	0.3	0.5	1.5

Source: National Science Board, *Science Indicators*, 1980.

\* Includes private and government civilian expenditures.

† Applies to total R&D.

## Conclusion

For future growth it is important to enhance the rate of capital formation, but the definition of capital should be a broad one that encompasses investments in human capital and research as well as in physical capital. The major barrier to increased physical capital seems to be the lack of demand for new investment rather than a lack of available resources in the form of saving. The poor environment for investment is in turn a reflection of the chaotic state of current fiscal and monetary policies — high financing costs and an appreciation of the exchange rate that has sharply reduced the competitiveness of U.S. products in world markets. A shortage of saving at levels of resource utilization acceptable to the monetary authorities is an element in the high financing costs, but the shortage is the result of a sharp rise in government borrowing rather than a decline in private saving. This issue is best addressed by stabilization policy rather than an attempt to achieve an offsetting rise in private saving.

Second, tax incentives for private saving should not be the focus of the current policy discussion. For the short term, the existing level of idle resources can finance a substantial increase in investment. For the longer term, there is room to increase national saving by reducing the government deficit and, even beyond that, by increasing the financing of public pension programs.

Third, the discussion of capital income taxation has focused heavily on the average or average marginal tax rate, with too little concern for the distorting influences of the variation in tax rates for different types of investment. The wide variations in effective tax rates on different types of capital potentially result in a substantial waste and misallocation of existing investment. These allocative issues could be addressed within either a consumption-wage tax or a comprehensive income tax. The choice between the two is a very complex issue that involves equity and other concerns. It is not clear that advocates of either proposal actually address the basic issue of what to do about tax preferences; yet it is the tax preferences, rather than conceptual differences over the appropriate tax base, which is responsible for much of the variation in effective tax rates.

Fourth, the evidence on rates of return supports the advocates of an increased national effort on research and development. Private R&D spending, however, has been steadily increasing, and the 1981 tax law changes introduced several new incentives. The reduction in

overall R&D investment is the result of cutbacks in federal financing. Tax incentives to private firms are unlikely to be effective in encouraging basic research where the discrepancy between social and private **returns** is expected to be most significant. Thus, any increased public effort should probably take the form of direct expenditures rather than tax incentives.



## Commentary

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*Edwin Mansfield*

The organizers of this symposium asked me to focus on economic policies toward technology, the purpose being to supplement Barry Bosworth's interesting and comprehensive paper, which was meant to deal in considerable part with other matters. To begin with, I should say that Bosworth's necessarily brief treatment of **R&D** includes a great many of the major points that should be made. Specifically, I certainly agree with him that there may well be an **underinvestment** in civilian technology, particularly at the more basic end of the R&D spectrum. And I agree that there has been an **overemphasis** on **R&D** tax incentives in recent years.

For decades, economists have pointed out that a market economy is likely to underinvest in civilian technology because firms often find it difficult to appropriate the benefits that society receives from new technology. In particular, the more competitive the market and the more basic the R&D project, the less appropriable the benefits are likely to be. However, as has frequently been indicated, this is only a partial guide for public policy. Oligopolistic emphasis on product improvement as a form of rivalry (rather than direct price competition), government intervention that promotes **R&D** and technological change in industries like aircraft, and the incentives for firms in some industries to invest heavily in somewhat duplicative **R&D** (and inventing around patents) all are factors that may offset, partially or completely, whatever latent underinvestment in **R&D** is present in particular parts of the economy.

Since economists cannot rely solely on a priori theorizing to tell them whether there is an underinvestment in **R&D** in the private sector (and if so, where it is most severe), attention has been focused on empirical studies of the social and private returns from **R&D** of vari-

ous types. Of course, there are many problems in measuring the social benefits from new technology. But at this point perhaps a dozen major studies have been carried out, based on very detailed data regarding scores of projects and firms. (For a summary, see Mansfield et al [1982] and Mansfield et al [1977].) Practically all of these studies indicate that the average and marginal social rates of return from industrial **R&D** tend to be very high, often 30 percent or more. Without question, these studies are frail reeds on which to build policy conclusions. But recognizing this fact, it nonetheless is remarkable that so many independent studies based on so many types of data result in so consistent a set of conclusions.

Responding to evidence of this sort, as well as to other considerations, the federal government has adopted measures to encourage industrial **R&D** expenditures. In 1981, the Congress included in the Economic Recovery Tax Act a 25 percent tax credit for **R&D** expenditures in excess of the average **R&D** expenditures in a base period (generally the previous three taxable years). Expenditures qualifying for the new incremental **R&D** tax credit are in-house expenditures for **R&D** wages, supplies, and the use of equipment, 65 percent of the amount paid for contract research, and 65 percent of corporate grants to universities and certain scientific research organizations for basic research. The credit applies to expenditures made after June 30, 1981, and before 1986. Several months ago, Treasury officials expressed support before Congress for a three-year extension.'

The central question concerning the **R&D** tax credit is: How much effect does it have on firms' **R&D** expenditures? For the past 16 months, I have been engaged in a project financed by the National Science Foundation to help answer this question. At this point, very detailed and rich data have been obtained from a carefully selected sample of more than 200 firms in the United States, Canada (which in 1962 was the first major nation to adopt an **R&D** tax credit), and Sweden (which has had an **R&D** tax credit since 1973). Also, some econometric analyses of more aggressive data in each of these countries have been carried out. Although the results obtained to date are

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1. Also, the Treasury recommended that the **R&D** activities that qualify for the credit be defined more precisely, that the base level of expenditures used to compute the amount of the credit be indexed so that credits are not awarded to firms merely for keeping up with inflation, and that the credits be altered to benefit start-up companies, which frequently do not have any income tax liability against which to apply the credit. See the statement of John E. Chapoton, assistant secretary of the Treasury, before the Subcommittee on Taxation and Debt Management of the Senate Committee on Finance, May 27, 1983.

highly preliminary and tentative, they seem to be the first and most extensive findings available on this score.

Put very briefly, these results suggest that the **R&D** tax credit has had only a modest effect on American firms' **R&D** spending. Specifically, the results suggest that, without the credit, company-financed **R&D** would have been about 0.3 percent lower in 1981 and about 1 percent lower in 1982 than in fact was the case. The extra **R&D** stimulated by the tax credit seems to be considerably less than the revenue loss to the Treasury, which has been estimated by the Treasury to have been about \$0.6 billion in 1981, and which is expected soon to be about \$1 billion per year. These results are not very different from those I obtained for Canada and Sweden, where such credits have been in existence for many years. Also, if my analysis of experience in these other countries is a reasonable guide, the tax credit will result in substantial increases in the *reported* **R&D** figures, due to the reclassification of activities as **R&D**. The above percentages, based on data obtained from the firms themselves, pertain to actual changes in **R&D**, not spurious changes in the reported figures.

Tax credits are not the only way that the government can influence civilian technology. Among other things, the government can, of course, increase its contracts and grants for **R&D**. One important and longstanding question about this way of stimulating civilian technology is: To what extent will government support merely substitute for private support? A number of recent studies, most of them in the process of being published, indicate that on balance, **government-supported R&D** is mildly complementary to company-financed **R&D**. For example, Lorne Switzer and I found that, for each dollar of increase in federal support for energy **R&D**, firms increased their own support of energy **R&D** by about 6 cents per year for two years after the increase in federal funds. (See Mansfield and Switzer [forthcoming].)

Based on experience in other countries (and the United States), there are a number of pitfalls in direct government expenditures on civilian technology. First, there often is a temptation to focus such a program on economically beleaguered industries. The fact that an industry is in trouble, or that it is declining, or that it has difficulty competing with foreign firms is, by itself, no justification for more **R&D**. Additional **R&D** may not have much payoff there or, even if it does, the additional resources may have a bigger payoff somewhere else in the economy. Second, government agencies sometimes

become involved in the latter stages of development work. In general, this is an area where firms are far more adept than government agencies. In my opinion, a government program of this sort should be concerned with the reduction of key scientific and technological uncertainties to the point where firms can use the resulting information to decide when and if they should devote their own funds to commercial development of a new technology. Third, government programs of this sort often fail to effect a proper coupling between technology and the market. Information transfer and communication between the generators of new technology and the potential users of new technology are essential if the technology is to be of the right sort and if it is to be successfully applied. There are great problems in having applied R&D, particularly of a relatively short-term character, conducted by organizations that are not in close touch with the production and marketing of the relevant products.

In general, the evidence suggests that government expenditures tend to be most effective when they are focused on long-term and relatively basic R&D. Moreover, the available evidence suggests that work of this sort can have a disproportionately large impact on productivity. Holding constant the amount spent on R&D, an industry's rate of productivity increase between 1948 and 1966 seemed to be directly related to the extent to which its R&D was long-term. Also, there is some indication that a firm's rate of innovation is directly related to the percentage of its R&D devoted to basic research when its total R&D expenditures are held constant. (See Mansfield [1980, 1981].) Fortunately, there are signs that industry is reversing the trend away from long-term R&D and basic research that characterized the late 1960s and much of the 1970s. Nonetheless, industry's support of R&D of this sort is small compared to the government's, and it is very important to the growth and international competitiveness of the American economy that such R&D be supported adequately.

Finally, returning to Bosworth's paper, I would like to second a number of his other conclusions concerning both capital formation and technology. Without question, the variation in tax rates on different sorts of capital may result in substantial waste. Also, as he points out repeatedly, better stabilization policies are extremely important in promoting the future growth of the economy. The creation and maintenance of a favorable climate for domestic investment and innovative activity — one that entails neither severe inflation nor

severe recession — would do a great deal in this regard. But my reason for being here is not to address these questions, which others have studied far more intensively than I have. What I have to say can be summarized very simply:

(1) The available evidence, limited though it certainly is, points toward some underinvestment in civilian technology, particularly at the more basic and long-term ends of the **R&D** spectrum.

(2) Based on my preliminary findings, the **R&D** tax credit seems to be having only a modest effect on firms' R&D expenditures. Moreover, this seems to be true as well in Canada and Sweden, both of which have had such credits for many years.

(3) If Congress or the executive branch wants to encourage and increase R&D of this sort, more attention should be devoted to measures other than the tax credit, at least in its present form.

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# International Trade Policies in a World of Industrial Change

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*J. David Richardson*

## **Introduction**

U.S. trade policy today is pressed and pulled by many forces. Some are foreign; most are domestic. Some are purely economic, others are social and political. Some forces press naturally on trade policy, many do so almost in desperation, because of resistance to change in policies more congruent to the force.

U.S. industrial change underlies many of these pressures. And trade policy is not always the most sensible or effective instrument for influencing industrial change. But it does have such a role in U.S. history, and in modern economic development. And to the extent that global industrial change is propelled by trade policy abroad, U.S. response to its domestic spillover might naturally include active U.S. trade policy.

In assessing the place of active trade policy in U.S. industrial change, institutions are important. The growing role of imperfectly competitive multinational corporations provides new arguments for more active U.S. trade policy, as does an increased social consensus that governments should insure what markets do not. Arguments against a more active U.S. trade policy, however, stem from its manageability in a democratic system of checks and balances, from its possible perception as a form of policy aggression, and from the likelihood that there are feasible alternatives to trade policy with smaller

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implementation costs, administrative costs, incentive costs, and resource-diversion costs. Considered promising among such alternatives are government adjustment programs, foreign-exchange-market intervention, and macroeconomic renovation.

The first two sections of this paper describe how international economic and policy environments encourage industrial change and pressure U.S. trade policy. Section 3 describes the pros and cons of more active U.S. trade policy where imperfectly competitive industrial structure and missing insurance markets are taken as facts of life. The last section assesses alternatives to more active U.S. trade policy, including, in addition to those mentioned above, strict reliance on market forces.

### **The changing economic environment**

International trade has become an increasingly important source of industrial change in the United States, especially since the early 1970s. Overall trade has grown faster than overall domestic activity. And trade conducted by imperfectly competitive multinational corporations has grown even faster than overall trade. So has trade in agricultural goods and, of course, oil. For the U.S., net exports of capital equipment have mushroomed, and net exports of technology-intensive products have not declined. Trade in financial assets and its concomitant flow of debt service have grown fastest of all. As a result, exchange rates and interest rates have become important short-run influences on U.S. industrial prosperity and structure.

The U.S. industrial incidence of these economic trends is discussed in this section.<sup>1</sup> Industrial change seems to be the most important force shaping prospective U.S. trade policy, as well as being the subject of this conference.

International trade in goods has grown dramatically over the past 15 years for most industrial countries. In the U.S. since 1971, both the export share of gross national product and the import share of gross national expenditure have doubled from 4-6 percent to 9-12 percent, depending on measure. Roughly half of this increased share is due to a rise in the price of tradeables relative to other goods, but

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1. Nothing is said here about the U.S. regional and occupational incidence of international economic trends. These issues, while almost as important as industrial incidence in shaping trade policy, require additional research. Bluestone (1983) makes a reasonable start at addressing them.

the other half is due to volume.<sup>2</sup> In other industrial countries, export and import shares of economic activity have also risen over this period, almost doubling for some, and increasing roughly one and a half times for most (Lipsey [1982b], pp. 2-5, and United States [1982], pp. 3-8, 161). Even as the global economy slumped in the past several years, the share of international trade in overall activity has continued to increase. Only trade in mineral products (mostly petroleum) has slumped along with the global economy; world trade in manufactures continued to grow until 1982, when it declined only 1 percent in volume; and world agricultural trade has grown continuously and rapidly (GATT [1983], pp. 1-2).

Developing countries have contributed disproportionately to growth in global trade. In the past decade, industrial countries, especially the United States and Japan, have increased their trade dependence on developing countries as import suppliers and export customers. This reversed a trend of the previous decade. Developing countries increased their share of imports bought by industrial countries to 31 percent in 1981 from 22 percent in 1973; their share had been 25 percent in 1963. Developing countries increased their share of exports purchased from industrial countries to 28 percent in 1981 from 19 percent in 1973; their share had been 24 percent in 1963 (GATT [1982], Table A3, excluding eastern trading area). A recent study suggests that if developing-country growth rates were to decline 4 percent, industrialized-country (OECD) growth rates would decline 1 percent.<sup>3</sup>

Multinational corporations have also contributed disproportionately to growth in global trade. Affiliates of U.S. multinationals have been increasing their share of world exports. U.S. majority-owned manufacturing affiliates increased their share of total host-country exports from roughly 8 percent in 1966 to roughly 10 percent in 1977 (Lipsey and Kravis [1982], pp. 25-26). Their share of exports in total affiliate sales (i.e., exports plus host-country sales) rose from 16 percent in 1957, to 19 percent in 1966, to 31 percent in 1977. The rise was especially pronounced for affiliates in east and southeast Asian countries. Exports of U.S. affiliates to third-country markets grew

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2. Export shares of tangible good production and import shares of tangible good consumption have grown even more dramatically.

3. Bradford [1983], Table XI, citing a study by Morgan Guaranty Trust Company, summarized in their *World Financial Markets*, June 1983, Table 4, p. 7.

most rapidly; exports of U.S. affiliates back to the U.S. grew more sluggishly. The share of exports to the U.S. in total U.S. affiliate exports declined from 38 percent in 1957, to 30 percent in 1966, to 29 percent in 1977 (Lipsey and Kravis [1982], pp. 3-5).

Certain sectors have contributed disproportionately to the U.S. stake in global trade. Others have suffered the spillover consequences. This **sectoral** imbalance is one of the many forces that underlie recent industrial change in the U.S. The remainder of this section addresses these matters briefly.

Growth in agricultural exports has been highly significant for the United States (and also significant for the European Community). U.S. agricultural exports increased sixfold in the value from \$7 billion in 1970 to \$41.3 billion in 1980 (United States [1982], p. 17), then declined to \$39.1 billion in 1982, while world agricultural exports continued to grow (*Wall Street Journal*, May 19, 1983, p. 1). U.S. agricultural imports grew more modestly, from \$6.2 billion in 1970 to \$17.1 billion in 1982 (U.S. Department of Commerce [1972], Table B1, [1983], Table 3). Net agricultural exports thus increased from roughly \$1 billion in 1970 to \$22 billion in 1982.

Growth in repatriated investment income from assets owned abroad has also been highly significant for the U.S. Such investment income is properly understood as payment for a kind of export, an export of the services of U.S. capital that is employed abroad. It increased almost 750 percent, from \$11.7 billion in 1970 to \$85.9 billion in 1982 (and also in 1981). Growth in U.S. investment payments to foreigners, i.e., import of the services of foreign capital, increased even more rapidly from \$5.5 billion in 1970 to \$57.2 billion in 1982 (United States [1983a], Table B-101, [1983b], p. 36). Net exports of capital services for the U.S. have thus increased from \$6.2 billion in 1972 to \$28.7 billion in 1982, a change of almost exactly the same value as the change in net agricultural exports.

Some commentators have argued that the U.S. has grown increasingly attractive as a safe haven for footloose global financial capital. They see the U.S. as an increasingly competitive supplier of investment assets — secure, high-yielding claims on future purchasing power. Data on U.S. trade in such claims up through 1982 do not, however, seem to bear out these conjectures. Average annual capital inflows (exports of claims on the future) have doubled or tripled since 1974, depending on measure. Yet average annual capital outflows (imports of claims on the future) grew comparably. Net export of

such claims, the capital-account balance, shows no systematic trend from 1974 through 1982.<sup>4</sup>

Gross international trade in financial assets has accelerated strikingly, however, with implications to be discussed below. Data on annual capital movements understate the acceleration because of recurrent ebbs and **reflows** during a year. The acceleration can be more readily glimpsed from surveys conducted by the Federal Reserve Bank of New York. In April 1983, the gross value of *daily* transactions in the U.S. foreign exchange markets was estimated to be \$33.5 billion; three years earlier, in March 1980, it had been estimated to be \$23.5 billion; and in April 1977, it had been estimated to be only \$5 billion (*Wall Street Journal*, September 8, 1983, p. 3, Revey [1981], p. 32, and Federal Reserve Bank of Chicago [1980], p. 3). Since U.S. trade in goods and services at most doubled during the same period, most of the remainder of the near five-fold increase in transactions is likely due to U.S. international capital movements.<sup>5</sup>

Growth in net agricultural exports, investment income, and possibly capital inflows has arguably tended to "crowd out" exports of manufactures and other products, and "crowd in" imports of all kinds (United States [1983a], p. 54). The most immediately understood explanation is the tendency for exogenous<sup>6</sup> growth in one type of net exports to raise the dollar's foreign exchange value, thereby reducing the international competitiveness of all other types of net exports. The ultimate explanation, however, for these crowding tendencies is the relative price adjustment that in due time brings about the same anti-competitive effect. From this perspective, growth in U.S. agricultural trade, maturation of the U.S. as an international creditor, and possibly the attractiveness of the U.S. for financial investments are potential sources of U.S. "deindustrialization."

4. The large (\$41 billion) statistical discrepancy in 1982 suggests the possibility, however, of substantial unrecorded capital inflows.

5. Some may also be due to increased U.S. bank activity in the global foreign exchange markets, of course (Revey [1981]).

6. There is an important empirical question being glossed over in this account that is, to my knowledge, unanswered. The question is loosely, which trade trends were the "crowders" and which were the "crowdees"? More tightly, the question concerns exogeneity. Did agricultural, debt-servicing, and oil-price forces from outside the usual frame of economic reference crowd out U.S. industrial exports and crowd in U.S. industrial imports? Or did deindustrializing forces from outside the usual frame of economic reference crowd in fuels imports and investment income and crowd out agricultural goods into world markets? As the text reveals, my own tendency is to answer the first question, "yes, strongly," and the second, "maybe, but not dominantly." Less casual empirical work could test these causal linkages and assign weights to alternative exogenous forces.

During the mid-1970s these deindustrializing tendencies were checked by equally dramatic growth in net U.S. imports of fuels and materials, chiefly petroleum. Imports of petroleum and related products grew from \$2.9 billion in 1970 to \$8.4 million in 1973, leaped to \$26.6 billion in 1974, and grew erratically to \$79.4 in 1980 (United States [1983a], Table B-102). But U.S. oil import growth turned dramatically negative in 1981, in reflection of still higher price, recession, conservation, and domestic production. Gone was the chief counter-balance to the potential deindustrializing trends described above.

Buoyant growth in agricultural competitiveness, investment income, and possibly inward financial capital movement all contribute to the spectre of sweeping deindustrialization. They are the opposite face to declining U.S. competitiveness in manufactures, where Japan seems committed to excel in high-technology goods, and gangs of developing countries seem committed to excel in low-technology goods. Nevertheless, evidence for across-the-board U.S. deindustrialization through 1980 is not very convincing. And evidence since 1980 is contestable.

From 1973 to 1980, the U.S. trade balance in manufactured products was generally positive and often growing, as shown in Table 1. Furthermore, from 1973 to 1980 labor productivity and the capital-labor ratio grew faster in U.S. manufacturing than in any other broad sector, and U.S. manufacturing employment grew faster over the same period than manufacturing employment in any other industrial country (Lawrence [1982c], pp. 13, 16); see also Branson [1983b], pp. 10-19).

Since 1980, aggregate data on U.S. trade and manufacturing might be read to imply sweeping industrial exodus from the United States to other countries. But a persuasive alternative explanation is that U.S. industry as a whole (and not just housing and consumer durables) has borne the greatest burden from monetary and fiscal innovations during this period. If so, then (to anticipate the section on policy options) moderating the monetary **and/or** fiscal stance of the U.S. government may be the most direct and effective reindustrialization policy available. Industrial and trade policies aimed at reindustrialization may by comparison be second best, attended by an unfortunate number of unwanted precedents and byproducts.<sup>7</sup>

7. William Diebold has pointed out the parallel to the frequent demonstrations of U.S. inability to compete internationally in the late 1960s, most of which were proved false by the 1971-73 adjustments of exchange rates.

The case for moderating fiscal policy is strong, and summarized well in Feldstein (1983) and Branson (1983c). Growing full-capacity budget deficits drove up U.S. real interest rates in 1981-1982. Increasingly pessimistic forecasts of future budget deficits drove up anticipated levels of future real interest rates. During this period, international capital movements toward the U.S. and parallel policy abroad closed the real-interest differential. The capital inflows forced the dollar to a higher level, and reduced the international competitiveness of U.S. goods. As the real-interest differential was closed, the appreciation ended. But the dollar remained at a higher and less competitive level. And it will stay until the reallocation of financial capital stocks toward the U.S. is reversed. Reversal will require some exogenous innovation to lower U.S. real interest rates (or raise foreign real interest rates). One such innovation would be legislation that would establish a credible reduction of future budget deficits. Anticipated future real interest rates would then fall. Current real interest rates would tend to fall in response, through induced changes in the timing of borrowing and lending. And the current value of the dollar would fall as expected and current real interest rates fell.

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TABLE 1  
Overall U.S. Trade Balance in Manufactured Products  
(billions of dollars)

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1973	- 0.3
1974	8.3
1975	19.9
1976	12.5
1977	3.6
1978	- 5.8
1979	4.4
1980	18.8

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Source: United States (1982), p. 280.

The case for moderating monetary policy is weaker. The most important recent monetary innovation was arguably the shift toward contraction in late 1979 and 1980. The burden on U.S. industry was very pronounced shortly thereafter, as the dollar quickly overshot (Branson [1977], Dornbusch [1976]), appreciating more than its ultimate equilibrium amount, and making U.S. goods immediately less competitive in international markets. Then the burden may have

increased in intensity, cumulating for as long as real U.S. interest rates lay above global levels (Richardson [1983], p. 23 *passim*). Yet by 1983, the economy may finally be witnessing an adjustment of expectations to permanently lower rates of monetary growth and inflation. If so, then the real effects of the monetary shift of 1979-1980 will have almost died away — including its effects on real interest rates and the international competitive position of U.S. goods (Richardson [1983], pp. 13-17). To alter U.S. monetary policy in any surprising way in 1983 might only confuse and retard the adjustment of domestic and international economies to lower U.S. inflation.

In short, industrial flight from the U.S. to other countries may only *appear* to be an inexorable external force in the economic environment of the 1980s. Macroeconomic policy rather than inevitable industrial relocation may be the principal culprit.<sup>8</sup> Macroeconomic policy renovation rather than trade policy may be the principal solution.

This policy-centered account of U.S. deindustrialization in the 1980s is consistent with the trend and timing of the decline in U.S. international competitiveness in Table 2. The decline in competitiveness is most pronounced in 1981, as both monetary and fiscal innovations caused real interest rates to rise and the dollar to appreciate. No significant additional monetary innovations occur in 1982, but further fiscal innovations do — in the form of increasingly bleak budgets and full-capacity budget forecasts. The further decline in U.S. competitiveness is large, but less pronounced than in 1981. As the bleakness of the budget outlook stabilizes (that is, becomes no bleaker) toward the end of 1982 the dollar also begins to stabilize, albeit at an uncomfortably high exchange value.

Aggregate trends notwithstanding, among U.S. manufacturing industries there is evidence of secularly declining international competitiveness for some, and secularly improving international competitiveness for others. The United States could be argued to be *deindustrializing* in the first group and prospering in the second. A familiar measure of these trends is a sector's trade balance. Table 3 includes trade balances for both groups, for two years in which aggregate U.S.

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8. A paraphrase of Cassius may apply: "The fault, dear Brutus, lies not in our stars, but in our self-selected macroeconomic policy."

TABLE 2  
Percentage Change In International Competitiveness  
of U.S. Manufacturers Over the Previous Year\*

1975	-3.5
1976	-1.4
1977	0.2
1978	3.6
1979	-0.1
1980	-1.8
1981	-9.8
1982	-7.4
1983†	-2.6

\* Percentage changes in the reciprocal of the "real effective exchange rate" of the dollar, which is an index of trade weighted exchange rates adjusted for inflation differentials in wholesale prices of nonfood manufactures for a group of major developed countries.

† April 1983 over April 1982.

Source: United States (1982), p. 174, Morgan Guaranty Trust Company, *World Financial Markets*, May 1983, p. 10.

international competitiveness was roughly the same.<sup>9</sup>

In general, U.S. imports are becoming more complementary to domestic production. The trend over three decades is toward increasingly positive U.S. trade balances in capital goods, chemicals, and agricultural products, and increasingly negative U.S. trade balances in fuels, automotive products, and consumer goods. This appears to reflect restoration of pre-World War II trends (Branson [1980, 1981, and 1983b], Lawrence [1982b and c], Deardorff and Stem [1983]).

Increasing complementarity of this sort probably makes domestic adjustment problems more, severe (Branson [1980], Krugman [1982a]). Skills, technology, and equipment differ more radically between import-competing industries and the rest of the U.S. economy than in the past, when U.S. trade was more heavily intra-industry trade. With increasing complementarity, ebbs and flows of U.S. international competitiveness may cause structural/transitional unemployment and excess capacity to be correspondingly larger and longer than in the past.

The amplitude of U.S. industrial and agricultural fluctuations may become larger due to growing dependence on global commodity markets and increased export specialization on capital goods. Business

9. With March 1973 serving as a base of 100, the average real multilateral trade-weighted value of the dollar was estimated in United States (1983a), Table B-100, to be 98.8 for 1973 and 100.8 for 1981.

TABLE 3  
Selected U.S. Manufacturing Trade Balances  
(billions of dollars)

	<u>1973</u>	<u>1981</u>
Textiles	-0.5	0.5
Clothing	-2.0	-6.8
Iron and steel	-2.0	-9.3
Chemicals	3.5	13.6
Machinery and equipment (except vehicles and appliances)	11.9	43.5
Road-motor vehicles and household appliances	-6.8	-19.9

Source: Deardorff and Stem (1973), pp. 7-8, adapted from GATT (1982), Table A19. Branson (1980), pp. 212-231, summarizes these same trends in even greater industry detail. See also United States (1982), pp. 167-170.

swings in agricultural prosperity are increasingly influenced by exchange rates and by foreign as well as domestic weather patterns. Business swings in capital-goods sectors are subject to accelerator influences that magnify ripples in global activity into waves in U.S. manufacturing production. This also may make domestic adjustment problems more severe and enduring, as congestion and slower clearing of labor and other factor markets is the result of larger cyclical swings.

Some commentators have alleged that U.S. imports are also becoming more "intermediate" in nature due to growth in global or "out-" sourcing and co-production arrangements (Bluestone [1983], pp. 18-19). The evidence is largely anecdotal. Data on imports by end use are not helpful in assessing the allegation. The share of industrial supplies and materials in total U.S. imports (each measured exclusive of petroleum products)<sup>10</sup> fell from 34.6 percent in 1970 to 31.9 percent in 1973, leaped to 36.7 percent in 1974, and has declined gradually since then to 29.0 percent in 1982. This does not suggest growing "intermediate-ness" of trade. On the other hand,

10. "N.e.c." imports are also removed from the total. Source: U.S. Department of Commerce, *Survey of Current Business*, various March issues.

the end-use classification assigns many parts and sub-assemblies to categories such as "capital goods" and "automotive" that are not, therefore, strictly measuring final-goods imports.

If U.S. trade is becoming more concentrated on intermediate and capital goods, then trade policy may affect industrial factor markets more importantly than it affects final demand. Its consequences for industrial structure may be more a matter of how it influences input costs and availability of capital and materials than how it influences product demand, and dependent more on elasticities of substitution among factors than among products.

Net U.S. exports do not seem to be becoming less technology-intensive, despite success by Germany and Japan at narrowing the "technology gap" of the 1950s and 1960s. Technology gaps have closed for some products, but not overall, and have opened wider in some instances. Table 4 illustrates how data on trade that is intensive in research and development (R&D) show no across-the-board loss of international competitiveness for U.S. producers.

TABLE 4  
U.S. Trade Balances in . . .  
(billions of dollars)

Years	R&D-Intensive Manufactured Products	Non-R&D-Intensive Manufactured Products
1960-1964*	6.8	- 0.5
1965-1969*	9.0	- 4.5
1970-1974*	14.7	- 13.2
1975	29.3	- 9.5
1976	29.0	- 16.5
1977	27.1	- 23.5
1978	29.6	- 35.4
1979	39.3	- 34.8
1980	52.4	- 33.5

\* Annual average.

Source: United States (1982), p. 156, from the National Science Foundation. See also Balassa (1983).

It is perhaps not surprising that persistent (albeit waning) U.S. technological leadership in world markets escapes popular attention (Branson [1983a], p. 1). Sectors with rapidly expanding technology-

based exports tend to be small and to lack well-established public identity and geographical location. They are not nearly as identifiable statistically or as easily recognized by the public as are sectors such as "steel" or "autos." Such sectors on the edge of technology-based import competition tend to be large, long-established, and well-defined in geographic center and political backing.

The United States continues to dominate other nations in R&D expenditure. As late as 1979, the U.S. was spending nearly as much on R&D as all other OECD countries combined (Piekarz, Thomas, and Jennings [1982], pp. 14-15). While losing ground to Japan and Germany (but not to others) in the late 1960s and early 1970s, the U.S. has stabilized its relative position since 1975.<sup>11</sup> Most of the recent acceleration of U.S. R&D has been business spending, not government. And proportionally less of it has been agricultural than for other nations (Piekarz, Thomas, and Jennings [1982], p. 25).

### **The changing policy environment**

The environment for trade policy has also changed significantly in recent years. Some changes are most pronounced in the U.S., such as the growing power of its trade policy for domestic purposes, and its waning power for foreign-policy purposes. Other changes are global, such as growing policy disorder — the declining adherence of governments everywhere to establish policy conventions and to long-standing commitments. Most fundamentally, the whole conception of trade policy as an interference in markets is being re-examined. Recent institutional trends suggest alternative conceptions of trade policy as a participation in markets or as a replacement for them.

These aspects of the trade policy environment are discussed below under the headings policy power, policy order, and policy "place."

### ***Policy power***

Trade policy has always served two masters, and is in fact a way of discriminating between them. For the United States in recent years, one master has grown in relative influence. Domestic economic prosperity has become increasingly sensitive to trade policy, which has been turned more and more toward meeting its demands. **Intern-**

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11. However, a broader but more dated study of U.S. technological leadership (U.S. Library of Congress [1980], p. 34, cited by Lawrence [1982b], pp. 37-38) includes measures additional to R&D for which Germany and Japan continued to close the technology gap into the late 1970s.

tional and national security goals of U.S. trade policy have correspondingly declined in relative importance (Baldwin [1982], p. 1 passim; see also Blackhurst [1981]).

This is a predictable result of growing U.S. dependence on international markets, discussed above, and of the decline in U.S. hegemony, discussed below. Growing U.S. trade dependence increases not only U.S. vulnerability to international competition, but also the effectiveness of its trade policy for domestic purposes. Elasticities of sectoral output, employment, and profit with respect to trade policy rise as import and export shares rise. When trade shares were small, even export and import embargoes had only modest impacts on domestic industries. As trade shares have grown, so has the attractiveness of trade policy to attain domestic goals, and to defend against "unfair" trade practices<sup>12</sup> of foreign firms that are no longer just token competitors for U.S. gains."

Furthermore, as the rest of the world has grown relative to the U.S. since World War II, its trade dependence on the U.S. has declined. Elasticities of global output, employment, and profit with respect to U.S. trade policy have become smaller. U.S. ability to influence world economic prosperity has therefore declined, and so has the importance of this goal in shaping U.S. trade policy. The important, but non-voting, foreign constituents of U.S. trade policy have taken careful note of its reduced influence on them at the same time as voting U.S. constituents awakened to its growing influence on them. Reflective of these trends is the long decline in the influence of the internationally minded State Department over U.S. trade policy and the more recent ascension of the Agriculture and Commerce Departments.

Trade policy, of course, discriminates by definition in favor of either a domestic or foreign constituency and against the other. From this point of view, one of the most troublesome aspects of recent trade policy is the increased weight given to its use as an aggressive or defensive tool in an implicit economic war between countries. This

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12. Baldwin (1983), pp. 18-19, documents the increasing U.S. prosecution of unfair trade cases. An aspect of these that underscores the increasingly domestic intent of U.S. trade policy is the role that plaintiff firms themselves are given in government negotiations over unfair trade practices, as a result of 1979 amendments to the Trade Act of 1974. See, for example, the account of the October 1982 U.S.-European steel agreement in the *Wall Street Journal*, November 23, 1982, p. 26.

13. Carroll (1982) is a helpful summary of the decline in the size of U.S. firms to foreign firms over the period.

tendency is exacerbated by social trends such as declining personal responsibility and increasing resort to "blaming." When constituents fail to take appropriate responsibility for their own economic prosperity and blame external forces instead, foreigners are tempting scapegoats. Democratically elected representatives must in some measure reflect these attitudes or else be guilty of misrepresenting their constituents. The result is an increase in the use of trade policy to punish "blameworthy" foreigners and to protect "innocent domestic victims" from foreign machinations, or even from the impersonal circumstances of global markets.

### *Policy order*

Order seems to be declining and aggression rising in the formation of national trade policy. A familiar American image may help to flesh out this observation. "Frontier justice" has seemed increasingly to order trade and policy. Under frontier justice, if a government can get away with it, it should do it. Strong governments survive prosperously; weak governments, tenuously. The economic problem with frontier justice is unpredictability.<sup>14</sup> More organized systems of justice regularize economic exchange, establishing boundaries for what qualify as voluntary transactions, rules governing the exploitation of market advantage, and sanctions to guarantee the enforcement of contracts. Frontier justice, by contrast, can destabilize economic exchange, becoming an irritant to the market rather than its lubricant.

Another way to describe frontier justice among governments is to call it policy aggression. Tendencies toward such are always present, of course. Yet some of the constraints that check policy aggression have become looser. U.S. hegemony<sup>15</sup> has waned since 1945, however one defines it. And undesirable though it was in some ways, it clearly checked the scope for policy aggression, much as the frontier sheriff or U.S. marshal checked the scope for frontier justice. U.S. influence was, roughly speaking, once sufficient to make other nations fall into line in trade policy, exchange-rate policy, and the international institutions that oversee them, but the U.S. seems currently less able and less willing to play that role. The awkward ques-

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14. Alan Deardorff has pointed out that another problem is resource waste from private attempts to provide protection, an inherently public good.

15. See Gilpin (1977). Keohane (1980), Kindleberger (1981), and Krasner (1976) for extended discussions of hegemony and international economics. See Blackhurst (1981) for implications that are similar to those described here.

tion this raises is: What happens on the frontier when the citizenry grows stronger and when the sheriff not only grows weaker, but begins to act just like everyone else? The problem facing both trade policy and exchange-rate policy is how to avoid frontier justice in inter-government relations — how to re-order policy interchange.

It may be unduly alarmist to claim that declining order is a fact. For example, the U.S. Trade Representative's Office (United States [1982], pp. 55-61) expresses considerable satisfaction with the orderly working of the seven codes on non-tariff barriers that were negotiated in the Tokyo Round, and with the code committees that meet periodically to oversee them. Yet the very same report contains conspiratorial comments such as, “. . . most ominously, there has been an increase in secret and voluntary restrictions over the past decade . . . unpublicized, secret safeguard understandings” (p. 35). Lawrence (1982a), pp. 36-40, also documents the decline in transparency of recent trade policy, consistent with the attempt by countries to advance their own welfare at the expense of others without being detected.

Increasingly aggressive trade policies are to be **feared** more for their potential to disorder resource allocation than to mis-order it. To put the problem even more starkly, the law of the jungle may increasingly dictate policy interchange among governments. Yet this is as haphazard a way of ordering policy transactions as it is of ordering market transactions. Even laissez-faire economists have in mind some particular legal structure of common-law conventions when they favor free markets and liberal trade policy. The threat is that longstanding legal structures and conventions governing government behavior will be abandoned. Uncertainty at best and chaos at worst could be the consequence for international trade and investment. The danger of the worst case can be appreciated by considering what happens to everyday commerce during civil disorder, when legal systems crumble and vigilantism waxes strong.

### *Policy "place"*

Policy may have an increasingly natural "place" in international trade because of changing institutional features. What we call trade policy may become less a distortion of markets and more a participation in them or a replacement for them. Part of this trend is due to governments' relation to multinational corporations, whose share of global transactions is rising. A second part is due to governments'

role as an insurer or guarantor on behalf of its constituents.

Governments have been gradually acquiring increased ownership stakes in corporations. Public corporations have grown, private corporations have been nationalized, and governments have acquired equity shares in both new and old ventures (Vernon [1983a, 1983b], pp. 31-34), Vernon and Aharoni [1981], and Kostecki [1982]). Trade policy is inevitably tugged in the direction of preserving employment (a kind of public labor hoarding), growth, and the capital value of publically owned equity, especially at the expense of employment, growth, and equity in the firms of foreign competitors. Trade policy may take on certain aspects of boardroom policy as trade itself includes more state trading. And state trading is inevitably more "politicized" than market trading. Certain quasi-mercantilist perspectives acquire respectability in this environment, as described in the next section.

Second, it seems clear that the citizenry of industrial countries looks more and more to government as the guarantor and insurer of economic prosperity and security. At the same time, it seems likely that increasing integration of international markets exposes domestic agents to larger and more frequent unanticipated shocks, despite diversification opportunities.<sup>16</sup> Since insurance markets may not provide adequately against such shocks, and since capital markets may not be sufficiently perfect to allow appropriate diversification, trade policy may emerge as a feasible and reasonably inexpensive second-best alternative, as also described in Section 4.

### **Pros and cons of new perspectives on a more active U.S. trade policy**

Even if the United States were to return on average to full capacity and acceptable exchange rates, industrial pressures for active U.S. trade policy might emanate from three sources. One, described above, is the ongoing rationalization of global industrial structure,

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16. The argument is expanded in Grossman and Richardson, pp. 20-23. It is that information is generally more *mobile* (cheaper to acquire and convey) within a nation than across national boundaries. Firms and other economic institutions will usually find it optimal to acquire less information about foreign markets and government policy than about domestic equivalents. (Presumably they proceed in such a way that an extra dollar spent on information-gathering would reap results of the same marginal value for information abroad as at home.) The result is that economic agents will generally be better able to anticipate and forecast domestic events than foreign events. The *variance* of unexpected business shocks should be larger the more dependent a sector is on exports or the more competitive it is with imports.

coupled with the still incomplete elimination of the post-World War II gap between American and foreign industrial technology, equipment, managerial expertise, and firm size (Branson [1980, 1981], Carroll [1982]). A second is the perception that aggressive government policy abroad aids foreign firms in their attempt to catch up with and surpass their American competitors. A third is the conviction that the international economy is growing more volatile and uncertain, partly because of floating exchange rates, partly because of policy disorder, and partly because of ambiguity about debt crises and oil prices. American industry often perceives both the economic environment and the policy environment to be conspiring against it.

As firms have grown multinationally over the years, and as the European Community, coproduction, joint ventures, and ambitious development plans have encouraged their global identity, national markets have taken on an increasingly oligopolistic structure, with similar firms in each. And as both policy and exchange rates become less predictable, world markets appear to take on an increasingly stochastic and less static structure. Traditional trade policy analysis, by contrast, has tended to retain the static competitive norm, producing conclusions that are sharp and familiar. Recent trade-policy analysis, however, has begun to incorporate imperfect competition among segregated national markets as a maintained distortion," and stochastic shocks as a fact of life. Its conclusions are only conditionally sharp, and not yet either complete or familiar. This is not surprising, since multiple distortions to the competitive norm casts analysis into the complexity of second-best economics. But imperfect competition, segmented markets, and incomplete insurance against stochastic change, unlike other potential distortions, are realistic and important.

This section summarizes some recent trade-policy analysis in imperfectly competitive, segmented, and stochastic worlds. It attempts to draw out its practical implications for the United States. The risks in doing so, as Paul Krugman once remarked, are similar in many ways to those associated with recombinant DNA.

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17. The reality being reflected is *not* increasing a global or even national concentration of production. On the contrary, global industrial concentration has probably been declining since World War II (Vernon [1977], pp. 73-82). The reality being reflected is, however, increasing shares of production by multinational firms, as outlined above.

*"Strategic" trade policy . . .*<sup>18</sup>

When the behavior of foreign individuals, firms, and even governments<sup>19</sup> is sufficiently competitive, then there are only weak defenses for trade policy intervention. In the absence of market distortions, market-determined trade wastes fewest resources; in the presence of market distortions, policies other than trade policy waste fewest resources. But when policy abroad, collusion abroad, or both lead foreign countries to act strategically as a group-conscious whole, then passive U.S. policy response is unlikely to be the optimal rejoinder. It is as unlikely as finding in a two-person game that one player's optimal strategy is independent of the other's (Branson and Richardson [1982], p. 21, United States [1983a], p. 61).

. . . *toward governments.* Consider strategic trade policy by foreign governments even in the presence of reasonably competitive markets. Then there would seem to be a problem with passive U.S. trade policy — policy that is invariant to time or circumstance, of which the best known (but least practiced) variety is free trade. The problem is that policy passivity is equivalent to allowing some other government to set trade policy for ours. And given the choice between us actively determining our own policy and someone else doing it, only foolish or incompetent governments would seem well advised to choose passive trade policy.

The point can be made in a more arresting way. Some economists defend passivity and forswear active trade policy because active policy almost always beggars our neighbors — we improve some domestic situation by making the same situation worse in our trading partners. But in this light, passive trade policy is equivalent to allowing foreign governments to beggar us with impunity. It is almost as if our policy were to allow their policy to decide for us. That is not on the face of it a better course of action. And it is clearly worse when a government allows others to exploit its constituents by slavish allegiance to some notion that markets can do it better.

These considerations notwithstanding, some commentary continues to favor passive trade policy. Baldwin (1979), p. 236, characterizes the view of economists who consider efficient resource allocation to be the key objective of economic activity as follows:

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18. A more detailed expansion of this subsection is in Branson, Grossman, and Richardson (1983). See Dixit (1983) for an even more complete survey, with ample caveats.

19. Governments compete with each other, for example, to attract foreign investment.

"The fact that a foreign government's subsidy policies place severe competitive pressure on certain U.S. industries . . . is not in principle different from the fact that the existence of lower wages abroad puts severe competitive pressure on particular **U.S.** industries. If foreign governments want to use their own taxpayers' money to provide us with goods at lower prices than we can provide ourselves, then we should welcome the addition to our living standards."

The implication of this view is that foreign governments should be free to choose their own optimal pattern of industrial subsidies and that our policy response should always be passive. That stance abjures the strategic insight that *our* policy may be able to improve for us *their* calculation of optimal policy (whereas our policy is not likely to be able to influence foreign wages). That is, we may be able to choose some active policy, or menu of active policies (contingent on foreign response), that would shift "optimal" foreign policy to an outcome more desirable to us than the outcome under policy passivity (Macdonald [1983], pp. 13-15).

Policy passivists sometimes recognize this but find the complexity and unpredictability of strategic policy to be overwhelming defects. These practical concerns are given more attention below. In principle, active dissuasionary policy may not be at all complex or unpredictable. It may even involve no resource cost, despite its active character. Domestic anti-dumping duties provide a potential example. If they were credibly anticipated by foreign suppliers and rescinded once dumping ceased, then no dumping would take place and no duty would be levied (Eichengreen [1983], pp. 9-10). Trade would appear to be free and undistorted by either policy or price discrimination. Yet the appearance would be the result of active, not free, trade policy. U.S. anti-dumping policy is meant to approach these features in its design since it is ostensibly transparent, non-discretionary, and in force for only as long as the dumping continues. In general, it seems likely that active dissuasionary trade policies would have to be predictable, non-discretionary, and temporary (contingent on foreign behavior).

. . . *toward firms*. If we now add imperfect competition among firms, matters become even more complex. The economics of active trade policy in imperfectly competitive markets is even less well developed than the economics of active government-to-government response. The chief reason for greater complexity is that the charac-

terization "imperfectly competitive" takes on many different meanings in many different contexts. Important elements of imperfect competition in early research on strategic trade policy include ongoing or transitory super-normal profits, static or dynamic scale economies, segregated product markets, and absence of markets providing adequate insurance or information about the universe of investment opportunities.

Brander and Spencer, for example, in a series of papers (1982a, 1982b, Spencer and Brander [1982]) generate a possibility for strategic trade policy that is aimed at capturing (or preserving) super-normal profits. One source of super-normal profits is obviously permanent market power. Another is temporary market power that accompanies technological leadership. Still another is the temporary super-normal profits that accrue to firms and individuals who adjust most rapidly to structural and industrial change."

Brander and Spencer start with an imperfectly competitive global industry, and take as a fact of life market segmentation that generates nation-by-nation pools of super-normal profits. Other things being the same, we would prefer that our producers had a larger share of each national pool than theirs. That preference seems sensible whether each pool is ongoing or transitory (say, because new entrants could compete it away). And it seems sensible whether we are consciously aggressive (out to maximize our share of the gains — or spoils — from oligopoly, much as we maximize our share of the gains from trade by setting an optimal tariff) or conservatively and honorably defensive (out to prevent our oligopolistic trading partners from maximizing their share of the gains from oligopoly at our expense). The point is very simple. If oligopolistic profit is inevitable, then trade patterns that give us larger access to it are economically superior to other trade patterns, given everything else.

Policy would seem at first blush to have no place here, and especially not trade policy. Our oligopolistic firms would seem to have exactly the same goals as outlined above and to be perfectly capable of taking care of themselves if they were allowed the market freedom

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20. This last kind of super-normal profits is no less relevant for being even more obviously an extra-equilibrium phenomenon. When the issue is equilibrium industrial structures, as for this paper, one might argue that economies are more often between equilibrium industrial structures than at them. Furthermore, quick capture of super-normal profits is analytically equivalent to quick escape from sub-normal profits is analytically equivalent to quick escape from sub-normal profits.

to do what comes naturally to oligopolists. Allowing them to is in fact one argument for looser or even non-existent extraterritorial application of U.S. antitrust law." But Brander's and Spencer's contribution is to show that even the basic institution about oligopolistic adequacy is misleading. Policy has a potential role, and most appropriately trade policy.

Policy enters in its ability to shift the equilibrium generated by oligopolistic interchange. In an equilibrium *without* policy, the information every oligopolist has about others deprives each of any credible new threat. The information is that each oligopolist has chosen optimally in light of the underlying environment. This information removes any incentive for further alteration in oligopolist instruments. Price, quantity, quality, investment, R&D, etc. are already at their optimal values when there is genuine equilibrium. Credible policy, however, *can* change the underlying environment and shift the equilibrium.

Government subsidies for domestic R&D, for example, might reduce costs and generate new products for which our firms will have at least temporary market power. Government export subsidies, for another example, might shift out the export demand curves that face domestic firms, and shift down the demand curves facing our firms' foreign competitors. Both policies could improve the competitive position of our firms if they were judged to be credible (sustainable) by oligopolistic combatants. Foreign competitors then might take them into account as "pre-commitments" — inhospitable aspects of the competitive environment on the same order as our access to a productive labor force or to plentiful raw materials. Being first with such policy pre-commitments may be important because the payoff to reactive foreign policies of the same sort is then reduced (Macdonald [1983], pp. 13-15), and our firms may inherit a *permanently* larger share of each market's pool of supernormal profits.<sup>22</sup> Firms themselves can undertake such strategic first strikes when they are out of equilibrium, as demonstrated in the literature on pre-emptive capital

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21. October 1982 passage of legislation authorizing export trading companies in the U.S. was a mild step in this direction.

22. The technical explanation for first-strike strategic policy in Brander and Spencer is that it can shift the economy to the Stackelberg equilibrium that would have emerged had our firms been "leaders" and foreign firms "followers." Firms by themselves are unable to establish and maintain such equilibria unless there are informational asymmetries or other distortions, since otherwise these equilibria imply irrational behavior for the followers.

formation and corporate innovation (Prescott and Visscher [1976], Spence [1977, 1979], Dixit [1980], Eaton and Lipsey [1980]). But in equilibrium, threats of further thrusts by some firms are dismissed by other firms as mere bluffs. Everyone is known to have adopted optimal strategies already, from which divergence would be costly.

Governments, however, can be assumed to have potential to threaten and credibly pre-commit even after the firms attain oligopolistic equilibrium, shifting the equilibrium to obtain a nationally desirable distribution of profits. Therein lies the key asymmetry between governments and firms in Brander's and Spencer's conception, and the answer to what governments can do for firms that firms cannot do for themselves. There are of course conditioning factors. Dubious or inscrutable policies have no influence — influence stems from both credibility and public transparency. But recurrent policy may lose strategic effectiveness. It may become so regularized that it too can be described by a stable behavioral relation (a policy reaction function). Then firms may be able to predict policy accurately, treat government as another player in the competitive game, and dismiss discretionary policy divergence from regular patterns as incredible."

Brander's and Spencer's conclusions appear to be neo-mercantilistic, since they rest on "improving the competitive position of our firms." Furthermore, this seems a far cry from the traditional, respectable, and even-handed trade-policy objective of maximizing the standard of living of the whole nation. In fact, though, under the imperfectly competitive conditions described, attaining the neo-mercantilist objective is an important part of attaining the traditional national-welfare objective. Global super-normal profits are a given. Nations compete over their international distribution. The larger the share that our policy can claim for us, the larger is our national purchasing power and economic welfare.<sup>24</sup> Given the imperfectly competitive global market structure, no nation need lose absolutely from us claiming a larger share of its rents. Other nations lose only the opportunity to enjoy a larger windfall share for themselves. Nor is any nation necessarily exploited by policy as opposed to market

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23. Increasingly, as governments own some or all of a firm's equity, they are closer to being just another player.

24. The gains accrue as corporate profits, of course, suggesting some shift in internal income distribution. But such shifts are not traditionally given any weight in calculations of the welfare effects of trade policy.

structure.<sup>25</sup> Nor are we necessarily exploitative to want as large a share for ourselves as possible. That is simply the logical implication of caring about national welfare. And its defensive version is even more unobjectionable. We would not sensibly choose as a nation to encourage foreign oligopolists to collect super-normal profits from us.

Trade policy (e.g., an export subsidy) is arguably appropriate to attain these objectives, given the oligopolistic structure; domestic policy (e.g. an R&D subsidy) may be less appropriate, involving unwanted second-best byproducts. The reason is Brander's and Spencer's recognition that transport costs and cultural differences separate national markets. An optimal strategic trade policy is then made up of a *set* of initiatives, a different initiative for each segregated market, all aimed at capturing the maximal share of every national pool of super-normal profits. Trade policy that is not MFN (most-favored-nation) is an effective instrument for such market-by-market profit preservation. Other policies, such as production subsidies, R&D subsidies, and MFN taxes and tariffs will often be second best by comparison.

Krugman (1982c), in a paper summarizing work by himself and others, generates a closely related possibility for strategic trade policy based on scale economies and market imperfections. Krugman examines international oligopolistic competition in a single industry. The industry has two distinctive characteristics. Firms sell their products in several national markets that are insulated from each other by transport costs and other natural barriers. And firms enjoy economies of scale of several potential kinds in production. Either cost curves decline as output increases, or cost curves are flat but nevertheless shift down when larger outputs ratify larger productive R&D spending, or when larger historical output imparts improved productivity through learning-by-doing.

Krugman's chief conclusion is that protection of domestic markets and promotion of export markets can reduce per unit costs, thereby saving resources. Cost and resource savings improve the international competitive position of our producers in all markets, not only those protected 'or promoted. The potential national-welfare gains

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25. The imperfectly competitive market structure does exploit some nations at the expense of others. Those with comparative advantage in oligopolistically produced goods gain absolutely from market power. Those with comparative disadvantage in them lose absolutely from the market distortion.

from improved competitiveness are the same as in Brander and Spencer — a larger share of global oligopolistic profit.<sup>26</sup> But the mechanism for achieving these gains is different. In Krugman's work, trade policy is directly a demand-side policy, but ultimately a supply-side policy. The size of markets facing our producers directly influences the productivity of their resources and effort. Trade policy is likely to be more appropriate than domestic policies in this regard. It is by definition a discriminatory policy for altering the relative shares of every market served by both domestic and foreign firms (including third-country markets).

Krugman and others demonstrate only a potential for policy in all these circumstances, not the case for it. When information is reasonably complete, and when insurance and financial capital markets work reasonably well, markets will leave no scope for policy. The financial market will correctly identify the firm with the most productive prospects in each market and underwrite its ventures to the exclusion of its competitors; the insurance market will underwrite any risk. And the most competitive firm will become a natural monopolist in the designated market (Shaked and Sutton [1982], pp. 25 *passim*). Markets will have made sure that all scale economies are captured, leaving none for trade policy to seize.

However, when private information is imperfect, or when risks are very large, or when certain externalities are present, then policy potential may be restored. This observation is trivially true, of course, whether scale economies are present or not. Scale economies can increase the practical relevance of these causes of market failure, however, by creating multiple market equilibria (Helpman [1982], pp. 26 *passim*). Some of the many equilibria are preferable to others from the perspective of national welfare. But the economy may be stuck at an inferior equilibrium if lenders and insurers are unable or unwilling to accept the risk involved in underwriting a dramatic change in resource allocation, even when the expected reward is quite high." Good information about the immediate neighborhood of a (stable) equilibrium helps keep the economy there; poorer informa-

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26. Krugman properly refuses to draw any definitive welfare conclusions, however. His analysis relates to a single industry only, and he observes how complex is the analysis of simultaneous distortions to the competitive norm — in this case oligopoly and trade policy intervention.

27. This observation has a long and full history in the analysis of trade policy. Caves (1960, pp. 161-174) gives a thorough summary. See also Meade (1955, Ch. XXI).

tion about more distant neighborhoods and equilibria is heavily discounted by risk aversion and institutional limits to the size of downsize loss that any firm can accept. Of course, once again these observations establish no case for policy, only a potential. And it is a potential that rests on the dubious reeds of superior government information and risk management. When markets do badly, governments may do even worse.

Many other practical and conceptual objections temper the arresting conclusions outlined above. But it is worth noting in turning to them that the force of the objections does not differ markedly from the force of those that are often raised against free trade. Differentiating sensible trade policies from nonsense is thus a complex task, better achieved by careful analysis with realistic roots in historical precedent than by sloganeering application of ideology.

For example, one conceptual objection to the strategic trade policies described above is that our firms and projects must be distinguishable from theirs. This point is important because many firms are trans-nationally owned, and many projects are joint ventures by firms with different nationalities. Trade policies that redistribute profits toward some favored project or toward some favored firm will fail to aid us significantly unless our residents have disproportionate stakes and shares in the favored projects and firm. But global integration of capital markets seems to be moving the world closer to an extreme in which profit-earners worldwide hold comparable portfolios of investments. In this extreme, national trade policies would be completely ineffective for capturing or preserving super-normal profits for us.

A similar conceptual objection could be raised to the familiar view that we would be better able to exploit our technological advantage if outward technology transfer were somehow restricted. The view can be supported analytically in an imperfectly competitive world where technology bears a national label (Krugman [1982b], Feenstra and Judd [1981]). But in today's world, technological advantage should not too readily be seen as a national factor of a production similar to labor and capital. It is more typically a corporate factor of production and hence belongs to **firms** rather than to countries. National policies aimed at circumscribing the application of technology or at appropriating a larger share of its gains may not succeed (Lipsey [1982a]). Nor do nations where technology is applied necessarily gain more than the enhanced productivity of local resources, since monopoly

profits often become a part of rapatriated corporate income.

More practically, one can object that successful government trade policy along strategic lines would require the same flexibility, centralization, and managerial discretion as are found in firms. It is not clear that the U.S. government can feasibly adopt these characteristics without sacrificing some democratic tradition (Lawrence and Krause [1982], pp. 7-10). In the United States, **government's** functions are constitutionally delineated, legislatively detailed, and judicially defended. Constitutional, legislative, and judicial checks and balances are built into the U.S. political system precisely in order to make U.S. government *less* flexible, centralized, and managerial. Americans fear more than most that such governments can become capricious and tyrannical. Furthermore, flexible management of policy tactics without sensible long-run policy strategy may create the worst kind of whimsical disordering of investment and resource allocation (GATT [1982], p. 23).

The most significant concern regarding activist trade policy along these lines, however, is that it is rooted in a kind of aggressive, frontier-like competition for the spoils of oligopoly or of desirable industrial structure. Some might answer that "that's life," that we should learn to live with it in our policy. But such policy runs all the risks of the economic disorder described above the remarks on frontier justice.

The crucial question is thus whether there are any sensible alternatives to living with frontier justice. It is easier to describe first what seem to be unlikely or undesirable alternatives. One is a return to hegemonic policy leadership in the fashion of the frontier sheriff. This seems out of the question for any government, barring a massive military realignment that might emerge from world war. Also out of the question is an extensive (that is, global) set of new rules governing trade relations. Such initiatives are at worst unappealing, and at best premature — in the same way that the U.S. Constitution was premature before a decade's experience with the more loosely binding, less inclusive Articles of Confederation. Finally, oft-repeated exhortations to more policy coordination are only a pretender to a solution. They beg the fundamental question of why such largesse would be in the narrow national interest of aggressive governments. Policy coordination is a safe haven only in the eyes of commentators without any stake in policy aggression.

Blackhurst (1981), pp. 369 passim, describes one possible **alterna-**

tive to living with frontier justice. He references the national benefits of a return toward conventions in governmental policy initiatives. Blackhurst seems to have in mind conventions that would at least order, but not bind, trade policy. Governments themselves should be the constituents. Mutually agreed conventions protect governments from each other and also from domestic political constituents in narrow pursuit of trade policies that serve their special interest at the expense of other constituents.

There are two important practical challenges in any such return toward conventions. One is to avoid over-ambitious promulgation of rules which, when broken, breed the unpredictability and incredulousness that disorders resource allocation. The second is to keep the resource and time costs of negotiation in check.

In these lights it seems timely to consider reinforcing recent retreats from multilateralism. Multilateralism may currently be too ambitious and too costly to maintain. Bilateralism, *trilateralism*, quadrilateralism, and so on may be cheaper, more promising, and the most predictable route toward a new multilateralism. Initially, after all, GATT, IMF, and the World Bank were upheld by small, non-exhaustive groups of nations. In the light of another metaphor, small neighborhood gangs may take on the obligations of turf-sharing agreements only after a conclusive demonstration of neighborhood peace and predictability that stems from agreement within the exclusive club of larger gangs.

What this may suggest practically is aggressive bilateral peacemaking — the formation of mutually advantageous coalitions with like-minded governments.<sup>28</sup> For example, the U.S. and Japan seem likely partners for a bilateral but possibly non-MFN trade agreement that would order trade along lines that are held closely in common. A successful U.S.-Japanese trade agreement might then encourage other trade-policy combatants to sue for peace. Or, for example, the United States seems currently in a position to bargain for European trade-policy concessions in return for a recommitment on its part to exchange-market intervention. U.S. intervention, as outlined below, might purge the economic system of large unanticipated *exchange-rate* variations that may be mistaken for resource-allocational sig-

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28. See Aho and Bayard (1983) and Vernon (1983b, pp. 40-41 *passim*) for more detailed consideration. The European Community has been essentially following this route as it expands, and in its preferential arrangements with non-member countries. See Camps and Diebold (1983) for arguments in favor of renewed aggressive *multilateral* peacemaking.

nals. The case for stable, predictable monetary policy to avoid resource-allocational mistakes and disorder ought to apply with equal force to stable predictable exchange-rate management.

The general goal of any return toward convention in government policy interchange is to re-order resource allocation, or perhaps more accurately to allay the imminence of disorder. Stability, credibility, and predictability are crucial prerequisites for both new trade policy and new exchange-rate policy (Krueger [1981], p. 91, Grossman and Richardson [1982], pp. 20-27, Artus [1982], pp. 10-11). These characteristics are more than simply motherhood principles. They entail, for example, more consistent and less discretionary enforcement of trade law that already exists, potential bindings of agreements made in committees negotiating non-tariff codes of conduct, and detailed and honest forecasts not only of trade trends, but of both U.S. and foreign trade policy over a medium-term horizon.

Stable, credible, and transparent trade policy is able to influence trends in resource allocation. Stable, credible, and transparent exchange rate policy is able to influence deviations around those trends. Ideal trends with minimal divergences are the obvious targets of policy. Trend mistakes are costly not only for the usual reasons, because resources are continuously less productive than they would be in the right place, but also because irreversible human and physical investment is often wasted, and because retraining and retooling costs are ultimately unavoidable. Divergence mistakes are costly not only because of human aversion to risk, but also because temporary competitive imbalances can generate empty shelves and storage lots in one location, excessive inventories in another, and resource-diverting arbitrage that transfers goods from the latter location to the former. The three respective costs associated with divergence mistakes are waste from rationing, waste from excessive stockpiles,<sup>29</sup> and waste from unnecessary transportation and redistribution.

In a peculiar way, the goals of stability, credibility, and predictability amount to making trade and exchange-rate policy more endogenous and less exogenous. Endogenous policy in this context simply means systematic policy. Policy may still be quite flexible and responsive to circumstances. But it will be governed by conven-

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29. Stockpiles are costly both to maintain, and in a growing economy, to build up at steady-state growth rates. Inventories can be excessive in the sense that they waste resources on maintenance, and in the sense that they force regular incremental additions to stockpiles that could otherwise be consumed.

tions and behavior that are stable, self-enforcing, and readily apparent to economic decisionmakers. Exogenous policy in this context, typical though it is in standard economic analysis, amounts to arbitrary, unsystematic, and unpredictable policy.

Attempts to negotiate new conventions governing international trade may fail, even among limited groups of like-minded governments. In that event, the U.S. is left with the alternatives of passivity and active, nationally-centered trade policy. Passivity may well be the lesser of two evils." But trade wars are not an inevitable consequence of active trade policy. There is presumably a reasonable range of policy action that resists predation rather than fomenting feuds."

### *Trade policy as insurance*<sup>32</sup>

It is well accepted that trade policy affects production patterns. It is somewhat less well understood that it can affect both the volatility of deviations around otherwise stable **sectoral** trends and the adjustment path from one trend to another. Massive surges and retreats in recent trade volumes and competitiveness have, however, forced increased attention to the issues of adjustment and economic variability. The previous section has already introduced the idea that increasing integration of international markets exposes domestic agents to larger and more frequent unanticipated shocks.

Increasing trade according to comparative advantage induces specialization. Yet if that same trade induces economic volatility, then it may heighten the need for adaptability. Adaptability is not necessarily furthered by specialization. For example, when production patterns are replicated over time, incentives for factors to train as adaptable generalists are reduced (Grossman and Shapiro [1982]). Internal factor mobility may decline and sector specificity may increase. Trends toward specialization may be further self-perpetuating to the extent that each task undertaken by a nation or a factor features **learn-**

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30. One well-known international economist has been known to say that just as with lying, active trade policy may sometimes be beneficial, but that open trade, like honesty, is almost always the best policy. He alleges to have been quoting Edgeworth, *Paper II*, p. 17.

31. William Diebold observes that at least in principle the U.S. might find passivity the best response in some sectors and circumstances, and activism best in others. He then points out the new problem such asymmetry would cause, however: allegations of inequity, and difficulties of sterilizing one set of actions against the economic, political, and judicial impacts of the other.

32. A more detailed expansion of this sub-section is in Grossman and Richardson (1982), pp. 19-26. See Baldwin (1981) for an expansion of the notion that trade policy may be the outcome of an implicit social contract to provide insurance.

ing-by-doing — productivity that improves with cumulative experience. This can diminish adaptability, which is a valuable attribute when other means of dealing with unforeseen divergences (e.g., insurance) are unavailable or under-supplied by market mechanisms.<sup>33</sup>

Adaptability problems are exacerbated once policy response itself is endogenized. The degree of sector specificity determines the strength of the linkage between the reward to a factor and the fate of the industry in which it is located (Grossman [1981]). When dislocations do occur, such specificity may lengthen periods of involuntary unemployment and deepen income losses. The incentive for specific factors to lobby for preservation of the status quo is clear. And successful political preservation of the status quo then only leads to further investment and worker commitment, which increases sector specificity, in a vicious circle.

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In this environment the challenge to policy is formidable. Adjustment to unforeseen shocks will be facilitated if policy minimizes the economic hardship to well-defined segments of the population. Sensible policy may include temporary protection as well as subsidization of retraining and relocation (Diamond [1982]). But commitment to eventual adjustment seems a necessity, since agents will forecast future government policy when contemplating a specialized investment. Government commitment to "preservation" makes no private adjustment the rational and equilibrium response. Credible commitment to adjustment makes it possible for anticipations of government

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33. This would in fact appear to be the economic rationale for national-defense objections to full-fledged free trade.

34. Alan Deardorff has pointed out further that government commitment to "eventual" adjustment makes waiting the rational private response.

reaction to alter ex ante allocation decisions. Thus sunk costs are not really sunk costs, as **Eaton and Grossman (1981)** emphasize.

Of course trade policy may not always be the ideal insulator of an economy from unforeseen divergences from international trends, nor the most desirable catalyst of adjustment from trend to trend. For example, a less wasteful alternative for achieving the same goal might be a domestic loan and insurance scheme for firms and workers, providing benefits (contingent on participation and payment of premiums) dependent on the state of competition from abroad. Under such a program, buyers would continue to enjoy the benefits of low-priced imports and incentives for factor reallocation would be preserved. In order to avoid problems of moral hazard, payments could be triggered by market conditions that lie outside the control of the decisionmakers involved. In industries where such indicators were not readily observable, trade policy might still have a second-best role. Other alternatives to trade policy as insurance are discussed in the next section.

When trade policy does function as insurance, it will impede adjustment least if it is explicitly temporary. It should also provide no unconditional windfall gains.<sup>35</sup> In fact, revenue-generating protection (tariffs, surcharges, auctioned quotas) has the potential to provide funds for underwriting desired adjustment (e.g., retraining, retooling, and relocation, such as rewarding workers who leave designated declining industries to accept employment in other industries.<sup>36</sup>

The whole discussion of trade policy as insurance of course rests on the observation that insurance markets are incomplete and capital markets are imperfect. Then international trade that causes larger unanticipated deviations of costs, revenues, and profits may also cause larger incidence of financial insolvency for firms that are still viable in terms of underlying trends. If insolvency is a boon, implying only a transfer of ownership and a shaking out of the least viable operations in the still viable firm, then there is no case for interventionist trade policy. If insolvency is a bane, implying waste of

35. There is reason to believe that productivity slippage due to resource diversion toward lobbying and rent-seeking is far greater than the slippage due to more familiar resource misallocation. In simulation extensions of Magee and Brock (1981), Magee reports resource diversion resulting from trade policy as high as 25 percent of total factor endowments, with only minuscule resource misallocation.

36. See Hufbauer and Rosen (1983) for an application of this idea to U.S. policy. Dore (1982) defends exit-adjustment incentives in a British setting.

resources through indivisibility or immobility, then trade policy may be defensible if it reduces the frequency or severity of unanticipated international disturbances.

Even in the absence of discontinuous change or cataclysm such as insolvency, trade policy may still be defended as a second-best means of establishing insurance markets or alleviating imperfections in the capital market. **Eaton and Grossman (1981)**<sup>37</sup> demonstrate how a policy commitment to tax imports when world prices would otherwise shift domestic resources from importables to exportables, and to subsidize exports in the converse case, will meet the implicit desire of individuals to insure themselves against losses. Furthermore, **Eaton and Grossman** demonstrate the superiority of a permanent, inflexible tariff over free trade in regimes of unanticipated shocks to international prices.

In these regimes, the importance of anticipating trade policy correctly is easily seen, as discussed above. Information about trade-policy intentions and forecasts of trade-policy actions have the same kind of economic value to firms and individuals as information about market conditions. Anticipated trade policy can influence economic decisions as dramatically as the realization of the trade policy itself. Investment in equipment, worker training, and plant expansion are all examples of decisions that can be influenced by anticipations of trade policy. **Richardson (1982b)** and **Eaton and Grossman (1981)** illustrate the potential for a kind of "leading adjustment" to trade policy that has the virtue of being controlled by expected prices, costs, and profits, all of which are flexible and able to contribute to market clearing, and none of which seem likely to be distorted in any systematic or undesirable way. Thus adjustment costs associated with transparent, forecastable trade policy may be minimal.

### **Alternatives to a more active U.S. trade policy**

Trade policy analysis obviously becomes more realistic by incorporating such ubiquitous distortions as imperfect competition and missing insurance markets. But that step toward realism does not by itself necessarily make stronger the case for active trade policy. There may still be superior policies for coping with industrial change in a competitively and temporally distorted world.

Alternatives to trade policy may be superior in several dimensions.

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37. See also **Cassing, Hillman, and Long (1982)**.

They may avoid inevitable but wasteful side effects of trade policy. They may require fewer resources to legislate their advent or to oversee their administration (that, among other things, what political feasibility implies). They may hit desired targets with more accuracy. They may avoid setting unfortunate precedents and perverting productive incentives. When alternative policies have all these traits, then trade policies are simply silly and bad. They are like Rube Goldberg contraptions compared to finely tuned machines. When alternative policies have only some of these traits, however, then trade policies may begin to make sense. When they have none, then trade policies are themselves superior (first best).

In this section of the paper, we examine some policies for industrial change that are closely related to trade policy. The crucial question for research and governance in coming years is whether or not they are superior to trade policy.

The first alternative is to rely on market forces despite their distortions, that is, to have no active policy of any kind. Doing something is not always better than doing nothing, even when the problems of industrial change are severe. When markets fail, governments may fail worse.

Yet a case is made that market-based adjustment in the U.S. is working less and less well, due to the large size of recent international shocks, and due to fundamental changes in social attitudes and institutions. Labor adjustment policies are discussed as a desirable alternative (or supplement) to active trade policy. Adjustment policies for firms are argued to be generally undesirable in contrast to labor adjustment policies.

Exchange-rate stabilization is discussed as an appealing alternative to active trade policy — appealing for firms especially, and indirectly for their workers. Firms view exchange rates, unlike other aspects of their international competitiveness, as beyond their ability to control and possibly even to fathom. The unanticipated component of their volatility leads to increased interventionist pressure. Exchange-rate stabilization might satisfy firms' as much as trade policy. Brief reference is made to methods of stabilization, including intervention in the foreign exchange market, which is argued to work as long as the government's target is credible.

Macroeconomic policy renovation, discussed above, is mentioned briefly again as a compelling antidote to hyperactive trade policy.

***Market reliance ("Our policy is to have no policy")***

Reliance on markets to provide adequate adjustment incentives during industrial change is a fashionable alternative to trade policy in the U.S. today, at least in ideology if not in practice:

Adjustment assistance [does not of itself] effectuate adjustment. It is U.S. policy to place primary reliance on market forces to facilitate adjustment in affected industries. . . .

A better solution to the problems associated with shifts in competitiveness is to promote positive adjustment of economies by permitting market forces to operate.

Ambassador William E. Brock  
U.S. Trade Representative<sup>38</sup>

But just how effective is the "market for adjustment"? Does it succeed reasonably well or fail? Do government adjustment programs succeed better or fail worse? Aho and Bayard (1980), pp. 367-71, provide a useful introduction to these questions in the context of U.S. trade adjustment assistance for workers. Their litany of problems with market adjustment is familiar, and worth repeating: imperfect information, uncertainty, incomplete factor mobility, wage-price rigidities, and insufficient access to the capital market to finance the capital investments (human as well as physical) that are the concomitants of adjustment. One reason that it is worth repeating is that some of the elements are reflections of social attitudes and institutions that are not very responsive to economic policy. These attitudes and institutions may exact a sobering economic cost if they impede the ability of the market to administer adjustment adequately.

Only one cautionary note needs to be added to the litany of problems. Even with the problems, U.S. markets for adjustment have probably worked fairly well until now in practice. Furthermore, market forces will always be sufficient to generate acceptable adjustment if there is an adequately large margin of workers and firms, even a minority, *with* adequate information, confidence, ambition, acceptance of risk (observe how these personal attitudes are the counterparts to the apparently impersonal forces labelled uncertainty, incomplete factor mobility, and wage-price rigidities), and access to the capital market. Only the margin matters. Characteristics, histo-

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38. Opening statement to the Joint Oversight Hearing of the Senate Committee on Finance and the Senate Committee on Banking, Housing and Urban Affairs, July 8, 1981, quoted at greater length by Gray, Pugel, and Walter (1982), end of Chapter 3.

ries, and personalities of the average worker and firm do not.<sup>39</sup>

With that note of caution in mind, there are two potential dangers in leaving adjustment to industrial change to be achieved in the market. The first is that the international fluctuations that will be experienced in the 1980s may be so much larger than those of recent history that they will overwhelm the margin of workers and firms who adjust to market signals. It may then be desirable for policy to mediate the adjustment to the extent that the market cannot.

The second potential danger is that U.S. attitudes and institutions may change in such a way that the margin is narrowed, and even moderate fluctuations cannot be accommodated by market adjustment. Attitudinal and institutional sclerosis seems to be the "European disease." (Blackhurst et al. [1977], pp. 44-52, provocatively entitle one section "Protection and the Refusal to Adjust.") There are signs that Canada has caught it, and that the U.S. has been exposed. In today's Congress, there is fundamental questioning of market reliance in U.S. international economic transactions, with surprising support for a negotiated world trade structure that would administratively constrain and channel global market forces (Richardson [1982c], point 60). And Congress may be faithfully representing a shift in social attitudes and institutions that includes:

- a decline in intellectual curiosity and increasing satisfaction with shallow and indulgent education, such that uncertainty and speculation displace information and reasoned judgment.
- increasing expansion of rights at the expense of contingent privileges, positions, and property—contingent on performance—such that perceived entitlement to a particular job at a particular salary level in a particular community precludes all but a semblance of mobility and rigidifies wages, work conditions, and promotion paths.
- higher real interest rates, crowding out, and credit limitations relating to wealth inequality, all of which constrict the availability of capital-market resources for physical investment and for human investments in retraining and relocating.

Each of these attitudinal and institutional shifts intensifies the distortions that impede the market adjustment mechanism.—imperfect information, uncertainty, incomplete factor mobility, wage-price

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39. Dore (1982) provides some engaging profiles of the easy adjustment undergone by firms and workers on the margin of adjustment to international competitive forces.

rigidity, and insufficient capital-market access. If little can be done about these shifts in the short run, then it may be desirable to have short-run policies that re-expand the margin of workers and firms that adjust, and policies with effective incentives to do so. It is anomalous that the social shifts so frequently decried in conservative diagnoses also undermine the conservative prescription for relief. Recourse to the market alone for adjustment may be ineffective without complementary government adjustment programs.

### *Government adjustment programs*

Trade-related manpower policies and capital-transformation policies are worth consideration as alternatives to more active trade policies.<sup>40</sup>

With respect to workers, adjustment-centered programs to replace moribund Trade Adjustment Assistance (TAA) seems to have potential. TAA in the U.S. is generally acknowledged to have been more a compensation program than an adjustment program (Corson et al. [1979], Aho and Bayard [1981, 1982], Richardson [1982a, 1982d]). Yet it was not devoid of adjustment stimuli. One of the less appreciated impacts of the U.S. program on labor market adjustment was its signalling dimension (Richardson [1982d], pp. 3-9). If it did nothing else, TAA certification signalled to employers and workers that a plant or firm was under important competitive pressure from imports. And it did this without significantly impeding similar adjustment signals from the market itself — wage, employment, price, and sales trends remained roughly as they were. Furthermore, there is an empirical suggestion that more generous TAA compensation increased the efficiency of job search, so that the first job taken after separation seemed to be a "better match" for the worker (Richardson [1982a], p. 350).

A sensible U.S. trade adjustment policy for workers in the 1980s might nevertheless put more weight on adjustment and less on compensation than historical TAA programs. To be considered as potential component of such a program are:

- Extension of existing U.S. employment subsidy programs, such as targeted job credits, to workers certified as having been permanently (not temporarily) displaced by trade.

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40. General manpower and capital-formation policies are treated in conference papers by Wachter and by Bosworth.

- Self-financing and voluntary **loan/insurance** programs for the same kind of worker to underwrite retraining and may be relocating.
- And conditional extensions of unemployment benefits beyond normal for trade-displaced workers — conditional, for example, on employed workers and firms bearing some sizeable portion of the extra financial burden through negotiated **cost-sharing**. In addition, a new trade adjustment program should avoid clear shortcomings in the administration, eligibility, and design of past TAA programs. Aho and Bayard [1980], pp. 21-28, make helpful suggestions along these lines.

With respect to firms in distinction from their workers, the potential for trade-related adjustment programs seems weaker. Capital markets are national and international; labor markets are local. Risk-taking owners of capital are presumably better informed than workers about prospects for international industrial change, and also about more lucrative employment of their resources by moving to other industries. They have thus more opportunities to diversify than workers. Firms are supported (or confronted) by financial intermediaries with multinational scope or contacts who are presumably even better informed than the firm about international and inter-industry prospects. Except perhaps for gargantuan, highly risky endeavors with long start-up periods and economically disenfranchised future beneficiaries, one can argue that financial markets assess more or less correctly the relative productivities of alternative firms and projects. Therefore, government programs to encourage modernization and product diversification by **trade-pressured** firms probably indenture workers and managers to an institutional shell that was revealed by the market already to be comparatively unsuccessful. (If it had been a successful firm, modernization and diversification would presumably have been profitable for it without government encouragement.) There seem to be few economic reasons for preserving institutions, especially unsuccessful ones, in contrast to preserving the skills and well-being of individuals. So it would seem more productive to allow firms to die rather than to modernize or diversify, after which diversification does take place. But it will be individual-by-individual diversification by employees of the dead firm — into new skills, new responsibilities, and relatively more successful institutional shells (firms). The upshot of this argument is of course to cast doubt on the wisdom of all government programs aimed at the survival of firms

rather than their **exit**.<sup>41</sup>

### *Exchange-rate stabilization*

U.S. efforts to stabilize exchange rates can be defended as an important alternative to active trade policy. Bergsten [1982], p. 4, suggests that "throughout the postwar period, dollar overvaluation has been the single most important 'leading indicator' of an outbreak of protectionist trade pressures in the United States." He and Williamson (1982) expand on how both misalignment (even undervaluation) and oscillation breed protectionist pressure. If the point is granted, of course, the key question is how to stabilize exchange rates. That is addressed briefly at the end of this subsection.

Over long enough periods of time, pressures for trade policy are unaffected by exchange rates. That is because *ratios* of wages, profits, and prices — in one sector relative to another and in one nation relative to another — respond only temporarily to exchange rates. These non-monetary ratios are ultimately the real measure of distributional equity and the real source of protectionist pressure. The monetary level of wages, profits, and prices doesn't really matter much. No worker, manager, shareholder, or creditor sees gross inequity or need for government protection when his or her wages and income rise as fast as prices, and when foreign wages, prices, and incomes rise at the same rate.

But over shorter periods of time, exchange-rate fluctuations can cause real adjustment and injury — in much the same way as monetary policy does. And when exchange rate fluctuations are recurrent, sharp, and unpredictable, they can lead to recurrent, sharp, and undesirable shifts in income distribution and in resources (see, for example, Artus [1982], p. 6, or Deardorff and Stem [1982]). Unanticipated exchange-rate volatility has all the unfortunate features of unpredictable monetary policy. Both can create hardship and send misleading and wasteful price signals to economic decisionmakers. Thus exchange rates are not irrelevant for trade policy even though they may be neutral in their long-run effects. Changes in the level or

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41. An untraditional exit-adjustment program for firms has been proposed by Hufbauer and Rosen (1983). A trade-pressured firm's owners would be essentially bribed to leave their industry (although not their geographical region) by government purchase of capital equipment at some negotiated value. The source of funds for such purposes would be increased tariff revenues from conversion of U.S. non-tariff import barriers to tariffs.

even the trend of an exchange rate may be ultimately innocuous; changes in its variance or predictability are not.

For example, an increase in unanticipated exchange-rate volatility may cause financial failure for firms that are still viable in terms of underlying trends. This can occur when intertemporal capital-market imperfections set practical limits to the losses consistent with any firm's continued survival. Each firm views itself as having very little influence over exchange rates. (Corden [1980], p. 176, suggests that firms think of their movement as "acts of God.") Yet firms are painfully aware of exchange-rate influences on them. Depreciation and appreciation due to asset market flux cause ebbs and flows in competitiveness, cash flow, and long-term prospects.

Thus unanticipated exchange-rate volatility may heighten corporate, **sectoral** and even collective political pressure for protection, especially quantitative trade barriers. Quantitative trade barriers shrink the variance of international competitiveness, as well as changing its mean. Tariffs (more accurately ad valorem tariffs) affect only the mean (Richardson [1983], p. 21, Aizenman [1983]).

Successful policy to stabilize exchange rates would obviously eliminate the need for trade policy to compensate for volatility in international competitiveness. Furthermore, exchange-rate stabilization would eliminate the inevitable resource waste and incentive costs that would occur from having adopted relatively rigid, long-lived trade policies to solve a problem that was inherently **temporary**.<sup>42</sup> Moreover, the policy apparatus necessary for the United States to at least modulate exchange rates already exists. Resources necessary to administer new trade policies (except tariffs) would have to be diverted from other productive activities. Finally, most methods of exchange-rate stabilization, unlike trade policies, create few incentives for resource-diverting **rent-seeking**.<sup>43</sup>

On all these counts, stabilization of exchange rates appears to be a desirable alternative to new varieties of protection. But how exactly could U.S. policy stabilize exchange rates? The most general answer is that it would help for the Federal Reserve System to decide and

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42. See the second paragraph of this subsection.

43. Neither this point nor the previous one is necessarily true of exchange-rate stabilization that is carried out by exchange and capital controls. These instruments are more typical, of course, of developing countries, and not likely to be adopted in the U.S. Some proposals for reducing exchange-rate volatility, however, such as a uniform tax on all **foreign-exchange-market** transactions and other sand-in-the-financial-wheels recommendations are a kind of capital control, but without significant **administrative** cost or rent creation.

then simply to announce that a relatively stable dollar was one of its goals in establishing U.S. monetary policy. It might help further, if governments could agree, to have several central banks announce jointly that exchange-rate volatility would influence their monetary initiatives, then to issue joint reports periodically on how it had.<sup>44</sup> Finally, official U.S. intervention in foreign exchange markets is worth reconsidering. Unsterilized intervention is really no more than monetary policy — open market purchases and sales of official reserve assets — so that it adds nothing except credible action to the suggestion that stable exchange rates be one of the goals of U.S. monetary policy. Sterilized intervention, by contrast, is an independent instrument for influencing exchange rates, recent official research notwithstanding. It inevitably changes the shares of domestic and foreign assets in the portfolios of the general public, and will change relative asset prices, including exchange rates, for the same reason that *any* shock to relative asset supplies does.<sup>45</sup>

Unsterilized intervention is not without its problems, however. Two problems are often said to confront any regular and significant unsterilized intervention. One is that official reserves are inadequate to cope with massive cross-boundary portfolio reallocations. The second is that no matter how large official reserves were, rational expectations of the government's intervention, based on knowledge of its policy reaction behavior, would cause the intervention to be ineffective. It is rarely observed that both of these problems are derivative, not primary. They are themselves caused by a fundamentally deeper problem: the incredulousness with which the market greets government exchange-rate targets and commitments. Suppose instead that governments were really believed in their exchange-rate commitments, and that they really took policy action consistent with those beliefs in order to ratify them. Then the payments mechanism would work much as it did under the gold standard, although not necessarily with fixed exchange rates. Massive portfolio reallocation might indeed take place. And the government's policy reactions would be indeed transparent to rational forecasters. But any massive

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44. This is a much weaker proposal than Ronald MacKinnon's (most readily accessed in two *New York Times* columns, Jan. 23 and 30, 1983) but in the same spirit.

45. It is curiously inconsistent (although understandably self-serving) for the U.S. government to imply (e.g. United States [1983a], pp. 68-69) that the U.S. asset swaps called monetary policy somehow matter, whereas the asset swaps called unsterilized U.S. foreign-exchange-market intervention would not.

capital movements based on rational expectations would themselves stabilize the exchange rate around the government's credible target. Little actual intervention would be necessary. By contrast, if the target is incredible, no amount of government intervention will succeed. The real problem is thus the stability and credibility of government financial policy, as discussed in Section 4 above. Stability and credibility seem to be as much a prerequisite for policy effectiveness as they are for personal effectiveness.

### *Macroeconomic renovation*

In this regard, mention might be made one more time of the general renovation of macroeconomic policy discussed above. Its main attraction to the U.S. today may not be macroeconomic at all, but rather the deterrence of wasteful, incongruous, and indenturing sectoral policies that would be adopted in understandable desperation if macroeconomic performance does not improve. Among other improvements, lower real interest rates, brought about by improved future budget forecasts, would assist adjustment to industrial change in a very natural way. Lower real interest rates would facilitate the market's ability by itself to provide adequate adjustment, through capital formation and transformation, and through labor retraining and relocation.

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## Commentary

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*C. Fred Bergsten*

### **U.S. trade and the dollar**

David Richardson's paper addresses comprehensively the major issues now confronting U.S. trade policy, defined, properly, to encompass a wide range of international and domestic measures adopted by the government which affect trade flows. I agree with most of its major conclusions. However, the paper lacks focus and a clear sense of priorities — and it comes to no clear-cut conclusions. My own comments will thus emphasize what I regard as the most important problem now facing U.S. trade, and the policy changes needed to remedy that situation.

In my view, the United States today has a very severe trade problem — a problem which at least begins to run the risk of fostering deindustrialization of the U.S. economy. That problem is not related to pernicious practices by Japan Inc. or other foreign countries. Nor is it the lack of a level playing field; there is no conclusive evidence that trade distortions (however defined) are higher abroad than in the United States. The problem is not our own lack of an industrial policy, though there are several steps normally included under that rubric which the United States could and should sensibly undertake (see below).

Indeed, the United States until quite recently had no major trade problem. In his paper for this conference, Lawrence shows for the decade of the 1970s that trade in no way contributed to any “deindustrialization” of the United States. During the more recent past, U.S. trade performance was even better. From 1978 through 1980, U.S. exports grew twice as fast as world trade. The United States regained a share of world manufactured exports that it had last held in 1970. Our current account improved by more than \$15 billion despite a rise

of more than \$35 billion in the cost of oil imports — a gain of more than \$50 billion on everything else. The trade balance in manufactured products rose to its highest level ever, except for 1975 when the sharp domestic recession severely depressed imports of manufactured products. It would be extremely difficult to conclude that the United States faces any fundamental problem of international competitiveness.

Since early 1981, however, the United States has developed the major trade problem to which I refer — the massive overvaluation of the dollar in the exchange markets, compared with the underlying competitive relationship between the United States and its major rivals in international trade. Richardson cites the difficulties caused by volatile exchange rates for traders, but the greater problem by far is the misalignments which seem to have become so endemic in recent years. The current misalignment has produced a stunning loss of price competitiveness for all U.S. products which compete internationally, either in the U.S. market itself or abroad.

The traditional method for calculating the extent of such misalignments is based on the concept of purchasing power parity. A base period is selected when equilibrium is judged to have existed in the past, and the contemporary equilibrium rate is then derived by adjusting for differences in inflation rates between the two countries concerned in the intervening period. Using variants of this approach, a range of analysts have concluded that the dollar is presently overvalued by a trade-weighted average of 15-25 percent.

All purchasing power parity calculations suffer, however, from the arbitrariness inherently involved in regarding any previous period as representing "equilibrium." My colleague John Williamson has thus employed an alternative approach, in which he first calculates the exchange rate changes needed to actually achieve current account equilibrium — defined as the counterpart of underlying net capital flows and adjusted for differences in cyclical positions — for the five major industrial countries in 1976-77. He then brings these rates forward to the present, adjusting for structural changes which may have occurred in the meanwhile (such as the second oil shock, which hit Japan particularly hard) as well as inflation differentials. Williamson concludes that the dollar is overvalued by about 24 percent in trade-

weighted terms and, as shown in the accompanying table, by 20-30 percent against the yen and DM':

	Fundamental equilibrium rate (September 1983)	Market rate (September 12, 1983)
yen	205	243
DM	2.04	2.65
pound sterling	1.58	2.50
French franc	6.05	8.00

The impact on U.S. trade of such a currency misalignment is equivalent to placing a tax of 20-25 percent on all U.S. exports and paying a 20-25 percent subsidy on all imports coming into the United States. Traditionally, our trade balance deteriorates by about \$3 billion for every percentage point loss in U.S. price competitiveness. A deterioration of \$60-75 billion should thus be expected. Since our *merchandise* trade is in deficit by about \$25-30 billion when our *current account* is in equilibrium, as was in fact the case during 1979-81, it should be no surprise that this deterioration will take the U.S. merchandise deficit close to \$100 billion by 1984 — as recently forecast by administration officials — or even beyond. The corresponding current account deficit would be on the order of \$75 billion, five times the pre-1983 record.<sup>2</sup>

The effects on the U.S. economy of the deterioration in the trade balance have already become severe. Updating Richardson's Table 1, the trade balance in manufactured goods deteriorated by \$50 billion (annual rate) between 1980 and the first five months of 1983. From the first quarter of 1981 through the fourth quarter of 1982, the closest quarterly approximation to the recent recession, the deteriora-

1. John Williamson, *The Exchange Rate System*, Washington: Institute for International Economics, September 1983, esp. Table 11.

2. The actual merchandise trade result could be even worse due to cyclical factors, if the United States continues to lead the world recovery, and because the continuing debt problems of countries which represent major U.S. markets (especially in Latin America) will inhibit their purchases from the United States. On the other hand, the recorder numbers may overstate the current account deficit by counting some U.S. services exports as "errors and omissions"; the magnitude of this statistical difficulty has been estimated as high as \$15-20 billion in Morgan Guaranty, *World Financial Markets*, May 1983. Even allowing for such a data problem, however, the current account deficit is clearly soaring to very high and record levels.

tion in net exports equalled more than three-quarters of the total decline in real U.S. GNP — despite the sharp decline in oil imports and the fact that in all previous postwar recessions, except 1958, the U.S. trade balance has improved sharply in the face of domestic recession.<sup>3</sup>

Moreover, this situation is becoming much worse. The further deterioration expected in 1983 and 1984 would take about one percentage point off the GNP recovery in each year. By the time the merchandise deficit hits \$100 billion, it will have cost the economy about 2 million jobs — mainly in the manufacturing sector.

The impact is also pervasive across U.S. industries. Numerous high-technology firms such as Hewlett-Packard, TRW, and Wang have testified to the adverse effects on them of the overvalued dollar. Since much of our future growth is likely to rely on such firms, the long-term outlook for the economy is jeopardized, as indicated by Bosworth during the discussion of his paper.

The possible long-term impact of dollar overvaluation is now becoming of particular concern, as it persists into a third year and as official administration spokesmen suggest that it may be a quasi-permanent phenomenon. Martin Feldstein argues that "dollar strength" will continue as long as huge deficits remain in the federal budget, with resulting high U.S. interest rates, and budget director David Stockman has admitted that those deficits are likely to persist "as far ahead as the eye can see".<sup>4</sup> Under such circumstances, as in the 1960s, we could anticipate growing offshore sourcing and foreign rather than domestic investment by American firms.

Beyond these direct effects on the economy, such severe dollar overvaluation is a potent source of pressure for protectionist trade policies. Indeed, the postwar history of U.S. trade policy suggests that dollar overvaluation (as in the late 1960s to early 1970s, in the mid-1970s, and now) may be the most accurate leading indicator of

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On

3. There were of course several pluses and minuses among the GNP components, so it would be incorrect to say that the decline in real net exports "caused" 78% of the recession. However, the trade decline was about twice as great as the housing decline and was by far the biggest single factor in the downturn.

4. Feldstein has in fact argued that dollar overvaluation and huge trade deficits are desirable in a second-best world of huge budget deficits, because only the corresponding inflow of capital from abroad can avoid crowding out. However, it is hard to see how such avoidance would offset the adverse effects on the investment plans of American industry of a quasi-permanent undermining of its international competitive position.

an outbreak of new import controls (and export subsidies).'

This impact of dollar overvaluation has already begun to appear extensively. Despite its free-trade rhetoric, the Reagan administration has moved to restrict imports sharply in at least a half-dozen industries: autos, textiles and apparel, sugar, steel, specialty steel, and motorcycles. Indeed, the administration is victimized by a fundamental policy contradiction: its complete neglect of the currency problem fatally undermines any prospect for **effective** implementation of its laissez-faire preferences regarding trade policy.

### Policy proposals

The central issue for U.S. trade policy is thus the continuing (and, as of this writing, growing) overvaluation of the dollar in the exchange markets, and what can be done about it. The most decisive policy step available is immediate action to reduce substantially the prospective ("outyear") deficits in the government budget, which would take pressure off interest rates directly and permit more expansionary monetary policy by the Federal Reserve without rekindling inflationary expectations. Such a reduction in U.S. interest rates (unless fully matched by reductions in foreign interest rates, which is unlikely) would limit, and probably reverse, the inflow of capital which has been a major element in pushing the dollar to such excessive levels.

I am quite pessimistic about the prospect for meaningful action on the budget, however. If the recovery continues, there will be no incentive to alter policy. If the recovery falters, few voices would support a reduction in fiscal stimulus. Only a further sharp rise in interest rates themselves, which would almost certainly take the dollar to new highs and thus intensify the trade problem substantially, would be likely to galvanize the political compromises needed to construct a responsible U.S. budget policy.

It may well be necessary, therefore, to deal with the currency/trade problem more directly. Richardson is correct in noting that sterilized intervention could be quite useful as part of such a strategy. At a min-

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5. See C. Fred Bergsten and John Williamson, "Exchange Rates and Trade Policy," in William R. Cline, ed., *Trade Policy in the 1980s*, Washington: Institute for International Economics, 1983. Such a relationship is easy to understand, since dollar overvaluation does in fact cause major competitive dislocation for a wide array of American industries and thus fosters political coalitions in support of deviations from the traditional liberal U.S. approach to trade policy.

imum, such intervention — if carried out with conviction, on a sustained and internationally coordinated basis and with substantial commitment of resources — can keep the situation from getting worse by braking further dollar appreciation. Moreover, when market forces push rates in the proper direction, as they inevitably do periodically, skillful intervention can accelerate the pace and extent of corrective movement; for example, a golden opportunity to achieve yen-dollar equilibrium occurred in early 1983 when joint intervention could have built on the 20 percent strengthening of the yen which occurred between November 1982 and mid-January of this year.

In addition, the United States will have to seek help from its major trading partners to correct the currency problem. Japan, for example, could quickly strengthen the yen by borrowing heavily abroad (and converting the proceeds to yen) and limiting, probably through administrative guidance, the huge capital outflows by Japanese firms and investors which have dominated Japan's current account and been the immediate source of yen **weakness**.<sup>6</sup> Several major allies — notably Germany, Japan, and the United Kingdom — could help by adopting much more expansionary fiscal policies, as part of a coordinated effort to sustain the global recovery as well as to adjust the huge trade and currency imbalances.'

For the longer **run**, we will need to move to an international monetary system **which is** less tolerant of overshooting and misalignments, of which the current dollar overvaluation is the most dramatic and costly example. My preferred alternative is a system of "crawling target zones" under which the major countries would continually assess the ranges (of perhaps 15-20 percent) within which their currencies should appropriately lie, adjust those ranges to account for inflation differentials and other changes in underlying competitive conditions (**hence, the "crawl"**), and commit themselves to take the actions **necessary to** keep rates from moving outside those zones. One purpose of such a system would be to bring external pressures to

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6. Details can be found in C. Fred Bergsten, "What to Do About the U.S.-Japan Economic Problem," *Foreign Affairs*, Summer 1982, updated in testimony of April 7, 1983, before the Senate Foreign Relations Committee.

7. Details can be found in *Promoting World Recovery: A Statement on Global Economic Strategy by Twenty-Six Economists from Fourteen Countries*, Washington: Institute for International Economics, December 1982, as updated and quantified in C. Fred Bergsten and Lawrence R. Klein, "Assuring World Recovery: The Need for a Global Strategy," *The Economist*, April 23, 1983.

bear to help prevent the emergence of policies as destructive to both national and international prosperity as the current U.S. fiscal-monetary mix.<sup>8</sup>

### Other "trade policy" steps

Finally, I would add a few words on other steps which would seem necessary to recreate a viable U.S. trade policy for the 1980s.<sup>9</sup>

First, Richardson is clearly correct in calling for a new, worker-oriented, adjustment-centered program of government response to trade dislocation. The Trade Adjustment Assistance program, for all its shortcomings, represented a critical political component of U.S. trade policy for almost two decades. A renovation of that program, correcting its flaws but restoring its contribution to overall trade policy, is essential.<sup>10</sup>

Second, it is also essential to renew the process of international trade-liberalizing and rule-making negotiations. History shows that trade policy is like a bicycle: it either moves forward toward greater openness, in the general interest, or it topples toward controls under the pressure of narrow, **sectoral** forces. Moreover, there is a wide range of both old issues (such as agriculture, subsidies, and textiles) and new issues (such as investment and **services**) which require new international conventions and agreements. I believe that Richardson is too quick to give up on the prospects for forging new multilateral connections, though I have no objection to arrangements between smaller groups of countries if they advance the ultimate objectives cited here.

Third, the United States should use its current trade policy tools — particularly countervailing and anti-dumping duties — aggressively against predatory practices of foreign governments and firms. Fortunately, we have remedies on the books to deal with most of the objectionable practices — although further evolution may well be needed both in defining "subsidies" and in fashioning effective responses to

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8. Details are in Williamson, *The Exchange Rate System*.

9. Elaboration can be found in C. Fred Bergsten and William R. Cline, *Trade Policy in the 1980s*, Washington: Institute for International Economics, November 1982.

10. One set of proposals can be found in Gary Clyde Hufbauer and Howard Rosen, *Managing Comparative Disadvantage*, Washington: Institute for International Economics, forthcoming.

them." Active use thereof is an essential component of any effective U.S. trade policy.

Finally, there are certain steps we could and should take which are sometimes included under the rubric of "industrial policy."<sup>12</sup> We clearly need to develop visions of where our major industries are going over the next 10 to 20 years, to see whether we like the prospects and to serve as a baseline against which policy proposals for those industries (including trade measures) can be judged. We need current analysis of the policies adopted by foreign governments to promote their industries, rather than coming in a decade or more later to try to address a problem that — if it ever existed — is much too far gone to remedy effectively. We need to coordinate the various policies frequently taken toward a particular industry by different parts of our government. And we need to insist on an effective adjustment program by any industry which gets government help, such as import relief, and monitor that program zealously to assure its implementation. A new governmental entity could be created to carry out these functions, which in addition to its merits per se could provide a stepping stone for more extensive "industrial policy" actions later if the modest initial efforts succeeded and if it became clear that a further effort were needed.

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11. See ~~Clyde~~ Clyde Hufbauer, *Subsidies in International Trade*, Washington: Institute for International Economics, 1983.

12. See my "What Kind of Industrial Policy for the United States?" Testimony before the Subcommittee on Economic Stabilization of the House Banking, Finance and Urban Affairs Committee, June 9, 1983.

## Overview

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*William Diebold*

This has been an encouraging conference for two reasons.

First, things got clearer as we went along, which does not always happen in conferences. I do not mean by that ~~that~~ we reached widespread agreement on policy; in fact I might see a bit less consensus than Jerry Jasinowski did. I also do not mean that everything was simplified; this is a field in which true clarity is to see complexity.

The second reason **the conference** was encouraging is that it saw so many able economists taking seriously some of the issues raised by this broad range of ideas that we call "industrial policy" for short. Paul Krugman said that in writing his paper on targeting he realized how unusual it was for an economist to be taking some of these issues seriously and dealing with them systematically. He is absolutely right, and I think that is deplorable. I hope this conference has persuaded others that there are a number of important issues here worthy of careful criticism by professional economists.

I understand why there has been reluctance on the part of economists to deal with many of these issues. When I first got involved with this subject, three groups of my friends warned me not to waste my time. My old colleagues concerned with trade liberalization said that industrial policy is nothing but a rationalization by which other countries seek to escape from their commitments to remove trade barriers and not to impose new ones. Businessmen told me that industrial policy was the means by which their foreign competitors were given unfair advantages through government help; they were not in favor of industrial policy for the United States because it meant government intervention in their affairs. Then there were the economists who, beguiled by macroeconomics, and by its *elegance* and its relative suc-

cess over the years, pointed out that there was no good theory, that the field was extremely messy and highly politicized.

All three groups were right about industrial policy but wrong about the need to study it. The questions raised by industrial policy are extremely interesting. The forces behind industrial policy cannot be escaped. **Government** officials, including trade people, and businessmen and others are giving far more attention to the subject than ever before. Surely economists will not think it wise to leave such matters to interest groups, politicians, and, for that matter, political scientists — though I must say that these last are making fairly important contributions to our understanding of the subject.

Distaste is no excuse for not studying something. Michael Wachter pointed out that concentrating on job displacement did not mean that he favored unemployment. For my part, I never had an initial obstacle to overcome. I first stumbled on this subject in the late '60s when I was pursuing some ideas about the ways in which U.S. foreign economic policy and the machinery for international economic cooperation did not appear to be keeping pace with changes in the world economy. In a book published in 1972 I said that some of the foreseeable difficulties that were going to make trade cooperation harder in the future than it had been in the past, and that would continue to plague efforts to reach international agreements about investment, were traceable to the kinds of measures that various countries called "industrial policy."<sup>1</sup> When I was able to pursue this further in the late '70s, I found that the situation had gotten worse and wrote a book arguing that unless we found a better way to deal with the clashes of national industrial policies, the whole machinery for international economic cooperation would continue to erode and might well break down.<sup>2</sup> I have seen no reason in the last few years to change that view. When I look ahead it seems to me clear that the situation is almost bound to get worse as national governments operate under the pressures of slow growth, high unemployment, little elbow room for adaptation, and so on. Moreover, it has already become reasonably clear that **Americans** can no longer treat industrial policy as simply a foreign practice to be censured where it appears abroad and resisted at home as somehow **unAmerican**.

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1. *The United States and the Industrial World*. Praeger, for the Council on Foreign Relations, New York, 1972, pp. 163-72, 338.

2. *Industrial Policy as an International Issue* (New York), McGraw-Hill for the 1980s Project/Council on Foreign Relations, 1980, 350 pp.

We can no more reasonably expect industrial policy to disappear than to get governments out of their economies. To act as if we could would be a new Pogoism of the economists, to **recall** the term that Jeff Sachs used. (Incidentally, when after some debate as to whether it would be understood, I used the Pogo quote in a paper on the clashes of national industrial policies and their impact on trade cooperation, intended largely for a European audience, I found there was no difficulty about identifying Pogo's thought — though possibly the reference to Commodore Perry was not recognized — but the idea was simply not accepted because there was such confidence that most of the objectives sought by industrial policy were highly desirable, a condition which reminds me to state my concurrence with Robert Lawrence about the rather alarming state of European economic performance and policy thinking in these fields.)

### The area of agreement

When I said that things had become clearer as the conference went along, I meant that one could summarize in a fairly few sentences a series of statements about structural change and industrial policy which seemed to represent the thinking of most people who have taken part in the discussion (though perhaps in some cases the ideas were implied more than stated explicitly). At least; this is how I interpret what I have heard:

So far as structural change goes, we are vague. We all know there is a great deal of change, but we are not always clear when it is structural. That word itself is used in a number of different ways. It is questionable how much is to be gained by a general discussion. It almost looks as if one were usually better off defining *ad hoc*, if that is not a contradiction in terms.<sup>3</sup> Perhaps there is some reluctance in coping with this issue since by some definitions structural change would almost certainly invalidate some earlier calculations, at least so far as their use in making predictions. My hunch is that there is also a difference in our approach according to whether even quite large changes take place slowly enough to be adapted to quite smoothly or come with a troublesome impact. We are also agreed that it is often

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3. For some discussion of this problem, see my paper, "Adapting Economies to Structural Change: the International Aspect," *International Affairs* (London) October 1978, p. 583; and the passages on pp. 6, 7, and 289 (and the sources cited there) of *Industrial Policy as an International Issue*. This book also deals with a number of issues touched on in these comments, such as the scope of industrial policy and its relation to macroeconomic policy.

difficult to distinguish the structural from the cyclical, especially where the cycle turns down.

There are also terminological difficulties with industrial policy. I used to begin talks on this subject by saying that you can have had an excellent education in the United States and never have heard the words. More recently I have had to add "until about two years ago, and now you cannot open a newspaper without finding them. The latter situation is probably more confusing than the former." While I sympathize with the frequently expressed view that it would be nice to have a better term, I suspect that no matter what term was adopted, it would soon be subject to the same confusion and abuse that now exists unless it were so narrow that it was no longer a valid description of what we are talking about. For my part I am content to take "industrial policy" as shorthand, which means that when we come down to particular issues or cases we have to restate exactly what it is we are talking about.

This last comment comes close to being one of the principal substantive things that has to be said about this field. Industrial policy comprises many different kinds of activities, quite a few of them contradictory. Some industrial policies resist change, some promote it, some try to ease the adaptation of adjustment to external circumstances by measures that make change politically and socially more acceptable and therefore more likely to take place than otherwise. Consequently one cannot sensibly be for, or against industrial policy as such; it is all a question of measures and circumstances. Often industrial policies have an industry or sectoral focus but this is not essential. Productivity, labor mobility, the effect of R&D on national economic performance, and even the incidence of uniform measures affecting taxes, investment, or the environment — all can be looked at under the industrial policy rubric.

Industrial policy is not altogether separate from other kinds of policies. It tends to overlap other major fields, notably foreign trade policy, taxation, and environmental issues. It most decidedly is not a substitute for macroeconomic policy. How their complementarity may be assured raises an important set of issues; there is the interesting possibility that some measures of industrial policy may make future macroeconomic policies more effective than those of recent years. This does not mean that macroeconomic policy and industrial policy are so interconnected that they cannot be distinguished. A simple formula is to say that up to a point macroeconomic policy reason-

ing says that what is needed is full employment, whereas industrial policy reasoning puts the stress on the kinds of jobs involved.

It has emerged quite clearly that the United States, although it has nothing that could be remotely called a comprehensive or consistent industrial policy, engages in a large number of activities which in other countries would be called industrial policy. Sometimes these have very clear-cut structural or industrial policy purposes — e.g. to protect the steel and textile industry, or to support agriculture. But they often have inadvertent effects — such as the allocation of capital to activities that provide tax shelters — or major spillover effects going beyond the immediate purposes. A fuller understanding of what we do and a clarification of these matters is clearly an important element in industrial policy analysis for the United States. George Eads said in a paper for the Wharton symposium, edited by Michael Wachter and his wife, that some of our main difficulties come from existing government **policies**.<sup>4</sup> That is certainly true and reminds us that industrial policy measures may require stopping doing things as well as starting them.

The many reasons for **worry** about how industrial policy would be carried out in the United States and the widespread skepticism as to whether the ends could be achieved by the means being proposed were repeatedly referred to. It is **clear** that this lesson of experience has to be taken very seriously. One needs to remember, however, that the alternative to poorly handled industrial policies with desirable objectives is not necessarily good policy or inaction. The United States is quite capable of providing selective protection, misdirecting investment, giving unnecessary tax concessions, and reducing its own ability to adapt to structural change. It also has to be recognized that much of the push for industrial policy — there were references to how many people were seeking some new medicine — comes from the fact that other economic policies are not operating the way they should. It is also true that much of the case for "industrial policy" has been badly made but it does not follow that it therefore can be brushed aside or that simple general statements will suffice as rebuttal.

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4. George Eads, "The Political Experience in Allocating Investment: Lessons from the United States and Elsewhere," in M.L. and S.M. Wachter, eds., *Towards a New U.S. Industrial Policy?* University of Pennsylvania Press, 1981, pp. 453-82.

These last remarks might be said to be my editorializing and not quite an accurate summary of the common ground that has emerged. Perhaps that is also true of one more point that I think belongs here. Paul Krugman emphasized the importance of setting forth clear criteria before you judge the merits or potentials of any measure of industrial policy. That is eminently true of individual measures and of whatever collection or approach is being advocated. It sounds obvious but isn't, especially since so much of the groping for an industrial policy for the United States involves quite different objectives on the part of different groups. Later in the Carter administration, when industrial policy became an active issue in the government, one young man who was assigned to write a paper called me up and asked where to start. I said, "Figure out what you want." "Of course," he said, "but . . .". "Not at all 'of course,'" said I. "Start with the objective, and then you will have guidance and criteria for judging the means." After all, the Japanese had it relatively easy; their concern has been to produce a modern industrial economy, and that has meant for most of the period catching up in one form or another. Now that they have arrived at that point, I think the questions of the future direction of Japanese policy are harder to answer.

This seems to me a fair summary of themes that have received general support and little or no contradiction in the discussion. Some of you may say that I could have written that description of industrial policy before coming to the conference. That is true, but I must say that I have drawn satisfaction from the fact that so many able people, once they tackle some of these issues, seem to come out with something like this. I only hope that my description commands the assent of others.

### **The task of economists**

Faced with this situation, what should economists do? Certainly they need to do something more sophisticated than simply saying "no." It is not sufficient to confine the work of economists to macroeconomic policies any more than it would be to abandon them.

There is no **either/or** here. Without doubt, the best contribution that could be made to reducing the risks and difficulties of industrial policy is to get macroeconomic policies right. (I include in this exchange rate matters.) To do this would not only ease the pressures but make it possible to live with some of the costs of bad industrial policy. Most important of all, good general economic policy and

growth — as Jerry Jasinowski has emphasized — provide a setting in which many of the aims of industrial policies can be achieved without embarking on measures that may be difficult for the United States to carry out. Anything that increases opportunities **helps**. However, this is not what economists have been able to do very effectively in recent years, and I cannot say that I have heard sufficient agreement at this conference to suggest that the way ahead is clear. There are majorities and minorities on some major points, and they do not square with all of what is currently being done, but that is **something** less than what is needed.

A good deal of what economists need to do in a situation in which industrial policy has become a live issue for the United States, in a way that it has not been for many years, is to do what they have always done. One point is to set up ideals of performance. That helps to measure departures from the ideals and to **warn** about things that move in the wrong direction: But it does not do **much** good to act as if anything short of the ideal was totally unacceptable. We do not live in that kind of world.

Surely most of the people in this room have at one time or another been parties to arrangements that were logically faulty but practically acceptable. Damage limitation is a very respectable and indeed important part of the contribution that economists and other advisers can make.

As a matter of fact, there is no sharp line between damage limitation and positive influence intended to make **industrial** policy measures better than they would otherwise be. **The 'starting** place for all this is analysis', and here the economists have much strength. They are particularly good at tracing out costs that elude other people and thereby sometimes showing that policies are more likely to produce opposite results than those expected by their **advocates** (as was shown in several papers for this conference). Moreover, economists can show not only what the ostensibly free lunch **costs** but who pays for it. Now, the question of who **should** pay for the **free** lunch is a political or even moral question, but the **clarification** as to who is paying helps to focus attention on the domestic conflicts of interest that are inherent in almost any measure of industrial policy. This is no news. It is a well-known fact, but it is one that **tends** to be suppressed in more familiar fields, such as trade policy. Perhaps clear demonstrations can play a useful part in working out industrial policies.

This kind of analysis is a continuing responsibility. Bear in mind

what Albert Hirschman said about the unexpected complications, costs, and **results** of various development issues which, if they were fully known in advance, might have kept people from acting in the first place. As time passes, industrial policy measures — like many other economic measures — may come to operate quite differently from the way they did initially. In thinking about the right posture for economists in these matters, it is important to bear in mind that there are almost always some people who benefit from bad industrial policies (and some economists who favor those policies), so that the tracing out of effects is a matter of considerable importance. It is true that the result may be to set some bad examples and lead others to say "me too," but that is another issue.

The kind of analysis provided by the papers by Lawrence on the sources of structural change (or pressures on the American economy) and **Bosworth** on capital formation, along with Mansfield's report of his findings on different approaches to R&D, are exactly the sorts of things that are needed. It is useful to show that the United States has done better in the last decade than many people think — and that other countries have not done as well **as** is sometimes alleged — though "things are bad all over" is not an adequate standard for American **policy**, as Lawrence **Klein** and a number of others have pointed out in this conference. Much work on familiar subjects such as taxes, foreign trade, investment, prices, and wages is **highly relevant** to the industrial policy debate and sometimes only needs small re-orientations **to be** put in proper perspective. We have to be careful, of course, not to fall into the familiar trap of drawing board conclusions from studies, that have been deliberately kept narrow **to be manageable**. Similarly, if you focus on one factor and show that "x" is not a sufficient cause for a certain result, that should not justify discarding it entirely when moving on to study the possibilities of the next factor that might operate in conjunction with it. That would be like Peer Gynt peeling the onion until there is nothing there, or Bishop Berkeley looking only at attributes of the chair and not the thing itself.

Some participants in the conference suggest that some advocates of industrial policy measures were ignorant of economics; others note that the inability of economists to give people assurances about the results of various actions created another kind of ignorance that has fueled some of the industrial policy argument. Closely related, or perhaps a third kind of ignorance, is the fact that there are all sorts of

things that we do not know as much about as we would like — or as we used to think we did. Our failure to understand something as basic as productivity any better than we do might seem almost a scandal, although it is a tribute to the honesty of the profession that we so clearly confess this. What looked like established connections are sometimes thrown into question when we shift from sustained growth to recession and instability. Even those familiar characters, savings, investment, and taxes, are not always speaking the dialogue that used to be assigned to them, as is shown by **Bosworth's** paper and some others. Perhaps the time has passed when too many of us would keep **reaffirming** our belief that the old verities of macroeconomic policy would reassert themselves, but until new **relations** are verified it is hardly surprising if people should look for answers in other fields — and think they have found them in the direct action that characterizes many industrial policy proposals.

Maybe thinking is moving along in the right direction. Certainly there were some signs of that in this conference. Economists do better when pushed than when left alone. Still, to deal adequately with industrial policy issues, they will have to study some problems that have not been very popular before. For example, I think there should be a revival of the respectability of studying particular industries, something that has been out of fashion for years. There are all sorts of difficulties with pursuing this course, involving drudgery, data, secrecy, objectivity, and the accumulation of intellectual capital (what does one know if one knows only steel?). But it seems inescapable. Otherwise the only ones who know anything will be the interested parties; that is one of the traps of sector-focused industrial policies. A judgment on what should be done about any major American industry is unlikely to coincide with the views of those in the industry. But it is a fallacy to say, "surely government officials cannot know better." True, as of now; less true if we keep having problem industries and decide that the national interest needs looking after; unnecessary if industrial policies are pursued with the close involvement and advice of businessmen, bankers, users, and others. Is there any good reason why investment bankers and government officials should not be able to walk the same road — up to a point?

The whole question of how industrial policy can sensibly be made in the United States, with its pluralism and multiple jurisdictions, is a daunting one that economists have to worry about but which should not permit them to dismiss some problems as not worth analysis. Not

the least of these is the well-known but frequently ignored fact — sometimes ignored because of "data availability"<sup>5</sup> — that within what is called an industry there are all sorts of activities that are not homogeneous, that respond to different stimuli, and that compete with or complement one another (and that can change), so that valid prescriptions can hardly be reached at the level usually pursued in economic analysis.<sup>5</sup> Krugman is right that industry studies often reflect hard work without hard thought, but hard thinking that is clear only because it is sufficiently general to pass over crucial facts is also not enough.

There is a dilemma in this sectoral issue. We have all heard the good arguments as to why it is better to avoid sector-specific policies. But the trouble that forces government action is often focused in one or two industries. And if you advocate general policies, economists, tending to be logical folk who suppose that the term "policy" implies clearcut ends and reasonably plausible means of getting there, soon see that any measures that do not rely on the market point toward "planning" or complete government control. This then becomes an argument for avoiding such measures. One sees traces of this in some of our papers. But in practice, economists know better. They know that governments operate in piecemeal fashion, are rarely altogether consistent or coherent, and are dealing with economies that are a blend of many ingredients, not straightforward projections of clear-cut principles. The usual cliché about pregnancy is irrelevant: it is possible to have a little bit of industrial policy, a little bit of market orientation, some competition, some monopoly, and even some planning. It may not be good, but it is not only possible — it is usual. Perhaps it is not surprising that mixed economies are guided by mixed policies.

A key area that needs emphasis when economists look at industrial policy is the operation of markets (and the study of industries that will help that). For good reasons, most economists like markets and are suspicious of those who would tamper with them. But the tamperers

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5. Some examples, which also show that a respectable approach can be made from the outside can be found in the industry studies in John Zysman and Laura Tyson, eds., *American Industry in International Competition* (Ithaca, Cornell University Press), 1983. For an exceptionally complex case where the complexities appear to be crucial to the diagnosis see Michael Borrus with James Millstein and John Zysman, *Responses to the Japanese Challenge in High Technology*, Berkeley Roundtable on the International Economy, University of California, Berkeley, forthcoming. Corporate strategy and union behavior raise questions which are crucial to industrial policies but cannot be taken up here.

are all around us — they include people and institutions that are part of the market. Economists know this and study imperfect competition, but they are happier with analysis that assumes that market forces work reasonably well. Practitioners of industrial policy include many market tamperers; some would speed the forces, some slow them, some just rig them. But that is not the whole story. Structural policy can also be directed toward removing the obstacles that keep markets from working as they are supposed to. In any case, to play a serious part in the industrial policy debate, we have to come to grips concretely with the imperfections that distort various markets and that seriously affect the public interest, separately or cumulatively. Whether you can then prescribe a public policy to set things right is another matter, but you have to try.

Even the case for not interfering in an imperfect market depends on knowing what is wrong with it. Looking for means of increasing competition can provide common ground for the majority view in economics, and for that part of the industrial policy school which puts its emphasis on the fact that a failure to adapt to changes in the world economy, or to move as fast as other countries do, may be the worst thing a country can do when confronted with the pressures that come from structural change elsewhere.

A related set of issues concerns externalities. There is widespread agreement among economists — repeated at this conference — that externalities warrant some public financing of R&D. The conclusion rests on observation (and reasoning) about the way things work; equal attention to other situations may generate comparable consensus. Where does the **comparable** argument lead us concerning the environment, safety, and economic and social stability? Even equity can be thought of in these terms, I suspect, since most economic measures do good or bad in this respect. A step in this direction carries us beyond anything I can deal with here. For example, what kind of national accounting is it that does not consider the cleaning of air and water as productive activity — unless it is paid for in a certain way? Are jobs and incomes not parts of the quality of life? We make these problems harder than they need be by speaking of non-economic values even if the results improve economic performance. Thus we help conceal the fact that the premium on efficiency rises the more society wants to devote resources to the pursuit of other values.

I have jotted down quite a long list of subjects that economists can study or approaches that they can take which will make their work

highly relevant to the issues raised by what Roger Guffey called at the outset of the conference the industrial policy debate that has already been joined. I can note only a few, in alphabetical order.

In *agriculture*, the United States has had a structural policy since at least the '30s. During most of the postwar years most economists — even some agricultural economists — were critical of that policy but increasingly ignored it; they shrugged their shoulders and said that nothing could be done about this costly effort because of "politics." Now it is said by many that the United States is a highly efficient producer whose comparative advantage in farming should be recognized by the world in spite of some heavy subsidies. Has the earlier protection paid off? Is the key the transfer of resources? Is it government research and technical assistance? What does this mean? What has it all cost? Is agricultural policy a model or a warning or an illusion? What does the experience mean about the relevance of economic analysis to public policy?

*Anti-trust* is clearly central to changing (or not changing) the structures and to arguments about market forces. Do we need global instead of national standards? Should economists have more influence than lawyers?

*The defense economy* — not just the level of arms expenditure — is another area of experience with *sectoral* policy that deserves the kind of attention that economists can give it. We know some of the difficulties of military procurement and R&D; can those processes be altered to produce improved economic results?

*Development economics* is now a respectable branch of the profession; there was once much discussion as to how separate a subject it was. There are a few references in the paper to the relation of development to some measures of industrial policy — mostly by way of warning — but a more imaginative pursuit of the subject is in order. Would it not help to interpret Japanese industrial policy and related measures as development policies?

*Energy* provides all sorts of illustrations of the American difficulty in dealing with a *sectoral* problem — and of its international dimensions as well. It is not only how different countries have adapted that needs attention but the difficulties of the policy procedures as well.

*Foreign experience* with industrial policy, though much talked about, is not too well handled in American discussions. More often than not it is too favorably assessed. And as I have said more than once, there is probably a good bit more bad industrial policy in the

world than good, at least if adaptation to structural change is the criterion.

*History* (economic and including business) ought to be brought into play. How much do we really know about structural change? Do we fully understand how adaptation in the American economy has taken place in the past, how major industries have risen and fallen, what kinds of company policies worked and which failed? If these questions were looked at in the light of current problems (a practice that I know is said to make for bad history but has its uses), I suspect we would have a better basis than we do now for seeing what kinds of governmental measures might help the processes by nudging along the good and resisting the bad. This kind of evidence might have special value in dealing with a range of industrial policies that receive relatively little attention in the papers, i.e., those intended to ease transitions and help both workers and managers either to shift to other activities or to make what they are doing more efficient. Yet another historical analysis that would be of value would be to test the validity of the view that during the "good times" of the '50s and '60s, when there was so much economic change, there was also a series of measures that resisted change and supported inefficiency and the status quo — and that the accumulation of these effects is one source of our more recent difficulties, partly because we no longer have the margin to afford their cost.

*Internationalization of business* is now extensive enough, and dynamic enough, to require an examination of our assumptions about business behavior (on which much economic policy reasoning rests) and of the effects of national policies, whether they are called "industrial" or "monetary."<sup>6</sup>

*The organization of the government* for the conduct of economic policy — and not only industrial policy — is of great importance to all these matters. Not only what to do but how to do it has to be discussed. Do we need a Consensus Bureau, as some of the discussions seemed to suggest? Where would we put it? In the Department of Commerce, perhaps as a consolation prize if it does not get STR? Rudy Oswald would not like that. How far can we go with industry-by-industry **tripartitism** when most problems of adjustment and struc-

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6. Richard E. Caves, *Multinational Enterprise and Economic Analysis*, Cambridge University Press, 1982, is an admirable synthesis of much work, but he has relatively little to say on public policy. We need parallel work on financial connections that are not covered by the label "multinational enterprise."

ture deeply involve the relation of an industry to the rest of the economy?

**Services** need more attention than they have had, especially when there are so many ludicrous efforts to find generalizations that cover McDonald's, Citibank, Bechtel, ballet, and bankers.

The list goes on, but my space is limited, and I should say something about the international dimension of industrial policy, if only because it is there that I have done most of my work.

### **The international dimension**

Taken all together, the papers seem to me quite balanced on this matter. They recognize the great increase in the international element in the American economy but do not exaggerate the impact of import competition in causing problems for some basic American industries such as steel and automobiles.<sup>7</sup> But the international issue has to be pushed somewhat further because I think we have not fully absorbed into our thinking the implication of the doubling of the international ingredient in American economic activities in the '70s. For example, I find it impossible to talk of structural change in the United States except in the framework of global change. Bosworth makes the leap when he points out that if American savings are short, foreigners can provide the wherewithal for investment. (More on international investment would fit with the closer analysis internationalized business that I spoke of above.) There is little or nothing in the papers of the rather provincial attitude, common in Europe, which speaks of excess capacity as the problem without asking whether it makes a difference whether the excess is in obsolete plants in old industrial centers or in new Korean factories.<sup>8</sup>

Richardson's excellent paper raises basic issues that are bound to influence American decisions about industrial policy. The choices are far more difficult than many people seem to think, whether they believe that the main problem is to offset the assistance that foreign

7. In this respect, I think they are in line with much American **public opinion** which seems to me to have understood for some time that the problems of these two industries could not be blamed primarily on foreigners. At least that is **true** of autos where every American **is** an expert; steel he is more likely to know about through hearsay, but the hearsay from American business, banking, and journalism has not been favorable to the steel masters for decades.

8. A range of European opinions can be found in Susan Strange and Roger Tooze, *The International Politics of Surplus Capacity* (London, George Allen & Unwin), 1981. The first part of my short contribution to that volume tries to explain the difference between American and European approaches to excess capacity. Since I wrote it, some American opinion has moved toward the European standard while the Europeans have become even more embattled.

governments give their businesses, or whether they make the kinds of remarks with which economists sometimes like to stir up the laity — saying that if other countries want to give away their substance by dumping or subsidies, we **should** be happy to be the recipients. Richardson's discussion of the largely unacceptable implications of passivity, the dangers of pursuing frontier justice — though it might work — and the narrowing of choices when others will not play the "convention" game all seem to me very much to the point. So are the suggestions about less than total multilateralism, though these need careful dissection. As I cannot do justice to this paper, let me confine myself to three quick points.

First, international competitiveness may not be the best criterion for American industrial policy, but unless most American production can hold its own in international competition, the difficulties of the economy will **increase**.<sup>9</sup> The issue is not simply one of exports and imports but of the domestic base, the openness of firing markets, learning curves, the scale of global operations, and the dynamics of industry. No matter what the policy of the United States, American and foreign firms will be influenced by the policies of *some* government. As noted above, how American business responds to foreign governments is part of the domestic problem.

Second, as Richardson shows, the action of foreign governments can change the setting in which transactions are carried on and American policy has to be shaped. Something like comparative advantage can sometimes be manufactured by government measures. Therefore, passivity by the United States — which in this case probably means trying to hold the line on trade liberalization and adhering to existing procedures for cooperation — may not be the best policy. This raises the question of fair trade which in the United States translates into the means of offsetting dumping or subsidies or, increasingly and not illogically, other forms of government help to businesses. This is an extremely unsatisfactory area of policy. On the one hand, people have always argued that it was impossible to defend the removal of trade barriers if that simply opened markets to unfair competition; the whole economic rationale of free trade would be lost if the result was not the best allocation of resources. On the other hand, American fair trade laws have long been subject to two fundamental

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9. I think this is not incompatible with Lawrence's point that international competitiveness should not be the primary target of industrial policies but rather their contribution to growth and/or jobs (the difference may be important).

and conflicting objections. First, they introduce uncertainty and threaten penalties in ways that make them effective instruments of protection. At the same time, from the point of view of injured domestic producers, they are so clumsy, slow, and uncertain that they do not really prevent damage from unfair competition. Both these objections have substance (at least sometimes); in addition, the effort to apply the laws carefully, consistently, fairly and objectively has led to procedures and practices that focus on facts whose relation to the real world is quite attenuated. This is obvious when one looks at constructed costs of production, but it should all have been clear long ago. Viner's *Dumping*, which came out sixty years ago, made it clear that pricing practices in business — including many kinds of highly rational **behavior that** were fully competitive and fair — were far too varied and complex to be dealt with in any satisfactory fashion by bureaucratic processes, much less **clearcut** and simple legislative definitions. Quite often the result of invoking (or threatening to invoke) the fair trade laws is not some precise offsetting action, but an agreement by suppliers to limit quantities or raise prices in ways that frequently seem to help preserve some very imperfect domestic competition. People concerned with the public good ought to dig into these matters, not least because making the fair trade laws more effective and expeditious has become a major objective of a number of business and labor groups whose aim seems to be more effective protection and not just the reduction of red tape.<sup>10</sup>

People concerned with maintaining the ability of the American economy to adapt to structural change in the world economy may have yet another perspective. Even if they operated smoothly and were used only in the most judicious and justified manner, antidumping and countervailing duties could only provide protection against specific forms of unfair competition. Is this enough to insure the optimal performance of the American economy, or should the need for these measures be a signal that something else has to be done? How often can one usefully retest the situation when costs and prices change the situation? How advantageous for the American economy can it be to make it a major aim of public policy to raise import

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10. This is the prime objective of TRAC (the Trade Reform Action Coalition) and one of the aims of LICIT (Labor and Industry Coalition for International Trade).

prices?"

Yet another weakness of these laws is that they cannot cope directly with unfair competition in third markets. If, as is generally agreed, global competitiveness is the objective of major firms and industries, other means have to be found to assure fair competition. Existing American trade law gives the government power to act in such cases, but the effect is not only not guaranteed to deal with the real issues, it may set off a series of damaging blows and counterblows by the United States and other countries. This is the same set of problems that arises when the United States — under Section 301 or by the use of other powers — tries to go beyond antidumping and countervailing duties to deal with government or business practices abroad that are thought to damage American trade. Something like this has to be done, but it is extremely difficult to be sure that the long-run public interest will coincide with the resolution of the immediate issue.

This last danger leads directly to my third comment on Richardson. It concerns the importance of trying to deal with the increasing international difficulties arising from structural change — or, for that matter, old-fashioned trade disputes, neo-mercantilism, or the inevitable clashes of national industrial policies — by improved measures of international cooperation. I believe that this effort ought to be at the forefront of policy. I am also not sanguine as to the results that can be expected in view of the deterioration of international cooperation that has been going on for some time.<sup>12</sup> Any possible or partial success would have considerable implications not only for American trade policy but for what the U.S. could or could not — should or should not — try to do with "industrial policy" or with economic policy more generally. Even more drastic choices would result from the failure to extend the area of international cooperation in these matters — which is the only way to maintain the degree of cooperation that already exists.

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11. The issue exists in a different but related form with regard to pricing and market disruption in the treatment of imports from state trading countries. This is a minor matter in the United States but of more importance in Western Europe, where it is also related to imports from developing countries.

12. All this is explained more fully in Miriam Camps and William Diebold, *The New Multilateralism*, New York, The Council on Foreign Relations, Inc., 1983.

## Conclusions

Sometimes economists write and speak as if they thought that economic optimality was either the normal or the only desirable objective of public policy. They really know better. For one thing, there are conflicting economic ends and conflicting concepts of optimality. For another, everyday experience reminds us that society wants all sorts of things besides the economically most efficient and that among its economic objectives, some are frequently **incompatible** with others. I first studied economics during the Depression, when it would never have occurred to us to suppose that economic policy — as distinct from economic analysis — could be made without regard to political and social factors, or indeed that it should be. It is just as true today. Defense, ever-broader concepts of national security, personal security, leisure, stability, political cohesion, child welfare, equity of various sorts, and any number of other considerations all go into public policy. Economic analysis that merely contests or even denigrates these objectives — which are not all equally worthy, compatible with one another, or even attainable — has limited uses. The demonstration of costs is a necessary function of economic advice. There is no inevitable hierarchy among these choices. The working out of tradeoffs comes close to being one of the main contributions economics can make. All this is commonplace; perhaps no one disputes it. But I make the point because I hear — not so much in these papers as in some other discussion — a somewhat impatient, almost arrogant tone which suggests that "if it isn't optimal, it isn't good — take it or leave it." That is not what economics is all about or how the study made progress, even in its theory.

Everyone knows these things even though they sometimes act otherwise. By recognizing them, economists improve their chances of influencing policy and need not lose their firm grip on analysis. As I look back over the time I have been aware of these issues, I think most good economists have coped reasonably well with this split personality and have made sense about public policy; trade policy is a case in point. Over most of that time, the influence of economists has also increased. During the last few years there has been a sag for reasons that will not have escaped anyone here. That creates a problem in dealing with the rising pressures for what we are loosely calling industrial policy. The best winning pitch for economists, as I have suggested, is to get macro policy back to where the other tensions can

be reasonably resolved and put off, and at the same time to come to grips with the issues and not wave them away.

To do that, economists have to go back a bit to the times when it was taken for granted that the economy was not working well and that fundamentals were in question, as in the New Deal. At the same time, they have to deal realistically with those aspects of the economy that you might like to get rid of but cannot. The choice is not new. About 150 years ago Thomas Love Peacock had one of the characters in *Crotchet Castle*, a philosopher, say to another, an economist:

The moment you admit that one class of things, without any reference to what they respectively cost, is better worth having than another; that a smaller commercial value, with one mode of distribution, is better than a greater commercial value, with another mode of distribution; the whole of that curious fabric of postulates and dogmas, which you call the science of political economy, and which I call *politicae oeconomiae inscientia*, tumbles to pieces.

That seemed logical, but it wasn't true. The books tell me that Mr. MacQuedy, to whom this is addressed, is modeled on J.R. McCulloch, but it might as well have been James Mill who worked with Peacock in the India Office, or his son. Remember that it was John Stuart Mill whose development of Bentham's Hedonism into utilitarianism (which underlies most of our economics) involved the introduction of quality. And Peacock apparently liked **Bentham** better than the Mills. But I believe he was wrong. You may disagree with me, but are you going to quarrel with John Stuart Mill?



## Overview

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*George C. Lodge*

The task of this panel is to describe the policy implications of what we have heard yesterday and today. Since there is some ambivalence and contradiction in what has been said, we are, I assume, free to choose the thoughts whose implications we trace.

Fred Bergsten said, and Bob Lawrence told me after his speech, that competition from Japan and other Asian countries, and even some European countries, was a significant factor in causing our economic devastation and contributed in an important way to our \$60-billion to \$100-billion trade deficit. Economic recovery, such as it may be, is no remedy for competitive failure. The remedy? Improve efficiency, said Lawrence and others: Lower prices, improve quality, lower wages, lower income. And as Jeff Sachs and Ray Marshall suggested, countries do this best which are good at developing a consensus between government, business, and labor about how the burdens of this austerity are to be shared. Thus, continued competitive pressure will force institutional — structural — changes with important implications for both public policy and business policy. (Larry Summers' view that such changes provide "no reason for public policy" was of course different.)

Much was said about industrial policy. Here I agree with George Eads and others that the choice is not to have one or not. The choice is a good one or a foolish one: coherence vs. ad hocery. Robert Kuttner put it well: "We commit industrial policy with a set of ideological blinders on that prevent us from doing it very well."

Proceeding from there, allow me to sketch broadly the changes which I see as happening and inevitable. I shall do this by analyzing three cherished myths and how reality is eroding those myths. We are

tempted to follow the myths and to deny reality, a path without promise. In a sense this is a psychological or psycho-ideological problem. It requires us to inspect some basic assumptions.

### **Myth No. 1: free trade and comparative advantage**

*The myth:* The comparative advantage of one nation over another in world competition derives from its natural resources, its labor, and its capital. An essentially static notion, this idea led many western economists to conclude, for example, that Japan at the end of World War II was a basket case and could develop only by making maximum use of its major resource, cheap labor.<sup>1</sup>

According to this idea, countries should produce what they can make most efficiently and trade for the rest. Trade occurs among numerous private companies in markets where prices are set by the laws of supply and demand. The task of government is to keep the avenues of trade free and open through multilateral agreements. In this way all economies will eventually grow and prosper, although some may need to suffer the short-run pain of adjustment to changes in comparative advantage.<sup>2</sup>

*The reality:* The static conception of comparative advantage, David Richardson implied, is no longer relevant. As my colleague Bruce Scott has pointed out: "Unwilling to accept the conventional Western idea that their role is to specialize in goods based on cheap labor . . . the East Asians have forged a dynamic theory of comparative advantage that allows them to allocate human and financial resources towards jobs with high value-added in growing industries and, for example, to succeed in steel despite a lack of both coal and iron."<sup>3</sup>

Through the use of systematic government policies, Japan has moved its economy from labor-intensive products such as textiles, to capital-intensive goods such as television sets and automobiles, into the advanced-technology sectors of electronics, semiconductors, and computers.<sup>4</sup> Many other countries are following the Japanese exam-

1. See Bruce Scott, "Can Industry Survive the Welfare State?" *Harvard Business Review*, September-October 1982.

2. John Zysman and Stephen S. Cohen, *The Mercantilist Challenge to the Liberal International Trade Order*, a study prepared for the Joint Economic Committee of the U.S. Congress, U.S. Government Printing Office, Washington, D.C. 1982, p. 4.

3. Scott, p. 72.

4. Zysman and Cohen, p. 9.

ple. Successful countries — that is, those who are able to formulate national goals and policies which achieve them — have learned how to *create* comparative advantage and design it to achieve a global strategy.

Under such circumstances the old premise of free trade is in many ways a delusion. "The assumption — half fact and half fiction — that governments are negotiating about the rules of trade, leaving the market to settle the outcomes, is increasingly less tenable," writes John Zysman and Stephen Cohen in a study prepared for the United States Congress.<sup>5</sup> Government, in fact, is concerned with outcomes. Countries are designing policies and institutions both to create advantage, that is achieve competitiveness, and to ease the costs of industrial transition within their borders. Both sets of activities fundamentally disrupt the traditional premise of free trade.

To echo David Richardson, countries, like companies, have portfolios of business or industries. Government policies are used to influence the mix in the portfolio as well as its structure: the development of new industries, the concentration of old, the redeployment of capital and labor out of declining and into growth sectors, the encouragement of research and development in carefully targeted areas, and more.<sup>6</sup> The United States is losing market share to those countries with effective competitive strategies.

The alternatives for America appear to be: to devise a competitive national strategy for itself, or to continue to resort to a variety of devices to protect its weakening industries from the strategies of others. Its attempts to change reality — that is, to force other countries to abandon their strategies and to play by the rules of free trade — have not worked, and it is unlikely that they will.

For example, the attempt to use U.S. countervailing duty laws to prevent European government from subsidizing their steel industries in 1982 evolved into a market-sharing agreement — hardly free trade. The legal action threatened a broad range of U.S. interests in Europe, ranging from the purchase of U.S. agricultural goods to nuclear policy versus the Soviet Union. These countervailing interests were sufficient to convert the enforcement of the laws into a negotiated agreement under which the Europeans promised to limit their steel exports to the U.S. to 5.4 percent of the market. If it is gov-

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5. Zysman and Cohen, p. 5.

6. Scott, p. 75.

ernmentally negotiated shares which will determine the size and nature of the world steel industry, then a number of other decisions are naturally forced upon government about the nature and size of the U.S. industry, the costs of retrenchment, and the national interest concerning imports (presumably Mexican steel is preferable to Korean, at least until the Mexicans get their bank debts paid). And if steel is diminishing as a contributor to our economy, what takes its place? We are thus driven to examine the next myth having to do with what is government's proper function.

### **Myth No. 2: the role of government**

**The myth:** As David Richardson again said, Americans have traditionally adhered to the concept of John Locke and his followers that government is a necessary evil: the less of it the better. Its purposes are best limited to protecting body and property and the enforcement of contracts. What there is of it should be checked, balanced, and separated. It should neither plan nor indeed even be coherent, and as many of its functions as possible should be decentralized. Implicitly, it should be responsive to interest groups and crises. "Because of the inherently antigovernment character of the American creed," writes Samuel Huntington, "government that is strong is illegitimate, government that is legitimate is weak."<sup>7</sup>

**The reality:** The results of efforts to diminish the role of government have been disappointing because of the global reality in which the United States finds itself requires a quite different conception of government — not more of it, but a different conception. As government policies bear ever more importantly on U.S. competitiveness, the government is being forced to a fuller consciousness of the myriad effects of what it does; if there is conflict and contradiction, it must choose priorities and work to create the consensus to implement its choices. Clearly the vast array of government transfer payments — subsidies and loans as well as its environmental, tax, and monetary policies — have a critical effect on savings, investment, and industry growth. The fact is that the pulls and thrusts of interest groups, augmented by crises of one sort or another, have created a very large and very interventionary government. Government, which traditionally eschewed making its interventions coherent because of

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7. *American Politics: The Promise of Disharmony*, Cambridge, Mass., Harvard University Press, 1981, p. 39.

its allegiance to the traditional myth and aversion to anything called "planning," has now found it necessary to become more coherent — for budgetary reasons if for no other. President Reagan's centralization of regulatory authority in the Office of Management and Budget is a case in point. Although one cannot yet say that the United States as a whole has grasped the necessity of a strategy for competitiveness, it is quite clear that a number of leaders of business and labor have done so: They have perceived the new reality.

The myth of the limited state has produced a large, expensive, and incoherent government, but the government has not been without a strategy. That strategy, however, has been implicit, indeed intentionally so, given our creedal aversion to making it explicit. The goals of the strategy have been short-term consumer welfare, "a higher standard of living through subsidies to consumption," with a consequent erosion of investment and productivity. Meanwhile, other nations have shaped their strategy to raise the standard of living by encouraging savings, investment, and productivity.

In implementing its strategy, Zysman and Cohen have referred to the Japanese government's two roles: It is "a gatekeeper," controlling the links between the domestic and the international economy, and it is "the front office," promoting, guiding, and financing domestic firms to achieve rapid expansion and to gain increased shares of world markets.' As a gatekeeper, it controls what enters in the way of technology, capital, and foreign-based control. As a promoter, it force-feeds industries at the frontier of innovation and growth so as to hasten their capacity to compete in the world. Japan produced only 160,000 cars in 1960. By 1970 they were producing 3.1 million cars, and ten years later it was more than 8 million a year.<sup>9</sup> This dramatic increase was made possible in part by the Japanese tax system, which allowed very rapid depreciation schedules, and by a credit policy that provided long-term debt at low interest rates.

The myth of the limited state has caused the United States to shun government credit allocation and to leave it to the supposedly free capital markets. But consider the reality. In 1981, the Council of Economic Advisers reported, \$361 billion was raised in U.S. credit markets. Of this, \$86.5 billion resulted from federal government

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8. Zysman and Cohen, p. 13.

9. Zysman and Cohen, p. 17.

activity: loan guarantees to ailing giants in the steel, automotive, and other industries; housing loans and guarantees; and subsidies to farmers and the like. The council decried the fact that "increasingly political judgments, rather than marketplace judgments, have been responsible for allocating the supply of **credit**."<sup>10</sup> The council went on to suggest a formal "federal credit budget." Is this — should this be — the beginning of some coherent procedure whereby the federal government considers priorities for credit? The U.S. government cannot choose winners and losers, it is said. But does it not already do so, favoring the losers over the winners? Contemplating the national interest in world competition, could not one draw a useful distinction, for example, between the semiconductor industry and fast-food shops? The free **market/limited** state myth would say no; reality suggests a different answer.

The myth of limited government has produced a governmental organization in which not only the executive branch is separated from the legislative, but in which also the various agencies of the executive branch are disjointed. Trade policy, for example, is now made in countless places throughout Washington: Defense, Commerce, Treasury, Agriculture, Labor, the Senate, and the House. The office of the United States Trade Representative is theoretically designed to coordinate all trade policy, but it can only do this with strong presidential endorsement, which in 1983 was not present. Reality is forcing change in this fragmented structure, but it comes slowly. Meanwhile, our competitors proceed more deliberately.

Converting the American government into such a machine seems most unlikely, given the power — and indeed the value — of the old myth of the limited state. But reality appears to be forcing a permanent shift in the role of government. It is inconceivable that government could successfully undertake such a role without the close collaboration of business and labor, particularly big business, which is heavily engaged in world competition. Business, not government, has the competence necessary to compete successfully, but this competence is handicapped if it is not nourished and legitimized by government policies. That such a consensus can be developed was shown in the working of the advisory committee to the USTR in the 1979 trade negotiations.

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10. *The Economic Report of the President*, transmitted to the Congress, February 1982, p. 94.

### Myth No. 3: managers and managed

*The myth:* The old assumption is rooted in the ideas of property rights and contract: The **owner** is free to do with his business as he will, observing either short- or long-run considerations, and he can hire and fire his employees, who have an obligation to obey the contract of employment. At first the contract was individualistic, and the owners' right to fix the terms was constrained only by the market for labor. As managers replaced owners in large publicly held companies, their obligation was to maximize benefit to owners, as the managers and owners defined that benefit, generally in terms of earnings per share, often over the short run. With the rise of trade unions, the contract in many companies became both collective and adversarial, its terms set through bargaining.

*The reality:* Again, multiple erosion has occurred. The institutionalization of the stock market has meant that it is difficult for managers to obtain a true reading of the owners' wishes. They are frequently driven, therefore, to "play to the mercurial tics and prejudices of a small cadre of stock price influencers' shifting ideas of value rather than value itself," to use consultant John Schnapp's colorful language."

Furthermore, debtholders — banks and other financial institutions — have become more important in many cases than shareholders. And the various demands of government and the community in general have become more pressing.

Finally, a variety of factors have caused change in relationships between managers and managed. The hierarchical separation of managers and workers that tended to result from the old model has become costly. With rising levels of education, workers obtain greater fulfillment by being involved in the decisions affecting their work which had previously been made exclusively by management. The introduction of new technology proceeds more smoothly and efficiently if workers are informed and consulted before it is introduced and if they join in managing the new procedures.

In many unionized settings, the old concept of managerial prerogatives and adversarial relationships drove labor costs far above that of foreign competitors, **causing** industrial deterioration and unemployment. Many unions, most notably the United Automobile Workers

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11. "Who for the Pedestal Now?" New York *Times*, July 11, 1982

and the Communication Workers of America, have recognized that restraint was necessary in order to save jobs. But they are unwilling to restrain their adversarial proclivities without a promise of participation in such management decisions as investment, allocation of profits, **employment** security (as Michael Wachter suggested), and even managerial salaries. Why should a worker take a pay cut if the profits gained thereby would be used to raise top management's salaries or to purchase an oil company or a savings and loan association?

In a wide variety of ways and for many reasons, therefore, the old notion of contract is being replaced by a new one of consensus. Managers and managed have mutualities of interest that are **far** greater than their conflicts. Both, at least theoretically, have an equal interest in competitiveness and in the company's ability to attract capital from whatever market — equity, debt, or government. This new fact has expressed itself in a variety of programs ranging from "quality of work life" and employee involvement in the auto industry to employee buy-outs. Some 16 percent of America's major companies in 1983 were estimated to be involved in such buy-outs. They were less expensive than shutdowns, since employees who owned the firm were prepared to sacrifice to make it competitive. Board membership in these new companies was generally shared by managers and workers. In fact, the separation implied by these old words was no longer appropriate.

The significance of these changes for managers and unions is radical and profound. The old bases of authority for each has been eroded; new ones are unclear. Some feel that the time has come to do away with unions altogether, their old adversarial mission having shown itself to be counter-productive. At the same time, thoughtful managers know that whatever the myth, their right to manage is in fact coming from those whom they manage. This is the wave of the future.

The competitiveness of American enterprise seems to depend on a quite new concept of corporate governance. From whence will the right and ability to manage derive in the 1980s and beyond: shareholders, debtholders, the managed, or the community, through government? How will the balance among these four sources be arranged? In Japan, shareholders are of little significance, and the relationships among banks, government, managers, and managed are carefully constructed for growth and competition. How will the United States respond? The debate on corporate governance in the

United States in 1983 seemed appropriate but remote from the problem as the old arguments proceeded about inside vs. outside directors, shareholder democracy, and the like.

I am not arguing that these changes in the traditional paradigm are good or even desirable. Each is fraught with problems. But I am saying that they are occurring and will continue to do so. Denying reality because of an affection for old myths is a form of psychosis which will solve nothing.



# Overview

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*Jerry Jasinowski*

## **Introduction**

The role of the summarizer is always a difficult one. This paper attempts to develop an integrated perspective on the causal factors responsible for industrial deterioration and, based on an analysis of these causes, to draw out the policy implications that have emerged from the studies presented at this conference.

The underlying theme of my comments is that the problems of American industry are sufficiently variegated that they cannot be analyzed in a single dimension, but rather are accessible only to more multidimensional forms of analysis. More specifically, while this conference has focused on structural change, a recurrent point in the papers presented is the underlying tension between analyses of industrial decline that have focused on cyclical factors, and those that have emphasized longer-term structural relationships and linkages to the international economy. In my opinion, these interpretations should not be viewed as necessarily incompatible. Instead, a synthesis of these interpretations may provide a better conceptual handle on the nature of current economic problems than any individual interpretation on its own.

From this perspective, four broad categories of causal factors can be outlined. The most important has had to do with greater cyclical instability, as reflected in the greater length and depth of recessions during the past 10 years. Cyclical instability in turn owes its origins primarily to the way in which demand management policies were

conducted, and to the exogenous shocks represented by OPEC oil price increases.

Side by side with the deterioration in the domestic macroeconomic performance, American competitiveness in international markets has also been poor, with exports undergoing a series of erratic cycles since the end of the Bretton Woods period, but growing on average less rapidly than the exports of the other major industrial countries. At the same time as American firms underwent a gradual loss in share of world export markets, their share of domestic markets also declined, as substantial import penetration took place.

While the implication of the poor international performance was primarily to reinforce cyclic swings in the economy, cyclical instability has taken place coincidentally with a series of longer-term structural difficulties. There is considerable debate, as reflected in the papers at this conference, as to the distinction between cyclical and structural factors, but it is generally accepted that the declines in capital formation, productivity, R&D spending, and corporate profitability during the last decade were greater than can be accounted for solely by cyclical influences, and are in part attributable to structural factors. Paramount here are the obsolescence of the capital stock and losses in potential output associated with the OPEC shocks, increases in the user cost of capital, and a series of factors that have lowered corporate profit margins, ranging from price controls to excessive taxation.

Finally, the analysis of industrial deterioration requires some reference to problems at the industry and firm level. The contribution of wage rigidity to macroeconomic disequilibrium is now well understood. However, an additional factor has to do with poor management practices, which appear to be at least partially responsible for the problems of specific industries. In this paper, I overview these four causal areas, with particular reference to the points made in this conference, and then proceed to a discussion of policy recommendations.

### **The problem of cyclical instability**

The role of cyclical instability is stressed by Larry Klein, who suggests that the basic parameters of economic behavior have not changed as much during the last decade as has frequently been argued, but that the performance of the economy was subject to **exog-**

enous shocks, changes in legal rules, or simply policy changes.' Following this line of analysis, cyclical instability can be linked more specifically with procyclical biases in demand management in conjunction with the destabilizing impact of the OPEC crises.

***Procyclical biases in demand management.*** Because monetary and fiscal policies tended to be procyclical in the long term, they led to an exacerbation of the reflation-recession cycles that have characterized the last fifteen years. The early 1960s were characterized by highly successful policies that were able to achieve high growth without triggering an acceleration in inflation. However, from this point on, macroeconomic policies were noticeably poorer. During the Vietnam War, the main problem had to do with large deficits ratified by monetary accommodation, leading to excessive stimulus and rising inflation. On subsequent occasions, under Nixon in 1971-73 and Carter in 1977-79, the problem was excessive monetary reflation, which caused the inflation rate to accelerate, while the industrial boom associated with looser money proved unsustainable in the face of financial volatility.

In retrospect, monetary and fiscal policies tended to be too expansionist during periods of recovery, leading to pronounced accelerations in inflation. The rise in inflation was exacerbated by the successive OPEC shocks (and in 1974-75 by the wage-price rebound following removal of controls), leading to a situation in which inflation rates reached destabilizing levels, and compelled a more prolonged disinflationary policy response. In the long term, therefore, the output gains achieved during the reflationary booms of 1971-73 and 1975-79 were eventually offset by the greater magnitude of the output losses during the disinflationary recessions of 1974-75 and 1979-82.

There are two possible explanations for the tendency for macroeconomic policies to become increasingly procyclical. One possibility is that policy decisions have tended to lag behind the actual state of the economy. Thus, rather than attempt to cool off the economy during destabilizing booms, policymakers did not apply restraint until the inflation rate had accelerated substantially. Similarly, little countercyclical stimulus was applied during recessionary periods until after protracted declines in economic activity. A second possibility is that macroeconomic policy decisions have become excessively influ-

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1. Lawrence Klein, "Identifying the Effects of Structural Change," this volume.

enced by short-term political pressures, causing recoveries to be pushed too far through excessive stimulus and recessions needlessly prolonged through excessive restraint.

***The worsening of the tradeoff.*** Klein also notes a gradual outward shift in the Phillips curve during the 1970s, and in this respect, one of the outcomes associated with the successive reflation-disinflation cycles of the late 1970s was a gradual worsening of the short-run inflation-unemployment tradeoff. As the underlying inflation rate gradually rose, each cycle of monetary stimulus tended to raise inflation by comparison with its level during the preceding business cycle. At the same time, as a result of the maturation of the generation born in the early 1950s and the unprecedented entry of women into the job market, the labor force grew very rapidly during the 1970s, increasing by over 20 million workers during the course of the decade. The result was that high employment could be achieved only at the expense of accelerating inflation. The political need to reduce inflation, impelled in part by public demands for greater price stability, led to more protracted monetary disinflation than would have been necessary if initial inflation rates had been lower.

***The mismatch of monetary and fiscal policy.*** The period of acute decline beginning in late 1979 is attributable in part also to the fact that monetary and fiscal policy have been fundamentally mismatched. Monetary policies were almost continuously restrictive from October 1979 until the initial loosening in July 1982. However, monetary restriction was not accompanied by a corresponding tightening of fiscal policy. Instead, fiscal policies have been excessively expansionist, resulting in severe congestion in credit markets and raised interest rates to levels not witnessed in over a century.

Thus, in the final analysis, the lower average growth rate experienced during the past decade traces back in part to cyclical volatility and therefore to errors in the conduct of macroeconomic policy. However, side by side with their impact on the domestic business cycle, macroeconomic policy changes have also been associated with substantial fluctuations in exchange rates and for this reason have also contributed to a deterioration in the international competitiveness of American industry.

### **Industrial performance in international trade**

Another theme touched on at this conference has been the contribution of international trade to economic performance. The competi-

tiveness of American industry is analyzed extensively by Robert Lawrence.<sup>2</sup> He finds that while export competitiveness improved on average from the end of the Bretton Woods system up to 1980, a more adverse development was that the export volume in the U.S. did not increase as rapidly as that of other major industrial countries during this period. His analysis also indicates that the loss in American export competitiveness is a comparatively recent development, having to do primarily with exchange rate misalignment. However, in addition to the current overvaluation of the dollar, there is ample evidence that the United States would have benefited from a more systematic export promotion policy, comparable to what has been instituted in the other industrial countries.

**The exchange rate.** The role of the exchange rate in accounting for the recent deterioration in export performance is now well understood. Under Bretton Woods, the dollar was overvalued from the late 1950s onward. This tended to retard the growth of American exports and led domestic manufacturing industries to concentrate primarily on the domestic market. The increasing multinationalization of American industry was also impelled in part by the overvaluation of the dollar. With exchange rates favoring imports, American companies established operations overseas and used foreign countries as "export platforms" in order to produce goods destined for the domestic market. The Bretton Woods system also encouraged import penetration of the American market by foreign corporations. Because of the undervaluation of the exchange rates of Japan and the western European countries, they were able to exploit increases in aggregate demand in the United States by shifting production to the American market. With the breakdown of the Bretton Woods system during the early 1970s, the dollar underwent two phases of depreciation in 1973 and 1978-80, which were associated with substantial increases in the export volume. Nevertheless, the export booms were eventually cut short by decreases in global demand and increases in the exchange rate. Most recently, the overvaluation of the dollar traces back primarily to differential between interest rates in the U.S. and the other industrial countries, which led to increased purchases of dollar-denominated assets in international financial markets.

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2. Robert Lawrence, "Changes in U.S. Industrial Structure: The Role of Global Forces, Secular Trends and Transitory Cycles," this volume.

*Differences in export promotion policies.* David Richardson's paper noted that the practice of trade policy among the industrial countries during the last few years has become increasingly divorced from the formal policy framework as established by multilateral agreements, although the United States has actually been less culpable in this respect than other nations.<sup>3</sup> The policy instruments through which exports have been promoted include

- 1) Tax credits or exemptions for exporters,
- 2) Credit allocation to export industries through semi-public financial consortiums or regulatory controls over capital flows,
- 3) Selective pricing by nationalized corporations, both in international markets and in domestic industries that provide inputs to exporters,
- 4) Fiscal subsidies by governments,
- 5) Provision of special credit terms to foreign countries purchasing exported goods.

Private companies in the United States have not enjoyed the same advantages. The major public policies available for export promotion in the United States have been tax advantages through DISC (Domestic International Sales Corporations) and easier credit terms through the Export-Import Bank. These have been neither as extensive as the corresponding advantages made available to exporters by governments in other countries, nor as systematic.

### **Long-term structural problems**

The role of long-term structural factors in accounting for industrial decline is considerably more controversial than that of cycles. The argument that there has been a secular or structural decline in the American industrial performance is difficult to reconcile with the cyclical behavior of the economy during the major business cycle upswings of the 1970s, and in this respect the entire structuralist case is sharply criticized by Lawrence. Although it has frequently been argued that in the aftermath of the first OPEC crisis, the growth rate of American industry underwent a process of secular decline, in fact, as Lawrence's research reveals, this is not the case: during the recovery of 1975-79, industrial growth was as rapid as during the boom of the early 1960s, and was actually somewhat more rapid than during

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3. S. David Richardson, "International Trade Policies in a World of Industrial Change," this volume.

the Vietnam War era. Relative to trend, U.S. industrial output and real GNP growth did not fall during the recovery of the late 1970s. The prognosis of a secular decline in industrial output during the late 1970s is therefore thrown into some question.

The strength of the American industrial performance during the late 1970s is particularly apparent when compared with the experience of western Europe and Japan during the same period. The recovery of 1975-79 in western Europe, even in countries that achieved high growth rates such as Canada, Austria, Germany, and Italy, was noticeably erratic, witnessing a sharp slowdown in 1976 — with the result that growth rates were lower relative to trend than their average of previous postwar business cycles. Similarly, in countries that experienced poorer economic performances, such as France, the U.K., and Sweden, growth rates fell to approximately one-half their trend of prior recoveries. Interestingly enough, the same phenomenon was also visible in Japan, where growth rates during the late 1970s were only about half their level of the 1960s. Hence, relative to trend, the U.S. actually registered one of the best economic performances of the industrial countries during the second half of the 1970s. The situation was, of course, somewhat less sanguine than the aggregate growth record would imply, inasmuch as the recovery of 1975-79 in the U.S. was achieved only through consistent reflation. The result was that while the greater buoyancy of domestic demand and the increase in export competitiveness implied by the depreciating dollar kept the American economy expanding for a period of nearly five years, the ancillary result was a sharp increase in the underlying inflation rate.

The structuralist case is also criticized by Barry Bosworth, who offers a highly iconoclastic approach to the current debate on productivity and capital formation.<sup>4</sup> The basic thrust of Bosworth's critique is that the link between capital formation and the productivity decline is weaker than has commonly been thought. Although there are indications of a secular decline in productivity growth over the business cycle, this is not paralleled by a corresponding decline in capital formation.

The relationship between declining capital formation and productivity has been the object of considerable debate. Studies by Siegel

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4. Barry Bosworth, "Capital Formation, Technology, and Economic Policy," this volume.

(1979) and Eckstein and Tannenwald (1981) analyze the productivity decline using a peak-to-peak methodology during the business cycles of the 1970s, comparing this period with the previous 15 years. Their conclusion is that the decline in the capital-labor ratio over the business cycle accounts for slightly less than one percentage point of the decline in productivity relative to **trend**.<sup>5</sup> Since the methodology used involves comparing productivity growth rates on a peak-to-peak basis, however, the **Siegel** and Eckstein-Tannenwald studies should not be viewed as incommensurate with the interpretation that the decline in capital formation during the 1970s was largely accounted for by the first OPEC energy price increase in 1973-74 and the resulting global recession in 1974-75. This latter interpretation is generalized to the industrial countries as a whole by **Bruno**.<sup>6</sup> Tests for the industrial countries and relatively more industrialized LDC's confirm that a major component of the productivity decline during the 1970s is explained by the combined effect of higher relative energy prices and the ensuing contraction in real economic activity.

From this perspective, the link between the capital-labor ratio and productivity growth on a cyclical rather than secular basis is largely noncontroversial. The deterioration in productivity growth and capital formation during the period 1973-75 is attributable to much the same causes, and was fundamentally global in nature. Where **Bosworth's** argument is more telling, however, lies with the asymmetrical relationship between capital formation and the productivity slowdown during the late 1970s. Following the 1974-75 recession, real business fixed investment underwent a sharp recovery. During the period of rapid expansion from 1975 to late 1979, real growth in investment actually surpassed its peak rates of the 1960s, and capital formation rose substantially as a share of GNP. Not until the second OPEC shock in 1979-80 and the renewed onset of recession did the investment boom slow down. The strength of the recovery in capital formation contrasts markedly with the behavior of productivity growth during the recovery of 1975-79. Following a severe decline in 1974 productivity growth recovered to its normal postwar trend by 1976, but thereafter slowed considerably over the next three years,

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5. Robin Siegel, "Why Has Productivity Slowed Down?" in *Data Resources Review of the U.S. Economy*, March 1979, and Otto Eckstein and Robert Tannenwald, "Productivity and Capital Formation," in *Data Resources Review of the U.S. Economy*, February 1981.

6. Michael Bruno, "World Shocks, Macroeconomic Response, and the Productivity Puzzle," National Bureau of Economic Research working paper #942, 1982.

despite the fact that the economy continued to experience rapid growth in 1977-78. The cyclically adjusted deterioration in productivity growth therefore cannot be explained as a function of cyclical decreases in investment, and instead emerges as a result of structural factors.

In essence, therefore, when one looks at productivity growth and potential output rather than aggregate industrial growth, a more compelling case can be made in favor of a role for structural factors as causes of industrial decline. Here several causes have been at work, ranging from the ancillary effects of the energy shocks to increases in the user cost of capital and other factors which have reduced the capacity to invest.

**Changes in relative energy prices.** The OPEC shocks were associated with both a decrease in potential output due to the reduction in direct energy inputs, and a decrease in actual industrial output due to the transfer of income to the OPEC countries. These in turn had a series of additional indirect implications for the economy. First, because of the higher complementarity between capital and energy inputs to production, the OPEC shocks were associated with a decrease in capital formation. Since increases in relative energy prices imply a **corresponding** increase in the cost of capital, capital inputs to production also declined. Secondly, because of the drop in demand associated with the transfer of purchasing power to OPEC, real output was further reduced, beyond the reductions implied by the decline in energy inputs.

**Capital formation.** Although the growth of business fixed investment has tended to correlate with the business cycle, the decline in investment in 1974-75 and 1980-82 appears to be somewhat greater than would be implied by cyclical underutilization of capacity. Hence, the magnitude of the declines on both occasions has reflected the impact of additional causes.

Apart from cyclical underutilization of capacity, the causes of the decline in capital formation have had to do primarily with the energy price shocks and increases in the user cost of capital. Because of the relationship between factor inputs of energy and capital noted above, the successive OPEC price shocks in 1973-74 and 1979 reduced capital formation directly. The OPEC shocks also account for the deterioration in the net investment ratio. Higher relative energy prices made much of the existing capital stock obsolete, since the equipment in place at the time ran on cheap energy. Thus the sharp increase in

investment in 1976-78 can be interpreted more in terms of conversion to energy-efficient plant and equipment than expansion of net new investment.

A major additional factor has been the increase in the user cost of capital — the rate at which corporations obtain funds for investment — since the late 1970s. Since the late 1960s, the user cost has been unusually high, with the result that even before the dramatic increase in interest rates in 1979, corporations faced a severe aggravation of the costs they incurred in obtaining capital. An additional factor here was the decrease in the real rate of return on corporate equity during the late 1970s, which lowered corporate equity values and retarded capitalization. Since 1979, with interest rates at their highest levels in over a century, the increase in the user cost of capital has been a major factor in accounting for the decline in investment.

*The financial deterioration of industry.* There has been a serious decline in both corporate profits and business liquidity, which although particularly acute during the major recessionary periods, has also resulted in part from non-cyclical developments.

Several factors contributed to the longer term process of financial deterioration. Wage-price controls and guidelines tended to depress prices in relation to labor costs, with the result that when controls were in force, particularly in 1971-74, the deflection of the price trajectory below its free market path was achieved primarily through constriction of profit margins.<sup>7</sup> Another factor had to do with the exaggeration of corporate tax liabilities by inflation; here two mechanisms were involved, overstatement of inventory profits and understatement of depreciation costs under the old ADR system.

Side by side with the decline in profitability there has been a corresponding decline in liquidity, due primarily to heavy dependence on short-term debt as a means of meeting capital requirements in a high interest rate environment. The dependence on short-term debt reflects two factors, an obvious reluctance on the part of business to incur long-term debt at exceedingly high interest rates, and a corresponding reluctance on the part of banks to undertake long-term lending when uncertainty about interest rates means that longer run com-

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7. For analyses of the impact of the Nixon administration's wage price controls on prices and wages respectively, see in particular Robert J. Gordon, "Wage-Price Controls and the Shifting Phillips Curve," in *Brookings Papers on Economic Activity*, No. 2, 1972, and Robert J. Gordon, "The Response of Wages and Prices to the First Two Years of Controls," in *Brookings Papers on Economic Activity*, No. 3, 1973.

mitments may not guarantee optimal rates of return on loans. However, it is the pervasive dependence on short-term debt that is primarily responsible for the rise in the debt service ratio. At the same time, there has been a serious rise in the debt-equity **ratio**, an important measure of the financial structure of corporations. The rise in interest rates during the late 1970s caused the rate of return on bonds and Treasury bills to exceed the real rate of return on corporate equity, prompting investors to switch their asset **portfolios** from corporate stock to bonds. This in turn forced business to rely more heavily on borrowing than on new stock issuances in order to obtain working capital, leading to a deterioration in the debt-equity ratio. The significance of the increase in the ratio of debt to equity was primarily to heighten the vulnerability of the business sector to the increase in interest rates since late 1979. The contraction in corporate cash flow was considerably more acute than it would have been with a more favorable debt-equity structure, since an increasing share of profits was tied up in debt service.

**Research and development.** There is also evidence of a sharp decline in **R&D** spending from roughly 1969 up to 1975, which in contrast to capital formation and productivity is largely uncorrelated with the business cycle. In accounting for the falling off of **R&D** spending during the early 1970s, one factor was the de-escalation of the Vietnam War, which led to a direct decline in military **R&D**. Thereafter, the gradual shift in the composition of federal spending from defense to transfer payments during the mid-1970s was associated with a further slackening off of **R&D** expenditures relative to trend. However, a substantial component of the **R&D** slowdown was in industrial rather than federally sponsored research, and probably is attributable to the deterioration in profitability during the mid-1970s. The fact that the recovery in **R&D** outlays has been sustained since 1979 is, however, quite remarkable in view of the decline in real profits during this period. Despite falling profits and severe illiquidity, the private sector has been able to increase its real allocations for **R&D**, in part because of the **R&D** tax incentives enacted under ERTA, including a moratorium on Section 1.861-8 of the Treasury Regulations, and an incremental **R&D** tax credit. The result of these new incentives is that **R&D** spending has held up quite well during the recent recessionary period.

In sum, there is considerable evidence that structural factors have coexisted along with the cyclical causes of industrial deterioration,

and in this respect there are a series of linkages between these two causal areas. First, the aggravation of cyclical downturns and longer run structural problems are to some degree attributable to the same causes. The OPEC shocks in particular were responsible for both the emergence of the two recessionary periods of the past decade and for the decline in capital formation and the deterioration in cyclically adjusted productivity growth. Monetary restriction not only produced the short-term contractions in demand that led to the recessions, but also increased the cost of capital. Second, the magnitude of the cyclical downturns of the 1970s themselves has been such that the resulting decline in factor inputs has lowered the level of potential output.

### **Microeconomic factors**

Although microeconomic factors are difficult to analyze through accepted econometric techniques, it may be useful to draw attention to certain micro-institutional factors at the corporate level which have contributed to the process of industrial deterioration.

The long period in which the United States functioned as a semi-autarkic industrial power and in which external trade comprised a minimal share of GNP made it more difficult for corporations to adjust to the opening up of the economy to international markets and competitive pressures during the 1970s than was the case in countries which have historically had open economies. The result was that investment strategies failed to take sufficient account of foreign competition, and American firms were not particularly aggressive in attempting to penetrate external markets. At the same time, the long period of price stability from the end of the Korean War up to the Vietnam War escalation of the late 1960s made it difficult for corporations to adjust to the new, volatile price environment. The distortion of market signals by inflation was associated with a greater prevalence of defensive investment strategies on the part of corporations, in which the length of corporate plans was reduced and risky long-run investment plans were avoided.

The historically semi-autarkic nature of American industry and the more inflationary environment beginning during the late 1960s led to inadequate attention to productivity and efficiency at the single-firm level. The decreased attention to single-firm productivity reflected a lack of awareness that declining competitiveness would be followed inexorably by penetration of domestic markets by foreign suppliers that could produce more efficiently and could increase their **produc-**

tivity more rapidly. It also reflected the supposition that low rates of productivity growth could be allowed since an accommodative monetary policy would allow the resulting increases in unit labor costs to be passed along to consumers. The difficulties involved in adapting to the more internationally integrated and higher-inflation environment of the 1970s, both at the single-firm and the public policy level can both to some degree be traced to the emergence of institutional inertia at the corporate level. As some corporations became progressively more institutionalized, their responsiveness to changes in the external environment was correspondingly diminished. Frequently, their response is less one of adaptation than of perpetuation of existing institutional rigidities.<sup>1</sup>

A microeconomic factor on which there is greater consensus is the problem of wage rigidity, as dealt with by Wachter and Wascher, and other recent econometric literature.<sup>9</sup> Because of the dependence of current wage settlements on lagged inflation through the process of cost of living adjustments, the result has been to introduce a strong element of inertia into the process of labor market equilibration. As inflation rates have accelerated under the impact of increasing demand, wages have risen in response to prior price movements in an effort to maintain purchasing power, with the result that only through exceedingly deep recessions have wages been able to be brought down to a less inflationary path. Furthermore, during disinflationary periods, wage rigidity meant that business confronted an unfavorable escalation of unit labor costs; this was exacerbated by the slowdown in productivity growth. However, business was not always able to pass these costs through to consumers, particularly during periods in which aggregate demand declined. Consequently, the costs of disinflation have been borne disproportionately by corporate profits, lost output and reduced employment rather than through wage restraint.

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8. See in particular the following for analyses of management practices: William J. Abernathy, Kim B. Clark, and Alan Kantrow, *Industrial Renaissance*, New York, Basic Books, 1983. Thomas J. Peters and Robert H. Waterman, *In Search of Excellence*, New York, Harper & Row, 1982.

9. Michael Wachter and William Wascher, "Labor Market Policies in Response to Structural Changes in Labor Demand," this volume. For a more generalized analysis of the impact of wage rigidity and other factors on macroeconomic adjustment, see Arthur Okun, *Prices and Quantities: A Macroeconomic Analysis*, Washington, D.C., Brookings Institution, 1981.

## A review of policy recommendations

A further theme covered at this conference is that of macroeconomic policy solutions. I will confine my comments to two substantive areas, tax policy as it relates to capital formation, and industrial policy, before moving on to a discussion of my own recommendations.

*Tax policy and capital formation.* Among the policy recommendations put forward in Robert Hall's paper, probably the most significant proposal has to do with shifting the base of taxation to **consumption** rather than income.<sup>10</sup> The premise for consumption-based taxation rests primarily on evidence that the savings rate in the United States has consistently been below that in the other industrial countries. The argument that shifting to a consumption-based tax system in order to favor greater capital formation is, however, criticized by Bosworth, who points out that both over time and across national boundaries the relationship between personal savings and capital formation is also weaker than is commonly held to be the case. To put Bosworth's argument in some perspective, it should be noted that the relationship between personal saving and capital investment should in any event not be viewed as strictly causal: at best, savings provide a pool of liquidity from which investment can be financed. Thus it is possible to develop hypothetical scenarios in which increases in savings have no demonstrable effect or even a negative effect on investment; for instance, if an increase in personal saving is associated with lower capacity, the negative impact of the resulting slack in the economy on capital investment may easily outweigh the effects of higher liquidity.

Nevertheless, Bosworth's critique is subject to the qualification that during the next few years, the major factors working against capital formation may not be underutilization of capacity, but rather high interest rates and lack of access to funds due to preemption in credit markets by federal borrowing. The argument can therefore be made that under the present economic circumstances, the liquidity effect of higher savings would in fact be associated with an increase in capital formation, inasmuch as it would directly reduce the user cost of capital and raise the supply of loanable funds.

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10. Robert Hall, "Macroeconomic Policy Under Structural Change," this volume.

In evaluating the merits of consumption-based taxation, it should be borne in mind that most of the other industrial countries do not have pure consumption-based tax systems, but rather incorporate some mix of consumption and income taxes. Thus while there is substantial empirical evidence suggesting that mixed tax systems may be more effective in certain respects than tax systems based predominantly on income, there is as yet insufficient evidence as to the economic effects of a consumption-based system to justify a wholesale reorganization of the tax code. A further argument against a full-scale shift to consumption-based taxes is that the importance of a higher savings rate may have been overstated by consumption tax advocates. Decisionmakers may wish to consider whether or not they wish to make tax reform dependent on a single economic indicator such as the savings rate. Under the circumstances, it might be preferable to rely on a mixed tax system based partially on consumption and partially on savings, as is actually the case throughout most of the industrial countries.

Furthermore, it is not clear what constitutes the optimal savings rate over the business cycle, and in this respect, a tax system designed to raise savings by taxing consumption could under certain circumstances elevate the savings rate to an excessive level. Particularly in an economy such as ours, where growth rates are critically dependent on consumer demand, it is conceivable that once savings surpassed a given rate, the result would merely be greater economic slack. In this respect, while advocates of consumption based taxation have normally pointed to Western Europe and Japan to illustrate the alleged advantages of higher savings rates, they have typically failed to take adequate cognizance of the fact that in these countries the business cycle is generally export-led rather than led by domestic consumption. In an export-led business cycle, a high savings rate does not necessarily imply shortfalls in aggregate demand since a substantial component of the growth of demand is exogenous, and consumer spending typically increases fairly late in the business cycle as a result of higher employment in the export industries. This, however, is not the case in countries that have historically been semi-autarkic, such as the United States. Here tax measures encouraging savings could hold demand at levels incommensurate with full utilization of resources.

Apart from consumption taxes, other options for stimulating capital formation through the tax system include retention or expansion of

the existing depreciation reforms enacted under ERTA. The ability of tax reform to stimulate capital formation has also been criticized by Bosworth; nevertheless, I do not share in his skepticism. Bosworth's critique of the link between tax rates and capital spending focuses on the fact that marginal tax rates on capital across national boundaries do not correlate closely with indicators such as the ratio of gross fixed investment to GNP. Thus the U.K., traditionally a low-capital-formation country, has extremely generous depreciation laws, while depreciation provisions in high-capital-formation countries such as West Germany, France, Italy, and Japan have actually been inferior to those in any number of countries with lower levels of investment.

This finding should not be misinterpreted to mean that tax policy is impotent as a determinant of capital formation, but that it may be secondary to other factors. Looking at the countries Bosworth mentions, it seems logical to conclude that depreciation tax cuts were unsuccessful in the U.K. because of distinctive aspects of that country's experience, while other countries were successful in achieving higher levels of investment despite less liberal depreciation laws because of economic conditions on the whole were more conducive to capital formation. In the U.K., the long-run overvaluation of the pound under Bretton Woods was associated with lack of export competitiveness and slower growth than in the rest of Western Europe. Subsequently, the inflationary explosion of 1973-75 left the U.K. with a substantially higher inflation rate than the other major industrial countries, and impelled successive governments to pursue restrictive monetary policies that insured an exceedingly slow real growth rate. Conversely, of the high-capital-formation countries, Japan and West Germany are distinctive in having experienced consistent undervaluation, high rates of capacity utilization, and for the most part relatively low inflation rates (except for 1973-74 in Japan), which enabled them to pursue more accommodative monetary policies during the late 1970s. The result was that higher growth rates and greater financial stability enabled these countries to maintain higher rates of capital formation.

In essence, the conclusion that should be drawn from cross-national historical experience is that in an environment conducive to increased capital formation, tax cuts may substantially augment the investment process, while in the event that the economic environment works against capital investment, the best that can be expected from tax cuts to favor capital formation is that they may exert some

mitigating impact.

Industrial policy. The concept of industrial policy, normally defined as government intervention in support of specific industrial sectors, was extensively criticized at this conference. Paul **Krugman's** paper in particular makes two entirely valid critiques of the current industrial policy literature." On the one hand, it points out that much of the literature has eschewed any kind of scholarly or technically advanced economic analysis, preferring to rely instead on an anecdotal approach more accessible to a popular audience. The result is that the criteria alleged in support of industrial policy options are at best haphazard and at worst largely spurious. In my view, a similar problem is that the advocates of industrial policy have put forward their recommendations on the basis of an inadequate and incomplete analysis of the actual causes of industrial decline. Given the analysis of the causes of decline that I have outlined here, it is readily apparent that industrial policy cannot contribute to the stabilization of the business cycle; rather, what is needed here is to develop a set of fiscal and monetary policies commensurate with a stable long-term growth path for the economy. Similarly, **sectoral** targeting cannot assist in the resolution of economy-wide structural problems, while microeconomic problems such as poor management and wage rigidity are more appropriately the domain of the private sector than the federal government. The one area in which greater governmental support for private industry is export promotion, and this should more realistically involve removal of the existing legislative barriers to export promotion and the restoration of a more realistic exchange rate.

**Krugman's** case studies of specific examples of industrial policy also present substantial countervailing evidence to the viewpoint of industrial policy advocates that such policies have generally been successful, and call into question some of the commonly held tenets associated with this school of thought. In short, to use a legalistic phrase, reasonable doubt has been demonstrated about the efficacy of industrial policy solutions.

Extending the critique of industrial policy further, an additional problem with such options has to do with the possible political ramifications. First, the process of governmental support for the private sector could easily be associated not with greater rationalization and competitiveness, but rather with exactly the opposite process, the

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11. Paul Krugman, "Targeted Industrial Policies: Theory and Evidence," this volume.

perpetuation of the existing institutional rigidities which have worked against efficiency. If unprofitable corporations were targeted for governmental support, the incentive for regaining profitability would be lost; in countries such as the U.K., France, and Italy, which have carried out extensive nationalizations, there are repeated instances of nationalized corporations that have proven less efficient under government control than when they were privately held. Furthermore, once a precedent had been established for governmental support, this could easily lead to demand for further support from other industries. The implementation of an industrial policy would therefore be associated with additional pressure on fiscal policy at a time when a major priority of public policy is to enforce greater fiscal restriction. Finally, the decisionmaking process whereby industries are selected for government support could easily come to be dominated by lobbying from special interest groups and would therefore depend more on political patronage than on economic rationality.

### **Toward better economic policies**

While the constraint of space does not permit a comprehensive overview of possible public policy alternatives, there is clearly a need to develop a coordinated economic strategy that will address the actual causes of industrial deterioration. The elements should include demand management policies commensurate with a stable growth path for the economy, along with greater promotion of exports and policies aimed at increasing the long-term factor inputs to production. While I have identified a further cause of industrial deterioration as microeconomic in origin, I do not outline any public policy solutions here; rather, the resolution of microeconomic problems is fundamentally the responsibility of the private sector, and is not an appropriate domain for public policy.

*Better demand management policies.* In the fiscal area, the key problem for the next few years will be elimination of the structural deficits. At their current levels, deficits will average in the range of 5-6 percent of GNP over the upcoming business cycle. Deficits of this magnitude are not commensurate with macroeconomic stability. As the basis for a better fiscal policy, Congress should bring the full-employment budget into surplus, while the actual budget could gradually be brought into equilibrium as the economy converges to a level of unemployment consistent with fuller utilization of resources. In the long term, revenues and expenditures should be held in approxi-

mate equilibrium over the business cycle; surpluses accumulated during booms can be used during recessions to offset deficits.

In the area of monetary policy, the principle of quantitative targets for monetary aggregates is useful and should be retained. However, such targets should be applied flexibly and in conjunction with targets for other indicators, rather than rigidly. In this respect, the Federal Reserve should consider formally adopting a multiple target system in which annual targets would be used for monetary aggregates and nominal GNP, but in which interest rates and exchange rates would be stabilized in the short term. The central banks of the other major industrial countries have successfully used multiple target systems.<sup>12</sup>

One recommendation aired at this conference, in Hall's paper, would be for the Federal Reserve to target expected future inflation, as well as current economic indicators. However, there is a series of problems with such a strategy, most importantly the fact that the existing econometric research on inflation expectations demonstrates a highly significant relationship between expectations and current actual inflation rates.<sup>13</sup> For this reason, stabilizing expectations appear to require more than a credible anti-inflationary monetary policy. Rather, it requires stabilization of actual inflation, and in this respect, there may be little difference between a policy rule aimed at controlling expectations and one aimed at controlling the price level.

***Policies to promote international competitiveness.*** A systematic policy aiming at export promotion would require a broad range of policies, including both a shift in the fiscal-monetary policy mix aimed at restoring a more realistic dollar exchange rate, and other policies to enhance export competitiveness. The Ex-Im Bank should be given the necessary budget authority to provide competitive financing for exports, and new financial instruments should be developed to support commercially competitive medium-term export credit. DISC's (Domestic International Sales Corporations) should be maintained until Congress passes legislation providing equivalent or improved benefits for U.S. exports. The Foreign Corrupt Practices

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12. See in this respect two studies by the Organization for Economic Cooperation and Development on central bank operation procedures in the major industrial countries, *The Role of Monetary Policy in Demand Management*, Paris, OECD, 1976, and *Monetary Targets and Inflation Control*, Paris, OECD, 1979.

13. See in particular Don Mullineaux, "Inflation Expectations and Money Growth in the United States," in *American Economic Review*, Vol. 70, March 1980.

and Export Administration Acts should be amended to clarify existing ambiguities. In this respect, although I have consistently criticized the interventionist schemes associated with industrial policy, it must be acknowledged that in the areas such as international trade, where the functioning of free markets has been systematically impeded by foreign governments, greater governmental support for American exports would be desirable.

***Policies to promote long-term growth.*** In the normal specification of the aggregate production function for the economy, potential output is modelled as a combination of technological change plus factor inputs of capital, labor, and energy. From this perspective, it is clear that a general industrial strategy commensurate with high long or medium-term growth must address the factor inputs that go into the determination of potential output.

In the area of capital formation, the ERTA depreciation reform should be retained in its current form, or possibly improved either through repeal of the TEFRA modifications or eventual transition to immediate first-year expensing of capital expenditures. A more restrictive fiscal policy achieved through reductions in federal spending, applied in conjunction with a stable monetary policy, will be associated with a reduction in interest rates, and will therefore reduce the user cost of capital. In the area of energy, the recent decline in OPEC prices will contribute positively to increased energy utilization, and thus has exerted a stimulative effect on economic activity. At the same time, the removal of remaining price controls will facilitate greater market equilibration in the energy sector.

In the area of **R&D**, two major actions were taken under ERTA that have stimulated greater spending on research. These were the incremental **R&D** tax credit and repeal of Section 1.861 of the Treasury Regulations, which forced companies to apportion their research activities among their foreign subsidiaries. Further measures can be taken to increased **R&D** spending, such as exempting joint research ventures from federal anti-trust legislation, restoration of patent terms, and in cooperative efforts between the public and private sector to share research and improve technical training.

In this paper I have outlined what constitute in my view the most important components of industrial decline, as reflected in the presentations made at this conference, and provided some preliminary indications as to how a broad industrial strategy dealing with these causes could be developed. An industrial strategy which addresses

these diverse needs could go a long way toward the restoration of stable long-term growth.



## Symposium Participants

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Duane C. Acker, President  
Kansas State University  
Anderson Hall  
Manhattan, Kansas 66506

Charles Alexander  
Time Magazine  
Time-Life Building  
Rockefeller Center  
New York, New York 10020

John Anderson  
Consultant to the President  
Farmland Industries, Inc.  
P.O. Box 7305  
Kansas City, Missouri 64116

Wayne **Angell**  
Chairman of the Board  
First State Bank  
P.O. Drawer 499  
Pleasanton, Kansas 66075

Karen Arenson  
New York Times  
229 W. 43rd Street  
New York, New York 10036

Douglas **Atkinson**  
Manager of Economic Services  
and Futures Assessment  
PPG Industries, Inc.  
One Gateway Center  
Pittsburgh, Pennsylvania 15222

Ken Bacon  
Wall Street Journal  
1025 Connecticut, N.W.  
Washington, D.C. 20036

Dan Bechter  
Assistant Vice President  
Federal Reserve Bank  
of Kansas City

Thomas J. Berardino  
Vice President  
Olin Corporation  
120 Long Ridge Road  
Stamford, Connecticut 06904

C. Fred Bergsten, Director  
Institute for Int'l. Economics  
11 Dupont Circle, Suite 620  
Washington, D.C. 20034

Gordon Berlin, Program Officer  
Ford Foundation  
320 E. 43rd Street  
New York, New York 10017

John Berry  
Washington Post  
1150 15th Street, N.W.  
Washington, D.C. 20071

Harry R. Biederman  
Chief Economist  
**Lockheed** Corporation  
2555 N. Hollywood Way  
**Burbank**, California 91520

*Symposium Participants*

Barry Bosworth  
Senior Fellow  
The **Brookings** Institution  
**1775** Massachusetts Ave., N.W.  
Washington, D.C. **20036**

James A. Cacy, Vice President  
and Senior Economist  
Federal Reserve Bank  
of Kansas City

Thomas E. Davis, Senior Vice  
President and Director of Research  
Federal Reserve Bank  
of Kansas City

**Rimmer DeVries**  
Senior Vice President  
Economic Analysis Department  
Morgan Guaranty Trust Company  
**23** Wall Street  
New York, New York **10015**

William **Diebold**, Jr.  
Senior Research Fellow  
Council on Foreign Relations  
**58** East **68th** Street  
New York, New York **10021**

Marvin Duncan  
Vice President and Economist  
Federal Reserve Bank  
of Kansas City

George Eads, Professor  
School of Public Affairs  
University of Maryland  
**3718** Harrison Street, N.W.  
Washington, D.C. **20015**

Robert Eisenmenger, Senior Vice  
President and Director of Research  
Federal Reserve Bank of Boston  
**600** Atlantic Avenue  
Boston, Massachusetts **02106**

Peter Fousek, Executive Vice  
President and Director of Research  
Federal Reserve Bank of New York  
**33** Liberty Street  
New York, New York **10045**

Sheldon **Friedman**  
Director of Research Dept.  
International Union, U.A.W.  
**8000** E. Jefferson  
Detroit, Michigan **48214**

Governor Lyle **Gramley**  
Board of Governors of the  
Federal Reserve System  
20th & Constitution Ave., N.W.  
Washington, D.C. **20551**

James B. Graves  
Senior Vice President  
Dresser Industries, Inc  
**1505** Elm Street  
Dallas, Texas **75221**

Roger Guffey  
President  
Federal Reserve Bank  
of Kansas City

Robert Hall  
Professor and Hoover Fellow  
Hoover Institution  
Stanford University  
Stanford, California **94305**

Tim **Hauser**, Director  
Office of Multilateral Affairs  
U.S. Department of Commerce  
Washington, D.C. **20230**

Bryon Higgins, Assistant Vice  
President and Economist  
Federal Reserve Bank  
of Kansas City

Robert C. Holland, President  
Committee for Economic Development  
1700 K Street, N.W.  
Washington, D.C. 20006

Jerome Jacobson, Vice Chairman  
Burroughs Corporation  
Burroughs Place  
Detroit, Michigan 48232

Jerry J. Jasinowski  
Sr. Vice President and Chief Economist  
National Assn. of Manufacturers  
1776 F Street, N.W.  
Washington, D.C. 20006

Walter K. Joelson, Chief Economist  
General Electric Company  
3135 Easton Turnpike  
Fairfield, Connecticut 06230

Lionel S. Johns, Assistant Director  
Office of Technology Assessment  
U.S. Congress  
Washington, D.C. 20510

John H. Kalchbrenner  
Senior Vice President  
Shawmut Bank of Boston  
1 Federal Street  
Boston, Massachusetts 02211

Robert Keleher  
Senior Financial Economist  
Federal Reserve Bank of Atlanta  
P.O. Box 1731  
Atlanta, Georgia 30301-1731

Donald King, Vice President  
Equitable Life Assurance  
Society of the U.S.  
1285 Avenue of the Americas  
New York, New York 10019

Joseph A. Kinney  
Staff Director of the Committee  
on Agriculture of the National  
Governors Association  
444 North Capital Street  
Washington, D.C. 20001

Nina Klarich, Vice President  
and Chief Regional Economist  
First National Bank of Chicago  
1 First National Plaza, Suite 0476  
Chicago, Illinois 60670

Lawrence Klein, Professor  
Department of Economics  
University of Pennsylvania  
3718 Locust Walk — CR  
Philadelphia, Pennsylvania 19104

Paul R. Krugman  
Senior Staff Economist  
Council of Economic Advisors  
Old Executive Office Building  
Room 417  
Washington, D.C. 20506

R. J. Kruijenga, Vice President  
Exxon Corporation  
1251 Avenue of the Americas  
New York, New York 10010

Robert Kuller, Corp. Economics  
Staff Director  
Phillips Petroleum Company  
11D-1 Phillips Building  
Bartlesville, Oklahoma 74004

Robert Kuttner  
Contributing Editor  
New Republic  
61 Dean Road  
Brookline, Massachusetts 02146

*Symposium Participants*

Robert Lawrence  
Economist  
The Brookings Institution  
1775 Massachusetts Avenue, N.W.  
Washington, D.C. 20036

George Lodge, Professor  
Harvard Business School  
Baker Hall — Room 233  
Soldiers Field Road  
Boston, Massachusetts 02163

Bruce K. MacLaury, President  
The Brookings Institution  
1775 Massachusetts Avenue, N.W.  
Washington, D.C. 20036

Edwin Mansfield, Professor  
Department of Economics  
University of Pennsylvania  
McNeil Building, Room 435  
Philadelphia, Pennsylvania 19104

Ray Marshall, Professor  
L. B. Johnson School of Public Affairs  
University of Texas at Austin  
Austin, Texas 78712-7450

David N. McCammon, Vice President  
Ford Motor Corporation  
The American Road  
Dearborn, Michigan 48121

William C. Melton, Vice President  
Investors Diversified Services, Inc.  
Investment Department  
IDS Tower  
Minneapolis, Minnesota 55402

Frank E. Morris, President  
Federal Reserve Bank of Boston  
600 Atlantic Avenue  
Boston, Massachusetts 02106

Rudy Oswald  
AFL-CIO, Director of  
Economic Research Department  
815 16th Street, N.W.  
Washington, D.C. 20006

Scott Pardee  
Executive Vice President  
Discount Corporation of New York  
58 Pine Street  
New York, New York 10005

George L. Perry  
Senior Fellow in Economics  
The Brookings Institution  
1775 Massachusetts Avenue, N.W.  
Washington, D.C. 20036

John R. Peterson, Vice President  
Combustion Engineering, Inc.  
900 Long Ridge Road  
Stamford, Connecticut 06902

Governor Emmett Rice  
Board of Governors of the  
Federal Reserve System  
20th & Constitution Avenue, N.W.  
Washington, D.C. 20551

J. David Richardson, Professor  
Department of Economics  
University of Wisconsin-Madison  
Madison, Wisconsin 53706

Stephen S. Roach  
Senior Economist  
Morgan Stanley  
1251 Avenue of the Americas  
New York, New York 10020

Steven M. Roberts  
Director of Government Affairs  
American Express Company  
1700 K Street, N.W.  
Washington, D.C. 20006

*Symposium Participants*

Barry K. Robinson  
Vice President  
Federal Reserve Bank  
of Kansas City

Arthur J. Rolnick  
Vice President and  
Deputy Director of Research  
Federal Reserve Bank of Minneapolis  
250 Marquette Avenue  
**Minneapolis**, Minnesota 55480

Robert Rosenblatt  
The Los Angeles Times  
Suite 1100  
1875 I St., N.W.  
Washington, D.C. 20009

Larry E. Ruff, Vice President  
National Planning Association  
1606 New Hampshire, N.W.  
Washington, D.C. 20009

Jeffrey Sachs, Professor  
Littauer Center M14  
**Harvard** University  
Cambridge, Massachusetts 02138

Karl A. Scheld  
Senior Vice President and  
Director of Research  
Federal Reserve Bank  
of Chicago  
230 S. LaSalle Street  
Chicago, **Illinois** 60628

Robert H. Schnorbus  
Economist  
Federal Reserve Bank  
of Cleveland  
Cleveland, Ohio 44101

Larry Slifman, Assistant Director  
Division of Research and Statistics  
Board of Governors of the  
Federal Reserve System  
20th & Constitution Avenue, N.W.  
**Washington**, D.C. 20551

Alfred G. Smith **III**  
Senior Vice President  
North Carolina National Bank  
One North Carolina Nat'l Bank Plaza  
Charlotte, North Carolina 28255

Anthony Solomon, President  
Federal Reserve Bank  
of New York  
33 Liberty Street  
New York, New York 10045

Sheldon Stahl  
Senior Advisor for Economics  
Midwest Research Institute  
425 Volker Blvd.  
Kansas City, Missouri 64110

**Bruce** Steinberg  
Fortune Magazine  
Time-Life Building  
Rockefeller Center  
New York, New York 10020

Lawrence H. Summers  
Senior Staff Economist  
Council of Economic Advisors  
Old Executive Office Building  
Room 313  
Washington, D.C. 20506

Governor Nancy Teeters  
Board of Governors of the  
Federal Reserve System  
20th & Constitution Avenue, N.W.  
**Washington**, D.C. 20551

*Symposium Participants*

James **Tobin**, Professor  
Department of Economics  
University of California  
Berkeley, California 94720

Michael Wachter, Professor  
Department of Economics  
University of Pennsylvania  
3718 Locust Walk  
Building CR  
Philadelphia, Pennsylvania 19704

Robert W. **Wagstaff**  
Chairman of the Board  
The Coca-Cola Bottling Company  
P.O. Box 500  
Shawnee Mission, Kansas 66201

William Wascher, Professor  
Department of Economics  
University of Pennsylvania  
3718 Locust Walk  
Building CR  
Philadelphia, Pennsylvania 19704

Harvey Wilmeth, Economist  
Northwestern Mutual Life  
Insurance Company  
720 East Wisconsin Avenue  
Milwaukee, Wisconsin 53202

John O. Wilson  
Senior Vice President  
Bank of America, N.A.  
P.O. Box 37000, 6th Floor  
San Francisco, California 94137

Seymour Zucker  
Business Week  
1211 Avenue of the Americas  
New York, New York 10020



