

**THE ANNUAL REPORT
OF THE
COUNCIL OF ECONOMIC ADVISERS**

LETTER OF TRANSMITTAL

COUNCIL OF ECONOMIC ADVISERS,
Washington, D.C., January 6, 1989.

MR. PRESIDENT:

The Council of Economic Advisers herewith submits its 1989 Annual Report in accordance with the provisions of the Employment Act of 1946 as amended by the Full Employment and Balanced Growth Act of 1978.

Sincerely,

A handwritten signature in cursive script, reading "Beryl W. Sprinkel".

Beryl W. Sprinkel
Chairman

A handwritten signature in cursive script, reading "Thomas Gale Moore".

Thomas Gale Moore
Member

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CHAPTER 1

Free Markets, Stability, and Economic Growth

THE FOUR DECADES SINCE WORLD WAR II stand out as a period of remarkable growth for the developed market economies. More people in more countries increased their standard of living than in any other era. Real gross national product (GNP) per capita in each of the major industrialized nations has grown significantly faster since 1948 than before World War II. This success is based in part on reliance by the United States and the other nations on private incentives and free markets, with governments attempting to provide both a stable macroeconomic framework and a stable world political environment. The result has been strong economic growth and large improvements in social conditions for the United States and other nations.

In the United States real income per capita and real reproducible tangible wealth per capita more than doubled between 1948 and 1987. These gains were widespread, with real family income more than doubling for both those at the highest and the lowest fifth of the income distribution. The poverty rate dropped from 30.2 percent in 1950 to 13.5 percent in 1987 (8.5 percent if noncash benefits are included). Most of the drop occurred before the rapid rise in transfer programs. Life expectancy rose from 67 to 75 years. Increases in wealth, pensions, and insurance allowed more people to enjoy these extra years; the labor force participation rate of those 65 and over fell from 27.0 to 11.1 percent. The average workweek fell from 42.8 to 38.7 hours. The percentage of the population with private health insurance increased from 51 in 1950 to 77 in 1985. Most measures of environmental pollution also showed improvement; parts per metric ton of suspended particulates in the air fell from 24.5 million in 1950 to 7.3 million in 1985.

The current expansion represents a continuation—after the stagflation of the 1970s and early 1980s—of this extraordinary postwar record of sustained growth. During this recordbreaking peacetime expansion the trend toward higher unemployment and inflation that characterized stagflation has been reversed. (A discussion of the accomplishments of the current expansion appears in Chapter 7.) The

success of the current expansion rests upon a philosophy that has served the United States well in the past: the private sector is inherently stable and is the fundamental source of economic growth. Government's appropriate role is to foster the inherent dynamism of the private sector. It can do so by improving private incentives and providing a framework for economic and political stability, basic public infrastructure, and a social safety net and by promoting open and flexible markets.

As this chapter and this *Report* demonstrate, during the postwar era and throughout the 20th century, when government has confined itself to this role, strong increases in standards of living have been recorded. In contrast, when government has departed from its appropriate role, incentives have become distorted and the United States and other countries have recorded poorer economic performances.

The other chapters of this *Report* expand on these themes in various areas of policy that have contributed to the sustained growth during the postwar period. The chapters address the contributions of fiscal policy (Chapter 2), international trade and finance (Chapters 3 and 4), regulation (Chapter 5), and science and technology (Chapter 6) to the outstanding economic performance in the postwar period and especially in the 1980s.

Lessons from Past Policy: The Employment Act of 1946 arose out of the policy mistakes of the Great Depression. The act was amended in 1978 as a result of dissatisfaction with increasing unemployment and inflation. The act charges the Federal Government with promoting maximum employment, production, and purchasing power, with "maximum reliance on the resources and ingenuity of the private sector." How best to achieve these goals has been the central question that economic policymakers have addressed during the postwar period. Government can make, and has made, two major mistakes in promoting these goals. Policy can be so passive that it is procyclical, exacerbating cyclical downturns. By contrast, policy can be so active that it increases instability and uncertainty.

The Great Depression provides a critical example of the first mistake. Throughout the decline, the Federal Reserve failed to function as the supplier of liquidity. The money supply contracted along with the economy, contributing to the economic collapse: employment, production, and real incomes plummeted.

The 1970s provide an example of the second mistake, with policy misperceiving short-term events for lasting changes. Stop-go policies, which employed monetary and fiscal policy to react to the oil crisis and other transitory shocks, resulted in higher unemployment and higher inflation. High and variable inflation, interacting with the Tax Code, reduced incentives, productivity, and real income growth. De-

spite the positive aims of the policies, problems of information, lags, and uncertain response caused the stabilization policies to be destabilizing. Policy fell short of the goals of the Employment Act: unemployment rose while productivity growth and real family income stagnated.

Policy in this Administration: The goal of this Administration has been to reinvigorate the private sector by limiting the size of the Federal Government, improving incentives through tax cuts, improving market flexibility through deregulation, avoiding new structural rigidities, and encouraging noninflationary monetary policy. As a result the economy has rebounded from the stagflation of the 1970s. Inflation and unemployment are down and productivity and real family income are up. The social safety net has been maintained and reforms have been introduced to help the disadvantaged become self-sufficient and escape the dependency trap of poverty.

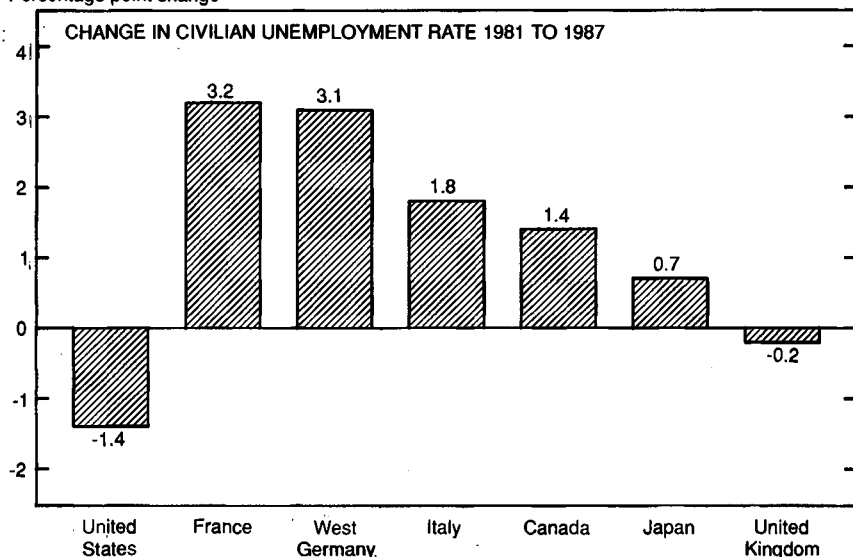
Economic performance during the current expansion is particularly impressive relative to that of the major U.S. trading partners, particularly the nations of Europe. These countries have also achieved lower inflation but have had little success in reducing unemployment, which traditionally has been much lower than U.S. unemployment (Chart 1-1). The United States in the 1980s has reestablished itself as the role model for economic policy and sparked a worldwide tax revolution, with all seven of the major industrialized nations (G-7) that have participated in the recent economic summits reducing their marginal tax rates.

Policy in the Future: It is said that the past is prologue. This chapter endeavors to identify the common threads that underlie the more, as well as the less, successful periods in 20th century U.S. economic history, paying particular attention to the postwar period and the critical role of stable policy, taxes, and inflation on private incentives, investment, productivity, and standards of living. It looks at the importance of free trade, highlighting the protectionist actions during the 1920s and early 1930s that contributed to the depression of 1933. The chapter looks at the postwar distribution of income, examining the relative contribution of economic growth to improvements in the standard of living. The discussion also identifies some groups whose postwar experiences have been somewhat better or somewhat worse than the average. The role of policy in this period is examined.

This review of U.S. economic history suggests that the more successful periods were grounded in a reliance on private markets, a commitment to free trade and the reduction of trade barriers, the development of institutions to provide stability in domestic and international financial markets, strong private investment supplemented by

Chart 1-1 **Change in Unemployment Rates in the Seven Summit Countries**

Percentage point change



Note.—Data for West Germany and Italy adjusted for discontinuities.
Source: Department of Labor.

government investments in basic infrastructure, and changes in tax laws and regulations to improve private incentives.

Looking to the future, the U.S. economy should continue to rely on the strength of private markets while promoting a framework for domestic and international stability. Work remains on achieving non-inflationary economic growth, lowering trade barriers, avoiding isolationism and protectionism, and improving incentives for business investment. The deregulatory effort should also move forward, and mandated benefits and other new laws and regulations that reduce market flexibility should be avoided. Finally, the budget deficit must be reduced by slowing Federal Government spending and focusing spending on investments in infrastructure and on providing basic public services.

THE PRE-WAR YEARS

The pre-war years offer two examples of the growth potential of private markets when provided with what, for early U.S. economic

history, could be described as relative stability. They also contain one strong example of the effect of instability in government policy.

The period from 1900 to 1913 was one of vigorous economic growth in the United States. Moderate growth in the supply of gold sustained expectations of long-term price and economic stability. Despite bank runs and financial "panics," which were recurring problems that plagued the U.S. economic system prior to World War II, money growth was adequate to support growth and trade without deflation. Strong growth in trade and abundant opportunities for expansion buoyed business expectations and encouraged investment. The United States enjoyed particularly robust growth, exploiting its natural resources, embarking on large private and public investments, obtaining advantages from trade and high rates of immigration, and achieving economies of scale from its large and growing market. Real GNP grew at a 3.9 percent annual rate and real GNP per capita grew at a 2.0 percent annual rate (Table 1-1), well above the long-term trend for the United States.

TABLE 1-1.—*Growth Rates in Real GNP/GDP, Selected Periods, 1900-88*

(Average annual percent per year)

Period	United States	Japan	West Germany ¹	United Kingdom	France	Italy	Canada
Real GNP/GDP							
1900 to 1913.....	3.9	2.5	3.0	1.5	1.7	2.8	5.5
1920 to 1929.....	4.3	3.4	4.9	1.9	4.9	3.0	4.0
1930 to 1938.....	.4	6.3	4.4	2.2	—1	2.3	.3
1948 to 1973.....	3.7	9.1	7.0	3.0	5.3	5.7	5.1
1973 to 1981.....	2.1	3.7	1.9	.7	2.6	2.6	3.8
1981 to 1988.....	3.0	3.8	1.8	2.9	1.8	2.3	3.1
1900 to 1938.....	2.3	3.5	2.4	1.3	1.1	2.0	2.8
1948 to 1988.....	3.3	7.1	5.0	2.6	4.1	4.4	4.5
1900 to 1988.....	3.1	4.2	2.9	1.8	2.4	2.9	4.0
Real GNP/GDP per capita							
1900 to 1913.....	2.0	1.2	1.6	0.7	1.5	2.2	2.6
1920 to 1929.....	2.7	2.0	4.2	1.4	4.3	2.1	2.2
1930 to 1938.....	—3	4.8	3.8	1.8	—2	1.5	—8
1948 to 1973.....	2.2	7.8	5.7	2.6	4.3	5.0	2.8
1973 to 1981.....	1.1	2.7	2.0	.7	2.1	2.2	2.5
1981 to 1988.....	2.0	3.2	1.9	2.7	1.3	2.0	2.2
1900 to 1938.....	.9	2.2	1.9	.9	.9	1.2	.8
1948 to 1988.....	1.9	5.9	4.2	2.2	3.3	3.9	2.7
1900 to 1988.....	1.7	3.0	2.7	1.5	2.0	2.2	2.1

¹ Pre-war estimates for West Germany are adjusted for territorial change.

Sources: 1988, estimates derived by Council of Economic Advisers; for the United States, 1900-87, Department of Commerce (Bureau of Economic Analysis); for other countries, 1900-50, A. Maddison, *Phases of Capitalist Development*, and 1950-87, unpublished data from Department of Labor (Bureau of Labor Statistics).

In 1913 U.S. capital per worker, GNP per capita, and productivity were higher than in the other major industrialized nations; average real output per person hour in the other six major industrialized nations of the world was 57 percent of U.S. productivity. Between 1900 and 1913 U.S. real GNP growth was higher than in the other major

industrialized nations except Canada, which shared the high investment rates and other attributes that benefited the United States (Table 1-1).

Improvements in economic conditions in the United States also had a large effect on social conditions. Higher real incomes were accompanied by better nutrition, better housing, better education, improved working conditions, increased numbers of health providers, and increased use of medical services for a large proportion of the population. Public health investments supplemented these improvements. Between 1900 and 1913 the death rate fell nearly 20 percent, from 17.2 to 13.8 per thousand. By 1986 the rate was down to 8.7 per thousand.

After a relatively severe recession following World War I, growth resumed in the 1920s. Money supply growth held at a relatively steady noninflationary rate—prices declined at a gradual 2.1 percent annual rate—and some observers have described the period as the high tide of the Federal Reserve System. Major reductions in tax rates improved private incentives and encouraged growth and investment during this period.

Between 1920 and 1929, the net stock of business capital increased more than 20 percent, while the net stock of government and institutional capital increased more than 50 percent. Real GNP grew at a 4.3 percent annual rate and real GNP per capita increased at a 2.7 percent annual rate, significantly above long-term trend growth for real GNP and GNP per capita. During this period death rates dropped another 8.5 percent, for a total drop of 31 percent since 1900.

Despite the relatively good domestic performance in the 1920s, problems began to arise on the international front. Britain's relative decline left a gap in trade and monetary policy that remained unfilled. The United States was reluctant to take over this role from the United Kingdom and entered a period of isolationism. With no clear worldwide framework replacing the pre-1914 arrangements, each nation pursued its narrow self-interest, particularly in the 1930s.

The Allies did little to aid the defeated central powers to recover from World War I. Their requirements for heavy war reparations contributed to hyperinflation in Germany.

Trade relations also suffered from isolationism during this period. In 1922 the Congress passed the Fordney-McCumber Act, raising already high tariff barriers. The tariff rate on dutiable imports rose from an average of 16.4 percent in 1920 to 44.7 percent by 1930. The Smoot-Hawley Act of 1930 raised tariffs even higher and ushered in an era characterized by beggar-thy-neighbor policies; by 1932 the tariff rate on dutiable imports reached 59.1 percent. Other coun-

tries retaliated and some moved toward autarky; still others formed rival trading blocs. Global protectionism sparked by U.S. actions contributed significantly to the severity of the Great Depression.

By 1931 the United Kingdom had abandoned the gold standard. During the rest of the decade other countries, including the United States, followed. Exchange rates were not permitted to fluctuate freely, nor were they fixed to gold or other commodities. Countries used devaluation and exchange-rate market intervention to improve their relative positions.

Paralleling and contributing to these failures in international economic policy were failures in domestic monetary and fiscal policy. Appropriate monetary policy could have reduced the severity of the Great Depression and shortened its duration. Instead, as the economy contracted, the Federal Reserve clung to a policy that resulted in a falling money supply. Money moved in a procyclical manner providing only sufficient liquidity for the much reduced needs of trade and doing little to stem the collapse of banks that further reduced the money supply and economic activity. Between 1929 and 1933 the money supply contracted by nearly one-third and prices dropped by one-fifth.

During the 1930s fiscal actions also erred, reacting to the temporary fall in revenues resulting from the contraction. In 1932, with unemployment at 23.6 percent, the Revenue Act of 1932 introduced the largest peacetime tax increase enacted up to that time in U.S. history.

The effect of these policies was staggering. Real investment plummeted and the net business capital stock declined by 9 percent between 1929 and 1933. Over the same period real GNP and real per capita GNP fell by more than 30 percent. Unemployment increased from 3.2 to 24.9 percent. Trade collapsed as real exports declined 46 percent and real imports by 35 percent.

Although the most important policy events of the Great Depression were protective tariffs and the failure of monetary policy, bank runs contributed to the severity and duration of the 1930's decline, as they had in several earlier periods. As a consequence, the Congress established institutions to mitigate the effect of recessions and reduce their severity. Among these were unemployment insurance and the Federal Deposit Insurance Corporation (FDIC) in 1933. The FDIC provided assurance that the Federal Government would guarantee a fixed amount of individuals' deposits. The insurance system later developed serious flaws and encouraged excessive risk-taking by banks. At the time, however, it provided a crude solution for bank failures that had characteristically occurred during recessions in the United States.

THE EARLY POSTWAR PERIOD: THE UNITED STATES TAKES THE LEAD IN TRADE, STABILITY, AND GROWTH

The 1950s and 1960s brought a period of stability, trade expansion, and economic growth that stands in marked contrast to the violently destabilizing policies and protectionism of the 1930s. The destruction in Europe and Japan during World War II left the United States as the clear political and economic leader of the world, with a higher capital stock and GNP per capita than the other major nations of the world. From this position of leadership, the United States worked toward a stable, free-market framework of domestic and international rules and institutions.

Between the postwar cyclical peaks of 1948 and 1973, real GNP in the United States grew at a 3.7 percent annual rate while in the other six summit nations it grew at an average 5.9 percent annual rate. Growth in the United States and other countries was strong relative to historical growth. The U.S. early postwar growth rate of 3.7 percent is significantly above both the long-term trend 1900–88 growth rate of 3.1 percent or the pre-war 1900–38 rate of 2.3 percent. Investment was strong and wealth per capita, as measured by the net stock of reproducible fixed capital in 1982 dollars, rose at a 2.4 percent annual rate. Productivity grew at a 2.9 percent annual rate and the civilian unemployment rate averaged 4.8 percent.

In contrast to the deflation of the interwar period, a moderate trend toward inflation appeared in the developed nations in the postwar period. In the United States the average annual rate of inflation as measured by the change in the GNP implicit price deflator between 1948 and 1973 was 3.0 percent.

SOURCES OF ECONOMIC GROWTH: 1948–73

A Large and Growing Capital Stock: World War II devastated the economies of Japan and Europe. Their capital stocks were greatly reduced as was their labor force. The United States, which had higher investment rates than other nations throughout most of the 1900s, had continued to invest and its capital stock continued to grow during the war, although at a reduced rate, and emerged from World War II with an even larger capital stock in absolute size and relative to other countries. By 1950 the U.S. gross stock of nonresidential capital per worker was larger than that of other major industrialized nations, and their average capital to labor ratio was less than one-half the U.S. capital to labor ratio (Table 1–2). Partly as a result, U.S. GDP per capita was also more than twice the average for the other six major industrial nations.

The United States was the world's technological leader. Its technology was generally the best-practice technology available. Produc-

TABLE 1-2.—*Real Capital Stock per Worker and GDP per Capita Relative to the United States, Selected Years, 1913–87*

[United States = 100]

Year	United States	Japan	West Germany ¹	United Kingdom	France	Italy	Canada
Real gross nonresidential fixed capital stock per worker							
1913.....	100.0	9.0	60.0	60.8	49.3	24.0	(²)
1950.....	100.0	15.5	50.8	49.8	56.0	33.3	88.1
1973.....	100.0	46.9	88.4	58.6	78.2	55.6	98.4
1984.....	100.0	90.0	111.0	65.0	101.0	(³)	(³)
Real gross domestic product per capita ⁴							
1913.....	100.0	23.4	59.5	85.4	62.4	50.0	81.3
1950.....	100.0	16.1	36.1	60.5	42.8	33.7	70.3
1973.....	100.0	59.2	68.3	66.2	66.9	61.3	84.1
1981.....	100.0	67.6	73.7	64.6	73.0	67.2	94.6
1987.....	100.0	71.8	72.6	67.0	69.8	66.8	94.8

¹ Pre-war estimates for West Germany are adjusted for territorial change.

² Not available.

³ Latest data available are for 1978: Italy, 63.1, and Canada, 104.8.

⁴ Based on purchasing power parity exchange rates.

Sources: Capital stock per worker: A. Maddison, *Phases of Capitalist Development* and "Growth and Slowdown in Advanced Capitalist Economies," *Journal of Economic Literature* (June 1987); GDP per capita: Department of Labor (Bureau of Labor Statistics).

tivity per man-hour of the other six major industrialized nations of the world averaged 43 percent of U.S. productivity in 1950. Before the war in 1938, the average productivity for the other nations had been 57 percent of U.S. productivity.

Improved transportation, lower tariffs, and U.S. economic aid and technological assistance through programs such as the Marshall Plan helped the war-ravaged nations to bridge the technology and productivity gap. With these changes, literate and trained labor forces, and U.S. assistance, the other nations were able to raise their productivity by increasing their rate of investment in new plant and equipment embodying U.S. technology. Although this investment did require the development of adaptive technologies to modify U.S. technologies to their own special needs, it was a much less expensive, less risky, and less time-consuming process than developing their own new technologies.

The availability of this U.S. technology in combination with low capital-labor ratios produced high returns to new capital investment abroad. Between 1950 and 1973 capital per man-hour by the next six largest industrialized nations grew over one and one-half times as fast as U.S. investment, and their productivity grew twice as fast. Prior to World War II, U.S. investment rates had been higher than those for most other industrial nations and U.S. productivity growth from 1900 to 1950 was roughly 50 percent higher than the average for the other major industrialized nations.

No parallel rapid acceleration occurred in U.S. productivity growth during the first 20 years of the postwar period. As the technological leader, U.S. productivity growth had been relatively steady during the

1900s. U.S. firms generally used best-practice technology and since there was no backlog of technology to exploit, increases in productivity were largely restricted to the rate of new technological innovation.

Relatively good rates of business investment between 1948 and 1973, however, resulted in the net stock of business fixed capital growing at a 3.9 percent annual rate and net capital per worker at a 2.4 percent rate. Faster growth occurred in the early part of the period and slower growth after 1966: net private capital per worker grew at a 2.5 percent annual rate between 1948 and 1966, and slowed to 2.1 percent between 1966 and 1973.

These increases in private business capital were supplemented by increased government investment in physical and human capital infrastructure. Work began on the Federal Interstate Highway System in 1956 and spending on it peaked in the mid-1960s. Between 1948 and 1973, the stock of educational structures also grew rapidly in response to the increase in the school-age population. Investments in sewer systems and water supply facilities responded to increasing urbanization, and investments in public airports responded to increased air travel. Between 1948 and 1973 the net stock of real nonmilitary government capital grew at a 4.0 percent annual rate, with investment peaking in the mid-1960s.

Paralleling these trends in investment, productivity grew at a 3.3 percent rate between 1948 and 1966 and at a 2.1 percent rate between 1966 and 1973. Over the entire period U.S. productivity rose at a solid 2.9 percent annual rate.

The United States also led in the first 25 postwar years in developing human capital. The Nation's educational attainment levels were above those of the other six summit nations, although the educational advantage of the United States over other nations appears to have been smaller than its productivity and technological advantage. Between 1948 and 1973 the percentage of the U.S. population over 17 years of age with high school degrees increased from 52.9 to 74.3 percent, with the largest increases occurring between 1948 and the mid-1960s.

Trade Policies: As part of its commitment to freer markets and more open trade, the United States pushed for rules under the General Agreement on Tariffs and Trade (GATT) to provide a framework for multinational negotiations and the gradual reduction of tariff barriers. At first, GATT was extremely successful because its members accounted for 80 percent of world trade. Tariff barriers in the major industrialized countries and the less developed countries fell dramatically. In the United States the average *ad valorem* tariff fell from an average rate of 59.1 percent on dutiable imports in 1932, after the disastrous Smoot-Hawley Act, to 13.1 percent in 1950, and dropped

further to 5.2 percent by 1987. (Chapter 4 discusses tariffs and international trade policy in more detail.)

The United States also did much to help other industrialized nations redevelop their economies and to help the less developed nations grow. In contrast to the reparations imposed following World War I, the United States, through the Marshall Plan, helped the European nations to increase production, restore internal financial stability, and achieve the benefits of scale economies and efficiencies that come from specialization and competition. Later the United States also supported the development of the European Community (Common Market) to continue the movement toward a larger and more efficient market in Europe.

During the postwar occupation the United States helped Japan to reorganize its government and redevelop its economy. Throughout the postwar period the United States also did much through direct aid and through various organizations to improve the position of the developing nations in Latin America, Africa, and in the Middle and Far East.

Accompanying these trade development policies were lower costs of transport and a faster flow of technological know-how from the United States to other nations. The result was an explosion of trade and growth.

Financial Stability: Paralleling the development of GATT and the reduction of tariff barriers was the development of a new monetary standard to facilitate exchange and financial stability. With the problems associated with the collapse of the gold standard on their minds, financial officials of the Allied Powers met at Bretton Woods, New Hampshire, in 1944 to plan the creation of the International Monetary Fund (IMF). They agreed on an international system of pegged but adjustable exchange rates that attempted to balance the need for stable fixed exchange rates with the desire to accord a higher priority to domestic stability.

Through the IMF, loans were made available to countries with temporary balance of payments problems. Surplus countries lent to deficit countries to avoid the need for contraction in deficit countries and the concomitant reduction in trade and demand for the rest of the world. Countries that chose to keep policy consistent with that of the United States could achieve both stable exchange rates and low inflation by pegging their currency to the U.S. dollar. Countries with persistent problems were expected to adjust their exchange rates.

In the early years of the system, good U.S. economic growth and moderate U.S. monetary growth allowed the U.S. dollar to serve as an international currency, providing a more stable payment system than in the interwar years to finance expanding trade opportunities.

Under the new dollar-gold exchange standard the United States maintained convertibility of the dollar at \$35 an ounce with other central banks. Other nations fixed their currencies to the dollar, thus providing international convertibility of major currencies by the late 1950s.

This system was not perfect but it worked well for a time. Flaws began to be evident in the 1960s. The system had no method for distinguishing between permanent and temporary balance of payments imbalances, and as a result could not prevent several “crises” with disruptive changes in currency values. More importantly, increases in U.S. monetary growth during the 1960s put pressure on other countries to buy dollars, increasing their own money supply, to prevent their exchange rates from appreciating. This spread inflation to other countries. Inflation and excessive monetary growth raised doubts about the U.S. ability to maintain convertibility. Other countries were reluctant to revalue their currencies upward against the dollar and used trade and capital controls to limit capital flows and reduce balance of payments pressures.

The Bretton Woods Agreement of exchange rates collapsed in 1971, and by 1973 had been replaced by the flexible exchange-rate system that exists today. The lesson from this experience is that a monetary system based on pegged but adjustable exchange rates cannot work without all participants following compatible policies to achieve common rates of inflation.

Relative Stability in Macroeconomic Policy: During this period the United States established policies dedicated to maintaining full employment and avoiding the procyclical swings in fiscal and monetary positions that had contributed to the severity of the previous business cycles. Although the period was not free from policy errors, from today’s perspective the result—whether intended or unintended—was relatively steady moderate growth in money until the mid-1960s, and fiscal integrity in taxes and spending.

Prior to the postwar period severe depressions had occurred in 1867, 1873, 1893, 1907, 1920, and 1929 according to the chronology developed by the National Bureau of Economic Research. Including recessions as well as depressions, the length of the average contraction between 1854 and 1945 was 21 months, with a contraction occurring on average once every 4 years. During the postwar period the length of the average contraction has been halved to 11 months with a contraction occurring on average once every 5 years.

Contractions have also become less severe. In contrast to the 25 percent unemployment rate in 1933, the highest unemployment rate during the postwar period has been 10.8 percent. The human costs associated with postwar unemployment were also lower than in earli-

er periods. Whereas in earlier periods the unemployed person was usually the head of the household, in the postwar period many of the unemployed were likely to be secondary wage earners or teenagers working part time. Also, in earlier periods no unemployment insurance system softened the impact of temporary layoffs.

Between 1900 and 1938 real GNP grew at a 2.3 percent annual rate and real GNP per capita grew at a 0.9 percent annual rate. Between 1948 and 1973, without the large losses associated with the depression, real GNP grew at a 3.7 percent annual rate, and, despite the baby boom, real GNP per capita grew at a 2.2 percent annual rate.

Part of the improvement in growth and reduction in cyclical instability was the result of the introduction of built-in stabilizers and other institutional changes, but a part was attributable to improvements in monetary policy. The Federal Reserve did not repeat the dramatic contraction of the money supply of the 1930s. Instead, policy tended to err in the opposite direction, producing inflation.

In the period during and immediately following World War II, the Federal Reserve tried to peg long-term Treasury bond rates so as to keep Treasury debt-service costs low. After an increase in inflation at the start of the Korean war the policy was abandoned in 1951. It was followed first by a period of controlling net free reserves, and later by a period of targeting short-term interest rates.

In the 1960s monetary policy shifted. The focus on interest rate control interacted with changes in aggregate demand to produce faster growth in the money supply and higher inflation. Growth in M2 (a measure of the money stock) increased from 5.3 percent between 1951 and 1960 to 8.1 percent between 1961 and 1973. Money growth also became more volatile, particularly in the latter half of the 1960s, and the variance of M2 growth increased from 1.6 percentage points in the 1950s to 6.7 percentage points between 1960 and 1973.

The Kennedy-Johnson Administrations responded to increased inflation by setting up an informal system of price and wage control. Guideposts attempted to put a lid on prices and hold wage increases to the average rate of productivity growth. The plan was based on the conjecture that inflation could be controlled by preventing certain sectors, such as steel, from setting the pace for large wage and price increases in other industries. The guideposts ultimately failed when increases in money and aggregate demand caused a broad-based increase in prices. The clear lesson was that inflation responds to maintained money growth, and control of prices and wages by means of jawboning is of little benefit.

The Administrations of the 1960s also introduced an era of increased emphasis on discretionary fiscal policy. Confidence in short-

term stabilizing fiscal mechanisms was high. Policymakers believed that more active use of short-run discretionary policies could have avoided, or significantly tamed, even the moderate cycles of the 1940s and 1950s. They intended to lower unemployment and raise real GNP growth without setting off higher inflation. An interim 4 percent unemployment target was set as the full employment rate that would not set off "demand-pull" inflation.

The first major discretionary fiscal move introduced explicitly to push the economy toward full employment was the Revenue Act of 1964. This act cut marginal tax rates from a high of 91 percent to 70 percent and lowered other rates as well. The act, along with Vietnam war spending and monetary stimulus, did indeed lower the unemployment rate, which dropped from 5.2 percent in 1964 to 3.5 percent in 1969.

These expansionary policies would have had a larger immediate effect on inflation had it not been for the fixed exchange-rate system. The Johnson Administration increased social spending and spending for the Vietnam war. From the viewpoint of many nations the United States was financing the Vietnam war with faster money growth. Under the Bretton Woods system, other countries were buying dollars and increasing their own money supplies to prevent their currencies from rising in value against the dollar. Many nations charged that the United States was exporting its inflation. (Chapter 3 discusses the breakdown of the Bretton Woods system in more detail.)

The initial effects of stimulative monetary and fiscal actions during the period were positive; the longer term negative consequences had yet to materialize. Along with the long expansion and low but rising inflation came a reduction in the magnitude and frequency of fluctuations, which was a significant spur to entrepreneurial expectations and investment plans. The threat of deflation appeared to be gone, replaced by a moderate upward drift in prices.

Buoyant business expectations and high real returns to new investments helped net nonresidential fixed investment to reach a postwar high in the mid-1960s, before inflation began to accelerate. Investment overseas grew even faster, as countries worked to increase their capital stock and to take advantage of U.S. technology embodied in new investments.

SOCIAL PERFORMANCE

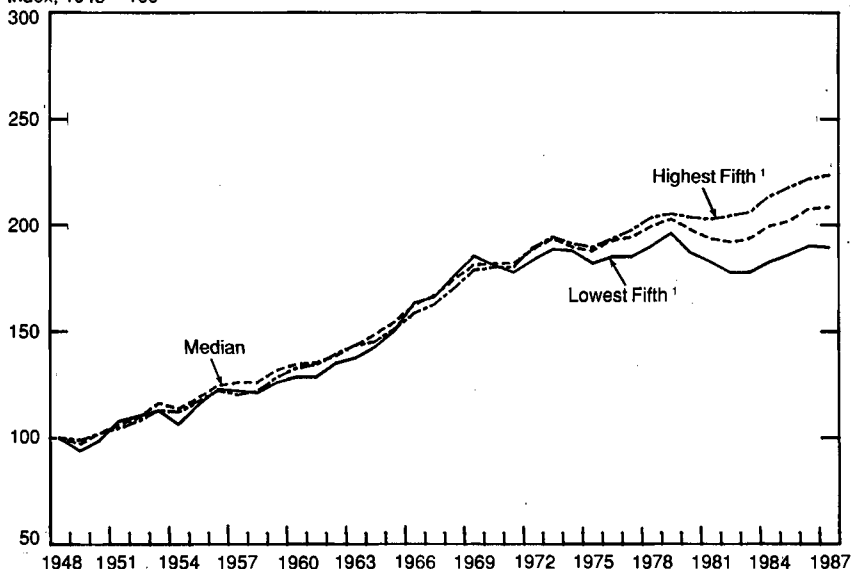
Standards of living improved dramatically in the early postwar period. Between 1948 and 1973 real disposable income per capita grew at a 2.4 percent annual rate and real median family income grew at a 3.1 percent annual rate. These gains were evenly distributed, with real family income growing at a 2.9 percent annual rate for

families at the lowest fifth of the income distribution and at a 3.1 percent rate for those at the highest fifth (Chart 1-2).

Chart 1-2

Real Family Income Relative to 1948 Levels

Index, 1948 = 100



¹The highest fifth refers to real family income at the 80th percentile while the lowest fifth refers to real family income at the 20th percentile.

Note.—Fixed-weighted price index for personal consumption expenditures used as deflator.

Source: Department of Commerce.

Among unrelated individuals, which include the elderly living alone, the same pattern was repeated, with all groups—with one exception—showing similar gains. The exception was that for unrelated individuals, the lowest fifth of the income distribution showed larger gains than other groups. Also, as a group, unrelated individuals did better than families, with their real median income growing at a 3.5 percent annual rate between 1948 and 1973.

The poverty rate dropped from 30.2 percent in 1950 to 19.5 percent in 1963. Despite this progress, a feeling persisted that more needed to be done for the disadvantaged. Twenty-five years ago, in addressing the problem of poverty in America, the Council of Economic Advisers outlined a plan to eliminate poverty. The plan called for increased social insurance programs to support the elderly, disabled, and unemployed. For others, the plan emphasized the development of skills that would lead to self-sufficiency. Help for the non-aged and nondisabled poor was viewed as an investment in the

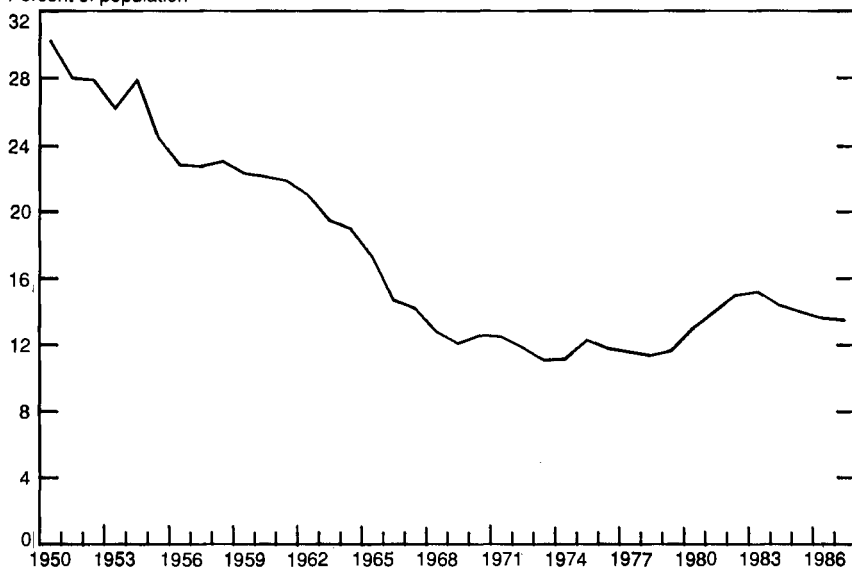
future, involving improvements in education, health, and community rehabilitation. The objective was to deal with the long-term causes rather than short-term symptoms of poverty, in hopes of bringing an end to the dole. The idea, according to President Kennedy, was "to give a hand, not a handout."

The war on poverty began in 1964, but the largest dollar increases in real public aid expenditures came between 1966 and 1973. Real expenditures increased from \$14.4 billion in 1963 to \$22.3 billion in 1967, but rose to \$56.3 billion by 1973. Real spending for old-age, survivors, and disability insurance programs followed a similar pattern. Although the antipoverty programs clearly helped some groups, especially the elderly, their net effect is difficult to assess because the programs occurred during a period of low unemployment and relatively good growth in real income. Also, the largest declines in the poverty rate occurred before the largest increases in transfer expenditures. The poverty rate for persons fell from 30.2 percent in 1950 to 14.2 percent in 1967, but fell only another 3.1 percentage points, to 11.1 percent by 1973, with over half of the decline occurring between 1967 and 1968 (Chart 1-3). While changes in the composition of the population also affected the poverty rate in the late 1960s, the decline was disappointing in light of the large increase in antipoverty funding.

Chart 1-3

Poverty Rate, All Persons

Percent of population



Source: Department of Commerce.

THE SEVENTIES: INSTABILITY, INFLATION, AND STAGNATION

After more than 25 years of stability, growth, and low inflation following World War II, the U.S. economy ran into trouble in the late 1960s and 1970s. A series of shocks to the economy combined with destabilizing monetary and fiscal policies produced a period that has been characterized as stagflation: high, variable inflation and rising unemployment. Aggravating these problems were disincentives to private investment introduced by the tax system, increased regulation, and reductions in government investment.

The 1970s stand in stark contrast to the 1950s and 1960s. Between 1973 and 1981 the rate of inflation was nearly three times as high as between 1948 and 1973, averaging more than 8 percent and reaching 9.7 percent (four quarter change) at the business cycle peak in 1981. Until 1981 each successive peak exhibited higher inflation and higher unemployment. Higher inflation was not buying lower unemployment, and the unemployment rate reached 7.4 percent at the business cycle peak in 1981 (Chart 1-4). Productivity growth plunged to a scant 0.6 percent per year between 1973 and 1981. Manufacturing's productivity performance was better than overall productivity, but it, too, slowed to a 1.3 percent annual rate of increase.

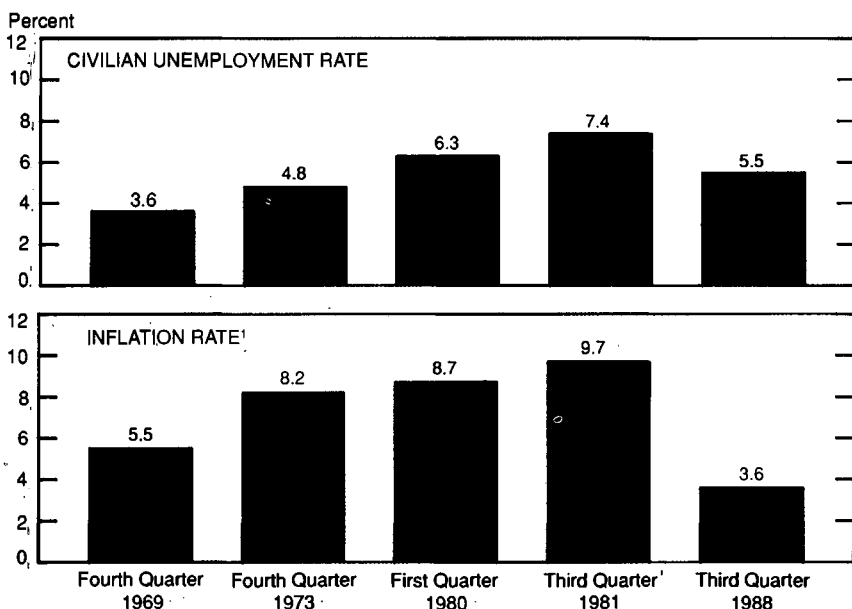
The net result was a stagnation in standards of living. Growth in real GNP per capita was cut to one-half the 1948-73 rate, to a 1.1 percent annual rate between 1973 and 1981. Real median family income showed no growth, despite the growth in the proportion of two-earner families. A real differential began to show up in the 1970s, however, with the lowest groups in the distribution of income faring the worst. The poverty rate increased from 11.1 in 1973 to 14.0 in 1981.

DESTABILIZING MACROECONOMIC POLICIES

The United States entered the 1970s with rising inflation, a recession, and the collapse of the exchange-rate system. These problems, inherited from the 1960s, were compounded by two supply-related changes in the 1970s: sharp increases in energy prices and rapid labor force growth that injected large numbers of inexperienced workers into labor markets.

Chart 1-4

Unemployment Rate and Inflation Rate at Business Cycle Peaks, and Current Rates



¹Four-quarter percent change in GNP implicit price deflator.

Note.—Data are seasonally adjusted.

Business cycle peaks as determined by National Bureau of Economic Research.

Sources: Department of Commerce and Department of Labor, except as noted.

Exacerbating the effects of these exogenous factors were short-term policy responses. Prominent among these policy responses was the mismanagement of mounting inflation and the energy shocks. Instead of pursuing the medium-term goal of gradually reducing the growth rate of the money supply from the rapid pace of the 1960s, policymakers focused on successive short-term responses to the inflation and unemployment problems.

Price Controls: In 1971 wage and price controls were introduced, beginning with a 90-day freeze on prices and progressing to weaker controls in later phases of the program. The freeze at first slowed the measured rate of inflation by suppressing the rise, but in doing so it may have encouraged a resumption of monetary stimulus. Between 1971 and 1972, M2 increased at an annual rate of 13 percent. The freeze also distorted relative prices and reduced efficiency.

When the oil “crisis” hit in 1973, the Nixon Administration imposed controls on the price of energy production. The result, howev-

er, was distortions in relative prices and gas lines. Perhaps most damaging was policymakers' failure to recognize that the oil price rise was a one-time increase in the price level, or, depending on monetary policy, a change in relative prices, not a permanent change in inflation. Consequently, policymakers did not confront the fundamental causes of the underlying increase in inflation—rapid monetary growth. Although periodic swings in money growth answered swings in inflation, average money growth remained high.

Discretionary Policies: The attempt to use fiscal and monetary policies to smooth the economy produced the pattern of successively higher peaks in inflation at each business cycle peak (Chart 1-4). Higher inflation rates did not produce the reduction in unemployment rates suggested by the Phillips curve tradeoff. (For a discussion of the Phillips curve tradeoff between inflation and unemployment, see Chapter 2 of the 1988 *Economic Report of the President*.) The stop-go pattern had already shown up in the 1960s. In the mid-1960s, there was an acceleration of monetary stimulus, accompanied by fiscal stimulus in the form of the 1964 tax cut, and Vietnam war and Great Society spending. In the latter part of the 1960s, rising inflation led to the 1968 tax surcharge and to the monetary contraction in 1969 that preceded the 1969-70 recession. This pattern became more destabilizing and more volatile in the 1970s, with government responding to short-term fluctuations, first stepping on the accelerator to stimulate the economy and reduce unemployment and later stepping on the brakes to slow inflation.

Information and Lags: Fine-tuning proved to be more harmful than helpful because of the inherent difficulties in forecasting business cycle turning points, the long and variable lags in policymaking, the lag between action and its effect on the economy, and the difficulty of distinguishing between permanent and transitory changes.

The first problem confronting discretionary policy was, and continues to be, information. Discerning trends in preliminary data is difficult. With hindsight, peaks and trends are easy to spot. Identifying trends as they occur is more difficult because there are large random components in the data, many changes in monthly data are not statistically significant, and initial data are often revised substantially. These difficulties and the time it takes to collect and disseminate the data make early recognition of trends even more difficult. For example, an analyst using business cycle rules for identifying significant trends in the leading index of economic indicators would not have been able to identify in advance either the 1974-75 or the 1981-82 downturns, the two most severe downturns of the postwar period.

These problems, in obtaining reliable information promptly, present large difficulties when combined with lags in policy. Fiscal

policy takes time to enact, and after enactment often requires 3 to 6 months to take effect. Fiscal policies reach their peak effect on average between 9 and 18 months, with wide variation around the average reflecting in part variations in anticipations and information about the change. Monetary policy has a short administrative lag, but its effect is usually not felt for between 6 to 9 months, and its peak effect may occur as many as 36 months later. Further complicating discretionary policy is the variability of these lags, with the length of the lag partly depending on anticipations—whether the action will be taken and the form it will take. Greater certainty about the action tends to shorten the lag and more uncertainty tends to lengthen it.

Given these lags and the fact that the average postwar contraction lasts only 11 months, to be effective, discretionary policy requires accurate forecasts of turning points at least four quarters ahead. Unfortunately, the record in the 1970s and 1980s indicates that neither Federal Government nor private forecasters has been able to forecast on average whether the economy will be in boom or recession four quarters ahead. The errors in their forecast tend to be largest at turning points, and even on average the range of real GNP growth suggested by the forecasts' standard errors bracket a range from more than twice the mean rate of real GNP growth to negative real GNP growth.

Much of the error in these forecasts involves problems in estimating the course of policy. Some estimates indicate that as much as one-half of the error of forecasts relate to unexpected changes in monetary policy. Much of the rest of the error results from random shocks, such as changes in oil prices or in labor force and productivity, and random fluctuations in decisions of governments and private citizens at home and abroad.

Stop-Go in the 1970s: The record of the 1970s graphically illustrates the problem with lags and the destabilizing nature of discretionary policy. Including one-time energy price increases, during 1973 the measured rate of inflation nearly doubled. To reduce the underlying rate of inflation in 1973 and 1974, monetary growth had to be reduced, but the sharp spike in prices related to the transitory energy-related change in relative prices caused the monetary authorities to overreact. Instead of reducing gradually, they cut the growth in M2 by more than one-half, from 13.3 percent between 1971 and 1972 to 6.2 between 1973 and 1974. While the one-time oil price change had a role in the severity of the ensuing recession—by reducing real incomes—monetary policy accentuated the effect. The 1974-75 recession was the deepest downturn that had occurred to that point during the postwar period. Inflation dropped from 8.2 percent at the pre-recession peak to a low of 5.7 percent following the recession,

but unemployment climbed to 9.0 percent. Also, although part of the reduction was attributable to a fall in the underlying inflation rate, much of the drop was traceable to the absence of additional oil price increases.

The 1974-75 recession and higher unemployment prompted a tax cut in 1975 and accelerated monetary growth. The progress in reducing the underlying inflation rate that had been so expensively gained was lost. Between 1975 and 1977, M2 growth averaged 12.3 percent.

The Tax Reduction Act of 1975 was a one-time tax cut designed to stimulate aggregate demand and fight the recession. Unfortunately, it was passed in March 1975, which was the recession trough, and the tax cut probably had its initial effect well after the expansion had begun, and its peak effect at a point well into the expansion, when inflation pressures were already starting to build. The monetary expansion also began in early 1975, with its initial effect probably occurring even further into the expansion and its peak effect as late as 1978, when inflation was approaching 8 percent.

Later in the 1970s a large increase in oil prices combined with the inflationary stimulus of past monetary growth to produce rates of price increases of 7.3 percent in 1978 and 8.9 percent in 1979. The Federal Reserve again shifted policy. In 1978 it started to tighten monetary policy and by 1979 was committed to reduce inflation. A significant slowing in monetary stimulus began.

The periods of rapid monetary growth in the 1970s had a particularly strong effect because of continued increases in velocity (the ratio of nominal GNP to the money supply). Higher inflation and higher interest rates during the 1970s kept velocity rising. From 1973 to 1981 the velocity of M1 (a narrower definition of money than M2) increased from 5.3 to 7.2. The behavior of the velocity of M2 was influenced by Regulation Q, which fixed interest ceilings on commercial bank deposits, and was more cyclical, tracking changes in short-term interest rates, the opportunity cost of holding idle money balances. The velocity of M2 also rose, however, increasing from 1.6 in 1973 to a peak of nearly 1.8 in 1981.

THE PRODUCTIVITY SLOWDOWN

Many analyses of the productivity slowdown focus on three exogenous factors that affected the United States in the 1970s: rapid increases in energy prices, rapid labor force growth, and the shift in demand away from goods and toward services.

The Energy Shock: Because the first oil shock occurred in 1973 and coincided with the worldwide productivity slowdown and stagflation, it appeared to explain both phenomena. The increase in oil prices raised the price level and measured rate of inflation, lowered real

output, raised unemployment, and lowered real incomes. The rapid increase in energy prices also reduced the optimal use of the existing capital stock, which was designed for low energy prices. Resources that might otherwise have been devoted to producing and purchasing new laborsaving capital equipment and structures were diverted to purchasing new energy-saving equipment and structures.

Some studies in the 1970s attributed a significant share of the decline in productivity to the sharp increase in energy prices; more recent analysis suggests a smaller effect because energy did not constitute a large enough share of total production costs to cause a prolonged decline in productivity.

Although it does not completely explain continuing stagflation, the effect of the energy price increase in some energy-intensive sectors, particularly in manufacturing, may have been significant. Higher energy prices combined with other pressures to cause an even greater reduction in the optimal use of the capital stock in these sectors. Some authors have suggested that a gradual change in energy prices might not have had a significant effect on the productivity of the capital stock because of energy's small relative contribution to total costs, but that the large sudden increase in energy prices presented serious adjustment problems.

Higher energy prices may also have had a large indirect effect on the economy. To the extent that the sudden rise in energy prices helped to contribute to the stop-go policies of the 1970s, it may also have contributed significantly to the period's stagflation.

Rapid Labor Force Growth: The growth rate of the civilian labor force in the United States increased from 1.2 percent between 1948 and 1966, to 2.4 percent between 1966 and 1973, and increased further to 2.5 percent between 1973 and 1981. These increases resulted from the maturing baby-boom generation and increasing labor force participation by women. The acceleration in growth shifted the composition of the work force to younger and less experienced workers, which tended to slow productivity growth. In 1966, 39 percent of the labor force were under the age of 35. By 1973 younger workers accounted for 47 percent of employment, and by 1981 they peaked at 51 percent.

This rapid labor force growth also added to the need for an increased rate of capital formation. The increase in labor required an even larger increase in investment to maintain the existing ratio of capital to labor and output per unit of labor. Unfortunately, coinciding with the rise in labor force participation was a slowing of the rate of capital formation.

The increase in labor force growth may have begun to assert its effect in the mid-1960s, when productivity growth dropped from a

rate of 3.3 percent between 1948 and 1966 to 2.1 percent between 1966 and 1973. Between 1973 and 1981, however, productivity growth dropped sharply to a rate of 0.6 percent, even though labor force growth was not much faster during this period than between 1966 and 1973. A more important factor was probably the slowdown in capital accumulation, which contributed to the slowdown in the growth rate of the net capital stock per worker. The productivity literature also suggests a relatively small effect on productivity from rapid growth in the number of young workers between 1973 and 1981.

Shifts in the Composition of Demand: Throughout U.S. history shifts in the composition of demand have affected productivity and economic growth. Flexibility in labor markets allows resources to move into expanding sectors. In the past, increases in agricultural productivity freed resources from farming to be used in the expanding nonfarm sectors. The shift raised average productivity as resources left agriculture—a sector with a relatively low level of output per man-hour—to other sectors with higher output per man-hour.

During the 1970s manufacturing productivity increased, although at a slower rate than in the 1950s and 1960s, which allowed manufacturing's share of GNP to remain roughly constant despite an increase in the share of the labor force employed in the expanding services-producing sector. This shift facilitated the employment and training of a large number of young, inexperienced workers.

In contrast to the net boost that the shift out of agriculture gave to average productivity, the shift to service industries lowered measured productivity growth because the faster growing components of the service sector had lower measured levels of productivity. Estimates of the effect of the shift in the composition of output vary widely, but it may have reduced overall measured productivity growth by as much as one-fourth. It is difficult to assess the true effect because part of the difference in productivity across sectors may be the product of problems in measuring output and productivity in the service industries.

In addition to these three exogenous factors, two other factors affected the productivity slowdown that were subject to Federal Government control: inflation and regulation.

Inflation: One of the most important changes in the U.S. economy that accompanied the U.S. productivity slowdown was rising inflation. Although analysts have carried out a large number of studies on the productivity slowdown, they seldom discuss or measure the direct effects of inflation—particularly variable inflation—on productivity. Yet the rise and variability of inflation after 1973 clearly paralleled the productivity slowdown. The potential impact of inflation is especially

important because, as the past 8 years have demonstrated once again, inflation is clearly subject to Federal Government control through monetary policy. In contrast, rapid labor force growth and the energy crisis are largely beyond the reach of government policies.

The effect of inflation in the United States in the 1970s and early 1980s, however, was not just to redistribute income. Inflation was high and variable, rising from 4.4 percent during 1972 to 10.1 percent during 1974, dropping to 5.7 percent in 1976, and rising again to 8.9 percent by 1979. Within a structure of unindexed taxes and contracts, high and variable inflation had real effects and pulled down measured productivity in a number of ways.

Noise and Relative Prices: During the 1970s high and variable changes in the rate of inflation were accompanied by a significant increase in the variability of relative input prices, as measured by the producer price index for intermediate goods. Not only did relative prices change more frequently, but also relative price changes did not appear to be lasting. For many goods, adjusting prices costs something, and sellers adjust prices infrequently. The result may be that during a period of high and variable inflation, relative prices may for a time be more a function of the pattern of past changes than a reflection of current or future resource cost.

Relative price volatility was important because many price contracts were not indexed for inflation and because changes in resources used in production processes can be costly. When decisions are based on relative price changes that reflect statistical noise and random adjustments rather than on changes in real costs, these rigidities can cause significant inefficiencies in resource allocation and reduce measured output per unit of input.

Even without rigidities, volatility in relative prices imposes two other types of costs. The first is the cost to sellers of adjusting prices, while the second is the cost to buyers and managers of having to learn new information and integrate it into decisionmaking.

Managerial Efficiency: In addition to its effect on resource allocation in the choice of input combinations, inflation had another significant effect on managerial efficiency in the 1970s. Operating decisions about productivity had a smaller impact than inflation on reported profits and rates of return; and managers had an incentive to allocate more time to the latter and less to the former. With input prices and wages rising at 10 percent or more, managers could save more by buying early or trying to win a wage concession than by trying to improve productivity by a percentage point or two.

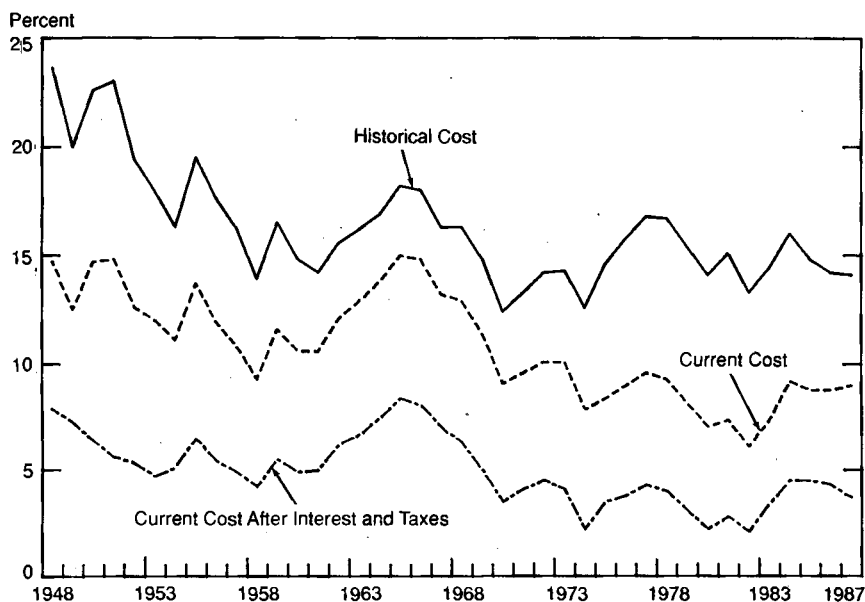
These labor and material pressures were reflected in the behavior of inventories. Expectations of rising prices and low real interest rates gave managers an incentive to carry more inventories, raising

the inventory input for a given level of output and raising inventory profits. In contrast to today's just-in-time inventory systems, in the 1970s inventory-to-sales ratios reached their highest postwar levels.

The relationship of inflation to incentives is graphically illustrated by its distorting effect on reported profits. Inventory profits came to account for a rising share of reported profits. Inflation also understated the replacement cost of capital assets, which further increased book profits. Reinforcing these effects on profits, inflation caused the value of a firm's capital assets to be understated. The result of all these effects was to cause accounting—or historical cost—rates of return reported to stockholders and upper management to diverge sharply from real rates of return, with nominal rates of return trending upward slightly while real rates trended down (Chart 1-5).

Chart 1-5

Alternative Rates of Return on Capital Investment



Source: Unpublished data from Department of Commerce.

In the 1960s real operating profits from production accounted for up to 82 percent of accounting rates of return for U.S. nonfinancial corporations; inventory profits and the understatement of capital costs and assets resulting from the effects of inflation-induced profits accounted for the other 18 percent. Rising inflation in the 1970s increased the importance of inflation, and by the early 1980s, inflation accounted for as much as 54 percent of accounting rates of return

and real operating profits from production accounted for only 46 percent. The effect of inflation on returns after taxes and interest payments was even more dramatic. By the early 1980s, inflation's share reached 72 percent of accounting rates of return after taxes and interest payments and real operating profits 28 percent.

In addition to the incentive and time problems related to inflation, managers had the added burden of burgeoning government regulations and of trying to forecast the effect of the stop-go economic policies. Under these uncertain conditions, at the margin, managers were likely to spend more of their time on purchasing and planning decisions—as well as on complying with new regulations—than on basic operating decisions. Training personnel, attending to plant maintenance, or working on improvements in work processes may have received less attention as a result of the increased demands resulting from inflation and regulation and the lower relative returns to time devoted to these activities.

Investment Incentives and Investment Trends: In addition to the distorting effect on accounting profits and rates of return, inflation raised effective tax rates on capital investment. Real after-tax rates of return fell, lowering investment incentives. Inflation eroded effective corporate profits by reducing the value of depreciation allowances and measured materials costs, thereby raising effective tax rates on capital that were based on nominal profits. Partly offsetting these effects was the deductibility of nominal interest payments. On average, however, the net effect was an increase in effective tax rates that accompanied the decline in real operating rates of return.

While uncertainty continues among economists as to how much the interaction of inflation and taxes increased effective tax rates and reduced real returns, and how much the rise in effective tax rates reduced the rate of capital formation, it is likely that higher effective tax rates had a significant role in reducing the rate of capital formation. One frequently cited estimate suggests that the interaction of inflation and taxes reduced net investment by as much as one-third.

The effect of inflation and taxes had another distorting effect on nonresidential investment. During the 1970s and early 1980s, inflation and the Tax Code gave large incentives to investment in residential housing while it lowered the net returns to investments in financial markets. Taxation of capital gains that reflect inflation rather than real increases in value also reduce incentives to save and invest. Partly as a result, housing values soared and stock values stagnated while the replacement cost of plant and equipment rose. As might be expected, lowering the stock market value of firms relative to the cost of new plant and equipment raised the firms' cost of capital and lowered the incentive to invest in new capital.

Slower capital formation lowered U.S. productivity in three ways: by failing to keep up with rapid labor force growth during this period, the growth rate of capital per worker slowed dramatically; by slowing down the rate of adoption of new technologies embodied in new plant and equipment, the growth rate of capital productivity was reduced; and the slowing of the rate of adoption of new technologies may have reduced the learning by doing that accompanies new investments and feeds back into the rate of technological change. (Science and technology are discussed in Chapter 6.)

Although considerable controversy surrounds the relative importance of the slowdown in capital formation, most studies have found that slower capital formation had a significant and substantial influence. The range of estimates is wide, with most of the estimates of slower capital formation ranging between 20 and 50 percent of the slowdown. And perhaps most important, in contrast to the rapid growth in labor force or the energy crises, government policies—either through their effect on taxes or inflation—have an important effect on incentives that influence the rate of capital formation.

Although some slowing of the rate of capital formation occurred after 1966, the drop in the 1970s was dramatic. The rate of growth in the private real net nonresidential capital stock per worker dropped from 2.2 percent between 1966 and 1973 to 1.4 percent between 1973 and 1981. The trend across industries was not even. Capital formation in manufacturing showed significant growth in the 1970s. Net capital stock per hour worked rose at a 3.4 percent annual rate between 1973 and 1981, while growth in capital per worker in nonmanufacturing slowed between 1973 and 1981, to a 0.7 percent annual rate (Chart 1-6). Partly as a result of the continued growth in capital formation, manufacturing productivity growth did not suffer as much of a slowdown as did productivity in other sectors.

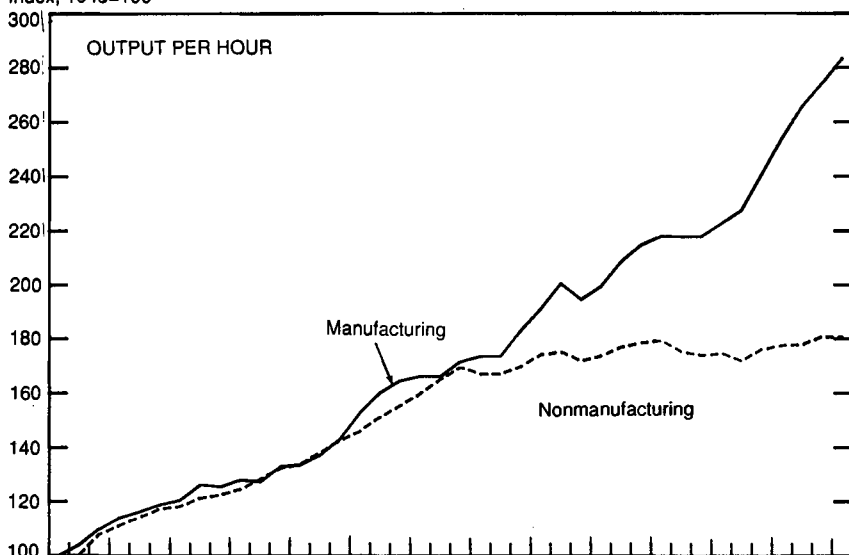
All these factors notwithstanding, one of the most important effects of inflation on private investment incentives was the result of stop-go policies that produced higher inflation and unemployment. Instability reduced incentives to investment, making entrepreneurs more cautious, more concerned about downside risks, and less willing to undertake new investments and projects.

Paralleling the decline in private capital formation was a continued decline in government capital formation as government direct transfers and insurance programs rose. After peaking at 4.1 percent of GNP in the mid-1960s, the ratio of government nonmilitary investment to GNP declined throughout the 1970s, falling to 2.1 percent by 1981. This decline in nonmilitary investment paralleled a decline in military investment, which allowed U.S. defense capability to run down.

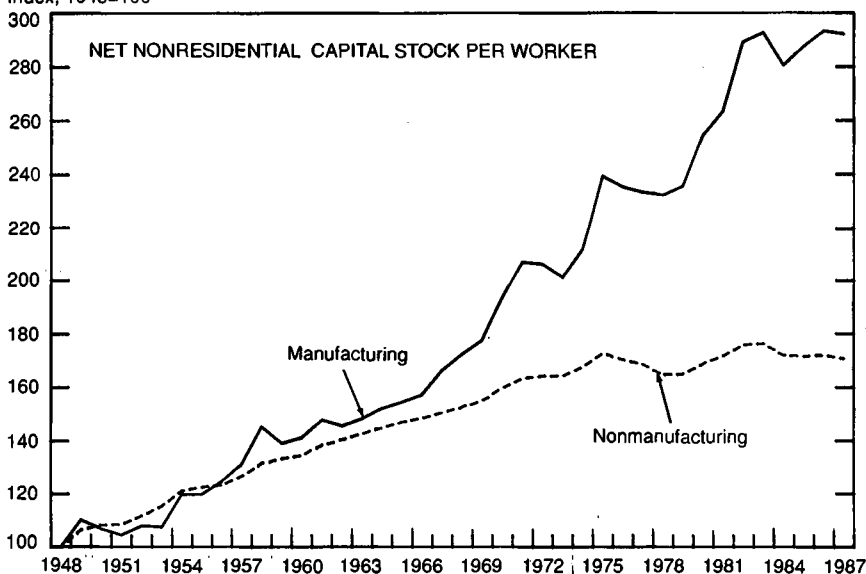
Chart 1-6

Output per Hour and Capital Stock per Worker, Manufacturing and Nonmanufacturing

Index, 1948=100



Index, 1948=100



Sources: Output per hour, unpublished data from Department of Labor; capital stock per worker, Council of Economic Advisers; based on data from Department of Commerce.

Incentives to Entrepreneurial and Other Labor Effort: Just as businesses and investors experienced inflation-induced bracket creep, entrepreneurs and workers also saw bracket creep reduce their returns to extra effort. One-earner families of four with twice the median income—who were more likely to be entrepreneurs and professionals—saw their marginal tax rates increase from 28 to 43 percent, while their real income stagnated. Proprietors' income declined from 10.6 percent of personal income in 1973 to 7.6 percent in 1981.

Wage and salary workers also saw their marginal tax rates rise as their real incomes stagnated. Between 1973 and 1981 nominal median family income for a one-earner family of four increased 92 percent, while the family's real income was little changed and its marginal Federal income tax rates rose from 19 to 24 percent. The impact on married women and other secondary workers was particularly severe, as they faced declining real wages and high marginal tax rates on their labor effort.

Measurement Problems: One of the most difficult problems in measuring productivity is separating pure price changes from changes in product price that reflect changes in the characteristics or quality of a product. The difficulty of making this separation is increased when either prices change rapidly or technology changes rapidly. During the 1970s rapid increases in prices increased the complexity of measuring relative versus pure price changes. There was also the added difficulty of distinguishing permanent versus temporary price changes.

In constructing price indexes, producers are asked to estimate the cost of product improvements, and these costs are used to adjust the product's price index so as not to overstate pure price change. If the quality change is costless or the cost is difficult to identify, however, the price index will not capture the improvement and any price increase will be shown as a pure price increase rather than as an increase in output. This problem is especially acute in industries where there is no physical output and where changes in quality are hard to measure or even observe. Interestingly, the decline in productivity growth in nongoods-producing sectors, such as finance, insurance, and real estate, transportation services, and other services, was much more pronounced than in manufacturing.

Rapid and variable increases in input prices during the 1970s probably made the estimation of the cost of improvements more difficult than during the 1960s. As a result, some overestimation of inflation, which resulted in an underestimate of real output growth may have occurred during this period.

Added to the problem of separating relative from pure price changes was the expanding underground economy. Increasing tax-

ation of inflation gains through bracket creep gave extra stimulus to the underground economy. Higher effective tax rates may help to explain the productivity declines in construction and services where there are significant numbers of sole proprietorships and underreporting of receipts is most likely.

Understatement attributable to the underground economy is more likely to show up as an understatement of receipts and income data than as an understatement of employment. As a result, if the statistical agencies did not adequately adjust for increases in the understatement of noncorporate income during the 1970s, they may have permitted a downward bias to enter the productivity estimates.

Regulation and the Productivity Slowdown: In addition to its impact on management efficiency, regulation reduces productivity by increasing capital and labor inputs without an increase in measured output. For example, environmental health and safety regulations in certain industries required new capital equipment designed to reduce pollution and produce environmental and health benefits but not measured output. Studies of these added capital and labor costs to industry estimate that, although government regulations improved the environment, they reduced measured productivity by about 15 percent between 1973 and 1981.

As the costs of these regulations became evident, policymakers began to reconsider the costs and benefits of environmental, safety, and other regulations. Questions were raised about the impact of regulations on costs and productivity of even the oldest of regulated industries. Entry and pricing restrictions in these areas resulted in inefficiencies that raised prices and reduced the quality of services. In recognition of these costs beginning in the 1970s, deregulation began in air transportation, trucking, and railroads as well as in other areas. (Regulation is discussed in Chapter 5.)

SOCIAL PERFORMANCE

The failure to reduce poverty in the 1970s was a source of social frustration. Part of the poverty problem appeared to be related to the stop-go policies that affected all families. The poverty rate had reached an all-time low of 11.1 percent in 1973, but the 1974-75 recession raised the rate to 12.3 percent. Economic expansion and a reduction in inflation seemed to improve the poverty rate, but shortly thereafter inflation began to rise and the economy moved in 1980 into a mini-recession. The poverty rate rose from 11.4 percent in 1978 to 14.0 percent in 1981 (Chart 1-3).

Part of the poverty problem was probably related to measurement issues because the official poverty statistics are based on the consumer price index, which in the 1970s and early 1980s overstated

housing costs and inflation. The poverty statistics also exclude non-cash income, a growing component of means-tested benefits. The net effect of these factors was probably to overstate the rise in poverty that occurred between 1973 and 1981.

Another part of the poverty problem appears to have been related to diminishing returns to economic growth. During the 1950s and 1960s increases in median income were accompanied by large reductions in poverty. When median income was lower, a significant proportion of the population was near the poverty income level. As median income rose, a large number of persons were lifted from poverty. By the 1970s, however, the poverty threshold was located in the long flat tail of the lower end of the income distribution, and further shifts in the location of the distribution lifted fewer people from poverty.

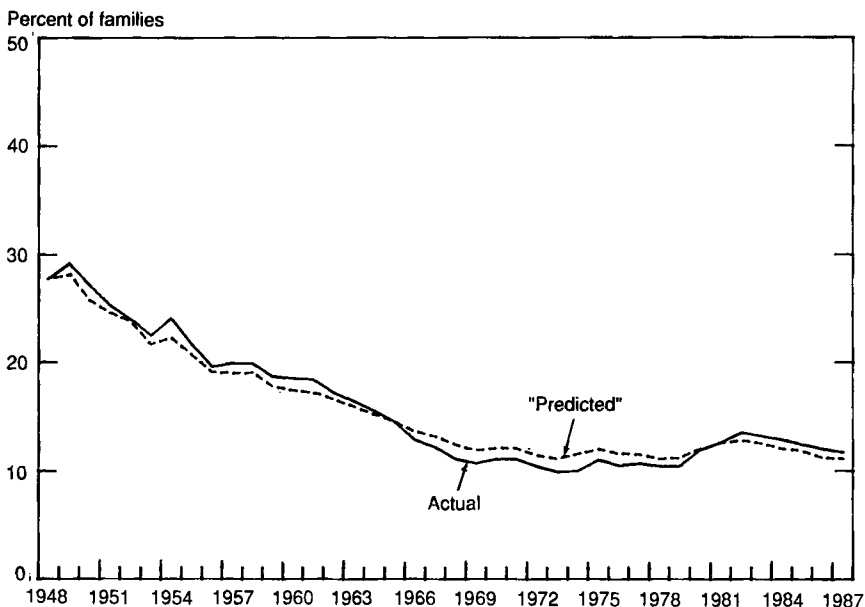
Interestingly, if a fixed distribution of income, such as the 1948 distribution, is used with growth in median income to "predict" the percentage of the population that would have been at low-income levels, it produces a "predicted path" that tracks the actual path quite well (Chart 1-7). Thus, despite the fact that large sums were being redistributed to reduce poverty, the distribution of income was little changed, and the low-income population appears to have been moving along a path that would have been predicted by economic conditions alone. The persistence of large numbers of low-income families and the rise in poverty rates may help to explain why at the time there was a nagging feeling that the effort to invest in people and "to give a hand, not a handout," was failing.

Real spending on public aid increased from \$56.3 billion, measured in 1982 dollars, in 1973 to more than \$87.1 billion in 1981. The programs did benefit some groups. Unrelated individuals and the elderly showed improvement and, despite the poor economic performance over this period, the poverty rate for unrelated individuals fell from 25.6 percent in 1973 to 23.4 percent in 1981 and for those over 65 from 16.3 percent to 15.3 percent.

For other groups a disturbing trend suggested that increased transfers were influencing behavior and fostering dependency. The proportion of births to unmarried women was rising and showed an alarming increase among the most disadvantaged groups. By 1981 more than one-half of all black births were to unmarried women, and for those aged 15 to 24 nearly 70 percent were to unmarried mothers. This development was particularly disturbing because families with the poorest economic outlook were increasing, suggesting that poverty was increasingly becoming a long-run condition for these families. The proportion of the poverty population accounted for by female-headed families grew dramatically, while those headed by a

Chart 1-7

Actual and "Predicted" Proportion of Families With Income Below \$10,000 in 1987 Dollars



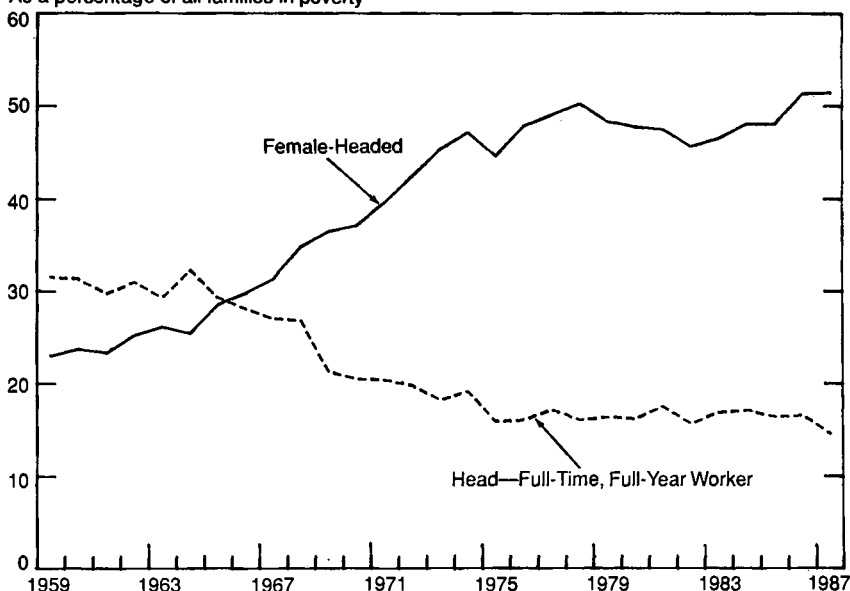
full-time worker declined. The proportion of families in poverty headed by women rose from 23 percent in 1959 to 35 percent in 1968, and rose further to 48 percent by 1981, while those with a full-time, full-year worker as head of the household fell from 31 percent to 27 percent between 1959 and 1968 and to 18 percent by 1981 (Chart 1-8).

An increasing proportion of these families also was headed by women with little or no work experience. With child care responsibilities and expenses and no work experience, job prospects were poor for these women and labor force participation correspondingly low. In 1981 more than 50 percent of black and Hispanic female-headed households were in poverty. Among these poor households only 34 percent of the women worked and only 7 percent worked a full-time, year-round job.

Chart 1-8

Composition of Families in Poverty

As a percentage of all families in poverty



Source: Department of Commerce.

THE EIGHTIES: LOWER INFLATION, IMPROVED INCENTIVES, AND IMPROVED PERFORMANCE

This Administration replaced the stop-go interventionist policies of the 1970s with a different view of the role of the Federal Government and of incentives. This view was based on lessons from U.S. economic history: the best performances have been recorded when government has provided stability and relied on the dynamism of the private sector.

The Administration emphasized that government often does best when it improves incentives and encourages private market solutions. The Administration sought to take government back to the basics, delivering the essential services and ensuring the stability that the private sector requires and allowing markets to work, often by providing a framework that gives incentives to private individuals to seek solutions. Desiring not to repeat the failures of short-term discretionary policy in the 1970s, the Administration abandoned discretionary fiscal policy. In its place the Administration has used fiscal policy as a tool for restoring incentives and efficiency, both in the private sector

and in the government and giving incentives for the private sector to plan for the future. The Administration has continued the drive for deregulation and has put forward new proposals to reduce rigidity. It has encouraged the monetary authorities to pursue the goal of non-inflationary growth. Finally, the Administration has continued work on lowering barriers to trade, trying to avoid protectionism and encouraging trade. The private markets have responded well to these improved incentives, and the flexibility of U.S. markets has allowed the United States—in contrast with the nations of Europe—to enjoy lower inflation and lower unemployment.

Like the 1970s the 1980s were a difficult period for the economies of the world. The move to slower monetary growth reduced inflation rates in the major industrialized nations, but it caused one of the most severe downturns of the postwar period. Partly as a result of inflexibility in their labor markets, many countries have not yet fully recovered from the downturn. Unemployment has remained high. Less developed countries have been plagued by the “debt crisis,” slow growth, and the need to earn foreign currency. In many nations, including the United States, the sharp drop in oil prices beginning in 1985 hit sectors of their economy hard. Low aggregate demand in Europe and in the less developed countries and rapid export-led growth in the Pacific rim resulted in increased competition in import and export markets.

Despite these difficulties the U.S. economy recorded a dramatic reversal from the record of the 1970s. The 1981–82 recession, which was one of the most severe downturns of the U.S. postwar period, slowed growth in the early 1980s, but a vigorous recovery resulted in strong U.S. economic growth in the 1980s.

Since 1981 real GNP has risen at a 3.0 percent annual rate, a significant improvement over the 2.1 percent annual rate between 1973 and 1981. Real GNP per capita has risen at a 2.0 percent annual rate, compared with a 1.1 percent annual rate between 1973 and 1981, and is slightly above the 1.7 percent growth trend for the 1900s. This record compares favorably with the record for the other major industrialized nations during the 1980s.

Perhaps the most important characteristic of the 1980s is that during the past 8 years the cyclical pattern of higher inflation and interest rates has been broken. Inflation has been cut to nearly one-third of its 1980 rate, short-term interest rates are about one-half their peak 1981 levels, and long-term interest rates have declined substantially.

Largely because of labor market flexibility and improved incentives, lower inflation in the United States did not result in higher unemployment, and strong gains in employment and reductions in un-

employment followed the 1981-82 recession. Nonfarm jobs have increased by nearly 19 million since the recession trough of November 1982, for a net total of 16 million jobs since July 1981. Civilian unemployment has been cut by one-half, from 10.8 to 5.4 percent, with gains for all major demographic groups. This employment record is in sharp contrast to that in Western Europe where unemployment in 1987 was 10.7 percent, just below the postwar record high.

Although overall productivity growth has not achieved the growth seen between 1948 and 1973, improvement has been significant. Since 1981 private business sector productivity has grown at a 1.7 percent annual rate, more than double the 1973-81 rate. Manufacturing productivity has grown at a 4.1 percent rate since 1981, roughly one and one-half times the postwar average and more than three times the rate of 1973-81. Manufacturing remains strong; the United States is not deindustrializing. Manufacturing production is up 43 percent during this expansion, and 29 percent since the mid-1981 peak. Manufacturing's share of total output, around 22 percent, is essentially the same as its peak levels during the past 25 years. Strong productivity growth has allowed manufacturing to maintain its share of total output despite a declining employment share.

The two nagging problems for the U.S. economy in the 1980s were the budget and trade deficits. The growth in the trade deficit in the 1980s reflected several interrelated developments, including the strength of the U.S. economy and U.S. domestic demand relative to other countries, the debt crisis in less developed countries, the attractiveness of investment in the United States, and the high value of the dollar. Since 1985 the dollar has come down in value and U.S. domestic demand growth has slowed while other countries' domestic demand has accelerated. The improvement in the trade balance has been substantial as both the real and nominal trade deficit have fallen sharply from their peaks in 1986 and 1987, respectively. (The trade deficit and other trade issues are discussed in Chapters 3 and 4.)

The Federal budget deficit is a more serious problem and, although the current U.S. debt burden relative to GNP is comparable with the burden in the 1950s and early 1960s and to that of many of the other G-7 summit nations, it is still large. The increase in the deficit in the 1980s was largely the result of spending increases rather than tax cuts. Tax changes in the 1980s brought Federal taxes as a share of GNP close to its historical average, while spending continued its upward trend. Real progress has been made in reducing spending and the deficit since fiscal 1985, and the deficit as a share of GNP has declined from 5.3 to 3.2 percent of GNP; however, Federal dissaving continues to exacerbate the U.S. savings investment

imbalance and continued progress on reducing the deficit is important. (The budget deficit is discussed in Chapter 2.)

SOURCES OF THE IMPROVEMENT IN OUTPUT, INFLATION, AND PRODUCTIVITY PERFORMANCE

Increased Stability in Macroeconomic Policy: In contrast with the use of spending and taxes in attempts to control aggregate demand in the 1970s, in the 1980s the focus has been on longer term issues concerning the appropriate sphere of government action. Examples of issues that were addressed on the spending side were the mix of government spending between Federal, State, and local levels and the appropriate role of transfer programs. On the tax side, the issues concerned the effects of bracket creep and the effect of taxes on incentives.

Beginning in 1979 the Federal Reserve undertook to control one measure of the quantity of reserves rather than a short-term interest rate. This task was not easy, however, in part due to disinflation and changes in financial markets and in part due to the Federal Reserve's control procedures, particularly the use of lagged reserve accounting that has since been modified and depository institution borrowing from the Federal Reserve discount window.

Deregulation, the creation of new deposit instruments, and the general increase in the pace of financial innovation caused many changes in financial markets. Significant shifts occurred across different deposit instruments, and the management of monetary policy became more difficult.

Despite these problems, between the late 1970s and 1980, M2 growth fell from a high of 13.7 to around 8.0 percent, with an average growth of 8.5 percent since 1978. This decline in monetary growth was reinforced by a decline in velocity. After peaking at 1.7 in 1981, M2 velocity fell at an average of 1.4 percent a year between 1981 and 1987.

The shift to slower money growth was not painless and the 1981-82 recession was the second most severe recession of the postwar period, perhaps partly because the Federal Reserve's past behavior encouraged the expectation that monetary ease and higher inflation would follow soon after monetary restriction. Despite the difficulties, slower monetary growth and less volatility paid large rewards. The rate of inflation fell from 9.7 percent in 1981 to the 3.5 percent range, and unlike periods in the past, it has stayed in that range. Contrary to the fears of many, it will stay in that range and gradually drift down if the monetary authorities remain committed to reducing the rate of inflation to achieve price stability. Monetary policy will contribute to stable growth if the monetary authorities focus on the

medium-term prospects, moving toward the goal of noninflationary growth and avoiding the past errors of overreacting to short-term shocks to the economy.

Investment Incentives: Three major factors have operated on investment incentives since 1981: tax reform, lower inflation, and increased stability in the macroeconomic outlook.

Tax Policy: The Economic Recovery Tax Act of 1981 (ERTA) arose out of concern for the effect of inflation on incentives. It was designed to address the eroding effect of bracket creep on incentives to produce, save, and invest. On the personal tax side, lower marginal tax rates, lower capital gains tax rates, and indexation removed many of the effects of bracket creep and inflation on incentives to save and invest. As it turned out, the effect on aggregate saving was more than offset by a 26 percent increase in household net worth between 1981 and 1988 and high consumption expenditures by baby-boomers who were at the peak of their spending for consumer durables, child care, and education. Although these are investment expenditures that yield returns in later years, they are the types of saving and investment that are excluded from the definitions used by national income accountants, and therefore reduce recorded saving and investment.

On the business tax side, ERTA accelerated depreciation allowances, increased the investment tax credit for certain assets, and improved other business tax incentives. Changes in the tax law and lower inflation resulted in effective tax rates for some assets that were low and for some types of equipment were negative. Some investment incentives were reduced under the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA), but the net effect was that effective tax rates were significantly reduced by ERTA, even after adjustments by TEFRA. The net result was to increase investment relative to GNP. By lowering marginal personal tax rates and capital gains rates, ERTA and TEFRA also improved the investment returns for entrepreneurs. One estimate suggests that ERTA and TEFRA raised investment by at least 20 percent between 1982 and 1984, with a smaller net effect between 1985 and 1987. The two acts also reduced the differences in effective tax rates across assets and industries. Most estimates indicate that ERTA and TEFRA improved resource allocation and the efficiency of the capital stock.

The Tax Reform Act of 1986 (TRA) was a comprehensive reform directed toward further reductions in marginal tax rates, reducing distortions, and broadening the tax base. The act substantially evens the cost of capital across assets. Overall the reduction in marginal tax rates and removal of many tax preferences will help to ensure that investment and financial decisions are based on economic rather than tax-motivated grounds.

The long-term effect of the TRA on capital efficiency is expected to be significant. The act did increase the effective tax rate on capital at a given inflation rate, but, relative to the early 1980s, this effect was more than offset by lower inflation.

Lower Inflation: Lower inflation had several effects on investment incentives. It reduced the variability of relative prices, allowing decisionmakers to more accurately anticipate future relative prices, thereby allowing them to allocate resources more efficiently, especially those involving fixed dollar commitments for the future. The variance in relative prices for non-energy goods, as measured by the producer price index, dropped 39 percent between 1973–81 and 1981–87.

With relative prices more accurately reflecting future resource costs, investment decisionmaking was improved. Costly investments in machinery and equipment that in the 1970s were made inefficient by subsequent and unexpected changes in relative prices were avoided. The reduction in volatility lengthened the expected useful lives of assets and enhanced decisionmakers' incentives to concentrate on long-run investment planning rather than short-run strategies.

Lower inflation in conjunction with reduced regulation also gave managers the incentive to concentrate on basic management decisions rather than on purchasing and paperwork responsibilities. The reduction in inflation sharply reduced inventory profits and brought book value depreciation closer to real replacement cost depreciation. Lower inflation brought asset values and depreciation in line with replacement cost slowly, through new investments and through the depreciation and scrapping of the old capital stock. Nonetheless, by 1987 real operating profits accounted for 64 percent of accounting rates of return and the inflation share fell to 36 percent, versus 46 and 54 percent, respectively, in the early 1980s.

Similarly, lower inflation significantly reduced effective tax rates on capital investment. For new investments, low expected inflation caused book value depreciation to be closer to replacement cost depreciation, and inventory costs to be closer to replacement cost. As a result, the inflation tax on new investments was significantly reduced. Although there is considerable controversy regarding the effect of inflation on effective tax rates, according to one model, the reduction of inflation from 13.5 to 4.0 percent would have reduced the effective tax on new capital investments by one-third, even without any change in tax laws. Also with inflation in the 4 percent range, despite increases in effective tax rates as a result of TRA, the effective tax rate on new plant and equipment investments in 1988, at 41 percent, is still 10 percentage points lower than in 1980. Reducing inflation

and achieving price stability, therefore, are as important as tax laws in keeping effective tax rates from rising.

Business Confidence: One of the more important factors explaining the improvement in U.S. growth and productivity may be the increase in stability that occurred during this expansion. Reduced volatility of inflation and interest rates since the early 1980s and the absence of a contraction for 6 years has significantly improved business confidence, raising investment.

These improvements in stability and business confidence are important because most studies of the determinants of investment have found sales expectations to be more important than tax or relative price effects in determining investment spending.

Trends in Investment: In response to the improved outlook and heightened investment incentives, real nonresidential investment spending has done well in the 1980s. Investment dropped during the 1981–82 recession, but between 1981 and 1987 it averaged 11.8 percent of GNP, which is 1 percentage point above the postwar average. Despite this increase in gross investment, the net real capital stock per worker grew at only a 0.5 percent annual rate between 1981 and 1987. This difference in rates of capital accumulation reflects the fact that, while the gross investment share of GNP has been increasing, measures of net investment—gross investment less estimated depreciation—have been falling (Chart 1–9).

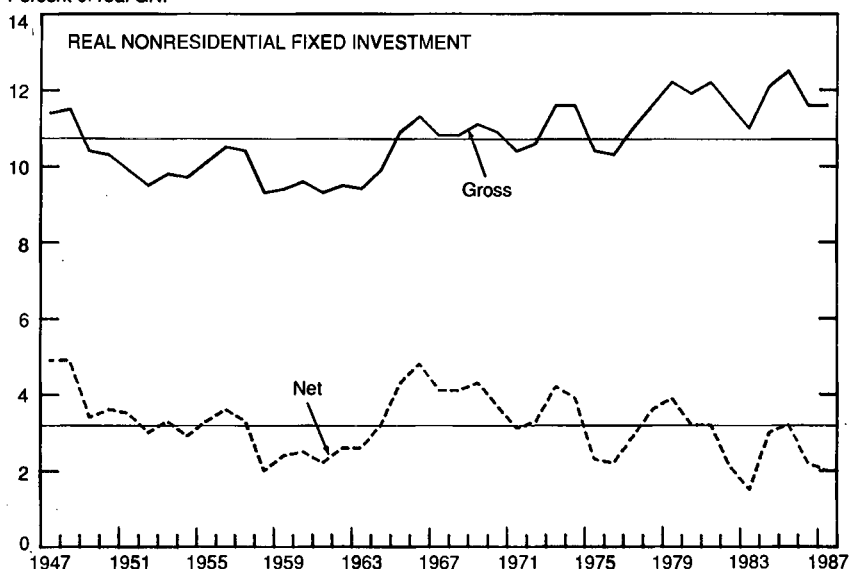
In terms of its effect on productivity, this trend in net investment and capital per worker has been offset by increases in the efficiency of capital, particularly in manufacturing. Since 1981 real output per unit of capital has risen 15 percent, or 2.3 percent a year.

Despite the improvement in capital productivity, some observers consider this trend in net investment particularly disturbing because standard national accounting measures indicate that U.S. investment as a share of GNP is smaller than that of other nations. Also, the United States spends a bigger share of investment on consumer durables and housing than many other nations. However, properly measured aggregate U.S. investment is comparable with that of most other industrialized nations of the world. Concerns about the low rate of aggregate saving and investment in the United States are exaggerated by national income and product accounts accounting conventions. If all expenditures that yield future income or services are counted as investment—including consumer durables, education, research and development, and military capital—then U.S. investment and saving as a share of GNP roughly equal those of most major industrialized nations of the world. The U.S. saving and investment shares on this basis are still significantly lower than Japan's, but because per capita income is higher than in Japan, investment per

Chart 1-9

Gross and Net Investment Shares of GNP

Percent of real GNP



Source: Department of Commerce.

capita in the United States is not significantly lower than Japan's when investment is measured more comprehensively than in the national income and product accounts.

The composition of U.S. investment and the slower U.S. rates of investment in plant and equipment relative to other countries result partly from the high levels of U.S. nonresidential private capital relative to other nations in the postwar era. The United States could afford to invest more in consumer durables because of its high ratios of capital to labor and associated high levels of GNP per capita. Japan and the other industrialized nations, on the other hand, had powerful incentives to invest and rebuild their capital stocks. As they approach U.S. levels, however, their investment paths may more closely resemble the U.S. path. In the pre-war era the United States had high investment rates relative to the rest of the world.

The U.S. investment pattern, however, may also stem from the bias in the Tax Code toward investments in housing and consumer durables. Also, higher levels of government infrastructure in the United States than in other countries allowed government investment to slip in the 1970s and 1980s. Now that other countries have closed most

of the gap and the United States is running a persistent trade and saving-investment deficit, it may be time to take steps to reallocate the investment mix and raise the level of U.S. nonresidential business investment or accept a lower rate of growth in the standard of living than in competing countries.

Accompanying the high levels of investment in residential structures and consumer durables is the declining trend in net nonresidential fixed investment (Chart 1-9). While gross nonresidential investment as a share of GNP has risen in the 1980s relative to the 1970s, net nonresidential fixed investment has declined as a share of GNP. These divergent trends result partly from tax incentives and may also be examples of problems in measuring depreciation.

The reason for the divergence between the trends in gross and net investment as a share of GNP is a shift in the mix of assets. Investment has shifted toward shorter lived assets, and the measured rate of depreciation on the capital stock has increased. The implication is that either the mix of investment must change or gross investment must increase even faster if the growth rate of net investment is to rise.

Technological change and a Tax Code that favored investment in equipment over structures has caused private nonresidential investment to shift away from long-lived structures toward shorter lived equipment. In 1960, 48 percent of investment was in structures and 52 percent in equipment; by 1987 these proportions were 28 and 72 percent, respectively. The shift to equipment was amplified by a shift within equipment toward shorter lived computers and transportation equipment.

The Tax Reform Act of 1986 did much to even effective tax rates between equipment and structures. However, tax reform raised effective corporate tax rates on business investment and removed the preferential treatment of business capital gains while retaining much of the advantage of investment in housing and consumer durables. Residential housing receives preferential treatment, because imputed returns are not taxed, interest and property tax payments are generally tax deductible, capital gains can be rolled over into a residence of equal or greater value, and, with the one-time exclusion of \$125,000 in capital gains from the sale of a principal residence for those over age 55, the bulk of capital gains on residential housing is never taxed. The Tax Reform Act of 1986 phased out the deductibility of interest payments on consumer durables, but a revision on the use of home-equity loans in 1987 opened the possibility for homeowners to use deductible home-equity loans to finance consumer durables. Under current law, deductibility is no longer limited to home improvements or educational and medical expenses.

Although a clear shift has appeared in the mix of capital and some of the bias toward short-lived investment has been reduced, at least part of the trend in net investment may be related to problems in measuring depreciation. The problems are so severe that many researchers use averages of net and gross investment to approximate the productive potential of capital stocks. Gross investment may be more relevant than net investment in analyzing productivity because replacement investment embodies the latest technologies. If an average of the two measures were used to measure investment share, no clear trend would be visible in its share during the 1980s.

Unfortunately, not much solid information is available on service lives for different types of capital assets, and much of the data available from the Department of the Treasury seems to embody a bias toward shorter service lives during the postwar period that does not appear to be related to technological change.

Equally important to the size of the net capital stock and net investment are depreciation and retirement patterns. Once again solid empirical data on this dimension of capital are lacking. The official Department of Commerce capital stock estimates are based on straight-line depreciation and a pattern of discards that is similar to a normal distribution. Straight-line depreciation is generally not consistent with most independent estimates of economic depreciation, however, and little empirical information is available on the distribution of discards around the estimates of average service life. As a result, the Department of Commerce produces an alternative capital stock series that uses a different decay function, with slower depreciation in the early years and faster depreciation in the later years of an asset's service life. This alternative method raises the 1987 value of the U.S. net capital stock for nonresidential capital by 29 percent, to \$4.8 trillion. This alternative series also shows a slowing of net investment since the mid-1960s, although the relative growth rate differs, with somewhat slower growth before 1973, from the straight-line measure and somewhat faster growth afterward.

Comparisons of foreign and U.S. net investment are even more difficult. According to official estimates of depreciation lives used to produce national capital stock estimates, apparently similar kinds of assets have significantly different durability across developed countries. For example, official estimates indicate that machinery and equipment in the Japanese chemical industry last only 8 years versus 31 years in the United Kingdom.

Increased Competitiveness: Increasing foreign competition and labor market accommodation were also factors stimulating increases in output and productivity. Imports' share of U.S. markets in manufacturing increased from 8.3 percent in 1981 to 12.9 percent in 1986.

Inefficient producers left the market. The remaining producers closed plants, cut back on excess labor, invested in higher technology equipment, and improved inventory control and other management procedures.

The impact was particularly large in durable goods manufacturing, where imports' share of the U.S. market rose from 10.7 percent in 1981 to 16.8 percent in 1986. Durable goods productivity rose over 5 percent per year between 1981 and 1987, compared with 1.0 percent between 1973 and 1981. In nondurable goods, where the imports' share was lower and growing more slowly—increasing from 5.9 to 8.0 percent—productivity growth was more modest.

Shifts in the Composition of Labor: Manufacturing benefited from improvements in the quality and quantity of labor. Increasing competitive pressure forced U.S. industries to conserve on inventories, labor, and capital. The labor force in manufacturing aged and gained experience. This labor force also benefited from the fact that manufacturing had kept up investment during the 1970s and, although part of the investment was diverted to energy-saving capital and regulation, some embodied new technologies. As a result capital-labor ratios in manufacturing in 1987 were 45 percent higher than in 1973 and the effective capital-labor ratio would probably show an even larger increase.

Work Effort and Marginal Tax Rates: Between 1981 and 1988 the top statutory personal Federal income tax rate was reduced from 70 to 28 percent, while the top corporate rate was reduced from 46 to 34 percent. Marginal tax rates have been cut across the board. For example, a one-earner family of four earning twice the median income has seen its marginal Federal income tax rate reduced from 43 to 28 percent. A one-earner family of four earning the median income has seen its marginal tax rate reduced from 24 to 15 percent. Two-earner couples have seen even larger cuts in their marginal tax rates.

The effect of cutting tax rates on incentives appears to have been large. Although other factors clearly had a hand, an explosion of small business growth has occurred during this economic expansion. Small businesses have accounted for a disproportionate share of overall job growth. Although they accounted for only about 50 percent of employment, between 1982 and 1986 they accounted for 64 percent of net employment growth. Proprietors' income, which had been declining as a share of personal income throughout the postwar period, has turned around, rising from 7.4 to 8.3 percent of personal income. The share of taxes paid by the top 5 percent of taxpayers increased from 34.9 percent in 1981 to 44.3 percent in 1986.

Regulation: Another boost to overall productivity has come from the deregulatory process that began in the late 1970s. In transportation,

regulation has changed dramatically. The railroad, bus, trucking, and airline industries have all become more efficient as a result. Problems in measuring productivity gains in service industries seem to have obscured the gains in these industries. Because all sectors of the economy, including manufacturing, depend on the transportation system, gains in this sector help the overall economy. Lower rates and improved services have permitted U.S. industry to reduce inventory costs and adopt more efficient production techniques. Overall savings are estimated to be between \$60 billion and \$90 billion per year.

Sector-Specific Productivity Improvements: Manufacturing has been the leader in improving U.S. productivity growth. Manufacturing more than accounted for the improvement in total nonfarm productivity. The increase in manufacturing productivity stems from the reduction in inflation and instability, improvements in incentives, increases in competition, the aging of the labor force, high capital-labor ratios, and the flexibility of U.S. labor markets.

There is some indication that manufacturing output and productivity have been overstated in the 1970s and the 1980s. Some observers have pointed to this overstatement as evidence of deindustrialization, noting that manufacturing's share of GNP may be overstated by 1 or 2 percentage points. Even if manufacturing's share were reduced from 22 to 20 percentage points, this lower figure is well within the range of normal variation in its share and just 1 percentage point below manufacturing's postwar average GNP share.

A review of the data also suggests that whatever revisions are made to manufacturing productivity data will not revise away the sharp improvement in manufacturing productivity since 1981. A large share of the problem—to the extent there is one—is said to arise from an adjustment that lowered 1972 manufacturing output and raised its growth rate for 1972–87. However, the largest impact of the adjustment on output growth occurred between 1972 and 1979, with little impact on manufacturing productivity growth after 1979. Thus removal of the adjustment would make the recovery of manufacturing productivity growth after 1981 look even stronger relative to the 1973–81 period. In addition, regardless of what revisions are finally made to the 1973–81 period, manufacturing productivity growth of 4.1 percent in the 1981–87 period is a significant increase relative to the 2.8 percent growth in the 1948–73 period. Finally, even if the level of manufacturing productivity is lowered somewhat, because manufacturing productivity is constructed separately from overall activity, the revision may simply lower manufacturing productivity and raise nonmanufacturing productivity, leaving overall productivity growth unchanged.

More fundamental problems exist with measured productivity growth in nonmanufacturing industries than a possible mismeasurement between manufacturing and nonmanufacturing. Although the nonmanufacturing sector has been growing rapidly, contributing heavily to real GNP growth and increased employment, its productivity record in the 1980s has been weak. The weakness is something of a puzzle. As can be seen in Table 1-3, not all the nonmanufacturing industries have done poorly. The average growth rate in output per hour in farming, mining, communication, utilities, and trade for the past 6 years has been 3.8 percent. However, this growth has been offset by slow measured growth in transportation and services and negative growth in construction, the finance sector, and government enterprises.

TABLE 1-3.—*Growth in Value Added per Hour Paid, 1948-87*

(Average annual percent change, except as noted)

Sector	1987 output share (percent) ¹	1948 to 1973	1973 to 1981	1981 to 1987
Goods-producing:				
Farm	2.4	4.6	5.2	5.2
Mining	3.8	4.0	-6.8	5.2
Construction	5.7	.6	-2.7	-6
Manufacturing	27.1	2.8	1.3	4.1
Durable manufacturing	17.0	2.4	1.1	5.2
Nondurable manufacturing	10.2	3.4	1.7	2.5
Service-producing:				
Transportation	4.4	2.3	-2	.7
Communication	3.5	5.2	4.3	5.3
Utilities	3.4	5.9	.4	1.4
Trade	21.3	2.7	.5	2.4
Wholesale	9.4	3.1	-1	3.5
Retail	11.9	2.4	.5	1.8
Finance, insurance, and real estate	10.7	1.4	-4	-7
Services	16.1	2.2	.3	.4
Government enterprises	1.5	-1	1.2	-9
BUSINESS	100.0	2.9	.6	1.6

¹ Detail does not add to total because of rounding.

Source: Unpublished data from Department of Labor (Bureau of Labor Statistics).

Part of the explanation for this divergent performance in productivity may be that these slow and negative growth sectors accounted for more than 65 percent of the job growth since 1981. As a result, they have added a disproportionate share of young and inexperienced workers to their labor force. Capital-labor ratios have also shown little growth in these industries, perhaps because of a substitution of labor for capital.

Measurement problems may also continue to exist in these rapidly expanding areas. In the services and finance sector—which accounted for more than 67 percent of total nonfarm employment growth—

output is extremely difficult to measure. The rapid rates of innovation in these industries make it difficult to identify quality changes or to separate pure price changes from price changes arising from changes in product characteristics.

Slow growth in measured productivity in transportation is related to measurement problems in the airline industry. Deregulation has produced lower fares and increased passenger miles per employee. Most estimates indicate large net savings, yet productivity as measured by value added per hour worked appears to have fallen. This clear contradiction of the evidence in airlines may be the result of the problem of developing consistent deflators during a period when the fare structure is rapidly changing. Today 90 percent of fares are sold at discounts from full fare; in 1976, 85 percent of travelers paid the listed full-fare price.

Construction offers another example of the problems of measurement. Value added per worker in construction stands at the same level as in 1948. This poor productivity performance seems difficult to believe given the development of prehung factory-made doors and windows, factory-made trusses, aluminum siding, and more sophisticated construction equipment. Understatement of construction activity and inadequate price data have always posed a problem, and it may be worsening.

International Productivity and Growth: A major question that arises in looking at the productivity and growth experience in the 1980s is why many of the other industrialized nations have not seen the recovery in productivity growth and output that the United States has witnessed. Part of the reason probably lies in their lack of labor market flexibility. Employment, especially in Europe, has not recovered from the contraction of the early 1980s. Unemployment among the Organization for Economic Cooperation and Development (OECD) nations of Europe is above 10 percent, and mandated benefits and high marginal taxes make employers reluctant to innovate and expand their businesses.

Strong growth of output and employment require flexible labor markets that are free from rigidities and distortions. The flexibility of U.S. labor markets contributed to the strong performance of the U.S. economy. In many countries, especially in Europe, the flexibility of labor markets has been reduced by restrictive work practices, excessive nonwage labor costs, rigid work rules, generous unemployment insurance benefits, and burdensome job security arrangements. Such distortions, along with high marginal tax rates in these countries, discourage job growth by driving a wedge between wages paid and wages received while reducing the costs of remaining unemployed and reducing labor mobility.

Most governments, as expressed in recent economic summits and the OECD, now accept the importance of market flexibility and structural adjustment. This relatively new development is attributable to the positive experience of the United States in the 1980s.

Market incentives form the basis for economic decisionmaking in the United States. For example, wage negotiations between workers and firms are voluntary, free of government intervention, and free to take into account special regional and industrial factors. The imposition of government-mandated benefits raises the cost of labor, thereby slowing the growth of employment and raising unemployment. As a result the young, inexperienced, and lower productivity workers, whom mandated benefits are often intended to help, are among those who are hurt.

Flexible markets ensure adjustment to changing economic circumstances. Flexible markets also promote dynamic adjustment. Admittedly adjustment can be painful for some workers and for some firms. In the United States, for example, during the 1980s, the adjustment of workers and manufacturing firms in many cases was especially difficult and costly. Some workers were displaced; the real earnings of others declined, and company profits fell. These difficulties are best dealt with by firms and workers, however, not the government. Government intervention slows the adjustment process and often does not help workers in any real sense, but simply shifts the burden elsewhere.

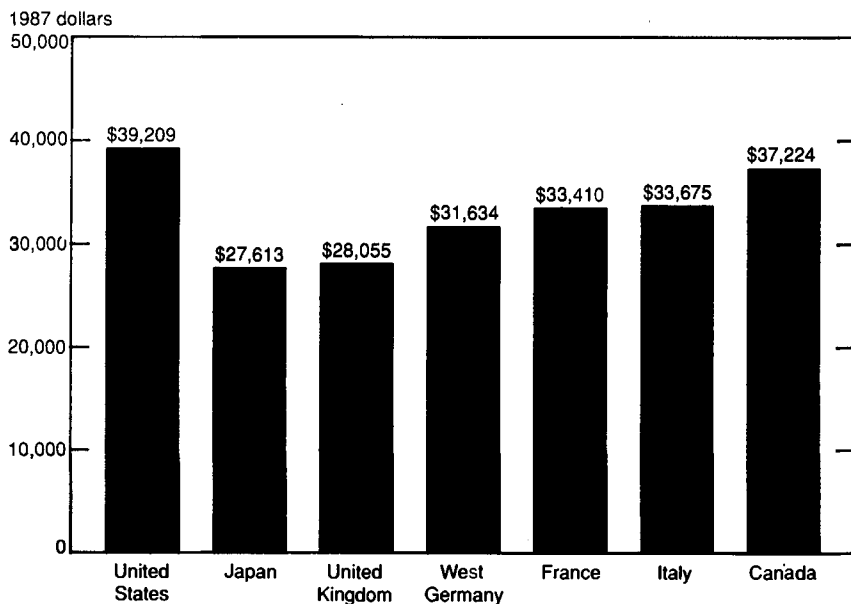
Although labor market inflexibility helps to explain the poorer growth and employment experience abroad, it does not help explain why growth in other countries' productivity has not revived as it has in the United States. The explanation may be that a slowdown in growth was inevitable for these countries. During most of the postwar period it was relatively easy to raise productivity through new investments adapting U.S. technology. As the other nations' capital stocks and standards of living have moved closer to those of the United States, and as the U.S. technological advantage was reduced, the other nations' productivity growth has approached the U.S. rate. As the British and French found with the Concorde and the Japanese with Beta videocassette recorders, innovation and new products are riskier, slower, and more expensive than imitation.

Thus while other nations will continue to benefit from the postwar free trade and stabilization programs of the United States, their growth rates and levels of output will likely converge toward U.S. rates and levels. Still, the United States continues to have the highest standard of living of the major industrialized nations of the world, and U.S. real income per capita and productivity still exceed that of any of the other major industrial countries (Chart 1-10). Contrary to

popular myths, Japan still has a way to go to reach the level of per capita income enjoyed by the United States, and its productivity is only 70 percent of U.S. real gross domestic product (GDP) per worker. It is clear that the United States is still the world's economic leader. From this position the United States should continue to strive to provide the free markets and stability that have allowed it and the other market economies to succeed so well during the postwar period.

Chart 1-10

Real GDP per Employed Person in the Seven
Summit Countries, 1987



Note.—Data based on purchasing power parity exchange rates.

Source: Unpublished data from Department of Labor.

SOCIAL PERFORMANCE

Although the 1981–82 recession was costly, the inflation that plagued the 1970s has been reduced dramatically. The expansion that followed brought strong job growth, growth in real family income, and increases in economic opportunity.

The economic expansion has improved the position of almost all demographic groups. Real median family income is up 9.4 percent since 1982. Black family income is up 10.5 percent, white family

income is up 9.0 percent, and Hispanic family income is up 3.9 percent.

Families across the distribution of income also showed gains. Between 1982 and 1987 families at the lowest fifth of the income distribution saw their income grow at a 1.4 percent annual rate, while those at the top fifth saw theirs grow at a 1.9 percent annual rate.

Tax reform will offset part of the faster relative growth in the before-tax money income of those at the upper end of the distribution. Tax reform cut low-income taxpayers' Federal income taxes by 65 percent, those in middle income groups by between 9 and 10 percent, and those in upper income groups by between 1 and 2 percent. Tax reform eliminated taxes for about 4 million low-income taxpayers.

Economic expansion also helped to reduce poverty. The poverty rate has declined from a postrecession high of 15.2 percent in 1983 to 13.5 percent in 1987. Unfortunately, the rising economic tide lifts only those boats that are in the water. Despite the lowest unemployment rate in 14 years, the head of the household in more than 85 percent of all families in poverty did not have a year-round, full-time job.

The continuing problem of poverty and dependency led to the Family Support Act of 1988, which the Congress passed in an attempt to increase individual responsibility, training, and support for low-income families. By strengthening provisions for child-support enforcement, the act requires fathers to take greater responsibility for their children. By introducing work requirements for those able to work and by extending employment-related services, the act is intended to help the poor to escape poverty and become self-supporting.

The Job Training Partnership Act (JTPA) was another step in the right direction. In contrast with the earlier Comprehensive Employment Training Act (CETA), where the bulk of the funds went for payments to individuals, JTPA focuses on training. By law, the block grant program—JTPA's largest program—must devote at least 70 percent of its funds to actual training compared with less than 20 percent under CETA. The JTPA provides training and job-finding services, using a decentralized approach. It gives State and local governments the responsibility and discretion to work with the private sector to train workers to meet local labor market needs.

These programs will certainly help, but much needs to be learned about incentives and dependency. For this reason, the Administration has assisted several States in undertaking welfare reforms designed at the local level, and has encouraged these States to employ randomized assignment for the purpose of subsequent evaluation. If the

Nation is to learn about the complex processes that determine dependency and self-sufficiency, it must provide the best possible opportunity to observe program effects. The object of study is too important to view through the veil of fundamentally arbitrary adjustments for pre-selection and other factors. Certainly, of all the welfare-related investments the Nation might make, an investment in understanding should rank high on the list.

CONCLUSION

The lessons of the past suggest that solutions to economic and social problems should place maximum reliance on free markets. Government has a role in providing a stable macroeconomic environment, encouraging free trade and investment, providing basic public goods and a social safety net, but lasting solutions are achieved when private incentives encourage private solutions.

Subsequent chapters of this *Report* expound on this general theme and the major functions that contribute to economic growth. Chapter 2 traces the role of fiscal policy in the 20th century, and especially the postwar period, in stimulating growth. Chapter 3 examines the role of international financial markets, capital movements, the international debt problem, and the role of international financial institutions in providing a framework for growth. Chapter 4 documents the significant reduction in trade barriers in the postwar period and the major contribution to growth that resulted. Regulatory issues and their relationship to long-term growth are explored in Chapter 5. Chapter 6 discusses the role of science and technology in increasing productivity, which underlies so much of the Nation's increased prosperity. Chapter 7 reviews the accomplishments of the present expansion and presents the Administration's economic forecast.

CHAPTER 2

Fiscal Policy and Economic Expansion

SOON AFTER WORLD WAR II ended, the United States started to put its economic house in order. The Federal Government committed itself in the Employment Act of 1946 to achieve for the Nation maximum levels of income, employment, and purchasing power. During the 1970s, however, the goals of the Employment Act eluded the Nation. Reduced real income, widespread and persistent unemployment, and the dollar's eroded purchasing power plagued the country. During the 1960s and 1970s attempts were made to use discretionary change in fiscal policy to stabilize the economy over short periods. By concentrating on the incentives created by Federal tax policy, this Administration redefined fiscal policy. The subsequent revitalization of the U.S. economy not only advanced the Nation toward meeting the goals of the 1946 commitment, but also led to a worldwide revolution in fiscal policy.

This Administration has pursued fiscal policy as part of a comprehensive program to reduce the role of the Federal Government in the economy and expand the role of the private sector in economic decisionmaking. The Federal tax system has been restructured by reducing marginal tax rates, indexing personal income tax brackets, and strengthening incentives for private capital formation. Federal Government expenditures have been subject to new controls to reduce both their rate of growth and the Federal budget deficit.

These policies have contributed to the longest peacetime expansion on record. During this expansion real gross national product (GNP) has increased 27 percent, and real per capita disposable income has increased 17 percent. Since November 1982 the economy has expanded, creating almost 19 million new nonfarm jobs and improving employment opportunities. Furthermore, inflation has been reduced to nearly one-third of its 1980 level. During the past 8 years the goals of the Employment Act of 1946 have been pursued through policies that have encouraged sustained economic growth, job creation, and reduced inflation.

For much of the postwar era fiscal policy emphasized discretionary changes in tax rates and Federal expenditures designed to regulate aggregate demand in ways that compensate for fluctuations in private

spending. It is now widely recognized, however, that the ability of the government to design and implement successful countercyclical fiscal policies is limited even though changes in tax and expenditure policies do have the potential to influence aggregate demand and real GNP. Government expenditure and tax policies are determined through the political process, which inevitably means that attempts to adjust aggregate demand to stabilize the economy are constrained. As Chapter 1 explains, variable and sometimes long delays occur in implementing discretionary changes in fiscal policy that limit their effectiveness in achieving timely adjustments in aggregate demand. Increased understanding of the effects of anticipations, such as expectations of changes in tax rates, on the timing of responses to fiscal policy has further increased doubts about the stabilizing properties of countercyclical fiscal policy.

The Federal budget has been in deficit throughout most of the postwar era and consistently since 1970. Since 1946 Federal revenues have rarely exceeded 20 percent of GNP. However, since 1970 the trend in the rate of growth of Federal Government expenditures has exceeded the trend in the rate of growth of tax revenues. While the political process has kept Federal Government revenues within a narrow range, fluctuating around 20 percent of GNP, the same process has also allowed Federal expenditures to expand as Federal entitlement programs grew. Persistent budget deficits are the result.

Since fiscal 1985 this Administration has been able to reduce Federal outlays and the Federal deficit as a percent of GNP. However, further controls on Federal Government spending are necessary to reduce the deficit and redress imbalances between investment and domestic saving. Unfortunately, the growth in spending has not been used for government nondefense investment, which has stagnated since 1970 as a percent of GNP. The Federal Government has increasingly been borrowing to finance transfer programs and other programs that fund consumption. The growth of Federal borrowing, combined with a lower net private saving rate in the United States since 1980, has given greater impetus to reduce government spending on consumption. Over the long run, fiscal policies can encourage private capital formation through low marginal tax rates. The tax incentives of the 1980s have encouraged private investment. Foreign saving has financed much of that investment. Further reductions in the growth of Federal spending are necessary to encourage increased national saving and to reduce U.S. reliance on foreign saving to finance domestic investment.

This chapter examines the evolution of fiscal policy in the postwar era and recent changes in Federal tax and expenditure policies. It discusses the rationale for moving away from countercyclical fiscal

policies to a fiscal policy that is primarily focused on the long-term goals of improving incentives and increasing capital formation. The chapter examines postwar changes in the structure of Federal Government spending and their effect on institutions, incentives, and capital formation, and reviews tax policy over the past 8 years and its influence on the economy. Finally, the chapter explores the Federal budget deficit within the context of an overall fiscal policy designed to encourage sustained economic growth over the long term.

THE EVOLUTION OF FISCAL POLICY IN THE POSTWAR ERA

Throughout much of the postwar era successive Administrations have attempted to stabilize the economy through temporary changes in Federal Government expenditure and tax policies. Yet great uncertainty has attended the timing and magnitude of the effects of discretionary fiscal policy on the performance of the economy. Forecasting the fluctuations of the economy is difficult and imprecise. It is rarely possible to know in advance when a recession will occur or when the economy will be subject to increased inflationary pressures. The information necessary to prevent a recession or control an expansion through fiscal policy may be impossible to obtain. Because of the uncertainties involved, attempts to use fiscal policy to fine-tune the economy can be procyclical rather than countercyclical.

Discretionary changes in fiscal policy during the postwar era have often taken place at the same time as changes in monetary policy. Most major fiscal policy initiatives were announced well before their actual implementation, virtually inviting anticipations of their eventual passage. Both the simultaneity of monetary and fiscal changes and the effect of fiscal policy proposals on expectations complicate the problem of measuring the timing and magnitude of their effects.

Lags between the proposal of a discretionary change in fiscal policy and its enactment vary considerably. For example, a 13-month lag occurred between the initial proposal of the tax cut of 1964 and its passage. The Tax Reduction Act of 1975, however, was enacted after only a 2-month lag. The success of fiscal policy in stabilizing the economy can be sheer luck. Major tax cuts that result from broad political pressures for tax relief have sometimes been fortuitously timed and have helped to speed an economic recovery. For example, the Congress imposed a major tax cut in the Revenue Act of 1948 over President Truman's veto; the cut moderated the recession of 1948-49, which began 7 months after the act became law.

Even if changes in fiscal policy are correctly timed, they can be ineffective in stabilizing the economy. For example, the temporary income tax surcharge enacted in June 1968 failed to dampen con-

sumer spending. Consumers responded by reducing personal saving, rendering negligible the impact of the tax surcharge in reducing inflationary pressures in the economy.

Some economists argue that tax cuts designed to increase aggregate demand with an unchanged level of Federal Government expenditures can result in an equal increase in saving. Empirical evidence indicates that much of a tax cut can end up as increased saving, although consumption is generally increased also. Changes in personal income tax rates in 1964 were largely offset by increased private saving although lower tax rates did provide improved incentives. Similarly, in 1975 a tax rebate of up to \$200 per family appears to have gone initially into private saving rather than consumption. In addition, stimulative fiscal policies are often said to put upward pressure on real interest rates and adversely affect private investment.

The effect of countercyclical fiscal policies combined with monetary policy on the price level is also a matter of concern. From 1960 to 1982, as described in Chapter 1, a higher price level and a higher rate of inflation followed after each trough of the business cycle. Fiscal and monetary policies should encourage steady economic expansion without contributing to inflationary expectations.

To a large degree Federal expenditures and receipts automatically adjust to cyclical fluctuations in real GNP. Built into the Federal budget are automatic stabilizers (such as unemployment insurance benefits and payroll tax collections that vary with the rate of unemployment and a progressive rate schedule for income taxation) that act to maintain aggregate demand when national income falls. Similarly, reductions in some components of government expenditure and increases in tax collections under the Federal income tax system act to restrain aggregate demand when it is increasing. These automatic stabilizers cushion the effects of cyclical fluctuations in the economy and make an important contribution to moderating recessions and controlling upward pressure on the price level.

The success of a countercyclical discretionary Federal fiscal policy designed to fine-tune the economy is difficult to measure. Because changes in fiscal policy frequently occur at the same time as changes in monetary policy and other changes in the economy, it is difficult to isolate the separate influence of fiscal changes on the economy. Uncertainties, difficulties in forecasting, and variable lags in implementing discretionary fiscal policies complicate the measurement of the price and output effects of fiscal policy.

During the postwar period the Federal Reserve System and some administrations have attempted to coordinate monetary and fiscal policies to stabilize the economy. Despite the good intentions of policymakers, sometimes monetary policy has acted to frustrate the goals

of discretionary fiscal policy, and the combination of the two policies has destabilized the economy. For example, the Revenue and Expenditure Control Act of 1968, enacted 11 months after it had been proposed, was designed as an anti-inflationary tax surcharge. Yet saving fell and the surcharge failed to reduce consumption. Given the uncertainty of the macroeconomic situation at the time, however, the tax surcharge, and the accompanying Federal expenditure ceiling raised concerns about a recession. To reduce that likelihood, the Federal Reserve allowed the money stock to expand rapidly. In this case, monetary action proved more powerful than the fiscal restraints. The economy continued to boom and later to inflate. The expansion in the money supply fueled inflation and inflationary expectations. In 1969 the Federal Reserve reversed course abruptly, reducing the rate of monetary expansion. The reduction in the rate of monetary expansion contributed to the recession of 1970.

In the 1970s fiscal policies designed to trade inflation for employment contributed to increasing inflation without decreasing unemployment. Monetary growth in the 1970s set the economy on an inflationary course. Inflation contributed to higher effective marginal tax rates on real personal and corporate income in the 1970s, thus offsetting the effects of tax cuts and investment tax credits enacted at the time. Expansionary fiscal policies embodied in the Tax Reduction and Simplification Act of 1977 and the Revenue Act of 1978 were designed to increase employment, but they probably added upward pressure to the price level.

Excessive fiscal and monetary expansion during the period 1977–78 contributed to a further increase in the rate of inflation during the period 1979–81 without producing a lasting decline in the unemployment rate. The unemployment rate was over 7 percent in 1981 while inflation exceeded 9 percent, measured by the annual percent change in the GNP implicit price deflator.

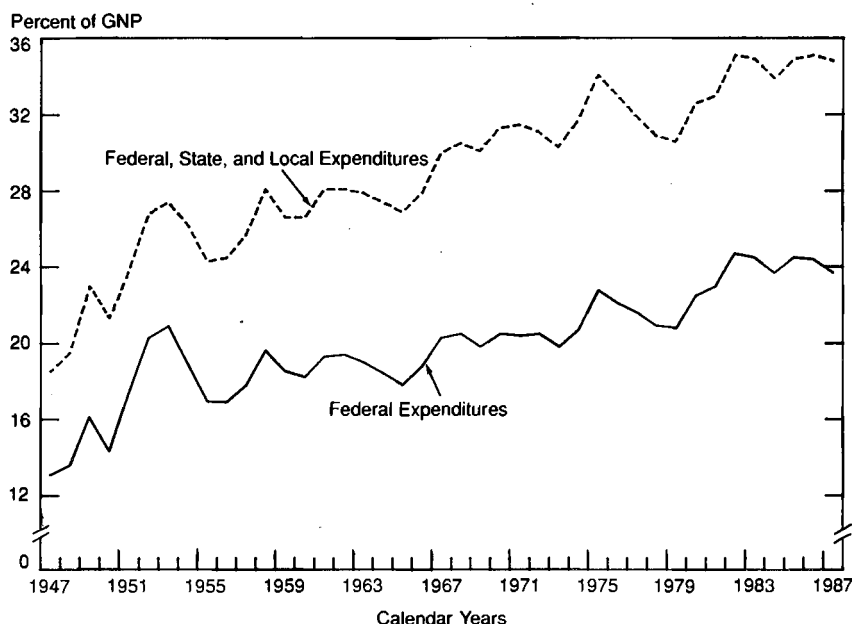
Discretionary fiscal policies designed to stabilize the economy in the postwar era have as often destabilized the economy as contributed to stabilization. Recognizing its limitations, this Administration has used fiscal policy as a long-term tool for achieving sustained economic growth. Fiscal policy can stimulate growth by controlling Federal spending and redirecting it toward government investment programs, and can encourage capital formation and labor force participation by lowering marginal tax rates to improve incentives for work and investment. A cornerstone of such a policy is tax incentives to increase net private investment. Reduction of effective tax rates on capital income stimulates investment. Tax policies have encouraged investment and have been effective in increasing net investment in the United States since 1981.

THE GROWTH OF GOVERNMENT EXPENDITURES AND REVENUES

An appropriate long-term fiscal policy concentrates on adjusting the path of government expenditures and the tax structure to achieve efficient use of resources and the goals of the Employment Act of 1946. The constraints on such a policy can be best understood through examining the postwar growth of government and how Federal revenues have varied as a percent of GNP since 1947. The postwar era has experienced growth in spending at all levels of government. Chart 2-1 shows the upward trend in both total and Federal Government spending as a percent of GNP.

Chart 2-1

All Government and Federal Expenditures as Percent of GNP



Note.—Data are on a national income and product accounts basis.

Source: Department of Commerce.

The postwar growth of government reflects increased demands for government goods and services and increased Federal commitment to provide income support and subsidized services for such groups as the elderly, farmers, veterans, and the poor. Transfers to individuals increased from 25.8 percent of government expenditures at all levels in 1947 to a peak of 35.9 percent of expenditures in 1983.

Federal Government expenditures nearly doubled from 13.1 percent of GNP in 1947 to a peak of 24.7 percent of GNP in 1982. Since 1982 the share of GNP devoted to Federal expenditure has declined, falling to 23.7 percent of GNP in 1987.

State and local government spending, excluding Federal grants-in-aid, has grown more rapidly than Federal spending in the postwar period. The percent of GNP absorbed by State and local expenditure of nongrant funds has increased more than twofold. Government expenditures at all levels have increased from 18.5 percent of GNP in 1947 to a peak of 35.1 percent of GNP in 1982.

Chart 2-2 shows how Federal expenditures and receipts have varied as a percent of GNP on a fiscal year basis from 1947 to the present. From 1947 to 1969 Federal Government expenditures fluctuated from a low of 12.8 percent of GNP to a high of 20.9 percent. From 1970 to 1983 Federal expenditures rose from 20.1 percent of GNP to 25.1 percent. The same period was associated with increased Federal commitment to programs that involved direct benefit payments to individuals that mainly finance consumption.

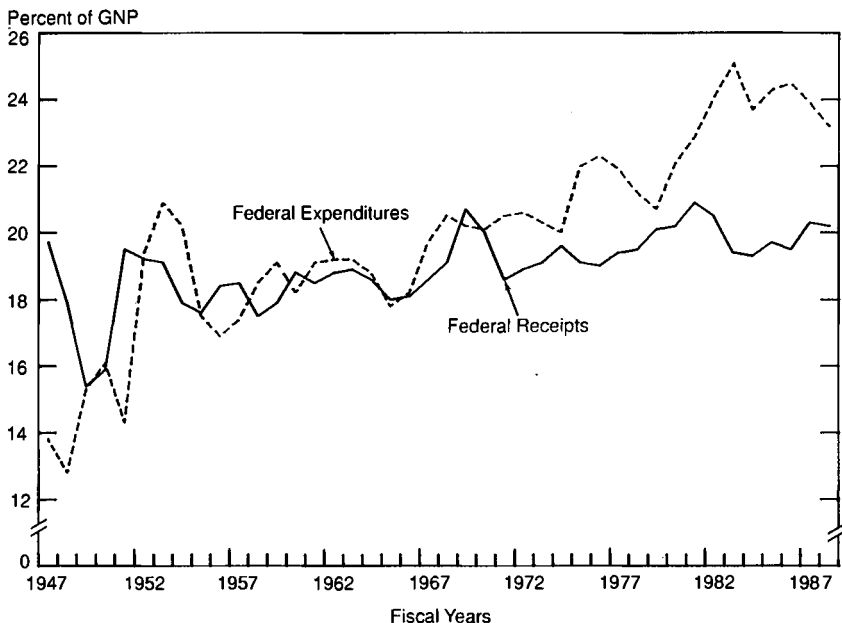
Federal receipts have fluctuated between 17.5 percent and 20.9 percent of GNP since 1951. Over the entire postwar period Federal receipts have averaged 18.9 percent of GNP.

In practice the upper bound to Federal receipts in the postwar era has been about 20 percent of GNP. In many instances in the postwar era, tax relief legislation has followed when Federal revenues, as a percent of GNP, have been at the upper bound of 20 percent. For example, in 1947 Federal receipts were 19.7 percent of GNP. The Revenue Act of 1948 became law in April 1948. When combined with the fiscal effects of the 1948-49 recession, the Revenue Act of 1948 contributed to reduce Federal receipts to only 15.4 percent of GNP in 1949. This was the postwar low. The Congress passed the Tax Reduction and Revenue Adjustment Acts of 1975 after Federal receipts again rose near 20 percent of GNP in 1974. It reduced taxes in 1977 (Tax Reduction and Simplification Act of 1977) and again in 1978 (Revenue Act of 1978), when Federal receipts were 19.5 percent of GNP. While reducing average tax rates, however, these tax reductions of the 1970s failed to reduce personal statutory marginal tax rates.

In 1979, Federal receipts as a percent of GNP rose above 20 percent of GNP. The Economic Recovery Tax Act of 1981 (ERTA) provided a major tax cut designed to encourage long-term economic expansion. Federal tax revenues fell from 20.9 percent of GNP in 1981 to 19.3 percent of GNP in 1984. By 1987, growth in the economy raised Federal revenues to 20.3 percent of GNP. Federal revenues are expected to be 20.2 percent of GNP in 1988.

Chart 2-2

Federal Receipts and Expenditures as Percent of GNP



Note.—Data are on a national income and product accounts basis.

Source: Department of Commerce.

The discrepancy between the growth in receipts and the growth in expenditures has implied a growing trend toward Federal budget deficits since 1970, which has made the Federal Government a net dissaver. The deficit has resulted from a political system that failed to contain Federal outlays but kept Federal tax collections below 21 percent of GNP. Administration fiscal policy in the 1980s has sought to reduce Federal spending as a percent of GNP, while at the same time reforming the tax system to improve efficiency and encourage capital formation.

THE STRUCTURE OF GOVERNMENT SPENDING

Government expenditures can influence the rate of capital formation and future living standards by affecting both incentives and economic institutions. Subsidy programs that distort incentives can adversely influence economic performance by affecting labor force participation, work effort, and resource use. Similarly, a shift of govern-

ment spending away from investment can also reduce the future capital stock and living standards. Other things being equal, government spending can influence consumption and investment in any given year. If government expenditure displaces investment purchases, it can lower future living standards. Government spending also affects resource demands and influences relative prices of goods and services. It is therefore important to examine the structure of government spending to see how such spending affects both capital formation and incentives to use resources efficiently in the private sector.

Federal investment expenditures include purchases of both defense and nondefense equipment and structures and outlays for research and development activities. The Federal Government also finances education and training that could be classified as investment in human capital. From 1963 to 1975, Federal outlays for physical investment, including Federal grants to help State and local governments to finance capital investment and grants for research and development fell from one-third of Federal expenditures to less than 16 percent. Chart 2-3 shows the trend in Federal investment as a percent of GNP. From 1968 to 1974, Federal investment outlays fell sharply both as a percent of Federal outlays and as a percent of GNP.

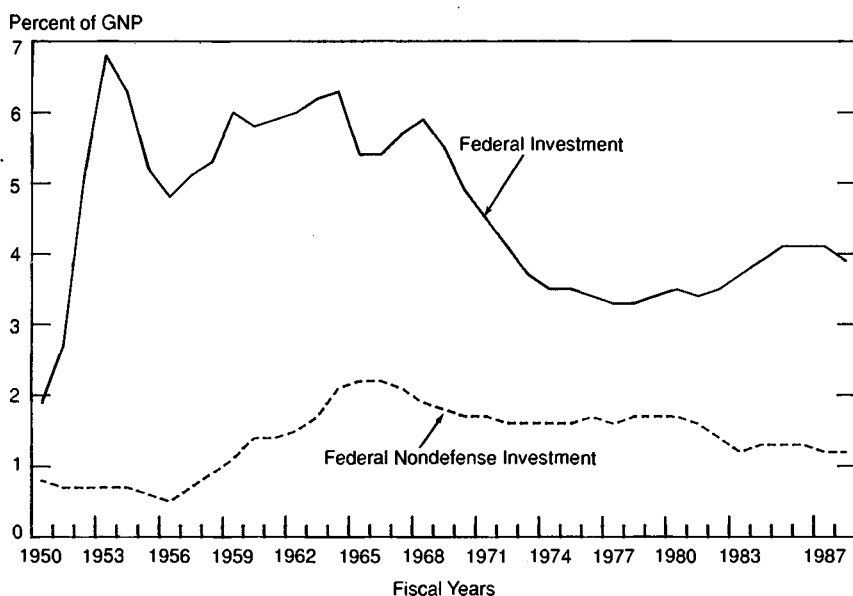
During the 1950s and early 1960s the Federal Government increased nondefense investment and spending for research and development as a percent of GNP. The government sector constructed highways, including the Federal Interstate Highway System, and invested heavily in educational structures and urban infrastructure. The Federal Government invested heavily in military weapons systems such as B-52 bombers. Although essential for national security, investment in defense does not directly contribute to improved future living standards in the same way as nondefense investment.

From the late 1960s to the early 1970s, Federal Government outlays for capital investment and for research and development plummeted both as a percent of total outlays and as a percent of GNP. By 1982 Federal outlays for investment as a percent of GNP were 60 percent of what they had been in the 1960s. The fall in the investment share of Federal spending is a matter for concern because it can adversely affect the productivity of inputs in the private sector as discussed in Chapter 1.

Federal nondefense physical investment and outlays for research and development account for close to one-third of Federal investment outlays. Federal nondefense investment as a percent of GNP grew from 1956 to 1966. After 1966 it first fell and then stagnated through much of the 1970s and early 1980s. The decline after 1980 reflects in part a shift of responsibility for such expenditures to State and local governments as real Federal grants were reduced. Federal

Chart 2-3

Federal Investment Outlays as Percent of GNP



Note.—Investment includes research and development, physical capital, and the investment component of grants-in-aid to State and local governments.

Sources: Department of Commerce and Office of Management and Budget.

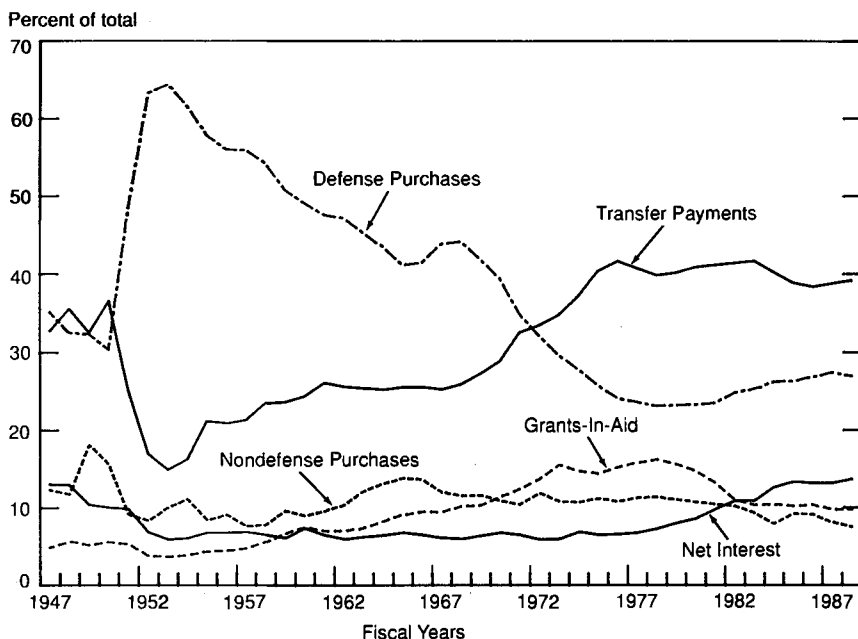
nondefense investment rose modestly from 1983 to 1986 but declined thereafter.

The postwar decline in the relative importance of Federal investment outlays parallels an increase in Federal direct benefit payments to individuals. By and large, these benefits constitute transfer payments that finance consumption by recipients.

Chart 2-4 shows trends in five major categories of postwar Federal Government spending as a percent of total Federal outlays. The rise in transfer payments from a postwar low of less than 15 percent of Federal expenditures in 1953 to a peak of 41.7 percent in 1983 represents a major redirection of Federal spending toward consumption. The relatively high level of transfer payments in the early postwar period largely reflected the GI bill much of which went to investment in human capital. Since 1950 the Federal Government has expanded the level of support under old-age survivors and disability insurance to increase cash transfers to the elderly and others on social security pensions. In 1965 the Congress enacted the medicaid and medicare programs to assist the indigent and the elderly in obtaining health care. Various government subsidy programs including

Chart 2-4

Federal Expenditures by Type



Note.—Data are on a national income and product accounts basis. Total expenditures includes subsidies less current surplus of Government enterprises and wage accruals less disbursements, not shown separately.

Source: Department of Commerce.

food stamps and housing assistance also grew in the 1960s as did expenditures under the means-tested Aid to Families with Dependent Children (AFDC) program. These direct-benefit programs provided assistance to the aged, disabled, indigent, and disadvantaged, but also distorted choices of recipients and reduced work incentives. The subsidy programs encouraged consumption of medical care by reducing the price to recipients of such services below the costs of providing the services. The increase in social security pensions induced many elderly to leave the labor force at an earlier date than they would have otherwise. Expenditures for means-tested assistance under AFDC and in-kind transfer programs may have discouraged the poor from seeking employment and job skills, thus contributing to welfare dependency. Under this Administration the growth rate of means-tested subsidies and transfers has slowed, while the share of payments going to the most needy has increased.

Chart 2-4 shows that defense spending as a percent of total Federal expenditures experienced a sharp downward trend between fiscal years 1953 and 1978. By 1978 Federal defense purchases fell to a postwar low of less than 24 percent of total expenditures. Since 1980, defense expenditures have risen somewhat as this Administration has undertaken a program of investment to improve the Nation's military preparedness and to maintain the U.S. role in ensuring international political stability.

One achievement of this Administration has been to reverse the trend toward a declining share of GNP allocated to national defense. From the mid-1950s to 1979, defense expenditures fell as a percent of GNP. By fiscal 1978, defense expenditures were less than 5 percent of GNP for the first time since 1950. Since 1981 the Administration has emphasized investing in new defense capabilities to enable the Nation to provide better for defense and to meet international commitments. Defense spending has increased from 5.4 percent of GNP in 1981 to 6.5 percent of GNP in 1987. Defense spending as a percent of GNP is, however, still below the levels that prevailed from 1955 to 1965.

The most significant change in the composition of defense outlays since fiscal 1981 has been a sharp increase in the ratio of investment to noninvestment outlays. Defense investment consists of weapons systems procurement, military research and development, and military construction. The ratio of investment to noninvestment defense outlays had declined from around 0.75 in the early 1960s to below 0.43 in 1976, but has risen sharply since 1981 to more than 0.70 in 1987. The modernization of the Armed Forces has resulted in only a modest increase in defense purchases as a percent of total Federal outlays.

In summary, the postwar composition of government spending has indisputably moved from defense and investment purchases to programs that transfer income and services to individuals. The effects of these programs on incentives to work and to use resources efficiently must continue to be scrutinized so that social objectives are achieved in ways that minimize efficiency losses in resource use and consequent loss of output.

The decline in Federal nondefense investment could reduce future living standards. Future administrations should consider expanding programs of nondefense investment, including investment in infrastructure and education, to improve future productivity.

THE LONG-RUN VIEW OF FISCAL POLICY

Fiscal policy over the past 8 years has sought to establish an environment for continued expansion of the economy's long-run potential to produce goods and services. Reducing marginal tax rates, eliminating tax preferences that distort incentives, and controlling growth of government outlays can free up resources to be used more efficiently to improve living standards in the United States. Chapter 1 showed that most economic groups have shared improvements in living standards.

Fiscal policy over the past 8 years improved incentives to use resources efficiently in the private sector. Since 1982 real GNP has increased at an average annual rate of 4.2 percent. The expansion has contributed to rising employment as a percent of the population and has reduced the civilian unemployment rate below 5.5 percent. This record of expansion has occurred even as inflation has dropped to nearly one-third of its 1980 rate and as interest rates have fallen substantially since the beginning of the decade. In contrast with earlier efforts to trade off inflation for employment, the use of fiscal policy for long-term growth has succeeded in realizing high employment with low inflation.

Productivity in manufacturing, measured from the business cycle peak in 1981, has risen at a faster rate than the postwar average and 2.6 times the rate of increase achieved between the business cycle peaks in 1973 and 1981. Tax policies designed to stimulate private investment have helped modernize the capital stock in the manufacturing sector and have probably contributed to this impressive record of productivity growth.

Taxation affects national well-being through its indirect effects on private incentives. Taxes result in a reallocation of purchasing power, but they can reduce incentives to use resources in the private sector efficiently. A tax system that weighs heavily on income from capital can adversely affect investment and the future level of income and standard of living. Similarly, taxes can also distort the work-leisure choice and impair work incentives, thereby causing losses in efficiency in labor markets.

A Federal budget that imposes high taxes on capital income to finance government consumption and private consumption through transfer payments to individuals is likely to adversely affect capital formation. Because taxes on capital income reduce the return to investment, they discourage private investment. The low economic growth in the United States from 1973 to 1982 was in part a result of fiscal policies that distorted the efficient use of resources and impaired incentives to save and work. Changes in tax policy since 1981

have improved incentives to use resources efficiently in the private sector through lower statutory marginal tax rates on both personal and corporate income and curbs on tax preferences that distort investment choices.

If the 1980 tax law were still in place today, Americans would probably be paying considerably more than 20 percent of GNP in taxes. Reduction in marginal tax rates and indexing of personal income tax brackets for inflation have prevented the moderate inflation of the past 6 years from pushing taxpayers into higher tax brackets and paying larger shares of their real income in taxes.

Despite the reductions in personal and corporate income tax rates, average Federal receipts as a percent of GNP have been higher in the last 8 years than the average for the 1970s. In the 1970s Federal receipts averaged 19.3 percent of GNP, while from 1981 to 1988 Federal receipts averaged 20.0 percent. Much of the growth in Federal receipts has resulted from economic expansion. Increased payroll tax collections have also increased Federal revenue. This is the result of higher payroll tax rates and increases in maximum wages subject to payroll taxes.

Federal outlays still remain above Federal tax revenue. This difference requires that the Federal Government continue borrowing to cover its budget deficit. Further controls on Federal outlays to reduce the Federal budget deficit are required.

TAX POLICY AND ITS IMPACT ON THE ECONOMY IN THE 1980s

The Congress has enacted two tax acts of historic significance since 1981: The Economic Recovery Tax Act of 1981 (ERTA) and the Tax Reform Act of 1986 (TRA). These acts have resulted in a fundamental restructuring of income taxation in the United States to improve incentives to produce, save, and invest and to encourage more efficient use of resources in the private sector.

The Economic Recovery Tax Act of 1981 reduced the top marginal tax rate for individual income from 70 to 50 percent. It reduced marginal tax rates on given levels of nominal income for all tax brackets while indexing personal exemptions, the standard deduction, and tax brackets in 1985 to prevent bracket creep. The indexation of tax brackets was designed to prevent future inflation from pushing individuals with no change in real income into higher tax brackets.

The act significantly reduced the average burden of taxation for American families compared with what it would have been without a change in the tax law. The tax reduction resulted primarily from a 23 percent across-the-board cut in marginal tax rates. Another provision

of ERTA was a special deduction for married couples designed to encourage labor force participation of both spouses by lowering the marginal tax rate on earnings of the lower earning spouse. These cuts in marginal tax rates acted to increase the incentives to work and to invest. The act also encouraged household saving through special deductions for retirement saving.

ERTA significantly changed the treatment of capital expenditures to encourage private investment and research and development. The accelerated cost recovery system and an increase in the investment tax credit for some types of equipment allowed an increase in the real after-tax rate of return for many types of investment. The provision to allow expensing of up to \$5,000 worth of equipment in 1982 and 1983 is likely to have increased the return to all types of small business investment. The Tax Reform Act of 1986 increased expensing of capital to \$10,000 worth of equipment. Expensing allows businesses to deduct capital outlays as a current cost when calculating taxable income.

Changes in the tax treatment of investment goods increased the real rate of return to investment in the United States relative to that in foreign nations and partially offset the distortions resulting from the high inflation of the 1970s. ERTA significantly reduced the effective tax rates on all new depreciable assets, but was relatively more favorable to investment in equipment and vehicles than to other types of investment goods.

The Economic Recovery Tax Act sought to improve future living standards by reducing the tax rates on capital income and encouraging investment. This historic change in tax policy sought to increase the Nation's capital stock.

Unlike many of the tax cuts of the postwar era, ERTA was designed as a fundamental restructuring of the tax system rather than as a temporary stimulus to aggregate demand. The Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) scaled back some of the investment incentives of ERTA by adjusting the accelerated cost recovery system in order to prevent cost recovery benefits from actually exceeding those of expensing. Nevertheless, the ERTA-TEFRA reforms significantly reduced the effective tax rate on most investments. One estimate shows that ERTA sharply reduced tax rates on capital by more than 50 percent, on average, compared with effective tax rates prevailing in 1980. Despite the TEFRA changes that increased effective tax rates on capital (which in some cases was zero or negative), these tax rates were still estimated in 1982 to be considerably below the levels that prevailed in the 1970s.

The Tax Reform Act of 1986 represented a broad overhaul, probably the most extensive in U.S. history, of the structure of both the

personal and corporate income tax. This act further lowered marginal tax rates on personal income and reduced the number of tax brackets while broadening the tax base to prevent significant loss of tax revenue. The act eliminated many tax preferences that distort choices so as to improve efficiency of resource use. The revenues obtained from reducing wasteful tax preferences have allowed a reduction in statutory marginal tax rates for taxpayers so as to encourage work effort and capital formation. The top personal marginal tax rate effective in 1988 is 33 percent for taxpayers subject to phase-out provisions affecting the personal exemptions and the 15 percent bracket. However, the top marginal tax rate for those in the highest taxable income class is limited to 28 percent.

The Tax Reform Act of 1986 also resulted in a somewhat higher effective marginal tax rate on capital income because it changed depreciation rules, the tax treatment of long-term capital gains, and repealed the investment tax credit. However, more uniform tax rates on alternative types of investments also resulted from a change in depreciation rules designed to improve the allocation of investment. Phasing out tax preferences such as the deduction of nonmortgage consumer interest on personal income tax returns was designed to change the allocation of private spending away from consumer durables toward business investment.

By reducing personal and corporate marginal tax rates, it has been possible to reduce the Federal Government's drag on both growth in the private sector and incentives. Reduction in personal and corporate income tax rates has not, however, resulted in a decline in Federal revenues as a percent of GNP because the tax base has been broadened, the economic expansion has increased income, payroll taxes have been increased, and wasteful tax preferences have been eliminated. Nevertheless, the reduction in tax rates has served to make disposable income greater than it would otherwise have been, thereby allowing more private consumption and saving while encouraging private investment.

Research on the effects of U.S. personal tax rate reductions under ERTA indicates that changes in taxpayer behavior that increased taxable income recouped as much as 40 percent of the revenue loss that would have resulted from the tax rate cuts. Some evidence on the effects of the ERTA tax cuts indicates that the response to the reduction in marginal tax rates has been greatest for taxpayers in the highest tax brackets: as a result the share of income tax paid by the highest income groups actually increased. Annual taxes paid by taxpayers with nominal taxable incomes of \$200,000 or more increased by nearly \$10 billion in 1985 relative to what they would have paid had

no change in tax rates and no macroeconomic response to the changes in tax rates occurred.

REDUCTION IN TYPICAL FAMILY TAX BURDENS

The tax reforms of the 1980s have prevented the Federal income tax burden from increasing sharply for virtually all families. For example, had there been no tax changes during the 1980s, a married couple with two dependent children with a single earner earning a median income of \$29,654 in 1987 and taking average itemized deductions would have paid \$3,840 in Federal income tax. With the reduced tax rates this family's Federal income tax liability in 1987 was actually \$2,389. Such a family pays 38 percent less in personal taxes than it would have were the 1980 tax law still in effect. The average Federal tax rate for this family in 1987 was 8.1 percent. Were the 1980's law still in effect, this family would pay an average tax rate of 12.9 percent.

Two-earner families have enjoyed even greater savings. A family consisting of a married couple and two dependent children, taking average itemized deductions and earning the median income of \$38,022 for two-earner families of four in 1987, enjoyed a 51 percent Federal tax cut. Such a family would have paid \$5,009 in income taxes were the 1980 law still in effect in 1987. The actual tax bill was only \$2,456, a tax cut of \$2,553. The average tax rate for such a family would have been 13.2 percent without tax changes since 1980. With the tax changes of the 1980s this family paid only 6.5 percent of its income in taxes. Table 2-1 shows how tax changes have affected one- and two-earner families with median income under assumptions about their average tax deductions. Estimates for 1988 show similar tax savings after the provisions of TRA were fully in effect.

TABLE 2-1.—*Income Tax Reductions: Current Law Versus 1980 Law, Median Income One-Earner and Two-Earner Families of Four*

Year	Median income one-earner family of four				Median income two-earner family of four			
	Income	Taxes under		Reductions under current law ¹	Income	Taxes under		Reductions under current law ¹
		Current tax law ¹	1980 tax law			Current tax law ¹	1980 tax law	
1980.....	\$20,429	\$2,081	\$2,081	\$0	\$25,669	\$2,227	\$2,227	\$0
1981.....	21,690	2,266	2,295	29	27,803	2,605	2,648	43
1982.....	22,777	2,217	2,487	270	29,316	2,333	2,970	637
1983.....	23,885	2,183	2,691	508	30,581	2,150	3,236	1,086
1984.....	25,561	2,295	3,003	708	32,549	2,313	3,670	1,357
1985.....	25,849	2,284	3,087	803	34,469	2,541	4,129	1,588
1986.....	28,388	2,591	3,574	983	35,336	2,598	4,353	1,755
1987.....	29,654	2,389	3,840	1,451	38,022	2,456	5,009	2,553
1988 ²	30,863	2,626	4,106	1,480	39,572	2,737	5,393	2,656

¹ "Current tax law" refers to the law in effect in year shown.

² Estimated.

Sources: Department of Labor (median income data) and Office of Management and Budget.

The reductions in the marginal tax on labor income encourage labor force participation particularly of second earners. Because TRA reduced the difference between gross wages and net wages at the margin, it provides workers with an incentive to increase their work effort.

The act cut the average Federal tax rate paid by families with an annual income of less than \$10,000 by more than one-half, and it is estimated that tax reform will reduce the number of low-income families paying Federal income tax in 1988 by more than 4 million.

TAX REFORM AND CAPITAL FORMATION

Under ERTA, capital formation was encouraged through measures to increase both saving and investment. Stimulus to saving came from reductions in marginal tax rates and from availability of individual retirement accounts for a broad spectrum of taxpayers. Stimulus to investment came from reduction in tax rates, accelerated depreciation, and investment tax credits. As shown in Table 2-2, ERTA was followed by an improvement in the annual average growth rate of U.S. gross domestic investment. Real gross domestic investment grew at an average annual rate of 5.6 percent from 1980 to 1986 compared with an average annual rate of only 2.1 percent from 1965 to 1980. Compared with other major industrial market economies the U.S. improvement in investment is impressive. Over the same period gross domestic investment in Japan grew by only 3.2 percent per year on average. As shown in Chapter 1, however, net investment in the United States grew more slowly than gross investment because of a shift to shorter lived assets during this period.

TABLE 2-2.—*Growth of Real Gross Domestic Investment in the Seven Summit Countries, 1965-86*
(Average annual percent change)

Country	1965 to 1980	1980 to 1986
United States	2.1	5.6
Japan	6.7	3.2
West Germany	1.7	-.1
France.....	3.8	-.2
United Kingdom.....	1.2	4.7
Italy	2.5	-1.1
Canada.....	4.7	1.6

Source: The World Bank, *World Development Report 1988*.

The Economic Recovery Tax Act contributed to a reduction in effective rates of taxation of capital compared with levels existing in the 1970s. Taxes directly influence the cost of capital, which is the pretax return on a new investment required to cover the marginal

cost of the investment given the market rate of interest, the rate of inflation, and the taxes levied on the income from the investment. The cost of capital has been estimated in one study to be higher in the United States than in several foreign nations. Although some controversy surrounds these data, some estimates based on the 1985 Tax Code suggest that the cost of capital in the United States has been about twice the cost of capital in Japan. The cost of capital in the United States also exceeded the cost of capital in the United Kingdom, but the estimated differential was not as great as that for Japan.

The average difference between the gross and net rate of return after taxes in the United States has been estimated to be more than 3 percentage points. Because corporate investments financed with equity in the United States receive less favorable tax treatment than do investments financed with debt, the taxes on equity-financed investments are higher than average. High taxes on capital income do contribute to the differential in the cost of capital between the United States and some foreign nations. Both the United Kingdom and Japan, for example, have taxed capital lightly. West Germany, however, has taxed capital income relatively heavily. The tax burden on corporate equity capital in the United States has also been estimated to be relatively high, with the difference between gross return and the net return after taxes running at 5 percentage points. According to one estimate, an investment financed with equity that cost 7 percent yielded only 2 percent after taxes in the United States in the mid-1980s.

The United States taxes capital income through the personal and corporate income taxes. In addition it now taxes realized capital gains and generally taxes all such gains (except for those on principal residences in most cases) as ordinary income. Reducing the tax burden on capital income would contribute to attracting funds into domestic capital formation in the United States.

Despite adjustment in the original ERTA rules in 1982, the act represented a powerful incentive for investment. Its tax reforms contributed to a substantial increase in net fixed nonresidential investment in the first half of the 1980s. ERTA also contributed to an increase in the real after-tax net return on capital in the nonfinancial corporate sector. Estimates indicate that ERTA also contributed to an increase in the investment-to-GNP ratio. Further, lower inflation resulting from this Administration's economic policies also has stimulated investment. The ERTA tax changes along with reduced inflation are likely to have been a major reason for increased productivity growth in the 1980s and the improving competitiveness of U.S. manufacturing industries in international markets.

Under TRA the average effective tax rate on capital increased. This increase arises mainly because TRA was designed to finance the cut in the personal income tax burden with a rise in the corporate tax burden. Despite its reduction in the top statutory corporate tax rate from 46 to 34 percent, TRA's other provisions—such as elimination of the investment tax credit and changes in depreciation rules—offset the reduction in the tax rate and raised the cost of capital on average. Other things equal, the increase in the marginal effective tax rate on capital resulting from the new Tax Code will act to reduce investment. The act's other changes will even out the effective tax rates on alternative investments, however, and thus moderate this effect. The evening out of tax rates on alternative investments, combined with elimination of tax deductibility of consumer nonmortgage interest, will provide incentives to allocate investment funds more efficiently. The economic effect of reduced investment due to the increase in the effective tax rate will therefore be offset at least in part by improved efficiency in investment choices as distortions in the pattern of investment choices are reduced.

Overall, the tax reform is likely to increase net national product after a period of adjustment. The new tax law will contribute to more efficient investment patterns by eliminating tax shelters that have encouraged the purchase of assets for resale so that new owners can redepreciate them.

Table 2-3 provides estimates of how TRA has influenced effective tax rates on corporate and noncorporate capital investments compared with prior law. The average tax rate on investment has increased from 33.3 to 36.5 percent. The increase in the tax rate on investment has been greater in the corporate sector than in the noncorporate sector. The new law has reduced the variance of effective tax rates on alternative investments by more sharply increasing the effective tax rates on investment in equipment relative to the increase in the effective tax rates on structures, including owner-occupied housing. The effective tax rates on land and inventories have fallen.

Despite the increase in the effective tax rate on capital investment resulting from TRA, tax reform remains consistent with a fiscal policy that encourages capital formation. Problems in the taxation of capital income remain, however, because depreciation allowances, capital gains, and interest income and expenses have not been indexed for inflation. Higher inflation would raise the effective tax rate on capital, as it did in the 1970s. Some concern also remains about the effects of the increase in the statutory tax rate on capital gains on incentives to invest and to realize capital gains.

Lack of indexation of depreciation allowances, capital gains, and interest will distort decisions by taxing nominal as opposed to real

TABLE 2-3.—*Estimated Average Effective Tax Rate on Investment*

(Percent)

Type of asset	Prior to TRA ¹	Under TRA ¹	Prior to TRA ¹	Under TRA ¹
OVERALL TAX RATE ON INVESTMENT	33.3	36.5		
Owner-occupied housing	22.5	23.7		
	Corporate		Noncorporate	
Equipment.....	10.0	39.6	-11.9	25.4
Structures:				
Nonresidential	34.4	43.1	27.8	31.4
Residential	49.5	52.5	38.2	40.6
Public utility	32.6	44.5	22.1	33.6
Inventories.....	48.8	45.8	33.0	30.5
Land:				
Nonresidential	50.6	47.8	36.1	33.8
Residential	53.9	51.4	41.4	39.5
OVERALL WITHIN SECTOR	38.7	44.4	33.2	33.9

¹ Tax Reduction Act of 1986.

Source: Department of the Treasury, Office of Tax Analysis.

capital income. In an inflationary environment, the effective tax rate on real capital gains and investment purchases will increase, thereby increasing the cost of capital. In an inflationary environment with no indexation of nominal capital gains or depreciation allowances based on historical cost, inflation biases an income tax toward consumption. To ensure continuing incentives for capital formation, therefore, inflation must continue to be reduced or depreciation allowances and capital gains and other inflation-sensitive income and deductions should be indexed.

In view of the positive response by upper income groups in realizing more capital gains after the ERTA tax reductions, some concern arises about the effects of the increase in the capital gains tax rate under TRA on tax revenue and investment incentives. The tax rate increase is the largest applied to capital gains in the postwar era. Some evidence now indicates that capital gains realizations are highly sensitive to tax rate changes and to anticipation of such changes. High tax rates on capital gains tend to lock investors into their portfolios because unrealized capital gains are not subject to taxation.

High tax rates on capital gains may also have long-term implications for capital formation and entrepreneurial activity. The capital value of a new business typically rises as the business succeeds. Owners of the business can receive income in the form of capital gains through sale of equities in the business. Higher capital gains taxation can, therefore, adversely affect the return to entrepreneurial activity over the long run and further reduce incentives for capital formation.

U.S. TAX STRUCTURE AND THE NEED FOR STABLE TAX RATES

The tax reform movement has spread worldwide. Spurred on by the success of tax reform in the United States, many nations are reducing marginal tax rates and adjusting their tax systems to encourage capital formation and increase incentives to work. Following the lead of the United States, most nations in the Organization for Economic Cooperation and Development have reduced marginal income tax rates.

Other nations raise substantial revenue with national value-added taxes on a base that explicitly excludes investment purchases. The heavy use of payroll taxes, which are not levied on capital income, along with consumption-based value-added taxes has contributed to reduced tax burdens on capital per dollar of tax revenue in many of those nations relative to the United States. Dividends in the United States remain subject to double taxation—taxed as income to corporations and again as personal income to the stockholders. Most of the European Community members have policies to relieve some of the double taxation of corporate income. On the other hand, most of these nations impose higher taxes on the use of labor.

The U.S. tax system still encourages investment in owner-occupied housing. The effect of TRA on investment in homeownership is difficult to forecast. The reduction of marginal tax rates and reduction of the number of itemizers will reduce incentives for homeownership. Other provisions in the Tax Code, however, encourage homeownership. For example, in most cases capital gains from the sale of a home still receive preferential treatment as does debt incurred to buy a home relative to debt incurred to purchase other consumer durables. Interest on mortgage debt is largely tax deductible while interest on other household loans is not. In addition, imputed rent on owner-occupied homes is not taxed. Some countries restrict the interest deduction for homeownership and some actually tax imputed rent from homeownership. The United States still has a tax system that distorts investment choices in favor of homeownership relative to other investment opportunities.

In sum, the tax policies of the past 8 years have improved incentives for capital formation and efficient resource use. A consistent long-term fiscal policy is necessary for the incentive effects of tax reform to bear fruit. Stability in the tax structure is needed to maintain long-term incentives for capital formation and to improve efficiency in resource allocation. Future fiscal policy must avoid raising marginal tax rates, which would reduce incentives for capital formation and lower future standards of living.

CONTROLLING FEDERAL OUTLAYS AND THE FEDERAL BUDGET DEFICIT

During the past 8 years Federal taxes as a percent of GNP have actually increased compared with average levels during the 1970s, while marginal and average tax rates declined. In view of the harmful effects of high marginal tax rates on private capital formation, a goal of this Administration has been to reduce the Federal deficit by reducing the growth of Federal outlays. In fiscal 1987, Federal outlays adjusted for inflation declined for the first time in 14 years. The budget process must be reformed and Federal spending must be restrained to reduce the budget deficit further.

The Balanced Budget and Emergency Deficit Control Act of 1985, as amended in 1987 (the Gramm-Rudman-Hollings Act) calls for a balanced Federal budget by 1993. The Gramm-Rudman-Hollings Act provides a framework for reducing the budget deficit through sequestration of funds when the budget deficit reaches specified trigger levels. A sequester would involve permanent cancellation of budget authority for a broad category of defense and nondefense programs. Except for 1993, when the target is a zero deficit, the sequester triggers are \$10 billion over the target deficits for each year. Table 2-4 shows the target deficits and sequester triggers for 1990 to 1993. In the event of a recession, however, the Congress can suspend Gramm-Rudman-Hollings for the remainder of a fiscal year or for the following fiscal year, or both, upon passage of a joint resolution.

TABLE 2-4.—*Deficit Targets Under the Gramm-Rudman-Hollings Act, 1990-93*

(Billions of dollars)

Fiscal year	Target deficit	Sequester trigger
1990	100	110
1991	64	74
1992	28	38
1993	0	0

Source: Gramm-Rudman-Hollings Act.

The "budget summit" in the fall of 1987 resulted in a 2-year, \$76-billion budget reduction package that for fiscal 1988 and 1989 complied with Gramm-Rudman-Hollings. Further reduction of the deficit will require cutting inefficient programs to eliminate waste and perhaps relying more on user fees to shift the cost of particular services from taxpayers to those who benefit from the service. Programs of purely local benefit should be transferred to State and local governments. Gramm-Rudman-Hollings increases incentives for the Con-

gress to control spending, and as such represents an important contribution to reducing the deficit without raising taxes.

THE FEDERAL DEBT AND DEFICIT IN PERSPECTIVE

The deficit and U.S. national debt must be put in perspective. The current government sector's net debt burden as a percent of GNP is well below historical highs and is also well below the levels for several other industrial nations. The United States and other developed nations have in the past prospered with government debt levels significantly higher than U.S. current levels without significant reductions in standards of living or growth.

Progress has been made in reducing the Federal budget deficit. The Federal deficit has declined from 5.4 percent of GNP in fiscal 1985 to 3.2 percent of GNP in fiscal 1988 and is projected to decline still further as a percentage of GNP.

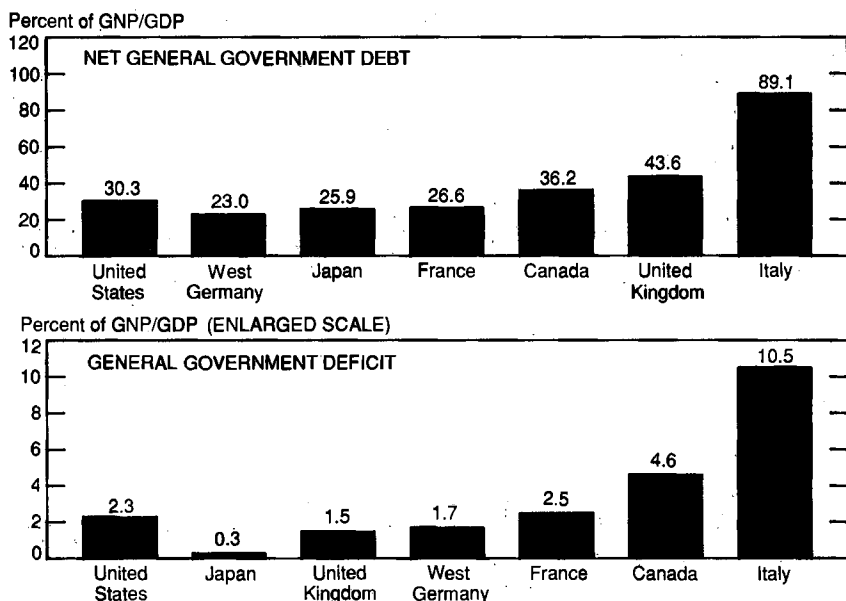
The general government deficit in the United States is less than the Federal Government deficit because State and local governments in the aggregate have run budget surpluses in recent years. For example, in 1987 State and local governments in the aggregate in the United States ran a \$52.9 billion budget surplus; the nominal Federal Government budget deficit that year was \$157.8 billion. The net dissaving by governments at all levels that year therefore amounted to \$104.9 billion which was the combined government deficit on a national income and product accounts basis. This net dissaving by the government sector amounted to 2.3 percent of GNP in 1987.

Chart 2-5 shows the 1987 net public debt of the government sector and the general government deficit in seven major industrial nations (the G-7) as a percent of the value of national production. The U.S. net public debt is a smaller percent of the value of national production than the net public debt of Canada, the United Kingdom, and Italy and is not much higher than that of Japan and France. The 1987 general government deficit as a percent of the value of national production in the United States was less than that for France, Canada, and Italy in that year.

How to measure the Federal budget deficit is controversial. For example, inflation results in overstating Federal Government net interest payments. Assuming 5 percent inflation, a 7 percent nominal interest rate on the net Federal debt results in \$70 of Federal outlays for each \$1,000 of net Federal debt. But \$50 of the \$70 represents receipts to the Federal Government in the form of an "inflation tax" on the holders of the net Federal debt. Government accounts treat the payment of interest—the entire \$70—as an expenditure but do not record the inflation tax as a receipt. Adjusting the nominal deficit for the inflation component of interest rates results in a real deficit

Chart 2-5

Debt and Deficit in the Seven Summit Countries in 1987



Source: Organization for Economic Cooperation and Development.

much smaller than the nominal deficit. This outcome occurs because interest payments now constitute a substantial portion (about 14 percent) of Federal expenditures.

While lack of adjustment for inflation tends to overstate the deficit, other omissions act to understate its real value. For example, Federal Government loan and loan guarantee programs and insurance programs involve spending commitments that are not valued in the current budget. The cash deficit could increase substantially in a given year if loan guarantees were to become due. Similarly, the recent experience of the Federal Savings and Loan Insurance Corporation illustrates how underfunded Federal insurance programs can possibly require increased Federal outlays. A reserve or contingency fund accurately covering the value of expected losses under loan guarantees and other unfunded liabilities of Federal Government agencies would increase, and more accurately reflect, Federal Government spending commitments.

The economic effects of government deficits are highly controversial. In any given year, the Federal budget deficit is a measure of the

nominal amount of Federal dissaving. The deficit is a concern of fiscal policy because it could result in pressure to increase the money supply, which would increase the price level. The deficit can also contribute to a misallocation of resources through its effect on capital markets and private incentives.

A deficit absorbs saving but actually affects the total saving in the economy in a complex manner. Because the Federal deficit, interest rates, output, and prices are parts of an interdependent system, it is incorrect to assume that a dollar reduction in the budget deficit would add an equal amount to gross saving. For example, in 1987, despite a large decline in the Federal budget deficit, there was little change in the balance of trade deficit, as real gross private domestic investment rose and the personal saving rate fell, increasing aggregate demand and thus import demand. The balance of trade deficits of recent years and consequent flow of foreign saving into the United States constitute a combined result of forces influencing both the government budget deficit and private incentives to save and invest. The budget deficit cannot be singled out as the single cause of the balance of trade deficit. Nonetheless, reduction in the Federal budget deficit through spending restraint remains an essential component of a strategy to reduce the balance of trade deficit.

A government deficit implies borrowing to pay for current government goods and services. Such borrowing can be justified if governments use the borrowed funds to provide investment goods that will generate a stream of future benefits to offset the future taxes that must be raised to pay interest on the borrowed funds. A deficit that finances an increase in public or private investment outlays, as opposed to consumption outlays, can actually improve future living standards. A complicated issue in analyzing the Federal deficit over the long run involves determining how the deficit and the composition of government outlays, along with tax structure, influence capital formation, resource use, and incentives to produce, save, and invest.

This discussion is not meant to minimize the negative influence of the current budget deficit on capital formation. Although there are disputes about estimated effects, studies indicate that the overall effect of deficits in the postwar era has been to reduce U.S. capital formation. These studies imply that future fiscal policy would improve future living standards by continuing to reduce the rate of government dissaving by controlling Federal Government expenditures.

THE SOCIAL SECURITY TRUST FUNDS' BUILDUP AND THE BUDGET DEFICIT

One of the more significant fiscal changes in the postwar era has been the growth of social security and medicare benefits, their indexation for inflation, and the consequent increase in payroll taxes to fi-

nance these benefits. Legislation enacted in 1977 and in 1983 increased payroll tax collections and mandated future increases. Annual payroll tax collections have begun to exceed annual payouts for social security benefits. The social security trust funds have increased and are forecast to continue to do so until the second quarter of the next century. For a time the social security trust funds buildup will increase Federal Government saving and contribute to a decline in the Federal budget deficit.

Awareness of large projected old-age survivors and disability insurance (OASDI) trust funds' surpluses has resulted in some concern about how the trust funds' surpluses might be used. Some observers fear that the trust funds' surpluses will be used to finance other government spending or will offer a solution to reduce the deficit that avoids the basic issues of cutting wasteful programs and improving resource use in the economy. Although these concerns are valid, it must be emphasized that the magnitude of the social security trust funds' buildup has been overstated.

The OASDI trust funds constitute budget accounts, not cash. When the trust funds are drawn upon to pay benefits, the Treasury must raise cash. When spending for social security benefits in a given year is less than receipts earmarked for those benefits, the excess receipts are loaned to the Treasury. The Treasury credits a special issue Treasury bond to the OASDI trust funds and credits interest on the bond at a rate equal to the average rate for marketable Treasury securities of 4 years or more to maturity.

Payment of interest on the special issue bonds held by the OASDI trust funds is merely an intragovernmental transfer. The interest credited to the trust funds is a general fund liability of the Treasury. In effect the Treasury issues a promise to pay the interest by making a note in its books. Much of the buildup of the trust funds over the next 30 years will constitute interest that the Treasury credits to the funds in this way.

A proper view of future trust funds' surpluses requires adjustments for inflation, for interest transfers to the funds that do not constitute net income to the Federal Government, and for the forecast deficits in the social security hospital and health insurance funds (HI). After these adjustments, the surpluses are much smaller relative to the Federal unified budget than unadjusted surpluses. Table 2-5 shows projections of OASDI and HI surpluses and deficits, excluding interest credited to the trust funds, in both current dollars and 1988 dollars. The annual projected OASDI surpluses never exceed \$75 billion in 1988 dollars. The maximum OASDI surplus in the year 2005, after adjustments, constitutes less than 7 percent of 1988 Federal spending. Adjusting for the forecast deficit of the HI fund shows that the

maximum surplus of the combined OASDI and HI trust funds in 2005 will amount to only \$50 billion in 1988 dollars. This amount equals less than 5 percent of current Federal spending.

TABLE 2-5.—*Unified Budget Impact of Projected OASDI and HI Surpluses (Excluding Interest), Selected Years, 1988–2065*

(Billions of dollars)

Year	Current dollars			1988 dollars		
	Total	OASDI	HI	Total	OASDI	HI
1988.....	40	32	8	40	32	8
2005.....	98	145	-47	50	74	-24
2025.....	-804	-329	-475	-187	-76	-110
2045.....	-3,544	-1,544	-2,000	-375	-163	-212
2065.....	-11,328	-5,218	-6,110	-547	-252	-295

Source: Department of the Treasury, based on Alternative II-B series in the 1988 *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds* and data from the Social Security Administration.

These projections suggest that the windfall of funding coming from the social security trust funds' buildup will not constitute a significant increase in purchasing power to finance other government programs. In addition, as Table 2-5 shows, the surpluses in the trust funds are projected to give way to large deficits later in the 21st century, as the population ages and payments for social security beneficiaries grow rapidly. By the year 2065 the deficit in the OASDI and HI trust funds is projected to be \$547 billion in 1988 dollars, an amount representing one-half of total 1988 Federal spending.

As the number of retirees grows through the 21st century, the social security trust funds will move into deficit and the Treasury will have to raise cash to pay out the interest on the trust funds' securities. As the proportion of retirees to workers increases, larger portions of both GNP and Federal revenues will have to be allocated to pay social security pension and health benefits. Taxable resources will be needed to finance those benefits; fiscal policies must encourage real increases in capital formation that will create those resources in the future.

A fiscal policy that encourages both private saving and private investment complemented by a reduction of the Federal deficit through elimination of wasteful expenditures will act to increase capital formation. The prospect of the buildup of the social security trust funds should therefore involve no significant change in fiscal policy. The buildup itself will decrease government dissaving and thereby temporarily increase the availability of funds for private investment. Increasing tax rates to increase government saving could undo the effects of tax reform on incentives to invest, and thereby do much to discourage private capital formation. If increases in tax rates to en-

courage government saving discourage sufficient private capital formation, they will be self-defeating.

Economists generally agree that saving must be encouraged to increase the tax base to fund future social security benefits. Disagreements arise about the best way to accomplish these objectives. The view of this Administration is that a consistent long-term fiscal policy designed to keep marginal tax rates low and provide incentives for work effort, saving, and investment remains the best way to encourage future capital formation. The growing real social security trust funds' surplus should not be used as an excuse to expand Federal Government outlays.

Social security pension benefits and finance are matters with which the Nation must grapple in the future as the population ages and the proportion of retirees to workers continues to increase in the 21st century. Retirees will consume growing portions of national output. Unless the elderly are encouraged to remain in the labor force as productive workers, or the real level of the social security pension benefits is cut, the best way to finance the consumption of future retirees—without devoting the major portion of the Federal budget to that end—is to encourage saving and investment now to increase taxable real income in the future.

INSTITUTIONAL CHANGE TO CONTROL FEDERAL OUTLAYS TO REDUCE THE DEFICIT

Mechanisms to curb spending increases are a key component in a fiscal policy designed to bring Federal outlays in line with a tax burden of no more than 20 percent of GNP. Gramm-Rudman-Hollings provides a framework for reducing the deficit through 1993. Over the long term, however, institutional changes in the budgeting process might be desirable to control the growth of government outlays.

Some economists have proposed dividing the current unified budget into an operating budget and a capital budget. The Federal budget now presents a comprehensive statement of anticipated cash outlays and cash receipts lumping together consumption and investment outlays for the current fiscal year. Separating capital expenditures from operating expenditures could more clearly link operating receipts with operating outlays, which would, in turn, more clearly identify the operating deficit or surplus of government. A capital budget would also link investment outlays with borrowing and provide a basis for linking payment for government debt-financed investments with taxes on future taxpayers. Further, a capital budget would distinguish borrowing used to finance capital investments from borrowing to finance current consumption. Capital budgeting could pro-

vide information necessary to plan an increase in the investment component of government spending.

Unfortunately, problems involved in actually implementing a capital budget for the Federal Government more than offset its possible advantages. A capital budget would significantly reduce the constraints on total government spending and make it more difficult for the Administration and the Congress to formulate fiscal policy. Total Federal spending would no longer be shown; the budget would no longer provide a comprehensive comparison of total Federal spending for different programs and purposes. Because a capital budget would record depreciation in place of capital expenditures, only a small fraction of the cost of a proposed capital purchase would be apparent to policymakers deciding about the overall level and composition of government spending. This would greatly increase the incentive for the government to purchase capital goods.

Conceptual and practical measurement problems also arise. Rules would be needed for depreciating Federal assets, for valuing government assets and measuring its liabilities, and for identifying types of outlays that constitute capital formation, e.g., whether to include in the capital budget education and other programs that build human capital. Care would have to be taken to avoid losing control over government spending, deficits, and debt by categorizing current programs as capital expenditures, by using inaccurate depreciation rates, or by introducing costly programs with small, initial outlays. Thus, a capital budget could lead to renewed increases in the growth of spending. For these reasons, the Administration has opposed proposals for a separate capital budget.

The Administration favors adoption of a line-item veto. A line-item veto would enable the President to veto individual items in appropriations bills, subject to the current provisions for overriding a veto of any bill. Effective use of a line-item veto would give future Presidents more flexibility in pursuing fiscal policies to encourage capital formation. The President could selectively veto wasteful new government spending programs that increase consumption without sending an entire appropriation bill back to the Congress. The line-item veto would discourage the Congress from enacting wasteful spending programs that are not in the national interest. Such a provision could forestall special-interest programs that benefit a few at the expense of many taxpayers.

A balanced budget and tax limitation amendment to the Constitution offers a comprehensive form of restraint to control spending. This approach would change the rules under which decisions are made to borrow or to increase Federal outlays and receipts relative to GNP. One proposal would require that total outlays not exceed

total receipts unless three-fifths of the whole number of both Houses of Congress votes to break that rule. Other approaches seek to limit the growth in Federal outlays to the growth in real GNP. An amendment could place similar restraints on the national debt, prohibiting increases unless a substantial portion of the Congress voted in favor. These limitations would help to establish an institutional framework that creates incentives for limiting Federal spending. Constitutional limitation would require political compromise to cut the rate of growth of Federal outlays and to keep spending in line with the public's willingness to pay taxes. Further, constitutional limitation would help to change the way in which decisions are made. Under a constitutional limit, everyone agrees to limit demands on government in exchange for a commitment that others will be bound by the same limit. Proposals for increased spending would be compared with current spending, and policymakers would have to pay increased attention to the merits of alternative programs. Constitutional spending limitation would bring fiscal discipline.

CONCLUSION

The challenge of the future is to enact reforms that adjust institutions and incentives to reduce the growth of Federal outlays and increase both public and private investment. By doing so the Federal budget deficit can be reduced and the government sector can make a greater contribution to increasing the Nation's rate of capital formation and improving its standard of living.

The Nation must avoid the temptation to increase marginal tax rates to reduce the Federal budget deficit. To raise marginal tax rates on labor and capital income would adversely affect the incentives to work and invest that are the foundation for improved future living standards. The reduction of the Federal deficit through reducing spending represents an important component in a policy to increase national saving. However, deficit reduction must not come at the expense of incentives for private capital formation.

CHAPTER 3

Growth and Evolution of International Capital Markets

IN THE SUMMER OF 1944, representatives of the Allied Powers convened at Bretton Woods for an ambitious purpose: to plan a financial system for the postwar world. In the 44 years since that meeting in New Hampshire, world trade and capital flows have changed course dramatically. A revolution in currency exchange markets occurred. By the end of the 1970s, vast changes in national economic conditions and policies had almost sundered international economic relations. In the 1980s the current Administration took stock. The policy changes it proposed not only revitalized the U.S. economy, but also brought the Nation renewed respect in the international arena.

The United States has played a central role in the evolution of international capital markets throughout the postwar period. Immediately following the war, loans, aid, and direct investment flowed from the United States to assist the ravaged economies of Europe and Asia. At the same time, the United States assumed a leading role in the system of pegged but adjustable exchange rates designed at Bretton Woods. By providing this leadership and by fostering a stable worldwide market system and encouraging the opening of markets in goods and assets, the United States reinvigorated the world economy.

The reward for these efforts has been enhanced opportunities for the United States. World output and trade have flourished. The successful recovery of the war-torn economies and the entry of many newly industrializing and developing nations into the international arena have meant a revision in the role of the U.S. economy in the world. Yet the United States remains a world leader, and U.S. policies of free markets, low tax rates, low inflation, and reduced government regulation have resulted in a robust, productive economy that stands as an example for the rest of the world.

The road to the 1980s has been replete with lessons about international trade, capital, and currency markets. Beginning in the 1960s divergences in sovereign policies affecting domestic inflation and output growth eventually led to results inconsistent with the exchange-rate regime initiated at Bretton Woods—a system of pegged

but adjustable exchange rates. In the early 1970s the flaws in the Bretton Woods system proved insurmountable and the industrial world adopted a regime of floating exchange rates in its stead. Subsequent large swings in the value of the dollar have led to renewed debate regarding international monetary arrangements. The value lost by the dollar in the 1970s was more than made up, and then lost again, during the 1980s. Swings in the international cost competitiveness of U.S. manufacturers mirrored those of the dollar's real value in the 1980s. Yet the flexible exchange-rate regime has weathered without crisis three recessions in the United States, sizable oil shocks and even war between two major oil-producing nations, rapid increases and decreases in inflation, and most recently a significant shift in the international pattern of trade balances. Although flexible exchange rates exhibit substantial short-run variability, they provide efficient and timely signals to markets and governments when actions and policies go awry.

During the 1970s the traditional trade and current account surpluses of the United States, correlatives of net U.S. lending to the rest of the world, gave way to intermittent external deficits. Since 1982 the external deficits have become persistent and amplified. Trade and current account deficits represent important channels through which an economy can acquire the resources needed to take advantage of profitable investment opportunities. They can also reflect current consumption out of previous saving. Trade deficits can arise when an economy's households and firms react to distorted incentives to consume today by borrowing from abroad at the expense of future generations. Whether the trade deficits of the 1980s signal promise or trouble for the current and future well-being of the United States is an important and difficult question.

Between 1918 and the mid-1970s, and particularly in the period following World War II, the United States built up large international asset holdings as the counterpart to its annual current account surpluses. By the 1980s that pattern of international capital flows had changed. The gradual acquisition of U.S. assets by foreigners at a faster rate than the United States has acquired similar assets abroad has resulted in a reversal in the U.S. net foreign asset position as officially measured. According to official estimates, since 1985 the total value of foreign holdings of assets in the United States in the form of direct investments, common stock, and bonds of all kinds has exceeded the total value of holdings by U.S. citizens of similar assets abroad. This imbalance is often described as the net debtor position of the United States, even though many of these assets involve equity claims rather than debt. Although difficulties of measurement cast some doubt on the accuracy of official estimates, there is little doubt

that the net international asset position of the United States has decreased in the 1980s.

The consequences of the United States becoming a net debtor have been hotly debated. Unlike the troubles of many indebted developing nations, the ability of U.S. citizens and the U.S. Government to maintain their contractual obligations is not a concern. The United States continues to have the largest aggregate wealth in the world, and its creation of new wealth remains strong. Nevertheless, some have argued that its current financial position increases the temptation for U.S. policymakers to induce an inflation, reducing the real value to foreigners of their dollar-denominated claims. Others argue that it erodes U.S. leadership in the world economy. Neither development is a necessary consequence of a net debtor position. By adhering consistently to this Administration's policies of noninflationary growth, the United States can continue as a world leader, and the dollar can remain a reliable and widely held currency.

During the 1980s many developing countries have experienced grave difficulties in managing their external debts. The problems of debtor nations have frequently been compounded by high-tax, inflationary, and confiscatory policies that have handicapped their domestic economies, reduced trade and investment, and led to capital flight. In addition, these policies have created insufficient incentives for debtors and creditors to reach voluntary, market-oriented agreements. Private and official creditors as well as international agencies have increasingly devoted resources to renegotiating the terms of existing debt and providing debt relief appropriate to the individual borrower. By maintaining incentives conducive to voluntary, country-specific negotiations between creditors and debtors and continuing to support domestic economic reform, the United States can encourage the design of innovative approaches that resolve the problem.

The issues of the international economy involve policy choices and the need to develop a framework to produce growth in world living standards for the coming years. Stable and growing economies require smoothly functioning financial markets. It is to that issue that this chapter turns first.

THE BEHAVIOR OF EXCHANGE RATES

Since the inception of floating exchange rates in the early 1970s, the nominal values of many currencies have swung widely. As indicated by the U.S. Federal Reserve Board staff index, between the beginning of 1970 and the end of 1979 the dollar declined 29 percent in value against a trade-weighted basket of the currencies of 10 major industrial countries. The deutsche mark rose 78 percent on a trade-

weighted basis during this period, while the currencies of many other nations also moved substantially relative to those of their trading partners. In the third quarter of 1980 the dollar turned around, rising 83 percent in value until the first quarter of 1985. Since then it has again declined, returning approximately to its 1981 level.

These dramatic changes have been the subject of much discussion and investigation. Major issues include the causes of the swings, their implications for the U.S. competitive position in world markets, their effects on trade balances, and the question of whether the regime of flexible exchange rates has well served the increasingly complex system of international trade in goods and assets.

THE PURCHASING POWER OF THE DOLLAR

A rise in the nominal value of the dollar does not necessarily mean that the dollar can buy more foreign goods. For example, if the dollar's rise is accompanied by a foreign inflation of equal magnitude, each dollar buys more of the foreign currency but no more of the foreign goods than before. Alternatively, if the dollar's appreciation is matched by a decline in the U.S. price level while the foreign price level remains unchanged, the rise in the value of the dollar signals an increased power of the dollar to purchase foreign goods, but not relative to the increased power of the dollar to purchase U.S. goods.

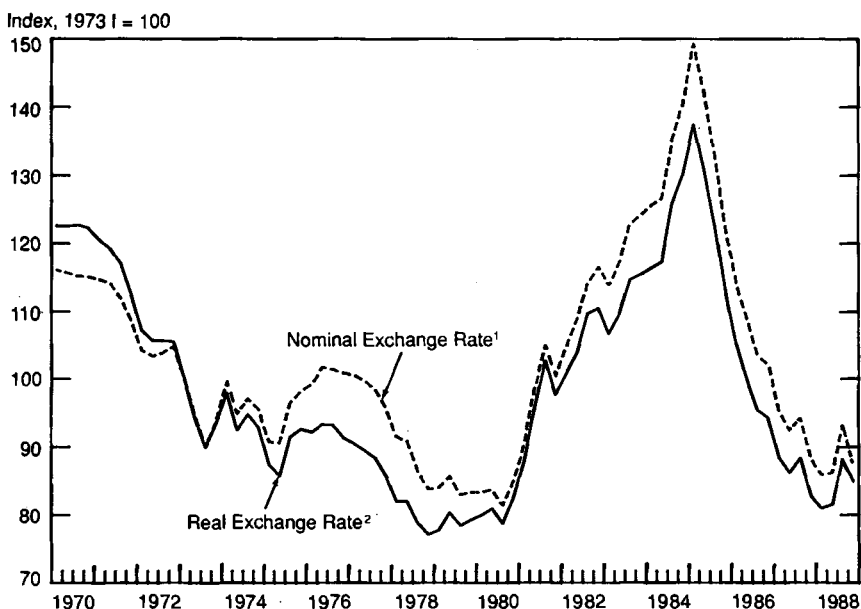
A broad measure of the dollar's relative purchasing power abroad can be derived from dividing the number of foreign goods that a dollar can buy by the number of U.S. goods that a dollar can buy, or equivalently by dividing the product of the U.S. price level times the foreign exchange value of the dollar by the foreign price level. A rise in that measure, called the real or inflation-adjusted exchange rate, would signal that a dollar could purchase more foreign goods relative to domestic goods than before. Alternatively, it would imply either that foreign inflation had not proceeded as quickly as the dollar's value rose, or that the pace of U.S. inflation exceeded the appreciation of the dollar. In either case, the real value of the dollar would rise—that is, the dollar's purchasing power abroad relative to its purchasing power in the United States would increase. Real exchange rates can change for a variety of reasons, including country-specific changes in productivity, thrift, taxation, and the efficient use of resources.

Chart 3-1 shows indexes of the nominal and real exchange rates of the U.S. dollar in terms of trade-weighted baskets of foreign currencies and consumer price indexes of 10 major industrial countries. The real value of the dollar has closely paralleled its nominal value, suggesting that, at least in the short run, the forces giving rise to exchange-rate movements are not matched by offsetting changes in in-

flation, either here or abroad. For example, the dollar's 20 percent decline from the second quarter of 1976 until the third quarter of 1980 was accompanied by a 16 percent decline in its real value, or purchasing power.

Chart 3-1

Nominal and Real Exchange Rates



¹Multilateral trade-weighted value of the dollar against the currencies of the other G-10 countries plus Switzerland.

²Product of the nominal exchange rate times the U.S. consumer price index divided by trade-weighted consumer prices of the other G-10 countries plus Switzerland.

Source: Board of Governors of the Federal Reserve System.

Although exchange-rate movements have not tended to be perfectly offset by changes in domestic or foreign price levels during the recent floating rate experience, exchange rates do respond to the relative price changes of the countries in question. There is no reason for bilateral exchange rates to reflect exactly all price level movements. The broad pattern of relative inflation across countries tends, however, to influence the long-run behavior of exchange rates.

Chart 3-2 shows indexes of relative price levels and nominal bilateral exchange rates for three major U.S. trading partners: Japan, West Germany, and the United Kingdom. In each case, relative price levels are measured by an index of the ratio of the implicit deflator of foreign gross domestic product (GDP) or gross national product (GNP) to the U.S. price level. The exchange rates and price ratios for

each individual country are indexed to equal each other in 1973, the starting point of the flexible exchange-rate regime. Although the units on the vertical axis are arbitrary, upward (downward) movements of the price ratios reflect rapid (slow) foreign inflations relative to that of the United States. Upward movements of the exchange rate reflect increases in the nominal value of the dollar, and vice versa.

The chart shows that, although exchange rates are more volatile than relative price levels, exchange rates tend in the longer run to fluctuate roughly around the ratio of the price levels. Shifts toward relatively rapid inflation in the United States raise U.S. prices relative to prices abroad and tend to be accompanied by a declining dollar. Slowdowns in U.S. inflation rates relative to those abroad tend to be met with dollar appreciation, as are periods of relatively rapid inflation abroad.

There is no reason to expect bilateral purchasing power parity—that is, to expect exchange rates and the ratios of the price levels of the paired countries to move together at all times. As can be seen in the chart, the relationship is far from exact. In the short run, ratios of price levels may not determine the exchange rate. This lack of concordance may be partly because a substantial share of goods and services is not internationally traded. In addition, it may be partly because exchange rates, as the relative prices of two assets, reflect the market's expectations about future relative inflations more rapidly than current price levels of goods and services respond to these pressures. The pronounced short-run deviations from purchasing power parity between the United States and its trading partners correspond to changes in the real exchange rate, which reflect a variety of influences.

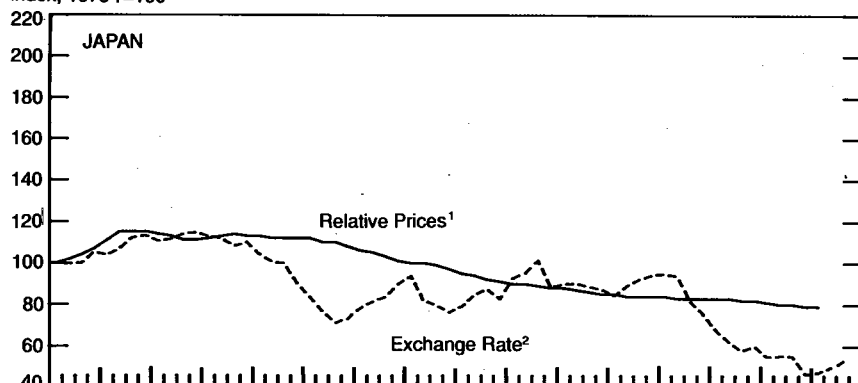
Changes in the real value of the dollar have no single cause. Changes in relative productivity, in relative thrift, efficiency, and risk make domestic assets more or less valuable. Changes in tax rates also alter the after-tax returns on assets. Market participants compare the expected, risk-adjusted after-tax real returns available all over the world. If expected risk-adjusted real returns rise abroad relative to the expected returns at home, demand for foreign assets increases until the expected real returns reach equality. The shifting of demand from one country's assets to another's entails shifts in the demands for the domestic and foreign currencies used to purchase the assets. The exchange rate adjusts to these changes in demand as in any other open market.

Any government policies that influence the price level, growth rates, or interest rates will affect exchange rates. Incentive-based fiscal policy, which affects a country's standard of living or alters the incentive to invest, will be reflected in exchange-rate movements.

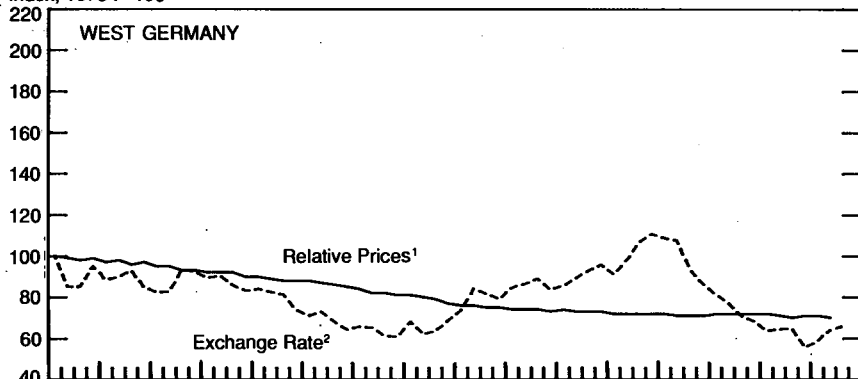
Chart 3-2

Exchange Rates and Relative Prices

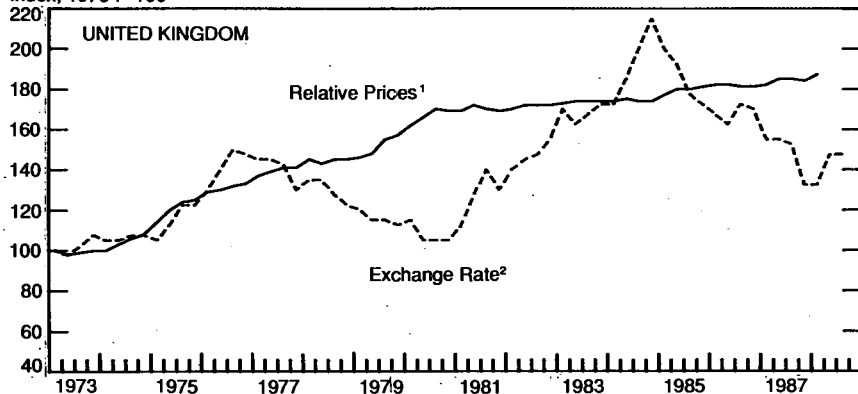
Index, 1973 I=100



Index, 1973 I=100



Index, 1973 I=100



¹Ratio of GNP implicit price deflator for Japan and West Germany (GDP implicit price deflator for United Kingdom), to U.S. GNP implicit price deflator.

²Foreign exchange value of the dollar.

Sources: Department of Commerce, International Monetary Fund, and Council of Economic Advisers.

Moreover, changes in government purchases relative to GNP may also induce relative price and real exchange-rate adjustments.

Influences that can lead to a decline in the value of the dollar include a rise in the rate of growth of the U.S. money supply relative to U.S. output, or a fall in the rate of growth of the foreign money supply relative to foreign output. Differences in these rates of change result in eventual declines in the rate of foreign inflation relative to that in the United States. The expectation of that fall in relative foreign inflation can trigger immediate movement of the exchange rate, as market participants attempt to shift from dollar-valued to foreign-valued assets. The decline in relative foreign interest rates, reflecting the market's reassessment of the relatively lower foreign inflation, reinforces the relative desirability of holding foreign currency by reducing the interest earned abroad that is forgone by holding money.

Although substantial evidence confirms the persistence of deviations from purchasing power parity, the tendency of bilateral exchange rates to return to the relative price ratios over long periods may indicate the presence of long-run market forces to return to approximate purchasing power parity. Because many of the goods and services whose prices are averaged in the consumer price indexes are not directly traded internationally (for example, many personal services and housing), some of the delay may reflect the time it takes for travelers and immigrants to shift their demands to the countries with lower relative prices. Given the length of time that is apparently involved, an alternative explanation is that by giving rise to shifting demand, large deviations from purchasing power parity pressure governments to revise their economic policies in the direction of long-run parity between the price levels. These policies include monetary and fiscal policies, as well as changes in incentive-based measures such as tax rates.

Under a system of floating exchange rates, U.S. policies alone are not the only determinants of the value of the dollar. The experiences and policies of other nations—the rates of growth of their real output, money supplies, tax rates, and interest rates—affect the value of the dollar as much as U.S. policies do. The United States can help to keep the foreign exchange value of the dollar stable by controlling its own inflation, but this approach will work only to the extent that U.S. trading partners pursue similar policies. Four historical examples of these principles are worth examining, and can offer the opportunity for some insight about the floating exchange-rate system and exchange-rate stability.

PEGGED AND FLEXIBLE EXCHANGE RATES: RECENT HISTORICAL EXPERIENCES

The broad features of the experience of the past 20 years tell much about exchange rates. This period breaks up logically into two separate subperiods. The first, beginning in the middle 1960s and ending in 1973, covers the demise of the Bretton Woods regime of pegged but adjustable exchange rates. The second covers the flexible exchange-rate regime, focusing on the wide swings in the value of the dollar.

The Foundering of the Bretton Woods System

Toward the end of the 1960s, pressures built that led ultimately to the breakdown of the Bretton Woods regime of pegged but adjustable exchange rates. In 1967, money growth picked up sharply relative to output. As discussed in Chapter 1, the increase reflected the combined pressures of U.S. Government expenditure for the Great Society and the Vietnam war and the operating rules of Federal Reserve policy—particularly interest rate targeting. The result was U.S. inflation. In addition, under the structure of the pegged exchange-rate regime, the excess money flowed abroad, raising foreign money stocks and price levels.

Both because of the rules of the Bretton Woods Agreement and the reputation the United States had acquired in steadfastly maintaining those rules during the postwar period, foreign countries continued to treat the U.S. dollar as a reserve currency at the historical par value of \$35 per troy ounce of gold. Moreover, many countries were reluctant to see the Bretton Woods system change. Foreign central banks accepted the extra dollars at par value even though the fractional gold reserves behind each dollar had declined.

In response to the ensuing U.S. balance of payments deficits, the United States intensified its capital controls. Differing real growth rates throughout the world in the early postwar period had already contributed to pressure on the dollar. As early as 1963, the United States had imposed the interest equalization tax on securities and long-term bank loans sold in U.S. markets by developed countries (except Canada). In 1965 additional controls were imposed on capital flows from banks and financial institutions, and in 1968, the United States made mandatory controls on direct investment abroad that had previously been voluntary. These measures distorted investment incentives and did not address the source of the problem.

In 1968 the U.S. balance of payments deficit worsened and by 1969 U.S. official reserve holdings were substantially reduced. As citizens of foreign countries turned in their dollars to their own cen-

tral banks, the foreign countries further increased their own money supplies, increasing inflation overseas. International pressure on the United States to change its monetary policy built up. The threat to tender the dollars against the insufficient supply of U.S. gold made the pressure credible. On August 15, 1971, President Nixon suspended the right of foreign central banks to convert the dollar into gold. The system established at Bretton Woods ended.

In an effort to stem the continued domestic inflation and capital outflows without addressing the rapid growth in money relative to output that was their fundamental cause, President Nixon simultaneously imposed wage and price controls and a 10 percent import surcharge when he suspended gold convertibility. These stopgap measures decreased market efficiency by distorting relative prices, and further contributed to the difficulty of economic adjustment. New exchange-rate parities were set at levels that were determined by the Smithsonian Agreement in December 1971. The plunge in the dollar's value halted, but that arrangement lasted little more than a year. By then it had become abundantly clear that the U.S. balance of payments deficits were attributable to U.S. economic policies that were fundamentally inconsistent with the fixed exchange-rate system and the maintenance of low inflation. In March 1973 the monetary authorities of the major industrial nations decided to let their currencies float freely against the dollar, either individually or in currency groups such as the European "snake." Between March and September 1973, the dollar fell by 5 percent on a trade-weighted basis, reflecting in part the accumulated pressures from 6 years of excessive growth of money relative to output.

The Bretton Woods system went far in the postwar years in the direction of its goals of both price and exchange-rate stability. In the course of time, however, it achieved neither aim. The system relied on the conduct of U.S. monetary policy, but provided insufficient incentive to carry out policies consistent with the maintenance of the goals of the regime. When the United States failed to conduct its monetary policy in a manner consistent with price stability, while several key currency countries were reluctant to accept inflation rates commensurate with continued exchange-rate stability, the system was unable to withstand the pressures that built up. Given the conduct of U.S. monetary policy, the inherent design of the system forced foreigners to choose between price and exchange-rate stability. They chose to let exchange rates be determined in international markets.

The Bretton Woods system was one of pegged but adjustable exchange rates. From its inception it was subject to currency revaluations and devaluations. In the 1960s the system came to be regarded as crisis prone, reflecting the increasing frequency and magnitude

of exchange-rate changes as countries adopted and persisted in uncoordinated economic policies. Changes in the rate of growth of one country's money supply relative to its output, unmatched by corresponding changes abroad, caused excess capital to flow out of the country that incurred relatively rapid monetary growth. When these changes were not reversed, they resulted either in a balance of payments crisis, with a decline in the international reserves held by the authorities of the country inducing the relatively rapid monetary growth, or in a currency devaluation to staunch that decline.

The Flexible Exchange-Rate Regime

Under a completely flexible exchange-rate regime, changes in the international reserve holdings of central banks are obviated, because a currency's value adjusts to the forces of supply and demand in international markets. The chief distinction between flexible and fixed exchange-rate systems lies in the institutional tradeoff between exchange-rate movements and international reserve movements. What matters most is not the system, but the stock of money relative to domestic output. The money stock changes as a result of monetary policy, and output may change as a result of such real factors as changes in productivity or demographic changes affecting thrift or labor force participation. These are the main determinants of the expected course of the exchange rate and the long-term movements of the price level.

Under a flexible exchange-rate system the monetary authorities may intervene to prevent the currency from declining in value. In order to succeed, they must necessarily stabilize the rate of money growth relative to the growth of output. If intervention reduces central bank holdings of both international reserves and money in order to change market anticipations about the thrust of monetary policy, a central bank can change the exchange rate. The essential element is a credible change in the growth of money relative to output. In contrast, sterilized exchange-market intervention, which changes the mix of international reserves and domestic assets held by central banks without changing the stocks of money relative to output at home and abroad, has no lasting effect on exchange rates. This process changes the distribution of assets in government and private portfolios. The main effect is to change who bears the risk of fluctuations in foreign or domestic asset prices.

Three changes in the value of the dollar characterized the experience of flexible exchange rates: the decline in the dollar's value during the middle to late 1970s, its appreciation until March 1985, and its subsequent depreciation. The dollar depreciation in the second half of the 1970s reflected the continuation of the rapid U.S. monetary growth relative to output begun in the late 1960s, com-

pounded by increasing reliance on policies that attempted to fine-tune the economy. The stop-go pattern of policy became more pronounced in early 1973, when the rate of growth of M2 fell sharply. The oil price rise later that year was met with direct controls on the domestic price of oil. These actions ultimately produced a slowing of the rate of price increase and a halt to the dollar's decline, but they exacerbated the economy's difficulty in adjusting to the reduction in income implied by the change in international oil prices. The ensuing recession of 1974-75 led to increasing efforts to boost employment and output by expanding monetary growth and reducing taxes. As monetary growth in the United States accelerated in an effort to lean against the recessionary tide, U.S. inflation soared. At the same time, several major U.S. trading partners, most notably West Germany and Japan, allowed domestic oil prices to adjust to world levels and consciously restrained their money supplies to focus on the longer run. The value of the dollar plummeted, dropping 16 percent between the first quarters of 1976 and 1980, the period of the highest postwar U.S. inflation.

During this period the Carter Administration had proposed a policy known as the "locomotive theory." Foreign governments were expected to adopt monetary and fiscal policies consistent with the expansionary policies of the United States in an effort to increase aggregate demand. Many foreign countries, fearing inflation, were reluctant to stimulate their economies in this manner. The episode ended with continued domestic inflation and a decline in the value of the dollar without achieving the desired outcome.

When in 1980 Ronald Reagan cast his pre-election support to the new regime of monetary control, the expectation of pronounced reduction in inflation resulted in a turnaround in the value of the dollar. The new U.S. tax incentives introduced in the Economic Recovery Tax Act of 1981 (ERTA) encouraged domestic investment and capital accumulation and raised expected after-tax real rates of return. Productivity increases in the United States resulted in an appreciation of the real value of the dollar, as the dollar's purchasing power increased relative to that of the currencies of many U.S. trading partners. Capital inflows to the United States responded with renewed vigor to the higher anticipated U.S. real after-tax rates of return. These higher expected real rates of return were reflected in real and market interest rates. The shifting of assets toward the United States reinforced the rise in the nominal exchange rate begun in 1980.

The resulting unprecedented rise in the dollar's value, as can be seen in Charts 3-1 and 3-2, continued until the first quarter of 1985; that is, throughout approximately the same period that the U.S. eco-

conomic recovery, revised growth incentives, monetary restraint, and reduced inflation led similar advances abroad. During this period, the dollar rose in value against all major U.S. industrial trading partners, including the United Kingdom, whose economic recovery began earlier but whose reduction in inflation was unable to match this Nation's, and West Germany, which continued to exercise its traditional monetary restraint but whose economic growth rate was usually below that of the United States.

In late 1984 U.S. monetary policy eased markedly. At the same time, widespread anti-inflation policies abroad accelerated. In March 1985 the dollar began to decline. In the 7 months between the dollar's peak and the Plaza Agreement of September 1985, which announced the intentions of the G-5 countries (France, Japan, the United Kingdom, the United States, and West Germany) to engage in coordinated economic policies and to regard some further dollar decline as appropriate, the trade-weighted value of the dollar declined 12 percent. The U.S. monetary expansion continued through the end of 1986, contributing to the continued decline in the dollar's value.

Changes in tax rates at home and abroad reinforced the decline in the dollar's value. Foreign marginal tax rates were lowered as other nations began to emulate the successful U.S. policies of the early 1980s. At the same time, the Tax Reform Act of 1986 reduced the relative incentive of U.S. citizens to invest in the United States by raising the effective tax rate on capital investments. As discussed in Chapter 2, it also provided more uniform treatment of alternative types of investment purchases. The elimination of the deductibility of nonmortgage interest on personal income tax returns encouraged some shifting of private spending away from consumer durables and toward business investment. Notwithstanding these mitigating forces, the real value of the dollar fell until early 1988.

Compared with the Bretton Woods system of pegged but adjustable exchange rates, the system of flexible exchange rates has functioned smoothly. The upheavals of the 1970s and 1980s, including two large oil price shocks, sharp changes in the relative prices of other commodities, and rapid relative movements in the patterns of international monetary and output growths of the period, were registered in wide swings in exchange rates. Crises in international reserves and speculative attacks in anticipation of dollar devaluations were nevertheless avoided. The market's depreciation of the dollar during the 1970s was a symptom of the rapid domestic inflation. As discussed in Chapter 1, it was also a symptom of the market's uncertainty about the future stance of U.S. monetary policy, given the stop-go reactions of the Federal Reserve to the events of the period. During the 1980s the market's assessment of real factors, such as

changes in relative output growth, productivity, and marginal tax rates, have played a dominant part in determining exchange rates.

A frequent comment is that real exchange rates have been more variable in the fluctuating exchange-rate period than under the Bretton Woods regime. Some observers interpret the increased variability as evidence that the international economy has become less stable. This conclusion is unwarranted. Changes in real exchange rates are the means by which the economy adjusts to changes affecting demand and output. Increased variability of real exchange rates is entirely consistent with greater economic stability and reduced fluctuations in output, employment, and the price level. Studies of variability in output and prices under fixed and flexible exchange rates suggest that despite the oil shocks, inflation, and then disinflation of the 1970s and 1980s, leading countries have reduced variability of prices and output in the flexible exchange-rate era.

THE DOLLAR AND COMPETITIVENESS

Wide swings in the value of the dollar in excess of U.S. and foreign inflation differentials have had pronounced effects on the cost competitiveness of American manufacturers. Dollar depreciation during the late 1970s raised the dollar price of imports relative to other domestic prices and temporarily shielded many trade-sensitive industries from foreign competition. The 10 percent real depreciation of the dollar between the first quarter of 1977 and the second quarter of 1980 allowed some manufacturing industries to remain temporarily profitable despite substantial increases in real wages and relatively slow productivity growth. This temporary insulation from foreign competition that dollar depreciation provided left many trade-sensitive industries unprepared to deal with heightened competition in the 1980s.

The unprecedented surge in the dollar's value during the first half of this decade resulted in a marked loss in the international cost competitiveness of U.S. industries. This loss occurred because foreign exporters to the United States could—and did—charge a lower dollar price to cover the same level of home currency costs when the dollar appreciated. Between the second quarter of 1980 and the first quarter of 1985, a period when the inflation-adjusted dollar price of a trade-weighted basket of currencies of 10 major industrial countries fell by some 37 percent, the price of nonpetroleum imports relative to U.S. producer prices declined by 18 percent. Although the aggregate data appear to suggest that foreign producers took advantage of the surge in the dollar to boost both sales and profits, more can be learned by examining the dollar prices of individual categories of imported goods.

Table 3-1 shows price indexes for several categories of U.S. non-petroleum imports divided by the producer price index for finished goods. The indexes are relative to a base of 100 in the second quarter of 1980. Between the second quarter of 1980 and the first quarter of 1985, the dollar price of industrial supplies and materials imports, relative to producer prices for finished goods, declined by 28 percent, while the relative prices of capital goods (excluding autos) and consumer durables imports declined by 26 and 19 percent, respectively. By contrast, the relative price of consumer nondurables imports fell by only 10 percent, while the relative price of auto imports rose by 11 percent. This divergence in relative import prices reflects several factors, including the weakness in world commodity prices during this period, technological advance in the production of capital goods, and, as discussed in Chapter 4, the imposition of nontariff barriers in the U.S. auto and textile industries. Apart from the impact of nontariff barriers on the dollar prices of autos and textiles, however, it would appear that much of the real appreciation of the dollar during the first half of this decade was in fact passed through to the dollar prices of imports.

TABLE 3-1.—*The Dollar and Import Prices Since 1980*
[1980 II = 100]

Item	1985 I	1988 III
Dollar price of foreign exchange ¹	63	84
Nonpetroleum import prices ²	82	97
Industrial supplies and materials	72	83
Capital goods except automobiles	74	92
Consumer durables	81	99
Consumer nondurables	90	109
Automobiles	111	133

¹ Dollar price of the trade-weighted currencies of the foreign G-10 countries plus Switzerland adjusted for changes in consumer prices in the foreign countries and the United States.

² Ratio of the GNP fixed-weighted price index to the producer price index for finished goods.

Sources: Department of Commerce, Department of Labor, International Monetary Fund, and Council of Economic Advisers.

Because of the passthrough of the dollar's real appreciation to dollar import prices, U.S. manufacturers lost sales to their foreign competitors. This loss happened despite the fact that unit labor costs were rising more slowly in the United States than abroad, the result of exceptional productivity gains and modest wage increases in U.S. manufacturing. Specifically, unit labor costs in U.S. manufacturing rose only 9 percent during the first half of this decade (and have actually fallen since 1982) while, in national currency terms, average unit costs in the nine largest foreign industrial countries rose nearly 18 percent. When measured in dollars, however, unit labor costs in

these nine other industrial economies fell just over 13 percent. Instead of experiencing a solid 9 (18–9) percent improvement in international cost competitiveness between 1980 and 1985, the surge in the value of the dollar brought about a 22 (–13–9) percent decline in relative cost competitiveness of U.S. manufacturers, measured at current exchange rates. This decline was in line with the relative price declines of capital goods and consumer durables.

The real depreciation of the dollar that has occurred since March 1985 has, in conjunction with continued rapid productivity growth and modest wage increases, restored the international cost competitiveness of many U.S. manufacturers. In particular, relative unit labor costs measured in dollar terms are now lower than they were in 1980. Although dollar import prices responded with a longer-than-expected lag to the real depreciation of the dollar—actually continuing to fall on average until the fourth quarter of 1986—manufacturing output and exports rose in 1987 and 1988 as higher prices for foreign goods shifted domestic and foreign demand toward U.S. goods.

As can be seen in the table, between the first quarter of 1985 and the third quarter of 1988 the inflation-adjusted dollar price of foreign exchange has risen 33 percent—that is, to 84 percent of its base in the second quarter of 1980. The dollar price of imported capital goods relative to the producer price index for finished goods rose 24 percent, reaching a level last recorded in the first quarter of 1981. Similarly, the relative dollar price of imported consumer durables (excluding autos) has jumped 22 percent, and is now about the same as in 1980. Reflecting the weaker dollar and, perhaps, the voluntary export restraints on Japanese cars and the quotas on textile imports, the relative dollar prices of imported automobiles and consumer non-durables have soared, and are now respectively 33 and 9 percent higher than in 1980. By contrast, the relative dollar price of industrial supplies and materials has risen 15 percent since the first quarter of 1985, reflecting the modest but incomplete recovery in commodity prices that has occurred in recent years. In short, the relative dollar prices of nonpetroleum imports have risen substantially in response to the real depreciation of the dollar and, excepting industrial supplies and materials, are currently near or above their levels in the second quarter of 1980.

To summarize, the real appreciation of the dollar, and not sagging productivity growth or other commonly alleged causes, was the primary source of the deterioration of the international cost competitiveness of U.S. manufacturers during the first half of this decade. Moreover, cost competitiveness has been restored for many industries in line with the dollar's depreciation. The jump in dollar import

prices discussed above has had a modest, one-time effect on the price level; but, contrary to the predictions of some commentators, dollar depreciation has not set off another round of accelerating inflation. This effect is not surprising because, in the context of appropriate monetary policy, real exchange-rate changes represent relative price changes that can ultimately change the price level, but not the economy's long-run inflation rate.

These observations do not imply that the United States can, or should, rely solely on exchange-rate movements to improve further its competitive position. Real exchange-rate depreciation can increase competitiveness in the intermediate run by making imports more expensive, but at the cost of slower domestic real income growth than would otherwise result. In contrast, policies to promote more rapid productivity growth should be actively pursued. Faster productivity growth will boost both international competitiveness and real standards of living.

INTERNATIONAL POLICY COORDINATION UNDER FLEXIBLE EXCHANGE RATES

Economic theory and the recent exchange-rate history both suggest that monetary and fiscal policies, through their effects on inflation, inflationary expectations, and real output, are important influences on nominal exchange rates. To achieve a stable value of the dollar requires not only predictable and restrained monetary policy along with sustainable real growth in the United States, but also similar economic conditions abroad. To the extent that wide swings in the value of the dollar are appropriate market responses to changes in these underlying international economic conditions, exchange rates can serve as signals of improved prospects or deepening problems in these underlying factors. Under a fixed exchange-rate regime, data on international reserve flows have to serve this same role. Although exchange rates are not perfect signals, they are generally more informative indicators than quantities, such as reserve flows.

Disturbed by the recent large exchange-rate swings, officials from many countries and other observers have expressed their desire for greater exchange-rate stability. They have sought to find ways to increase the coordination of sovereign policies in order to help stabilize exchange rates. As shown in many studies, however, including those commissioned by the Versailles Economic Summit in 1982, direct sterilized exchange-market intervention has proved to be of limited value in reducing exchange-rate variability.

Some groups of countries have tried an adjustable peg—notably the European Monetary System (EMS), which ties several currencies together but allows some variability within pre-arranged bands. This

system requires either a common monetary policy to keep inflation similar or strict capital controls to limit precipitate intercountry asset flows. Otherwise countries must accept periodic adjustment in their exchange rates. Smaller countries tend to fix their exchange rates to those of larger developed nations. As is evidenced by repeated realignments within the EMS and repeated devaluations of the currencies of some developing nations, an adjustable peg system contains all of the inherent drawbacks of modern fixed exchange-rate regimes. The inability to enforce compatible sovereign monetary and fiscal policies is a key deficiency of these systems.

A promising approach for increasing the stability of exchange rates focuses on the coordination of domestic policies toward inflation and economic growth. Under this approach, the leading industrial countries adopt mutually compatible economic policies to achieve sustained growth with low inflation. Direct exchange-rate coordination is not required to achieve these principal benefits.

If fully enacted, plans for a single internal market in the European Community by 1992 could contribute to increased stability of exchange rates within Europe by encouraging international competition, which will help to keep domestic policies in line across countries. Some European leaders have suggested that the 1992 reforms be followed by reforms leading toward the use of a single European currency. If widely used in place of existing monies, a common currency would require a unification of monetary policies. A common currency is not necessary, however, to achieve the benefits of the sweeping reductions of economic barriers proposed for Europe in 1992.

No country acting alone can achieve both price and exchange-rate stability. Larger countries that achieve domestic price stability provide a public good: smaller countries can then fix their exchange rates to those of the larger countries and achieve greater price and exchange-rate stability. For the larger countries, disturbances to exchange rates caused by differences in actual or anticipated inflation can also be reduced, and exchange-rate stability can increase. A policy of this kind does not require elaborate control procedures. The benefits can be achieved if each of the major countries adjusts its money growth rate to be consistent with sustained growth at stable prices in its domestic economy.

This arrangement provides the opportunity for countries to choose increased price and exchange-rate stability. Bretton Woods produced this result to a degree and for a time, and the prosperity of the period showed that benefit is to be had. Nevertheless, the inability of the Bretton Woods system to weather the strains of changing sovereign goals suggests that an overarching system of pegged but adjust-

able exchange rates will not serve the world as a whole as well as the current system of free choice in forming exchange-rate arrangements.

Productive policy cooperation among countries includes not only consistent monetary and fiscal policies, but also vigilant reduction of market rigidities and barriers to trade in both goods and financial assets. Recent discussions among developed countries with regard to the plans for Europe in 1992 and at the Organization for Economic Cooperation and Development (OECD) indicate increasing regard for reducing the institutional, policy-supported, and structural rigidities that slow or even prevent market adjustments to a rapidly changing world. Postwar institutions such as the General Agreement on Tariffs and Trade (GATT) and the International Monetary Fund (IMF) have also devoted themselves to reducing such market imperfections. In the case of GATT, direct reductions in tariffs as well as in import and export quotas have expanded trading opportunities throughout the world and have increased the communication among trading nations. The IMF, whose original role as defined at Bretton Woods was to finance temporary payments imbalances under the regime of fixed exchange rates, has taken a strong stance in favor of market and trade liberalizations for countries to which it has extended loans. Progress on these fronts has been made, though much more remains to be achieved.

EXPORTS, IMPORTS, AND TRADE BALANCES

During the 1980s the United States experienced trade deficits relative to output of a persistence and magnitude that have not been seen since the past century. The increasing external deficits of the 1980s were not associated with rapid inflation, as were the trade deficits of the late 1970s; nor did they weaken the economy or portend the dire economic consequences that some feared. On the contrary, the trade deficits of the 1980s reflected the relative strength of the U.S. expansion. Both real exports and real imports of goods and services have risen on average since the last quarter of 1982. The excess of imports over exports during that period provided U.S. citizens with additional consumption and investment goods to satisfy the demand generated by relatively rapid U.S. real growth. Until early 1985 that effect was reinforced by the strong dollar, which lowered the relative price of these imports.

External trade deficits necessarily imply inflows of capital. Whether the ultimate consequences of these inflows benefit the United States depends on how the resources are used and on whether there is a bias toward consumption in the United States. Such a bias could arise as a result of distortions inherent in the tax system, in regulation, or

in government spending. Government spending and transfers shift toward consumption some resources that the private sector might otherwise invest. Government spending financed by borrowing absorbs private savings unless the private sector acts to offset the savings reduction. An understanding of the causes and consequences of the trade deficits of the 1980s begins with their definitions.

MEASURES AND MEANINGS OF EXTERNAL BALANCES

Trade and current account balances convey information about exports and imports, net international borrowing, and net international flows of capital. In order to disentangle this information, it is helpful to examine the meanings of the external balances on which the United States collects data.

When the United States imports more goods than it exports, it experiences a merchandise trade deficit. Because the balance on merchandise trade is restricted to trade in physical goods, it is too narrow a measure of the many things traded internationally to be a reliable signal about U.S. trade. Adding U.S. exports and imports of services (including investment income) produces net exports of goods and services. Because the United States tended in the past to export more services than it imported, the recent deficit on net exports tended to be somewhat smaller than that of merchandise trade. The net service balance has declined recently, so that the difference between the merchandise trade and net export balances is smaller than in the past.

The balance on net exports as measured in the national income and product accounts (NIPA) is conceptually similar to but slightly narrower than the balance on goods and services as measured in the international transactions of the Bureau of Economic Analysis (BEA). The balance on net exports excludes interest payments and receipts on government liabilities; but these investment earnings are included in BEA's balance on goods and services. (The NIPA and BEA balances also differ in the way they account for certain other items such as gold, capital gains and losses, and data revisions.) A still broader measure of the external trade balance is BEA's current account, which is derived by adding net international remittances, pensions, and other unilateral transfers to the balance on goods and services. Because the United States tends to transfer more abroad than foreigners transfer to the United States, the current account deficit exceeds the deficit on net exports. The balance on the current account is the most inclusive and reliable measure of the value of the net flow of U.S. sales to foreigners.

By measuring the balance between exports and imports of goods and services in constant 1982 dollars, it is possible to determine real

net exports. This measure is the one most closely associated with real GNP, which reflects real living standards. Because differences between net exports in current and constant dollars reflect changes in the relative price of imports and exports, however, only the relative movements of the balance on real net exports are meaningful. For example, in 1972 the difference between exports and imports in current dollars was positive, implying a surplus on real net exports—that is, net exports in 1972 dollars. Between 1972 and 1982 the price of exports went up by a factor of 2.4, while the price of imports more than tripled, owing primarily to the two oil price shocks in the 1970s. Reevaluating 1972 exports and imports in 1982 dollars increases the value of imports by enough more than the value of exports to make 1972 a year of a deficit in real net exports. Conversely, revaluing 1982 net exports in 1972 dollars raises it to an even larger surplus. Given a base year whose prices are chosen to remain constant, measurement can be made of relative increases and decreases of the balance on real net exports, but not of whether it is in deficit or surplus.

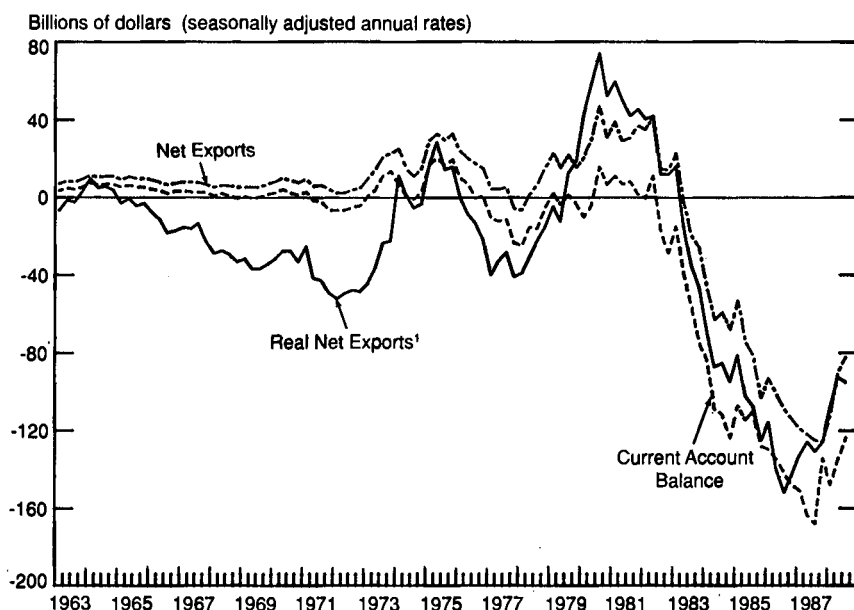
Chart 3-3 depicts the nominal current account as well as net exports in current and constant 1982 dollars since 1963. All three measures of the external balance exhibit broadly similar patterns. Until the second quarter of 1983 all three measures stayed within the ranges exhibited in the previous postwar history. Beginning in 1983, however, all three accounts deteriorated substantially. The deficit on real net exports reached its peak at \$151.8 billion in the third quarter of 1986. Since then it has declined from 4.1 percent of real GNP to 2.3 percent. The deficit on net exports in current dollars reached its peak in the last quarter of 1987, and has since turned around. Since 1983 the deficit on net exports has averaged 1.8 percent of GNP, greater than any deficit experience in this century, but about the same as the average ratio of the post-Civil War deficit on goods and services to output in the years 1869-75.

A deficit in net exports implies several things. First, it implies that total spending by residents of the United States—government and private investment and consumption—is greater than the value of GNP or domestic income. When domestic purchases exceed domestic production, the country imports the excess and runs a deficit on goods and services. Alternatively, it implies that national saving is less than national investment. This result is a direct consequence of national income accounting relationships. Apart from some relatively minor items, the excess of national investment over national savings equals the excess of domestic demand over GNP, and thus the deficit on net exports.

Finally, a deficit in net exports implies that, on net, foreigners are accumulating claims on or reducing liabilities to the United States,

Chart 3-3

Net Exports and the Current Account Balance

¹ In 1982 dollars.

Source: Department of Commerce.

either in the form of direct investment or acquisition of financial assets (including those of the government). A current account deficit must equal in magnitude the capital account surplus, because in order to purchase current goods and services in excess of those sold, assets must be sold in excess of those purchased. Except for a statistical discrepancy, the current account deficit equals this net capital inflow, which in turn is conceptually similar to net foreign saving.

Under a strictly flexible exchange-rate regime, the exchange rate adjusts until the net payments offered by market participants balance exactly, so that capital account transactions exactly offset those of the current account. If the monetary authorities engage in capital account transactions, as they might under fixed exchange rates or a managed float, a current account deficit must equal in magnitude the surplus on the total capital account, including the value of any net official sales of international reserves.

Many factors can lead to net international borrowing, and thus to deficits in the current account. In some cases a current account deficit signals an inherent problem in economic policies or in underlying economic conditions. In other cases a current account deficit reflects a healthy, growing economy where citizens are borrowing in order to invest and consume in anticipation of a robust future. Three recent experiences of current account deficits are instructive on these differences: the first occurred between early 1971 and the end of 1972, the second between mid-1976 and mid-1980, and the last in the period since the third quarter of 1982.

The first of these incidents had its seeds in the late 1960s, as the U.S. dollar creation in excess of amounts consistent with the maintenance of the Bretton Woods Agreement led to dollar outflows that exceeded the amount of dollars willingly held by foreigners and domestic residents. The current account of the United States declined accordingly, leading to the balance of payments deficits and the accumulation of the excess supply of dollars by foreign central banks noted in the previous section. Current account deficits persisted until early 1973, when the dollar was finally allowed to float freely. As can be seen in Chart 3-1, the value of the dollar fell almost without exception throughout the period both in real and nominal terms, while both the balance on real net exports and the current account first declined and then, beginning in 1972, began to increase. When the underlying source of a dollar depreciation is excessive money creation, the current account and the value of the dollar tend to deteriorate together.

The circumstances characterizing the latter 1970s appear to be similar. The rapid U.S. monetary expansion intended to combat the high unemployment resulting from the recession of 1974-75 led simultaneously to higher inflation, a depreciating dollar, and a declining current account. By the middle of 1975 real imports began to soar, and by the end of the next year the current account became negative. The deficits on the current account and real net exports began to shrink in 1978. The inflation-fighting stance adopted by the U.S. monetary authorities in late 1979 helped to halt the deteriorating dollar and the rapid capital outflows of the period. Real exports picked up and real imports slowed. By mid-1980 the current account was in surplus and real net exports were rising briskly. In 1982, however, the current account again fell into deficit, followed shortly by a decline in real net exports.

Unlike the earlier experiences with current account deficits, both of which were associated with excessive money growth relative to output, the experience of the 1980s has been one of incentive-based

fiscal policy and an inflation-fighting stance. The recent decline in the current account actually began in 1980, when the prospect of reduced inflation under the new regime of monetary restraint raised real after-tax rates of return in the United States relative to those abroad. As foreigners began to increase their willingness to hold U.S. assets, the U.S. current account fell. This trend was reinforced by the effects of the Economic Recovery Tax Act of 1981, which reduced corporate taxes, further increasing after-tax real returns in the United States relative to abroad. The dramatic U.S. expansion beginning in 1982 came at a time when many U.S. trading partners were still in the throes of slow growth or recession. The growth of total public and private U.S. demand for consumption and investment goods, based on the strength of the expansion, outstripped the growth of current U.S. output. This increase in relative U.S. demand resulted in growing current account deficits accompanied by voluntary private capital inflows. The rising real value of the dollar amounted to a relative price effect that further reinforced the income effect behind the increased relative demand.

In the past few years, foreign nations have begun to acknowledge and emulate the success of U.S. policies, with the result that, since mid-1987, the external balances have begun to turn around. Foreign tax reductions and monetary restraint have reduced foreign inflations and been accompanied by increases in foreign GNP growth that have in turn increased relative foreign demand. The prospect of reduced trade and structural barriers associated with the 1992 plan for a single European market and the extension of the European Community to include Spain and Portugal have resulted in sharp increases in investment in Europe. Again, the decline of the dollar, which partly reflected these improved foreign conditions, has helped reinforce the improvement in the U.S. current account.

A frequently made claim is that recent U.S. current account deficits are financing a U.S. spending spree that will end in the painful curtailment of future consumption in order to service the debt. This result is possible but not inevitable. The outcome depends on how the resources are used. Borrowed resources enable the United States to increase investment, raising productivity and future output, thus providing the resources to service the debt out of higher future incomes. On the other hand, relatively low U.S. savings and investment rates suggest that much of the inflow of foreign capital is instead being diverted to current consumption. As Chapter 1 showed, however, measured U.S. investment rates are understated relative to those of the rest of the world because education, research and development, and consumer durables, on which U.S. expenditure is relatively high, are excluded from the usual measures of investment. The

encouragement of U.S. investment through tax laws that raise expected after-tax rates of return and make uniform the tax rates on alternative kinds of capital has been a goal and an achievement of this Administration. Raising corporate or marginal income tax rates will discourage further investment and reduce future output, making the servicing of the foreign debt more difficult.

During the 1980s the large U.S. external deficits occurred along with large U.S. Government budget deficits. While the concurrence of these deficits has often been noted, a precise statistical relationship between the two is not expected on theoretical grounds and has not been found. In principle, if the government simply taxes less while borrowing more in order to finance a given amount of government expenditure, the private sector may simultaneously save the difference in anticipation of the higher future taxes necessary to repay the debt, including interest, that the government has incurred. Net borrowing by the United States under these circumstances would not increase if the only factor were a government budget deficit. In practice, government expenditure was not held fixed during the early 1980s; and various distorting tax laws may have discouraged sufficient private saving to offset the effects of the government borrowing. Higher economic growth and the reduced government spending consistent with the Gramm-Rudman-Hollings deficit reduction plan will contribute to higher U.S. saving, and hence to further reductions in the current account deficit, without a tax increase.

THE CHANGING U.S. NET ASSET POSITION

The negative current accounts of the 1980s have meant annual increases in the net claims foreigners held on the United States. Even though total U.S. holdings of foreign assets have continued to increase on average during the 1980s, foreign ownership of U.S. assets has increased at an even faster pace. As a consequence, the postwar role of the United States as net lender to and investor in the rest of the world diminished during the 1980s. According to official estimates, since 1985 the United States has acquired a position of net indebtedness toward the rest of the world, a position last assumed by the United States in World War I. At the end of 1987, total U.S. assets abroad were recorded at \$1.17 trillion, \$368 billion less than recorded foreign assets in the United States. Although these official estimates may substantially underestimate the true U.S. net asset position, the trend implies a change in the traditional role of the United States as a net lender.

Although measured U.S. net external indebtedness in 1987 represented the largest net nominal amount owed by any single country, it

amounted to only 8.1 percent of GNP. This amount is small compared with U.S. net indebtedness-to-GNP ratios in the latter half of the 19th century. Following the Civil War and again following the period of heavy investment in railroads during the 1880s and 1890s, this ratio reached a full quarter of average annual GNP. Based on estimates produced by the IMF, Canada's net external debt (excluding gold holdings) was 34 percent or more of Canadian GDP throughout the 1980s. In 1987 the service on the gross U.S. debt abroad amounted to less than 2 percent of GNP and was less than U.S. earnings on assets abroad. Even a further increase in net U.S. debt need not be a problem for the United States. By continuing to increase U.S. output, the productive use of resources will keep the U.S. net debt and its servicing from growing too fast relative to GNP. Nevertheless, questions about the causes and consequences of the debt merit examination. It is helpful to begin with definitions and facts.

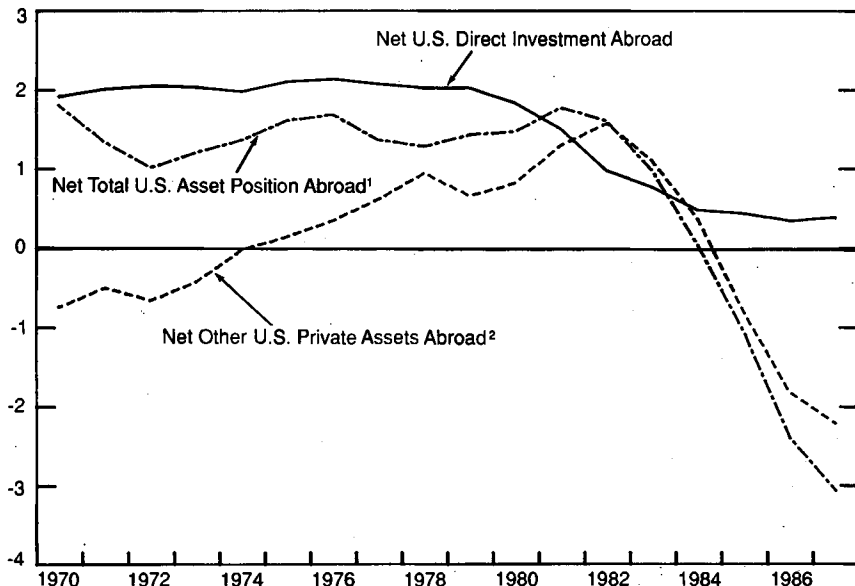
At the end of 1970 total U.S. assets abroad stood at \$165 billion, 54.7 percent higher than foreign asset holdings here. Total assets include direct investment, other private assets (such as bonds, Treasury bills, bank deposits, and stock), and official assets such as international reserves. These assets had largely been accumulated during the postwar period, as the United States contributed heavily to the rebuilding of Europe and Japan through loans and direct investment. On average, U.S. assets abroad grew somewhat more slowly than foreign assets in the United States during the 1970s. From the end of 1979 to the end of 1987, however, the average annual rate of growth of foreign assets in the United States increased from the 16.2 percent per year of the 1970s to 17.7 percent per year, while the average annual rate of growth of U.S. assets abroad fell from 13.3 to 10.9 percent.

Chart 3-4 shows the total U.S. net asset position abroad and two of its components as a percentage of U.S. wealth net of depreciation. U.S. net wealth consists of the value of government and private tangible assets (including land, structures, inventories, and consumer durables), and net U.S. claims on foreigners (including both net financial assets and net direct investment abroad). Because the net U.S. asset position abroad is available only on a primarily historical-cost basis—that is, excluding changes in asset values attributable to capital gains or losses for many of the assets—net wealth is also computed on an historical-cost basis. The total net U.S. asset position abroad was 1.8 percent of net wealth in 1970. Although U.S. holdings of foreign assets continued to increase on average even relative to U.S. net wealth, the percentage of net wealth represented by foreign asset holdings rose more rapidly. Consequently, by the end of 1987 net foreign assets in the United States amounted to some 3.1 percent of U.S. wealth.

Chart 3-4

U.S. Net Asset Position Abroad as Percent of Net Wealth

Percent of net wealth at historical cost

¹Direct investment, other private assets, and official assets.²Nondirect investment.

Sources: Department of Commerce and Board of Governors of the Federal Reserve System.

Several factors caused the reversal of the net asset position of the United States. By the mid-1950s Europe and Japan had recuperated from the war's devastation, reducing the net outflow of capital from the United States. The incentives to use U.S. dollars to finance the purchase of foreign assets created by the arrangements of Bretton Woods were removed with its breakdown in the early 1970s. Increased U.S. private and official lending to developing nations partly offset the contraction in the net U.S. capital outflow to other industrial countries. By the early 1980s, however, debt repayment problems on the part of those developing nations reduced their ability to borrow.

At about the same time U.S. tax laws in the early 1980s made the country a relatively desirable and safe investment for its trading partners, simultaneously attracting private foreign capital into the United States and reducing the relative desirability to Americans of foreign assets. Additionally, beginning in 1982 the robustness of the eco-

conomic expansion in the United States led to an increased U.S. demand for goods and durables for consumption and investment purposes. The result of these forces was that the capital account deficits in the 1960s gave way to capital account surpluses in the 1980s, with a concomitant annual decline in the net lending position of the United States.

As can be seen in Chart 3-4, U.S. direct investment abroad continues to exceed foreign direct investment in the United States. In the early 1980s, however, U.S. direct investment abroad declined slightly, while foreign direct investment in the United States continued to increase rapidly, resulting in a decline in the U.S. net investment abroad to 0.4 percent of national net wealth in 1987. The net capital inflow was responding to the rise in the relative U.S. after-tax real rate of return experienced in the early 1980s.

The most variable component of the U.S. net asset position has been that of other private assets, which include financial instruments but exclude direct investment. During the 1980s private foreign acquisition of U.S. financial assets, particularly U.S. Treasury bills, has outpaced even the fairly rapid increase in private American holdings of foreign nondirect investment. A slowdown in private U.S. asset acquisition abroad between 1982 and 1984 further contributed to the decline in the net position. These private asset flows again reflect the increase in expected U.S. after-tax rates of return, as well as the relatively low risk associated with U.S. Treasury assets, including the reduced risk of U.S. inflation during the 1980s.

The figures presented in Chart 3-4 and above substantially underestimate the U.S. asset position relative to the foreign position. Because direct investment is valued at historical cost, the increased market value of older assets is not taken into account. American assets abroad are of a relatively older average vintage than foreign assets here, resulting in an estimate that undervalues the net U.S. asset position. Moreover, the current definition of the U.S. asset position counts official holdings of gold as claims on foreigners, but values the gold at the official price of \$42.22 per troy ounce. Revaluing official gold holdings of the United States in 1987 at \$400 per troy ounce reduces the apparent net debtor position of the United States by one-fourth. On the other hand, allowance for the reduced market value of U.S. holdings of the debts of troubled developing countries such as Brazil, Mexico, and Argentina tends to increase the U.S. net debtor position. In addition, if the bulk of the errors and omissions item in the U.S. capital account is assumed to reflect unrecorded capital inflows, then U.S. liabilities to foreigners are also understated. One recent estimate correcting for some of these measure-

ment deficiencies suggested that the United States continued to be a net creditor in 1987 by about \$50 billion.

An alternative indicator of the U.S. asset position abroad can be inferred from international earnings flows. Although quarterly earnings are not strictly related to the market value of the investments, and are affected by tax laws governing assessments on distributions, earnings may still provide a gauge of the market's valuation of the U.S. net asset position abroad. Chart 3-5 shows seasonally adjusted quarterly public and private earnings by the United States on foreign assets and by foreigners on assets in the United States during the 1980s. These series exhibit a good deal of quarter-to-quarter variation despite seasonal adjustment, reflecting changes in short-term interest rates, the exchange rates at which foreign earnings are repatriated into the United States, and taxes. Although the gap has been closing for several years, quarterly U.S. receipts exceeded U.S. payments on assets until the second quarter of 1988. In 1987, U.S. receipts of income on assets abroad exceeded U.S. payments of income on foreign assets in the United States by \$20.4 billion. By this measure the net asset position of the United States remained positive at least through the end of 1987. Such an inference does not take account of the differences in interest rates. American assets abroad tend to earn higher rates of return than foreign assets in the United States. This difference may reflect the greater relative riskiness of foreign assets, or it may reflect the higher realized returns that come with long-established capital investments. On the other hand, it may be an artifact attributable solely to comparing earnings with the artificially low historical-cost value of the assets.

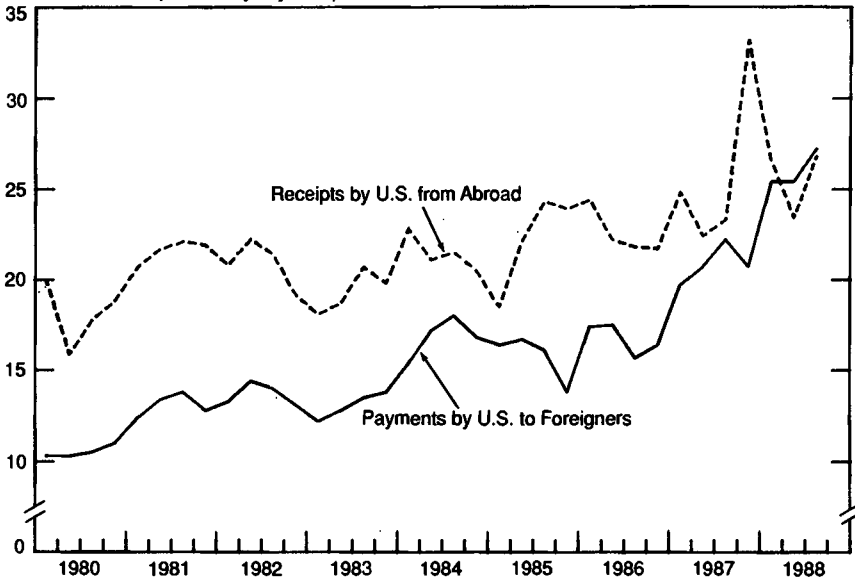
Regardless of whether the net U.S. asset position is still positive, the trend has certainly been for it to decline. The year 1982 marks a quickening in the pace at which foreign net lending to the United States, relative to wealth, increased. Since that year foreign non-official lending and direct investment to the United States have increased by 151 percent, while U.S. private lending and direct investment abroad increased by 44 percent. The largest percentage increases in foreign holdings of U.S. assets during the period were in Treasury securities and corporate and other bonds. During this period, after-tax real returns in the United States had increased relative to those abroad, attracting the large private capital inflow.

Foreign holdings of U.S. Government securities have increased substantially during the 1980s. Interest payments made to foreigners by the U.S. Government are currently 2.6 percent of government expenditures, and amount to 18.7 percent of net U.S. Government interest payments. The inflow of foreign funds for which these interest payments serve as compensation is beneficial in several ways. It helps

Chart 3-5

Asset Earnings Flows

Billions of dollars (seasonally adjusted)



Source: Department of Commerce.

to keep U.S. interest rates close to world levels. It frees up the capital of U.S. citizens for other purposes. To the extent that the capital has been invested productively rather than consumed, the increase in expected future income attributable to that investment can be expected to compensate for the interest payments due to the foreigners who helped finance it.

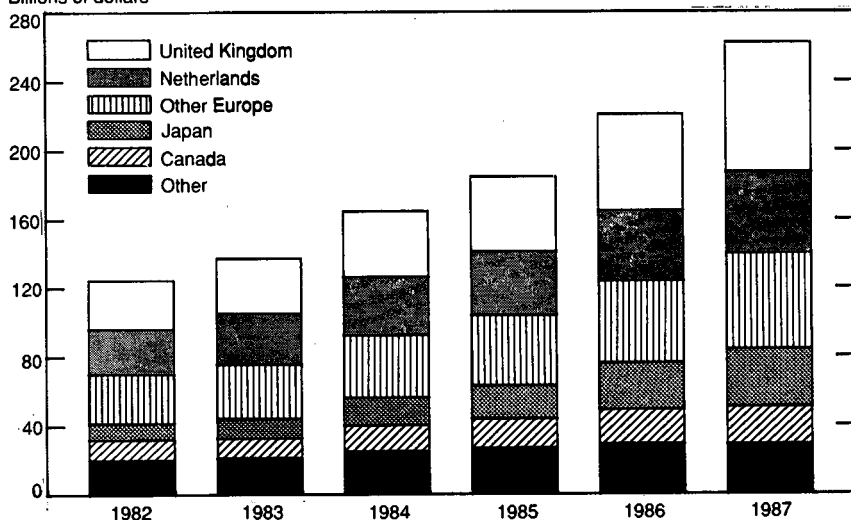
Although the majority of the increase in net foreign claims on the United States has been in financial assets, foreign direct investment in the United States has also increased in the 1980s. Chart 3-6 breaks down the foreign direct investment position in the United States since 1982 by nationality. Direct investment by the United Kingdom represents the largest component of foreign ownership in the United States, averaging 25 percent of total foreign direct investment since 1982. The Netherlands, at 20 percent, is the next largest single investor. Other European direct investment averaged 22 percent. Japanese direct investment constituted 11 percent, growing from 8 percent in 1982 to 13 percent in 1987. Canadian and other direct investment make up the remainder.

Free international trade in assets, including direct investment, benefits both buyers and sellers. At the same time, there is some concern about the impact of foreign direct investment on national security. The Exon-Florio provision of the Omnibus Trade and Competitiveness Act of 1988 empowers the President to investigate and block foreign direct investment for reasons of national security. This provision is a step toward meeting those concerns, while allowing the United States to maintain an open investment policy.

Chart 3-6

Foreign Direct Investment Position in the United States

Billions of dollars



Source: Department of Commerce.

As a net debtor to the rest of the world, the United States has certain obligations. In order to service the debt in the future, the Nation must make appropriate use of the resources today. By continuing to use the loan proceeds to engage in productive investment, the United States can service the future debt without reducing consumption growth.

Because the debt of the United States is denominated in U.S. dollars, inflation in the United States would have the short-run effect of reducing the real value to foreigners of their long-term debt instruments. Such an inflation would reduce the role of the dollar as a principal world currency if foreigners became hesitant to denominate debt and goods contracts in dollars. Since 1982, when the current increase in net lending to the United States started, U.S. inflation has

remained under control. Nevertheless, some increase in the international roles of other currencies has occurred.

Table 3-2 compares the roles of various currencies in the denomination of international bond issues. Although the role of the U.S. dollar as an international currency is no longer the formal one assigned to it at Bretton Woods, widespread use of the dollar has continued under flexible exchange rates. Since 1983, however, the share of the U.S. dollar in the denomination of internationally traded financial assets has decreased by 44.3 percent, while the shares of the Japanese yen and other currencies have increased substantially. Some of those increases parallel the greater share of lending by nations whose increased growth and financial liberalizations have enabled their participation in world credit markets to soar. As nations such as Japan have opened their capital markets, in part at the urging of the current Administration, their currencies have come to play a larger role in the denomination of international loans and goods payments. Some of the increase may be a response to international market concerns about the U.S. response to the temptation to incur an inflation, thus reducing the real value of the debt service on outstanding debt. The United States welcomes the increased participation of other nations in the world's credit markets. Open international credit markets benefit the citizens of all countries. At the same time, the United States continues to offer credible assurances of its ability and intention fully to repay its real debt through monetary restraint and domestic investment incentives. By reducing inflation until price stability is restored, and continuing its policies of promoting domestic growth, the United States will ensure the continued use of the dollar throughout the world as a means of payment, a unit of account, and a store of value.

TABLE 3-2.—*Currency Denomination of International Bond Issues, 1983-88*

[Percent distribution]

Year	United States	Japan	West Germany	Other
1983	78.3	0.5	8.1	13.2
1984	80.0	1.5	5.3	13.3
1985	70.9	4.8	7.0	17.2
1986	62.9	9.9	9.1	18.1
1987	41.3	16.1	10.7	31.9
1988: First 3 quarters	43.6	9.0	12.9	34.6

Note.—Data are shares of total new issues of international debt. Shares may not sum to 100 percent due to rounding.
Source: Organization for Economic Cooperation and Development.

THE DEBT OF DEVELOPING NATIONS

Compared with the manageable debts of developed nations, the external debts of developing nations reached unprecedented levels during the late 1970s and early 1980s. Between 1980 and 1982 the average external debt of developing countries reporting their loans to the World Bank grew from 28 percent to 36 percent of GDP. Although the pace of new lending has diminished since 1982, stagnating real GDP and investment in many of those countries further increased average external debt to 48 percent of GDP by 1986.

Although no generally accepted economic criteria exist for the maximum sustainable level of debt a country can bear, the experience with developing nations during the late 1970s and early 1980s has been alarming to their creditors. Only the regions of South and East Asia (including the Pacific) continue to have external debt-to-GDP ratios within the range experienced recently by developed countries. The ratios for the African nations south of the Sahara soared to an average of 70 percent in 1986. The average debt of the Latin American and Caribbean countries has hovered around 60 percent of GDP since 1983, with some individual countries reaching levels higher than 100 percent. Each increase in debt requires a permanent increase in the net exports of the indebted country in order to service that higher debt. Nevertheless, during the 1980s the exports of many of these countries as well as their investment have slowed, although the exports of some highly indebted countries have improved since 1986.

Beginning with Mexico in 1982, many indebted developing nations have interrupted servicing portions of their debt, in some cases unilaterally declaring moratoriums on both principal and interest payments. Official lenders such as the members of the Paris Club and various consortia of commercial banks have increasingly devoted resources to renegotiating and rescheduling existing private and official bilateral debts. International institutions such as the IMF and the World Bank have played a leading role in assisting these renegotiations. Almost one-third of the estimated \$1.2 trillion worth of total debt owed by developing countries in 1987 was subject to renegotiation between January 1980 and September 1987. Fifty nations, representing one-half of the developing countries reporting their loans to the World Bank, were involved in these renegotiations. Proposals for debt relief continue to be presented, despite negotiated reductions in debt servicing, new loans and investments, and somewhat improved economic conditions in many of these countries.

The causes of these debt problems, the implications for the United States and other lenders, and the solutions vary by debtor country.

Nevertheless, some common features and lessons can be observed, beginning with the meaning of the debt figures, then the causes, and finally the proposed solutions.

The debt totals of developing nations are not directly comparable with the net international asset positions of developed countries. The debt totals of developing nations exclude net foreign direct investment, which in some developing countries has been substantial. On the other hand, the debt figures also do not include the assets of the developing countries held abroad. In many cases, capital and exchange controls imposed by these countries limit the ability of their citizens to buy foreign assets, suggesting that the net external liability position is well approximated by gross external debt. However, capital controls do not prevent and may encourage capital flight. Although by definition flight capital is not an available asset of the country (for example, its earnings cannot be reached for tax purposes by the country of origin), it does have the potential for repatriation should economic conditions at home improve, because citizens of the country control it. Recent estimates of the flight capital of seven highly indebted countries suggest that it may represent one-third of their total external debt, and may be substantially higher for some individual countries. Nevertheless, even though the external debt figures for developing countries are not perfectly comparable with the net external debt statistics available for developed nations, they are likely to be broadly suggestive of their current position.

The debt of developing nations can be broken into short-term, long-term unguaranteed, and long-term guaranteed debt. Based on IMF estimates, long-term debt guaranteed by the debtor countries accounted for 75 percent of total developing-country debt in 1987. Private creditors held about one-half of that debt. International agencies and governments held the remainder of the long-term publicly guaranteed debt. International agencies customarily retain seniority over private creditors in the servicing of debt. The resources that contributing countries provide to international agencies have been increased as the agencies increased their responsibilities in addressing the debt problems. The United States recently supported a \$74.8 billion general capital increase for the World Bank to enable it to support reforms and strengthen its role.

Although many highly indebted countries continue to be good credit risks, maintaining scheduled principal and interest payments and occasionally even prepaying, the 1980s have witnessed a large number of reschedulings. Many debtor nations have also fallen into arrears on commercial bank loans. Renegotiations have often been preceded by brief moratoriums on the payment of principal and, in the past few years, interest on the debts of some countries.

Although the causes for these troubling events vary by country, some themes stand out. First, the low or negative real interest rates of the 1970s increased borrowing, while the high real interest rates of the early 1980s suddenly raised the cost of servicing the outstanding debt. Some of the effect of the rise in cost was mitigated by the portion of the debt that had been negotiated at the lower fixed rates of the earlier period, notably World Bank loans. However, most of the loans were at premiums over the floating London Interbank Offered Rate (LIBOR), the benchmark on many short-term interbank loans. While the average interest rate on new commitments of official loans went from 5.2 percent in 1975 to 7.5 percent in 1982, the average market interest rate on new private commitments went from 8.6 percent in 1975 to 12.3 percent. Because much of the debt was denominated in U.S. dollars, unexpectedly high levels of real debt service resulted from the high real interest rates and strong dollar that accompanied the reduction in U.S. inflation during the early 1980s and the higher expected after-tax real rates of return brought on by the Economic Recovery Tax Act of 1981.

Second, the effects of the higher real interest rates of the early 1980s were exacerbated by the collapse of the prices of many commodities such as copper and oil, on which particular developing countries had relied for export revenue. In some cases recoveries in these prices have contributed to improvements in the solvency of these countries—notably, copper prices for Chile. In other cases, such as oil, prices have fallen even further. As long as some countries depend heavily on a small number of commodities for their exports, such high variance in earnings must be anticipated.

A third common cause of debt problems has been the use to which the loan proceeds were put in some countries. In some cases, poor investment projects simply failed to pay off. Some of these projects such as the building of minor roads had low expected payoffs at the time the investment was undertaken. Others were initially promising projects that ultimately never yielded the expected return. In many countries consumption rather than investment was the destination of the funds. This outcome in itself need not signal trouble, especially for a nation with promising prospects. When investment is insufficient to cover the loan repayments, however, consumption eats into wealth. The tendency of troubled debtors to reduce investment more than consumption as a response to maintaining repayment schedules has been an additional complication of the 1980s. This response compounds the problem, making future repayments increasingly difficult. In some cases, too, outright fraud and corruption may have waylaid funds meant for productive purposes.

Finally, a fourth cause of the debt problem was the further deterioration of economic conditions within these countries. Barriers to trade and to financial transactions, price controls and fixed exchange rates coupled with high domestic inflation rates, high marginal tax rates, and the nationalization of private industry handicapped these countries as they entered the difficult passage of the 1980s. In many instances, these distorting disincentives were increased rather than reduced as a response to the economic downturns. Capital flight often resulted. The very capital needed by these countries to invest in more promising industries, rebuild, and repay the debts moved quickly out of the countries as the governments—through inept policies and threatened confiscation—reduced the incentives to keep wealth at home. Policies that entice this capital to be repatriated can help the countries achieve domestic economic recovery as well as return to timely debt servicing.

Despite the difficulties, some countries have achieved a degree of success in coping with their problems. South Korea, Mexico, and Chile have all improved their debt standings. For Chile, the improvement accompanied sweeping deregulation of domestic markets and a consistent inflation-fighting stance, leading to rapid and sustainable economic growth and renewed domestic investment. Based on its successful performance, Chile's creditors unanimously agreed to a partial waiver of the prohibition against buying back its outstanding debt, permitting it to use copper earnings in excess of a threshold value to repurchase and thus extinguish some of its debt. On the other hand, countries that tried to raise tax revenue via inflation have generally fared among the worst, creating the greatest amounts of capital flight, incurring repeated currency devaluations, and in extreme cases, inducing their own recessions in attempts to cure their monetary excesses.

Progress in the form of increased gross domestic product and increased export earnings has been initiated on average in the 15 major debtor countries targeted by the Baker Initiative of 1985, of which Chile is one example. The Baker plan strengthened and extended many of the existing proposals for dealing with the debt problems of the developing nations. It emphasized four essential and mutually reinforcing elements: first, the importance of achieving sustained economic growth; second, the need for market-oriented reforms in order to achieve such growth; third, new debt and equity financing as well as the return of flight capital to help support such reforms; and fourth, a case-by-case approach to address the individual needs of each country.

A key feature of the plan was to highlight the need for reform within the debtor countries, particularly reform in areas that will con-

tribute to renewed investment and output growth so that the net exports of these countries can be sufficient to service their debt obligations. Trade and financial market liberalization, privatization, deregulation, increased reliance on market prices including exchange rates, and fiscal balance can help these countries recuperate and return as reliable participants in world credit markets. For countries at the lowest levels of income that undertake appropriate economic reforms, initiatives have been put into place to provide substantially increased concessional financing.

The Baker plan continued the emphasis on the need for voluntary negotiations that leave room for individual responses to the wide variety of problems arising in a particular developing country. There can be no grand solution, because each country has its own constraints and opportunities. Each creditor, and each borrowing nation, must be free to negotiate acceptable terms. This approach encourages a variety of debt conversion techniques and innovative responses to the evolving debt climate.

While the long-run solution to the debt problem must be directed at regenerating investment opportunity within these countries, short-run solutions must include either reschedulings or other types of negotiated adjustment. Reschedulings basically extend the maturity of the debt. The advantage is that the annual principal and interest payments are reduced, helping a country through a temporary downturn without having to reduce domestic spending further. The cost is that the debt increases and additional interest must be paid in the future on the portion of the principal that is rolled over. Nevertheless, for many countries this step has been useful.

Some types of negotiated adjustment reduce the creditor's exposure without affecting the obligations of the borrower. The lending banks are currently able to sell their debt in a secondary market. Doing so imposes severe costs on the bank. Typically, the discount in the secondary market is substantial. Following the sale, the bank must adjust its balance sheet to take account of any previously unrecorded difference between market and book value. Another alternative is swapping the debt for equity equal in value to some measure of the market value. Debt-equity swaps can sometimes benefit all parties. Because the debtor nation stands to gain by reducing its interest payments, the value of the equity offered often exceeds the secondary market price. Part of the debt and the need to service it is wiped out for the debtor country, although it is replaced by dividend payments to be made.

Under a debt-equity swap, capital is left in the debtor country and a working relationship remains between the investor and the nation. Direct foreign investment contributes to improved foreign expertise

and increases competition and market efficiency. Some risks are entailed for the creditors. For example, the creditor must now learn about business conditions and laws in these foreign countries, a risk that is fairly substantial and is outside the usual province of banking expertise. In order to entice banks and other lenders into such swaps, a country must offer assurances minimizing the risks of nationalization, of denial of the right to repatriate the dividends, or of imposing exchange controls. Perhaps as a consequence of these risks, most of the debt-equity swaps have been in the secondary markets involving private investors rather than banks' involvement for their own portfolios. In some cases, country risks associated with direct investments qualify for U.S. Government guarantees under the Overseas Private Investment Corporation or the investments can be insured by the private sector. Correct assessment of these risks for the purpose of providing insurance is difficult but essential if the risks are to be allocated in an appropriate and unsubsidized manner.

Many countries face internal opposition to debt-equity swaps based partly on nationalistic fears about foreign control of capital, and subject the swaps to severe restrictions. There is also concern that the capital inflow at the time of the exchange will raise money growth and inflation, although this problem can be prevented by appropriate central bank action. Despite these objections, countries have found debt-equity swaps helpful. Debt-equity swaps have accounted for \$10 billion to \$12 billion in debt reduction, or almost one-half of the total debt reduction accomplished since 1982, and have been carried out successfully in Bolivia, Brazil, Chile, Mexico, the Philippines, and other countries.

In some cases debt reduction has been accomplished through debt buybacks where either the private or public sector repurchases the outstanding debt at a discount. This method has been successful in Brazil, Bolivia, Chile, and Mexico. A promising innovation is the opportunity to swap debt for bonds, an approach tried recently in Mexico. Perhaps because the bonds were not sufficiently more appealing in marketability, interest security, or price to the banks than the debt, only a small fraction of the outstanding debt was exchanged. Nevertheless, experimentation with swaps and buybacks holds the promise of finding arrangements attractive to both borrowers and lenders.

Grand schemes that attempt to encompass all of the individual debtor-country problems with a single proposed solution should be rejected. Circumstances differ across countries. Furthermore, proposals offering to transfer part of the debt to taxpayer-supported facilities may discourage countries from making the painful adjustments required to bring greater efficiency to their economies.

A fine line separates providing the proper environment for successfully resolving the debt problems and offering assistance that may ultimately compound the problem. Attention must be paid to the incentives and disincentives that any particular plan creates. The offer of official guarantees or an official program offering non-country-specific relief creates free rider and moral hazard problems, if some countries are tempted to declare insolvency in order to qualify for the aid. Confronted with an official program to provide relief, a borrowing country has an incentive to act in ways that reduce the market value of its debt in order to qualify for aid.

As long as the choice of whether and how to renegotiate the debt remains privately and individually determined, the market's traditional threat to limit further lending to recalcitrant debtors reduces these disincentives. Many banks have now recognized that the market value of the debt is less than its face value. Commercial banks are increasingly moving to reduce their developing-country exposure through a variety of techniques, including decisions to swap debt for equity, debtor bonds, or other local claims at market or negotiated prices. There have been several proposals to increase the incentives for debtors and creditors to negotiate such voluntary transactions. There is a danger, however, that many of these proposals would involve either additional official financing or a shift in risk from the private to the public sector. To avoid this result, debtors and creditors should be encouraged to pursue voluntary, market-based solutions to debt problems. To support these efforts, debtor countries must establish stable economic conditions compatible with the return of flight capital and sustainable growth. By privatizing state industries and liberalizing restrictions on domestic markets and international trade, as envisioned in the Baker Initiative, these countries can create an economic environment that is conducive to long-term growth and solvency.

International financial institutions may risk increasing their exposure in order to sustain full service of outstanding debt. Such increases of exposure could pose fundamental problems for the long-term viability of these institutions. It is important, therefore, to review the role of the IMF and World Bank in the debt strategy and their relationship to commercial bank financing packages.

International agencies and lending governments have played a constructive role in preventing the debt problem from degenerating into a crisis. They have offered a route for continued debt renegotiation and have encouraged economic reform. They have often sought to ensure adequate financing that, combined with commercial bank and Paris Club reschedulings, would meet debtors' financing needs, while leaving specific elements of financing packages and any debt-reduc-

tion techniques to be negotiated between the debtor nations and commercial banks. International agencies should continue to encourage reforms that increase market incentives and reduce government subsidies and deficits.

The chief aim of the United States and international agencies, should be to continue maximizing debtor nations' prospects for lasting economic reforms and sustainable growth. This objective is advanced by conditionality which ties new lending to programs that foster productive investment, growth, and market freedom. Under current policy, there is room for debtors and creditors to reach market-oriented agreements to reduce the value of the outstanding debt. If these negotiations proceed more actively, international agencies could continue the policy of making new loans conditional on reforms, leaving negotiations between debtors and private creditors to determine changes in the value of outstanding debt and the associated debt service. More resources could then be available to encourage domestic reform and increase the share of borrowing from international organizations used for productive investment; this change would heighten debtors' incentives to achieve economic reforms. Voluntary agreements leading to debt reduction would, if successful, lower the amount of debt service that the debtor economies would be required to support.

The demise of the Bretton Woods system and the rapid liberalization and accessibility of international financial markets have altered the roles of the IMF and the World Bank in a more general sense. The original function of the IMF was to maintain a system of fixed exchange rates by providing short-term loans of international reserves to ease temporary payments imbalances. This function was diminished as the major industrial countries adopted flexible exchange rates and were able to meet their financing needs from private markets. Similarly, the World Bank's original commission to provide credit to developing countries for investment in projects such as infrastructure was aided by the increased access these countries obtained to financing from private markets. Over time, both private and government credit expanded, and by the early 1980s many countries were deeply in debt. What began as an effort to increase insufficient market lending ended in a crisis exactly the opposite in character. Many countries borrowed to such an extent that they now face difficulty servicing their extensive debts.

At the urging of the United States and others, the IMF and the World Bank have undertaken increased responsibility to assist debtor countries in dealing with their debt problems. The IMF and the World Bank have increased their financing activities in support of economic reform efforts by developing countries that are having dif-

ficulty repaying their extensive debts. They are also playing a more active role in debt renegotiations between developing nations and their private and official creditors. This change in mission, however, has blurred the traditional distinction between the two institutions and has raised fundamental issues regarding their purposes and operations in today's world economy. These issues require careful consideration. The roles of official international organizations in a world of flexible exchange rates and integrated and efficient capital markets should be appropriately reevaluated and redefined.

CONCLUSION

The postwar period witnessed an unprecedented transformation of world financial markets. In the early 1970s the regime of pegged but adjustable exchange rates devised in 1944 at Bretton Woods proved unable to withstand the diversity of independent sovereign policies that had evolved. The regime gave way to the system of flexible exchange rates now in use. That system proved able to accommodate differing domestic monetary and fiscal policies during the 1970s, significant shifts in international capital flows, and increased international coordination of inflation-fighting, incentive-based policies during the 1980s.

A multinational system of fluctuating exchange rates was a new experience for the world. Wide swings in the value of the dollar during the 1970s and 1980s reflected underlying changes in worldwide domestic policies and events, including changes in relative inflation, marginal tax rates, expected real after-tax rates of return, and productivity. Moreover, the advent of the system of flexible exchange rates accompanied rapid growth in the volume of financial assets and the development and liberalization of financial markets in many parts of the world. New instruments and new procedures developed. It is not surprising that some time passed before central banks and governments learned to operate effectively to control inflation.

The current system of flexible exchange rates permits countries to achieve desired rates of inflation. In the 1980s many countries have embarked on policies to lower inflation, and they have succeeded much better than in the past. Countries acting alone must choose between price and exchange-rate stability. By choosing compatible policies, countries can achieve the goals of price stability and sustainable output growth and can thereby reach the additional goal of increased exchange-rate stability.

By focusing on long-term growth, price stability, and open trade, the United States has been able to achieve the longest peacetime expansion in its history. The United States has simultaneously encouraged the rest of the developed and developing world in its renewed regard for the incentive-based, free-market policies that have enabled the United States to achieve this goal. The continuation of these policies can lead to the economic prosperity that is the common goal not only of the United States but of all nations of the world.

CHAPTER 4

World Trade and Economic Growth

AS WORLD WAR II DREW TO AN END, much of the industrial world lay in ruins. Hunger and despair, not hope, prevailed in war-torn Europe and Asia. Political events—first in Eastern Europe, later in Asia—threatened the stability and freedom of nations on those great continents. The United States emerged from the war stronger, and more productive, than ever before. At this critical juncture in world history, the United States had a choice: to return to an isolationist, protectionist policy, as it had in the interwar period, or to assume the mantle of leadership that lay open to it. If it chose the latter route, it would have to decide what kind of postwar world to foster—one that guaranteed its own prosperity and security, while seeking to maintain weaker countries as political and economic inferiors, or one that offered all nations the prospect for prosperity and freedom enjoyed in the United States.

In looking back upon the past four decades, it is clear that the United States discharged its leadership responsibilities by helping to construct a world that offered hope, freedom, and the chance for prosperity for all who sought it. The cornerstone of U.S. policy was a vision of a world united, not divided; one in which the nations of the world were free to exchange their goods, and their ideas, for the betterment of all. Rather than trying to subjugate Europe and Japan economically, the United States sent massive foreign aid to rebuild their economies. And rather than attempting to perpetuate historical divisions within Europe in order to maintain its superiority, America dispensed the aid in a way that fostered cooperation among those countries, so that mutual economic and political cooperation would replace the hostilities of the past. Today, Europe stands on the brink of economic union, and the Organization for European Economic Cooperation formed to coordinate the distribution of American aid in Europe has evolved into one—the Organization for Economic Cooperation and Development—that includes the world's great industrial democracies.

American policymakers also recognized that trade, as well as aid, was an indispensable ingredient in postwar reconstruction. Thus, the General Agreement on Tariffs and Trade (GATT), which celebrated

its 40th anniversary this past year, was formed to reduce trade barriers that had been elevated in the interwar period. These barriers, notably the Smoot-Hawley tariff, were intended to protect American jobs and prosperity, but had instead lowered world trade and incomes. The principles of open and fair trade laid down in the GATT recognized that opening U.S. markets to foster reconstruction abroad would also create jobs and prosperity at home.

Today, the fruits of this policy are apparent. The growth rates of the industrialized countries during these past 40 years are virtually without parallel. Yet some see this phenomenal success as a cause for concern. Despite enormous increases in productivity and living standards in the United States, they see the narrowed gap between living standards here and abroad as a threat, rather than as the successful culmination of American policy. They cry that the Nation must protect American jobs and American industry; that it must close its borders, thereby frustrating the aspirations of developing countries today, as well as imposing enormous costs upon its own populace. As this chapter reviews the past 40 years of trade policy, it is important to recall the devastating experience of the 1930s—a time of isolationism—as well as the remarkable explosion in economic prosperity that accompanied the openness of the postwar period. It is also crucial to recognize those aspects of the international trading system, and of GATT in particular, that can be improved upon, for these issues will constitute the agenda for the future. The Nation's goal should not be to close markets at home, but rather to continue to open markets throughout the world.

ECONOMIC GROWTH AND TRADE IN THE POSTWAR WORLD

The end of World War II left a changed political and economic map. While the United States emerged from the war greatly strengthened, the economic output and industrial capacity of many of the combatants had been sharply reduced. Economic output in 1946 was well below its pre-war (1939) level in France, Italy, West Germany, and Japan. As late as 1950, output in West Germany and Japan had not returned to pre-war levels. By contrast, U.S. output in 1950 was two-thirds larger than the pre-war level, having grown on average nearly 4.8 percent per year.

From this inauspicious beginning, the rest of the industrial world soon joined the United States in experiencing rapid economic growth. Average world output over the period 1950–86 grew at an average rate of more than 4.2 percent, nearly doubling the 2.2 percent growth rate over the period 1870–1950. Even during the eco-

conomic expansion from 1870–1913, output had grown at an average rate of only 2.5 percent.

While Japan, West Germany, Italy, and France offer the most dramatic examples of this phenomenon, every major industrial country, with the sole exception of the United States, experienced faster growth in the postwar period than in the period 1870–1913 (Table 4–1). When viewed in terms of output per man-hour—a measure of productivity—the superior postwar performance is even more striking. Average productivity in the major industrial countries grew at almost 3.8 percent during the postwar period, as compared with 1.7 percent from 1870–1913. Not only was productivity growth generally higher in the postwar period than earlier, but also in many countries the growth rate more than doubled, and in Japan and Italy it more than tripled the rate in the 1870–1913 period.

Accompanying this rapid economic growth was an even more rapid increase in trade flows between countries. As can be seen from Table 4–1, exports grew quickly during the periods 1870–1913 and 1950–87, while they were relatively stagnant from the onset of World War I to 1950. Furthermore, trade has expanded more rapidly in the postwar period than in the earlier period of economic growth. The growth in world trade is attributable to a number of factors, including dramatic declines in tariff barriers throughout the industrial world and the reduction of internal barriers in Europe with the formation of the European Community (EC)—a development promoted by the United States. The expansion in trade is most notable for those countries that grew most rapidly—Japan, West Germany, Italy, and France. For the period from 1957—when the EC was formed—to 1970—by which time all internal tariffs had been eliminated—export volumes for France and West Germany increased by more than 230 percent each, while Italian exports grew by more than 425 percent. During this same period, exports from the United Kingdom, which did not join the EC until 1973, increased by only 67 percent. The comparable movements in gross domestic product (GDP) are also indicative, with output levels in France, Italy, and West Germany roughly doubling, but output in the United Kingdom increasing by only 45 percent.

The postwar expansion was not confined to industrialized countries. Some countries that were impoverished at the start of this period made remarkable strides toward joining the ranks of the industrialized world. Between 1965 and 1985 developing economies as a whole grew at an average rate of more than 5 percent. Among the most successful economic performers were Singapore, Hong Kong, and South Korea. Singapore and South Korea grew at annual rates of

TABLE 4-1.—*Output and Export Growth, 1870-1987*

[Average annual percent change]

Item and year	United States	Japan	West Germany ¹	France	United Kingdom	Italy	Canada
Real GDP:							
1870 to 1913.....	4.1	2.5	2.8	1.7	1.9	1.5	3.8
1913 to 1950.....	2.8	1.8	1.3	1.0	1.3	1.4	2.9
1950 to 1987.....	3.2	7.5	4.4	4.0	2.5	4.3	4.4
Real GDP per man-hour:							
1870 to 1913.....	2.0	1.8	1.9	1.8	1.2	1.2	2.0
1913 to 1950.....	2.6	1.3	1.1	2.0	1.6	1.8	2.3
1950 to 1987.....	2.0	6.2	4.7	4.1	2.7	4.4	2.3
Real exports:							
1870 to 1913.....	4.9	8.5	4.1	2.8	2.8	2.2	4.1
1913 to 1950.....	2.2	2.0	-2.8	1.1	0	6	3.1
1950 to 1987.....	5.2	12.4	9.3	6.5	3.8	9.0	6.1

¹ Pre-war estimates for West Germany are adjusted for territorial change.Sources: A. Maddison, *Phases of Capitalist Development*, Organization for Economic Cooperation and Development, and Council of Economic Advisers.

more than 9 percent, while Hong Kong's annual growth rate was nearly 8 percent.

As in Europe, rapid expansion of exports accompanied fast overall growth in developing countries. Studies show that for the period 1963-85 real gross national product (GNP) per capita grew at more than 6 percent, and manufactured exports grew at more than 14 percent, for developing economies with a strong outward, trade-promoting orientation, while for the same period countries characterized as strongly inward-oriented and favoring self-sufficiency had real GNP per capita growth rates averaging 1 percent and manufactured export growth rates under 5 percent. Successful export-led growth in many developing countries could not have occurred without the liberalization of industrial country markets in the postwar period. Yet the greater successes have occurred in developing countries that have also opened their own markets to imports. Singapore and Hong Kong probably have the world's most liberal trade regimes. Although it still has much room for progress, South Korea initiated major trade liberalization efforts in the 1960s and again more recently.

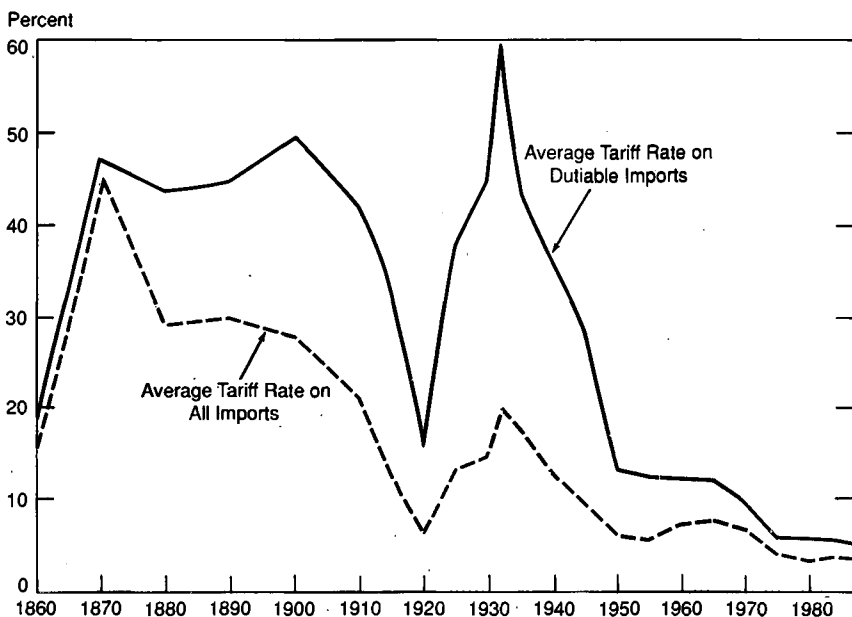
TARIFF LIBERALIZATION IN THE POSTWAR PERIOD

Today, U.S. tariffs are the lowest in history, with average tariff rates on all imports under 4 percent. This dramatic reduction in tariffs represents the progress achieved by steady efforts over the past 50 years to lower tariff barriers, both at home and among U.S. trading partners. The United States had not always been at the forefront of tariff liberalization, however. In the 19th and early 20th centuries, the United States had a far more protectionist trade regime than did

much of Europe. While the United Kingdom had pursued a policy of essentially free trade prior to World War I, the United States had consistently maintained high tariffs. From the end of the Civil War to 1900, U.S. tariff rates averaged nearly 30 percent on all imports, and more than 40 percent on dutiable imports, i.e., those imports subject to tariffs (Chart 4-1).

Chart 4-1

U.S. Tariff Rates, 1860-1987



Source: Department of Commerce.

The early 1900s saw several reversals in U.S. tariff policy. The Underwood Tariff of 1913 reduced tariff rates substantially, to an average of under 13 percent on all imports by 1915. But setbacks occurred following World War I, as the United States resumed a posture of political and economic isolationism. The Congress refused to approve U.S. membership in the League of Nations, and the Fordney-McCumber Tariff of 1922 brought the average tariff rate on goods subject to duties back up to nearly 45 percent by 1930. The economic downturn sparked by the 1929 stock market crash prompted the Congress to go even further, and the Smoot-Hawley tariff it passed in 1930 established the highest tariff rates in U.S. history. By 1932 the tariff rate on dutiable imports averaged nearly 60 percent. The combination of high tariffs and the ensuing depression led to a

sharp decline in imports: between 1930 and 1934 the dollar value of U.S. imports fell by nearly 50 percent. But the intended goal of protecting American jobs proved elusive. Exports shrank as U.S. trading partners mounted retaliatory tariffs, and the economy continued to deteriorate.

The passage of the Reciprocal Trade Agreements Act of 1934 marked the beginning of the U.S. tariff reduction policy that has endured to the present. Using the authority to negotiate reciprocal tariff reductions on nonagricultural goods by up to 50 percent of their Smoot-Hawley levels, the United States had entered into more than 20 bilateral agreements by the beginning of World War II. This approach brought average tariff rates back down to 35 percent of dutiable imports (and 12.5 percent of all imports) by 1940. The turnaround in trade flows, aided by the economic recovery, was dramatic: from 1934 to 1939 U.S. imports and exports increased by 40 to 50 percent.

Although the trade negotiations conducted at this time were on a bilateral basis, they already embodied a principle of nondiscrimination central to the multilateral approach the United States would promote after the war. Tariff reductions were applied not only to negotiating parties but to other trading partners as well, on a most-favored-nation basis. The scope of the pre-war liberalization exercise was limited, however, as major trading nations such as Japan and many in Europe chose not to participate. The outbreak of World War II interrupted U.S. efforts toward freer trade.

U.S. POSTWAR OBJECTIVES

The United States emerged from World War II as the world's dominant military and economic power. Yet Soviet expansionism in Eastern Europe, and civil war in China, threatened global stability. Recognizing that political stability required economic prosperity, the United States adopted a policy of promoting rapid economic growth abroad. The three pillars of this policy were: a stable international monetary system to finance international transactions; an open trading system to foster global economic growth and cooperation; and economic aid to help speed postwar reconstruction. This chapter focuses on the trade component of American policy.

The economic principles that govern trade among nations are essentially the same as those that govern trade among regions of a single nation, or among individuals. Just as individuals, or States within the United States, improve their standard of living by specializing in those tasks they perform best and exchanging these products for goods produced by other individuals or States, so do nations gain from international specialization and trade. Likewise, international

flows of investment, and the managerial and scientific know-how that accompany these investments, bring gains to all parties. The remarkable prosperity the United States enjoys today is, in large measure, attributable to the wisdom the Founding Fathers displayed 200 years ago when they made constitutional provision for the unrestricted flows of goods, capital, and people across State boundaries.

The gains from free international trade in goods and services are likely to extend beyond the economic sphere. Prior to the adoption of the Constitution, trade wars and other disputes were common among the original States. A contemporary observer remarked: "As to the future grandeur of America...it is one of the idlest and most visionary notions that ever was conceived...[The] clashing interests of the Americans...indicate that they will have no...common interest...a disunited people...suspicious and distrustful of each other, they will be divided into little commonwealths or principalities, according to natural boundaries...." Just as the economic union created by the Constitution led to a politically cohesive Nation, so can freer trade among nations lead to increased international political cooperation.

Embracing a policy of free trade does not imply that governments have no role in regulating international commerce. As with domestic commerce, government policy must ensure a stable economic environment, open competition, free trade, enforcement of contractual rights, and protection of intangible and tangible private capital. Governments that make unpredictable or frequent changes in tariffs or other restrictions on trade are likely to disrupt economic activity. Countries' failures to protect foreign investment or intellectual property rights reduce the returns to investment or innovation, decrease investment, and restrict the international flow of capital and ideas. Trade liberalization in one country generally benefits its trading partners as well as the country undertaking liberalization. International coordination raises the possibilities for additional liberalization efforts and the consequent gains from expanding trade. Thus, creation of a proper international trading environment requires active cooperation among nations to make and enforce the rules of the game. Recognizing the economic and political benefits of broad international participation in trade liberalization, the United States made a multilateral approach the cornerstone of its postwar trade policy.

TARIFF REDUCTIONS IN A MULTILATERAL FRAMEWORK: GATT

As the war drew to a close in 1945, the Congress authorized the executive branch to seek tariff reductions of up to 50 percent of rates prevailing at the beginning of that year. The United States worked to establish a multilateral framework for negotiations. Under U.S. leadership, an international conference was convened in 1947 to establish

an International Trade Organization (ITO) that would ratify the principles of free trade and create rules for enforcing these principles. American calls for talks to reduce tariffs immediately led 23 countries to participate in tariff-reduction negotiations in Geneva later that year.

For a variety of reasons, the European nations resisted American pressure for a rapid transition to free trade. These countries felt that their economies were too weak to compete in open markets, and generally favored more interventionist economic policies than did the United States. In addition, some wished to maintain the preferential trading arrangements they had with their colonies and other countries, and hence strongly resisted U.S. pressure for a comprehensive most-favored-nation principle.

Nevertheless, the talks in Geneva resulted in important achievements, both in the reduction of tariffs and in the establishment of general trading guidelines, which were drawn up as the General Agreement on Tariffs and Trade. Although the International Trade Organization was to have superseded GATT, the Congress failed to approve it and it never came into being. Thus, GATT emerged as the major forum for conducting international trade negotiations and supervising the implementation of their results. The next section reviews the principles guiding trade policy under GATT, the extent of GATT's achievements in tariff liberalization, and its remaining weaknesses in this and other areas of trade policy.

GATT Principles

The principles on which GATT was founded are the essential features of an open trading system. The GATT's aim of trade liberalization was to be achieved on a nondiscriminatory basis (that is, following the most-favored-nation or MFN principle); trade policy was to be transparent (hence favoring tariffs over quantitative restrictions whose effects on prices are less clear); tariff reductions negotiated under GATT, or "concessions" in GATT parlance, were "bound" so as not to increase above specified levels and were not to be replaced by other trade barriers ("integrity of concessions"); GATT members were to provide "national treatment" to each others' imports in matters of internal taxation and regulation; and nations were to follow an orderly process of dispute settlement, abiding by the internationally agreed upon rules and procedures, rather than engaging in unilateral retaliatory measures that might lead to escalating trade wars.

Tariff Reductions under GATT

In retrospect, GATT has had remarkable success in reducing, and in many cases virtually eliminating, tariffs. Three of the seven com-

pleted negotiating rounds stand out for their achievements in this area.

Inaugural Round in Geneva, 1947. This first round of GATT achieved substantial multilateral tariff cuts, as reductions negotiated in some 123 bilateral agreements were extended on a most-favored-nation basis to all participants. The United States made weighted-average tariff cuts of about 20 percent on dutiable imports. Participating European countries made less substantial cuts, from generally lower tariff levels, because the Smoot-Hawley tariffs had put U.S. rates in a higher range. But the effects of European concessions were not felt until the European nations made their currencies convertible, and abandoned most quantitative restrictions, at the end of the 1950s. The favorable economic climate in the United States allowed it to confer these asymmetric reductions. With most major U.S. industries enjoying trade surpluses, the specter of U.S. protectionism—although not absent—was not dominant.

Tariff concessions in each of the four rounds held over the next 15 years were comparatively minor, in part due to limited negotiating authority from the Congress, which demonstrated an increasing penchant to protect U.S. industry from competition. The combined effect of these talks was still notable, reducing U.S. tariffs by about 10 percent.

The Kennedy Round, 1963–67. The momentum for this round came from the United States, which wanted to ensure continued trading access to the newly formed European Community. The Kennedy Administration paved the way for more rapid progress on tariffs by obtaining enhanced negotiating authority in the Trade Expansion Act of 1962. Not only did this act allow for high tariff cuts (up to 50 percent), but it also eliminated some restrictions that the Congress had earlier put in place to prevent reductions in specific industries. The Kennedy Round of GATT that ensued was even more successful than the first Geneva Round had been. In addition to reducing average tariffs on dutiable imports by more than one-third, it included much broader country coverage, as important trading countries such as Japan and West Germany had since acceded to GATT. Because the negotiating principle changed from an item-by-item focus (“request-offer” in GATT parlance) to a formula approach of automatic 50 percent cuts on all nonagricultural products with exceptions to be negotiated, the product coverage was also more comprehensive than any prior GATT round.

The Tokyo Round, 1973–79. Again using a formula approach, major industrial nations agreed to cut average tariffs by about one-third in the Tokyo Round of GATT. The phased-in reductions from this round were completed in 1987. Table 4-2 shows pre- and post-

Tokyo Round industrial tariff rates, based upon the concessions negotiated during the round and the prevailing trade flows. With weighted-average tariff levels of major industrial nations brought down to levels below 5 percent, and in most cases these tariffs are bound not to increase under GATT, a case can be made that the goal of multilateral tariff liberalization is largely accomplished.

TABLE 4-2.—*Tokyo Round Tariff Cuts by Stage of Processing, Selected Countries*
[Percent]

Country and period	All industrial products	Raw materials	Semi-manufactures	Finished manufactures
United States:				
Rates before Tokyo	6.5	0.9	4.5	8.0
Rates after Tokyo.....	4.4	.2	3.0	5.7
Percent cut.....	31	77	33	29
European Community:				
Rates before Tokyo	6.6	.2	5.1	9.7
Rates after Tokyo.....	4.7	.2	4.2	6.9
Percent cut.....	29	15	27	29
Japan:				
Rates before Tokyo	5.5	1.5	6.6	12.5
Rates after Tokyo.....	2.8	.5	4.6	6.0
Percent cut.....	49	67	30	52
Canada:				
Rates before Tokyo	13.6	1.0	14.8	13.8
Rates after Tokyo.....	7.9	.5	8.3	8.3
Percent cut.....	42	48	44	40

Sources: Director General of GATT and Congressional Budget Office.

Yet the average figures mask considerable discrepancies on individual products, as countries have retained high "tariff peaks" on items for which there is strong domestic protectionist pressure, such as textiles, apparel, and footwear (Table 4-3). Moreover, as shown in Table 4-2, nominal tariffs on raw materials and semimanufactures are lower than tariffs on manufactures. This escalated tariff structure, by reducing input costs for manufacturers, results in higher "effective protection" for processed goods than is reflected in the nominal tariff rate on these manufactures. Finally, although country and product coverage has increased considerably since the inception of GATT tariff negotiations, large areas still remain less-than-fully incorporated. Because of previous "special and differential" treatment, developing countries, including those newly industrializing economies that have made rapid strides over the past 20 years, have participated little in either the reduction or the binding of tariffs. Although tariffs have been cut on agricultural products, these cuts have been less even across countries (Table 4-3). Furthermore, agricultural tariffs are bound less frequently than are tariffs on manufactures.

TABLE 4-3.—*Tokyo Round Tariff Cuts by Industry for United States, European Community, and Japan*

[Percent]

Industry	Pre-Tokyo Round tariff rates			Post-Tokyo Round tariff rates			Percent cut		
	United States	European Community	Japan	United States	European Community	Japan	United States	European Community	Japan
Agriculture, forestry, and fisheries.....	2.2	7.1	18.4	1.8	4.9	18.4	18	31	0
Food, beverages, and tobacco products.....	6.3	12.4	25.4	4.7	10.1	25.4	25	19	0
Textiles.....	14.4	9.8	3.3	9.2	7.2	3.3	36	27	0
Wearing apparel.....	27.8	16.8	13.8	22.7	13.4	13.8	18	20	0
Leather products.....	5.6	3.7	3.0	4.2	2.0	3.0	25	46	0
Footwear.....	8.8	11.7	16.4	8.8	11.6	15.7	0	1	4
Wood products.....	3.6	3.3	3	1.7	2.5	3	53	24	0
Furniture and fixtures.....	8.1	8.5	7.8	4.1	5.6	5.1	49	34	35
Paper and products.....	.5	7.3	2.1	.2	5.4	2.1	60	26	0
Printing and publishing.....	1.1	3.2	.2	.7	2.1	.1	36	34	50
Chemicals.....	3.8	11.5	6.2	2.4	8.0	4.8	37	30	23
Petroleum and related products.....	1.4	1.2	2.8	1.4	1.2	2.2	0	0	21
Rubber products.....	3.6	5.3	1.5	2.5	3.5	1.1	31	34	27
Nonmetallurgical mineral products.....	9.1	5.2	.6	5.3	3.7	.5	42	29	17
Glass and glass products.....	10.7	9.9	7.5	6.2	7.7	5.1	42	22	32
Iron and steel.....	4.7	6.2	3.3	3.6	4.7	2.8	23	24	15
Nonferrous metals.....	1.2	2.6	1.1	.7	2.1	1.1	42	19	0
Metal products.....	7.5	7.9	6.9	4.8	5.5	5.2	36	30	25
Nonelectrical machinery.....	5.0	6.5	9.1	3.3	4.4	4.4	34	32	52
Electrical machinery.....	6.6	9.9	7.4	4.4	7.9	4.3	33	20	42
Transportation equipment.....	3.3	10.2	6.0	2.5	8.0	1.5	24	22	75
Miscellaneous manufactures.....	7.8	7.7	6.0	4.2	4.7	4.6	46	39	23

Source: Congressional Budget Office.

Weaknesses of the GATT Framework

The exceptions in product and country coverage for GATT-sponsored tariff reductions conflict with the basic GATT aim of achieving broad-based trade liberalization. Yet these and numerous other exceptions to GATT's main principles to foster open and fair trade have been accepted as necessary compromises in an agreement whose only teeth are those lent willingly by member countries. Because those principles ultimately embodied in GATT had been honored more often in the breach than in the word prior to the formation of GATT in 1947, it is hardly surprising that the initial exceptions list was relatively long. More telling is the fact that, rather than shrink, this list has grown longer. Safeguard clauses allow countries to take steps backward, on the overall goal of liberalization, by imposing quantitative restrictions (which also violate transparency) or by ignoring tariff bindings in the event of balance of payments concerns, injury to domestic producers (the "escape clause"), or a perceived threat to national security.

Discriminatory application of protection often occurs when countries invoke the balance of payments safeguard—as the Europeans did in the 1950s and more recently many developing countries have

done. More generally, the most-favored-nation principle was side-stepped to allow the continuation of preferential trading areas in the early years of GATT; customs unions and free-trade areas were subsequently provided for even though they offer members better than most-favored-nation treatment and hence discriminate.

The GATT principle of integrity of concessions is weakened by the fact that discipline on domestic subsidies that can undo tariff concessions is not very effective. Integrity can also be violated by the use of safeguards and “grey-area” measures, such as “voluntary” export restraints—quantitative restrictions that violate GATT’s spirit but not its letter. As discussed below, these and other nontariff barriers have become the major obstacle to trade liberalization. Although many GATT signatories have accepted codes limiting their use in the Tokyo Round, nontariff barriers remain an area of weakness for GATT. Although GATT does not formally provide exceptions to the use of its dispute settlement procedures, these procedures have proved sufficiently cumbersome and limited in authority that they have failed to replace the threat of retaliation in the resolution of trade disputes.

Limits on product coverage have been made by commission and omission, with the result that GATT is by and large an agreement prescribing the rules of the game for those manufactured products that are not too politically sensitive in the industrial countries. Although agricultural products are formally included, the effective exemption of two of the largest markets, the United States and the EC, has made the agreement largely irrelevant for the principles guiding agricultural trade. In the U.S. case, exceptions were granted at GATT’s inception and in a waiver in 1955. And although it clearly distorts trade, the EC’s border policy of using variable levies to defend domestic price supports has not been declared GATT-illegal. Due to grey-area measures, trade in textiles and apparel, and more recently in steel, takes place outside of GATT discipline. Trade in services, an expanding component of world output, has never been covered by GATT. Although protection of intellectual property rights is certainly consistent with GATT principles, the lack of specific codes of behavior on intangibles has effectively excluded them from GATT treatment.

Although GATT’s membership list continues to expand, effective country coverage remains elusive. Under what is known as “special and differential treatment,” wide-ranging exemptions to GATT concessions and disciplines have been granted to developing countries since the Kennedy Round. As another component of special and differential treatment, industrial countries have created “Generalized Systems of Preferences” (GSP), which allow developing countries cer-

tain tariff concessions superior to the most-favored-nation rates of GATT. At the same time, special treatment in GATT has reduced the negotiating leverage of developing countries, preventing them from gaining GATT concessions of most value to them, including reduced tariffs on manufactures and progress on nontariff measures, safeguards, and the treatment of tropical products and agricultural commodities. Although developing countries argue that they need special and differential treatment because of the less advanced states of their economies, their economic progress is hindered by the high tariffs and quantitative restrictions these exemptions have allowed them to maintain.

As the economic disparities among developing countries widen, with the newly industrializing economies such as South Korea, Brazil, Singapore, and Mexico making rapid strides in export markets, pressure is mounting in industrial countries to alter radically the special provisions. Developed countries may unilaterally end the concessionary tariffs granted to these most successful economies, as the United States recently did by graduating Hong Kong, Singapore, South Korea, and Taiwan from GSP status. In a multilateral context, the successful developing countries must be persuaded to accept GATT discipline over their own barriers. The aim is to encourage these better-off economies to provide market access to industrial and other developing country exporters more commensurate with the benefits they themselves enjoy, thereby also increasing the export opportunities for the poorest developing countries.

THE TRADEOFFS IN U.S. TRADE LEGISLATION—TARIFF REDUCTIONS VERSUS CREEPING PROTECTIONISM

Protectionist sentiment was not strong in the immediate postwar period, but some elements opposed liberalized trade. These sentiments have been on the rise. As tariff barriers have steadily fallen, other barriers to trade have arisen. Because the Congress has granted authority to negotiate tariff reductions, while at the same time channeling protectionist sentiment into legislation, a curious pattern has emerged in the trade laws of the postwar period. Trade bills needed by the executive branch for negotiating authority to reduce protection often include provisions that make it easier for firms to qualify for protection, and restrict Presidential discretion to limit protectionist measures.

Examples of this tradeoff are numerous. In 1947 President Truman, bowing to congressional pressure, issued an Executive order requiring all future U.S. trade agreements to include an escape clause that allowed the United States to renege on tariff concessions that injured domestic industry—a measure that became the basis for

GATT's safeguards on these grounds. In the 1950s the Congress added this provision to statute and strengthened it. In 1955, to win support for further tariff reductions, President Eisenhower proposed that Japan voluntarily limit exports of some cotton textiles. Under pressure from domestic coal and oil producers, the Congress, as part of its 1955 extension of the Trade Agreements Act granted Presidential authority for quantitative restrictions to be used for national security purposes.

To gain congressional support for the Kennedy Round negotiations, in 1961 President Kennedy entered into the Short Term Arrangement that restricted cotton textile exports from 17 countries. In addition to authorizing broad tariff negotiations, the Trade Expansion Act of 1962 authorized the President to withdraw tariff concessions from countries that had "unreasonable" restrictions on U.S. exports and to negotiate quantitative restraints on products that injured U.S. industry. Then, within the same year, the Long Term Arrangement regulating trade in cotton textiles was launched.

Protectionist sentiment grew in the 1970s and 1980s as some U.S. trading partners were perceived not to be offering equal opportunities for trade. Once again, enhanced textile protection, in the context of the Multi-Fiber Arrangement of 1974, was the price paid to gain congressional authorization for negotiating tariff reductions in the Tokyo Round and for fast-track congressional approval of any agreement on nontariff measures negotiated through GATT. The Trade Act of 1974 also reduced Presidential discretion in implementing International Trade Commission recommendations for protection, and introduced Section 301, a provision for countering foreign practices that "unreasonably" restrict U.S. exports.

The record of the 1980s has largely paralleled that of the 1970s. The 1988 *Economic Report of the President* documented the sharp increase in unfairness findings during the 1980s (against "dumping" at below fair prices and government subsidization of exports), cases for which no Presidential discretion exists. Nontariff barriers, for products such as steel, autos, machine tools, and textiles, have been entered into or extended. This Administration has, however, successfully resisted passage of several highly protectionist trade bills. Attempts to pass textile and apparel bills that would have increased protection for one of the most highly protected industries in the United States have been twice successfully repelled. A potentially disastrous trade bill that would have limited trade based upon bilateral trade balances has been successfully modified. While the Omnibus Trade and Competitiveness Act of 1988 has some troubling features, it also authorizes the President to reduce tariffs by up to 50 percent under the current Uruguay Round GATT negotiations.

This Administration has vigorously sought ways to expand free trade. Its attempts to open foreign markets to U.S. products have won some notable successes, while the resort to protectionist retaliation measures have been infrequent. It inaugurated the Caribbean Basin Initiative, and won congressional extension of the Generalized System of Preferences, in order to provide developing countries with ready access to U.S. markets. The United States-Israel Free-Trade Agreement was the first such agreement for the United States, while the United States-Mexico Framework Understanding should help to improve trade and investment flows between the two neighbors. Finally, the United States-Canada Free-Trade Agreement will bring tremendous benefits to both sides.

Notwithstanding the pressures for protectionism over the past 40 years, the move toward a liberal trading order has been remarkable. Tariffs on most products have been reduced to low levels, and trade flows and economic growth have responded accordingly. From 1950 to 1986 world real GDP has increased by 350 percent, while world trade, in real terms, has grown by more than 800 percent. The task for the future is to ensure that this progress continues, and that non-tariff barriers are reduced.

THE SPREAD OF TRADE-DISTORTING MEASURES

Because most nations' tariffs are "bound" by GATT, the signs of increased protectionism in the 1970s and 1980s are not found in higher tariffs, but in other, often more hidden, forms of protection. Using a potentially limitless array of measures, governments distort trade flows and production decisions by subsidizing exports and domestic production, and by constricting the flow of imports. Import barriers include: assessed duties on unfairly traded products; "hard-core" nontariff barriers, such as quotas and voluntary export restraints or voluntary restraint agreements, which are poorly disguised quantitative restrictions; and "softer" nontariff measures, such as technical and health standards, which tend to distort trade if imposed for nonscientific reasons or applied in a discriminatory fashion. Many of these measures are difficult to quantify; no precise estimates of their tariff-equivalents, or their trade-distorting impacts, exist.

Yet convincing qualitative evidence of this rising interventionist and protectionist trend is available. One example of such evidence is the amount of domestic subsidies that governments supply to private industries and public corporations. Because these subsidies alter domestic production, they may distort trade flows and comparative advantage. As shown in Table 4-4, their amount has increased as a percent of GDP from 1960 to 1986 for most countries, the important

exception being the United Kingdom, whose subsidy rate peaked in the mid-1970s. Two additional factors in the table qualify this observation. First, it would appear that the trend toward greater subsidization was reversed for many countries in the 1980s. Second, although the U.S. subsidization rate has grown, it is still significantly below that of other countries, reflecting the more market-oriented approach, and the sparsity of public corporations, in this country.

TABLE 4-4.—*Growth of Subsidies in Selected OECD Countries, 1960-86*
[Percent of GDP]

Country	1960	1970	1975	1980	1986
United States	0.2	0.5	0.3	0.4	0.6
Japan	(¹)	1.1	1.5	1.5	1.1
West Germany .....	.8	1.7	2.0	2.1	2.1
France	1.6	1.9	2.0	1.9	² 2.2
United Kingdom	1.9	1.7	3.5	2.4	1.7
Italy	1.2	1.3	1.9	2.0	² 2.3
Canada .....	.8	.9	2.5	2.7	2.0

¹ Not available.

² Data are for 1985.

Note.—Based on national income accounts.

Source: Organization for Economic Cooperation and Development.

Countries also distort trade and compete unfairly for exports by providing export subsidies. In agricultural trade, many countries, including those in the EC and the United States, provide subsidies or rebates for exports of agricultural goods. For manufactured goods, the more common means is through "export financing," which provides subsidized credit to importers of the products. Data from the Organization for Economic Cooperation and Development (OECD) show that the implicit subsidy in export financing by 14 member countries increased by more than two-thirds from 1979 to 1982. Following successful U.S. efforts in the early 1980s to negotiate increased discipline over export credit subsidies through the OECD Export Credit Arrangement, the subsidy component in export financing has decreased substantially.

Foreign export or production subsidies unfairly distort trade, and impose burdens on domestic producers of like products. Although these foreign subsidies may actually benefit the domestic economy if it is a net importer of the subsidized good, GATT articles and the laws of many nations, including those of the United States, recognize these subsidies, as well as dumping, to be distortive and unlawful actions. Under U.S. law, dumping occurs when a foreign firm sells in the import market at a price below the price charged in the home market, or below costs as estimated by the Department of Com-

merce. Under the law, the United States may, subject to certain injury tests, impose duties to offset this dumping margin. Similarly, U.S. law allows duties to be imposed to "countervail," or offset, unfair advantages that accrue to foreign firms arising from government production or export subsidies.

Regardless of the intentions, or economic merits, of laws restricting dumping and foreign subsidization, their net impact can be protective. A finding that dumping has occurred can depend on estimates of costs of production if price data for the foreign market are not available. Precise cost estimates are often difficult to obtain, so a foreign firm may be found erroneously to be in violation. Furthermore, although many petitions may ultimately be rejected under these statutes, the filing, or even threat of filing, of unfair trade cases can restrict imports. It is costly for foreign firms to defend themselves against a dumping charge. Moreover, in the event of an affirmative finding, the level of import duties imposed retroactively is uncertain. The threat of such action is likely to raise prices foreign firms charge, thereby having a protective effect similar to a tariff, except that the revenue from protection is transferred from U.S. taxpayers and consumers to the foreign producer.

These legitimate procedures to counteract foreign unfair trade practices can result in cartel-like effects. Subsidization, and other distortions, are rife in the world steel market. In addition to subsidizing domestic producers, EC countries have used programs limiting imports (either through voluntary restraint agreements or minimum import prices) and internal production quotas to "rationalize" production. In 1982 the U.S. steel industry filed more than 130 dumping and countervailing duty petitions against steel imports from various foreign countries, including EC members. An extensive Department of Commerce investigation found subsidies, in some cases exceeding 20 percent, against some producers in the United Kingdom, Italy, France, and Belgium. It also found that other European producers, including the large West German producers, were either unsubsidized or received *de minimis* subsidization. The results were troubling for EC countries whose producers were found to be subsidized, as countervailing duties against their producers would effectively exclude them from the U.S. market. Ultimately, in October 1982, European producers agreed to a voluntary restraint agreement encompassing carbon steel exports from the EC to the United States.

The steel industry continued to face strong competition from countries not parties to the agreement. The industry proposed to file a large number of complaints that would have burdened the agencies responsible for making "unfairness" determinations and would have raised costs to importers. The alternative chosen was to negotiate ad-

ditional voluntary agreements to reduce imports. The current agreements, reached with 19 countries plus the EC, are estimated to have an annual cost to consumers of several billion dollars and are scheduled to expire September 30, 1989. The steel industry is currently operating near capacity and, for the first time since 1981, reported significant profits in 1988.

While the United States is the dominant user of countervailing duty laws, other nations use antidumping provisions more aggressively. Of 460 countervailing duty cases reported to GATT between 1980 and 1986, more than 60 percent were initiated in the United States. But, of the 1,272 antidumping cases reported during this same time period, 27 percent originated in the United States, whereas 33 percent came from Australia, 22 percent from the EC, and 18 percent from Canada.

These actions significantly increased in the United States and abroad during the 1980s. In the United States, for example, the number of countervailing duty cases increased from an annual average of 21 during the period 1975-79 to an annual average exceeding 40 during the period 1980-86. In the EC, the number of antidumping cases reported increased from 71 for 1971-79 to 280 for 1980-86.

In contrast to antidumping and countervailing duty provisions, the protection offered through the "hard-core" nontariff measures falls largely outside of GATT jurisdiction. Table 4-5 represents one crude attempt to compare the prevalence of these barriers across countries and over time. It shows the percent, in value terms, of a country's imports that are covered by quantitative restrictions, voluntary export restraints, and nonautomatic licensing. While the numbers may not be quantitatively important, they are qualitatively instructive. They make clear that the United States is not the main offender. It is noteworthy that these barriers particularly seem to affect the exports of developing countries.

TABLE 4-5.—*Industrial Country Imports Subject to "Hard-Core" Nontariff Measures, 1981 and 1986*

[Percent]

Importer	Source of imports			
	Industrial countries		Developing countries	
	1981	1986	1981	1986
United States	9	15	14	17
Japan	29	29	22	22
European Community.....	10	13	22	23
All industrial countries.....	13	16	19	21

Source: The World Bank, *World Development Report 1987*.

SOURCES OF INCREASED PROTECTIONIST SENTIMENT

Many explanations have been cited to account for the increase in protectionist sentiment. These include the deterioration in the U.S. merchandise trade balance; the continuation of foreign subsidies and nontariff barriers; declining net exports in traditional U.S. strongholds, such as agricultural and manufactures; and a protracted period of inflation and high unemployment during the 1970s and early 1980s, which contributed to the notion that somehow imports were responsible for lost domestic jobs. Other contributory factors include a perception that the United States had lost its technological "superiority" and even its "competitiveness," and that an industrial strategy, coupled with protectionist trade policy, was needed to regain American superiority. These feelings were probably accentuated by a general belief that U.S. exports were subject to unfair barriers, a position that might have had some merit as foreign agricultural protection increased, and as the importance of service-type industries that were not (and still are not) subject to GATT discipline increased.

Despite popular beliefs, trade restrictions are inappropriate tools for attempting to reduce trade deficits. The trade balance reflects the discrepancy between national output and national expenditure, and little reason exists to expect protection to alter either of these significantly. While import protection in automobiles may reduce the trade deficit in that sector by increasing consumption and production of domestic autos, this reduction can be achieved only by diverting the resources required to expand auto production from other more productive uses within the economy.

The notion that imports cost American jobs is probably the most common argument for protection. While it is certainly true in a narrow sense that employment in an import-competing sector might decline if import protection were reduced or eliminated, this fact does not imply that total U.S. employment would fall. Rather, protection in that sector reduces the resources available for expanding output, and employment, in more efficient export sectors. Most studies of the consumer cost per "job saved" through protection put this cost at more than \$100,000 per year, far exceeding the typical earnings in the affected industry. Moreover, protective policies that reduce foreign exports to the United States invite retaliation, which reduces the demand for U.S. exports, causing further inefficiencies in the allocation of resources and imposing extra costs on consumers.

Certainly unexpected increases in imports can cause temporary unemployment as workers retrain for new jobs. But the appropriate response is to facilitate labor adjustment, not to discourage it through permanent protectionist policies. Trade Adjustment Assistance, first introduced as part of the Trade Expansion Act of 1962 and signifi-

cantly liberalized by the Trade Act of 1974, may be viewed as one attempt to ease this adjustment and to mollify domestic opposition to trade liberalization. The program, which is designed for firms and workers hurt by import competition, provides financial, technical, and retraining assistance to make firms more competitive and to assist relocation of workers. If adjustment through normal market forces is allowed, the displaced workers will find employment in other industries. Currently, the average period of unemployment is a brief 13 weeks. If permanent protection is offered, adjustment never occurs, and the cost of the policy remains forever. The rules governing explicit protection under the escape clauses in U.S. trade law (Section 201) and in GATT (Article XIX) recognize this danger and require relief to be temporary.

The recent economic record demonstrates that imports do not destroy domestic jobs. From 1982 to 1987 the volume of U.S. imports increased by more than 65 percent, while U.S. real GNP expanded by more than 21 percent, and employment by 13 percent. Meanwhile, West German imports increased by over 27 percent, its GNP grew by nearly 12 percent, and employment stagnated. During this period the U.S. merchandise trade balance fell sharply, while the West German trade balance rose by more than \$45 billion.

Recent proponents of protectionism have focused on the use of "strategic trade" policy to promote selective, presumably high-technology, sectors. The essential notion is that economies of scale and learning-by-doing render the competitive paradigm inappropriate in these industries. Trade policy, by preserving the home market for domestic firms, or by promoting selected industries and their exports through subsidies, can be used effectively to prevent foreign competition and to increase the monopoly profits domestic firms earn from foreign sales.

These policies of targeting industries with import protection and export subsidies are harmful. The import restrictions hurt both domestic consumers and foreign producers. Because foreign countries may retaliate in kind, a situation can arise in which all countries are worse off, but no country has the incentive to reduce tariffs unilaterally. For manufactured goods, the costs of protection are likely to be even greater because the resulting market segmentation reduces the inherent benefits derived from economies of scale and product diversity. Promoting particular sectors through export subsidies is equally costly. The subsidies impose costs on taxpayers, are inconsistent with international trading rules, and invite retaliation.

Moreover, the argument for government activism is predicated on the notion that governments can effectively identify those industries that are at the forefront of technological innovation, and can devise

appropriate trade policies to foster their dominance. This kind of fine-tuning, reminiscent of attempts to fine-tune the macroeconomy, presumes that policymakers have access to enormous quantities of information, wisdom, and objectivity. To be successful it also would require government officials to be able to foresee the major consequences of their actions.

If government pursues such activist policy, it is reasonable to ask what the policy response will be when it mistakenly backs a losing industry. Will it be willing to remove protection, or will it feel compelled to shelter an inefficient industry behind a tariff wall in order to avoid facing up to the mistakes it made? If business executives err, they are forced to face the cost of their decisions through the discipline of the market—lower prices, reduced output, and even bankruptcy. No such discipline is imposed on government officials, who can reach deep into the pockets of taxpayers and consumers to hide their failure. The reality seems to be that protection has been granted to sunset, not sunrise, industries and that this protection is hard to remove.

POLITICAL ECONOMY OF PROTECTIONISM

One possible explanation for continuing protectionist pressures is that economic efficiency is not all that matters; notions of equity and fairness also have considerable influence on public policy. In most developed countries, government agricultural programs, as well as the protection of some industries, are typically justified on these grounds. However, these objectives can be achieved through policy instruments superior to the trade-distorting devices that have been used.

A more likely explanation relates to other distributional consequences of trade-distorting policies. The benefits are concentrated among the relatively small number of people employed or owning assets in the protected industry. Meanwhile, the higher overall costs are paid for by the large numbers of taxpayers who foot the bill for government programs, and of consumers who pay higher prices for the goods. Because it is difficult to be informed on every issue, the many who are adversely affected by protection may not be aware of these costs. Yet those few who stand to gain from protection are likely to be well aware of the benefits. Just as with pork-barrel projects, the gainers are far more likely to make their voices heard than are those who are hurt.

It is not surprising that the Congress has traditionally been more protectionist than the President. The President, regardless of his party, responds to a national constituency, and thus needs to consider the impact of protectionist policies in a much broader context.

Senators and Representatives respond to smaller constituencies, wherein those few who gain from protection make their opinions known forcefully. If producers and workers in enough regions are affected, or if they are heavily concentrated in some regions, they can influence legislation. This President, like most postwar Presidents, has represented the voice of free trade within the government. Laws that attempt to reduce the President's discretion or authority increase the protectionist thrust of trade policy.

Protectionist efforts are most likely to be resisted when the distributional costs of protection are also highly concentrated. The steel agreements hurt domestic steel users, and recently efforts have been mounted by some of them, such as Caterpillar, to oppose renewal of the voluntary restraint agreements. Fabricators of copper wire and other copper products successfully lobbied in 1984 against protection for the copper industry, after an International Trade Commission decision ruling domestic copper producers had been injured by imports. Similarly, because the higher semiconductor prices that followed an agreement to stop Japanese dumping hurt high-technology American industries that use this product, industry associations representing the two groups have been working together to fashion policies that will be mutually beneficial and, presumably, less protectionist. By contrast, consumers of final products receiving protection, such as textiles and apparel, are in a relatively weak position to protest the costs of import restrictions.

The benefits to producers in the protected industries can be significant, and include increased profits on both the inputs and final products. One study of trade restrictions estimated annual gains to producers at \$3.8 billion for carbon steel products, \$2.6 billion for auto firms, \$5 billion for dairy products, and more than \$20 billion for textile and apparel firms. Depending on how they are administered, some of these programs impose substantial costs on foreign producers, while others essentially transfer, through higher import prices, additional benefits to foreign firms. The same study estimated that U.S. restrictions transferred benefits of \$2 billion to foreign steel producers, \$2.2 billion to foreign (Japanese) auto firms, and \$1.8 billion to foreign textile firms. Even if these estimates are off by a factor of three, they are still prizes well worth pursuing. The even higher costs of these prizes are borne by a large group of consumers and taxpayers.

Not surprisingly, considerable real resources are spent in petitioning governmental groups that make and implement policy. Everyone, whether having spent time in Washington or not, is aware of the effort, time, and resources lobbyists spend trying to influence trade policy. Nor is the lobbying activity restricted to representatives of

U.S. firms. Department of Justice records show that in 1986 Japan spent more than \$11 million on economic lobbying activity in the United States, Indonesia spent more than \$7 million, and South Korea more than \$4 million. The resources spent on these lobbying activities are wasted in an economic sense because they are withdrawn from potentially productive activities.

Protection in the form of licensing and quotas may lead to even greater inefficiency than tariffs. If the quotas are auctioned off, as in Hong Kong where licenses to export clothing to the United States may sell for 40 percent of the price of the clothing, then no additional inefficiency occurs. But if the quotas are allocated in some other manner, as is usually the case, then people will be willing to spend scarce resources trying to obtain them. Because the ownership of quotas confers private gains, but no gains to the economy as a whole, this rent-seeking activity is wasteful. It can be especially deleterious in less developed countries, as studies indicate that the implicit value of import licenses may have been as high as 7.3 percent of GNP in India, and 15 percent of GNP in Turkey.

THE SPECIAL THREAT OF NONTARIFF MEASURES

The opposing postwar trends toward lower tariffs, but greater use of nontariff measures, raise two related questions. First, does it matter what form of protection is used; second, why has this change in policy mix occurred?

Most economists view nontariff measures as being more costly than tariffs. Nontariff measures may circumvent U.S. laws and GATT, and may be negotiated, as was the case with the earlier restraint on Japanese car exports to the United States, even when there is no determination of an unfair trade practice, or of injury to domestic firms. Unlike escape clause relief, there is generally no provision for reducing protection over time ("degressivity"), nor is a formal time limit imposed on the protection. The agreements do expire, but they may be renegotiated, as has been the experience in textiles and apparel. Producers in these industries appear determined to maintain protection.

Quantitative restrictions are also inferior to tariffs because they cartelize the market. By granting firms more monopoly power, they lead to even higher prices. Studies indicate the restraints on Japanese automobile exports increased the price of Japanese cars in the United States by up to \$1,000, and increased the price of U.S. cars by about \$400. Moreover, because imports cannot respond to increased demand, unexpected shortages are more likely to develop under quantitative restrictions. Recent shortages of domestic steel forced domestic users to import more costly finished products not covered

under the agreements. Hence, quantitative restrictions can undermine the competitiveness of downstream industries even more than do tariffs.

Another problem that inevitably arises is how to apply the nontariff measures. Whereas tariffs will typically be applied on a most-favored-nation basis, quantitative restrictions are usually imposed selectively, with specific limits granted to each exporting nation. The issue of selectivity versus most-favored-nation treatment is of great concern to developing country exporters, as well as to importing nations. Apart from transferring tariff revenues abroad, selectivity further distorts trade, as U.S. importers cannot import from the least expensive, or highest quality, foreign supplier.

However, under flexible exchange rates, domestic firms wishing to avoid risk may prefer quantitative restrictions. Unpredictable movements in exchange rates can affect the domestic currency price of foreign products, making the amount of protection afforded by a tariff uncertain. Quantitative restrictions insulate the level of imports, and hence domestic price, from foreign price or exchange-rate movements.

Lack of transparency often makes nontariff measures more acceptable than tariffs from a domestic political standpoint. Whereas consumers readily recognize tariffs as a form of taxation, they are unlikely to perceive the similar effect of quantitative restrictions, because the price changes are hidden. Nontariff measures are also usually more acceptable to exporting nations. The use of tariffs under GATT's escape clause requires compensation to foreign exporting nations, or allows them to retaliate. Because voluntary restraints fall in a grey area outside of GATT jurisdiction, the country imposing them need not worry about these provisions. Exporters are compensated indirectly because they can charge higher prices for the reduced amount of goods being shipped, or can divert exports to higher profit items. Naturally, the losers are consumers and taxpayers in the importing country.

A more transparent system would be highly preferable for the population at large. If the tariff-imposing nation had to reduce other tariffs as compensation, or if some of its exporting industries faced higher retaliatory tariffs abroad, an active constituency to limit the extent or length of protection would appear.

The United States has suggested one innovative strategy for dealing with nontariff measures in the Uruguay Round negotiations on agriculture. Before the effects of existing nontariff barriers can be reduced, the proposal calls for "tariffication" of these barriers—that is, converting them into tariff equivalents that will then be the basis for negotiations on barrier removal. The Japan beef and citrus agree-

ment is a good example of the potential of this approach. The agreement calls for the phase-out, over a 3- to 4-year period, of import quotas on beef and oranges, and of Japan's Livestock Industry Promotion Corporation's import management operations. These nontariff measures will be replaced by tariffs that are scheduled to decline to 50 percent by 1993.

While confining protection to tariffs will not cause protectionist pressure to disappear, it may create stronger political opposition to increased protection. It will also make it easier to negotiate mutual reductions in trade barriers. Paradoxically, this policy may imply, as some have suggested, that laws should be modified to make it easier for firms to obtain temporary protection under escape clause criteria so that the pressure for resorting to nontariff measures is reduced.

TEXTILES AND AGRICULTURE—CASE STUDIES IN PROTECTION

Textiles and agriculture are two of the most heavily protected sectors in virtually all industrialized countries. No doubt part of the explanation is historical, given the importance of these sectors in the industrialization process. Yet implicit and explicit support and protection have been provided for protracted periods of time, with program costs far in excess of costs associated with most other forms of government intervention. Industrial country protection is significant not only for the costs imposed on domestic consumers, but also for the burden placed on developing economies.

Textiles and Apparel

Protection has been the rule rather than the exception in these industries. During the 19th century the U.S. industry developed behind high tariff walls. During the interwar period, the Great Depression and increased competition from Japan led to increased protection. Many industrial countries resorted to quotas; in 1930 the United States raised tariffs to 60 percent on woollens and 46 percent on cottons. In 1936 Japan and the United States reached an agreement to restrict Japanese exports, setting a precedent for the "voluntary" restraints of the postwar period.

Postwar liberalization of the industrial world's trade did not extend fully to Japan. Although Japan entered GATT in 1955, many countries continued to restrict textile imports from that country under Article XXXV, an annex specifically allowing nonapplication of GATT provisions to new members. The inaccessibility of the European market diverted additional exports to the United States. In 1956 the Congress authorized negotiations to limit textile imports. The following year Japan again agreed "voluntarily" to limit exports to this country.

This limit on Japanese exports led to increased U.S. imports from other countries, notably Hong Kong, whose 1960 exports to the United States surpassed Japanese levels. In response, GATT adopted the "Decision on the Avoidance of Market Disruption," which allowed restrictions on a discriminatory basis, even if actual injury had not occurred. This decision became the basis for the ensuing Short Term Arrangement (1961) and the more comprehensive Long Term Arrangement (1962).

But the Long Term Arrangement did not stem domestic protectionist pressures. From 1961 to 1972 textile imports increased by 135 percent in real terms, while apparel imports soared by well over 400 percent, with much of the growth in man-made fiber products not covered under the Long Term Arrangement. In response, the United States negotiated several bilateral agreements restricting imports of products made from wool or man-made fibers. The Multi-Fiber Arrangement, negotiated in 1973 and implemented in 1974, legitimized these bilateral agreements and provided a framework for negotiating additional bilateral export restraints. Subsequent Multi-Fiber Arrangements have extended the material, product, and country coverage, so that roughly 60 percent of world trade in textiles and apparel is now restricted, the main exception being trade among the industrial countries (excluding Japan). Recent agreements have added a "call" provision that allows the United States unilaterally to restrict products not previously covered under the agreements in response to an import surge. The current agreement, Multi-Fiber Arrangement IV, is scheduled to expire in 1991.

While the nominal tariff rates on textiles and on apparel average around 10 percent and 20 percent, respectively, the combined protection afforded by tariff and nontariff barriers is nearly 30 percent for textiles and more than 50 percent for apparel. The annual estimated cost to U.S. consumers of the protection exceeds \$20 billion. Furthermore, world restrictions on trade in textiles and apparel impose an enormous burden on developing economies. These products account for 80 percent of Jamaica's manufactured exports, 72 percent of Pakistan's exports, and 89 percent of all exports from Bangladesh (100 percent of its manufactured exports). The restrictions limit exports to the main developed economies and divert sales to other importers. Some exporting nations allocate export quotas to Multi-Fiber Arrangement countries among domestic producers based upon those firms' exports to non-Multi-Fiber Arrangement importers. This method of allocating quotas leads to overshipments to these latter importers, exacerbating the pressure for additional worldwide protection.

The combined textiles and apparel sector remains one of the largest manufacturing sectors in the United States, employing more than 1.8 million workers. Over the past 25 years labor productivity in the textile industry has grown by more than 4 percent per year, above the national average, while productivity in apparel has grown by an average of 2.8 percent since 1973. Employment declined through 1986, partly because of productivity increases. In 1987 and the first half of 1988 employment stabilized in apparel, and grew in textiles. In real terms, domestic textile production has increased by more than 140 percent since 1960, while apparel production has increased by more than 60 percent. Profits rose in 1987 and the first half of 1988.

Yet the pressure to protect continues. In recent years the Administration has repeatedly had to fight even more protectionist legislation, using vetos that were sustained in 1985 and 1988. This case is clearly not one of temporary protection to allow adjustment, and the protection cannot be justified under any escape clause criteria. The question is whether tariffication could help reduce this pressure, because the social costs of this protectionist policy remain high.

Agriculture

Agriculture, like textiles, is an important industry whose relative economic significance has waned. Employment in American farming, now just over 3 million, has declined both in absolute and relative terms in the postwar period. Similarly, the value of agricultural output as a share of GNP has declined sharply during this period. Agriculture has maintained an important, although declining, share of total U.S. merchandise exports. Exports remain crucial to the vitality of the agricultural sector.

For the world as a whole, output of agricultural products has grown by about 150 percent over the period 1950-86, in contrast with the nearly 600 percent increase in manufactures. Although the volume of world trade in agriculture has increased more rapidly than agricultural output, the relative share of agriculture in world trade has declined from nearly 50 percent in 1950 to less than 15 percent in 1986.

The economic and political importance of this sector is apparent from the types of support programs that most developed economies maintain. Unlike textile programs, those in agriculture have involved both domestic and border measures, and have not only affected the volume of trade, but in several cases also actually reversed trade patterns. In terms of their impact on both taxpayers and consumers, these policies have tended to become more costly. One estimate indicates that the cost of farm policies to taxpayers and consumers in the OECD countries was about \$200 billion in 1986.

The United States began using price supports and land diversion programs to increase farm family incomes before World War II. These programs continued to evolve after the war. However, relatively high market prices during the 1970s for the major crops covered by these support programs reduced the cost of farm programs to taxpayers. Program changes made in 1981 and 1985, however, combined with relatively low market prices to cause unprecedented budget outlays as well as record nominal net farm incomes. As measured in 1982 dollars, the total taxpayer cost of farm programs, which varies with market conditions, increased from under \$4 billion in the early 1950s to more than \$20 billion in the mid-1980s.

Because U.S. programs typically involve price supports or deficiency payments, and because the United States is a major exporter of many agricultural products, border measures are not usually needed to keep out foreign products. In some products, such as dairy, sugar, beef, and peanuts, the United States does maintain quantitative barriers on imports to support domestic producer prices. Apart from the dairy program, these other programs impose little direct burden on taxpayers, but they do result in significantly higher consumer prices. Under the domestic sugar program, for example, import quotas are adjusted annually to achieve a high domestic price. While both the protective effect and costs of the program depend upon the world price and the domestic stabilization price, current protection levels exceed 100 percent, and the estimated annual consumer costs for 1987 exceeded \$3 billion. The use of export quotas rather than tariffs, and the allocation of these quotas to specific foreign exporters, resulted in a transfer to these exporters of nearly \$300 million, reflecting the difference between U.S. and world prices. The additional revenue to domestic producers for 1987 was about \$1.7 billion. These benefits are highly concentrated among producers, resulting in an average transfer to sugar growers of \$50,000 to \$100,000 per farm.

Regardless of the crop or the country, government programs significantly benefit farmers in developed countries. As documented in the 1988 *Economic Report of the President*, the producer subsidy equivalent, which measures the estimated percentage decrease in gross farm income that would occur if all of a country's internal and border measures were removed, increased sharply for the United States, from 11 percent in 1979 to 34 percent in 1986. However, U.S. farmers would benefit if all nations were gradually to remove their distortionary agricultural policies, as the President has proposed as part of the Uruguay Round negotiations.

The Common Agricultural Policy of the EC entails high producer prices and a variable levy on imports that keeps European consumer prices well above world prices. This subsidy program has trans-

formed the EC from a grain importer to a surplus producer. To dispose of these surplus stocks, the EC adds an additional subsidy to promote its exports. In the 1987 budget year the EC received about \$1.9 billion from import levies, and paid out \$10.8 billion for export subsidies. These export subsidies increased significantly during the preceding decade. While benefiting importers, the subsidies create conflicts with other agricultural exporters, including the United States and producers in developing countries. The total budget of the Common Agricultural Policy was about \$27 billion in 1987, and represented about 64 percent of the Community's total budget.

Japan remains a major agricultural importer despite the fact that its agricultural protection remains among the highest for developed countries. Estimated *ad valorem* tariff equivalents for many agricultural products, including rice, wheat, barley, sugar, and beef, were all above 100 percent in the middle 1980s. Domestic rice prices currently exceed five times world prices. As shown in the 1988 *Economic Report*, Japan's producer subsidy equivalent of 79 percent is well above that of any other major industrial country, and this rate had increased significantly in less than a decade. These programs result not only in taxpayer costs, but in higher prices for Japanese consumers, who spend a considerably larger percent of their income on food products than do consumers in the United States. These barriers remain because Japanese farmers are a politically potent group, and they have vigorously opposed liberalization attempts.

As with textiles, many of these agricultural programs are outside of GATT discipline, largely because of U.S. desires in the early years of GATT. The high degree of protection and subsidization in agriculture has led to significant international tension. This tension, and the massive distortion that results from these policies, constitute a major impetus behind the sweeping U.S. proposal in the Uruguay Round to eliminate all market-distorting agricultural policies. Moreover, a large portion of U.S. market-opening activities is directed toward agricultural products. These and other market-opening activities are the subject of the next section.

FREE AND FAIR TRADE

In the early postwar period the United States was prepared to accept the fact that its trading partners used nontariff barriers more than it did, because the primary U.S. aim was to foster recovery overseas. As recovery proceeded and the income gap decreased, however, Americans came to think that the responsibility for fostering trade liberalization should be shared more equitably.

Domestic protectionist sentiment has increased during the past two decades. Recently, U.S. exporters have sought relief from foreign practices that were perceived to treat their products unfairly. This sense of unfairness was exacerbated by declining U.S. agricultural exports, and the increasing importance of services and intellectual property rights, neither of which was protected under GATT discipline.

Despite this adverse political climate, this Administration has managed to sidetrack some major pieces of protectionist legislation. Political pressure was adroitly diverted toward an effort to open foreign markets to American products through the use of Section 301 of the Trade Act of 1974. The spirit of this provision is to help the government carry out its legitimate roles in fostering and maintaining a free and fair trading system. Implementation of the provisions raises some complex issues, however, especially when international agreements do not cover the alleged unfair foreign practices.

Under Section 301, as amended, the United States Trade Representative is authorized, subject to Presidential direction, to take specific actions to obtain the elimination of unfair foreign trade practices. These practices include, but are not limited to, policies that restrict U.S. exports to that country, that undermine U.S. export markets, and that deny American residents the protection of intellectual property rights. Although the ultimate sanction available to the United States under the statute is retaliation, the purpose of the process is to obtain successful resolution of the conflict, not to close American markets. In fact, few of the cases brought under this Administration have resulted in retaliatory tariffs.

If the unfair practice violates GATT obligations, then the usual dispute settlement mechanism of GATT can be used. The usefulness of Section 301 action derives from the weakness of GATT's dispute settlement procedures, and its limited coverage.

SECTION 301 IN PRACTICE

Since Section 301 was passed in 1974, about 70 cases have arisen, nearly 50 during this Administration. More than 20 cases have been initiated since 1985, 10 of which were initiated by the Administration without a private petitioner. Nearly one-half of the petitions have dealt with raw and processed agricultural products, including grains, beverages, leather, and tobacco products. The other major sources of petitions include eight filed by steel producers, nine involving service industries (such as insurance and films), four filed by footwear producers, and several recently filed by the Pharmaceutical Manufacturers Association involving intellectual property rights. The basis of many of these petitions mirrors the weakness in GATT disciplines in

agriculture, and the lack of coverage for intellectual property rights and services.

The Section 301 process of market-opening has resulted in important agreements. The Japan beef and citrus agreement, which was negotiated under the threat of imminent Section 301 action, has been mentioned. Under earlier Section 301 actions the Japanese agreed to lower tariffs and end the state monopoly's discriminatory treatment of imported tobacco products. Separately they also agreed to reduce some tariffs, on a most-favored-nation basis, to compensate for GATT-illegal leather and leather footwear import quotas. Agreements with South Korea include one that increased foreign access to the domestic insurance industry, another that resulted in sweeping modifications of Korea's laws and regulations concerning intellectual property, and a third liberalizing the Korean market for imported cigarettes.

The emphasis on market-opening in the trade law has facilitated the conclusion of bilateral agreements even without Section 301 action. Examples include agreements with Japan to increase access to their domestic construction industry, to modify the procedures for government procurement of supercomputers, and to allow foreign attorneys to practice their home law in Japan. Partly because of U.S. pressure, both South Korea and Taiwan significantly reduced their tariff barriers, and Taiwan improved its intellectual property rights protection. In a recent case, U.S. petitioners voluntarily withdrew their petition against South Korea after an agreement was announced to open that country's film market significantly.

Attempts to define unfair trade practices, for the purposes of Section 301-type actions by any country, can raise complex issues. A country might, for example, undertake deregulation or privatization measures for purely domestic reasons. Nevertheless, these measures are likely to confer benefits on some foreign firms, particularly because government procurement processes are typically less open than private procurement procedures. Should the liberalized country be entitled to compensatory trade liberalization from others for its policy? This issue is unresolved and is a potential source of friction.

Another issue concerns the extent to which any government intervention in the economy is deemed to be unfair. The United States typically has more of a *laissez-faire* attitude toward economic development than other countries, particularly—but not exclusively—those in the developing world. Many of these latter countries practice active government intervention. This intervention may include subsidies to specific domestic industries, which necessarily distort trade patterns, or regional subsidies. While the latter subsidies can be trade neutral in an overall sense, nevertheless they are likely to hurt some (and

help other) U.S. industries. The law is unclear as to whether such regional subsidies are unfair.

In pursuing action under Section 301 other complex problems arise. Petitioning firms want to use the process to their advantage, which sometimes means they are more interested in obtaining domestic protection from foreign competition than in opening foreign markets. Such efforts must be resisted. At times the executive branch may find itself under pressure from a domestic industry to pursue Section 301 action against a foreign practice that harms one U.S. industry but actually benefits the country as a whole. For example, if a foreign country taxes exports of a primary product, this policy will discourage domestic production and exports of that primary product, but will encourage exports of processed goods derived from it. American firms that produce the processed product will be hurt, but U.S. producers of the primary product will benefit. If the processors initiate a Section 301 action, should the United States attempt to eliminate this foreign policy because it is "unfair" and burdens U.S. processors, even though the policy's overall impact on the U.S. economy may be beneficial?

In some cases tangible evidence of discrimination against U.S. products may be difficult to obtain. In the Japan semiconductor case, an agreement was reached to end Japanese dumping of semiconductors in the United States and third-country markets and to increase access for foreign firms in the Japanese market. A subsequent sharp increase in prices raised costs for industries using semiconductors as inputs, thereby weakening the competitiveness of these high-tech firms. Tangible evidence of Japanese discrimination against U.S. firms was hard to document. The criteria used for gauging market access was the U.S. share of the Japanese semiconductor market. Because this share has not increased sufficiently, the United States has put 100 percent tariffs on \$165 million worth of selected Japanese products. This is one of the relatively few such retaliatory tariffs that have resulted from this Administration's market-opening trade policy.

RECENT MODIFICATIONS IN THE LAW

Several sections of the Omnibus Trade and Competitiveness Act of 1988 dictate significant changes in the U.S. campaign against unfair trade practices. Mandatory action is now required, subject to a limited number of exceptions, if the foreign practice is found to violate a trade agreement or to be unjustifiable and a burden to U.S. commerce. The removal of discretion is likely to lead to more frequent resort to retaliation. Moreover, this provision may make it harder for the United States to obtain agreements from foreign countries to modify their practices. Under U.S. law, countries that agree to under-

take measures to eliminate practices that previously were not subject to mandatory action will be deemed to have entered into a trade agreement and henceforth be subject to mandatory retaliation if the proposed changes are not fully implemented. This modification in the law may reduce the incentive for countries to agree to alter their policies.

Other sections of the law require the U.S. Government to self-initiate Section 301 investigations and to name specific countries as "unfair traders." Section 1302 of the 1988 act requires the identification of priority foreign practices, the elimination of which would have the most benefit for U.S. commerce, and of priority countries that undertake such practices. Section 1302 also purports to require the United States Trade Representative to enter into negotiations with these countries in order to obtain agreements to remove the barriers. In essence, this provision requires the government to indict a country's entire set of trade practices, not one specific aspect of its policies.

The telecommunications section of the 1988 act requires the government to investigate foreign country practices in telecommunications and decide which are most offensive, as well as which would reap the most commercial benefit for the United States upon modification. If agreements to modify them cannot be reached, the law authorizes the President to retaliate. It also directs the President, if he does take retaliatory action, to target telecommunications trade. It will be a challenge to implement these procedures in a way that opens foreign markets, instead of causing the United States to close domestic ones.

AGENDA FOR THE FUTURE

The future of the international trading system, and the way in which modifications to it are negotiated, are arguably at a crossroad. The GATT system has functioned remarkably well during the past 40 years by all but eliminating tariffs on manufactured products as a major trade impediment, but it has been far less successful in limiting other obstacles to trade. The increased reliance on nontariff measures makes further progress more difficult, notwithstanding the limited success achieved in the Tokyo Round. Expanding GATT's coverage to include important omissions, including agriculture, services, and intellectual property rights, is complex because it may require basic modifications in domestic law or policy, not just in international conventions.

The multilateral negotiating process is complicated by the increase in the number of important participants, and the consequent tenden-

cy toward bilateral or plurilateral liberalization outside GATT. While the United States, Canada, the European Community, and Japan remain the most important trading nations, the share of world trade in manufactures controlled by the middle-income developing countries has tripled, from 5.0 percent in 1965 to 15.3 percent in 1983. Individual concessions by these nations on issues such as intellectual property rights, trade-related investment measures, or trade in services are less important to the larger nations than are collective concessions. In multilateral negotiations, a free-rider problem arises because smaller nations, hoping to gain from the final package, which will be applied on a most-favored-nation basis, have less incentive to make individual concessions. This problem explains the tendency for supplemental codes to GATT to be applied only to signatories, and not to all GATT members.

The tendency toward bilateralism is evident in a variety of ways, none of which is necessarily a negative factor by itself. Bilateral agreements negotiated by the United States under Section 301, while applied on a most-favored-nation basis, nevertheless clearly have the intent of removing those trade barriers most significant to this country. The Israel-United States Free-Trade Agreement, which came into effect in 1985, has already significantly liberalized trade between the two countries. As of January 1, 1989, Israel will have eliminated duties on 80 percent of its imports from the United States. In 1987 the United States and Mexico concluded a bilateral understanding that provides a framework of principles and a consultative mechanism to improve economic relations. This understanding, in conjunction with trade liberalization programs Mexico has undertaken as part of its accession to GATT in 1986, should enhance trade flows between the two countries. The Canada-United States Free-Trade Agreement, which enters into effect this year, creates the world's largest free-trade area. The simultaneous reduction of U.S. and Canadian tariffs and some nontariff measures will expand trade between the two nations, and both will undoubtedly gain. Because the benefits of the agreement are not conferred on a most-favored-nation basis, however, other countries may not necessarily share in this gain, as some trade is diverted away from them. These bilateral agreements will be especially beneficial if they foster further multilateral liberalization.

Whether bilateral or multilateral liberalization will prevail depends significantly on two major events: the outcome of the EC integration, scheduled to be completed by 1992, and the outcome of the Uruguay Round GATT negotiations, scheduled to end in 1990.

In 1985 the member states of the European Community undertook to eliminate all remaining economic barriers between them by 1992. Since the late 1960s the EC has been operating as a customs union with a common external tariff and no internal tariffs. Yet various nontariff barriers remain, including, for example, technical requirements that differ among member states (for instance safety standards on machinery and health standards on agricultural products) and public procurement practices that discriminate in favor of domestic suppliers. Despite the absence of tariffs, cumbersome customs procedures are required because member states have different value-added and excise tax systems. The internal market reforms are intended to eliminate or substantially reduce barriers by harmonizing tax rates, eliminating restrictive technical standards, liberalizing financial sector regulations, and enforcing intra-European competitive bidding in public procurement.

To many in Europe this liberalizing process represents the logical next step in consolidating the economic advantages of the customs union framework. Substantial gains are expected from the realization of scale economies, once technical standards are uniform across this large market, which now spans 12 countries. Financial service integration is expected to lower the cost of capital to investors, and efficiency gains are expected from more fully competitive bidding on the sizable government procurement market, from tax harmonization, and from the elimination of administrative and time costs of customs arrangements. A study done for the Commission of the EC, which has been planning the directives for the changes, puts the expected contribution to baseline GDP in Europe at 4.5 percent over the medium term, and to employment of almost 2 million new jobs. For an economic bloc that has been slow to recover from the stagflation of the 1970s and the recession in the early 1980s, a potential economic boost of this sort could provide sufficient incentive for governments to overcome domestic resistance to these reforms.

For the U.S. economy the EC 1992 reforms offer potential benefits, in addition to possible barriers alluded to in American businesses' fear of a Fortress Europe. The effects will be felt in two distinct ways: through American trade with Europe, and through American investment on the continent. As a trading partner, the United States and other countries outside the EC may lose to the extent that the easier movement of goods within Europe encourages more internal trade, and puts outsiders at a relative disadvantage. If the reforms do result in substantial European growth, however, this growth may increase the amount of the Community's external trade, including U.S.

exports to Europe. These gains will only be realized, however, if the EC remains open to the rest of the world.

The issues differ somewhat for the United States as an investor. As long as American firms located in Europe are granted "national treatment," that is, the same rights of market access as European firms, their gains from the increased efficiency of an expanded single market are the same as for their European counterparts. This issue is of considerable concern to the United States because the Europeans are considering a reciprocity standard for granting third-country financial institutions access to the newly integrated financial market. Under strict reciprocity the EC could deny entry to American firms as U.S. laws in the financial sector are not equivalent to those of the EC. Consequently, U.S. firms not already established in Europe would not benefit from the reforms.

URUGUAY ROUND NEGOTIATIONS

At the United States' urging, the eighth round of GATT negotiations was launched in Punta del Este, Uruguay, in September 1986. The work was divided into two main parts, a Group of Negotiations on Goods and a Group of Negotiations on Services. Actual negotiations began in February 1987.

While all negotiating areas are important to the United States, the main U.S. objectives are to correct the weaknesses in GATT coverage and discipline. The responsibility of the Group of Negotiations on Services is to establish principles for extending GATT coverage to trade in this expanding component of world output. The group must also negotiate sector coverage and establish basic rules on issues such as transparency, nondiscrimination, national treatment, and rights of establishment. Because trade in services often requires at least some local production, the right of foreign firms to establish local operations is crucial. Possible sectoral coverage includes areas such as insurance, construction, advertising, telecommunication services, leasing and franchising, and computer and data processing. Liberalized trade in these areas can offer significant gains to American firms.

The Group of Negotiations on Goods is split into many smaller groups covering agriculture, trade-related intellectual property rights, trade-related investment measures, tariffs, and nontariff measures, among others. The United States made its most dramatic proposal in agriculture, where the long-term U.S. objective is to eliminate all policies that distort world agricultural production, trade, and prices. This sweeping proposal includes both domestic and border measures. To increase transparency and facilitate systematic liberalization, the United States has proposed tariffication of many of the nontariff

measures that are so important in agricultural programs. Successful implementation of U.S. proposals would lead to large gains in economic efficiency, and reduce the high financial cost of farm programs at home and abroad. While all nations have agreed to the principle of increasing GATT discipline over agricultural policy, including internal and border measures, major players such as Japan and the EC will need to be convinced of the desirability of the full-scale liberalization that the United States and smaller exporting nations are promoting. At the same time, comparable liberalization of trade in tropical agricultural products is of prime importance to developing economies.

Another prime U.S. concern is reflected in the group on intellectual property, where, in conjunction with other developed countries, the United States is attempting to develop a framework to enhance intellectual property rights protection. Suggested areas for coverage include patents, copyrights, trademarks, trade secrets, and semiconductor layouts. The absence of appropriate protection in these areas is estimated to cost the United States more than \$20 billion per year in lost sales. Insufficient protection of intellectual property leads to underinvestment in research and development activities. Although less developed countries wish to concentrate the negotiations only on border measures, proper protection must also include internal measures and enforcement to prevent the misappropriation of intellectual property for domestic production.

In light of the substantial past achievements in tariff reductions, this issue is not as important as in previous rounds. Other groups, including those on safeguards, nontariff measures, textiles, subsidies, and GATT Articles, are striving to develop formulations for limiting the greater problem of nontariff measures. As in agriculture, tariffication of "hard-core" nontariff measures could be a first step toward their elimination. Many less developed countries wish to liberalize textile trade, and to reduce the ability of industrial economies to use safeguard, antidumping, and countervailing duty actions to protect domestic industries. On the other hand, the United States seeks greater discipline on the use of trade-distorting subsidies. Developing countries also wish to require that safeguard actions be imposed on a most-favored-nation basis. At the same time, they seek special and differential treatment concerning reciprocal tariff reductions, and their "right" to protect domestic industries. The developed economies thus far have not offered significant proposals to reduce the use of grey-area measures of protection.

Direct international investment, like international trade, is an important component in expanding world output and efficiency. Policies that inhibit or distort those flows reduce world efficiency. Many

developing countries tie performance requirements to direct foreign investment. These requirements, which include technology transfer, local equity participation, minimum export levels, and balanced trade, both discourage investment and distort trade flows. Developing countries have resisted progress in this group on sovereignty grounds.

Broadening GATT coverage will be meaningless unless ways are found to enhance compliance with GATT principles. An improved dispute settlement process is an indispensable requirement to enhance reliance on GATT principles and procedures. Main proposals include the automatic right to a panel to settle disputes, the possibility of binding arbitration if both parties consent, an expedited panel process, and perhaps the adoption of a procedure whereby parties to the dispute abstain from voting. The possibility of having a strong dispute settlement process is doubtful as long as countries maintain their rights to act unilaterally, and ignore GATT reports.

A ministerial level Mid-term Review of progress in the Uruguay Round took place in Montreal in early December 1988. In 11 of the 15 groups this review resulted in agreement on proposals to be implemented or on frameworks for further negotiations for the remainder of the talks. From the U.S. perspective some of the most important progress occurred in the groups on services, dispute settlement, subsidies, tariffs, and functioning of the GATT system (FOGS). In four groups—agriculture, intellectual property, safeguards, and textiles—disagreements remained, although some progress was made in Montreal in narrowing these differences. Negotiations in these four groups will continue, and a senior officials level meeting of the Trade Negotiations Committee is scheduled to meet in Geneva in April 1989. Once agreement is reached in these four areas, the results achieved in Montreal can be implemented. The changes in FOGS and dispute settlement will be implemented on a provisional basis. Most GATT members anticipate that the talks will be successfully completed, on schedule, by the end of 1990.

The record of the past 40 years clearly demonstrates that economies that have utilized free market principles have been at the forefront of economic growth. The significant reduction in trade barriers and the ensuing increase in international trade flows have been major factors in the record growth during this period. Current U.S. proposals to phase out distortive agricultural policies, to expand trade liberalization to sectors not previously covered, and to strengthen GATT manifest the United States' desire to help construct a world trading system that is open to, and benefits, all nations. The guiding principle that government interference with international commerce should be kept to a minimum is equally applica-

ble to internal commerce. Freeing the economy from excessive regulation allows entrepreneurs to focus on innovation, the hallmark of the American economy. Continued efforts to liberalize trade, and to reduce internal regulation, will ensure America's role as a model for the rest of the world.

CHAPTER 5

Rethinking Regulation

GOVERNMENT REGULATION can have a dramatic effect on economic growth and productivity. Strong economic growth can be expected when governments promote markets by enforcing property rights and encouraging commerce. On the other hand, poor economic performance usually results when governments play an active role in regulating prices and output. The U.S. Government has tended to leave most pricing and output decisions in the hands of the private sector. As the United States becomes a wealthier country, however, demands increase for regulating marketplace activities that affect environmental quality, health, and safety. It is critical that the Nation meet these challenges by designing regulatory institutions that facilitate innovation and foster competition.

Regulation of economic activity is hardly a new phenomenon. Over the past century, Federal, State, and local governments have played an increasingly important role in regulating the lives of individuals and the activities of business. The average consumer need not venture beyond the home to see the extent of regulation. There are labeling requirements for food and appliances, standards for the paint in the living room, pollution control requirements and energy standards for the car, standards for gas and portable electric heating systems, and safety requirements for bicycles. Today regulation is so pervasive that it is difficult to imagine a world in which Federal regulation was not a dominant force. Currently more than 100 Federal agencies are responsible for administering a staggering array of regulations.

Much regulation is motivated by a perception that the marketplace does not adequately address a particular economic or social problem. For example, child labor laws help prevent the exploitation of children. Environmental legislation tries to improve the quality of the air people breathe and the water they drink. Safety legislation to protect coal miners was enacted to help reduce on-the-job injuries. In other cases, legislation was introduced to limit what was viewed as potentially "destructive competition," or to help save a cherished institution, such as the family farm. While many of these regulations had beneficial effects, they were not without their costs.

The success of regulatory programs can be measured by quantifying the costs and benefits of regulation. Regulatory costs imposed on the economy have been estimated to be in the neighborhood of \$100 billion annually. The benefits of regulation are more difficult to measure, but nonetheless are real, particularly for programs designed to promote environmental quality, health, and safety. Critics say that the costs are too high, arguing that regulation tends to favor special interests and is generally inefficient. Proponents of an increased government role in the marketplace point to the myriad of social, environmental, and economic problems that have not been adequately addressed.

To move beyond such general debates, it is necessary to examine the economic and social impacts of specific regulations and policies. Such analysis reveals that some regulatory activities have led to unambiguous increases in consumer welfare, but that many regulations have had a neutral or adverse effect on consumers. Examples of regulations that have had significant adverse economic impacts on the general public include wage and price controls, regulations on interstate trucking and railroads, and regulations on ocean shipping. Although there are notable exceptions, such as the abolition of the Civil Aeronautics Board (CAB) and the breakup of the American Telephone & Telegraph Company (AT&T), changes in the regulatory environment have often favored special interests at the expense of the general public.

There are signs, however, that some important aspects of the regulatory process are undergoing a fundamental reexamination. Over the past two decades, numerous reforms have been aimed at deregulating or partially deregulating several industries. The transportation industries, most notably trucking, railroad, and air transport, have experienced tremendous gains as a result of deregulation. One study estimates that the benefits of trucking deregulation are between \$39 billion and \$63 billion annually, while another estimates the benefits of airline deregulation at \$15 billion per year. A third study found that the partial deregulation of railroads has led to efficiency gains of between \$9 billion and \$15 billion annually. These gains, which have largely occurred in the 1980s and have helped produce the improved economic performance of the past 6 years, have translated into lower prices and a wider range of services for consumers. Where increased competition has been promoted in other sectors, a similar story emerges. The widespread introduction of money-market accounts that followed reduced financial industry regulation has allowed consumers to obtain a higher return on their savings. The introduction of increased pricing flexibility for stock commissions has helped to promote a booming discount brokerage industry. The relaxation of

the restrictions on overnight mail delivery has led to dramatic increases in the provision of next-day-delivery services by private companies.

The movement toward deregulation represents one kind of regulatory innovation. More recently, other efficiency-enhancing innovations in the regulatory process, although not completely removing regulation, have been aimed at fostering greater innovation in the marketplace. For example, the U.S. Environmental Protection Agency (EPA) has pioneered the development of market-based approaches designed to achieve a given level of environmental quality at lower cost. These approaches have resulted in cost savings in the billions of dollars over the past decade.

Another area undergoing a great deal of change is the regulation of public utilities, such as phone companies, gas companies, and electric utilities. In many cases the fundamental rationale for public utility regulation has been called into question. The general thrust of these changes is to develop institutions that encourage firms to operate more efficiently. Thus, where new electric generating capacity is needed, for example, some state public utility commissions now encourage competitive bidding for constructing new generating capacity. Formerly, a single company that served the area was given a monopoly over the right to build new capacity. In some cases States are also allowing utilities to provide economic incentives for energy conservation as an alternative to building additional capacity.

The reasons for the evolution of the regulatory process are complex and only partially understood. In contrast, the relationship between the adoption of a particular regulatory approach and the resulting economic performance is fairly well understood. On the whole, greater reliance on market forces has led to a more efficient industry structure and large gains for consumers. The result of deregulatory efforts and efficiency-enhancing regulatory innovations has been to increase the overall size of the economic pie, and to make the average citizen better off. A critical element in promoting U.S. competitiveness in the years to come will be the implementation of regulatory strategies that encourage competition and innovation.

This chapter provides a selective review of regulatory activity, highlighting those aspects of Federal regulatory policy where exciting reforms are taking place. It also points out some areas, such as the banking industry, where additional reform is needed. The analysis demonstrates how the regulatory environment in which firms operate can have a dramatic effect on the performance of particular industries as well as the overall economy. In addition, it suggests how some fresh approaches to regulatory design can foster economic growth and promote technological change in the decades ahead.

REGULATION: AN OVERVIEW

Economists have identified two broad classes of regulation. The first, sometimes referred to as "economic regulation," usually covers the regulation of specific industries. This regulation takes three basic forms. The first places restrictions on the prices a firm can charge or which firms can enter a particular industry. For example, prior to 1978 airlines needed approval from the Civil Aeronautics Board for specific routes and fares. Truckers and railroads still have to file rates with the Interstate Commerce Commission. These transport industries represent a more general category of industries that could operate more efficiently in the absence of price and entry restrictions. Fortunately, much of this regulation has been removed in recent years, resulting in lower prices and an expanded menu of services for consumers.

A second form of economic regulation concerns industries for which it is less costly to have a single large firm provide a product than to have several smaller firms provide the product—i.e., so-called "natural monopolies." Industries thought to have elements of natural monopoly include local telephone networks and transmission and distribution systems for electricity and natural gas. For example, it is sometimes cheaper to build one large natural gas pipeline than several small ones. Some industries with natural monopoly elements, such as electric utilities, are regulated by Federal and State agencies. The typical approach of these regulators is to provide limitations on the overall return on investment that firms are permitted to receive.

A third form of economic regulation, which has often been overlooked in the scholarship on regulation, involves the direct government provision of services. For example, the government provides mail services through the U.S. Postal Service and prohibits others from competing for those services. This type of regulation can be viewed as an extreme form of price and entry regulation where the government is the sole supplier of certain services.

The second broad class of regulation, referred to as "social regulation," is aimed at tackling problems that are not always adequately addressed by the marketplace. Examples include health, safety, and environmental regulation. This regulation is not directly related to issues of prices and market structure, but rather attempts to address problems where there is a perceived "market-failure." For example, a firm may generate too much pollution because it does not include in its costs the effect of its pollution on others. Unlike much economic regulation, social regulation is rarely targeted at specific industries.

Although the preceding taxonomy of regulatory activity covers a lot of ground, it is far from complete. For example, not all economic

regulation is targeted at specific industries; minimum-wage laws clearly represent a form of economic regulation that applies to almost all industries in one form or another. Similarly, antitrust policy, whose purpose is to promote competition by placing limitations on different kinds of business conduct and policies, is also an important form of economic regulation. Despite such drawbacks, the preceding classification scheme provides a convenient lens through which to analyze the activities of a wide variety of Federal regulatory agencies.

RATIONALES AND MOTIVATIONS FOR REGULATION

Many justifications have been offered in defense of regulation. Economists quite naturally tend to focus on those justifications motivated by potential gains in economic efficiency. The primary efficiency rationale for economic regulation is that of natural monopoly. However, it is important to recognize that just because, in theory, an industry consisting of a single regulated firm might be able to sell its output at a lower cost does not mean that, in practice, it will. Just as the marketplace may be imperfect in the case of natural monopoly, so too are the tools at the disposal of government regulators.

The economic rationale for social regulation is that firms or individuals may impose costs or benefits on other individuals that are not adequately accounted for in the marketplace. Such costs or benefits are sometimes referred to as "externalities." Examples of externalities include smoke from a factory that contributes to respiratory illness of nearby residents, and the costs an individual might impose on others by driving while intoxicated. Externalities are often viewed as examples of market failure. Until recently many economists viewed market failure as a sufficient rationale for government intervention. Because it is now widely recognized that government intervention is not without its pitfalls, however, market failure is seen as a necessary, but not sufficient, condition for government intervention.

Economists sometimes refer to situations where government intervention results in a less efficient policy as "government failure." Such failures can arise in cases of both social and economic regulation. This is because what economists see as reasonable grounds for government intervention and regulation, and what actually happens when regulations are implemented, are often different. For example, many firms attempt to use the regulatory process to enhance their competitive position. Barriers to entering an industry may increase with the introduction of new regulations, not only increasing profits for regulated firms, but also yielding a less efficient industry structure. The existence of incentives for firms and individuals to manipulate the political process means that regulatory programs may not be

implemented so as to promote economic efficiency; nor is such efficiency necessarily an important criterion for politicians designing such programs.

Over the past 20 years some economists and political scientists (especially those of the "public choice" school) have attempted to understand what motivates different approaches to regulation. A key insight from this research is that much regulation can be explained by an interest in redistributing wealth from the general public or taxpayers to special interest groups. The motivations for some social regulation are more difficult to disentangle, but here, too, there is a strong political element related to the redistribution of wealth. For example, the legislation requiring scrubbers on power plants appears to have been motivated as much by the self-interests of environmentalists and high-sulfur coal miners as by a desire to promote cleaner air.

Notwithstanding the growth in understanding of both the politics and economics of regulation, some important parts of the puzzle still defy a simple explanation. Most notable among these is the wave of deregulatory activities that has taken place over the past two decades. The fact that many of these activities were characterized by diffuse benefits for a large group of consumers and concentrated costs for some well-organized interest groups makes it difficult to explain why they were adopted.

Several factors appear to have contributed to this dramatic change in the approach to regulation. First, an outpouring of research on economic regulation suggested that the costs of regulation were quite high. Second, some "natural" experiments provided further evidence that deregulation would result in large benefits. For example, in the case of airlines almost all intrastate markets were unregulated whereas interstate markets were heavily regulated. A comparison of the fares between Los Angeles and San Francisco with those between New York and Washington, D.C. suggested that people in the latter market were paying much higher fares as a result of regulation. Third, technological changes in industries such as telecommunications and electric utilities led some firms to lobby for a reduction in the entry barriers that protected existing firms. Finally, as the social costs of regulation grew, some politicians may have seen an opportunity to claim national credit by promoting policies that would result in significant gains for a large group of consumers. Although these factors help to motivate the movement toward deregulation, they do not explain why a wave of such activity began in the 1970s; nor do they explain what is likely to be in store for the future.

TRENDS IN REGULATION

The scope of regulation has broadened considerably since the first Federal administrative agency, the Interstate Commerce Commission (ICC), was established in 1887. The Sherman Antitrust Act became law in 1890. This was followed by the Federal Trade Commission Act and the Clayton Act in 1914, which were designed to protect consumers and to regulate competition. The New Deal period witnessed the creation of several financial regulatory agencies, including the Federal Deposit Insurance Corporation, the Securities and Exchange Commission, the Federal Home Loan Bank Board, and the Farm Credit Administration as well as other regulatory agencies, such as the Civil Aeronautics Authority (later the CAB) and the Federal Communications Commission. Prior to 1960 Federal regulation was primarily aimed at affecting the market structure of specific industries. For example, the Interstate Commerce Commission regulates the rates of truckers and railroads involved in interstate commerce. The now defunct Civil Aeronautics Board regulated prices and entry into various domestic airline markets (discussed in Chapter 6 of the 1988 *Report*). In short, the focus was on economic regulation.

Although economic regulation was predominant prior to 1960, some Federal agencies were charged with addressing health and safety issues during this period. For example, the Food and Drug Act of 1906 required inspection and labeling of certain foods and drugs. The Federal Aviation Administration was created in 1958 to help ensure safe air travel. These agencies have played an important role in shaping the structure of the industries they regulate.

Since the mid-1960s the focus of new regulatory activity has changed. While traditional regulation of prices and entry still exists in some industries, there has been a virtual explosion of social regulation concerned with safety, health, and environmental quality. The Consumer Product Safety Commission sets safety standards for consumer products from carpets to cribs. The Environmental Protection Agency develops environmental standards and approves State pollution control plans. The Occupational Safety and Health Administration regulates hazards in the workplace. The growth in this type of social regulation has led to an increased Federal presence not only in business activity, but also in the day-to-day activities of the general public. Indeed, some studies argue that social regulations have led to a measurable decline in productivity (discussed in Chapter 1).

THE EFFECTS OF REGULATION

The dramatic increase in regulation has been accompanied by an increase in understanding of the beneficial as well as harmful effects of this type of government intervention. Regulatory policy has an im-

portant effect not only on specific sectors of the economy, such as transportation and finance, but also on the Nation's ability to compete in the global marketplace. For example, if the United States chooses to adopt environmental and safety regulations that are more stringent than those of the rest of the world, it may encourage some types of industries to move facilities abroad. In other cases social regulation can serve as a form of protectionism. For example, if a foreign manufacturer must meet a complex set of U.S. standards, it may choose not to compete in this market. In this way some pollution and safety regulations can work to benefit domestic manufacturers, although consumers ultimately must pay higher prices. At the same time such regulations can yield benefits for consumers in the form of a cleaner environment and increased safety.

There have been several estimates of the scope of regulatory activity. One measure frequently cited is the increase in the number of pages in the *Federal Register*. Unfortunately, this measure is not very informative because it fails to account for differences in the impact of regulations as well as changes in the composition of the *Federal Register* over time. A somewhat more informative measure is given by the amount of direct Federal outlays for regulatory activity. Chart 5-1 shows how these costs have varied in real terms over the past 19 years. The chart reveals that the administrative costs of social regulation grew rapidly in the 1970s, fell slightly in the early 1980s, and then began to rise again. Activities associated with economic regulation, which represents only a small fraction of these administrative costs, have grown slowly over this period. A similar picture emerges from an analysis of administrative staffing requirements and costs as a fraction of gross national product.

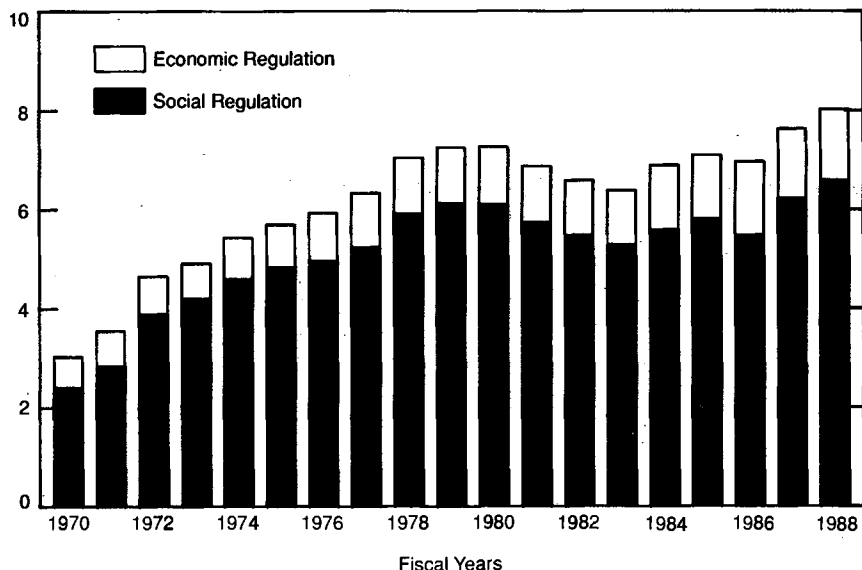
Of much greater economic interest are the costs that regulation imposes on industry that are ultimately borne by the public. These costs are decidedly more difficult to estimate. For example, consider the problem of measuring the environmental impacts of Federal and State efforts aimed at reducing air pollution. Information on pollution levels at the time the regulations were implemented is often inadequate. Moreover, even where accurate records are available, it is difficult to isolate the effects of regulation from other economic activity. While it is likely that the level of sulfur dioxide has decreased since 1970, for example, the result may be attributable as much to economic factors such as increasing energy costs and advancing technology as to regulatory changes.

Despite the methodological difficulties, studies have estimated how regulation of specific industries affects consumer costs. One recent estimate of environmental regulations alone put the annual price tag at more than \$75 billion, but made no attempt to measure benefits.

Chart 5-1

Real Federal Outlays for Regulatory Activities

Billions of 1982 dollars



Note.—Data for 1988 are estimates.

Sources: Center for the Study of American Business and Council of Economic Advisers.

Combining the results of other studies shows that Federal health and safety regulations cost consumers at least \$22 billion annually, again ignoring benefits. For the case of economic regulation, for which there are seldom any net benefits, the annual costs are estimated to exceed \$18 billion.

THE MOVEMENT TOWARD DEREGULATION

One of the most surprising and noteworthy changes in the regulation of markets has been the movement toward deregulation over the past two decades. Table 5-1 chronicles the deregulatory initiatives that have occurred from 1971 through the present. Most of these initiatives have occurred in the area of economic regulation, although a handful have occurred in social regulation.

The list illustrates the broad range of activities in which markets and competition have played an increasingly important role. Deregulatory efforts from airlines to cable TV have allowed firms to compete with less government intervention. Although estimates of total efficiency gains are not available, deregulatory efforts have provided substantial benefits for both industry and consumers.

TABLE 5-1.—*Deregulatory Initiatives, 1971-88*

Year	Initiative
1971.....	Specialized common carrier decisions (FCC)
1972.....	Domestic satellite open skies policy (FCC)
1975.....	Abolition of fixed brokerage fees (SEC)
1976.....	Railroad Revitalization and Reform Act
1977.....	Air Cargo Deregulation Act
1978.....	Airline Deregulation Act Natural Gas Policy Act Standards revocation (OSHA) Emissions trading policy (EPA)
1979.....	Deregulation of satellite earth stations (FCC) Urgent-mail exemption (Postal Service)
1980.....	Motor Carrier Reform Act Household Goods Transportation Act Staggers Rail Act Depository Institutions Deregulation and Monetary Control Act International Air Transportation Competition Act Deregulation of cable television (FCC) Deregulation of customer premises equipment and enhanced services (FCC)
1981.....	Decontrol of crude oil and refined petroleum products (Executive order) Truth-in-lending simplification (FRB) Automobile industry regulation relief package (NHTSA) Deregulation of radio (FCC)
1982.....	Bus Regulatory Reform Act Garn-St Germain Depository Institutions Act AT&T settlement Antitrust merger guidelines
1984.....	Space commercialization Cable Television Deregulation Act Shipping Act
1986.....	Trading of airport landing rights
1987.....	Sale of Conrail Elimination of fairness doctrine (FCC)
1988.....	Proposed rules on natural gas and electricity (FERC) Proposed rule on price caps (FCC)

Source: Adapted from R. Noll and B. Owen, *The Political Economy of Deregulation: Interest Groups in the Regulatory Process* and updated by the Council of Economic Advisers.

THE INTRODUCTION OF EXECUTIVE REGULATORY OVERSIGHT

When regulation represented only a small part of the “activity” of the Federal Government, there was no pressing need to coordinate or evaluate its overall effects. Now that regulation is an important component of economic policy, the need for coordination has become obvious. At the most basic level, there is a need to ensure that regulations do not promote policies that conflict with each other. Many economists would argue that it is also important to evaluate regulations in terms of their expected costs and benefits. From an economic standpoint, a basic problem is that regulatory agencies lack adequate incentives to take into account the cost of regulations on affected parties. Consequently, many regulations are designed to yield short-term political benefits while imposing larger costs on the public at large over a longer period.

To address the dramatic increase in regulatory activity beginning in the late 1960s the past four Presidents have introduced different oversight mechanisms with varying degrees of success. President Nixon, in 1971, established a "Quality of Life Review" of selected regulations. Born out of concern that some of EPA's environmental regulations were ineffective or too costly, this review process was administered by the Office of Management and Budget (OMB) and required agencies issuing regulations affecting health, safety, and the environment to coordinate their activities. President Ford formalized and broadened the review process in Executive Order 11821, which required that agencies prepare, and OMB review, inflation impact statements for major rules. In 1978 President Carter modified executive regulatory oversight by issuing Executive Order 12044, which required detailed regulatory analyses of proposed rulemakings and review by the Executive Office of the President. In addition he established two interagency groups. The Regulatory Analysis Review Group, made up of representatives from the Executive Office of the President and regulatory agencies, examined a limited number of proposed regulations expected to have substantial regulatory impact. The Regulatory Council, consisting of the heads of 36 Federal regulatory agencies, was asked to publish a *Calendar of Federal Regulations*, which summarized major regulations under development and was designed to point out regulatory overlap and to describe the costs and benefits of the proposed actions.

This Administration further sought to strengthen executive regulatory oversight. Just 2 days after entering office the President announced the formation of his interagency Task Force on Regulatory Relief to be chaired by the Vice President. The task force became the clearinghouse for the President's effort to improve the Nation's competitiveness and was used, in the President's words, to "cut away the thicket of irrational and senseless regulations." Hailed as "one of the keystones in our program to return the nation to prosperity," the task force later counted among its achievements expediting the drug approval process, reducing airborne lead emissions by phasing out lead in gasoline and encouraging the search for safe alternatives, and promoting more efficient uses of energy resources.

Three weeks after forming the task force the President issued Executive Order 12291, which authorized the new Office of Information and Regulatory Affairs (OIRA) within OMB and the task force to work together to develop more effective and less costly regulations. The Office of Information and Regulatory Affairs has primary responsibility for implementing Executive Orders 12291 and 12498. The first of these Executive orders requires cost-benefit analyses for all major rules. Although OMB could not veto agency rules, it could

improve the quality of a rule by sending the analysis back to the agency for reconsideration. The second Executive order requires annual publication of the *Regulatory Program of the United States*, which reviews regulations proposed by agencies for conformance with Administration policy and priorities. The approach of this Administration is unique in both the scope of the regulatory review as well as the formal inclusion of benefits estimation in the regulatory impact analyses for major rules.

The potential for executive regulatory oversight to impose discipline on the regulatory process is limited. One reason is that regulatory reform is unlikely to be a high priority for any Administration in the near future because it is hard to convince the public of the need to streamline the regulatory process when specific regulations are at issue. The problem is analogous to that of placing a limit on the budget or on spending. People recognize that in the aggregate many regulations may be burdensome, but almost always a vocal interest group will attempt to block the removal of any single regulation. A second reason is that program advocates in the Congress oppose the consequences of such oversight. Indeed, for some laws, such as the Clean Air Act, the statute clearly states that standards should be set without regard to costs.

Although the prospects for widespread reform of regulatory procedures are dim, executive regulatory oversight can play a constructive role in coordinating policies and reducing the burden of some of the more onerous regulations. Hopefully, this process will continue. The ability to review rules and to suggest agency reconsideration helps the Executive Office of the President to ensure that agency regulations are better justified and more consistent with Administration policy.

ECONOMIC REGULATION: EXTENDING THE BOUNDARIES OF COMPETITION

Over the past three decades a consensus has emerged among economists about the usefulness of some types of regulation. It is generally agreed, for example, that regulation aimed at controlling prices or entry will lead to inefficiencies in industries where competition can be sustained. Competition is generally viewed as a positive dynamic force that will encourage innovation and promote economic growth.

PRICE AND ENTRY REGULATION

The potential for competition in many industries has been enhanced in recent years by dramatic advances in technology, particu-

larly in telecommunications, information processing, and financial services. As a result, price and entry regulation has come under increased scrutiny. In some cases, such as in transportation, substantial deregulation has occurred. In others, such as banking and securities, there have been modest moves toward relaxing price and entry barriers, with mixed results. In addition to the piecemeal attempts to relax economic restrictions in specific industries, a major change has occurred in the government's treatment of proposed mergers and acquisitions.

The Shift in Antitrust Policy

Antitrust policies limit the type of business agreements firms can use. For example, one aspect of antitrust policy places restrictions on price-fixing, because price-fixing is presumed to be anticompetitive. A second aspect of antitrust policy that has come under increasing scrutiny in recent years is the review of proposed mergers between different businesses. A marked shift in antitrust merger policy has occurred since 1980. While horizontal mergers involving similar companies are still monitored closely when entry barriers and concentration levels are high, the view of vertical mergers has evolved considerably. Vertical relationships, such as those in the petroleum industry where some firms refine petroleum and also distribute petroleum products, are viewed with less suspicion. The principal reason for this change in perspective is that the efficiency-enhancing aspects of vertical relationships are more widely appreciated. In addition to the change in thought on vertical restraints, there is also increasing recognition that many U.S. firms now compete in global markets, which means that the appropriate measure of market size must be enlarged.

Reflecting this change in perspective, the Department of Justice in 1982 adopted new guidelines for determining when it would challenge mergers or acquisitions as anticompetitive. The Federal Trade Commission at the same time adopted a comparable policy statement. These new guidelines provide a firm conceptual basis for evaluating horizontal and vertical mergers. They also provide more leeway for vertical mergers. In 1984 the Justice Department issued revised guidelines that placed even greater weight on competition in a global setting.

It is too early to assess the economic impacts of changes in the merger guidelines. However, one effect has been to increase competition in the market for corporate control. Increased competition should provide greater incentives for managers to run their corporations more efficiently (discussed in Chapter 6 of the 1985 *Report*).

Another important change in policy, which should complement the recent merger guidelines, is the National Cooperative Research Act of 1984. This act was designed to promote greater collaboration on

basic and applied research among private companies. The act should encourage domestic firms to engage in cooperative arrangements, such as research and development. Like the revised merger guidelines, the act is supposed to make it easier for U.S. firms to compete in a global setting (discussed in Chapter 6).

Banking: The Need for Reform

One of the major challenges for the next Administration will be to address the critical problems faced by the "banking" industry. A wide variety of institutions besides banks perform banking functions. Here, the terms "bank" and "banking institution" will be used to refer to those depository institutions covered by Federal deposit insurance. These institutions include savings banks and savings and loan associations (thrifts), credit unions, and commercial banks.

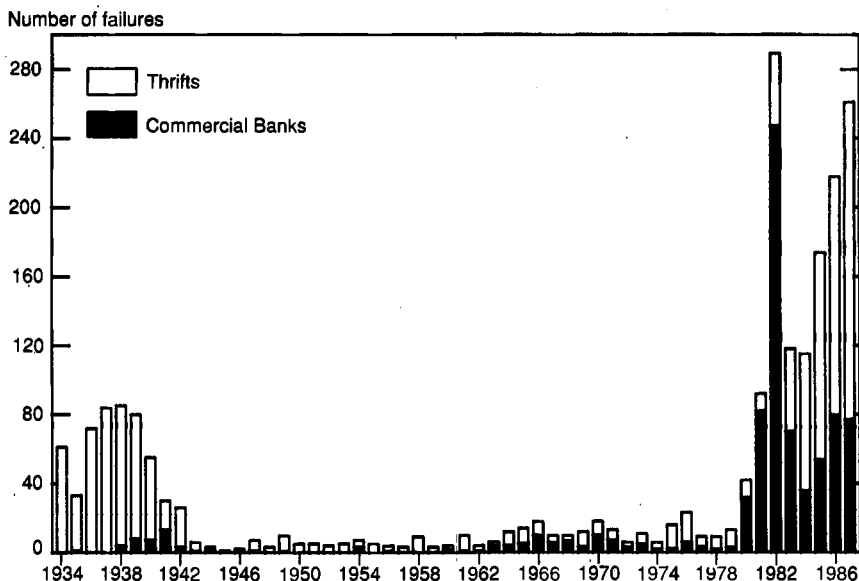
Much of the concern over the health of the banking industry results from the marked increase in bank failures over the past decade. As shown in Chart 5-2, failures remained high through the end of the depression, stayed at relatively low levels from 1945-79, and then rose dramatically. Net outlays for bank failures by the major Federal deposit insurance agencies reveal a similar pattern after World War II, but were inconsequential prior to that time.

The sharp rise in failures has placed a major burden on the deposit insurance systems. The Federal Savings and Loan Insurance Corporation (FSLIC), which provides deposit insurance for savings and loan associations, has been insolvent since 1986. The Federal Deposit Insurance Corporation (FDIC), which insures commercial banks and some savings banks, is still solvent, but will run a loss for 1988. Estimates of the costs to the FSLIC of closing insolvent thrifts have risen steadily. The Federal Home Loan Bank Board, which regulates these institutions, now estimates this cost to be in the range of \$50 billion. Other estimates range as high as \$100 billion, but costs will vary depending on how soon the problem is addressed. Unless something is done promptly, these costs are expected to climb rapidly.

The problems that many of these institutions have stem from the incentives provided by banking regulations. For example, thrifts were designed to hold portfolios that are unbalanced, with a large portion of assets consisting of long-term, fixed-rate mortgages while liabilities are held in the form of short-term deposits. When long-term rates exceeded short-term rates, the industry prospered. Problems arose in the 1970s, however, as a result of inflation and Regulation Q, which placed ceilings on interest rates for deposits. As the real rate of return on bank deposits declined, innovations, such as money-market funds, attracted funds into nonregulated substitutes for bank and thrift deposits. The sudden loss in capital bankrupted many banks and thrifts, and reduced the capital of others.

Chart 5-2

Bank and Thrift Failures



Sources: Thrift data from J. Barth et al., *Contemporary Policy Issues*, Fall 1985, and J. Barth and M. Bradley, paper presented at Federal Reserve Bank of Cleveland, November 3-4, 1988. Bank data from Federal Deposit Insurance Corporation, 1987 Annual Report.

With the sudden loss in capital, some of the defects in the current system of deposit insurance became apparent. This system, which currently guarantees about \$3 trillion of deposits, has tended to exacerbate the problems faced by the banking industry. The basic problem with the current system of deposit insurance is that it fails to provide banks with appropriate incentives for risk management when banks have little or none of their own capital at risk.

Deposit insurance is intended to provide safe investment opportunities for individuals and businesses that desire low-risk investments. It is also designed to reduce the likelihood of runs on banks. Unfortunately, deposit insurance also dramatically reduces the incentives for depositors to monitor the financial health of their bank. Many depositors do not pay enough attention to the possibility of large losses because most, if not all, of their deposits are fully insured. Thus, one of the most effective mechanisms for curbing the excesses of banking institutions has been abandoned.

The primary task of monitoring banking institutions falls on shareholders and Federal regulatory agencies. Because the shareholders'

interests do not always coincide with those of depositors, the task of looking out for depositors' interests as well as the general health of banks is left largely to the regulators. The next Administration will need to develop constructive ways to reform these regulatory institutions so that the industry can regain its financial health.

From the standpoint of the regulator, effective monitoring is particularly important as the health of a bank deteriorates. As a bank's net worth declines, it has an even greater incentive to engage in risky behavior because less of its own capital is at risk. If a bank becomes insolvent but is still allowed to keep its doors open, it may engage in highly speculative behavior. If such investments turn out well, the banks will reap the gains; however, if such investments perform poorly, the brunt of the adverse consequences will be borne by the deposit insurance funds and, ultimately, the U.S. taxpayer.

The irony of this situation is that Federal Government policies have led to this debacle. Deposit insurance initially was limited in scope; the limit on private savings and loan accounts was set at \$2,500 in 1934. However, deposit insurance has expanded dramatically. For example, in 1980 the Congress increased the ceiling on deposit insurance for individual savings and loan accounts from \$40,000 to \$100,000. Two years later, a congressional resolution explicitly affirmed the full faith and credit backing of deposit insurance funds by the U.S. Government. In addition the effective scope of deposit insurance has expanded. In the event of failures, not only have accounts under the ceiling been protected, but so have many accounts exceeding \$100,000. In some cases other creditors and, in rare cases, stockholders were also fully or partially protected. In effect, there has been a secular move in Federal banking toward providing greater coverage for depositors and creditors, particularly in the case of large bank failures. While this move may have helped to decrease the likelihood of runs on particular banks, it has also contributed to the decline in the health of the U.S. banking industry.

Unfortunately, Federal agencies have taken other steps that have exacerbated rather than alleviated the problems with excessive risk-taking, partly as a result of congressional pressure. One measure taken in response to the erosion of bank capital has been to lower capital standards. This approach was tried in 1986 for institutions heavily involved in farm and energy investments. The reduction in capital requirements meant that banking institutions in poor financial health would have less of their own money at risk when making investments. Given the insurance system, institutions have an increased incentive to engage in riskier investments, largely at the taxpayer's expense if things do not work out as anticipated.

In addition to allowing troubled banks to have lower capital requirements, regulators have been reluctant to require banks to evaluate their loan portfolios at current market value. Some banking institutions, therefore, appear solvent when, in fact, they are not. While there may be a short-term payoff to regulators from avoiding taking action in such cases, there has been a long-term cost to the taxpaying public. These banks continue to remain in business, and often they invest in excessively risky assets, thus increasing the exposure of the deposit insurers.

As problems with insolvency have grown, the agencies have responded by attempting to reduce their out-of-pocket costs. In some cases insurers have allowed banks with financial problems to bid on other troubled banks. In other cases the insurers have entered into long-term agreements with purchasers of failed thrifts that protect the new owner from any losses on the acquired portfolio for up to 10 years. By weakening incentives for efficient management, such actions are likely to raise insurance costs in the long run.

Most regulatory actions taken so far merely serve to postpone the problem. Postponing the day of reckoning will sharply increase costs to the general public. The current regulatory strategy also makes life much more difficult for healthy institutions. By allowing banking institutions that are engaged in excessive risk-taking to remain in business, the healthy thrifts covered by the FSLIC are forced to pay higher insurance premiums to pay for the cost of those thrifts that are failing or have failed.

The lessons from past mistakes can be used to develop a more constructive approach to restoring the health of the banking and thrift industry. The key lies in providing institutions with the appropriate incentives for risk-taking. While existing proposals differ in their details, there is widespread agreement that the Congress and the next Administration should squarely address the problems created by the current deposit insurance system. Several economists have pointed to the need to liquidate or reorganize insolvent banks and thrifts as quickly as possible. Critics of such reorganization note the high price tag, estimated to be in excess of \$50 billion for insolvent thrifts alone. Moreover, a large portion of the payment of this bill will need to come directly from the public. The remainder will be paid for indirectly by consumers through deposit insurance premiums levied on banks.

Removing insolvent banking institutions from the banking system is only a first step. The insurance system itself needs to be redesigned. In particular, the scope of Federal deposit insurance should be significantly curtailed. Reducing the ceiling on deposit insurance would help achieve this end. In addition, large depositors and credi-

tors should not be provided with *de facto* Federal deposit insurance. These changes would restore some much-needed discipline to the system.

In addition to reforming deposit insurance, regulators should establish procedures to step in and restructure institutions before they become insolvent. For example, a regulator can require accounting procedures that use market valuation of assets so that regulators have better information on the net worth of banks. The combination of better regulatory practices and lower ceilings for insured deposits should promote the health of the banking industry.

Two recent government studies provided careful examinations of banking regulation. The 1984 President's Task Group on Regulation of Financial Services chaired by the Vice President and the 1985 Cabinet Council on Economic Affairs both made suggestions for streamlining the oversight process and for providing more appropriate incentives for banking institutions. Some of the more salient recommendations included risk-related deposit insurance, higher capital requirements, stronger disclosure requirements, limitations on insurance to insured depositors, and increased monitoring and more vigilant enforcement by oversight agencies. These ideas are designed to increase monitoring on the part of interested parties and ensure that banking institutions have adequate amounts of their own capital at risk. Had these ideas been adopted in 1985, the problems facing the FSLIC and the FDIC would probably be much more manageable now.

The banking industry is evolving rapidly. The purpose of regulation should be to encourage the development of a healthy financial service sector that can compete internationally. Needed reforms include not only restructuring the deposit insurance system, but also redefining the appropriate sphere of competition for depository institutions. While the two exercises differ, they will both rely heavily on an understanding of how the incentive structure faced by today's banking institutions has led to the current crisis.

RETHINKING THE LIMITS OF NATURAL MONOPOLY

There has been a longstanding debate about how best to regulate natural monopolies. The traditional approach to such problems has been to regulate selected firms in order to prevent excessive profits. This regulation usually assesses the value of the firm's capital stock and then allows the firm to obtain a "reasonable" return on its investment. In practice, Federal and State regulatory commissions do not fix the rate of return *per se*, but rather agree on prices that the firm can charge. The prices result in a revenue stream for the firm

that is not supposed to, but sometimes does, exceed the allowable rate of return.

Rate-of-return regulation has several problems. First, it tends to be time-consuming and expensive. A rate proceeding before the Federal Communications Commission concerning appropriate charges for international satellite communications took 11 years. A second problem, related to the first, is that it is often difficult to determine which aspects of a firm's capital stock should be included in calculating the appropriate rates, and how this capital should be valued. A third problem is that firms subject to such regulation have relatively little incentive to produce output efficiently. In cases where the allowable rate of return exceeds the cost of capital, firms may try to increase their capital stock beyond what is efficient so that they can receive higher revenues. In cases where it falls short, firms may be unable to add needed capacity. The regulator is in the unenviable position of having to set a "reasonable" rate of return and determine whether price increases are justified on the basis of limited information about demand and costs.

Rate-of-return regulation needs to be compared with other approaches for dealing with industries with strong elements of natural monopoly. While competition could conceivably result in higher costs when there is a natural monopoly, it may also serve to spur innovation and drive down prices. For example, a study of electric utilities in markets with and without competition suggests that rates could be lowered by increasing competition. The point is that most forms of economic regulation are inherently flawed. Because policy should be based on actual rather than theoretical performance, competition, even in the presence of technologies with natural monopoly characteristics, may be preferred.

Given the costs associated with the rate-making process and the attendant inefficiencies, there have been several suggestions for reforming the process. For example, one approach is to allow firms to bid on the right to offer a particular service, and give the contract to the highest bidder. Such franchise bidding schemes can present difficulties. Once the bidder wins the contract, it may be difficult to ensure adequate performance. Moreover, the contractor may be able to create conditions that make it difficult for new entrants to enter the market when the contract has expired. Such problems tend to limit the applicability of this approach.

Two new ideas have recently surfaced that, for some cases, represent promising alternatives to traditional rate-of-return regulation of natural monopolies. The first would replace such regulation with a "price cap." The idea behind a price cap is to set an upper limit on the price a firm can charge over a given period, but then allow the

firm to choose any price that does not exceed the cap. The advantage of this approach is that the firm has an incentive to produce its output at least cost. Moreover, the firm also has a strong incentive to search for new technologies that would lower production costs because it would be allowed to retain its profits.

Price caps present some difficulties in practice. In many instances it may not be a straightforward matter to set the price cap at a level reflecting a competitive price. If the price cap needs to be revised periodically, the problem is further complicated. Indeed, constant revision of the price cap may result in a system of regulation as cumbersome as traditional rate-of-return regulation. The challenge lies in selecting applications where price caps will result in efficiency gains. While there are no hard and fast rules, it would appear that price caps are most likely to succeed when a firm or industry is changing from monopoly to a more competitive situation.

The regulation of prices for some long-distance calls provides one potentially promising application of price caps. The Federal Communications Commission is considering using this approach as a way of regulating the portion of local telephone companies' costs that are subject to Federal jurisdiction, and as a way of regulating part of AT&T's business for a short period of time before moving to complete deregulation. Whether price caps will be adopted in this case is uncertain. They are already being used in a variety of contexts including telecommunications in the United Kingdom. British Telecom, formerly a state-owned entity, is now subject to price caps that are adjusted periodically to account for inflation and productivity. A study of this application suggests that price caps have succeeded in promoting efficiency.

A second approach to the issue of natural monopoly is to devise institutional mechanisms that permit competition to thrive even where the production of a commodity has certain characteristics of natural monopoly. An idea that appears to hold great promise for introducing competition is that of shared capacity rights. These rights allow private parties to use property jointly in a way that benefits them all. One example is the sharing of common space and facilities in a shopping mall. A second example is the joint ownership of a fiber optics cable for trans-Atlantic calls.

This idea can be, and often is, applied to large investments in complex networks. For example, suppose it is cheaper to build one large pipeline than two small pipelines to transport natural gas. The pipeline need not be owned by a single firm. Indeed, several firms could each own a share of the pipeline. The ownership share would entitle the firm to use a certain fraction of the pipeline's capacity. By dividing ownership among several firms or individuals in this manner, it is

possible to imagine a competitive market emerging for pipeline capacity, whereas if a single business owned the only pipeline, competition would not exist. This approach can be a first step toward promoting competition as regulatory barriers to entry are reduced. The idea of sharing capacity rights may hold promise for introducing competition into such diverse areas as telecommunications, electricity transmission, and the transport of oil and natural gas by pipeline.

In addition to the new approaches that are evolving as substitutes for traditional rate-of-return regulation, recognition is growing that many industries formerly thought to have strong natural monopoly characteristics can be reorganized in ways that would foster greater competition and efficiency. The change in the view of which industries are natural monopolies derives in part from technological change, and in part from growth in the size of markets, which allows several firms to compete. The equipment needed to provide a network for making a long-distance call is different now from what it was 25 years ago. Competition in the long-distance market is now a viable alternative.

A second factor contributing to the change in thinking about industries with natural monopoly characteristics stems from a more careful examination of the cost structure in a given industry. For example, in the case of telecommunications, economists have argued that telephone companies had some characteristics resembling those of a natural monopoly, but that long-distance service could be more efficiently provided if firms were allowed to compete.

The impetus for change has come mainly from industries that stood to gain from changes in the regulatory environment. For example, new entrants in telecommunications saw an opportunity to gain by providing consumers with lower rates on long-distance calls than were being offered. Similarly, low-cost producers of electricity see an opportunity to increase their profits as markets are opened up. Indeed, in virtually all cases of regulatory reform, an outside stimulus was provided by an interest group that stood to gain from those changes in direct economic terms. Such interest group stimulus is not, however, sufficient to generate regulatory changes.

Two of the more exciting sets of reforms are being applied to the regulation of electric utilities and pipelines that transport energy. The changes in these industries underscore the potential for regulatory reform as well as some of the pitfalls.

Increasing Competition in the Electric Power Industry

Electric utilities are frequently cited as a classic case of natural monopoly. Indeed, all three components of the industry—generation, transmission, and distribution—were previously thought to be subject to economies of scale. Thinking on this issue has changed dramati-

cally in recent years. Econometric studies have provided ambiguous results concerning the scale economies that could result from larger power plants. While economies of scale probably exist over some range of output (as they do with many firms), the range may be small enough to allow several firms to compete in building and running power plants that serve the same market. In addition, although it is widely agreed that transmission and distribution systems are subject to economies of scale and barriers to entry, there are ways to allow competition to emerge even in these parts of the industry.

The interest in new institutional arrangements has been sparked, in part, by problems that arose in the electric utility industry in the early 1970s. Prior to that time, real electricity rates showed a marked downward trend. This situation changed dramatically with the large increase in oil prices. Traditional rate regulation was ill-equipped to adapt to these changing circumstances. Consumer groups placed continuing pressure on public utility commissions to hold down rates, while utilities argued that rate increases were necessary both to cover costs and make the necessary investments in new generating capacity.

Fortunately, both the electric utilities and the regulators have begun to develop some innovative solutions to these problems. Utilities, in cooperation with Federal and State regulators, have developed a variety of sophisticated contracting arrangements for the purchase and sale of power. Under long-term contracts, utilities can effectively purchase partial or full ownership of a generator. At the other end of the spectrum, spot markets for electricity allow utilities to exchange power on an hourly basis.

One of the more important pieces of recent legislation to promote the move toward a more competitive generating sector was the Public Utility Regulatory Policies Act of 1978 (PURPA). The primary purpose of this legislation was to encourage cogeneration and small power production, and it has done just that. Cogeneration involves the joint production of heat and electricity at the same facility. This process often facilitates the generation of electricity at a cost lower than is possible at a conventional power plant.

Cogeneration has increased dramatically since the implementation of PURPA. A report recently issued by the North American Electric Reliability Council projects that between now and 1997, some 20,000 megawatts, or 27 percent of all new capacity coming on line, will come from sources that are not owned exclusively by traditional electric utilities. While PURPA promoted the use of different generation technologies as well as small facilities, it also led to the purchase of some unneeded capacity. The principal problem was that States sometimes provided price signals to builders of capacity that did not

reflect the underlying economics of the particular power system receiving the electricity.

Although the implementation of PURPA has created inefficiencies, it has helped to create a group of entrepreneurs interested in having greater access to the market for producing electric power. The legislation also demonstrated that an electricity generation market with several participants was technically feasible. That is, it was possible to allow new entrants into the generating sector without compromising the reliability and stability of the entire power system. Having shown the technical feasibility, the principal challenge that remains is to design rules that promote efficiency in the generation sector.

In the past year, the Federal Energy Regulatory Commission (FERC) has issued three proposed rules designed to encourage greater competition in the market for generating electricity. The rules provide guidelines that, if implemented, would reduce regulatory entry barriers for generating electric power, and would also specify appropriate compensation mechanisms for rewarding entrepreneurs. There are three key aspects of the proposed rules. The first is to define guidelines for administratively determining "avoided cost." Avoided cost refers to the cost that a utility does not need to incur (i.e., it avoids) if it purchases electricity from a third party. In order to promote efficiency, FERC defines avoided cost in a way that approximates the economic concept of marginal cost. The cost a utility avoids will depend, among other things, on the availability of other generating units, which in turn will depend upon the time of day or year at which the power is expected to be needed. These guidelines will help States avoid unnecessary capacity purchases. In particular, the rule is designed to avoid problems under PURPA where utilities were sometimes forced to purchase uneconomical power.

A second key feature of the proposed rules is that they promote market-based mechanisms that would eliminate the need for an administrative determination of avoided cost. The basic idea is to establish a market where firms are allowed to bid on supplying capacity that is needed. Other things being equal, the firm with the lowest bid would supply the additional capacity. For the market to work effectively, capacity needs to be defined carefully. The proposed FERC rule on bidding suggests that nonprice factors, such as those related to system reliability, be put into writing if they are a characteristic desired by the purchaser.

A third key aspect of the proposed rules, which will introduce greater competition into the electric power generation market, is the lowering of barriers for new entrants. An entire rule is devoted to defining a class of "independent power producers." Just as the name

implies, the independent power producers generate electricity for sale outside an area in which they have market power as long as they do not have control over key transmission facilities. The intent of the rule is to provide a framework so that such producers can compete without being subject to traditional rate-of-return regulation. Both utilities and nonutilities can be independent power producers. One implication of this rule is that it allows utilities that can to build inexpensive reliable sources of power to compete in markets outside of their area. Thus, for example, a utility operating in North Carolina could build a power plant in California to supply customers there if it were the lowest bidder. This increased competition will ultimately mean lower electricity prices for consumers and businesses, and it will also enhance the Nation's ability to compete abroad.

These proposed rules represent an important step toward developing a more efficient electric generation sector. However, much more needs to be done even in the context of generation. For example, one alternative to increased generation capacity is conservation. Several utilities have encouraged conservation through advertising, and in some cases, providing economic incentives to users that reduce demand. A more general policy that provides incentives for consumers and producers to put conservation efforts on an equal footing with capacity investments would promote further cost savings.

One important aspect not addressed by the proposed rules is the determination of needed capacity. Under current regulations, the local public utility and the public utility commission jointly make this determination. While such projections are made on the basis of demand forecasts, these demand forecasts are based on a set of prevailing prices that rarely reflect underlying costs. What is needed is a system where electricity users are asked to pay a price that reflects the costs they impose on the system.

Although widespread support exists for promoting greater competition in the electric generation sector, there is no consensus on what to do about transmission and distribution systems that are subject to economies of scope and scale. Competition in these areas may also be desirable. Indeed, in some cases, utilities are devising new arrangements, such as shared capacity rights, that will help spur competition.

It is possible to imagine both the transmission and distribution segments of the electric utility industry taking advantage of shared capacity rights. Indeed, after finishing with its rules on generation, FERC intends to take a closer look at opportunities for promoting competition in the transmission sector. The idea of shared capacity rights has been shown to work in practice. The key to its successful implementation in the electric utility industry and other segments of

the economy that are heavily regulated (such as telecommunications) is to design systems that would enable currently regulated utilities to adapt to a competitive environment.

Regulation of Oil and Natural Gas: Some New Developments

Energy regulation over the past two decades provides a textbook study of the effects on markets of price controls and government intervention. Fortunately, the wave of price controls introduced in the 1970s has for the most part been reversed. Price controls remain on some fuels, such as natural gas. However, controls on gasoline and crude oil prices were removed at the beginning of this Administration. The lessons to be learned from the experiments with price controls are clear. They lead to inefficiencies and shortages, and they typically exacerbate adverse impacts on the overall economy, such as those that resulted after the oil price hikes in the 1970s.

The transmission system for oil and natural gas remains regulated. The Administration recently moved to deregulate part of the oil pipeline network and set up a system of price caps for the remainder of the system. In addition, FERC has stated that it will reduce regulatory oversight of proposed rate increases by an oil pipeline if the pipeline lacks significant market power.

The States and FERC still regulate natural gas pipelines. The FERC has issued several rules and proposed rules that attempt to ease some of the problems in the supply of natural gas. One proposed rule focuses on allowing pipeline capacity rights to be bought and sold. This change would enhance the efficiency of the network by allowing the pipeline to be allocated to the highest valued uses.

The movement toward more complete deregulation of the natural gas industry should be promoted. It not only makes good sense from an economic point of view, but it is also important for environmental reasons. Natural gas is a clean-burning fuel that results in relatively low emissions of carbon dioxide. Thus, this fuel could be part of a strategy aimed at addressing concerns regarding global warming. Moreover, because the combustion of natural gas results in much lower levels of nitrogen and sulfur oxides than oil or coal, it could play an important role in reducing acid deposition.

In conclusion, the potential for increased deregulation in areas formerly thought to be natural monopolies is enormous. This potential lies primarily in areas characterized by network structures such as telecommunications, electricity, energy, water delivery systems, and air traffic control. Price caps, shared capacity rights, and other innovative approaches to regulatory reform should be pursued vigorously.

PRIVATIZATION

Privatization is a natural extension of deregulation. Eliminating government provision of services fosters competition by increasing the role of the market. Government provides a large array of goods and services that the private sector could also provide. Examples include the air traffic control system, the enrichment of uranium, and the postal service. From an efficiency point of view, the critical question is whether firms could provide a similar or improved menu of services at lower cost. The answer depends on the nature of the service; however, there is widespread agreement that the government now performs several tasks that the private sector could more effectively and efficiently handle. The motivation for keeping these functions within the sphere of government is usually to achieve objectives other than economic efficiency.

The rationale behind privatization—the movement of government activities to the private sector—is that the private sector can often provide services more efficiently because it is subject to the discipline of market forces. However, recent history suggests that even privatization measures that clearly promise efficiency gains are likely to encounter substantial political resistance. As with other regulatory reforms, the key to the success of privatization lies in designing institutions that will allow the beneficiaries of such change to compensate adequately those who stand to lose.

There are essentially three techniques for the privatization of goods and services now supplied by the government sector. One involves selling government assets to persons who will manage them privately. The sale of Conrail in 1987 is an example of Federal Government divestiture of an enterprise as a functioning unit. Assets also can be sold piecemeal; examples include the sale of obsolete military bases, loan portfolios, and surplus equipment.

A second privatization technique is contracting out, whereby government contracts with private firms to provide goods and services that it would otherwise supply directly. The Federal Government now contracts to purchase approximately \$200 billion of goods and services annually. Contracting out usually results in cost savings because of the competition for contracts among vendors. A 1986 General Accounting Office study determined that additional opportunities for contracting out could result in the transfer of between 95,000 and 500,000 current government positions to the private sector, at annual savings ranging from \$0.9 billion to \$4.6 billion.

Contracting out is most likely to succeed when the terms and measurement of service delivery are clear and easily defined, where at least several firms have the capacity to perform the contract, where the contractor does not have to make large new capital expenditures,

and where the contract can be subject to regular renegotiation and renewal. Examples of areas particularly well-suited for contracting out include data processing, laboratory testing, and payroll services.

A third technique for privatization is the use of vouchers, through which the government, rather than directly providing goods or services, distributes chits, such as food stamps, that allow eligible consumers to purchase those goods and services from private suppliers. For example, the government now provides housing vouchers usable for rental payments to more than 140,000 low-income households as a substitute for public housing. A comparable proposal often discussed is the provision of education vouchers as a partial substitute for public schools (discussed in Chapter 5 of the 1988 *Report*).

In March 1988 the President's Commission on Privatization issued a comprehensive report calling for increased Federal Government use of privatization. Areas identified by that report as being especially well-suited for increased privatization efforts included low-income housing, housing finance, Federal loan programs, air traffic control, education, postal delivery, military commissary operation, prison operation, urban mass transit, and intercity passenger rail transportation. The Commission did not examine some other candidates for privatization, such as the uranium enrichment industry and the power marketing authorities, because the Congress has said that no Federal funds could be used to study privatization of these activities.

Postal delivery appears to have great potential for enhancement of economic efficiency through privatization. The U.S. Postal Service (USPS) is, in effect, a government-owned monopoly maintained by law, because the private express statutes reserve letter delivery for the USPS. Many aspects of postal delivery do not exhibit the natural monopoly characteristics that would preclude their competitive provision by multiple firms, and thus are good candidates for privatization measures. Some limited privatization of postal delivery has already occurred. The USPS annually contracts out about \$3 billion of services, primarily long-distance mail transport and rural retail and delivery services. It also offers discounts to large mailers who pre-sort their mailings. In addition, private express couriers have been allowed since 1979 to deliver "extremely urgent" mail, subject to time of delivery or minimum price restrictions. These firms have grown dramatically. One private courier, for example, now handles more than 178 million pieces of urgent mail a year, and a second firm now controls more than 90 percent of the parcel market. The USPS has responded to this competition with its own express mail service, but has been able to retain only a small share of this market.

Further privatization of postal delivery could be encouraged in several ways. The Privatization Commission recommended the repeal of

the private express statutes, particularly with regard to third-class mail and rural delivery; repeal of the restrictions on private use of letter boxes; loosening of the restrictions on private delivery of urgent mail; and more widespread use of contracting out. The Commission also recommended that the possibility of private ownership of the USPS be considered, with priority being given to employee ownership, in whole or part.

One obstacle to more widespread use of privatization involves groups that are special beneficiaries of the government provision of certain goods and services. For example, when the Federal Government provides goods or services, it often charges a single price. This practice frequently results in the cross-subsidization of high-cost consumers by low-cost consumers. Those people receiving subsidies resist privatization measures that would end or reduce their subsidies. A second group of special beneficiaries are the government workers who now provide goods and services, and who receive a level of compensation and benefits that they might have difficulty retaining were their services provided in a market environment. The Privatization Commission noted that for privatization initiatives to be implemented, it would often be necessary to appease beneficiaries of the current status quo by adequately compensating them for the benefits they would lose as a result of privatization.

The resistance of current beneficiaries has successfully blocked most privatization initiatives in recent years. Support is growing, however, for more widespread use of privatization, based both upon the realization that substantial benefits can often be obtained, and upon the recognition that a trend toward privatization is accelerating worldwide. This trend is most obvious in the United Kingdom, but is visible also in many other countries, including some with socialist governments. If privatization measures can address the concerns of special interest groups, it may be possible to expand the sphere of competition and improve overall economic welfare.

RETHINKING SOCIAL REGULATION

Just as the nature and scope of economic regulation may be changing significantly, there are signs that new approaches to social regulation are emerging. Whereas economic regulation appears to be receding, there is no sign that social regulation is on the wane. A large portion of the public believes that the Federal Government should take a strong leadership role in protecting the public from environmental, health, and safety risks. Elected officials frequently accommodate these concerns by passing legislation aimed at "fixing" the problem. Unfortunately, much of this legislation has fallen far short

of its goals. In some cases, this was because the goals were highly symbolic. For example, 1972 amendments to the Clean Water Act called for the elimination of all discharges into navigable waterways by 1985—a solution that, even if possible, would have been prohibitively expensive. In other cases the legislation itself led to decisions that inadvertently increased both the risks and costs to society. For example, the Consumer Product Safety Commission requirement for child-proof caps on products, such as aspirin, appears to have led initially to an increase in the number of poisoning accidents. Evidently parents became more lax about leaving hazardous products within the reach of children.

Agencies involved in social regulation tend to specialize in one of two areas. “Standard-setting” agencies focus on defining acceptable levels of risk and setting standards accordingly. These agencies seek to lower the current amount of risk society faces from activities such as breathing polluted air, working in hazardous areas, being exposed to excessive airport noise, and driving automobiles. Each agency faces the burden of proof, both legally and politically, in setting standards. By and large the standard-setting agencies seek to reduce the levels of risk that are already commonplace in society.

A second type of regulatory agency focuses on screening new risks by requiring manufacturers to prove that their product is not harmful. Absent such “proof,” the agency may prohibit the product from being sold to the general public. While statutes for standard-setting agencies sometimes require a recognition of the costs imposed on the regulated, statutes for screening agencies rarely contain such provisions. Consequently, agencies are not permitted to weigh the safety of a new product against the safety of a product it would replace. Moreover, screening agencies often need not justify, either to the courts or the Congress, the costs, or forgone benefits, of prohibiting the sale of potentially valuable products.

There has been increasing recognition that the legislative mandates underlying both kinds of regulatory approaches lead to inefficiencies. Indeed, one of the most important challenges that remains is to design regulatory institutions that achieve social objectives more efficiently. Recently, several agencies have attempted to implement some innovative reforms aimed at streamlining and improving the regulatory process. The following review highlights a few of the more noteworthy reforms and identifies some of the challenges that remain.

THE EXPANDED USE OF MARKET INCENTIVES

In the 18 years since its establishment, the Environmental Protection Agency has developed a large and still growing body of regulations to cope with a wide range of environmental problems, including

toxic dumps, acid rain, and smog. The EPA's approach to environmental management has been rigid, allowing companies little flexibility in meeting mandated environmental targets. Unfortunately, as with all highly centralized approaches to problem-solving, this command-and-control approach fails to take advantage of important information. Firms, not regulators, have the detailed knowledge about pollution control costs that is crucial to expensive approach to cleaning up the environment.

Regardless of one's view of the value of environmental improvements, EPA's rigid regulatory strategy has clearly wasted a substantial portion of the Nation's investment aimed at improving air quality. The cost of air pollution control during the 1980s has averaged more than \$30 billion annually, and economic studies indicate that more cost-effective pollution control strategies could have achieved the same degree of environmental quality for billions less. The combination of political pressures and legislative mandates from the Congress has made it difficult for EPA to accommodate concerns about the cost of regulations.

Over the past decade EPA has undertaken several modest reforms that allow firms greater flexibility in meeting environmental standards. By far the most ambitious of these is the emissions trading policy, which includes the well-known bubble program and three lesser known programs. The basic idea of emissions trading is that firms, given the opportunity, can often devise less costly ways to control their emissions than can regulators. The emissions trading policy is an attempt to take advantage of this fact by creating markets in the *de facto* rights to pollute. Trading of these rights within and between firms can increase efficiency by concentrating air pollution control efforts on those emission sources that cost the least to control.

On balance, emissions trading has produced a mixed bag of accomplishments and disappointments. The program has afforded many firms flexibility in meeting emission limits, and this flexibility has resulted in significant aggregate cost savings—in the billions of dollars—without sacrificing environmental quality. However, these cost savings represent only a small portion of the total potential savings. Far less than 1 percent of the total stock of emissions has been traded, and economic studies suggest that trading could be much more active.

An important reason that more active markets have not emerged is that the emissions trading program has been the source of a great deal of controversy over regulatory reform. The EPA and local pollution control agencies have tried to minimize this controversy by placing constraints on the use of emissions trading. Unfortunately, some

of these constraints have dampened industry's interest in making greater use of this exciting regulatory alternative.

The politics of emissions trading can best be understood in terms of a struggle over the nature and distribution of property rights. Environmentalists and industry disagree over who is entitled to pollute and at what levels. Despite these differences, the reform represents a constructive attempt to cut the cost of regulation. Markets have emerged and performed better than traditional command-and-control regulation.

Several positive market-based reforms have followed in the footsteps of emissions trading. For example, in 1982 EPA implemented a "lead trading" program designed to lower the cost of achieving the phase-out of lead in gasoline. Overall, EPA estimated the program would save more than \$200 million annually when it was in operation. Similar market-based programs have been proposed for such diverse problems as acid rain and the depletion of stratospheric ozone. If implemented for acid rain, a trading program could save tens of billions of dollars compared with more onerous command-and-control methods that would require power plants to use scrubbers to remove emissions of sulfur oxides.

THE IMPACT OF SOCIAL REGULATION ON INNOVATION

While regulatory screening can protect the public from certain risks, it can also have undesirable side effects. Screening can, and sometimes does, lead to the banning of products whose expected benefits outweigh their costs because the screening procedure frequently focuses almost exclusively on a narrow definition of risk. Since 1958 the Delaney Clause has required the Food and Drug Administration (FDA) to prohibit any food additive found to cause cancer in either man or animals. Such zero-risk strategies do not permit explicit comparison of the costs and benefits of various chemicals. Thus, screening of new risks can serve as an entry barrier that limits the introduction of new products, even in cases where the new item is less harmful than the one it would replace.

Ironically, zero-risk strategies can lead to marked increases in the level of risk. For example, EPA in 1983 denied a request for permission to use a fungicide on hops that was expected to increase a heavy beer drinker's odds of getting cancer by 1 in 100 million. The denial resulted in the continued use of existing fungicides thousands of times riskier. The EPA has recently dropped the zero-risk rule, replacing it with a policy that allows the introduction of pesticides if they pose a "negligible risk," currently set at 1 in 1 million. Such a policy encourages innovation on the part of chemical companies to

develop new and safer products to replace their existing, and frequently more dangerous, counterparts.

Screening agencies can dramatically affect the rate of innovation. A case in point is the Food and Drug Administration. Following the 1962 amendments to the Food, Drug, and Cosmetic Act, FDA required pharmaceutical companies to prove not only that their proposed new drugs were not harmful, but also that they were "effective" (i.e., do what the manufacturer claims they will). Several studies have documented the impact of the requirements on slowing the approval of "new chemical entities." One study showed that on average 54 new chemical entities were approved annually in the 13 years preceding 1962; for a similar period after the amendments, the average number fell to just over 16, a 70 percent decline. The decline in new drug innovations restricts the public's choice of remedies, a choice often made under a physician's guidance.

In response to criticisms about the FDA's slow approval process, which took on average 10 years to complete, the agency has attempted to streamline its screening procedures, both in the research and market approval stages. Administrative measures have reduced the average drug processing time by 2 years. In addition, the number of pending new drug applications fell from 343 at the end of 1983 to 204 just 3 years later. Moreover, the average annual number of new drug applications approved by FDA jumped from 86 between 1976-79 to 109 between 1980-86. More recently, FDA has agreed to help companies design drug studies that will produce data as early in the process as possible, and in certain cases to hasten the approval process for drugs where serious illness or death threatens, as in the case of acquired immune deficiency syndrome (AIDS) or hairy cell leukemia. The reforms in the FDA approval process could result in a significant increase in the number of new drugs provided that they actually reduce the costs to firms of getting drugs approved.

In the case of life-threatening diseases, such as AIDS, a strong argument can be made that the decision to use new experimental drugs should be left to the patient and the patient's physician. The President's Task Force on Regulatory Relief, chaired by the Vice President, recently endorsed efforts that would reduce the role of the Federal Government in such life-threatening situations. The FDA could expedite the process by conditionally approving drugs after initial investigations show them to be safe. Further testing could then be performed in the field after issuing the drug with proper warnings to both physicians and patients, rather than requiring that such testing be done in industry laboratories.

In addition, the Drug Export Amendments Act of 1986 allows FDA to approve applications to export drugs not yet approved for domes-

tic use, but sanctioned under a foreign country's regulations. By allowing the export of such drugs, FDA has provided additional incentives to pharmaceutical manufacturers to develop and produce new drugs in the United States. Not only will this procedure help the domestic drug industry to compete globally and aid foreign citizens, but it will improve the health of Americans as well by spurring domestic product innovation.

One of the biggest challenges for screening regulation will be in the emerging field of biotechnology. The United States has the potential to be a commercial giant in this field while still protecting the public from unnecessary harm. The development of new technologies in this field can lead to important applications in agriculture (such as pest and climate resistance), medicine (such as the FDA-approved recombinant DNA-derived human insulin), containing oil spills, and cleaning up hazardous waste sites. Worldwide demand for biotechnology products has been estimated to be as high as \$100 billion annually by the turn of the century.

The proper Federal role in biotechnology is to ensure that new processes and products do not, on balance, pose an unreasonable risk to the public. Measuring the total risk of introducing a new product, however, is not straightforward. For example, if a Federal agency prohibits a biotechnology product from being applied as a pesticide to crops, it is implicitly favoring the use of currently approved pesticides. Regulators should not evaluate the risk of a new product in isolation, but should consider the current level of risk of the products it would replace.

This Administration has made strides in improving the regulatory coordination of approving new products by forming the Biotechnology Science Coordinating Committee. In 1986 this Committee issued a notice, approved by the President, that provided a framework for coordinating the policies of the six Federal agencies with oversight responsibilities. The notice concluded that regulation should focus on the risks of the organism itself, not the process that formed it. Thus, simply because a product could be labeled "biotech" did not warrant special (and frequently more stringent) consideration. Indeed, a National Academy of Sciences study argued that no unique hazards are involved in genetically engineered technology.

A number of new products have reached the marketplace. The FDA has approved nine therapeutic drugs, including a new anti-cancer drug and a new hepatitis vaccine. The FDA has also approved a human growth hormone, now marketed by two companies, for treating growth disorders in children.

Biotechnology products have been used in waging the war against deadly diseases as well, including the first vaccine tested for use

against AIDS. In all, more than 600 biotechnology products are now undergoing clinical trials, including special grains capable of growing in desert regions of drought-stricken Africa.

Although these new developments in screening procedures are encouraging, there is a fundamental design problem inherent in the current approach to screening: regulators are not given enough credit for allowing new products to reach the marketplace sooner. At the same time, they often have to shoulder a major share of the blame if something goes wrong after a new product or chemical is approved. Thus, screening procedures involving civil servants are likely to reinforce the status quo, which means that technological innovation is likely to be slower than it needs to be.

LESSONS AND CHALLENGES

It is always tempting to respond to a perceived social need by calling for government intervention of one sort or another. The experience to date with Federal regulation suggests the need to keep this impulse in check. This observation does not mean that regulation should be eliminated. It means that regulation should be applied judiciously. The challenge is to design institutions that create incentives for private market solutions to address problems, such as pollution, that can arise as a result of marketplace activity.

The strengths and limitations of some of the older approaches are now well understood. Price and entry regulation often leads to inefficiencies and tends to stifle innovation. Inflexible social regulations that specify in detail how firms should behave also tend to stifle innovation. It makes little sense to require a business to install an expensive pollution control device if it can devise a better way to achieve the same goal at half the price. Yet in many cases regulations do not provide firms with the incentive to search for such innovations.

Gains can result from a judicious application of marketplace incentives in traditional areas of economic regulation as well as social regulation. Calculating the gains from such activities and designing institutions that will enable the public to benefit from these gains are necessary steps in promoting constructive reforms. Strong political forces, however, protect the status quo. These political forces are not likely to change unless the configuration of underlying interest groups changes or there is a more widespread understanding of how current institutions often lead to inefficient and ineffective regulation. This understanding is promoted, in part, by successful examples of deregulation and successful changes in regulatory procedures that promote more efficient policies. It will also be promoted as the cost of onerous regulations is more widely recognized.

The United States now competes in a global marketplace. In order to continue to compete successfully, the Nation must develop approaches to regulation that promote technological innovation. This goal can be reached through gaining an understanding of the institutions that yield such innovation, and through asserting the political leadership necessary to meet the challenge.

CHAPTER 6

Science, Technology, and the U.S. Economy

TWENTIETH CENTURY ADVANCES in science and technology have brought deeper understanding of the nature of matter and the origins of the universe, the vanquishing of many forms of disease and pestilence, efficient and economical worldwide communications, and human travel to the Moon. For example, the invention of the integrated circuit, with its seemingly unlimited applications, has been compared in importance with Gutenberg's movable type. The revolution in biotechnology, advances in recombinant DNA (deoxyribonucleic acid) research, and other breakthroughs in health technologies promise major advances in the fight against disease.

The United States has been in the forefront of these stunning accomplishments, and the U.S. Government has played a leading role in stimulating and undertaking the research and development needed to achieve them. The government has a keen interest in science and technology, because work in those fields relates directly to national security technologies, and also because the results of such research have significant economic consequences. During the past 8 years, this Administration has sought to reorient direct government involvement in research and development (R&D) and stimulate the forces of the private sector as well.

Advances in knowledge contribute importantly to the Nation's real economic growth; about one-half of all growth in output per capita has been attributed to technological knowledge and managerial and organizational know-how. Estimated rates of return to private industry's R&D spending range from 20 to 50 percent. More importantly, the rate of return to society is about double the private rate. Thus, R&D is a good investment for society. Because the returns to society typically exceed the returns to the sponsor of the research, however, the private sector has inadequate incentive to invest in R&D, particularly where the results cannot be easily appropriated for production and profit. Partly because of this underinvestment, the Federal Government supports R&D.

In short, government policy toward, and support for, scientific research and technological innovation are important for the future of America.

OVERVIEW

The purpose of this chapter is to provide an economics perspective on the debate over the appropriate policies to ensure the continued contribution of science and technology to U.S. economic growth. Like the other chapters of this *Report*, it examines changes in institutions and incentives over the longer term. This chapter does not attempt to provide a comprehensive review of U.S. science and technology (S&T) policy, nor of all the factors that affect the incentives of firms to invest in R&D and to innovate. Instead, it highlights some of the recent changes in U.S. approaches to science and technology.

The chapter first reviews international trends in science and technology that influence the relative U.S. position in science, in technology, and in innovation. It also reviews the U.S. position in the international trade of high-technology products and the role that technology plays in trade relationships. Based on this evidence, some of the fears of a declining U.S. position in science, technology, and high-technology trade are misplaced. Given economic conditions after World War II, the United States was able to become the dominant supporter of R&D, which led to technologically advanced products. As other nations recovered economically, they too began to invest in R&D. Thus, some decline in the relative U.S. position is to be expected. The increasing S&T capabilities of U.S. industrial partners provide an opportunity, as more countries are sharing the costs of technological advances, sharing basic research, and providing benefits to consumers in the form of technologically advanced products. However, those capabilities also present a challenge to American producers. An area of growing concern to U.S. industry, based on its trade performance, is its manufacturing technologies, and industry is taking a variety of steps to remedy its deficiencies. Some of the current policy debate is over the appropriate Federal role in this area.

This chapter also examines the institutions and incentives in the S&T policy environment. It highlights several S&T policy initiatives of the 1980s aimed at strengthening the incentives of U.S. industry to invest in R&D: taxes, antitrust, and intellectual property protection. It reviews the incentives and new institutional relationships that encourage the transfer of research results to industry from the academic sector and government laboratories. The latter initiatives play an important role in facilitating the rapid transfer of science into commercial applications.

Ultimately, for society to benefit from investments in R&D, the results must be turned into products, processes, and services—technology must get off the shelf. A major concern is the broad economic benefit of federally supported research. As described in this chapter, a strong technological position by U.S. firms will not keep production from going offshore, but this result does not preclude U.S. consumers and investors from benefiting from that technology. In addition, the U.S. research system is very open. International research collaboration—whether formal or informal—benefits the United States as well as the foreign partners by improving the productivity of the R&D process. Where exclusive property rights to research results can be established, however, the U.S. Government has already taken steps to protect such knowledge.

Recommendations for improving the efficiency and the effectiveness of the R&D and innovation process must recognize the decentralized and competitive S&T system. The system has served the United States well. While the S&T systems of other countries differ in some ways from that of the United States, they are not demonstrably superior. However, the incentives and institutional relationships within the United States need to be examined to ensure that barriers do not inadvertently limit the ability of the public's investment in R&D to benefit the Nation as a whole.

INTERNATIONAL COMPARISONS

The United States continues to be a leader internationally in science, but U.S. firms face strong technological competition from other major industrial countries. Japanese firms are particularly capable in implementing new manufacturing processes and in commercializing technologies.

SCIENCE AND TECHNOLOGY INPUTS

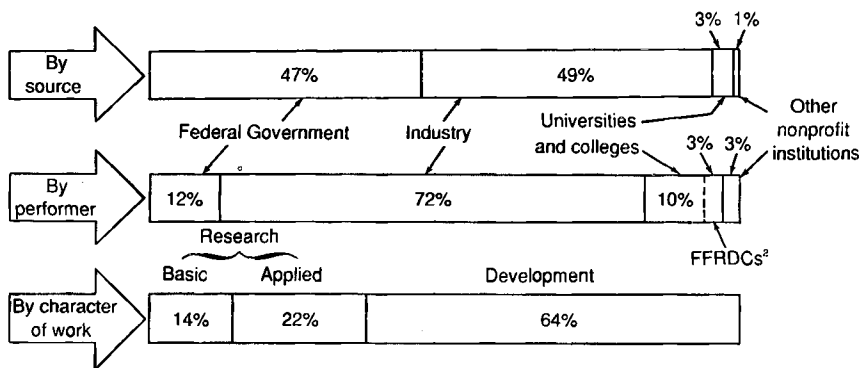
Chart 6-1 characterizes the national R&D effort by source of funds, performer, and character of work (basic research, applied research, and development). This chart provides background for the discussion in this section.

Aggregate Research and Development Spending

Total U.S. expenditures on R&D, adjusted for inflation, have grown dramatically since the 1950s. Real spending (in 1982 dollars) grew from \$20 billion a year in 1953 to \$104 billion in 1987. National R&D funding trends for France, West Germany, Japan, the United Kingdom, and the United States for the period 1965-86 are shown in Chart 6-2. In 1986 the United States spent more on R&D than France, West Germany, Japan, and the United Kingdom combined.

Chart 6-1

The National R&D Effort

Expenditures for research and development=\$124.9 billion, Fiscal Year 1988¹¹Estimated.²Federally funded research and development centers administered by universities and colleges.

Source: National Science Foundation.

However, the U.S. share has declined; 20 years earlier, U.S. expenditures were more than twice the size of the combined expenditures of those four countries.

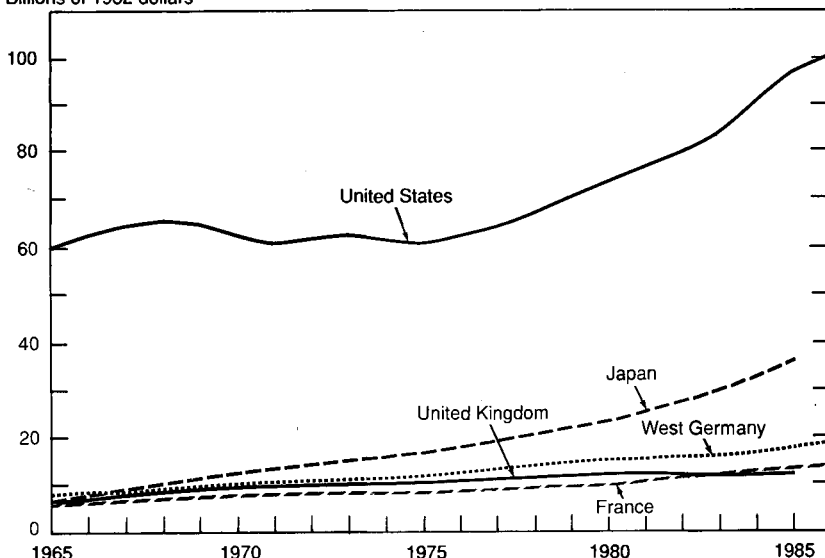
Japan, West Germany, and the United States now spend roughly the same proportion of their gross national product (GNP) on R&D. Estimates for 1986 (the latest year for which data are available for all countries) show that Japan devoted 2.8 percent of its GNP to R&D, while the United States and West Germany each spent 2.7 percent. Despite steady growth in non-Federal R&D, declines in the ratio of R&D to GNP in the United States have resulted from lower Federal R&D spending on defense and space. For example, the U.S. ratio peaked at 2.9 percent in 1964 and dropped between 1968 and 1979, reflecting the decline in Federal R&D for defense and space. West Germany and Japan have the highest percentages of GNP devoted to nondefense R&D expenditures. Japan's ratio stood at 2.8 percent in 1986, compared with 2.5 percent for West Germany and 1.9 percent for the United States. Based on absolute amounts of nondefense R&D funding, however, the United States still outspends these two industrial competitors.

But which measure of national R&D spending determines technological capabilities: absolute levels of spending or share of GNP? For

Chart 6-2

National R&D Expenditures, Selected OECD Countries

Billions of 1982 dollars



Note.— Dollar conversions are based on OECD purchasing power parity exchange rates and U.S. Department of Commerce GNP implicit price deflators. Data for 1984-86 are preliminary or estimated. Data for United Kingdom are not available for 1965; 1964 data used.

Sources: National Science Foundation, Organization for Economic Cooperation and Development, and national sources.

some purposes, absolute R&D spending levels may well be more relevant in providing benefits to society. The basic output of R&D is knowledge, which can be spread over any number of units of output; increased production may require no additional knowledge. But comparisons of absolute levels of spending are also limited. One problem is that new knowledge is not equally relevant to all sectors of the economy. Because knowledge relevant to one industrial sector, such as pharmaceuticals, may not be applicable to another, such as electrical machinery, a more diverse economic base may require more R&D to sustain the pace of technological innovation across all sectors.

Major changes in a country's ratio of R&D to GNP do indicate a shift in the emphasis that the country places on R&D. The full significance of that shift in emphasis, however, depends on where the reallocated funds are spent.

Industrial Research and Development

Industry supports a major share of national R&D in the five industrial nations examined here. Furthermore, industry's share increased over the 1970–86 period. Industry in Japan supports the largest share of national R&D (69 percent in 1986), followed by West Germany (61 percent that year). In the United States, industry funds roughly one-half of all R&D.

Across the five countries, the industrial sector receives varying amounts of government R&D funds. For those countries with major expenditures on defense R&D, government provides a greater share of industrial research and development. Thus, in the United States, the government finances one-third of industrial R&D. In contrast, Japanese companies fund 98 percent of all industrial R&D, and West German companies support more than 80 percent of their own R&D effort.

Comparisons of business R&D (conducted with both private and government funds) show some differences in national emphases on broad manufacturing sectors. All five nations emphasize the electrical equipment industry (excluding computers). France, the United Kingdom, and the United States also particularly emphasize aerospace.

These comparisons are based on distributions of each nation's spending in the industrial sector, not on funding levels that more directly affect technological capabilities in particular sectors. Nonetheless, the relative emphases within a nation identify what sectors it views as important and, to the extent that R&D-intensive products are internationally traded, where competition is likely to lie and gains from trade are most likely to occur.

Scientists and Engineers

Both the United States and Japan send a much larger proportion of their young adults to college than do France, West Germany, and the United Kingdom. Similar proportions of American and Japanese college-age populations receive first university degrees (25.9 percent for the United States and 22.6 percent for Japan in 1986), while fewer than 10 percent do so in the other three countries. Japanese universities award a somewhat larger proportion of their degrees in the natural sciences and engineering (27 percent of all degrees compared with 20 percent in the United States). Significant differences arise, however, between the two countries in fields of emphasis. Almost three-quarters of all Japanese students in science and engineering are in engineering, while slightly more than one-third of such American students obtain engineering degrees.

The United States has the largest concentration of scientists and engineers engaged in R&D, as a proportion of its labor force, fol-

lowed closely by Japan. Between 1965 and 1986, the other four nations increased their relative use of scientists and engineers to perform R&D, while U.S. employment of R&D scientists and engineers as a share of the labor force reflected fluctuations in the ratio of R&D to GNP. The absolute number of U.S. scientists and engineers engaged in R&D has been increasing since 1973, however, giving the United States a large base of R&D personnel.

SCIENCE AND TECHNOLOGY OUTPUTS

Policymakers are interested in the S&T system because of its generation of knowledge and ideas and the linkages between science and technology. Several indicators of these outputs are available, although they are only proxies for, not direct measures of, the knowledge and ideas generated.

Nobel Prizes are a well-known indicator of scientific achievement. Since 1945 U.S. citizens have received about 50 percent of such prizes awarded in science. Based on where the research was done, the United States has hosted an even larger fraction of the prize-winning work over the past four decades. But the Nobel Prize is not a good indicator of the current strength of science in a nation because the award lags the performance of the work by years, even decades. On a per capita basis, of the nine countries whose citizens have received the most Nobel Prizes in science since 1970 (population in 1980), the United States ranked sixth, behind Sweden, Denmark, Switzerland, Belgium, and Great Britain; Japan ranked ninth, behind West Germany and France.

Citations or references to papers and patents are one indicator of the influence or importance of the cited paper or patent. Based on citation measures, U.S. scientific research is of very high quality. The U.S. share of citations made in a large set of scientific journals published worldwide was about 40 percent higher than the U.S. share of publications in that set.

Patent Shares

Because a patent protects an invention only in the country in which the patent is issued, foreign filings for U.S. patents are indicators of potential foreign competition. As might be expected when other nations increase their research capabilities, the U.S. share of some S&T outputs has fallen. The U.S.-invented share of U.S.-issued patents has fallen from 73 percent in 1970 to 52 percent in 1987. This declining share also reflects an 8 percent fall in the actual number of patents granted to U.S. inventors, even though total U.S. patents granted increased 29 percent. Japanese inventors have increased their share of patents received fivefold, more than the inventors of any other coun-

try. Their share of U.S.-issued patents increased from 4 to 20 percent.

Links Between Science and Technology

Although science generates knowledge used for commercial applications, that linkage can be difficult to identify and quantify. One approach to quantifying this relationship identifies the use of academic research in industry and the value of the time that such research saves a firm in its innovation process. Based on this measure, the contribution of academic research to industry is large; using conservative assumptions, the social rate of return is estimated to be at least 28 percent.

Another approach is to examine the connections by using publications as a proxy for science and patents as a proxy for technology. Citations from patents to the scientific literature help to establish links between science and its technological applications. In general, however, the knowledge most frequently cited by patents is contained in other patents. The patents described here are those issued by the U.S. Patent and Trademark Office to residents of various countries, and the references are those cited by the U.S. patent examiner. Before granting a patent, the patent examiner must identify the prior art, i.e., the knowledge at a particular time that determines whether an invention is new and not obvious to someone with normal skills in that area.

The science intensity of inventions from the five major industrial countries has been increasing, as measured by the average number of scientific publications cited per patent filed in the United States. Between 1975 and 1986, patents issued to U.S. inventors have grown most rapidly in science intensity. The science intensity of Japanese patents is now the lowest of the five countries, suggesting that advances in Japanese technology are based on improvements in other patented technologies. At the beginning of the period studied, patents of inventors from the United Kingdom were the most science-intensive, but patents of U.S. inventors overtook them in 1980.

Earlier studies of the connections between the development and application of scientific knowledge found lags exceeding 20 years, but some evidence now suggests that the lag is shrinking. Patent filings are showing a much shorter time between publication of research results and their incorporation into a patentable technology: science is being applied sooner. The median age of scientific publications cited in U.S.-issued patents over the 1975-86 period has been declining for all five countries. Throughout the period, patents issued to U.S. inventors have cited the most recent publications, followed by patents issued to Japanese inventors. West Germany has consistently cited the oldest publications. In 1975 the median age of

publications cited by U.S.-owned patents was just under 8 years; by 1986 the median age was slightly more than 6.5 years. In some rapidly growing fields such as biotechnology, recent patents cite research, including basic research, of about the same age as the literature cited in research articles on bioscience.

INDUSTRIAL INNOVATION IN THE UNITED STATES AND JAPAN

Before society benefits from the full value of R&D spending, the knowledge gained must be converted into products, processes, and services. Thus, the factors involved in this conversion are an important component of any comparison of innovative capabilities.

For the manufacturing sector overall, Japanese and American firms that do R&D spent roughly the same proportion of net sales on R&D in 1985 (2.7 percent in Japan versus 2.8 percent reported for company-funded R&D in the United States). Within manufacturing, however, the ratios of R&D to net sales vary. For example, ceramics and iron and steel are more R&D-intensive in Japan, while the professional and scientific instruments sector is significantly more R&D-intensive in the United States.

Recent studies show that American and Japanese firms devote similar proportions of their R&D expenditures to relatively risky projects (about one-quarter of their R&D to projects with less than a 50 percent estimated chance of success) and to long-term projects (almost 40 percent of R&D to projects expected to pay off after 5 years). This similarity represents a significant shift for the Japanese from the 1970s, when Japanese industrial R&D was composed largely of low-risk and short-term projects. Japanese firms appear to have changed both the breadth and depth of their R&D and in these ways more resemble American firms.

Nonetheless, differences remain in the composition of American and Japanese industrial R&D. The U.S. firms studied devote about two-thirds of their R&D expenditures to product technology (new products and product changes) and about one-third to process technology (new processes and process changes). Japanese firms reverse the proportions. This difference cannot be attributed simply to different industry mixes at the aggregate level. Within the chemicals industry, where firms in both countries emphasize product innovations more than does the sample as a whole, U.S. firms still devote a greater share of their R&D to product than to process innovation than do the Japanese.

American and Japanese firms need about the same time and incur similar costs to carry out innovations based on technologies developed within the firm. Recent work suggests, however, that Japanese firms enjoy advantages over U.S. firms with respect to innovations

based on external technology, that is, technologies originating outside the firm. Many innovations based on external technology involve new products that imitate others in important respects. The contrast between Japanese and U.S. firms shows up particularly in the commercialization stage of the innovation process (beginning when the product is developed and ending when it is introduced commercially), as distinguished from the R&D stages. In the United States the commercialization of an innovation based on external technology requires more time and about as much money as the commercialization of one based on internal technology. Japanese firms, however, are able to commercialize innovations based on external technology faster and at less cost than those based on internal technology.

Japan's advantage here depends on how many U.S. innovations are based on external technologies. However, modifications of external technologies are reported to be an important source of U.S. innovations. Efforts of Japanese firms to improve their S&T capabilities largely involved catching up with U.S. firms. In these circumstances, their greater efficiency in adapting external technology affords a clear advantage. Yet this superior efficiency of Japanese firms in commercializing external technologies does not appear to be attributable solely to the advantages of being a follower. In carrying out such innovation, they have been more likely than American firms to adapt the imitated product significantly and reduce its production costs substantially. The Americans seem more inclined to invest heavily in marketing startup costs, emphasizing marketing strategies more than technical performance and production cost.

The ultimate arbiter of the value of R&D strategies is the market. Before examining how U.S. firms have fared in international high-technology trade, however, a look at how the U.S. and Japanese governments develop their S&T policies—policies that influence the S&T capabilities of industry—is in order.

GOVERNMENT RESEARCH POLICY IN THE UNITED STATES AND JAPAN

The Japanese government accounts for only 21 percent of its nation's R&D funding, but it nevertheless plays an important role in science and technology. It identifies new directions for R&D efforts and encourages R&D initiatives by industry through financial incentives, selective R&D funding of particular R&D projects, and the creation of special institutes. Japanese S&T policy develops from consultation and consensus. The Council for Science and Technology, the primary authority for developing Japanese S&T policy, recommends long-term national policy objectives but funds no R&D. It recently identified the need for a basic shift in emphasis toward seeking creative, fundamental breakthroughs that benefit not only Japan but also

the international community. Its latest recommendation stressed basic research, greater involvement of foreign researchers, and industry and university cooperation.

Almost one-half of the Japanese Government's S&T budget (which includes some expenditures that do not meet the narrower definition of R&D) in 1985 went to the Ministry of Education, Science, and Culture (Monbusho), which administers Japan's national universities and their affiliated research institutes. The Japanese approach (also used in many European countries) provides long-term government support to public universities for faculty R&D activities. In contrast U.S. Government agencies fund most university research on a shorter term and competitive basis.

With 27 percent of the government's S&T budget, the Science and Technology Agency funds and conducts basic and applied research. It also directs the Japan Research and Development Corporation, which encourages the commercialization of promising R&D developments at the national universities and research institutes.

The Ministry of International Trade and Industry (MITI) spent 13 percent of the government's 1985 S&T budget. While MITI wielded substantial power over Japanese industry during the 1960s and early 1970s, controlling foreign exchange, technology licensing from abroad, and tariffs, it has largely lost those powers. Currently, MITI tries to influence the private sector through using its R&D funds to leverage higher industrial R&D funding. Within MITI, the Agency for Industrial Science and Technology (AIST) sponsors development of technologies with potential commercial value, much of which is carried out in AIST-administered national and regional industrial research institutes. The AIST also administers special incentives, such as conditional loans (which are included in the S&T budget) and tax deductions for private-sector technology development.

The two countries also differ in how they carry out long-term S&T planning. The Japanese Government has conducted major formal forecasting exercises that included large sections of the industry, government, and academic communities in the forecasting process. Every 5 years Japan's Science and Technology Agency sponsors these forecasts, which combine the "science push" and "demand pull" perspectives on technological innovation. Among the areas ranked highest in terms of future Japanese S&T needs in the most recent survey are cancer; storage and disposal of radioactive solid wastes; automatic protocol conversions to facilitate information flows between communication networks; advanced software verification technology for rapid development of error-free, large software systems; antivirus agents for treatment of viral diseases; and industrial application of superconducting materials.

The accuracy of forecasts that reach 30 years into the future is open to question, particularly where unforeseen developments may change opportunities. Nonetheless, the Japanese forecasts help establish R&D priorities. Furthermore, some observers say that thinking about longer term applications encourages Japanese industry to monitor external research and more quickly adopt the findings.

It is not necessarily advisable, however, for the United States to make its own 30-year forecasts. Such forecasts tend toward conservatism, fail to anticipate some of the more creative scientific advances, and may lead to a consensus that encourages an excessively narrow R&D focus. Rather, the decentralized U.S. system might benefit more from involving potential users of basic and applied research in an R&D agency's process of planning and setting priorities.

HIGH-TECHNOLOGY PRODUCTS AND U.S. TRADE

A product's life cycle and its manufacturing process affect its producer's ability to compete. The importance of performance versus cost characteristics for marketing a product varies with the stage of its life cycle. At the initial innovation stage, the producer's technological lead is the key factor in determining its competitive position. As the initial demand is met and more competitors arise, cost and quality become much more important in generating sales. The location of production can change during the stages of the product life cycle. At the initial R&D stages, the availability of skilled technical labor is important. Later, R&D inputs become less important, and the usual determinants of production location come into play: wages, taxes, transportation, and access to markets. In rapidly changing technologies, a product may never get to the mass production stage, or only be mass-produced for a short time. Thus, the ability to shift quickly to another product can be a critical competitive strategy.

Judging from the success of U.S. multinational firms in maintaining world market shares, the diminished U.S. trade position may result less from deficiencies in American technological leadership than from other factors—productivity, wage rates, taxation, cost of capital, domestic inflation, and exchange rates. As described in earlier chapters, many of these factors that affect cost and quality have recently become more favorable to U.S.-based production. American firms need a policy environment that helps them to benefit from the use of their technologies wherever they produce. Improved protection of intellectual property in countries where such protection is weak can help U.S. firms in this regard, and it can also encourage increased U.S. investment in those countries.

CHARACTERISTICS OF THE HIGH-TECHNOLOGY SECTOR

No commonly accepted definition of high-technology industries exists. These industries are said to make significant use of scientific, engineering, and other technical personnel and to invest in a greater than average level of R&D funding, adjusted for industry size. A definition of high-technology industries based on these R&D-input criteria thus include industries that may differ in market structure, labor composition and compensation, type of product, and the degree of economies of scale. High-technology industries thus defined may also vary substantially in rates of employment and output growth. One study of the 1976–80 period found that some high-technology industries experienced employment growth in excess of 75 percent, while other industries contracted their work force by 50 percent. Several industries with rising levels of output showed slow or negative employment growth.

U.S. TRADE IN HIGH-TECHNOLOGY PRODUCTS

Some research distinguishes between the competitive position of U.S. firms and that of the United States as a geographic location for production. Companies that become multinational in their operations reduce to some extent their dependence on home-country determinants of competitiveness. If home-country production becomes more expensive relative to foreign production because of rapid inflation at home, because the exchange value of the home country's currency has risen, or because labor has risen in price or decreased in efficiency, the multinational firm has some opportunity to shift its production to locations in other countries.

The export shares of all U.S. firms and U.S.-based multinationals were about equal in 1966 (about 17.5 percent of world exports), but the multinationals subsequently maintained their share while that of U.S. firms as a whole declined (to 14 percent in 1984), particularly during the early 1970s. The parent firms of the U.S. multinationals did not escape the forces that led to the fall in the U.S. export share, but they fared better—the fall in the parents' share was less than that of all U.S. firms. The success of exports from their foreign affiliates was largely responsible for maintaining the multinationals' share of world exports.

The distribution of exports among industries reveals the comparative advantages of the United States and its multinational firms. If the multinationals' share of exports in an industry exceeds the export share of all U.S. firms in that industry, U.S. multinationals are regarded as having a comparative advantage in that industry relative to the United States as a country. Among the major industry groups, the multinationals showed such comparative advantages in chemicals,

electrical machinery, and motor vehicles. Such advantages change with the exchange rate and differences in productivity growth at home and abroad.

Both R&D intensity and advertising intensity (i.e., marketing) seem to be major factors in the comparative advantage of U.S. multinationals. Many studies associate R&D intensity with the comparative advantage of the United States as a country, and the same R&D intensities are even more strongly related to the comparative advantage of U.S. multinationals.

The United States is relatively less export-oriented than other industrial nations within the Organization for Economic Cooperation and Development (OECD). It has a large domestic market, and its shares of OECD production substantially exceed its shares of OECD exports. The United States also accounts for large shares of OECD production across all sectors, even in those for which, based on the structure of exports, it has no apparent comparative advantage.

High-technology goods account for an increasing share of U.S. trade. Between 1981 and 1987, the high-technology share of U.S. exports of manufactures rose from 35 to 42 percent, and the high-technology share of imports increased from 22 to 25 percent. During the 1980s the combination of slower growth of U.S. exports of high-technology products and the steady increase of such imports led to a dramatic decline in the U.S. high-technology trade surplus. The sectoral trade balance dropped in current dollars from \$26.6 billion in 1981 to \$3.6 billion in 1985, and to a deficit for the first time of \$2.6 billion in 1986. In 1987 the trade balance in the high-technology products sector became positive again at \$0.6 billion. Despite this decline, U.S. trade performance in high-technology manufactures has been stronger than in less technology-intensive products. The U.S. trade balance in manufactures that are not high technology continued to deteriorate, going from an \$11.2 billion deficit in 1981 to a \$138.3 billion deficit in 1987 despite the recovery in exports in 1986 and 1987.

The product groups making up the high-technology sector in these trade statistics are defined at the three-digit standard industrial classification level. While these measures use a definition of high-technology goods that takes into account use of R&D-intensive inputs, each group contains products of varying levels of technological sophistication. Thus, a declining trade balance in a particular product group may in fact reflect an increase in imports of the less sophisticated goods in the product group, rather than changes in the most technologically advanced products. An illustration of this effect is the large increase in U.S. imports of telecommunications products following the deregulation of the telecommunications industry and the breakup

of American Telephone and Telegraph on January 1, 1984. Far East nations other than Japan accounted for almost 30 percent of U.S. imports of telephone and telegraph equipment in 1986, and these countries supply mostly low-cost, low-technology telephone instruments.

The emergence of the East Asian newly industrializing economies (NIEs) as major suppliers of products at the low-technology end of high-technology product groups has eroded the U.S. surplus in high-technology trade. American imports of high-technology products from the East Asian NIEs grew faster between 1980 and 1986 than overall U.S. imports of high-technology products. In 1986, East Asian NIEs accounted for about 18 percent of U.S. imports of these products, making these countries key participants in U.S. high-technology markets.

The semiconductor market illustrates the complexities of identifying the role of technology in U.S. competitiveness. Semiconductors are diverse products, ranging from standardized commodity chips to chips custom-designed for specific applications. Technological forces have dictated marketing strategies since the beginning of the industry. The average useful life of many of these products is short. For example, the product life cycle for dynamic random access memory (DRAM) chips has been about 3 years since the early 1970s. Another characteristic of the semiconductor industry is rapid price reductions.

Several factors complicate any assessment of the competitive position of the United States or of U.S. firms in semiconductors. Trade data reflect intracorporate trade in both imports and exports; U.S. offshore manufacturing, primarily in Southeast Asia, generates about one-half of U.S. trade in semiconductors. In addition, some of the largest U.S. producers consume their output internally, and reliable production data are difficult to obtain for such captive producers. In 1978, companies headquartered in the United States (excluding captives) produced 55 percent of global semiconductor revenues; in 1986 they produced 40 percent. Shipments from U.S.-based plants (including captives) held steady at nearly 60 percent of global semiconductor shipments until after 1982, but fell to 52 percent in 1985.

Several factors explain most of the U.S. semiconductor industry's losses of market share in the mid-1980s: faster growth of the Japanese home market, which is supplied primarily by Japanese firms; exchange-rate movements; and worldwide overcapacity and aggressive Japanese pricing, reflected in the 1986 U.S. determinations of semiconductor dumping. The U.S. market share has eroded in products that require efficient manufacturing that can be provided by state-of-the-art process technology. The erosion is most extreme in the market for DRAMs, which demand high yields of good chips in large

quantities for economic production. By contrast, U.S. companies' market share has held up better where product design and customer relationships are primary and yields and price secondary; examples are microprocessors and microcontrollers and application-specific integrated circuits.

POLICY ISSUES OF THE 1980s AND BEYOND

Over the past 20 or so years, U.S. policies have evolved in light of a growing consensus that spending on science and technology is an investment in the Nation's future. Policymakers in the 1960s and 1970s sought to use S&T to meet national needs, e.g., in health, safety, environmental quality, energy, and transportation, and to foster continued economic growth. Policy debates focused on the role of the Federal Government in meeting these needs, the role of particular sectors such as small business, and the ability to use Federal Government policies to speed commercial implementation of new technologies.

There has been broad endorsement of Federal support for basic research. The Ford and Carter Administrations both adopted the view that the substantial decline in Federal support of basic research since the late 1960s, if allowed to continue, would have grave consequences for the United States. Both Administrations viewed basic research as a long-run national investment, and both backed these views with real growth in Federal basic research budgets. The current Administration continued providing substantial support for basic research, with a 52 percent increase in real expenditures between fiscal years 1981 and 1989 in the civilian agencies and 48 percent growth over all agencies. The Administration reemphasized the importance of basic research with a proposal in 1987 to double the budget of the National Science Foundation (NSF) over 5 years. The Congress supported this effort and increased funding for NSF by 10 percent in fiscal 1989, in excess of the 2 percent overall increase in domestic discretionary spending.

Other Federal policies in the 1970s focused on applied research and development directed at specific civilian technologies. Experience with many Federal Government efforts to accelerate the development of civilian technologies were expensive and unsuccessful in producing commercially viable processes and products (particularly in the energy sector after the decline in oil prices). As a consequence, the major civilian S&T policy initiatives of this Administration and the Congress in the early 1980s moved away from direct Federal intervention at the later stages of the innovation process. Instead, the policy focus has been on stimulating private investments in

R&D through increased incentives provided by taxes, antitrust exemptions, and strengthened protection for intellectual property rights. In addition, the Federal Government has paid increased attention to incentives for commercial use of R&D that it has financed for its own purposes.

During the 1980s there has been greater awareness of the international scope of science and technology. Some policy initiatives have emphasized strengthening protection of intellectual property internationally and the need for international research cooperation. During the latter half of the 1980s, concerns about U.S. competitiveness have also revived interest in direct Federal support of civilian technologies, particularly funding for industrial R&D cooperatives.

Use of government funds to support particular industries or technologies raises questions of how winners and losers are picked and whether R&D investments that industry is unwilling to make are to be encouraged. Complicating the issue is the fact that U.S. taxpayers are already directly funding nearly one-half of the Nation's R&D.

INCENTIVES FOR PRIVATE INDUSTRY

Recent S&T policy initiatives have sought to strengthen private incentives to invest in R&D and innovation, recognizing that the private sector is ultimately the arena in which research results must be commercially implemented.

Taxes

The Economic Recovery Tax Act of 1981 included a temporary 25 percent tax credit for incremental spending by industry on qualified research expenditures, over and above the average level of such spending for the previous 3 years. Some early studies concluded that this tax credit did not have a strong effect on R&D spending. They attributed the weak effects in part to uncertainty about duration of the credit and to the low effective rate of incentive (because credits are only available for increased spending over a rolling base that changes annually). Small business proponents have also pointed out the credit's limited applicability to newly established firms that are just beginning to fund R&D. The credit was to expire in 1986, but the Tax Reform Act of 1986 extended it at a reduced rate of 20 percent. The Congress has again extended the credit through 1989.

Antitrust

Policy debates in earlier years weighed incentives for innovation against the possibility for reduced domestic competition. More recently, policymakers have analyzed antitrust and competition issues in terms of global markets, and they are more willing to permit cooperation in the pre-production stages of research and development.

Cooperative research among firms has been going on in the United States on a limited scale for many years. The National Cooperative Research Act of 1984 enables firms to cooperate on research in the developmental stages before product sales competition occurs. Under the act, industrial research consortia can register their formation with the Department of Justice and the Federal Trade Commission, thereby avoiding treble damages if the joint venture is later found to violate antitrust statutes. Actions under joint R&D ventures are not deemed to be *per se* violations of any Federal or State antitrust laws, but they are to be judged on a rule-of-reason basis. More than 100 such consortia have registered since the law was enacted.

Intellectual Property

The Omnibus Trade and Competitiveness Act of 1988 gives holders of U.S. process patents greater legal rights to block imports or collect damages from persons who import into the United States products produced overseas using—without permission—processes patented in this country. The United States is also pursuing improved protection of intellectual property through its bilateral science and technology agreements, bilateral trade agreements, and, multilaterally, in the Uruguay Round of negotiations under the General Agreement on Tariffs and Trade. Domestically, the Drug Price Competition and Patent Term Restoration Act of 1984 extended the length of patent protection for pharmaceuticals to compensate for regulatory delays in getting them to market.

New technologies sometimes raise questions about the most appropriate form of protection for their underlying ideas. In semiconductor designs, the matter was resolved through creation of special copyright-like intellectual property protection with a duration of 10 years. Incentives in the semiconductor design legislation for international reciprocity in such protection have led to efforts in Japan, the European Community, and the World Intellectual Property Organization to protect semiconductor designs in this way.

Federal patent and copyright protection and State trade secrecy laws encourage private investment in R&D and in commercializing new technologies. Nonetheless, limits to such protections exist that reflect competing social objectives. The patent system guarantees inventors the right to exclude others from unauthorized use of their inventions, but only for a limited time (17 years from the date the patent is issued in the United States) and in return for disclosure. Trade secrecy has an unlimited duration in the United States, but the owner must safeguard the information against disclosure and is vulnerable to those who independently think of the same idea or who obtain it by legal means, such as reverse engineering. Copyright protection extends longer (typically, life of the author plus 50 years in

the United States) than patent protection, but it covers only the form of expression, not the underlying concept. Unlike a patent, a copyright is no protection against an independently developed work.

The tradeoff between encouraging creation of knowledge through the grant of exclusive property rights and permitting early and widespread use of knowledge at a low price has been long debated. These tradeoffs between incentives to invest and losses from restricted dissemination are reflected in the limited duration of legal protection given to intellectual property. Concern that firms would use exclusive patent rights to create or extend product monopolies has also led to restrictions on the use of patents, although some scholars have warned that fears of monopoly extension have led to unwarranted restrictions on the legitimate use of patents to capture economic returns attributable to the invention.

Other limitations of intellectual property protection hinge on the subject matter to be protected. For example, many observers view patent protection for manufacturing processes as more difficult to enforce than patents for products. Process innovations are often based more on superior integration of existing elements than on elements that are clearly new, and they may not meet the criteria for patentability. In addition, infringement of process patents is often less easy to detect and to demonstrate than infringement of product patents.

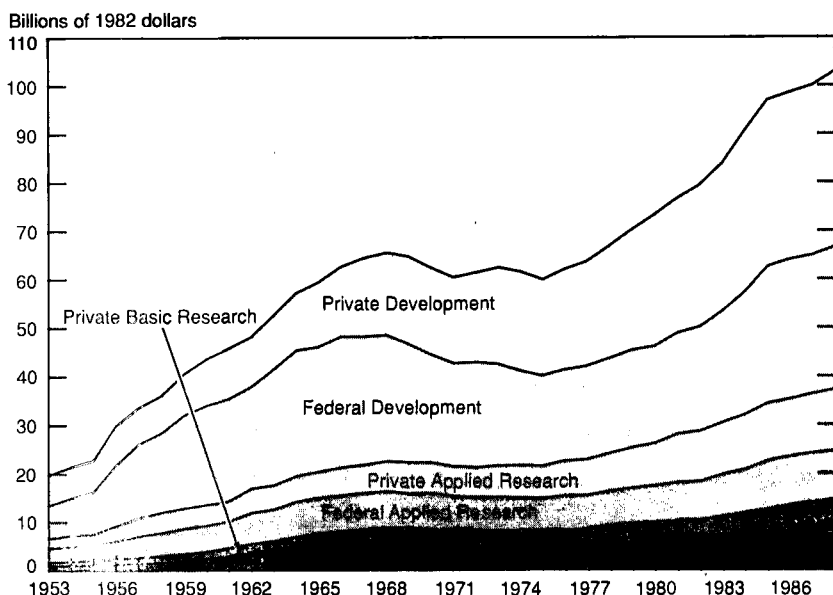
Studies have found variations in the importance of patent protection to firms that innovate; patents are most important for pharmaceutical and chemical companies. The ability to protect intellectual property is not, however, unimportant in providing a competitive advantage in product and process innovation. Rather, patents are not the only way to gain this advantage. For example, a recent survey of U.S. firms in a variety of industries found that lead time, secrecy, and moving down the learning curve quickly (so costs fall as cumulative output and production experience increase) also played important roles in protecting the competitive advantage of an innovation. From a policy perspective, however, government cannot readily provide these other forms of advantage; a firm's learning, secrecy, and production experience must come from within.

FEDERAL FUNDS FOR RESEARCH AND DEVELOPMENT

The Federal Government and the private sector support all stages of R&D, as shown in Chart 6-3. Development expenditures take the largest share of each sector's R&D spending and basic research the smallest. The government's share of national R&D expenditures has varied between 46 and 66 percent, depending on national priorities and the role of Federal R&D in meeting them.

Chart 6-3

Federal and Private Funding of Research and Development



Note. --Private includes a small amount of State and local government funds.

GNP implicit price deflator used to deflate expenditures.

Data for 1988 are estimates.

Source: National Science Foundation.

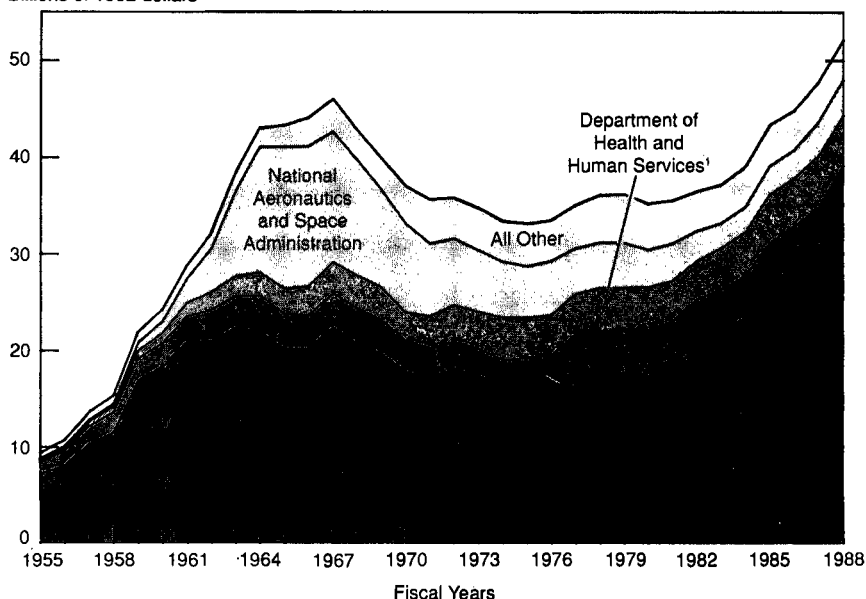
The level of Federal R&D funding has varied substantially as priorities changed. As shown in Chart 6-4, Federal obligations for R&D in constant dollars declined after 1967 and only recovered their earlier peak in 1987. This slump is attributable primarily to changes in the R&D budgets of the National Aeronautics and Space Administration (NASA) and the Department of Defense (DOD), which together accounted for 80 percent of Federal R&D funds in the early 1960s. The rapid growth in Federal R&D began in the late 1950s following the Soviet Union's launch of Sputnik in 1957. High levels of R&D spending supported NASA's successful Apollo program to land a man on the Moon in 1969. While DOD again showed large R&D funding growth during the 1980s as part of this Administration's emphasis on national defense, NASA's R&D funding has not regained its former levels. The Department of Health and Human Services, in contrast, generally showed a slow, steady growth throughout the period. The bulge in R&D funding for the Department of Energy (and its predecessors) during the latter part of the 1970s reflects the ill-advised at-

tempt to seek S&T solutions to the energy crisis and the later efforts of this Administration to cut back expensive demonstration projects.

Chart 6-4

Federal Obligations for Research and Development by Major Agency

Billions of 1982 dollars



¹Data prior to 1979 are for Department of Health, Education, and Welfare.

²Data for 1955-73 and 1974-76 are for Atomic Energy Commission and Energy Research and Development Administration, respectively.

Note.—Data for 1987 and 1988 are estimated.

GNP implicit price deflator used to calculate 1982 dollars.

Source: National Science Foundation.

Although not apparent in agency R&D totals, the recent growth in DOD's R&D has significantly offset the increasing emphasis on basic research in the civilian agencies. Over the past 10 years basic research in the civilian agencies has grown from 23 percent of their R&D to 40 percent. At the same time, however, DOD's share of Federal R&D increased from 45 percent to 67 percent, and DOD spends both a smaller and a declining share of its R&D on basic research. In 1978 basic research accounted for 4 percent of DOD's R&D budget; by 1988 its share had fallen to 2 percent. As a result, Federal spending on basic research remained at 14 percent of total Federal R&D.

Several rationales justify Federal support of R&D. One is that direct government support is appropriate where incomplete property rights lead the private sector to underinvest in R&D; this rationale is

the primary economic reason for Federal support of basic research. Another is that the pure advancement of knowledge—with or without some commercial payoff—is worthwhile (this rationale is perhaps best applied to some forms of space exploration). In other cases, social objectives, such as higher levels of education, are furthered by funding for faculty and student R&D. Still another rationale for Federal R&D support stems from the need of the government to use the knowledge.

Relatively small amounts of Federal R&D are funded under the narrow rationale of insufficient private investment in R&D. Taking all basic research as a proxy for that R&D where the private sector has inadequate incentives to invest, about 14 percent of Federal R&D is funded on the basis of this market-failure rationale. If university R&D is the proxy, the proportion is 12 percent of Federal R&D. Instead, as shown in Chart 6-4, most Federal R&D funds go to meet the needs of the agencies themselves. The agencies were created to respond to specific social needs, in such areas as defense, space, and health, where private actions alone would not be sufficient. They rely on R&D to help them meet their goals or to provide them with technologically advanced products where they are the dominant purchaser. In such a situation, R&D is a means of fulfilling the agencies' roles in society; support of R&D is not an end in itself.

FEDERAL TECHNOLOGY TRANSFER

Because of the large direct Federal role in R&D, policy officials have recently paid particular attention to incentives for the transfer of the results of federally sponsored R&D to industry.

Government Patent Policy

Some results of federally funded research are patentable, and government policy on ownership and use of these patents has recently changed to offer greater incentives for their commercialization. The earlier policy of many agencies was to patent their inventions and to provide nonexclusive licenses to encourage wide use of their research results. Agencies found little demand for nonexclusive licenses.

Legislation in 1980 permitted contractors engaged in federally funded R&D to obtain patent title when they are small businesses, universities, or nonprofit institutions. A 1983 Presidential memorandum extended the contractor title policy to firms of all sizes (unless contrary to law) and removed a previous restriction mandating that a Federal agency should normally retain title to inventions that concern public safety, health, or welfare. Amendments to the patent title legislation in 1984 extended its coverage to university and nonprofit operators of government-owned, contractor-operated research facilities

and in 1986 to some cases of government-owned, government-operated facilities.

A policy of offering contractors exclusive rights to patents arising from government-sponsored R&D is likely to be the most effective way of ensuring that research results will be brought to the point of private commercial use. Indeed, without exclusive rights, private entrepreneurs are likely to shy away. The post-patent stages of the innovation process may involve substantial investment in additional research that may not be patentable or easily protected. In addition, contractors may have used their proprietary information in carrying out R&D for the government, making it difficult or impossible for another firm to exploit the patent without using that information.

The 1980 legislation permitting universities to own patentable inventions flowing from federally funded research appears to have stimulated both invention and university-industry cooperation. The number of university patents increased from 230 in 1976 to approximately 900 in 1987, of which universities are licensing almost one-third to private firms for development and potential commercialization. Universities attribute the significant increase in business-sponsored research on their campuses to this legislation. Some observers also view the growth in the U.S. biotechnology industry as largely a product of the university-industry cooperation made possible by this legislation.

Cooperative Research Involving Industry, Federal Laboratories, and Universities

Policymakers also recognized the importance of incentives as they tried to improve the linkages between researchers in government laboratories and private industry by allowing laboratories to keep a portion of the revenues from license fees. The Technology Innovation Act of 1980 (the Stevenson-Wydler Act) explicitly promotes civilian technological innovation, by making the transfer of federally owned technology to industry and to State and local governments an objective of all Federal laboratories.

The Federal Technology Transfer Act of 1986 amended the Stevenson-Wydler Act to encourage further the transfer of Federal technology to industry. Federal laboratories could perform cooperative research with outside parties, as long as such research was consistent with the mission of the laboratory, and permit private companies to obtain in advance rights to patent technology developed under the cooperative agreements. The act also provided that laboratory directors could negotiate licensing agreements arising out of other, non-cooperative research at the laboratory. It enabled an agency to retain any royalties resulting from commercialization of inventions from its laboratories, and it directed the agency to share those royalties with

the individuals responsible for the invention and with its laboratories. Preliminary indications of the effect of these two laws are favorable. Inventions reported by government scientists rose significantly in fiscal 1988 compared with fiscal 1987, and Federal laboratories have entered into almost 100 cooperative research agreements with private companies under the Federal Technology Transfer Act.

The Federal Government has also encouraged new institutional arrangements for cooperative research. These cooperative arrangements have several motivations and objectives, including cost-sharing, reducing the barriers to commercialization of technology developed in universities or government laboratories, making more effective use of the scarce and valuable talent and facilities of government laboratories, and broadening the scope of firms' exposure to external technical advances. As an example of the new institutional arrangements, in 1986 NSF made the first 6 of what has since become a total of 18 awards for Engineering Research Centers located in schools of engineering that also have support from private industry. Based on strong industry and university interest, NSF has developed a similar program for science and technology centers and announced the first 11 awards in December 1988.

Some critics have voiced concerns that cooperative research involving industry and either universities or government laboratories may divert these institutions from their proper social objectives. They fear that university researchers will develop an excessively near-term focus and neglect longer term research, or that government-funded laboratories may be diverted from their primary goals in order to do research on commercially profitable products. But it may also turn out that researchers still do longer term research, although in areas with market potential.

A basic issue raised by concerns over research diversion involves the opportunity cost when researchers cooperate with industry. That is, if researchers are diverted, which type of research has the greater value to society? Some academic research driven purely by the interests of the scientist leads to important breakthroughs. The R&D process does not move in a single direction, however, and basic research is not the only source of ideas. Important feedbacks occur throughout the R&D process; social problems and technological limitations can stimulate major fundamental research. The heart of the issue lies in identifying the effect of cooperative research on the composition and quality of R&D. Two final points are that the sponsoring agency must ensure that government funds are used only to further the objectives of the agency and, for Federal laboratories, that technology transfer is now part of their mission.

A different problem arises from the limitations of relying on researchers alone to become entrepreneurs or product champions. They may not have the skills or interest in turning research results into commercial products. What is needed is industry awareness and anticipation, while the research is being planned, of how the results of longer term, fundamental research could lead to product or process improvements. Cooperative research across sectors can increase this awareness, as industry identifies areas of long-term research in which it will invest.

FEDERAL SUPPORT FOR INDUSTRY

Industry now receives one-half of all Federal R&D funds. The U.S. Government has longstanding relationships with industry in space and defense to meet agency goals. Some observers cite the commercial success of the U.S. aviation industry as justification for Federal support of other industries. But as a counter-example, spillovers from defense research into the civilian sector appear to have fallen off since the 1950s. The underlying question is whether federally funded R&D in industry can both meet government needs and benefit society in other areas as well through its use in commercial products and processes. This question is not easily resolved, and policy officials are still examining existing government-industry relationships and developing new ones to permit broad use of Federal R&D results.

Industrial Base

One troublesome facet of government-industry cooperation becomes evident when foreign competition threatens a U.S. industry that is deemed to be important for national security. This competition may result from unfair trade practices, exchange-rate changes, cost of capital, or superior foreign products or production capabilities. In recent years two examples have arisen of Federal R&D directed at improved manufacturing capabilities for strategically important U.S. industries—machine tools and semiconductors. In both cases foreign competitors undercut the competitive position of U.S. firms, and the industries petitioned the U.S. Government for relief. Both industries directly or indirectly raised national security arguments to support the need for continued domestic production. In both cases the government granted some import relief and supplemented it with support, through DOD, for research to improve the manufacturing capabilities of the industry.

The National Center for Manufacturing Sciences (NCMS), established in 1986, is an R&D consortium focusing on manufacturing technologies of all types. Although U.S. manufacturers of machine tools are involved, membership is much broader, including the users

of manufacturing technologies in the automotive, defense, and consumer products industries and suppliers to the machine tool industry. The NCMS contracts out its research to industry, academia, and government. The NCMS receives about \$5 million a year from DOD and plans for \$45 million a year from private sources.

SEMATECH (semiconductor manufacturing technology initiative) is a newly established consortium of U.S. semiconductor producers, equipment suppliers, and users. SEMATECH is developing the next generation of process technology for the production of semiconductors, where U.S. firms have lost market share to Japan (especially in DRAMs) and for which efficient production processes are critical for commercial success. SEMATECH is partially supported with Federal funds, with DOD authorized to provide \$100 million of support in fiscal 1989.

The existence of NCMS and SEMATECH raises fundamental questions about DOD's role in supporting civilian commercial technologies. The Department clearly needs semiconductors and advanced machine tools and, in special circumstances, may not want to rely on foreign suppliers. But DOD's demand for these products is only a small portion of the total market, and DOD alone does not need and cannot support a large domestic production base. Requiring DOD to provide R&D support for an industrial base larger than it needs, however, diverts its resources from military technologies that the private sector would never fund on its own.

Cooperative Research and Development

Cooperative research among competing firms is an organizational form of research that some argue deserves special Federal support. Many firms benefit from cooperative research on generic projects, the argument states, that individual firms lack incentives to finance themselves. Yet the fact that firms share the costs reduces the need for government support. The argument is most convincing where members of the cooperative cannot readily appropriate research results, so that they lack sufficient incentives to invest. For example, incentives to invest could be inadequate if intellectual property protection is incomplete, if the results cannot be kept secret, and if participants will not gain lead time.

Cooperative R&D is an obvious way for companies to overcome the limitations of R&D budgets. It can eliminate purely duplicative research of individual companies and free up resources for additional research. It can marshal more researchers and equipment to work on a problem. Cooperative R&D can also pursue several possible solutions simultaneously, thereby reducing the risk of finding no feasible solution at all.

Formal modes of cooperation are cumbersome to arrange, difficult to administer, and often only modestly successful. Competitors often bring different R&D capabilities and knowledge to a proposed cooperative R&D effort. If participants pool personnel and knowledge, those with the better staff and equipment are often reluctant to join. The participants' ability to exploit the fruits of cooperative R&D projects often differs, which makes the selection of appropriate projects and the optimal sharing of R&D costs touchy subjects.

Competitors can address these problems in several ways. The Microelectronics and Computer Technology Corporation (MCC), a private R&D cooperative established in 1982 without government subsidy, serves as an example. The corporation performs advanced long-term R&D in microelectronics and computer development; it does not develop products or processes. Members do not pool proprietary research and face no restrictions on their own individual research. The private sector financing and governance provide market checks against MCC becoming irrelevant to industry needs and inefficient in its management.

Members of MCC have adopted a simple rule for assigning R&D costs: initial participants in a program pay an equal share; later participants may pay a larger amount. Because of the difficulty of predicting how beneficial some technology will be to a particular member, participants make an additional payment for a license to use a technology coming out of their program, and they share in the royalties. Participants also receive a 3-year head start in access to technologies before those technologies are opened to other MCC shareholders.

Alternative cooperative approaches involve either formal technology licensing or informal know-how trading after the research is completed. Know-how trading takes place when scientific and technical personnel obtain information from colleagues at other firms, possibly competitors, and provide other information in turn, possibly at a different time. The technical participants judge the quality of information given and received and, over time, ensure that exchanges are of comparable value. This phenomenon partially explains the rapid leakage of technology out of innovating firms, and also explains the incentives for firms to fund R&D despite the leakage—they get know-how in return.

Given the many ways in which industry generates and shares knowledge without government support, proposals for Federal support of cooperative industry research should identify the circumstances that make purely private solutions infeasible and the extent to which the social benefits of government support exceed the public costs. Government funding certainly makes a consortium more attrac-

tive to industrial participants if the money comes with few strings attached. However, government funding raises such issues as which firms are eligible for membership in the consortium, under what conditions nonmembers can obtain access to the R&D results, when foreign members are eligible for membership, and how scarce government resources should be allocated among various consortia.

Perhaps a more useful and appropriate government role than funding would be to gather information on successful organizational and contractual solutions to the typical problems in cooperative industry R&D. And, where industrial R&D consortia operate in areas where the Federal Government supports R&D, these consortia should be eligible to compete for R&D support on equal terms with other research institutions.

POTENTIAL POLICY PROBLEMS

Some emerging issues pose potential problems for the continued success of the American S&T enterprise; among them are the politicization of the allocation of Federal R&D funds, the degree to which the country benefits from government R&D spending, and the adequacy of the supply of scientists and engineers to meet the needs of the U.S. economy.

Political Pressures in Research Funding

Decisions on R&D funding are increasingly subject to political pressures. These pressures are brought to bear by industries that do not receive Federal R&D funds at the level or in the form they want, by research organizations that do not obtain their "share" or do not receive funds for the specific purposes they want (e.g., facilities), and by regions that want the resources associated with Federal R&D.

The location in which R&D is carried out is not a new concern for science policymakers. For example, the geographic distribution of National Science Foundation grants was an issue in the Congress before the organization was established. However, Federal research funds are increasingly earmarked for particular institutions in the budget and appropriations process, rather than allocated by agency decisions. One estimate showed that earmarked science projects had increased from 19 in the 1979–80 sessions of the Congress to 121 in the 1985–86 sessions, with recipient institutions rising from 12 to 60.

Such political intervention is not surprising; locations in which research is conducted gain from Federal funds regardless of any potential commercial benefits that may result from the research. Earmarking appears to benefit institutions that have difficulty obtaining Federal funds. One study found that the top 20 universities (in terms of Federal R&D support), which got 41 percent of total research funds, received only 1.3 percent of earmarked funds in 1986. Universities

ranked below the top 100 received 14 percent of the total R&D funds but 71 percent of earmarked funds, suggesting that research institutions lobby for earmarked Federal research funds that they could not obtain otherwise.

The potential problem is that political earmarking will waste R&D resources. Once the evaluation criteria have been established, researchers should compete on merit—not their lobbying skills.

Access to U.S. Science and Technology

Concerns for both national security and economic competitiveness have generated interest in setting appropriate conditions for foreign access to American S&T. On the competitiveness side, the primary consideration is to ensure that the Nation benefits from its R&D investments, particularly those publicly funded.

Both this Administration and the Congress have sought to balance international S&T relationships through measures that ensure comparable access to government-sponsored or government-supported R&D programs and facilities. All nations should eliminate R&D arrangements that discriminate against researchers based only on their nationality. Comparable access across all countries will not suffice to ensure that research opportunities afforded by such access will be used, however. The degree of use of foreign research opportunities depends on individual perceptions of research-facility quality, the existence of language barriers, the costs of carrying out research abroad, and the individual researcher's expertise. Several U.S. Government agencies are taking steps to increase American use of worthwhile foreign research opportunities. These agencies plan to monitor and provide information on research opportunities abroad, fund more international research, and provide scientists with foreign language training. These measures will benefit the United States as American researchers take greater advantage of the increasingly strong S&T capabilities of other nations. As in trade, solutions to a perceived lack of reciprocity or imbalance should end up helping instead of harming the United States.

Policies to ensure that the United States benefits from its government-supported R&D investments have to take into account the openness of much of the U.S. research system. Academic research is traditionally published, and draft material circulates in informal research networks. Cooperation among nationals of different countries—formal or informal, in U.S. laboratories or abroad—can improve the productivity and quality of the research. Such cooperation benefits all participants. At times, however, participants may be able to appropriate the research results, e.g., through patents, and put them into commercial use. The U.S. Government now includes intel-

lectual property protection provisions in its international S&T agreements to guard against this eventuality.

Strong domestic research cannot ensure that the United States will remain the location of production for goods derived from that research. Once the country has made an R&D investment, it is in society's interest to allow that knowledge to be incorporated into products, wherever they are produced. The best way to ensure that U.S. firms and the American public benefit from this R&D is to give firms a policy environment conducive to innovation.

New Scientists and Engineers

Recent demographic trends have raised doubts about the adequacy of the future U.S. science and engineering work force. The size of the 16- to 18-year-old population of the United States peaked in the mid-1970s, and it is expected to continue to decline until the mid-1990s. Each successive college-age cohort contains a larger proportion of ethnic and racial minorities, which historically have been poorly represented in science and engineering. By the year 2000, more than 25 percent of the college-age population will be black or Hispanic. The math and science performance of U.S. students at the precollege level is relatively poor, whether that performance is measured against other countries or within the United States over time; this showing is a matter of concern. These trends taken together could impose restraints on the supply of newly trained scientists and engineers unless educational and employment patterns change.

The downturn predicted for the number of bachelor degrees in science and engineering based on past participation rates has not yet come about. The United States is already halfway through its demographic decline in the college-age population, and the number of college graduates with first degrees in the natural sciences and engineering (excluding social and behavioral sciences) has continued to increase. Much of this continued production of bachelor degrees in science and engineering is attributable to the increased participation of females and increased enrollments in computer sciences.

Foreign students play a large role in U.S. graduate education, although at the undergraduate level they account for less than 4 percent of the degrees in science and engineering. In 1987, foreign students received 30 percent of U.S. doctorate degrees in science and engineering, up from 21 percent in 1978. Within engineering, foreign students received the majority of U.S. doctorates in 1981, and by 1987 their share reached 55 percent. Two-thirds of these foreign engineering students are from Asia. Students from Taiwan, South Korea, and India accounted for 44 percent of the foreign engineering doctorates in 1987, illustrating the importance of American institutions in training scientists and engineers from developing countries.

The U.S. higher education system has become a major producer of international human capital.

Ability to meet the longer term needs of the U.S. economy for scientists and engineers will depend on the basic factors that affect their supply. One factor is pay for scientists and engineers at different degree levels and compared with job opportunities in nonscience fields. Another factor is the flow of undergraduates, which depends on a supply of qualified high school graduates. Longer term enlargement of the base of potential scientists and engineers also depends on the recruitment of women and minorities into these fields.

CONCLUSION

Because the 1980s have seen strengthened incentives for the private sector to put the results of R&D into commercial use, major changes in the role of the Federal Government do not appear to be needed. Nonetheless, the United States needs to improve its understanding of the factors—institutional relationships as well as incentives—that determine how effectively the S&T system works. The Nation needs to ensure that efforts to benefit particular groups do not hinder the efficient deployment of S&T resources. In this way, the United States can continue to stimulate its scientific and technological genius, which for so long has benefited both the Nation and the world.

CHAPTER 7

The U.S. Economy in the 1980s and Beyond

WHEN THE PRESIDENT TOOK OFFICE in January 1981, the condition of the U.S. economy was bleak. Sixteen years of inappropriate monetary and fiscal policies and two oil price shocks had left the economy in the grips of stagflation. Inflation and unemployment rates had followed rising trends between 1965 and 1981. For example, at the expansion peak in the fourth quarter of 1969, the unemployment rate was 3.5 percent and the inflation rate was 5.1 percent. By the third quarter of 1981, another expansion peak, the unemployment rate had climbed to 9.2 percent and the inflation rate had risen to 9.4 percent. At the same time, the trends in real output and productivity growth had faltered. Between the expansion peaks of the second quarter of 1953 and the fourth quarter of 1969, real gross national product (GNP) and manufacturing productivity growth averaged 3.2 percent and 2.3 percent per year, respectively. Between the fourth quarter of 1969 and the third quarter of 1981, GNP and manufacturing productivity growth averaged 2.6 percent and 2.2 percent per year, respectively, while between the fourth quarter of 1973 and the third quarter of 1981, GNP and manufacturing productivity growth averaged only 2.2 percent and 1.5 percent, respectively.

As the President leaves office in January 1989, the economy is in its seventh year of expansion. This is the longest peacetime expansion in recorded U.S. history and one marked with notable achievements. Real output has grown 4.2 percent per year on average between the fourth quarter of 1982, and the third quarter of 1988. Nonfarm employment has increased by almost 19 million jobs through November 1988. The inflation rate has fallen from double digits and has averaged about 3.3 percent in the past 5 years. Manufacturing productivity has increased at an average annual rate of 4.4 percent, almost three times as fast as its average growth between the fourth quarter of 1973 and the third quarter of 1981.

Economic performance in 1988 surpassed the expectations of many forecasters, who first expected the October 1987 stock market crash and an apparently large inventory overhang to dampen growth, and who later predicted rising inflation. Real output grew an average 2.9

percent during the first three quarters of the year, inflation was only 3.9 percent, and the unemployment rate fell to 5.3 percent, among the lowest in 14 years. Moreover, the composition of real output moved into better balance, with business fixed investment and exports both posting impressive gains.

The prosperity of the past 6 years is in no small measure attributable to the economic policies fostered and implemented by this Administration. Tax reform has improved the incentives to produce, save, and invest. Slower growth of Federal spending has freed resources for the private economy. Prudent monetary policy has lowered and stabilized the rate of inflation. As long as policymakers maintain open and flexible markets, enhance economic stability by avoiding short-run stabilization policies and higher tax and inflation rates, rein in Federal spending, and avoid protectionism, the economy can continue to demonstrate good economic performance in the years ahead. With this proviso, the economic outlook for the United States is bright.

THE LOWERING OF INFLATION IN 1981 AND 1982

A cornerstone of this Administration's economic policy has been a reduction in the rate of inflation. Given the poor economic performance of the 1970s, the Administration believed that strong and durable gains in living standards could not be achieved unless inflation was stable, and ultimately zero. The Administration encouraged and supported Federal Reserve efforts to reduce the growth of money in order to achieve a lower inflation rate. This policy support built public credibility in the Federal Reserve's disinflation policy.

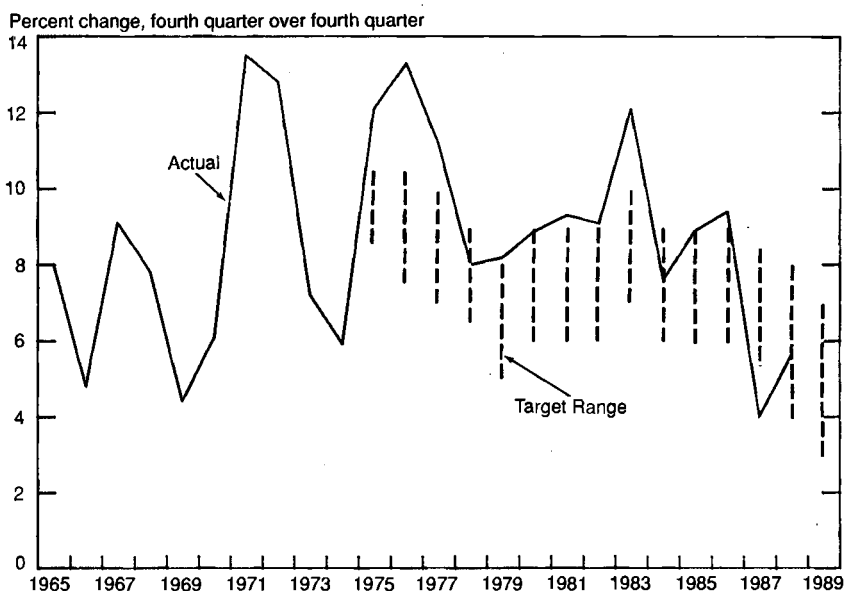
Monetary policy actions between 1965 and 1980 had shattered the Federal Reserve's credibility as an inflation fighter. On average, the money supply grew more rapidly than the rate consistent with low inflation. For example, M2 grew at an annual average rate of nearly 9 percent between 1965 and 1980. Given that the velocity of M2, which is defined as the ratio of nominal GNP to M2, has exhibited no secular trend during the postwar period, inflation would not have surged during the late 1960s and the 1970s if M2 growth had stayed closer to the 3 percent trend growth of real GNP. Compounding the inflationary effects of fast money growth during the second half of the 1970s was an increase in the average growth rate of the velocity of M2 as nominal interest rates rose in response to continued inflation. Thus, a given money growth rate was translated into even faster inflation.

Not only was average money growth excessive between 1965 and 1980, but it was also highly variable (Chart 7-1). Large changes in

money growth whipsawed the economy alternately into boom and bust periods. During 1967, 1971, and 1975, the growth rate of M2 approximately doubled from the previous year, while during 1966, 1969, 1973, and 1976–78, M2 growth reversed course, falling by about one-third to one-half of its previous value.

Chart 7-1

Actual and Target M2 Growth



Note.—Target ranges set for 1975 to 1989 only.

Source: Board of Governors of the Federal Reserve System.

Excessive and highly variable money growth clouded the public's understanding of the intentions of the Federal Reserve. Since 1975 the Federal Reserve has announced annual growth targets for most of the monetary aggregates. The Federal Reserve designs the target ranges to be consistent with its ultimate policy objectives of achieving price stability in an environment of sustainable real output growth. In recent years the Federal Reserve has also announced its expectations of real output growth, inflation, and the unemployment rate for the coming or current year. These growth targets and expectations of economic activity, along with policy announcements of foreign governments, set the pattern of expectations affecting, for example, interest rates, exchange rates, and other prices. During the second half of the 1970s the Federal Reserve's policy objectives were to moder-

ate real output growth and reduce the rate of inflation, as evidenced by a gradual lowering of the target ranges during this period. Yet the Federal Reserve consistently allowed the monetary aggregates to increase faster than their maximum targeted growth rates. As the rate of inflation steadily rose in the late 1970s the credibility of the Federal Reserve's announced disinflation policy was severely eroded.

This loss of credibility was potentially important. Because the public did not believe that the Federal Reserve was serious about controlling inflation, it did not alter its behavior to be consistent with a lower rate of inflation; public expectations of continued rapid inflation were reflected in wage and loan contracts, spending habits, and asset prices. These expectations raised the probability that the output loss and unemployment from a disinflationary policy would be greater than from a credible policy.

The Federal Reserve demonstrated its determination to reduce inflation in 1981. Although the growth rate of M2 changed little from 1980, the growth rate of the narrow aggregate M1 was reduced from 7.5 percent between the fourth quarter of 1979 and the fourth quarter of 1980 to 5.2 percent over the four quarters of 1981. At the same time, the Federal funds rate rose from a then recent low of about 9 percent in July 1980 to more than 19 percent in June 1981.

The effect of this monetary tightening on the rate of inflation was dramatic, coming as it did after the brief 1980–81 recovery and reinforced by the largest decline in velocity of the postwar period. From a peak of 12.1 percent in the fourth quarter of 1980, the rate of inflation fell to 3.6 percent in the fourth quarter of 1982. Although the 1981–82 recession is often called the most severe in 50 years, its effect on the real economy was less than that of the 1973–75 recession. Real GNP fell 3.2 percent between the expansion peak in the third quarter of 1981 and the recession trough in the fourth quarter of 1982, compared with a total decline of 4.3 percent during the 1973–75 recession; the unemployment rate rose 3.2 percentage points over the same period, slightly less than its 3.4 percentage points rise during the 1973–75 recession. The output and employment losses during the 1981–82 recession were the price paid for the failure to correct the inflationary excesses of the previous 15 years, and are properly viewed as the downpayment for the current expansion.

THE EXPANSION IN PERSPECTIVE

An important legacy of this Administration is the refocusing of economic policy. The Administration deemphasized short-run stabilization policies; worked to provide a stable policy environment with

market-based incentives for productive behavior, including low inflation; and attempted to extricate private markets from burdensome regulations. The strength and durability of the current expansion bear testimony to the soundness of these policies. In December 1988 the current economic expansion entered its seventh year, making it the longest peacetime expansion and the third longest on record. Most impressively, the inflation rate has not risen during this expansion, but has remained in the neighborhood of 3 to 4 percent. Indeed, this President is the first President in 36 years to leave office with both a lower inflation rate and a lower unemployment rate than when he assumed office.

The performance of the economy during the current expansion can be evaluated in several ways. One is to compare the performance with that of major U.S. trading partners. Another is to compare U.S. economic activity during this expansion with economic activity in previous expansions. Apart from the obvious advantage of indicating how domestic economic activity compares with activity abroad, the international comparison can hold constant many common factors influencing economic activity worldwide. The disadvantages of international comparisons are the lack of an historical perspective and the failure to hold constant expansion timings and institutional arrangements such as labor market practices across countries. The comparison with previous U.S. expansions offers this time perspective, indicating to what extent economic activity during the current expansion is better or worse than during past expansions. But this comparison does not hold constant the various exogenous forces, such as droughts, changes in foreign oil supplies, and the impact of foreign government policies, on the U.S. economy. Neither comparison is superior to the other; each has its own strengths and weaknesses. For this reason, both comparisons are employed below.

GROWTH IN REAL OUTPUT

The growth of real output during this expansion compares favorably with growth abroad. Between 1982 and 1987 real output growth in the United States was greater than the average output growth of the other six economic summit countries—France, West Germany, Italy, the United Kingdom, Japan, and Canada—and greater than the average growth of every summit country except Japan and Canada. In contrast, U.S. output growth in the 1960s and 1970s was below the average of the other six summit countries and well below that of Japan, France, Italy, and Canada.

The good performance of the U.S. economy during this expansion is not simply a matter of an early start at recovery. The better U.S. performance also appears during the 1981–87 and 1983–87 time pe-

riods. Instead, the above-average performance of the U.S. economy during this expansion reflects the vigor of the free-market system and economic policies aimed at promoting long-run growth and stable prices. Indeed, as it has become clear that this Administration's policies are paying off, other countries have rushed to adopt similar policies. For example, tax reform is underway in Japan, West Germany, the United Kingdom, and several other countries as well. Government has reduced intervention in the marketplace in France, West Germany, and the United Kingdom through privatization of major publicly owned firms and steps toward deregulation of key markets.

The growth of real GNP in the United States between the fourth quarter of 1982 and the third quarter of 1988 totaled almost 27 percent, greater than real GNP growth in all but one postwar U.S. expansion. This solid growth reflects the long duration of the current expansion, which sets the current expansion apart from almost all U.S. expansions. Average real GNP growth during the current expansion is remarkably similar to that of the past five expansions, excluding the brief 1980-81 episode (Table 7-1). Real GNP has grown an average of 4.2 percent per year between the fourth quarter of 1982 and the third quarter of 1988, virtually matching the 4.3 percent average of the previous expansions. The growth of other aggregate measures during this expansion is similar to the expansion average. Real final sales have grown 3.7 percent per year compared with the average of 3.9 percent, and total employment has grown slightly faster than the average. Real personal consumption expenditures have grown close to the expansion average of 4.1 percent, dispelling the notion that the current expansion has been entirely consumer-led.

SAVING AND INVESTMENT

Although similar in aggregate terms, output and spending during the current expansion differ in composition from the average of past expansions. These differences are best described by examining the balance between saving and investment, which is the reverse side, although not the mirror image, of output and spending behavior. The national income and product accounts identity between income and output can be rewritten as an identity between gross saving and investment. Gross saving is the sum of personal, business, and governmental saving, and gross investment is the sum of gross private domestic investment and net foreign investment.

One difference between the current and past expansions is the behavior of the Federal Government budget deficit. Between calendar years 1980 and 1983, the Federal budget deficit rose from 2.2 percent to 5.2 percent of GNP on a national income and product ac-

TABLE 7-1.—*Comparison of Current and Past Expansions*

[Average annual percent change, except as noted]

Item	Total expansion		First 2 years		Second 2 years		Third 2 years	
	Current ¹	Average	Current	Average	Current	Average	Current ¹	Average
REAL GNP	4.2	4.3	5.8	4.8	2.8	3.9	4.1	3.3
Final sales	3.7	3.9	4.2	4.1	3.5	3.6	3.4	3.6
Personal consumption expenditures	4.0	4.1	4.8	4.9	4.4	3.0	2.7	2.7
Nonresidential fixed investment	6.1	6.7	12.3	5.9	-1.9	9.2	8.8	5.2
Structures	-1.6	4.2	3.1	2.3	-8.3	6.3	.9	10.0
Producers' durable equipment	9.9	8.7	17.9	8.8	1.0	11.1	11.8	3.1
Residential fixed investment	9.2	5.8	21.0	13.0	8.5	-2.2	-2.3	-12.0
Exports of goods and services	7.7	9.1	5.9	6.6	1.5	11.5	17.5	13.3
Imports of goods and services	11.5	7.8	20.6	9.5	6.1	4.8	8.1	8.4
Government purchases of goods and services	2.8	1.3	2.5	.7	5.7	1.8	-1	6.0
Federal	1.8	-.9	1.9	-1.6	6.4	-.5	-3.5	7.8
Defense	4.3	-1.7	5.8	-3.2	6.0	-1.3	-.7	10.2
Nondefense	-5.5	2.6	-7.6	6.1	7.8	.7	-16.5	.7
Excluding CCC	2.2	2.6	4.1	6.0	-2.5	.4	5.5	1.2
State and local	3.6	3.8	2.9	3.5	5.1	4.1	2.5	4.2
Final sales to domestic purchasers	4.2	3.8	5.8	4.4	4.1	3.1	2.6	3.0
Change in net exports of goods and services (billions of 1982 dollars)	-105.6	1.7	-106.5	-15.6	-47.6	17.4	48.5	17.9
ADDENDA:								
GNP implicit price deflator	3.3	4.4	3.5	3.8	2.9	5.4	3.5	5.9
Employment including resident Armed Forces	2.6	2.5	3.3	2.4	2.1	2.7	2.4	2.0
Industrial production	5.7	7.2	10.4	8.7	1.4	5.6	5.5	3.7
Manufacturing output per hour	4.4	3.0	5.7	4.3	3.6	2.6	3.7	.2
Real compensation per hour, nonfarm business sector .....	.6	2.3	.1	3.1	1.9	1.2	-2	-.7

¹ Through 1988 III.

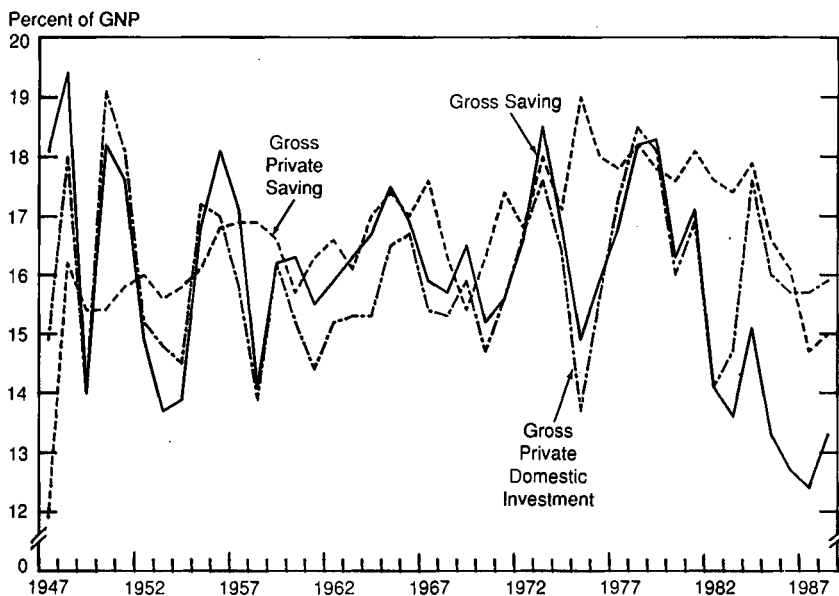
Note.—Average expansion includes expansions beginning in 1954 II, 1958 II, 1961 I, 1970 IV, and 1975 I. (Expansions are as determined by National Bureau of Economic Research.)

Sources: Department of Commerce, Department of Labor, and Board of Governors of the Federal Reserve System.

counts basis. This increase had cyclical and structural components. The cyclical components included greater income-support payments and lower income tax receipts during the 1981-82 recession. The structural components were the buildup in national defense spending and tax changes in the Economic Recovery Tax Act of 1981 (ERTA) and the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA). For example, real national defense purchases rose at an annual average rate of 8.2 percent between the fourth quarter of 1980 and the fourth quarter of 1982, the strongest growth since the Vietnam war buildup, and at an annual average rate of 5.9 percent during the first 4 years of the current expansion. On balance, expenditures increased as a percent of GNP and receipts as a percent of GNP remained roughly constant. The increase in the Federal budget deficit accounted for most of the decline in the gross saving rate during this period. This increase is shown in Chart 7-2 by the difference between gross saving and gross private saving.

Chart 7-2

Gross Saving and Investment as Percent of GNP



Note.—Data for 1988 based on average of the first three quarters.

Source: Department of Commerce.

Between calendar years 1984 and 1987, the Federal budget deficit averaged 4.4 percent of GNP, but a combination of strong income growth and spending restraint has reduced the deficit to 2.8 percent of GNP during the first three quarters of 1988. Total expenditures as a percent of GNP have fallen from 23.7 percent in 1984 to 23.0 percent through the first three quarters of 1988, while total receipts as a percent of GNP have increased from 19.2 percent to 20.1 percent of GNP over the same period. The fiscal 1990 budget proposal indicates a continued decline in the Federal budget deficit to reach a balance by fiscal 1993.

A second difference in the composition of real output during this expansion, relative to past expansions, is the decline in the U.S. trade balance. This decline reflected faster real income growth and a greater expected real, after-tax return on capital in the United States relative to the rest of the world. The rise in the real value of the U.S. dollar in foreign exchange markets reinforced these factors. Real net exports fell \$154.1 billion between the fourth quarter of 1982 and the fourth quarter of 1986, compared with the average \$1.8-billion

increase during the first 4 years of the past five expansions, excluding the brief 1980–81 episode. During the first 4 years of the current expansion, real import growth was almost double and real export growth was less than one-half of the average of past expansions. The deterioration in the trade balance is mirrored by the decline in U.S. net foreign investment during this period, shown in Chart 7–2 by the difference between gross saving and gross private domestic investment. Between 1982 and 1986 net foreign investment fell from about zero to –3.4 percent of GNP. This capital inflow more than offset the decline in the gross saving rate after 1982.

The swing in the trade balance is also reflected in the greater growth in domestic demand relative to that of domestic output during this period. Growth in real gross domestic purchases averaged 5.3 percent per year during the first 4 years, a full percentage point faster than the growth in real GNP.

Since the fourth quarter of 1986 the decline in the real U.S. dollar exchange rate and the convergence of real income growth in the United States and abroad contributed to the \$48.5-billion improvement in real net exports, as strong export growth more than offset continued import growth. Additional improvement in the trade balance can be expected in the future.

A final difference in the composition of real output during this expansion involves stronger growth of gross private domestic investment relative to past expansions. Real gross private domestic investment grew at an average annual rate of 10.5 percent during the current expansion, more than a full percentage point faster than the average of past expansions.

Among the components of gross private domestic investment, real residential fixed investment has grown during the current expansion at a 9.2 percent average annual rate, considerably above the expansion average of 5.8 percent. The stronger growth reflects the early effects of ERTA and TEFRA, which lowered the cost of capital for multifamily housing construction as well as for nonresidential structures. Real nonresidential fixed investment has grown about one-half of a percentage point less during this expansion than the 6.7 percent average annual growth during past expansions, but the difference appears in nonresidential structures. The annual average 1.6 percent decline in structures mostly reflects lower spending on petroleum exploration and drilling in response to the oil price decline in 1986, although recent weakness in nonresidential structures spending reflects the removal of incentives for investment in structures in the Tax Reform Act of 1986. Real producers' durable equipment expenditures have grown over a full percentage point faster than the expansion average. A number of studies suggests that this strength is

not attributable to the effect of ERTA tax incentives on the cost of equipment capital; TEFRA removed most of these incentives. Instead, much of the strength in equipment spending can be attributed to a lower rate of inflation, which lowered the effective tax rate and raised the expected after-tax return on equipment. Moreover, falling computer prices, the necessity of modernizing to remain competitive in world markets, and the effects of rising aggregate demand for U.S. manufactured goods in the past 2 years have also contributed to stronger equipment spending.

Considerable public attention has been devoted to the effect of Federal Government budget deficits on private investment. A popular view is that large Federal budget deficits during this expansion have absorbed a substantial share of gross private saving, thereby raising real interest rates and crowding out or displacing private investment. This view fails to account for foreign capital inflows. Gross saving minus net foreign investment equals total saving of the public, private, and foreign sectors in the United States. It also equals, apart from a statistical discrepancy, gross private domestic investment. When these foreign capital inflows are included, nominal gross private domestic investment as a percent of nominal GNP has been average during this expansion, judged by historical experience, while real gross private domestic investment as a percent of real GNP is greater than its postwar average. This evidence suggests that concerns about high real interest rates and large Federal budget deficits crowding out residential and nonresidential investment, thus far in this expansion, appear to have been misplaced. Of course, the relevant comparison would use what would have happened had the Federal budget deficit not been as large, a subject of some dispute, but it is clear that gross private domestic investment did not deviate from historical norms.

This strong growth in gross nonresidential fixed investment ignores the fact that a growing share of investment during the past 22 years has simply replaced worn-out capital, and has not added on net to the national capital stock. The share of gross nonresidential fixed investment in real GNP has risen from 11.3 percent in 1966 to more than 12.2 percent during the first three quarters of 1988. But net nonresidential fixed investment, which represents new additions to the Nation's capital stock after replacing worn-out capital, has fallen from 4.8 percent of real GNP to 2.0 percent in 1987. The reasons for the divergence between gross and net nonresidential fixed investment are not entirely clear. As discussed in Chapter 1, the decline in the growth of net investment is likely to have been overstated.

EMPLOYMENT AND UNEMPLOYMENT

The United States continues to create employment opportunities at an enviable pace. Total employment has grown at an average rate of 2.6 percent per year between November 1982 and November 1988, slightly faster than the expansion average. Nonfarm payroll employment has grown by nearly 19 million jobs, or a 3.2 percent average annual rate, matching its expansion average. Within nonfarm payrolls, goods-producing employment has grown an average 1.9 percent per year during this expansion, almost a full percentage point slower than the expansion average. Service-producing employment has grown 3.7 percent, slightly stronger than the expansion average. The differential between goods- and services-producing employment reflects the better productivity of the goods-producing sector and the long-term shift toward services consumption.

Strong economic growth during this expansion has improved employment opportunities for all major demographic groups. Between November 1982 and November 1988 civilian employment of adult males has grown at an average annual rate of 2.2 percent, adult females at 3.4 percent, blacks at 4.4 percent, and Hispanics at 6.6 percent. Employment growth has been exceptionally strong for black teenagers—6.8 percent at an average annual rate. This gain is almost three times that in black teenage employment during the 1975–80 expansion.

The impressive employment growth during this expansion is reflected in unemployment rates. Since the expansion began, the unemployment rate has been cut by one-half, from 10.6 percent to 5.3 percent in November 1988. During 1988 the unemployment rate fell to its lowest level in 14 years. Moreover, the employment-to-population ratio reached an all-time high of 62.9 percent in 1988. Unemployment rates have declined substantially for all major industrial and occupational categories and for all major demographic groups. Unemployment rates of women, which averaged more than 25 percent higher than for men during the 1970s and early 1980s, dropped below men's rates in early 1982. Since November 1982 unemployment rates for women have fallen by 4.9 percentage points and have been roughly equal to unemployment rates for men since 1981. Black and Hispanic unemployment rates have both shown large declines, and, although still high, current unemployment rates for these groups are the lowest recorded since 1974.

Strong growth of employment in the United States surpasses that of major U.S. trading partners. Employment has grown considerably faster in the United States than in the other six summit countries. Between 1982 and 1987 civilian employment in the United States has grown at an average 2.5 percent annual rate, faster than in any other

summit country. Canada had the second fastest growth at 2.4 percent, Japan and the United Kingdom were tied at about 1.0 percent growth, and the rest were under one-half of 1 percent. Indeed, more than twice as many jobs have been created in the United States since 1982 as in the other six summit countries combined. Faster employment growth in the United States was also evident in the 1981-87 and the 1983-87 periods.

The reduction in the U.S. unemployment rate has been particularly impressive when compared with that of other industrial countries. Since 1982 the U.S. unemployment rate has declined substantially, while unemployment rates in Western Europe, for example, are among the highest of the postwar period. The U.S. unemployment rate is now lower than that of any of the other summit countries except Japan, a country with different labor market practices. In contrast, the U.S. unemployment rate was generally above unemployment rates in Western Europe between 1960 and 1980.

The distribution of economic growth among regions of the United States can vary with relative price changes and regional cost competitiveness and economic bases. Early in this expansion, the industrial Midwest continued to suffer employment problems related to ongoing structural change. The energy-producing region, primarily the Southwest, suffered when oil prices fell in 1986, while employment growth was strong along both coasts. Currently, most regions of the country, except oil-producing regions, have experienced good job growth. Between September 1982 and September 1988 employment has grown by more than 5 percent in 43 States, and by more than 10 percent in 39 of those States. In 1987, employment was above its average 1982 level in 46 States and above its average 1979 level in 44 States.

Much has been made about the United States turning into a Nation of low-wage, low-skilled workers. Although it is difficult to test this hypothesis directly, evidence suggests that this notion is incorrect. Employment growth in the current expansion has been strongest in the higher paid, higher skilled occupations. Two-thirds of the increase in employment has occurred in the higher paying occupations. More than 85 percent of the increase in full-time employment has occurred in occupations with annual salaries of \$20,000 or more in 1987 dollars. Only 12 percent of the increase in employment has occurred in the lowest paid, low-skilled service occupations. Of the new jobs created during this expansion, 92 percent are full-time jobs. Further, 80 percent of part-time workers report that they choose to work part time.

Economic growth has improved employment opportunities for all groups, especially women. Since 1980 the percentage of women em-

ployed in traditionally high-paying, male-dominated occupations has increased dramatically. For example, women now hold 46 percent of all jobs for accountants and auditors, up from 38 percent; 20 percent of all jobs for lawyers, up from 14 percent; 20 percent of all jobs for physicians, up from 13 percent; and 13 percent of all jobs for architects, up from 8 percent. Earnings of women have also grown strongly. Weekly earnings of female workers have grown 27 percent, while male earnings have grown 19 percent. Thus, the gap between female and male earnings has narrowed. Moreover, real earnings of women, which stagnated in the 1970s and early 1980s, have increased 7 percent since 1982.

Blacks and Hispanics have also made gains in job quality, although their employment in the higher paid occupations is still relatively low. While overall employment in the higher paid white-collar occupations has increased by 17 percent during this expansion, employment of blacks in these occupations has increased by 36 percent and of Hispanics by 60 percent.

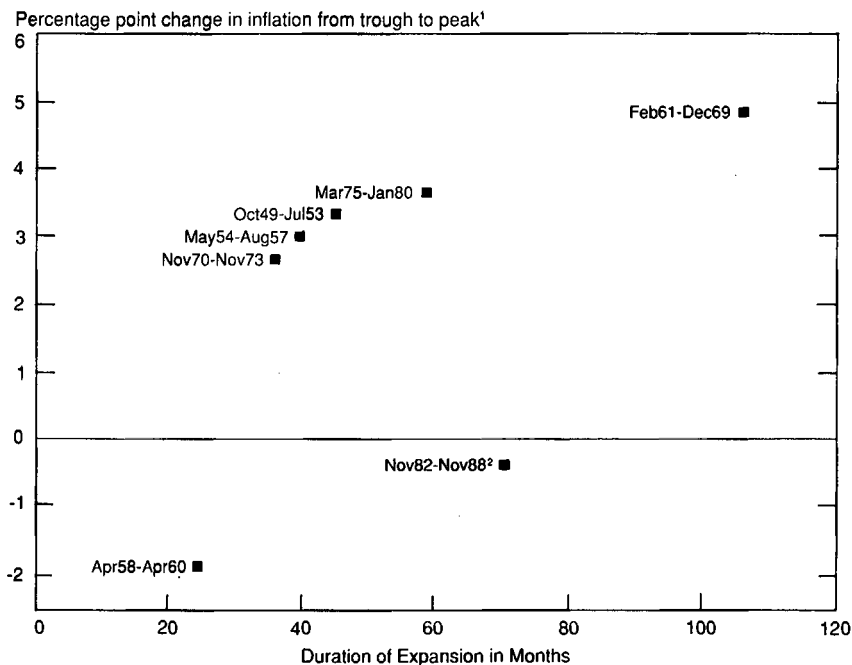
INFLATION AND PRODUCTIVITY GROWTH

Perhaps the greatest achievement of economic policy during the current expansion has been the stability of the inflation rate, albeit at an historically high rate. Chart 7-3 displays the relationship between the duration of an expansion in months and the difference in consumer price inflation rates between expansion peak and recession trough for all postwar expansions except the brief 1980-81 episode. Prior to the current expansion, the longer an expansion lasted, the greater was the increase in the inflation rate. In contrast, the current expansion has witnessed a slight decline in the rate of inflation, instead of an increase comparable to the 3.6 and 4.8 percentage point increases experienced during the third and first longest expansions of the postwar period. The stability of the inflation rate during the current expansion is not attributable to weaker economic performance compared with the other expansions. Real output in the current expansion has grown about the same as the average 4.3 percent growth of the five previous expansions, excluding the brief 1980-81 episode.

The GNP implicit deflator has grown at an annual average rate of only 3.3 percent during this expansion, more than a full percentage point less than the average of past expansions, and more than 4 percentage points less than during the 1975-80 expansion. The GNP fixed-weight price index increased at an average annual rate of 3.6 percent during this expansion, slightly faster than that of the GNP implicit deflator. The difference between the growth rates of the implicit deflator and the fixed-weight price index indicates a shift in the

Chart 7-3

Expansion Duration and Inflation Change



¹Inflation is measured by the 12-month percent change in the consumer price index for urban consumers.

²November 1988 is the latest month in the expansion for which data are available.

Sources: Department of Labor and National Bureau of Economic Research.

composition of output away from that of the 1982 base year. Because spending tends to shift toward lower priced goods and substitutes for existing goods over time, the implicit deflator usually grows less rapidly than the fixed-weight index. In the current expansion, a major shift in output has involved increased purchases of computers, whose price index is falling because of strong technical innovation in that industry.

The inflation record of the United States during this expansion also compares favorably with those of the major U.S. trading partners. The average rate of consumer price inflation in the United States during this expansion is lower than the average among the other six summit countries, and lower than the average rate of inflation in France, Italy, the United Kingdom, and Canada. Consumer price inflation in the United States has averaged 3.3 percent per year between 1982 and 1987, while the average of the other summit countries was 4.5 percent. The relatively better inflation performance of

the United States also appears in the 1981-87 and 1983-87 time periods.

The stability of the inflation rate compared with the experience of previous expansions ultimately is attributable to the prudent economic policies pursued during the current expansion. In the long run, the price level cannot rise continuously unless accommodated by monetary policy. In the short run, however, changes in the velocity of money can complicate control of the price level. A decline in velocity during 1982 aided the disinflation efforts of the Federal Reserve, and additional declines in 1985 and 1986 restrained the rate of inflation. These unusual declines in velocity during the 1980s are not completely understood. Such factors as the introduction of nationwide negotiable order of withdrawal (NOW) accounts, the removal of interest rate ceilings, and lower nominal interest rates, may have played a role, but the best research in this area has not disentangled their effects.

The surge in manufacturing productivity growth demonstrates the benefits of lower inflation, market-based tax incentives, and more rigorous foreign competition. Manufacturing productivity has grown at an average rate of 4.4 percent, almost one and one-half times faster than the expansion average. After growing at an annual average rate of 5.7 percent in the first 2 years, manufacturing productivity has maintained a steady 3.6 percent annual average growth in the past 4 years.

Current estimates of the Nation's manufacturing productivity growth during this expansion have matched those of its major trading partners. After taking into account faster growth in foreign labor compensation, however, unit labor costs have grown considerably slower in the United States than among its major trading partners. Combined with the weaker U.S. dollar in foreign exchange markets, this better unit labor cost performance means that the competitive position of U.S. manufacturers has improved significantly during the past 3 years.

Productivity growth in the nonfarm, nonmanufacturing sector has been considerably weaker than manufacturing productivity growth during this expansion. Productivity in the nonfarm business sector grew at an annual average rate of 1.8 percent during this expansion, about the same as the expansion average. The possible reasons for the relatively slow productivity growth in the nonfarm, nonmanufacturing sectors are discussed in Chapter 1.

MONETARY POLICY

The Federal Reserve has faced two main challenges in formulating monetary policy during the current expansion. One was conducting

monetary policy without a reliable relationship between the monetary aggregates and economic activity. The short-run relationship between various monetary aggregates and income and interest rates, which began to break down in the mid-1970s, became further distorted by a combination of financial deregulation, disinflation, and possibly other unknown factors. Monetary policy actions tended to react more to developments in the real economy than to deviations of the monetary aggregates from their announced targets.

This control problem only exacerbated the overriding challenge facing the Federal Reserve, however, which was demonstrating its resolve to work toward price stability. Thus far in the current expansion, the Federal Reserve has successfully kept inflation from rising. Still, inflation remains above the Administration's goal of a zero average rate.

This partial success should not be taken to imply that developments in the real economy are the most efficient or the most reliable guides for making monetary policy. Using developments in the real economy as a guide to policymaking poses at least three risks. One is overreacting to short-run changes in economic indicators that are either temporary or illusory, to be revised away with more complete data. This overreaction adds needless and inefficient volatility to markets. Another risk is that policy will be based on imprecise or spurious economic models. During the 1960s and 1970s the Federal Reserve appeared to act as if there was a reliable short-run tradeoff between changes in inflation and unemployment, as embodied in the Phillips curve. The Federal Reserve appears to have reverted to this same kind of policy guide during the past few years. A third risk is that monetary policy will be based upon a shifting set of indicators, thereby obscuring the intent of policy. To succeed over the long term, monetary policy needs to take a long-term perspective, avoid reacting to erratic short-run developments, and avoid misleading the public about the direction of current policy.

THE ECONOMY IN 1988

At the beginning of the year many economic forecasters saw two major impediments to growth in 1988. One was the stock market crash in October 1987, which erased an estimated \$650 billion of household wealth and which, before any offset from lower interest rates, raised the cost of capital to firms. The diminished value of consumer wealth was expected to lower real personal consumption expenditures, other things being constant, while the higher cost of capital was expected to depress real business fixed investment. The other impediment was the apparently large inventory overhang at

year-end. The large \$67.1-billion increase in real business inventories, combined with slower spending resulting from the decline in stock prices, was expected to depress output growth in early 1988. Between early October 1987 and early November 1987, the consensus forecast for 1988 real GNP was revised down from 2.8 to 1.9 percent annual average growth, with only 1.4 percent annual average growth expected in the first half.

In fact, economic performance during 1988 considerably exceeded most expectations. Real GNP grew at an annual average rate of 2.9 percent during the first three quarters of 1988, and 3.2 percent during the first half. The stock market crash had a small impact on real personal consumption expenditures, which, after a weak fourth quarter in 1987, rose at an annual average rate of 3.8 percent during the first three quarters, and the personal saving rate averaged about 1 percentage point higher than in 1987. Little impact was evident on real business fixed investment, which grew at an annual average rate of 8.8 percent during the first three quarters, with producers' durable equipment expenditures up nearly 15 percent. Real net exports increased \$32.1 billion during the first three quarters of the year, almost double their improvement during all of 1987. Nonfarm payroll employment increased by 3.4 million persons through November 1988, and real disposable personal income increased 3.5 percent on an average annual basis through the first three quarters of the year. Corporate profits after taxes, with inventory valuation and capital consumption adjustments, rose an average 3.9 percent, after 0.2 percent in 1987. Consumer prices, excluding food and energy, increased 4.6 percent during the first 11 months of 1988, slightly above the average of the past 5 years.

The growth in real GNP would have been stronger had it not been for the prolonged drought, which affected much agricultural production during the summer. Crop and livestock losses amounting to \$12.3 billion during the year are expected to lower real GNP growth in 1988 about 0.7 percentage point, on a fourth-quarter-over-fourth-quarter basis, and temporarily to boost consumer food prices 1 percentage point.

THE IMPACT OF THE STOCK MARKET CRASH

It is now evident, more than 1 year later, that the stock market crash had little noticeable impact on U.S. economic activity. At a rudimentary level, little effect might have been expected because the stock market is not a particularly accurate predictor of economic activity. During the postwar period before 1987, about twice as many declines as recessions occurred in the stock market. Although by this measure the odds of recession in 1988 were 50-50, many economic

forecasters were convinced that the magnitude of the decline, the largest since the crash in 1929, raised the probability of recession. On a more fundamental level, little effect should have been expected because economic activity was strong at the time of the crash and because Federal Government policies and institutions prevented the crash from escalating into a recession.

Changes in stock prices can affect real output growth through two main channels. One is personal consumption expenditures. Consumers generally are thought to take a long view, spending not according to their current income but according to their expected lifetime consumable resources, including both human and nonhuman wealth components. Human wealth is the present discounted value of expected future after-tax labor income, and nonhuman wealth is the consumer's expectation of the long-run or permanent value of his or her current net financial and tangible assets. A drop in the value of corporate equity holdings that is expected to be permanent, all else being constant, will lower consumption, while a transitory drop will not affect consumption.

At the end of the third quarter of 1987, nonhuman wealth of consumers amounted to \$15.1 trillion, with corporate equities outside of pension funds worth about \$2.7 trillion or 18 percent. At the end of the fourth quarter of 1987, holdings of corporate equities by households had fallen by about \$650 billion, most of which reflected capital losses. A common estimate of the marginal propensity to consume real permanent nonhuman wealth is about 4 cents for every dollar of nonhuman wealth, which implies that real personal consumption expenditures should have fallen about \$25 billion or about 1 percent before other factors are considered. Real personal consumption expenditures during the fourth quarter of 1987 fell by about one-half of this amount, and have grown at an annual average rate of 3.8 percent during the first three quarters of 1988. The personal saving rate rose 2 percentage points in the fourth quarter of 1987, and has averaged almost 1 percentage point higher in 1988 than in 1987. In the aggregate, therefore, apparently consumers initially believed that only part of the stock market decline was permanent. Indeed, improvement in the overall stock price indexes during 1988 indicates that they were correct.

A second channel through which the stock market can affect real output is business investment. The stock market provides an up-to-the-minute estimate of the value of thousands of publicly traded firms. When the profits of a firm are expected to rise faster than in the past, the share price of the firm will also rise to reflect the greater expected value of the firm. At times, the stock market's valuation of a firm will differ from the replacement cost of the firm—what it

would cost to rebuild or replace the firm, hire equally competent personnel, and rebuild the firm's goodwill. Modern theories of investment posit that, in general, a new firm will be started or new investments will be undertaken by an existing firm when the firm's market value is greater than its replacement cost. Declines in stock prices, all other things being constant, depress investment.

Business investment did not fall in the fourth quarter of 1987, and continued to grow rapidly in 1988, suggesting that the impact of the stock market crash was small. During the first three quarters of 1988, real business fixed investment rose an average of 8.8 percent at an annual rate, unchanged from 1987. The reason why business investment did not collapse is that the stock market recovered some of its losses during the year and the decline in interest rates after the crash lowered the replacement cost of capital and offset some of the initial decline in stock prices.

The response of the economy to the 1987 crash, compared with its response after the 1929 crash, highlights the benefits that can be achieved when the Federal Government follows a proper course. Two differences of major importance emerge for the short-term adjustment of the economy, one affecting the exchange rate and one affecting the general conduct of monetary policy. In addition, differences in trade policy and taxation occurred in the periods following the two declines, as did differences in institutional arrangements affecting the financial system, built-in stabilizers, and other devices that reduce the risk of a severe contraction.

Immediately following both stock market crashes, the Federal Reserve acted to increase bank reserves. Major differences in monetary policy came later. A slowing in the decline of economic activity, visible in industrial production and personal income by the spring of 1930, was turned around by restrictive monetary actions. In 1929-33 the Federal Reserve allowed the money stock to fall by almost one-third, adding an extreme deflationary burden to any remaining effect of the crash. Attempts by money holders to shift from bank deposits to currency drained reserves from the banking system. By failing to offset the sequence of reserve drains, the Federal Reserve permitted large numbers of banks to fail, with severe effects on confidence and anticipations. In marked contrast, the Federal Reserve in 1988 first absorbed the additional reserves it had provided in timely response to the October crash, and through 1988 held money growth within its pre-announced growth range.

In 1929 the United States was on a gold standard, with exchange rates fixed against foreign currencies and gold. Under that regime, the deflationary effect of the crash and monetary restriction fell mainly on U.S. markets for goods and labor. Prices and wages had to

fall. Because money wages adjust slowly, a decline in prices raised real wages and lowered employment. Adjustment to the deflationary impulse was achieved by a downward adjustment of U.S. output and spending and by reductions in employment. In 1987, in contrast, the U.S. dollar was allowed to respond flexibly to market forces. Flexible adjustment in the real value of the dollar facilitated the adjustment of costs of production, and of the relative prices of domestic and foreign goods and assets, buffering the effects of the stock market crash and other events on U.S. markets for goods and labor.

Trade policy also differed following the 1929 and 1987 stock market crashes. Unlike today's emphasis on free trade, the United States in 1930 intensified protectionist policies with the passage of the Smoot-Hawley Act. International trade collapsed as foreign countries retaliated with their own protectionist measures, lowering world efficiency and incomes. In contrast, the United States and Canada in 1988 completed negotiation of the Free-Trade Agreement, committing both countries to the elimination of most remaining barriers to trade. This step and the President's rejection of strongly protectionist measures gave assurance that the United States did not intend to repeat the mistaken trade policies of the interwar period.

Another difference in the aftermath of the 1929 and 1987 stock market crashes can be found in tax policy. In 1932 President Hoover requested and received a large tax increase to balance the growing Federal Government budget deficit. This policy was, of course, the wrong one to request during a recession. In late 1987 the Administration and the Congress achieved modest reductions in the budget deficit for fiscal 1988 and 1989 from their projected baselines, but the last phase of the personal income tax reductions embodied in the Tax Reform Act of 1986 was allowed to take effect. Although partially offset by increases in corporate taxes, the personal income tax cut helped to limit any possible damage from the crash to real output.

SOURCES OF DEMAND

The composition of demand in 1988 continued the trends begun in 1987. Real gross nonresidential fixed investment and exports continued to grow rapidly. Spending restraint reduced real Federal Government spending on goods and services, freeing resources for the private sector. Consumer spending on goods and services continued to grow moderately, and the average personal saving rate during the first three quarters of 1988 was 0.8 percentage point higher than the unusually weak rate of 1987.

Gross nonresidential fixed investment rose at an annual average rate of 8.8 percent during the first three quarters of 1988, unchanged from 1987. All of this growth was accounted for by gross producers'

durable equipment spending, which rose at a 14.9 percent annual average rate. Every major component of gross producers' durable equipment grew strongly: information processing and related equipment rose 18.9 percent; after little growth in 1987, industrial equipment increased 13.9 percent; and transportation and related equipment grew 18.7 percent.

Spending on nonresidential structures fell an average 6.3 percent per year during the first three quarters of 1988, with all of the decline (–22.4 percent) in the first quarter. Most of the decline appeared in nonresidential buildings, partly because of the elimination of tax incentives in 1986, although investment in mining exploration, shafts, and wells remained weak in response to the continued decline in the relative price of oil. Adjusted for inflation, the refiners' acquisition cost of imported crude oil fell 47.3 percent between January 1986 and August 1988.

The overall decline in the real value of the U.S. dollar since 1985 and slower unit labor cost growth in U.S. manufacturing have improved the competitiveness of U.S. goods in world markets. Thus, real net exports accounted for a large share of the real output gain in 1988, continuing a trend begun in the fourth quarter of 1986. During the first three quarters of 1988, real net exports increased a total of \$32.1 billion, about the same as the dollar increase in nonresidential fixed investment and about one-half of the increase in personal consumption expenditures. Export growth has continued strong at an annual average rate of 16.2 percent, while import growth has slowed by one-half to 5.2 percent. Real exports of agricultural products were up at an annual average rate of 10.4 percent, real exports of nonagricultural products rose 19.5 percent, real imports of nonpetroleum products rose 1.5 percent, and real imports of petroleum products rose 9.4 percent. All major merchandise export components grew strongly in 1988, with consumer goods up 36.3 percent, capital goods except autos up 24.9 percent, foods, feeds, and beverages up 12.0 percent, and industrial supplies and materials up 17.6 percent. The trade balance in industrial supplies has seen the greatest improvement, up \$12.6 billion. Following industrial supplies, the capital goods balance improved \$9.8 billion, despite a 15.5 percent increase in capital goods imports; autos were up \$5.2 billion; consumer goods rose \$4.7 billion; and the food, feeds, and beverages balance increased \$3.7 billion.

Spending restraint and fewer purchases of agricultural products by the Commodity Credit Corporation (CCC) induced by the drought reduced Federal Government spending on goods and services in 1988. Real Federal spending on goods and services fell at an annual average rate of 10.4 percent over the first three quarters of 1988,

with defense spending down 5.8 percent and nondefense spending down 25.6 percent. All components of defense spending fell in 1988, with durable goods accounting for most of the decline. Virtually all of the decline in nondefense purchases is attributable to the change in inventories held by the CCC. Excluding the CCC inventory change, real nondefense spending grew at an annual average rate of 0.7 percent, while total real Federal purchases were down only 4.6 percent.

Real personal consumption expenditures grew at an annual average rate of 3.8 percent during the first three quarters of 1988, but part of this rise simply reflects the low base of the fourth quarter of 1987. Much of the decline in real personal consumption expenditures during the fourth quarter of 1987 occurred in new automobile purchases, which fell after sales incentives expired in September 1987. If real consumer purchases of new autos during the fourth quarter of 1987 had grown at the same rate as their average during the fourth quarter of 1987 and the first quarter of 1988, real personal consumption expenditures' growth during the first three quarters of 1988 would be 3.2 percent, close to its postwar average annual growth.

After falling 3.5 percent in 1987, real residential fixed investment fell at an annual average rate of 0.8 percent during the first three quarters of 1988. Most of the decline in both years occurred in multi-family structures, reflecting the large supply of these structures created by tax incentives that existed until 1987. Spending on single-family structures fell at an average rate of 2.5 percent per year over the first three quarters of 1988, with most of the decline occurring in the first quarter.

Real State and local government purchases of goods and services grew an average 2.6 percent per year over the first three quarters of 1988, slightly slower than GNP and about the same as their 2.5 percent pace in 1987. Purchases of goods grew at an annual average rate of 6.5 percent, while spending on services grew 2.4 percent. After almost 8 percent average growth in 1985 and 1986, spending on infrastructure slowed in 1987, and the weakness continued into 1988. Spending on structures fell at an annual average rate of 2.0 percent in 1988, after rising 1.7 percent in 1987.

Over the first three quarters of 1988, business inventory investment fell a total of \$27.6 billion. All of the decline occurred in non-farm business inventories, which fell \$27.8 billion.

PRICES, WAGES, AND EMPLOYMENT

Employment continued to increase strongly in 1988. Civilian employment rose by 2.2 million through November, while the civilian unemployment rate fell 0.4 percentage point to 5.4 percent, among

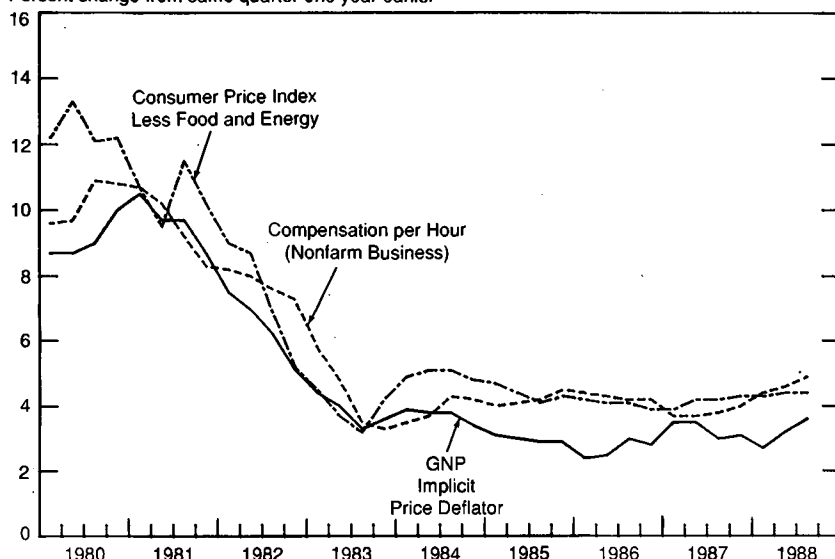
the lowest rates in 14 years. Nonfarm payroll employment increased by 3.4 million during the first 11 months of 1988, with strong gains in export-related industries.

Continued strong employment gains were barely reflected in stronger compensation growth in 1988. Compensation per hour in the nonfarm sector increased 4.5 percent on average during the first three quarters of 1988, slightly above its 1987 rate of increase, and real compensation growth increased about 0.1 percent, after falling slightly in 1987. The growth in compensation per hour in manufacturing increased to 4.4 percent on average during the first three quarters of 1988, almost three times as fast as in 1987, while unit labor costs were up 0.3 percent, after falling 1.7 percent in 1987. Abstracting from short-term movements, the trends in nominal compensation per hour and in unit labor costs were rising slightly during 1988, but do not point to serious cost pressures in the aggregate (Chart 7-4).

Chart 7-4

Hourly Compensation and Prices

Percent change from same quarter one year earlier



Sources: Department of Commerce and Department of Labor.

Signs of any rise in inflation were mixed in 1988. Producer prices grew somewhat faster in 1988 than in 1987, but the increase was minor. The consumer price index for urban consumers increased 4.4 percent in the first 11 months of 1988, but excluding the volatile

food and energy components, consumer prices increased 4.6 percent during the year, only slightly above the average of the past 5 years.

THE IMPACT OF THE DROUGHT

The drought of 1988 was one of the worst on record for principal agricultural regions of the Midwest and Upper Mountain States. The drought began early in the growing season and rains were delayed long enough to drastically reduce yields of corn and soybeans, as well as less important crops such as spring wheat, barley, oats, and some Midwest vegetables. Hay crops and livestock forage in pastures were also severely reduced.

Impacts of the drought on other regions and industries have been smaller or localized. Stream flows in the Tennessee Valley had already been reduced by several years of smaller amounts of precipitation. Shipping and electrical generation were hampered in several regions. In the Far West, 2 years of drought have reduced water supplies to extremely low levels. Although these low water supplies had little effect on 1988 output, if precipitation in the winter of 1989 is below normal again, crop losses in the irrigated valleys of the Far West will be severe. Forest fires and water shortages have been localized with little distinguishable impact on the economy as a whole. Potentially important losses attributable to higher barge transportation costs were not a major impediment to economic activity. Finally, despite severe losses to some financial institutions in the agricultural areas, the health of the rural financial system continued to improve.

The effects of the drought clearly distinguishable in the national income and product accounts are crop and livestock losses. For the 1988 crop year, corn production was more than 30 percent below pre-drought expectation and soybeans were 20 percent below expected levels. Lost crop and livestock production attributable to the drought totaled about \$12.3 billion in 1988 in terms of 1982 farm prices or about 0.7 percent of real GNP for the year. However, the loss in growth is temporary. With normal weather in 1989, increased farm output from the low 1988 base will raise the projected GNP growth for 1989 on a fourth-quarter-over-fourth-quarter basis by approximately the same 0.7 percent over what would have been expected had the drought not occurred.

Large inventory stocks have moderated the drought's effect on prices, but cash market prices for corn and wheat are up about 30 percent relative to pre-drought levels. Because of the importance of nonfarm inputs and farm goods unaffected by the drought, however, higher commodity prices from the drought added about 1 percentage point to the rise in retail food prices for 1988.

Higher crop prices also affect the quantity of U.S. agricultural exports and raise the costs that livestock producers and other producers face in the food industry. However, higher output prices raised gross cash receipts of farmers in 1988. Net cash income was near record high levels in 1988 because, in the aggregate, the higher output prices that farmers received more than offset the yield losses and higher input prices. Direct payments under the drought assistance legislation and feed assistance and crop insurance also supported incomes, as did the sale of farm inventories at sharply higher prices.

MACROECONOMIC POLICIES

Spending restraint and fewer Commodity Credit Corporation purchases of agricultural products because of the drought helped lower the Federal Government budget deficit in fiscal 1988. Nevertheless, the deficit on a unified budget basis rose to \$155.1 billion, \$4.7 billion more than in fiscal 1987. Total outlays rose \$59.5 billion to \$1,064.1 billion, while total receipts rose \$54.9 billion to \$909.0 billion. The increase in the deficit between 1987 and 1988 is attributable to the reversal of special factors that reduced the 1987 deficit. The phase-in of the Tax Reform Act of 1986 added \$21.5 billion to receipts in 1987, but reduced tax collections by \$4.5 billion in 1988. Timing changes, such as the 1-day shift in military pay, and one-time savings such as the sale of Conrail, held down net outlays by \$10.5 billion in 1987. Without these special factors, the deficit would have declined by \$31.1 billion between 1987 and 1988.

When discussing monetary policy in 1988, it is important to distinguish policy from actions designed to achieve that policy. Monetary policy is summarized currently by Federal Reserve announcements of target ranges for the annual growth of M2 and M3. The target ranges are usually 3 to 4 percentage points wide, reflecting the uncertainty about the relationship of these monetary aggregates to economic activity. Over the course of a year the Federal Reserve may take various actions to keep the aggregates within their target ranges. Apart from unexpected shocks to money demand and supply, these actions should not be interpreted as changes in policy unless they result in money growth outside the announced target ranges.

In 1988 the Federal Reserve achieved its announced monetary policy for the first time in 3 years. The growth rates of both M2 and M3 were comfortably within their target ranges at year-end. Early in the year the Federal Reserve allowed monetary aggregates to approach the upper limit of their target ranges in order to limit any impacts of the stock market crash on economic activity. By March it was evident that the stock market crash would not seriously affect spend-

ing growth, and the Federal Reserve began taking actions that brought the growth of the monetary aggregates closer to the midpoint of target ranges by the third quarter of the year.

In July the Federal Reserve announced its preliminary policy intentions for 1989. It lowered the target range for M2 from 4 to 8 percent in 1988 to 3 to 7 percent in 1989. For M3, it lowered the target range from 4 to 8 percent to 3.5 to 7.5 percent for 1989. The lowering of the target ranges is consistent with the Federal Reserve's desire, expressed in its targets, to promote a steady reduction in the inflation rate over time. The Federal Reserve's target of slightly faster growth for M3 reflects its expectation that the public will substitute away from M2 assets and toward assets found in the broader monetary aggregates. If both M2 and M3 remain near the midpoints of their target ranges in 1988, the transition to modestly slower growth of the monetary aggregates in 1989 is likely to be a smooth one.

THE ECONOMIC OUTLOOK

The Administration's economic forecast for 1989 reflects three continuing changes in the U.S. economy: improved international competitiveness, more restrictive macroeconomic policies, and the effects of temporary shocks to the economy. The forecast anticipates a continuation of the transition of the U.S. economy from growth led by domestic demand to growth driven by expanding world markets, the result of the United States' improved competitive position. Tempering overall growth, however, are policies of monetary and fiscal restraint. Slower monetary growth for most of 1988 following rapid growth in the first part of the year, reflects two major considerations: the cessation of post-crash fears of recession and the long-run national commitment to achieve stable prices. Adherence to the deficit reduction targets of the Gramm-Rudman-Hollings legislation continues to encourage fiscal restraint. These policies are expected to hold nonfarm economic growth below its 1988 pace.

As the economy approaches full use of its current resources, slower growth relative to the rapid pace of recent years is a desired development. Slower domestic demand growth will allow for the continued expansion of the Nation's international sector. Slower overall growth will enable capacity to expand to meet demands in future years and continue the current record-setting expansion.

The Administration's economic forecast anticipates that real GNP will rise 3.5 percent from the fourth quarter of 1988 to the fourth quarter of 1989, after increasing an estimated 2.6 percent during 1988. These figures are not, however, representative of the underly-

ing pattern of slower growth expected for most sectors of the economy in 1989. Distorting the picture of slower growth are the concluding effects of last year's drought. The impact of the drought on crop and livestock output lowered overall growth last year, and the expected return to more normal weather conditions and farm output levels will temporarily boost real GNP growth in 1989. As noted above, lower drought-induced farm output in 1988 is estimated to have subtracted 0.7 percentage point from real GNP growth in 1988 (fourth quarter to fourth quarter), and the anticipated rebound in farm production this year will contribute approximately 0.7 percentage point to growth in 1989. After adjusting for the impact of the drought on farm production, real GNP is estimated to have grown 3.3 percent in 1988. Drought-adjusted GNP growth is forecast to be 2.8 percent in 1989, indicating continued healthy expansion of the nonfarm economy, but at a somewhat slower pace than during 1988 and significantly slower than the rapid but likely unsustainable 5.0 percent pace of real GNP in 1987.

The growth rates of components of real GNP for 1989, partially detailed in Table 7-2, reflect the slowing trend in the nonfarm economy as well as the continued trend toward expanding international trade and slower domestic demand. All components except residential and inventory investment and government purchases are projected to rise at a somewhat slower pace in 1989 relative to 1988.

TABLE 7-2.—*Economic Outlook for 1989*

Item	1988 ¹	1989 forecast
	Percent change, fourth quarter to fourth quarter	
Real gross national product.....	2.6	3.5
Personal consumption expenditures	3.3	2.0
Nonresidential fixed investment	8.4	4.9
Residential investment.....	—4	2.7
Federal purchases of goods and services.....	—4.4	—6
State and local purchases of goods and services	2.7	3.0
GNP implicit price deflator	3.9	3.7
Compensation per hour ²	4.6	4.7
Output per hour ² .....	.9	1.5
	Fourth quarter level	
Unemployment rate (percent) ³	5.3	5.2
Housing starts (millions of units, annual rate).....	1.5	1.5

¹ Estimate.

² Nonfarm business, all persons.

³ Unemployed as percent of labor force including resident Armed Forces.

Note.—Based on seasonally adjusted data.

Sources: Department of Commerce (Bureau of the Census and Bureau of Economic Analysis), Department of Labor (Bureau of Labor Statistics), and Council of Economic Advisers.

Consistent with slower domestic demand, real consumer purchases are forecast to increase 2.0 percent this year, down from the estimated 3.3 percent pace of 1988. Slower consumption growth relative to income growth is expected to lift the personal saving rate somewhat in 1989. Reflecting the continued trade-oriented realignment of the U.S. economy, a continued strong increase in real net exports is projected partly to offset slower personal consumption growth. As the result of growing U.S. competitiveness in world markets, exports will continue to be one of the biggest factors contributing to growth in 1989. Real import growth will slow compared with growth in recent years, as the result of slower drought-adjusted GNP growth and continued substitution away from more costly foreign, toward less costly domestically, produced products. Although the improvement in real net exports is not expected to continue at the record-setting pace of 1988, the trade sector of the economy is projected to contribute significantly to growth in 1989 and beyond.

The need for further capacity in the exporting and import-competing sectors of the economy is anticipated to continue to stimulate growth in nonresidential fixed investment. Continued export demand should also help support capital goods production. Owing to these factors, nonresidential fixed investment is forecast to rise a substantial 4.9 percent in 1989, slower than the estimated 8.4 percent growth rate achieved in 1988.

Residential investment is projected to rise modestly in 1989, following the modest estimated gains during the second half of 1988. The recent rise comes after nearly a year and a half of decline, prompted partly by reduced incentives for multi-unit construction arising under the Tax Reform Act of 1986.

After subtracting significantly from growth in 1988, inventory investment is also expected to contribute to GNP growth in 1989, as inventory-building progresses at a slower but more sustainable pace. The decline in the pace of inventory-building in 1988 reflects a return to more normal inventory-building patterns in the nonfarm sectors of the economy following a large unanticipated accumulation of inventories in the fourth quarter of 1987, when domestic final sales growth temporarily halted. In the farm sector, inventories are expected to accumulate in 1989 after substantial drought-induced withdrawals for most of 1988.

Government purchases at the State and local levels in 1989 are projected to increase 3.0 percent, similar to the pace of 1988. At the Federal level, further decline in real purchases is expected in 1989 which will help to moderate domestic growth. Although Table 7-2 indicates that the decline in total Federal purchases appears to be slowing in 1989 relative to 1988, the drought explains much of the

1988 drop. Net CCC farm inventory purchases were reduced as higher drought-related crop prices and lower production induced farmers to redeem crops and the CCC to sell inventories directly to the open market. Crop redemption and government inventory sales are expected to diminish in 1989, as farm production recovers. Projected real Federal purchases, after adjusting for the one-time effect of the drought, reflect continued declines in 1989, following the pattern set in 1988.

Inflation, as measured by the GNP deflator, is forecast to be 3.7 percent in 1989 on a fourth-quarter-to-fourth-quarter basis, compared with an estimated 3.9 percent in 1988. In line with slower growth in the nonfarm economy, little change is expected in capacity utilization rates and the rate of unemployment this year. This will help to contain sectoral capacity problems that can put upward pressure on prices. Also, higher energy prices at the retail level and higher farm prices were temporary factors helping to raise prices in 1988. The end of the drought, coupled with currently lower crude oil prices, is expected to moderate price increases during 1989, and keep reported rates of inflation within the approximately 3 percent to 4 percent range of previous years. Consistent with slower growth and moderating inflation is the expectation of somewhat lower interest rates in 1989.

PROJECTIONS FOR 1990-94

Table 7-3 summarizes the Administration's medium-term economic projections for the period 1990 through 1994. The projections are not year-to-year forecasts; rather, they indicate expected trends based on underlying factors, discussed in the next section, that will allow continued expansion of the economy's capacity to produce. These projections are contingent on the successful implementation of current and proposed government policies and on the assumption of no serious adverse shocks to growth. Implicit in these figures is the assumption that the free-market, incentive-oriented policies of this Administration, which have promoted the growth and more efficient use of national resources, will continue in coming years. In particular, the projections embody the assumption that Federal spending continues to be brought under control and that the benefits of tax reform are retained. Through spending restraint and economic growth, the Federal deficit is assumed to decline in line with the Gramm-Rudman-Hollings targets for deficit reduction. It is also assumed that the Federal Reserve provides sufficient expansion of monetary aggregates to maintain economic growth, while fostering continued progress toward the long-term goal of price stability.

TABLE 7-3.—*Administration Economic Assumptions, 1988-94*

(Calendar years)

Item	1988	1989	1990	1991	1992	1993	1994
Percent change, year to year							
Real GNP.....	3.8	3.2	3.2	3.3	3.2	3.2	3.2
Real compensation per hour ¹.....	.5	.9	1.2	1.8	2.0	1.9	1.9
Output per hour ¹	1.5	1.2	1.8	2.0	2.1	2.1	2.1
Consumer price index ²	4.0	3.8	3.7	3.2	2.7	2.2	1.7
Annual level							
Employment (millions) ³	116.7	118.6	120.4	122.3	124.0	125.7	127.4
Unemployment rate (percent) ⁴	5.4	5.2	5.1	5.0	5.0	5.0	5.0

¹ Nonfarm business, all persons.² For urban wage earners and clerical workers.³ Includes resident Armed Forces.⁴ Unemployed as percent of labor force including resident Armed Forces.

Source: Council of Economic Advisers.

The Full Employment and Balanced Growth Act of 1978 requires that the *Economic Report of the President*, together with the *Annual Report of the Council of Economic Advisers*, include an investment policy report and a review of progress in achieving goals specified in the act. The strongest incentive for expanding the employment of both physical and human resources is profitable and growing markets. Major policy goals of this Administration have been to promote a stable noninflationary macroeconomic environment and encourage private initiative to adjust to take advantage of changing market conditions. Progress toward achieving these goals has allowed the current expansion to continue into its seventh year. As a result, real nonresidential fixed investment has grown more than 40 percent in 6 years, a peacetime record compared with similar timespans following previous postwar recession troughs.

Table 7-3 presents estimates of important macroeconomic measures that address the goals specified in the act. The table shows continued economic growth, rising compensation, lower rates of unemployment, and further progress toward price stability. The unemployment rate recently has fallen to the lowest level in 14 years, while the share of the adult population employed has increased to its highest level in the Nation's history. Unlike the expansions of the past 40 years, this expansion of employment and output has been accompanied by a stable rate of inflation. The policies of this Administration have done much to achieve the goals specified in the act. Continued adherence to these policies in the future is necessary to ensure progress toward meeting these goals.

The long-run improvement in the Nation's standard of living depends importantly on expansion of its capacity to produce, which in turn is determined by the growth and productiveness of its resources. Growth and productiveness are functions of longer run underlying trends in the economy and incentives created by the economic environment, the latter being influenced by government policies. Favorable longer term trends, combined with policies directed at improving growth and maintaining the healthy economic climate the Nation currently enjoys, are projected to maintain the momentum that the economy has developed during the 1980s, returning it to the trend rate of growth of the postwar era.

Over the projection period, these long-run forces—growth of the labor force and labor productivity—are supplemented by changes in the utilization of capital and labor. The productivity of labor depends on the education, experience, and the skills of the labor force; on the supplies of physical capital and other cooperating factors of production; and on the technological efficiency of resource allocation. Influencing the supply of labor are the size of the general population and its demographic characteristics and incentives to undertake employment in the market economy. The cyclical state of the economy affects the use of capital and labor by encouraging or discouraging the search for jobs, by changing the mix of factors in production, and by changing the demand for inputs.

A detailed breakdown of the components that make up these sources of growth, organized into an accounting framework, is presented in Table 7-4. In order to focus on trends in the economy and to avoid the complications of cyclical fluctuations, the first two columns of the table show growth rates from business cycle peak to business cycle peak for historical periods. The third column shows growth from the peak of the last business cycle through the third quarter of 1988, and the final column presents growth rates over the projection period, which extends through 1994.

Growth of the labor force is expected to slow somewhat further during the projection period, mainly because of changes in the demographic composition of the population. The gradual decline in the growth rate of the adult population, which has occurred since the baby-boom generation reached adulthood in the 1960s and 1970s, is expected to continue into the next decade. As Table 7-4 shows, increases in labor force participation (the fraction of the adult population in the labor force) also determine labor force growth. Strongly rising rates of labor force participation that have existed since the 1970s are expected to continue in coming years. Increases in overall participation will likely reflect continued entry of women into the

TABLE 7-4.—*Accounting for Growth in Real GNP, 1948-94*

[Average annual percent change]

Item	1948 IV to 1981 III	1973 IV to 1981 III	1981 III to 1988 III	1988 III to 1994 IV
GROWTH IN:				
1) Civilian noninstitutional population aged 16 and over	1.5	1.8	1.2	0.9
2) PLUS: Civilian labor force participation rate .....	.2	.5	.5	.5
3) EQUALS: Civilian labor force	1.8	2.4	1.7	1.4
4) PLUS: Civilian employment rate	-.1	-.4	.3	.1
5) EQUALS: Civilian employment	1.7	2.0	2.0	1.5
6) PLUS: Nonfarm business employment as share of civilian employment .....	.1	.1	.3	.2
7) EQUALS: Nonfarm business employment	1.7	2.1	2.3	1.7
8) PLUS: Average weekly hours (nonfarm business)	-.4	-.6	-.1	-.1
9) EQUALS: Hours of all persons (nonfarm business)	1.4	1.5	2.2	1.6
10) PLUS: Output per hour (productivity, nonfarm business)	1.9	.6	1.4	1.9
11) EQUALS: Nonfarm business output	3.3	2.0	3.7	3.6
12) LESS: Nonfarm business output as share of real GNP	-.0	-.1	.7	.4
13) EQUALS: Real GNP	3.3	2.2	3.0	3.2

Note.—Based on seasonally adjusted data. Detail may not add to totals due to rounding.

Sources: Department of Commerce (Bureau of the Census and Bureau of Economic Analysis), Department of Labor (Bureau of Labor Statistics), and Council of Economic Advisers.

work force, higher participation of young workers as they make up a smaller proportion of the population, and a slowing of the decline in participation of people over 55. Reductions in marginal tax rates on labor income initiated during this Administration are expected to encourage labor force participation in the years ahead. Furthermore, maintenance of a stable, growing economy with expanding employment opportunities encourages increased labor force participation. Overall, the civilian labor force is projected to rise 1.4 percent per year during the projection period.

Changes in the utilization of labor are indicated by the growth of employment relative to the labor force. Civilian employment is projected to grow at an annual average rate that is slightly faster than labor force growth over the projection period, reflecting further modest declines in the rate of unemployment. The 0.1 percent annual increase in the employment rate appearing in the last column of the table reflects the estimated decline in the unemployment rate from current levels to 5.0 percent in 1991 and later years. It is assumed that, at approximately this level, remaining unemployment is largely frictional.

The estimate of civilian employment growth is adjusted to cover the nonfarm business sector in order to match published statistics for productivity. A further adjustment, to account for a slight projected decline in the length of the workweek, yields the growth rate of total hours available for production indicated in Table 7-4. The sum of the growth rate of total hours and the growth rate of output per hour

(productivity for nonfarm business) determines the growth rate of nonfarm business output over the medium term. After adjustments for the effect of relatively stronger growth in the nonfarm business sector than in other sectors in the economy, the rate of growth of real GNP is shown on the final line of Table 7-4.

The table shows that the average growth rate of real GNP through 1994 is projected to be 3.2 percent a year, the same as the average rate of the 1948-88 postwar period. Continued strong increases in labor force participation and a higher rate of productivity growth are projected to offset slower population growth.

Critical to these projections is the assumption of continued productivity growth at the average rate of increase achieved from 1948 to 1981. This assumption recognizes favorable trends in the economy that are expected to restore productivity growth to its previous trend, as well as policy initiatives that are expected to promote technological change and growth in physical and human capital. Aging of the baby-boom generation implies a trend toward a more experienced, more educated, and more skilled work force that should translate into improved productivity growth in coming years. Slower growth of the labor force will facilitate capital deepening in coming years, that is, an increase in the stock of capital per employed worker. Continued stability and gradual decline of the inflation rate should also contribute to stronger productivity growth by reducing the cost of capital and by focusing managerial energies on improving efficiency in resource allocation. Oil and energy prices are expected to remain lower than in the late 1970s and early 1980s, implying that firms will have more resources to spend on investments that enhance general productivity than on investments that reduce energy costs.

Government policies should also contribute to increased productivity growth. Partly as a result of government initiatives, research and development expenditures as a share of GNP are expected to remain higher than in the 1970s, thus promoting innovation and technological change. Government initiatives to improve education and to promote investment in knowledge and human capital should also lift productivity growth. Tax reform has lessened the distortions to investment decisions by establishing more equal effective tax rates across investment activities. This effect, coupled with policy initiatives to lower market barriers and distortions, will allow capital and labor to realize their productive potential more fully. Finally, avoiding short-run stabilization policies will increase the likelihood of maintaining a noninflationary economic environment. That environment will, in turn, allow private producers to concentrate on achieving higher productivity growth and profitability.

THE LEGACY OF THIS ADMINISTRATION

High and rising inflation, distorted tax incentives, and burdensome regulation sapped the productive energies of the Nation during the 1970s. Productivity and real income growth stagnated, and U.S. competitiveness in world markets was severely eroded. The cure for these economic problems required nothing less than a fundamental refocusing of Federal Government responsibilities and policy initiatives. This refocusing of government policy is the legacy of this Administration.

The underlying tenet of economic policy in this Administration is that, with the proper incentives, private markets generally provide more efficient economic outcomes than are possible with direct government intervention. Thus, the Administration discarded social and economic policies that were wasteful and not incentive-based, and reversed activist aggregate-demand management policies. The Administration undertook efforts to establish and maintain a stable policy environment in which private initiative played the major role in providing desired outcomes. At the same time, the Federal Government continued to support basic public infrastructure investments and provide a social safety net.

Stable and incentive-based economic policies have served the Nation well in the past. Real incomes and standards of living improved rapidly between 1900 and 1913, during the 1920s, and between 1946 and 1965, when the money supply generally grew at a noninflationary rate and Federal Government spending was geared to providing basic services. On the other hand, economic performance deteriorated when such policies were not followed. For example, recession turned into depression during the early 1930s when the Federal Reserve allowed the money supply to fall by one-third between 1929 and 1933, and U.S. beggar-thy-neighbor trade policies incited retaliation and a consequent decline in world trade and income. Inflationary monetary policy, high tax rates and inflation-distorted tax incentives, and a large and growing regulatory burden contributed to the stagflation of the 1970s.

The redefinition of fiscal policy under this Administration has been aptly described as a fiscal revolution. This revolution has not overthrown the Employment Act of 1946, which commits the Federal Government to maintaining high levels of income, employment, and purchasing power. It has overthrown a long entrenched view of the best way to achieve the goals of the act. Gone are attempts to smooth fluctuations in aggregate demand through frequent changes in government expenditure and tax policies and efforts to find a balanced mix of fiscal and monetary actions. As indicated in Chapter 1 of this

Report, this activist policy has generally failed to smooth aggregate fluctuations, and in a few cases has actually increased the variability of aggregate demand. Instead, this Administration has worked to establish and maintain stable incentives for productive behavior by reducing marginal tax rates on capital and personal income, indexing personal income tax rates to the rate of inflation, eliminating wasteful tax preferences that distort incentives, and controlling government outlays. Monetary policy has been used principally to achieve and maintain a modest rate of inflation.

Another important element of the incentive-based policies of this Administration was a commitment to flexible exchange rates and free international trade. The rationale for this commitment is given in Chapter 4, which demonstrates that international trade is not a zero-sum game, where an increase in the exports of one country offsets a reduction in exports by other countries. Free trade expands world trade and raises incomes of all nations.

Flexible exchange rates and free trade send a prompt and accurate signal about the competitive position of a nation in world markets. The decline in competitiveness of U.S. goods in world markets created by the stagflation of the 1970s was laid bare during the first half of the 1980s, when U.S. goods lost a considerable market share of world trade. The efficient solution to this loss of competitiveness was not, and is not, a shield fashioned from tariffs, quotas, and other impediments to trade. Free trade gave U.S. manufacturers an efficient, market-based incentive to compete on the basis of the price and quality of their goods. As documented in Chapter 1 and earlier in this chapter, U.S. manufacturers have lowered production costs and improved their productivity, and, with help from a lower value of the U.S. dollar in foreign exchange markets, they have seen a substantial rise in their world market share.

Flexible exchange rates and free trade impose a discipline on economic policymakers worldwide, providing the incentive to implement sound, market-based economic policies and to coordinate these policies with other countries. A good example of this discipline appeared in the early 1980s, when the U.S. dollar began to appreciate in foreign exchange markets. The initial reason for this appreciation was the confidence on the part of U.S. and foreign investors that the economic policies of this Administration would contribute to strong economic growth and lower inflation in the United States relative to the rest of the world. The U.S. dollar continued to appreciate after the Administration's policies were implemented, and these expectations were fulfilled. Foreign capital inflows into the United States signaled to foreign governments that their own economic policies needed to be redirected in the same manner as in the United States. Other

countries lowered their tax and inflation rates, and deregulated and privatized many of their key industries. As countries implemented these policies, their economic growth has increased and the U.S. dollar has depreciated in response.

The challenge for the future is to sustain political and economic stability by maintaining a strong national defense and the commitment to market-based policies and price stability. Further efforts to deregulate domestic markets and international markets slated for upcoming negotiations under the General Agreement on Tariffs and Trade should be assigned high priority. Moreover, national governments worldwide must work to establish consistent monetary policies to achieve and maintain price stability. With these policies acting as the foundation, national economies can build on the achievements gained during this President's stewardship of the U.S. economy, and can continue to improve standards of living worldwide.