

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

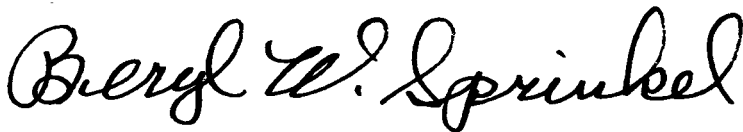
LETTER OF TRANSMITTAL

COUNCIL OF ECONOMIC ADVISERS,
Washington, D.C., February 16, 1988.

MR. PRESIDENT:

The Council of Economic Advisers herewith submits its 1988 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,



Beryl W. Sprinkel
Chairman



Thomas Gale Moore
Member



Michael L. Mussa
Member

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CHAPTER 1

The U.S. Economy: Performance and Prospects

THE LONGEST PEACETIME EXPANSION in the history of the U.S. economy entered its sixth year in 1987. Growth was vigorous, with the economy's real output rising by nearly 4 percent last year. Three million additional jobs were created in 1987, beyond the 12 million generated earlier in the expansion. The unemployment rate dropped almost a percentage point to its lowest level in 8 years. Significant improvement in the real trade deficit contributed importantly to growth of output and employment, for the first time since 1980. The inflation rate remained in the 4 percent range that has characterized most of the expansion—well down from the double-digit rates at the start of the decade. Dramatic progress was made in reducing the Federal budget deficit. Judged by these accomplishments, leaving aside the extraordinary events in financial markets, the U.S. economy enjoyed a good year in 1987.

OVERVIEW OF THE REPORT

The past 5 years of sustained and vigorous growth in production, income, and employment did not occur by accident. It was shaped by government policies explicitly directed toward fostering the inherent dynamism of the private sector. In reviewing the record of the current expansion and looking to the future, this *Report* highlights the appropriate role for government in the economy—its macroeconomic responsibilities, such as fiscal and monetary policy, as well as its microeconomic responsibilities, which concern particular markets and industries. This chapter begins with a summary of the *Report*.

THE MACROECONOMIC SETTING

Nineteen eighty-seven was a year of robust economic growth, strong increases in employment, and—despite a temporary acceleration early in the year—continued moderate inflation. The composition of demand changed in a welcome direction, as the foreign trade sector contributed to overall growth. But late in the year, the plunge in the stock market and a sharp buildup in inventories raised ques-

tions about the outlook. With appropriate economic policies, however, growth should continue through 1988—albeit at a more moderate rate than in 1987. A more balanced and sustainable pattern of growth in 1988 then will set the stage for a resumption of more rapid growth in the future, together with gradual reductions in both the unemployment and inflation rates.

Chapter 1 first reviews the macroeconomic performance of the United States in 1987 and the factors that shaped it. In particular, the chapter discusses the role of fiscal and monetary policy in fostering noninflationary growth and economic adjustment. During 1987 macroeconomic policies turned toward restraint: growth of the monetary aggregates slowed sharply, interest rates climbed, and the Federal budget deficit was cut by one-third. Partly as a result, inflation remained low and progress was made in reducing the trade deficit.

Important adjustments occurred in the U.S. economy last year. Real exports rose by nearly 17 percent, helping to turn business fixed investment around and to produce large gains in output and employment in the manufacturing sector. Consumer expenditure growth slowed significantly from the rapid pace set during the first 4 years of the expansion, restraining the increase in imports. Last year the U.S. economy enjoyed both trade deficit reduction and good growth; with appropriate policies, this combination can be expected to continue into the future.

EMPLOYMENT, PRODUCTIVITY, AND INCOME

The most important measures of economic progress concern people: the number of people with jobs; the productivity of each person; and real income per capita. Chapter 2 reviews the record of the current economic expansion with respect to such measures of well-being, and finds that, in both quantity and quality terms, the past 5 years of growth have been good ones. Genuine economic progress has been made, with benefits widespread across major demographic groups and across regions. Since 1982 the U.S. economy has created 15 million new jobs—the strongest record of employment growth among the major industrial countries. Unemployment rates have dropped substantially for all major demographic groups, with especially large improvements for blacks, Hispanics, and youths. The bulk of new jobs have been full-time and in higher paying occupations. Along with the rapid rise in employment, growth rates of both productivity and real per capita income have picked up, after a period of slow growth in the 1970s. Manufacturing has experienced particularly strong productivity growth, while retaining its traditional share in the value of total output. The Nation's industrial base remains strong.

Moreover, the expansion's accomplishments should continue to build, provided the Administration's growth-oriented economic policies are followed in the future. The unemployment rate has not reached a natural barrier beyond which further reductions necessarily imply serious risk of accelerating inflation.

EXTERNAL IMBALANCES

Since late 1986 the Nation's large trade deficit has been narrowing in real terms, contributing to output and employment growth in the United States. Chapter 3 discusses the significance of external imbalances—the problems they do and do not pose for the United States and the world economy. It then examines the forces behind the evolution of worldwide imbalances, as well as the processes that are under way to reduce them.

In assessing the significance of the country's external deficit, the chapter finds that, because of strong demand growth within the U.S. economy, the widening trade gap did not impair overall employment growth. Nor did it cripple the manufacturing sector. Moreover, U.S. investment was aided by substantial net inflows of foreign capital which offset a relatively low national saving rate. The buildup of net foreign claims on the United States remains modest relative to U.S. income and wealth, and future problems arising from a continued rapid buildup can be forestalled by adequate progress in reducing the external deficit.

To sustain such progress, it is essential that the fundamental macroeconomic causes of worldwide imbalances continue to be addressed. A substantial reduction in the foreign exchange value of the dollar has helped to restore the international competitiveness of U.S. industry, and it is a major factor in the turnaround and expected further improvement in the real trade deficit. To maintain noninflationary growth in the world economy while external imbalances are being corrected, it is vital that Federal deficit reduction continue in the United States, that internal growth in foreign countries remains strong, and that markets function freely and flexibly to bring about necessary structural adjustments here and abroad. It is equally vital that national markets remain open to international trade and that the world avoid a descent into protectionism.

OPENING MARKETS AND AVOIDING PROTECTIONISM

Chapter 4 amplifies the conclusion of the preceding chapter: protectionism is not the answer. Instead, economic progress here and around the world is enhanced by the benefits of further liberalizing international trade.

During 1987 significant progress was made toward a more open trading system. Chapter 4 discusses the steps taken in three important areas: the Free-Trade Agreement (FTA) with Canada; the United States-Mexico Framework Understanding; and the Uruguay Round of negotiations under the General Agreement on Tariffs and Trade (GATT). When approved, the FTA will culminate 140 years of efforts to establish free trade as the guiding principle governing what has become the world's largest commercial trading relationship between any two nations, thereby providing substantial and enduring benefits for businesses and consumers in both the United States and Canada. In the Uruguay Round, the United States is vigorously pursuing the proposals it has made to strengthen the free and fair trade principles of GATT and to broaden their application in services, investment, intellectual property, and agriculture.

At the same time, however, threats to trade liberalization have emerged within the United States. Pending legislation, while including some useful features, also contains numerous protectionist provisions. Enactment of these protectionist provisions would violate U.S. obligations under GATT, increase costs to consumers, damage relations with our trading partners, and invite retaliation. The United States has a choice: it can continue to lead the movement toward freer world trade, building on the progress of the last year, or it can turn inward, embracing protectionist measures that point only toward economic stagnation.

KNOWLEDGE AND PROGRESS

Chapter 5 examines three of the major factors that underlie rising living standards in the longer term and considers the role of government in supporting and sustaining economic progress. The chapter first examines investment in human capital, reviewing trends in schooling, training, and work experience, as well as their effects on earnings and output. It then discusses expenditures on research and development and their relationship to economic growth. Finally, the chapter reviews the importance of economic incentives and flexible markets in supporting economic progress by assuring that resources are directed toward their most highly valued uses.

The government has a constructive, but limited, role to play in ensuring that these building blocks of economic progress are strong. In education, government plays a large direct role, primarily at the State and local level where it can be most responsive to community needs. For investment in human capital and in research and development, government support is most effective when it relies on private incentives that guide such investment toward its most productive uses. To maintain economic incentives, government has an important respon-

sibility to protect the rights of individuals to benefit from their own labor, investment, innovation, and entrepreneurship. Beyond this, the best role for government is often a minimal one—ensuring that it does not interfere with the efficient use of resources or introduce market barriers and distortions that impede productive economic activity.

AIRLINE DEREGULATION

The success of deregulation is well illustrated by the airline industry. The final chapter of this *Report* focuses on the effects of the Airline Deregulation Act of 1978, which led to a surge in air travel as a result of lower fares and greater choice. Recently, however, more complaints about service and on-time performance, as well as safety concerns, have prompted calls for reregulation.

Reregulation would be a mistake. The benefits of having removed regulation of entry and pricing in the airline industry are clear. They are also sizable, on the order of \$11 billion per year. Despite airline mergers and fears of monopoly pricing, competition remains vigorous. More air travel—a reflection of the very success of deregulation—unquestionably has meant more crowded skies and busier airports. However, the answer to this congestion is not less reliance on market forces, but more. Deregulation should be expanded to allow a greater role for market forces in the management of the Nation's airspace and airport services.

Concerns that air safety is being undermined by the increased competition of a deregulated environment are not supported by the facts. The rapid increase in airline business in the last 10 years has led to no deterioration in the safety of air travel; instead, the record is good and compares favorably with the period before 1978. More people are flying to more places than ever before, and they are traveling more safely.

THE U.S. ECONOMY IN 1987

U.S. economic growth strengthened in 1987, and the sources of growth shifted markedly. Starting in the fourth quarter of 1986, real gross national product (GNP) growth began to exceed domestic demand growth, as—for the first time in 7 years—the foreign trade sector contributed on a sustained basis to economic growth in the United States. On the inflation front, the increase in consumer prices moved up into the 5 percent range early in 1987, spurred largely by the rebound in world petroleum prices. Non-oil import prices, which had tended to restrain inflation during the first half of the 1980s, also contributed upward pressure on consumer prices. But this accel-

eration, which largely reflected a one-time shift in relative prices, proved short-lived, and inflation in the second half of the year fell back to the 4 percent rate that has characterized most of the current economic expansion.

SOURCES OF DEMAND

The economic expansion continued through 1987, and in October it claimed the record as the longest period of uninterrupted growth that the United States has experienced in peacetime. Ironically, the record was set just as the stock market's optimism was shaken, and the Dow Jones Industrial Average dropped more than 20 percent in a single day. Clearly, some stresses and imbalances had emerged during the expansion, but data on the real economy indicated that favorable adjustments were occurring, and that they were occurring within a context of continued growth. The trade deficit was narrowing in real terms, the Federal budget deficit had dropped by one-third, and business fixed investment was rebounding from its 1986 decline.

Real GNP grew 3.8 percent from the fourth quarter of 1986 through the fourth quarter of 1987, rising more than half again as fast as in the preceding year. But this acceleration was by no means uniform across components of demand. In fact, the largest component, personal consumption expenditures, slowed almost to a standstill, posting just a 0.6 percent rise after 4 consecutive years of 4-plus percent increases (Table 1-1). Similarly, investment in housing declined for the first time since 1981. While the growth of government purchases picked up slightly last year to 3.0 percent, the primary source of the acceleration in GNP was the rebound in three components that had been a drag on growth in 1986: net exports, business fixed investment, and inventories.

The strengthening of exports, the turnaround in business fixed investment, and the slower growth of consumer spending all were part of a welcome pattern of economic adjustment necessary to redress the major imbalances of the U.S. economy. The figures presented on the composition of output growth in 1987 were influenced importantly by the weakening of consumer expenditures and business fixed investment in the final quarter of last year, but the fundamental pattern was not altered. Combined with continued strong growth of production, the drop in consumer and nonresidential fixed investment demand at the end of 1987 meant a large increase in inventories, which consequently accounted for one-half of the total increase in real GNP last year.

Growth of real consumption expenditures was dampened by slower growth of real personal income in 1987. As a result of the faster rise

TABLE 1-1.—*Growth of Real GNP and Its Components, 1982-87*

Item	1982 IV to 1985 IV	1985 IV to 1986 IV	1986 IV to 1987 IV ¹
	Average annual percent change		
Real GNP	4.9	2.2	3.8
Domestic demand.....	6.3	2.7	3.2
Personal consumption expenditures	4.7	4.1	.6
Nonresidential fixed investment	9.7	-4.7	3.7
Residential fixed investment.....	15.8	12.5	-2.9
Government purchases of goods and services	4.5	2.4	3.0
Exports of goods and services.....	2.9	5.9	16.9
Imports of goods and services.....	15.2	8.9	8.2
	Contribution to real GNP growth in percentage points ²		
Total change in real GNP.....	4.9	2.2	3.8
Final domestic demand.....	5.7	3.2	1.3
Change in inventories.....	.6	-.4	1.9
Net exports of goods and services.....	-1.5	-.6	.6

¹ Preliminary.² Detail may not add to totals because of rounding.

Source: Department of Commerce, Bureau of Economic Analysis.

in consumer prices last year, the growth of real disposable personal income slowed to 2.0 percent. Within consumer expenditures, only spending on services recorded an increase. After rising 2.4 percent in 1986, real services expenditures increased 3.8 percent in 1987. By contrast, spending on durables and nondurables fell. Consumer spending on motor vehicles dropped 5.9 percent in 1987, reversing half of the 12 percent rise in the year before. With so many households having recently bought automobiles, fewer remained interested in and able to make a purchase in 1987. In general, purchases of motor vehicles have been highly volatile in recent years, as manufacturers have instituted on-again off-again incentive plans. These huge fluctuations in car sales—routine 40 percent annual rates of increase or decrease in a quarter—have induced large swings in the pattern of consumption expenditures, despite the fact that motor vehicles account for less than 10 percent of total consumer spending.

The housing sector was affected adversely last year as interest rates climbed. Real residential investment dropped 2.9 percent, a reversal from 1986 when it had soared 12.5 percent as interest rates on new 30-year mortgages had moved into the single digits for the first time in the 1980s. Early in 1987 mortgage rates continued to ease to a 9-year low of 9.0 percent, but then they turned higher and in mid-October peaked at nearly 11.6 percent. The plunge in the stock market then changed the financial landscape, and mortgage rates ended the year about 1 percentage point below their October highs. The impact of higher rates during most of last year was softened somewhat by a shift toward adjustable-rate financing, which accounted for more than

half of all mortgage originations by early autumn. In addition, by most indications, inflation expectations picked up at times last year, so that the increase in real (inflation-adjusted) rates was not so large as that in nominal interest rates. In the multifamily sector, however, high vacancy rates and tax code changes that reduced the attractiveness of multifamily homes as tax shelters acted as added deterrents to new construction.

During 1987 business investment appeared influenced primarily by the strength of the economy—especially improved export prospects. Business fixed investment rose 3.7 percent, reversing most of the 4.7 percent decline of the preceding year.

Improved export demand was evident in sales, production, and employment figures. Real exports grew almost 17 percent last year, finally rebounding above their peak levels of 1980–81. The increased international competitiveness of U.S. products, owing to the drop in the dollar's exchange rate, rising manufacturing productivity, and moderate wage increases, lifted export sales. As a result, the external sector contributed significantly to GNP growth last year. Growth of imports, while well below the rates recorded during the early years of this expansion, remained relatively rapid. Imports increased more than 8 percent in real terms last year, as U.S. domestic demand picked up.

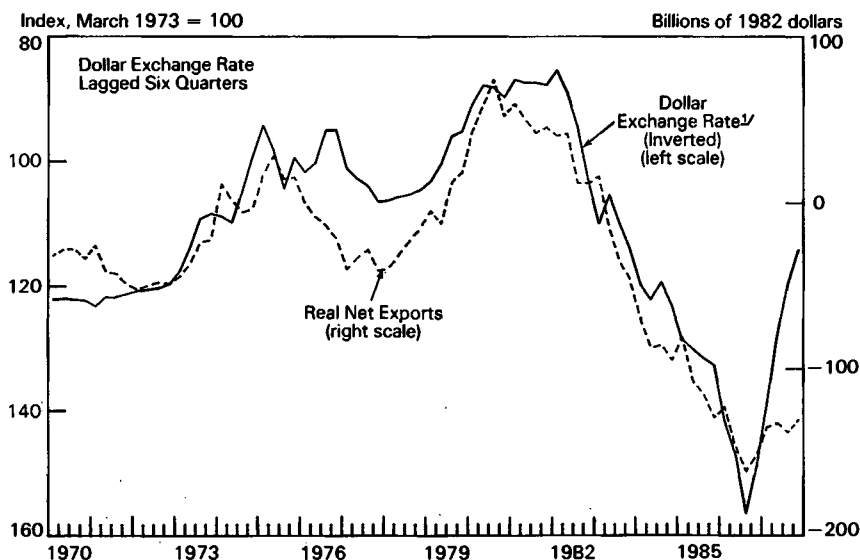
Although real domestic demand grew at a 3.2 percent rate last year, substantial progress was made in reducing the real external deficit. The improved net export performance stemmed primarily from relative price changes that made U.S. goods increasingly attractive both at home and abroad (Chart 1-1). In coming quarters these relative price changes should continue to improve the external balance. But even faster progress will be made if demand abroad strengthens, and if growth of U.S. domestic demand slows—preferably as a result of Federal spending restraint that narrows the budget deficit.

INFLATION AND RELATIVE PRICE CHANGES

The consumer price index (CPI) rose at more than a 5 percent annual rate during each of the first 4 months of 1987, but this initial acceleration did not herald a sustained resurgence of inflation. Last year the economy had to contend with significant increases in the prices of imports and energy—two categories that earlier in the economic expansion had tended to act as restraining influences on inflation. In addition, aided in part by the accommodative monetary policy of 1985–86, the economy was moving through a fifth year of growth, capacity utilization was rising, and the unemployment rate was continuing to fall. In similar circumstances in the 1970s, inflation had accelerated. But in 1987 most broad measures of inflation, al-

Chart 1-1

The Dollar and Real Net Exports



^{1/}Nominal multilateral trade-weighted value of the dollar against the currencies of the other G-10 countries plus Switzerland.

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

though up from 1986 when oil prices had dropped sharply, remained close to their averages for the first 3 years of the current expansion. For example, the GNP fixed-weighted price index rose 4.0 percent, compared with an average of 3.7 percent during 1983-85.

In 1986 crude oil prices had fluctuated wildly, dropping from more than \$25 per barrel for West Texas Intermediate at the beginning of the year to a low of less than half that in July, then climbing back up to more than \$18 per barrel around the end of the year. During 1987 the price of oil was less volatile, ending the year only a little below its level at the beginning of the year. The deflationary impact of the earlier drop in oil prices was completed at the retail level during 1986, as the energy component of the CPI declined almost 20 percent over the year. The inflationary effect of the subsequent rebound in oil prices, however, was strongest during the first 3 months of 1987, when the energy component of the CPI rose at a 26 percent annual rate. Thereafter, the energy component increased at about the same rate as the aggregate CPI.

In early 1987 the higher relative price of oil gave a one-time boost to the aggregate price level, with no apparent effect on the economy's underlying inflation rate. Similarly, the rising import prices of recent quarters are a relative price adjustment which should produce only transitory upward pressure on inflation. But, in the case of imports, the relative price adjustment is likely to be a more drawn-out process. Prices of non-oil imports have been rising more rapidly than overall inflation since the end of 1985, and they likely will continue to do so for several more quarters as the dollar's drop on foreign exchange markets gradually affects prices. A fixed-weighted index of non-oil import prices has increased at a 9 percent annual rate during the last 2 years.

Although the passthrough effects of the lower dollar can be expected to take some time, rising import prices nevertheless represent a one-time change in relative prices and are a necessary factor in reducing the Nation's trade deficit. Only if macroeconomic policies are unduly expansionary, and wage increases fully reflect the increases in import prices, will the increased relative price of imports turn into a sustained higher rate of inflation.

The increase in measured inflation early in 1987, in combination with the economy's stronger growth, may have contributed to slightly higher wage demands later in the year (Chart 1-2). Data on wage costs and average earnings indicate that wage increases bottomed out during the first half of the year and began to edge up during the second half. The acceleration was modest, however, and the 12-month change in wages remained in the 2.5 to 3.5 percent range. By most measures, the increase in wage costs last year was among the lowest of the postwar period, and the rise in unit labor costs, at 1.3 percent, was also relatively low.

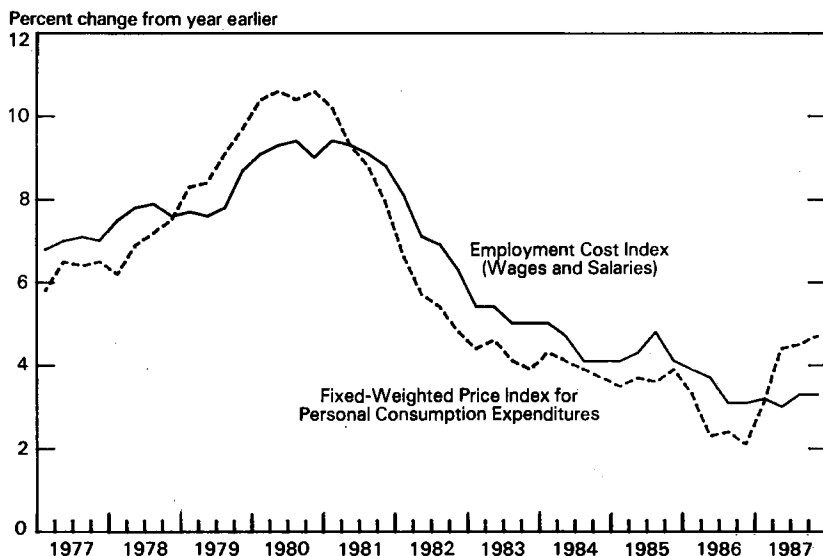
At times during 1987, inflation expectations appeared to flare up. Early in the spring, both the price of gold and interest rates rose sharply, apparently reflecting higher inflation expectations as broad indexes of commodity prices surged. Throughout much of the year the strong growth of industrial production also raised demand for inputs and put upward pressure on the prices of intermediate and crude goods, especially metals. In the 12 months through December, the producer price index for crude materials rose 8.8 percent, but this increase had little effect last year on the price index for finished producer goods, which rose just 2.2 percent.

INDUSTRIAL COMPOSITION

Along with the shifts in sources of demand and in relative prices last year, the sectoral composition of output also changed. After more than 2 years of sluggish increases, industrial output rose a

Chart 1-2

Wages and Prices



Note.—Data for fourth quarter 1987 are preliminary.

Sources: Department of Commerce and Department of Labor.

healthy 5.2 percent in the 12 months through December 1987. Some industries benefited from the surge in exports and the renewed competitiveness vis-a-vis imports, while others were aided by the strength of equipment investment. The rebound in oil prices encouraged activity in energy-related industries. And the agricultural sector appears to have improved, aided by government support as well as by stronger exports.

In 1987 the growth of goods production outpaced that of services by the widest margin since 1984. Similarly, after 2 years of declining employment, an additional 628,000 people were put to work last year in goods-producing industries. However, the predominant increase in employment remained in service-producing industries, where more than 2 million new jobs were created.

Among industries there were some remarkable reversals. Iron and steel production increased by nearly 30 percent in the 12 months through November 1987, having fallen about that much during the preceding 3 years. Similarly, the output of construction, mining, and farm equipment rose 18 percent through November, back to levels last reached in 1982. Oil and gas well drilling was another very

strong component of industrial production in 1987; it increased by 37 percent, thereby retracing about half the drilling decline that had followed the collapse in oil prices at the end of 1985.

After a number of years of severe financial stress, agriculture may well have turned the corner. Farmland prices and net worth on farms rose in 1987, after declining in each of the preceding 7 years. Agricultural exports turned higher, crop prices rose, and huge stockpiles declined. In 1986 net farm income was at a high level as a result of record government transfers to farmers, high livestock prices, and low production expenses. In 1987 net income rose further, supported in addition by the strength of exports.

As the economic expansion continued through 1987, certain industries and sectors that had not fully participated in the recovery, or that had suffered setbacks more recently, were caught up in the spreading cycle of growth. Earlier in the expansion the high exchange rate had stymied export growth; but by 1987, after the dollar declined roughly 40 percent on the Federal Reserve Board's trade-weighted index from its peak in the first quarter of 1985, export-dependent industries (and those that compete with imports) regained some ground.

MACROECONOMIC POLICIES

Both fiscal and monetary policy turned toward restraint last year. The Federal deficit narrowed by one-third in fiscal 1987, and even on a cyclically adjusted basis—that is, abstracting from the deficit-reducing effect of faster economic growth—the restraint was clear. Moreover, measured either in real terms or as a share of GNP, Federal outlays fell below the level of the previous fiscal year. At the same time, rising interest rates and sharply lower money growth rates indicated a tightening of monetary policy during much of 1987.

FISCAL RESTRAINT

In fiscal 1987 the reduction in the Federal budget deficit was remarkable. The deficit was cut \$71 billion, or 1.9 percent of GNP, in a single year. This salutary development reduced the government's demands on credit markets, while restraint on Federal spending released more resources for use by the private sector and, by holding down growth of domestic demand, contributed to the improvement in the Nation's real trade gap. Despite the contractionary impulse from fiscal policy last year—equivalent on a cyclically adjusted basis to roughly 1 percent of GNP—economic growth did not slow. The economy performed well in 1987, supported in part by the monetary

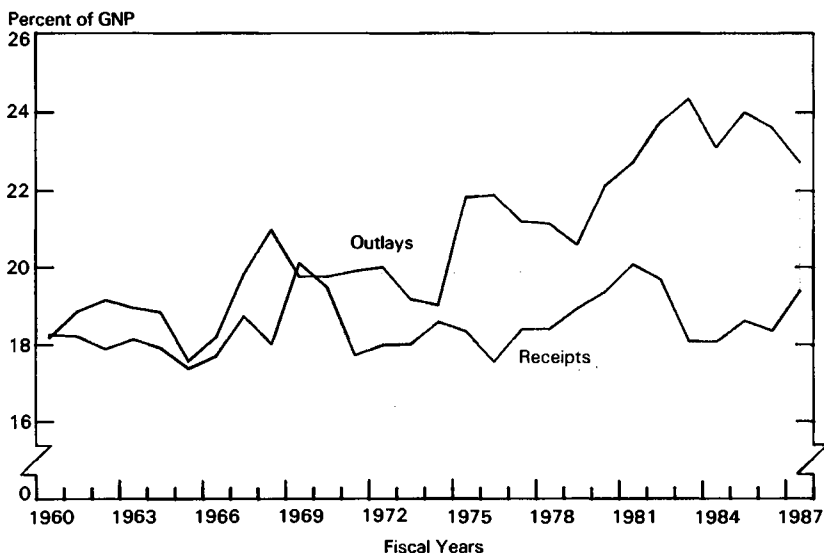
stimulus of the preceding years and in part by the strong export growth that stemmed from a lower dollar.

A portion of the deficit decline was made up of one-time occurrences, such as loan asset sales, small changes in the timing of receipts and expenditures, and higher revenues due to the phase-in of the Tax Reform Act, but much was real, substantive deficit reduction. The Federal budget as measured by the national income and product accounts, which exclude some of these special factors, showed a \$55 billion narrowing in the deficit in fiscal 1987.

The growth of total Federal outlays (both on- and off-budget) slowed to just 1.4 percent in fiscal 1987, which translated into the first inflation-adjusted decline in 14 years. Similarly, as a share of GNP, Federal outlays dropped to 22.8 percent, down from 23.6 percent in fiscal 1986 (Chart 1-3). Boosted by stronger economic growth and roughly \$30 billion in additional revenues brought in by tax reform, total Federal receipts rose 11.1 percent in fiscal 1987. Federal revenues thus rose to 19.4 percent of GNP, 1 percentage point above the 1960-80 average.

Chart 1-3

Federal Receipts and Outlays as Percent of GNP



Note.—Includes on-budget and off-budget items.

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

The fiscal 1987 deficit of \$150 billion came close to the \$144 billion target specified in the original Gramm-Rudman-Hollings (GRH) legislation passed in 1985. After the method of imposing automatic spending cuts in that law was found to be unconstitutional, amendments to GRH, with new enforcement mechanisms and new deficit targets, were signed into law in September 1987. The amendments extended the deadline for a balanced budget by 2 years to 1993, and they eased the deficit reduction requirements for fiscal 1988 and 1989 by providing "safe harbors" in the form of caps on the amount of cuts mandated. For fiscal 1988 the amendments exchanged a \$108 billion target, as specified in the original act, for a new \$144 billion target with a maximum automatic cut of \$23 billion.

In October, as fiscal 1988 opened, the Federal budget for the year remained far from settled. A short-term continuing resolution kept the government operating, while lawmakers worked on appropriations and reconciliation legislation that would allow them to avoid the across-the-board spending cuts mandated by GRH. But the likelihood of agreement on a satisfactory budget package appeared to diminish as October progressed, making automatic cuts more likely. Automatic cuts are preferable to some alternatives—such as no deficit reduction at all, or higher taxes that undo the benefits of tax reform—but they have a serious drawback: they do not recognize priorities. In other words, programs that may legitimately merit more funds are cut just as much as those programs that may have outlived their usefulness. For fiscal 1988, automatic cuts were avoided eventually, but not until the stock market break had encouraged the parties involved in the budget-making process to reach an agreement.

MONETARY POLICY

During 1987 the Federal Reserve continued the eclectic approach that has characterized decisionmaking within the Nation's central bank in recent years. The creation of new deposit instruments, wide fluctuations in market interest rates, the deregulation of deposit rates, and the accelerated process of general financial innovation had raised questions about how movements in money and credit aggregates should be interpreted. As the 1980s progressed, the Federal Reserve had watched the historical relationships between money and income and interest rates apparently break down in response to these influences, and it came to rely less on the monetary aggregates and more on a wide range of economic and financial variables as indica-

tors of emerging trends. Finally, in 1987 the Federal Reserve refrained from specifying an annual growth range for M1, the measure of money which in the past had been related most closely and reliably to income growth. Thus, for the first time since 1975—when the Federal Reserve began to set money targets publicly—neither a target nor a monitoring range for M1 was announced. And while target ranges for M2 and M3 (broader measures of money) were specified, the Federal Reserve's midyear report to the Congress explicitly recognized that "[in certain circumstances,] some shortfall from the annual ranges might well be appropriate."

In view of heightened uncertainty about the behavior of the monetary aggregates, the sharp slowing in money growth in 1987 did not alarm the Federal Reserve, as it continued to tighten policy through September. Annual rates of growth in the second and third quarters of 1987 averaged between just 2½ and 4½ percent for M1, M2, and M3. When measured from the fourth quarter of 1986, the growth rates were somewhat higher: through September, M1 grew at a 6.1 percent annual rate, M2 at a 4.2 percent rate, and M3 at 5.4 percent. Nevertheless, even these rates represented substantial decelerations from those in the preceding year, and left M2 well below, and M3 just below, their target growth ranges: M1A, which consists of currency and checking accounts that cannot pay interest, increased at less than a 2 percent annual rate through September, after having risen 10 percent in 1986.

Background

The lessened reliance on money as an indicator was an outgrowth of the experience of the 1980s, but especially of 1985–86. The Federal Reserve had begun to ease policy in the second half of 1984, reversing its earlier restraint in order to support the flagging economic expansion, and more than 2 years of falling interest rates and rapid money growth followed. From their peaks in mid-1984, most interest rates declined 5 to 6 percentage points by the end of 1986, and many short-term rates were cut in half. The monetary aggregates, especially the narrower aggregates, soared in 1985 and accelerated further in 1986. Over the four quarters of 1986, even the slowest growing of the commonly cited aggregates, M3, rose 8.9 percent, while the fastest growing measure, M1, ballooned 15.3 percent. By comparison, nominal GNP increased just 4.5 percent during the same period. In other words, by any measure, velocity (the ratio of nominal GNP to the money supply) dropped steeply in 1986.

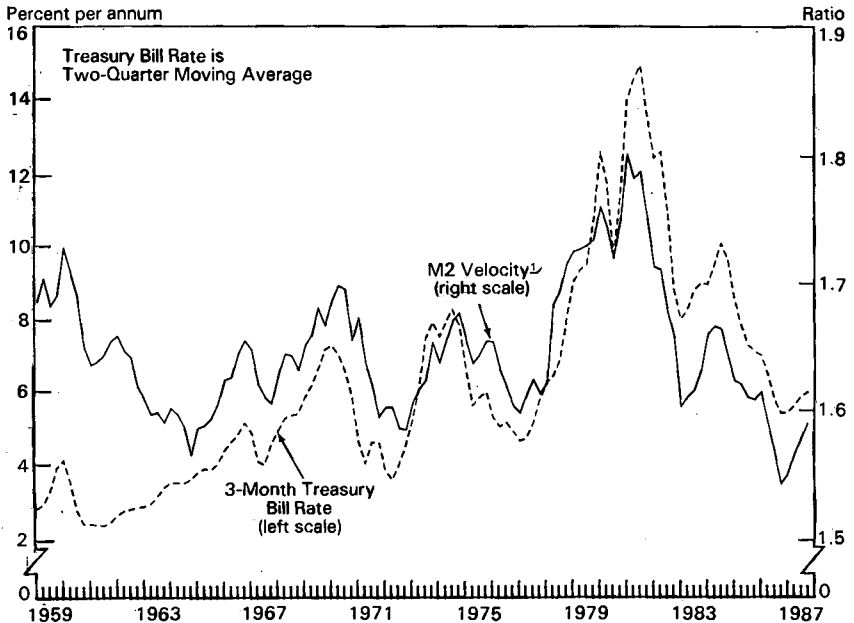
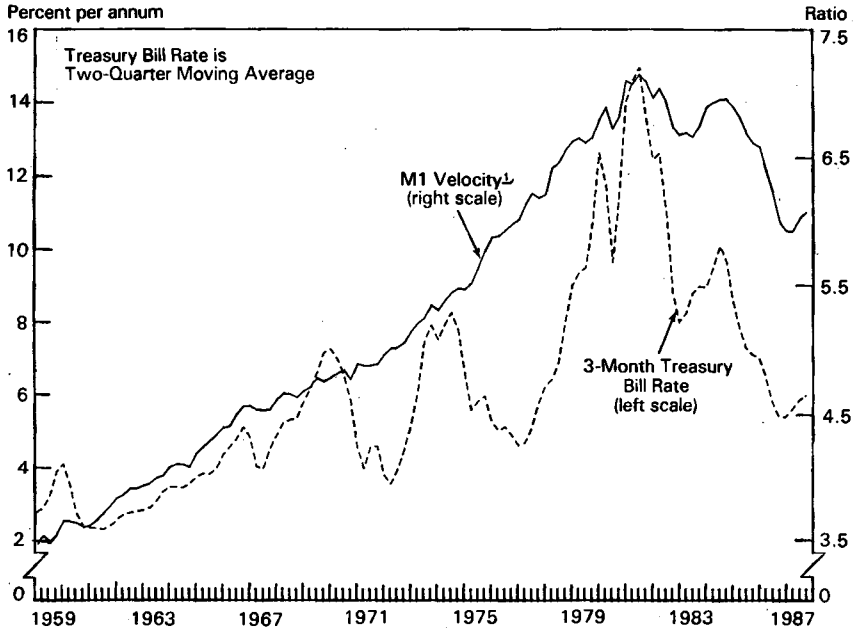
The decline in the velocity of M1, at 9.4 percent, was particularly steep and provided additional evidence that the relationship between that measure of money and income had shifted. The relationship between nominal GNP and M1, as summarized by velocity, apparently veered off track in the early 1980s (Chart 1-4). Rather than trending higher at a rate of roughly 3 percent a year as it had during the preceding 20 years, velocity declined on balance after 1981. There always had been some cyclical variations in velocity, with changes in interest rates altering the "opportunity cost" of holding idle balances. But the experience of the 1980s clearly was different. M1 velocity appeared to be responding far more emphatically than in the past to changes in market interest rates, while M2 velocity—although also affected—remained closer to its historical behavior.

The two most likely explanations for this increased interest rate responsiveness of money balances are deregulation and the sharpest disinflation since the late 1940s. The drop in inflation early in the 1980s fed through to expectations: as the public expects lower inflation, they tend to become more willing to hold money. Thus, to the extent that falling interest rates reflected declining inflation expectations, the disinflation/more-stable-purchasing-power argument provides an additional link between lower interest rates and increased demand for money.

Financial deregulation had its effect by changing the composition of the monetary aggregates. Interest-bearing transaction accounts were permitted, and interest rate caps were eliminated on all types of accounts except demand deposits, on which interest payments remained prohibited. In the case of M1, the shift in composition was profound: by 1986 interest-bearing deposits had grown to nearly one-third of M1 from a negligible share just 8 years earlier. As a result, the 1984-86 decline in market interest rates meant that, by the end of that period, the opportunity cost of a major component of M1 dropped below one-half percent. This opportunity cost, measured as the 3-month Treasury bill rate less the interest rate paid on negotiable order of withdrawal (NOW) accounts, was the lowest for any transaction account in 40 years. Such a narrow spread is clearly atypical; it developed in part because deposit rates on NOW accounts and other variable-rate accounts have adjusted relatively slowly to changes in market interest rates. This rate-setting behavior has accentuated the effect of variations in market rates on the demand for money.

Chart 1-4

Interest Rates and Velocity of Money



Ratio of GNP to M1 or M2.

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

Federal Reserve Actions in 1987: Before October 19

In 1987 monetary policymakers continued to face uncertainties concerning the strength of the economy, the extent of the inflationary threat, and the interpretation of movements in the monetary aggregates. Evaluating financial and economic indicators and predicting the precise effects of policy moves remain inexact sciences. On the domestic front, financial markets indicated that inflation expectations may have surged at times, although inflation itself exceeded the 4 percent range only briefly, early in the year. And on the international front, the value of the dollar came under pressure several times. Throughout the year, however, U.S. economic activity remained robust, and the unemployment rate dropped nearly a percentage point.

As 1987 began, the deciphering of economic and financial market trends was complicated by a year-end surge of transactions prompted by a change in tax laws. Because many provisions of the Tax Reform Act were to take effect at the turn of the year, individuals and businesses rushed to complete real estate transactions, mergers, sales of equities, car purchases, etc., before the end of 1986. In the process they generated huge demands for money and credit; for example, M1 rose at a 30.5 percent annual rate in December 1986, and business loans increased at a 36 percent rate.

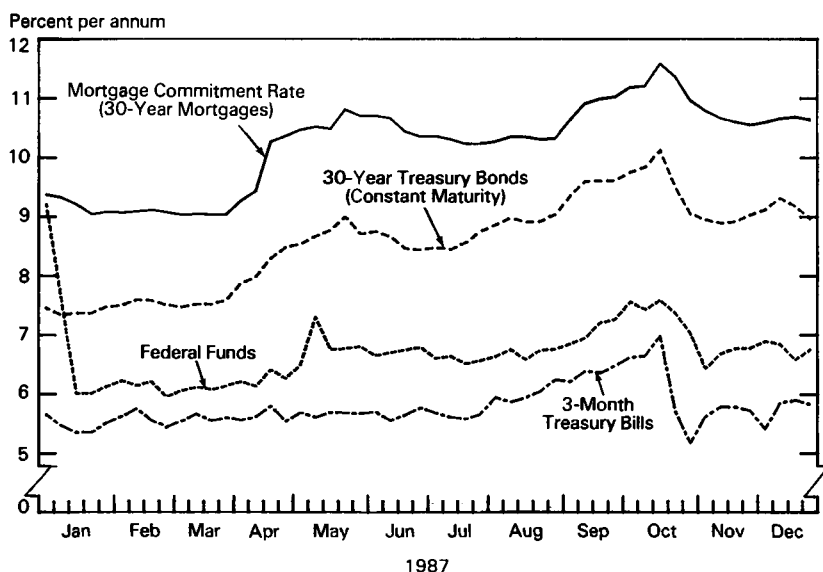
In view of the difficulty in separating tax effects from underlying economic trends during this period, the Federal Open Market Committee (FOMC), the Federal Reserve's principal monetary policymaking body, chose not to make any substantive changes in its instructions to the Open Market Desk, which implements policy on a day-to-day basis. Thus the thrust of the directive that had been in place since the last discount rate cut in August 1986 remained in force. At the same time, however, the FOMC indicated its bias toward future tightening and noted that, at least with regard to M1, money growth would have to slow from the 1986 pace in order to sustain progress toward price stability.

As the year-end bulge in the monetary aggregates dissipated and the economy continued to grow at a moderate pace, the Federal Reserve made no explicit changes in monetary policy until late April. Then, in April and again in May, the market for bank reserves was tightened as policymakers responded to downward pressure on the dollar in exchange markets and a perceived ratcheting upward of inflation expectations. News on the real economy was generally good: growth was maintained, and the unemployment rate was dropping substantially. But the rebound in energy prices, with some help from higher import prices, had boosted the inflation rate above 5 percent, and expectations of inflation were heating up. While oil prices had

roughly stabilized, broad indexes of commodity prices rose sharply in April and early May, as did the price of gold. Long-term interest rates also appeared to reflect an increase in inflation expectations: the rate on 30-year Treasury bonds increased $1\frac{1}{2}$ percentage points in 2 months, to a peak of 9.0 percent (Chart 1-5). The dollar also told a similar story about expectations during this period, losing nearly 5 percent of its value on a trade-weighted basis in those 2 months.

Chart 1-5

Weekly Interest Rates, 1987



Sources: Department of the Treasury, Board of Governors of the Federal Reserve System, and Federal Home Loan Mortgage Corporation.

The Federal Reserve actions, complemented by measures taken abroad to ease policy, generally were successful in reassuring the domestic financial and foreign exchange markets. The dollar appreciated through mid-August, and interest rates remained below their highs of the spring. Meanwhile, the economy showed signs of additional strength, inflation dropped back from the elevated levels of early in the year, and wage increases remained subdued.

Under the influence of higher interest rates and tighter Federal Reserve policy, growth of the monetary aggregates continued to weaken. M1 rose at just a 2.7 percent annual rate in the 6 months through July, and M1A fell slightly, while M2 growth remained well

below, and M3 just below, their 5½ to 8½ percent target ranges. To some, this sharp slowdown in money growth raised concerns about potential economic weakness.

In early September the Federal Reserve again tightened policy, both by restricting reserve availability further—which it did “in light of the potential for greater inflation, associated in part with weakness in the dollar”—and by raising the discount rate one-half percentage point to 6 percent. In the preceding 3 weeks the dollar had dropped nearly 5 percent on a trade-weighted basis, and interest rates had begun to move up very steeply in the last few days of August. Once again, foreign exchange markets apparently were reassured by the Federal Reserve’s actions. The dollar stabilized, but this time interest rates continued to climb.

The spur for the dollar’s drop and the bond market’s weakness appears to have been the release in mid-August of the June foreign trade figures, which showed a \$15.7 billion deficit—substantially worse than the markets had expected. With the trade deficit thus narrowing more slowly than anticipated, the financial markets surmised that further adjustments were required—either a lower dollar, reduced demand in the United States, or increased demand in our major trading partners. Against a background of rising interest rates abroad, and with little additional action expected to be taken to reduce the U.S. budget deficit or to augment demand abroad, attention focused on the foreign exchange market and U.S. interest rates. Specifically, a rise in U.S. interest rates appeared increasingly likely, perhaps reflecting expectations that further dollar depreciation would add to inflationary pressures. Higher rates also would have been expected to result from an effort to dampen business investment and consumer spending—and thereby U.S. imports, which would reduce the extent of the needed dollar decline.

The trade figures for the next 2 months also were worse than generally expected, and financial markets reacted adversely. On October 14, when the August data were released, the Dow Jones Industrial Average posted a 1-day drop of 3.8 percent, and the rate on 30-year Treasury bonds rose 20 basis points (0.20 percentage point). The dollar also declined, but by less than 1 percent. On balance between September 4 (when the discount rate was increased) and October 16, the trade-weighted value of the dollar remained unchanged, the Dow Jones Industrial Average dropped 12 percent, and interest rates rose 50-150 basis points.

The extent of Federal Reserve tightening through mid-October was most dramatic as measured by the sharp deceleration of money and reserve growth. In view of the relative looseness of money-GNP relationships in recent years, however, other indicators provide addi-

tional evidence on the stance of Federal Reserve policy. Judging by the level of the Federal funds rate in early October, the progressive tightening of monetary policy had effectively reversed most of the easing that had occurred during 1986. At their peaks, short-term interest rates had increased roughly 150-250 basis points since the beginning of the year, and long-term rates had risen a bit more than that. Although these nominal increases were offset in part by higher inflation expectations, real interest rates, which adjust for inflation expectations, also appear to have risen during 1987—albeit by a more modest amount than during some other periods of real rate increases in the 1980s. Two other variables that sometimes can be used as indicators of monetary policy did not appear to point to a tightening last year. In particular, the dollar's exchange rate declined on balance, and the yield spread between long- and short-term securities widened somewhat, rather than narrowing or even turning negative as it tends to do in periods of severe monetary policy restraint. Nevertheless, the balance of the evidence points to a tightening of monetary policy last year.

There is little question that a turn toward some restraint in 1987 was desirable; continued growth of money at the high rates experienced in 1985 and 1986 would have had inevitable inflationary consequences. With output growth apparently well-maintained and inflation expectations building at times, the Federal Reserve acted to forestall a resurgence of deep-rooted inflation and to retain hard-won gains toward price stability. As always, because monetary policy actions affect the economy with sizable lags, the tightening of policy last year had implications for future growth and price performance.

THE BREAK IN THE STOCK MARKET

As the third quarter ended, preliminary evidence suggested—and data later confirmed—that the U.S. economy was growing strongly. The unemployment rate continued to edge down, reaching its lowest level since late 1979, and the index of leading indicators pointed to sustained economic growth. However, the outlook for further substantial improvement in the Federal deficit was clouded by an apparent deadlock between the Congress and the Administration over the budget for fiscal 1988, which began October 1. In financial markets, the Federal Reserve had tightened monetary policy in September. Interest rates, both short- and long-term, rose further in the first weeks of October.

THE CRASH

In mid-October the stock market posted a string of large declines, culminating in a 1-day plunge of unprecedented magnitude. The stock market had soared more than 40 percent in value from the start of the year through its August peak, but, by the close of business on October 16, nearly half of that gain had been erased. And the following Monday, October 19, after stock markets elsewhere in the world had posted sharp declines, the Dow Jones Industrial Average lost 22.6 percent in a single day. Trading volume was enormous, the markets were chaotic, many stocks opened very late, and the word "panic" aptly described the atmosphere. It was a worldwide phenomenon with potentially worldwide consequences.

On that 1 day, the total value of the stock market dropped by roughly half a trillion dollars. The next day, again amid an enormous volume of transactions, market conditions worsened. Trading in many stocks and index futures halted for a time, but the market managed to recover and closed higher. In subsequent days and weeks, investors remained nervous, but they drew reassurance from the Federal Reserve's prompt provision of liquidity and the large number of corporations announcing stock buy-backs. During the remainder of the year, the market settled into a trading range that left the Dow at the end of 1987 quite close to its year-earlier level.

A wide range of explanations for the crash has been offered, and many factors may have contributed. However, no political or economic event occurred between the market's close on Friday and on Monday that appears capable of explaining such a huge revaluation of the net worth of U.S. corporations. To an extent, the stock market appeared to be reacting simply to itself; in increasingly heavy trading on the preceding Wednesday, Thursday, and Friday, the Dow had lost a total of 261 points, and on October 19, as more individuals and institutions became aware of the deepening plunge in stocks that day and tried to sell, the decline cumulated.

A survey regarding the factors that had propelled stock prices downward was included in *The Report of the Presidential Task Force on Market Mechanisms*, which reviewed the stock market break. A majority of the market participants and other interested parties that responded to the survey viewed technical and psychological factors, especially "sheer panic," as the cause of the intense selling pressure on October 19. By contrast, fundamental factors, such as rising interest rates, overvaluation of the market, and the large trade and budget deficits, were described as the primary cause of the preceding week's decline.

Some commonly watched measures of stock values lend support to the proposition that stocks were overvalued before mid-October. Dividend yields on stocks were well below their postwar average, while

price/earnings ratios had soared to highs attained only briefly in recent decades. Since the beginning of 1987, stock prices had skyrocketed amid reports of escalating corporate earnings and robust economic growth. But while stock prices were soaring, bond prices were dropping, creating an unusual divergence between the two markets. In a sense, on October 19 the stock market caught up with the bond market.

Rising interest rates certainly were a factor in the stock market's decline. As noted above, rates had risen sharply in the weeks preceding the crash, and one major bank announced another half percentage point hike in its prime rate on the Thursday before the plunge. Moreover, the outlook for even higher interest rates had been bolstered by the lack of improvement in the monthly U.S. trade figures. The slower-than-expected turnaround in the trade deficit implied to some that further adjustments—either to exchange rates or to foreign or domestic fiscal or monetary policies—would be necessary to stimulate U.S. exports and reduce U.S. import growth.

Several additional factors may have played a role in the market's decline. In particular, publication of the large trade deficits appeared to strengthen the position of those supporting protectionist trade legislation, the passage of which would seriously impair the ability of U.S. firms to do business abroad and would signal the abandonment of a longstanding U.S. commitment to an open trading system. There also were other indications that international economic policy cooperation might be endangered. In addition, the House Ways and Means Committee had just approved a tax package containing several items adversely affecting business, including a measure that would increase the cost of corporate takeovers.

THE ECONOMIC IMPLICATIONS

The damage to the financial system as a direct result of the stock market break was remarkably minor. Several brokerage firms closed their doors or merged with larger, better capitalized companies, a number of Wall Street firms announced layoffs, and the demand for portfolio insurance—which was supposed to provide a hedge against declining stocks—dropped off amid evidence that such insurance had failed to perform as expected.

Recent studies have provided much useful information concerning the events surrounding October 19. These studies deserve, and will receive, serious and careful attention. In response to the crash, however, it is important to avoid precipitous actions that might make financial markets less efficient and less flexible. The resilience of the financial system in the face of the unprecedented dive in stock prices can be read as eloquent testimony to the general adequacy of gov-

ernment regulations in this area. Regulatory authorities and market participants worked together effectively to ensure that, despite the large declines in stock prices, the financial system continued to function.

The implications of the market break for the economy, however, are harder to gauge and may ultimately be more serious, requiring a careful balance of macroeconomic policies to avoid the threat of an economic downturn. The stock market is a good, but not infallible, predictor of economic trends. While it is sufficiently reliable to be included in the Department of Commerce's index of leading indicators, it represents only 1 of 11 components in that index. The stock market tends to be overly pessimistic, erroneously predicting several additional recessions in the postwar period. But in those circumstances when a stock drop has not been followed by an economic downturn, it is often because economic policies have shifted direction, effectively preempting a recession. For example, in 1966, after the stock market had declined more than 20 percent, the Federal Reserve did an about-face, reversing much of its earlier tightening. The economy responded to the support, and a recession was avoided.

Stock prices are a leading indicator because they distill expectations about future corporate earnings, and because they affect decisions about spending and investment. Until October, when the break in the stock market affected attitudes, surveys had shown steady increases in consumer confidence during 1987. Thereafter, consumer sentiment dipped sharply, and although it has largely recovered, consumer spending behavior appears to have become more cautious.

The stock market is a barometer of confidence in the outlook, and it is a major component of the Nation's wealth. At the end of September the market value of corporate equities totaled roughly \$4.4 trillion, about \$2.3 trillion of which was held directly by the household sector. This \$2.3 trillion represented nearly one-sixth of that sector's total net worth of \$15 trillion, so a large change in the value of stocks could be expected to have an impact on household spending. Some econometric models have estimated that a \$1 decline in the value of the stock market reduces consumer spending by about 4 cents over a horizon of roughly 1 year. Thus a \$500 billion drop in stocks would mean about a \$20 billion (or 0.8 percent) reduction in consumer expenditures by the fall of 1988.

The repercussions for consumption should be mitigated, however, by the fact that the lost wealth this time had been so recently acquired. While many individuals and institutions were badly hurt financially by the plunge in prices, the decline reversed only about 1 year's gain in stock values. Even after October 19, the Dow Jones remained more than double its mid-1982 level. Nonetheless, in the at-

mosphere of uncertainty that followed the crash, there were convincing reasons to postpone decisions to spend and invest.

The stock market crash was not, as one observer put it, “a necessary, marvelous correction,” but it may have had its silver lining. In particular, as discussed below, it helped move macroeconomic policy in the direction of a more balanced posture, by adding impetus to efforts to reduce Federal spending and the deficit. In addition, by drawing an explicit parallel to the Great Depression, the stock market decline highlighted the serious dangers associated with protectionism, thereby undercutting support for protectionist trade legislation and encouraging the reduction of trade barriers. Moreover, the crash may have made enactment less likely for ill-considered Federal legislation that would inappropriately restrict the market for corporate control.

If the plunge in stock prices also causes consumers to become slightly more cautious in their spending patterns, a gentle rise in the personal saving rate and consequent added improvement in the trade balance will ensue. In this case, however, it is not true that if a little consumer retrenchment is good, a lot is better. And it is the responsibility of policymakers to watch closely and to take additional actions if it appears that a downward spiral is threatening. With appropriate policies, 1987—the market break notwithstanding—need not herald the end of the longest peacetime expansion in U.S. history.

THE POLICY RESPONSE

In the days and weeks following October 19, U.S. macroeconomic policies were reassessed. The Federal Reserve reacted promptly, indicating by word and deed that ample liquidity would be provided to help the financial system and the economy weather the stresses associated with the market break. The fiscal policy response required more negotiation and more time, but 1 month after the plunge in stock prices, the Administration and the Congress concluded an agreement to continue efforts in the direction of restraint by cutting the fiscal 1988 and 1989 budget deficits by \$30 billion and \$46 billion, respectively, from a specified baseline.

Fiscal Policy

Deficit reduction through Federal spending restraint was, and is, a high priority of the Administration. The stock market drop added urgency to Administration and congressional efforts to forge a 1988 budget that consolidated and built upon the deficit reduction progress made in fiscal 1987. At the “budget summit” set up in the wake of the stock market drop, participants agreed to a 2-year \$76 billion deficit reduction package; the resulting legislation rendered GRH automatic spending cuts unnecessary for fiscal 1988. The

spending cuts and revenue increases enacted preserve the progress on the deficit made in fiscal 1987 and set the stage for further gains.

While deficit reduction is a very important objective, it is not paramount. For example, GRH wisely allows for suspending the targets should the economy weaken markedly. In current circumstances, with the deflationary impact of the stock market decline not yet clear, progress on the fiscal deficit should continue to be made, but cautiously. The Federal Government's budget has the attractive property of providing the economy with automatic stabilizers, moving in the direction of deficit when the economy sinks and in the direction of surplus when it soars. These stabilizers should not be overridden in the pursuit of deficit reduction. Nor should the deficit reduction imperative run roughshod over considerations of economic efficiency by raising taxes that undo the benefits of tax reform and reduce incentives to work, produce, and invest.

Without question, in the long run the potential for growth in this country will be enhanced by moving toward a balanced Federal budget. Over the medium term, a tighter fiscal policy would play a major role in improving the balance between income and spending in the United States. As the government significantly reduces its demands on resources, there is an increased likelihood that the external imbalance can be righted without impairing the growth of private sector investment expenditures. If, instead, investment expenditures were to be stunted by a combination of loose fiscal policy and tight money, America's potential for future growth might be jeopardized by an increasingly outdated capital stock.

Monetary Policy

The stock market crash required—and received—an immediate monetary policy response. By the end of the day on October 19, billions of dollars of financial wealth had been lost, and fears of a possible collapse of the financial system and, ultimately, of the economy were palpable. The Federal Reserve responded promptly and unequivocally to these threats by issuing a brief statement the next day that emphasized its willingness to support the system with adequate liquidity. This statement was buttressed by open market operations that satisfied increased demands for liquidity and eased money market conditions. In the 2 weeks immediately following the crash, borrowing from the Federal Reserve declined to a level not seen since the initial tightening of policy in the spring, excess reserves soared to nearly double their usual amount, and the Federal funds rate dropped back to the 6¾ percent range that prevailed during the summer.

The stock market plunge changed the circumstances faced by monetary policymakers in an important way. The market break caused an

abrupt loss of wealth and consumer confidence, removing some of the impetus for higher growth and higher prices. The balance of risks shifted as the possibility of recession increased, and the general level of uncertainty about the outlook was heightened enormously. In these circumstances, it was appropriate for the Federal Reserve to respond by making reserves freely available.

After its initial response, however, monetary policy began to take a more cautious tack. Amid signs that the economy had strong momentum going into the fourth quarter, and with few clear indications of economic retrenchment in reaction to the crash, the Federal Reserve took no further moves to ease policy, keeping the discount rate at 6 percent. Most monetary and reserve aggregates weakened over the balance of the year. M1, M1A, and total reserves each ended the year below their pre-crash levels, and M2 remained well below its target growth range, rising at just a 4 percent rate for the year as a whole.

Immediately following the 508-point drop in the Dow, the Federal Reserve's operations were exemplary. It was in the right place at the right time, supporting the financial system with ample liquidity. While it was appropriate for the conduct of policy to change subsequently (once constant reassurances to the markets were no longer needed), the stance of monetary policy at the end of 1987 may have underestimated the risks to adequate economic growth. At the end of the year, interest rates were down from their October highs, but they remained above the levels of January through August, while monetary aggregate growth remained weak. More recently, declining interest rates and increased money growth suggest that the Federal Reserve has been more supportive of economic growth.

THE ECONOMIC OUTLOOK

The Administration's economic forecast anticipates that the rate of economic expansion will slow this year from the rapid pace set in 1987. Subsequently, growth is projected to resume at a rate that more fully reflects the economy's long-term potential and that promises further reductions in unemployment. Improvement in the U.S. real trade balance is expected to contribute to output and employment growth in coming years, as it did in 1987; this contribution will play an especially important role in 1988. Increases in the working-age population, in labor force participation rates, and in the education, skill, and experience of the work force, together with an expanding capital stock and improving technology, are projected to sustain growth of the economy's output at a rate sufficient to meet rising domestic and international demand. The inflation rate is projected to move gradually downward from the 4 percent range charac-

teristic of the current expansion toward the long-term goal of price stability. Underlying this outlook are economic policies that are assumed to support these developments.

FORECAST FOR 1988

Real GNP is forecast to rise 2.4 percent from the fourth quarter of 1987 to the fourth quarter of 1988, somewhat slower than the 3.8 percent increase in 1987. Nevertheless, output growth in 1988 is expected to generate employment growth sufficient to match increases in the labor force and to keep the unemployment rate at about its current level. As a result, the average unemployment rate during 1988 is likely to be the lowest in 13 years.

The expected slowing of real GNP growth in 1988, also widely anticipated by private forecasters, reflects economic developments during 1987, especially those during the last quarter of the year. The low rate of personal saving and the slow growth of real disposable income through the third quarter of last year already suggested some prospective slowing of growth in consumer spending—even before the stock market crash lowered household wealth and consumer confidence. Interest rates declined significantly after the market break, but they remained above their levels at the beginning of the year. Slow growth of monetary aggregates throughout 1987 points to some possible weakening of economic growth in 1988. The buildup of inventories at the end of 1987 also indicates a likely need to reduce production growth relative to final sales growth in the new year. Weighing on the other side, gains in disposable income at the end of 1987 and tax rate reductions taking effect in January 1988 are likely to support consumer spending. Declines in mortgage interest rates promise a future boost for residential construction. Perhaps most important, prospects for continued strong growth of U.S. exports look excellent. All told, however, real GNP growth in 1988 appears likely to lag behind the rapid pace of 1987.

Probably the most immediate concern is the fast pace of inventory accumulation during the fourth quarter of 1987. In particular, nonfarm inventories appeared to rise at an unsustainable rate. To correct this situation, production will have to decrease relative to final sales. Final sales are expected to show renewed growth in 1988, after being essentially flat in the final quarter of 1987. Consequently, an outright decline in production can be avoided. The inventory adjustment can be achieved through slower production growth relative to final sales growth. This essentially reverses the situation in 1987. As discussed earlier, inventory building accounted for one-half of overall economic growth last year, more than offsetting deceleration in other domestic

components of GNP. In 1988 inventories are expected to accumulate at a slower and more sustainable pace. This slowdown will have a negative impact on real GNP growth, possibly with much of the effect felt in the first half of the year. Modest gains for most other domestic components of demand and strong gains for the U.S. trade sector are expected to keep real GNP growing.

Real net exports will be one of the main sources of growth in the economy in 1988, providing nearly half of overall output growth. Rapid productivity gains in manufacturing, moderate wage increases, and the effects of past exchange-rate adjustments will continue to help U.S. businesses expand exports in foreign markets and compete against imports at home. In addition, anticipated slow growth of final demand within the U.S. economy and the possible effect of the inventory correction on imports are expected to restrain growth of imports and to contribute to net export gains.

In 1987 growth of real consumption slowed to a 0.6 percent rate from the rapid pace set earlier in the expansion, and it actually fell at a 3.8 percent annual rate in the fourth quarter. The personal saving rate finished the year 1.3 percentage points above the year-earlier rate, due entirely to the drop in consumer spending and a strong gain in disposable income during the last quarter of the year. Given the high rate of auto purchases in the third quarter of 1987, the low personal saving rate for most of the year, and the likely effects of October's stock market decline, it was widely anticipated late last year that there would be some downward adjustment in consumer spending. It appears that much of that adjustment occurred in the fourth quarter. Accordingly, as indicated in Table 1-2, real consumption spending is forecast to rise at a modest 1.9 percent rate during 1988, slightly below the projected growth rate of real disposable income, and substantially below the 4½ percent annual growth rate of real consumer spending during the first 4 years of the current expansion.

Despite slower growth of aggregate output this year, fixed investment is expected to accelerate somewhat. As reported in Table 1-2, nonresidential fixed investment is forecast to increase 4.4 percent during the current year, up from 3.7 percent last year. The improving trade picture, which is lifting capacity utilization rates in many manufacturing industries, will provide much of the motivation for increased investment. The need for additional capacity to meet demands both for exports and for import substitutes should continue to stimulate investment in equipment and nonresidential structures. Lower interest rates in 1988, partly as the result of slower economic growth and lower expected inflation, should strengthen housing demand. Residential investment, after falling in 1987, is forecast to increase 3.4 percent in 1988.

TABLE 1-2.—*Economic Outlook for 1988*

Item	1987 ¹	1988 forecast
	Percent change, fourth quarter to fourth quarter	
Real gross national product.....	3.8	2.4
Personal consumption expenditures.....	.6	1.9
Nonresidential fixed investment.....	3.7	4.4
Residential investment.....	-2.9	3.4
Federal purchases of goods and services.....	2.9	-4.6
State and local purchases of goods and services.....	3.1	2.9
GNP implicit price deflator.....	3.3	3.9
Compensation per hour ²	2.8	4.7
Output per hour ²	1.4	1.5
	Fourth quarter level	
Unemployment rate (percent) ³	5.8	5.8
Housing starts (millions of units, annual rate).....	1.5	1.7

¹ Preliminary.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.

The deficit reduction agreement concluded by the Congress and the Administration, together with earlier efforts to control Federal spending, will contribute to a decline in real Federal purchases in the current year. Increases in State and local spending are expected to offset much of this decline, leaving a small negative contribution to GNP growth from the government sector as a whole.

As discussed in Chapter 2, the United States has been notable among industrialized nations in its ability to create jobs both to meet the needs of an expanding labor force and to reduce unemployment. During the current expansion 15 million jobs have been created. Between the fourth quarter of 1986 and the fourth quarter of 1987, when real GNP rose 3.8 percent, 3 million new jobs were created, and the unemployment rate dropped from 6.8 percent to 5.8 percent. Even though slower real growth in the current year is not expected to bring further immediate reductions in the unemployment rate, it is anticipated that some 1½ million new jobs will be created as employment growth keeps pace with an expanding labor force.

Higher oil prices and higher import prices increased the 1987 inflation rate (as measured by the CPI) above the very low rate recorded in 1986. Higher import prices also are expected to contribute to consumer price inflation in 1988. However, after a year of slow growth of monetary aggregates, and in view of the expected slowing of real GNP growth, acceleration of inflation is not seen as a likely danger in 1988. On a fourth-quarter to fourth-quarter basis, the CPI

is forecast to rise 4.3 percent in 1988, a small decline from the rise in 1987. The GNP deflator, which is not affected directly by import prices, is forecast to rise 3.9 percent in 1988. The increase from 1987 primarily reflects a shifting of weights attached to different component prices used to calculate the deflator. It does not signify an acceleration of inflation.

The Administration's forecast for 1988 takes account of the favorable effects of tax reform, i.e., full implementation in January 1988 of the reduced marginal tax rates mandated by the Tax Reform Act of 1986 and continued confidence in the preservation of tax reform's incentives for growth and efficiency. Embodied in the forecast is the expectation that the budget compromise agreed to by the Administration and the Congress will be followed, and that rates of demand growth in other industrial countries will be sufficient to sustain world output growth while the U.S. trade deficit is being reduced. Also critical for the forecast is the assumption that monetary authorities will provide sufficient liquidity to support real growth without fueling an acceleration of inflation.

PROJECTIONS FOR 1989-93

The Administration's medium-term projections show real GNP growth strengthening after 1988, with growth averaging 3.3 percent annually for the period 1989 through 1993. This projection is based on the assessment that recent events in financial markets and slower growth in 1988 will not materially alter the longer run growth potential of the U.S. economy. Table 1-3 presents yearly estimates for major components of the medium-term projections. These estimates are not intended to be year-to-year forecasts; rather, they are meant to reflect underlying economic trends and Administration policies.

Implicit in the Administration's medium-term projections are important economic policy assumptions similar to those underlying the forecast for 1988. First, tax increases that would dull incentives to work, invest, and produce and that would impair the efficient allocation of resources are avoided, and the benefits of tax reform are preserved. Second, continued progress is made in reducing the Federal deficit, primarily by restraining the growth of Federal spending while allowing Federal revenues to rise with the growth of the economy. Third, government regulation continues to be directed toward legitimate interests of public policy and does not again become an excessive and unnecessary burden to enterprise and growth. Fourth, monetary authorities supply adequate liquidity to sustain economic expansion while fostering progress toward the long-run goal of price level stability. Fifth, protectionist pressures, which could provoke retaliation and hamper U.S. access to foreign markets, continue to be

TABLE 1-3.—*Administration Economic Assumptions, 1988-93*

[Calendar years]

Item	1988	1989	1990	1991	1992	1993
Percent change, year to year						
Real GNP	2.9	3.1	3.5	3.4	3.3	3.2
Real compensation per hour ¹ .....	.0	.8	1.5	1.9	2.0	1.9
Output per hour ¹	1.4	1.8	2.0	2.0	2.0	2.0
Consumer price index ²	4.3	4.1	3.6	3.2	2.7	2.2
Annual level						
Employment (millions) ³	116.1	118.1	120.0	121.9	123.8	125.5
Unemployment rate (percent) ⁴	5.8	5.6	5.4	5.3	5.2	5.2

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.

resisted successfully. This last assumption is especially important in view of the contribution that an improving U.S. trade balance is projected to make to overall U.S. economic growth in the medium term. It is crucial that American businesses be permitted to compete in markets that are as free as possible from the distorting effects of trade barriers.

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. Business fixed investment grew 3.7 percent in 1987, and it is expected to continue expanding over the next 6 years in response to a growing economy. Strong growth of manufacturing output and increases in capacity utilization in manufacturing industries provided an important stimulus to investment growth in 1987. This development was related to strong growth of U.S. exports, which is expected to persist in 1988 and later years and thus support future investment growth.

More generally, it is the view of the Administration that the best way to promote investment is to maintain a stable, growing, and flexible economy that can profitably employ an ever-larger stock of physical and human capital. The Administration has sought by means of tax reform, deregulation, privatization, and other policies to provide such an environment. Chapter 5 of this *Report* discusses in greater detail the proper governmental role in promoting economic efficiency and investment, particularly investment in human capital and in research and development.

The Administration's estimates of important measures that address goals specified in the Full Employment and Balanced Growth Act are summarized in Table 1-3. Projected increases in output and employment, higher real income and productivity growth, and lower inflation and unemployment will move the economy along the path to the targets set by the act. As was discussed earlier, 15 million jobs have been created during this expansion in an environment of decelerating inflation, and more can be accomplished in coming years. Chapter 2 documents in more detail the progress made so far in attaining the goals specified in the act and outlines the prospects for future gains.

DETERMINANTS OF GROWTH 1988-93

The long-run improvement in the Nation's standard of living implied by the Administration's economic projections hinges on the continued expansion of the economy's capacity to produce. Important determinants of this capacity are the supply of labor, its level of utilization, and its productive ability. The supply of labor is influenced by the size of the population and its demographic characteristics, by incentives to undertake employment in the market economy, and by the cyclical state of the economy. The level of utilization of the labor force, of course, responds primarily to fluctuations in the level of economic activity. The productivity of labor depends on the education, experience, and skills of the labor force, on the supplies of physical capital and other cooperating factors of production, on the technological efficiency of production processes, and on the economic efficiency of resource allocation. Except for the level of utilization of labor, the behavior of the determinants of the economy's productive capacity is governed mainly by long-term developments in the economy, and is influenced by government policies that affect these longer term developments. Favorable longer term trends and policies directed at improving growth 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.

The sources of growth in the economy's productive potential that underlie the Administration's medium-term projections are organized into an accounting framework in Table 1-4. 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 displays growth from the peak of the last business cycle through 1987, and the final column presents growth rates over the projection period, which extends through 1993.

TABLE 1-4.—*Accounting for Growth in Real GNP, 1948-93*

[Average annual percent change]

Item	1948 IV to 1981 III	1973 IV to 1981 III	1981 III to 1987 IV ¹	1987 IV ¹ to 1993 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	.1	.2
7) EQUALS: Nonfarm business employment	1.7	2.1	2.0	1.7
8) PLUS: Average weekly hours (nonfarm business)	-.4	-.6	.0	-.1
9) EQUALS: Hours of all persons (nonfarm business)	1.4	1.5	2.0	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	3.4	3.5
12) LESS: Nonfarm business output as share of real GNP .....	.0	-.1	.6	.3
13) EQUALS: Real GNP	3.3	2.2	2.8	3.2

¹ Data for 1987 are preliminary.

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.

Growth of the labor force is expected to be somewhat slower during the projection period than earlier in the postwar era. As Table 1-4 shows, labor force growth is determined by growth in the adult population and by increases in labor force participation (the fraction of the adult population in the labor force). The gradual decline in the growth rate of the adult population that has occurred since the baby-boom generation reached adulthood in the 1960s and 1970s is expected to continue into the next decade. Also, strongly rising rates of labor force participation that have existed since the 1970s are expected to continue in coming years. Increases in overall participation likely will reflect continued entry of women into the work force, higher participation by youth as they make up a smaller proportion of the population, and a slowing of the decline in participation by people over 55. Significantly lower marginal tax rates on labor income 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.

Civilian employment is projected to grow slightly faster than the labor force from 1988 to 1993, reflecting further modest declines in the rate of unemployment. The 0.1 percent annual increase in the employment rate documented in the last column of the table reflects the estimated decline in the unemployment rate from current levels

to 5.2 percent by 1993. (Chapter 2 discusses the prospects for reductions in unemployment in coming years.)

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 1-4. 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 are made 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 arrived at on the final line of Table 1-4.

The table shows that the average growth rate of the economy through 1993 is projected to be almost the same as the average rate of the postwar era, despite slower growth of the adult population. Growth of nonfarm business output averages 3.5 percent annually for the projection period, slightly higher than the 3.3 percent average for the 1948-87 period. Slower population growth is projected to be offset by continued strong increases in labor force participation and a higher rate of productivity growth.

Critical to these projections is the assumption of a continued pickup in productivity growth from the low rates experienced during the 1970s and early 1980s. This assumption recognizes a number of favorable trends in the economy that are lifting productivity growth, as well as policy initiatives that should 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. Furthermore, labor productivity growth should rise as the result of increasing the ratio of the stock of physical capital to labor. Slower growth of the labor force will facilitate this process of "capital deepening" in coming years. Continued stability and gradual decline of the inflation rate also should contribute to stronger productivity growth by removing a major cause of distortions in the allocation of capital. 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 rather than having to focus so heavily on investments that reduce energy costs.

Government policies also should 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 technologi-

cal change. Government initiatives to improve education and to promote investment in knowledge and human capital also should 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 more fully their productive potential.

CONCLUSION

The current economic expansion entered its sixth year in 1987 and became the longest peacetime expansion in U.S. economic history. Real GNP recorded a strong 3.8 percent gain last year, 3 million new jobs were created, and the unemployment rate dropped by nearly a full percentage point. Early in the year, inflation rose temporarily into the 5 percent range, due primarily to rising energy prices. For the year as a whole, however, inflation remained in the 4 percent range characteristic of the current expansion. An important transition was made from an expansion led by growth of domestic demand and with a deteriorating trade position, to one in which improving real net exports made an important positive contribution to growth. The manufacturing sector in particular benefited from the improving trade situation, recording substantial gains in employment and output. Dramatic progress was made in reducing the Federal deficit, with a cut of one-third achieved in fiscal 1987.

However, some of the developments in 1987, particularly in the last quarter, suggest a slower pace of economic advance in 1988. Interest rates rose persistently through the first three quarters of 1987, due primarily to the vigor of the expansion, to increased worries about higher inflation and a lower dollar, and to a tightening of monetary policy after 2 years of relative ease. After the stock market drop on October 19, interest rates declined significantly, but still closed the year above the levels at which they had started it. The decline in stock prices cut the market value of equities back essentially to the level at the end of 1986. This loss of wealth, together with the effect of the stock market break on consumer confidence, was widely anticipated to dampen the growth of consumer spending somewhat. In the fourth quarter of 1987 output continued to grow strongly, but it ran well ahead of final demand, leading to a buildup of inventories. Correction of this situation implies a period in which output grows more slowly than final demand. During 1988 strong growth of exports, some recovery of consumer spending, and anticipated growth of fixed investment should enable this inventory correction to be achieved in the context of continued economic expansion.

In sum, the longevity of the current expansion and the robust growth exhibited in its most recent year testify convincingly to the dynamism and resilience of the U.S. economy. Inevitably, no economic expansion proceeds at an absolutely even pace. The economy had a good year in 1987—better than in 1986, and certainly much better than in past years of recession or high inflation. This year does not promise to be quite as good as 1987. However, the mistakes of the past are not being repeated. Inflationary pressures are not being built up that will once again distort the economy and impair its growth, ultimately bringing on the wrenching readjustments of disinflation before a stable foundation for economic progress can be reestablished. Further progress toward the long-term goal of price level stability is in prospect. The Federal deficit has been reduced substantially, and agreement has been reached on further reductions that do not undermine the benefits of low and stable marginal tax rates. The real trade deficit has begun to decline, and its further narrowing promises to be an important source of strength for the U.S. economy. The present economic expansion, and the substantial benefits it brings, can continue through 1988 and beyond.

CHAPTER 2

Rising Employment, Productivity, and Income

“MAXIMUM EMPLOYMENT, PRODUCTION, and purchasing power” are the fundamental goals of economic policy established by the Employment Act of 1946. These goals are among the most important criteria by which the success of the Administration’s economic policies must be assessed. The overall record of the last 7 years is good. Since the longest peacetime expansion began in November 1982, 15 million new jobs have been created; production, as measured by real gross national product (GNP), has increased by almost 23 percent; living standards, as measured by real GNP per capita, have grown at an average annual rate of 3.2 percent; and inflation is down from double digits to a 4 percent annual rate.

Despite these accomplishments questions have been raised about the breadth of U.S. economic growth, the strength of the industrial base, and the rate at which incomes and productivity are rising. And as the unemployment rate recently approached its lowest levels in 15 years, people have wondered if further reductions in unemployment will accelerate inflation, as has happened in the past.

Many of these concerns are based on misconceptions about recent trends in employment, productivity, and income growth. These trends indicate that (1) most major demographic groups have shared in the employment and income gains realized during the current expansion; (2) employment growth has been strong particularly in high-paying occupations; (3) the U.S. industrial base remains strong and has not lost ground to other sectors of the economy; (4) incomes and productivity have rebounded after a period of slow growth in the 1970s; and (5) as U.S. economic growth continues, further reductions in the unemployment rate can be sustained without the damaging effects of accelerated wage and price inflation.

These features of the current expansion have not only ensured increased employment, production, and income; they also have improved the prospects for future growth. By virtue of its longevity and steadiness, the recent economic expansion has simultaneously improved both living standards, through increased employment and incomes, and competitiveness, through improved productivity. These

gains in competitiveness can be expected to generate further gains in employment and incomes in the future.

EMPLOYMENT AND OUTPUT

Strong employment growth is one of the outstanding features of the current expansion. Since the expansion began in November 1982, total employment has increased by 15 million, and the unemployment rate has fallen by 4.9 percentage points to 5.7 percent. By December 1987 the proportion of the working-age population employed reached a record 62.3 percent, and the unemployment rate stood at its lowest level since July 1979, and within 0.2 percentage point of its lowest level since 1974.

These employment gains exceeded the average rate of growth experienced in other postwar expansions, and they far surpassed the growth rates of other major industrial countries. Employment has risen at a 2.7 percent annual rate as compared to a 2.5 percent rate in past expansions. The U.S. economy has added three times as many workers as the six other economic summit countries combined, as measured from either 1973 or 1982. This accomplishment is remarkable, considering that the combined working-age populations of these countries are more than one and one-half times the working-age population of the United States. This difference in growth reflects not only the rapidly growing U.S. labor force, but also the more than tripling of unemployment rates in France, Germany, and the United Kingdom since the mid-1970s.

These strong gains in U.S. employment have been associated with a brisk rate of growth in real output. The real value of goods and services produced in the U.S. economy has increased at an annual rate of 4.2 percent since the expansion began, a pace that is comparable to the average rate of growth in other U.S. postwar expansions, but exceeds the rate of growth experienced by many other major industrial countries. Only two other postwar expansions, the first beginning in 1949 and including the Korean war, and the second beginning in 1961 and including the Vietnam war, have had faster real output growth over a 5-year period.

The recent strength of GNP growth in the United States as compared to other industrial countries marks a break from past trends. Between 1960 and 1980 real GNP growth in the United States lagged behind output growth in the other six economic summit countries, except the United Kingdom. In contrast, since 1982 only output growth in Canada has exceeded growth in the United States.

THE BREADTH OF EMPLOYMENT GAINS

Increases in employment and reductions in unemployment during the current expansion have affected all major demographic groups and virtually all areas of the country. During the current expansion unemployment rates for men and women have fallen by 5.4 and 4.3 percentage points, respectively, recording their largest declines of any expansion in the postwar era. This progress reflects both the depth of the 1981-82 recession, and the durability of the current expansion. Moreover, during this expansion, the unemployment rate for women has fallen to nearly the same level as the unemployment rate for men, in contrast to earlier periods when the rates for women were significantly higher than those for men.

Gains in employment and reductions in unemployment rates have been particularly large for minority groups. Employment of black workers has risen by 2.4 million since November 1982, with black female employment rising by 1.3 million and black male employment rising by 1.1 million. As shown in Table 2-1, these employment gains are significantly larger than those for other workers. As employment has risen, unemployment rates for black males and black females have fallen by 9.9 and 6.1 percentage points, respectively. Both the gains in employment and reductions in unemployment rates are substantially larger than those recorded during the 1975-80 expansion.

TABLE 2-1.—*Changes in Employment and Unemployment by Selected Demographic Groups, 1975-87*

Demographic group ¹	Employment			Unemployment rate		
	1975 to 1980	1980 to 1982	1982 to 1987	1975 to 1980	1980 to 1982	1982 to 1987
	Average annual percent change			Percentage point change		
ALL CIVILIAN WORKERS	3.3	-0.3	2.7	-2.3	4.5	-5.0
Females	4.8	.9	3.3	-2.7	3.3	-4.3
Males	2.3	-1.2	2.3	-2.1	5.3	-5.4
Both sexes 16-19	2.6	-7.3	1.0	-3.4	7.6	-8.0
Black	3.8	-.8	4.7	-2.1	7.2	-8.0
Females	4.9	.1	5.1	-2.3	5.6	-6.1
Males	2.9	-1.7	4.4	-1.8	8.7	-9.9
Both sexes 16-19	2.3	-9.3	8.2	-2.9	11.2	-16.1
Hispanic	9.3	1.2	6.8	-3.4	6.5	-7.1

¹ Persons 16 years of age and over, except as noted.

Note.—Changes are measured from business cycle trough in March 1975 to business cycle peak in January 1980, from peak in January 1980 to trough in November 1982, and from trough in November 1982 to December 1987.

Source: Department of Labor, Bureau of Labor Statistics.

Civilian employment of Hispanic workers has risen 2.3 million since the expansion began. In percentage terms the employment of Hispanics has risen much faster than the rest of the work force, although more slowly than the rapid pace set during the late 1970s.

The rapid pace of Hispanic employment growth during the 1970s was partially due to rapid growth in the Hispanic labor force, which between 1973 and 1980 grew by 8.6 percent per year. Since 1982 the rate of Hispanic labor force growth has fallen by about one-third, and this slowdown accounts for the difference in employment growth during these two expansions. In recent years the pace of Hispanic employment growth has exceeded the rate of growth in their labor force, thus allowing their unemployment rate to fall by 7.1 percentage points.

Youth employment has risen relatively slowly during the current expansion, reflecting slower growth of the population between 16 and 19 years of age than during the 1970s. Yet employment gains for black youths have been among the strongest of all demographic groups. During 1987 alone employment of black teenagers increased by nearly the same amount as it did during the entire 1975-80 expansion. At the same time unemployment rates, especially for black youths, have declined dramatically. For all youths the unemployment rate declined by 8.0 percentage points between November 1982 and December 1987 to reach its lowest level in 8 years. For black youths the unemployment rate declined by 16.1 percentage points to reach its lowest level in 13 years. Unemployment among black youths is, however, still unacceptably high.

Gains in employment and reductions in unemployment rates also have been widespread geographically. Between November 1982 and November 1987, total employment increased in all but three States. It increased by more than 5 percent in 43 States, and by more than 10 percent in 38 States. During this period unemployment rates decreased in all but 2 States, declining by at least 2 percentage points in 39 States, and by at least 4 percentage points in 27 States. Most States with small employment gains and small unemployment rate reductions were energy producers that were affected adversely by the decline in energy prices, especially during 1986.

The large and widespread gains in employment and reductions in unemployment rates during the past 5 years are primary benefits of a long and vigorous economic expansion. These gains demonstrate the principle that economic growth benefits all groups who participate in the economic system. And conversely, as shown in Table 2-1, virtually all groups are injured during periods without economic growth, as occurred between 1980 and 1982.

CHANGES IN JOB QUALITY

Employment gains during the current expansion have been largest in higher paying occupations. Nearly two-thirds of the new employment growth has been in managerial, professional, technical, sales, or

precision production occupations. Within these broadly defined occupational categories, employment growth has been strong for a wide variety of jobs. It has been less vigorous in lower paying, low-skilled occupations and in part-time work.

For full-time workers, data recently available on employment and earnings in nearly 500 occupations show that about 50 percent of the increase in full-time employment between 1983 and 1986 occurred in occupations with real median earnings of at least \$20,000 per year. The median earnings of these occupations were at least 10 percent above the median earnings of all full-time workers. Managerial and administrative jobs, which tend to pay the highest wages and salaries and employ the most educated workers, accounted for 21 percent of the gains in employment, even though these occupations accounted for only 11 percent of all existing jobs in 1983.

In contrast, in low-paying occupations such as food preparation and services, janitorial services, and retail sales, where new job growth is commonly thought to be strong, the share of new employment growth was almost the same as the share of existing jobs. Employment growth was smallest, relative to its share of all jobs, for machine operators and other semiskilled blue-collar occupations.

Moreover, studies have indicated that the share of total full-time employment accounted for by the lowest paying occupations declined during the 1970s and has continued to fall during the current expansion, while the share accounted for by mid- and high-paying occupations has increased. Thus the growth in employment during the current expansion has not occurred solely in higher or lower paying occupations with fewer employed in the occupations in between.

The shift in employment toward higher paying occupations among full-time workers does not mask a shift from full-time to part-time employment. More than 90 percent of the increase in employment during the current expansion has been in full-time work. This share exceeds the share of full-time employment in the civilian workforce. For those employees who work part time, the vast majority, nearly 80 percent, work part time voluntarily, according to surveys conducted by the Bureau of Labor Statistics (BLS). The fraction of part-time workers who report that they would prefer to work full time rose in the late 1970s. After increasing substantially during the 1980 and 1981-82 recessions, it has fallen steadily during the current expansion.

SHIFTS IN SECTORAL OUTPUT AND EMPLOYMENT

During the current expansion real manufacturing output has increased more rapidly than real GNP, offsetting the effects of the recession and pushing the share of manufacturing output in real GNP

very close to its peak for the postwar period. The share of final goods (as distinct from services and structures) has also risen and approached its highest level since 1960. In fact, except for business cycle movements, the shares of real manufacturing output and real final goods output have been remarkably stable for 25 years. In contrast, there has been a long and relatively steady decline in the fraction of all workers who are employed in manufacturing or in goods-producing industries, and a consistent upward trend of the fraction employed in service-producing industries. More rapid gains in productivity in manufacturing and in goods-producing industries than in the rest of the economy have allowed declining shares of workers in these sectors to produce roughly constant shares of real GNP.

Shifts in Final Product

The value of the economy's total final product, as measured by real GNP, is divided officially into three broad categories: goods, services, and structures. The value of these products includes the contribution of intermediate goods and services from many different industries. For example, the price of an automobile includes the value of the transportation provided by the railroad industry, the value of the electricity provided by the utility industry, and the value of the salesperson's time provided by the retail industry. These particular services are not included as final services, since their value is already embodied in the output of the goods sector.

Final goods and structures account for more than one-half of total output. These products' share of real GNP has fallen slowly during the postwar era, while the share of final services has risen gradually. However, since 1960 final goods' share of GNP has remained roughly unchanged. In 1987 final goods represented 43 percent of GNP, the same share as in 1965 and only 0.7 percentage point below its level in 1960. During the last two decades the slight gains in final services have coincided with a declining share of output in structures. The relative stability of the shares of final goods, services, and structures in total GNP demonstrates that the United States is not becoming primarily a service economy.

While final goods' share of GNP has remained stable over the last two decades, there have been dramatic changes in the types of final goods produced and consumed. Since 1948 production of durable goods has risen substantially relative to nondurable goods. Even within these product categories, there have been changes in the goods demanded by consumers. In durables, consumption of books and kitchen appliances has fallen relative to motor vehicles and electronic equipment. Similarly, in nondurables, consumption of basic food stuffs has fallen relative to processed foods. These changes in

the distribution of production across final products reflect the responses of the economy to changes in consumer demand.

Shifts in Value Added

GNP also can be partitioned based on the contributions that particular industries or sectors make to the value of the final product. Value added (or GNP originating) in an industry is the difference between the value of its output and the value of inputs purchased from other industries. For example, the measure of value added in the motor vehicle industry removes the contribution of the railroad, public utility, and retail industries from the total value of an automobile. The remaining portion, the value added, represents the industry's contribution to GNP.

Therefore the value added of the goods-producing sector (which includes agriculture, mining, construction, and manufacturing) is not equal to the final value of goods and structures. In 1986 real value added by the goods-producing sectors accounted for 32 percent of GNP, whereas the share accounted for by final goods and structures was 53 percent. The share of value added for the goods-producing industries has declined throughout the postwar period. The economy's goods-producing sector accounted for 42 percent of GNP in 1948, 40 percent in 1960, and 36 percent in 1973. The declining share in this sector has occurred entirely as a result of declining shares of value added in agriculture, mining, and construction.

The share of value added in manufacturing has remained remarkably stable throughout the postwar years, fluctuating in a narrow range between 19 and 23 percent. The manufacturing sector's share of value added has risen since the last business cycle peak in 1981. In 1986 manufacturing accounted for 22 percent of GNP, about 1 percentage point above its share in 1981, and only 0.7 percentage point below its peak share in 1973.

Manufacturing's share of GNP has remained stable despite substantial changes in the types of final goods, services, and structures produced in the economy. These changes reflect the shifting demands for final goods by consumers and for intermediate goods by producers. To accommodate the shifting demand for new products, capital and labor have been reemployed in new tasks in the manufacturing sector. This sector has maintained its share of total output because it has adapted to the changing demand for final goods, and because it continues to be an important supplier of intermediate products for final services.

Shifts in Employment

Large shifts in employment of labor across industrial sectors have occurred during the postwar period. The share of employment in

service-producing industries has risen steadily. In 1948 these industries (which include transportation, communications, public utilities, wholesale and retail trade, finance, insurance, and real estate, and other business and personal services) accounted for nearly 58 percent of all nonfarm payroll employees, and they contributed more than 59 percent of total GNP. Over the years the share of employment in the service-producing sector increased faster than its share of GNP. Recently the share of employed individuals working in this sector has exceeded 75 percent, while the share of total value added in this sector has topped 67 percent.

Movements in the share of employment in goods-producing industries are roughly the opposite of such movements in the share for service-producing industries. The share of goods-producing employment and manufacturing employment has declined throughout the postwar era. Currently there are 1.6 million fewer nonfarm jobs in the goods-producing sector and more than 1.9 million fewer jobs in manufacturing than in 1979. The share of total employment in manufacturing has declined from 35 percent in 1948 to 26 percent in 1973 to 19 percent in 1987. Moreover, this trend is not confined to the United States. In all the major industrial countries, shares of employment in manufacturing have been declining since at least 1960, and in all except Japan the absolute level of employment in manufacturing has been declining since 1979.

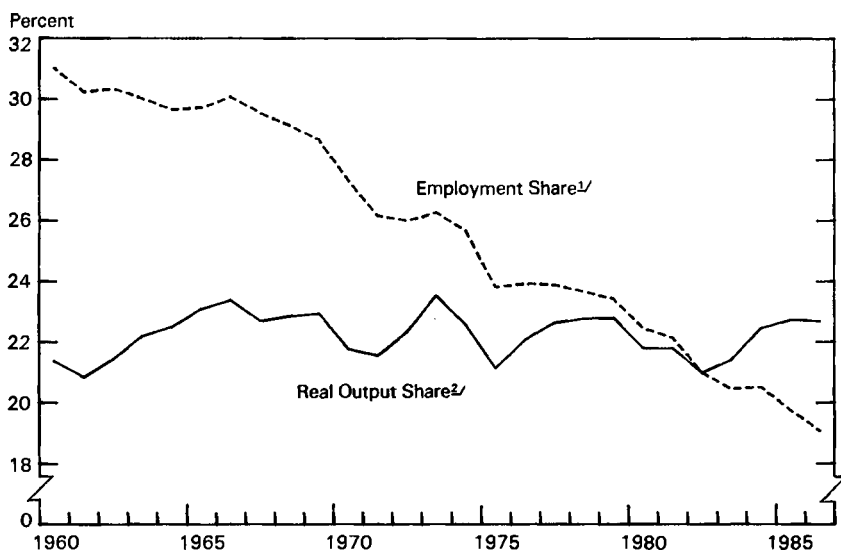
CHANGING PATTERNS OF DEMAND AND PRODUCTIVITY

While manufacturing's share of employment has declined, its share of value added has remained roughly constant. These trends are illustrated by Chart 2-1, which compares the ratio of manufacturing employment to total nonfarm employment with the ratio of value added in manufacturing to real nonagricultural gross domestic product (GDP). In 1960 about 31 percent of all nonfarm workers were employed in manufacturing and produced approximately 21 percent of total output. By 1986 a slightly larger proportion of total output was produced by 19 percent of nonfarm workers. This trend does not suggest any long-term weakness in the manufacturing sector. Instead, it reflects stronger productivity growth in manufacturing than in other sectors of the economy.

More generally, the rise in the share of employment in the service-producing sector and the corresponding decline in the manufacturing sector reflect expected responses to changing patterns of demand for goods and services as well as differential rates of productivity growth among various sectors of the economy. For most of the past 40 years the output of services has risen faster than real GNP, because households have wanted to spend a larger fraction of their rising incomes

Chart 2-1

Real Output and Employment Shares in Manufacturing



^{1/} Manufacturing as percent of nonfarm payroll employment.

^{2/} Manufacturing as percent of real gross domestic product less agriculture, forestry, and fisheries.

Sources: Department of Commerce and Department of Labor.

on services. The output of services can rise faster than GNP when productivity growth is more rapid in the service-producing sector than in the rest of the economy, or when employment expands more quickly in services than in goods. However, productivity growth in much of the service-producing sector lagged somewhat behind productivity growth in the goods-producing sector until 1973, and it has stagnated since then. The large gains in output of services have been fueled not by productivity advances but by relatively large increases in employment. Thus the increase in the share of employment in the service sector is the result of growing demand and lagging measured productivity.

Like manufacturing, the agricultural sector's share of total employment has exhibited a downward trend for some time. Productivity growth in agriculture has been quite strong, while its share of national output has been falling. As discussed in Chapter 5, it is estimated that in 1810 approximately 80 percent of the U.S. labor force was employed in agriculture. In 1910 agriculture's share was approximately 30 percent; in 1987 it had fallen to 3 percent. During this

long period the share of agricultural output declined less rapidly than the share of agricultural employment, reflecting rapid increases in productivity.

Even though agricultural employment as a share of total employment and agricultural output as a share of total output have decreased, Americans today are significantly better fed and spend a smaller fraction of their incomes on agricultural products than they did during the 19th century. Because of rapid and sustained increases in agricultural productivity, the small fraction of the U.S. labor force working in agriculture is able to produce all the food required for domestic consumption, plus a substantial surplus available for export. Forestalling the downward trends in the shares of agricultural employment and output would have been counterproductive. Despite the interference of many agricultural policies, resources have moved into and out of agriculture in response to changes in consumer demand, agricultural productivity, and nonfarm opportunities.

Similarly, it would be a serious policy error to attempt to maintain the share of output or employment in manufacturing, or in any other industry. The relative constancy of the share of U.S. manufacturing output for the past 40 years is a consequence of particular circumstances. It is not an appropriate objective for economic policy. The declining share of employment in manufacturing in the United States and other industrial countries is not a sign of economic weakness. Indeed, even though it has contributed to a decline in the share of employment in manufacturing, the acceleration of productivity growth in U.S. manufacturing during the 1980s is unambiguously a source of economic strength.

INCOME AND PRODUCTIVITY

By the broadest available measure, American living standards have resumed a steady rate of increase during the 1980s, after a period of sluggish growth in the 1970s. To a large extent, these gains reflect improved productivity growth. During the 1970s, gains in real GNP per capita resulted primarily from an increasing proportion of working-age persons in the population and signified little gain for individual workers. During the 1980s, by contrast, improved productivity growth has allowed more rapid growth in compensation per worker. These gains in labor compensation are broad-based, benefiting all major demographic groups. Furthermore, the upswing in productivity growth will sustain gains in both per capita income and labor compensation in the coming years.

Another beneficial effect of improved productivity growth has been its impact on the competitiveness of the manufacturing sector. Com-

bined with slower compensation growth, higher productivity growth in manufacturing has reduced the real cost of producing manufactured goods. The benefits of these cost savings have been realized broadly across the economy through lower consumer prices. Together with the recent depreciation of the dollar, lower real costs and lower relative prices of manufactured products have enhanced the competitiveness of U.S. manufacturers in world markets, thereby contributing to recent strong growth of exports.

These gains would have been impossible, however, had labor and management failed to take advantage of opportunities for productivity improvement, or if they had failed to meet the challenges posed by foreign competition. The many collective bargaining agreements that have called for wage freezes or concessions, and that have addressed labor's concerns about job security and management's concerns about work rules, reflect the cooperation of labor and management. As a result, the manufacturing sector has corrected many of the important problems that plagued it a decade ago, and it stands well-positioned for the future.

INCREASES IN LIVING STANDARDS

The broadest measure of the economy's ability to support the living standards of the American people is the real value of all goods and services produced in the economy each year, divided by the total population, i.e., real GNP per capita. As indicated in Table 2-2, real GNP per capita has grown at an annual rate of 1.8 percent since the last business cycle peak in 1981. This rate of growth has approached the rapid rate recorded between 1948 and 1973, has exceeded the rate experienced between the business cycle peaks in 1973 and 1981, and has equaled the average rate achieved in the United States since 1900.

TABLE 2-2.—*Growth in Real GNP per Capita and Productivity, 1948-87*
[Average annual percent change]

Period	Real GNP per capita	Contribution to real GNP per capita			Business sector productivity ¹
		Real GNP per worker	Employ- ment- population ratio	Working- age population as share of total	
1948 IV to 1966 IV.....	2.2	2.6	0.1	-0.4	3.2
1966 IV to 1973 IV.....	2.0	.8	.2	1.0	2.0
1973 IV to 1981 III.....	1.1	.2	.2	.8	.7
1981 III to 1987 IV ²	1.8	.8	.8	.2	1.5

¹ Output per hour, all persons.

² Preliminary.

Sources: Department of Commerce (Bureau of Economic Analysis) and Department of Labor (Bureau of Labor Statistics).

Real GNP per capita rises when a larger fraction of the population works or when those who work produce more. As indicated in Table 2-2, the importance of these two factors in generating higher living standards has differed over time. Between 1948 and 1966 real GNP per worker grew rapidly and more than offset the decline in the proportion of the population at work. The high birth rates of the 1950s increased the share of children in the population, thus causing a decline in the share of working-age persons. Between the mid-1960s and the early 1980s productivity growth declined significantly, but an increase in the fraction of the population at work partially offset these losses and helped to maintain a steady rate of growth in real GNP per capita.

Productivity growth slowed during the mid-1960s, just as the baby-boom generation began to enter the labor force. This influx of inexperienced workers slowed productivity growth but did not entirely account for the slowdown. From 1966 to 1973 growth in real GNP per worker averaged only one-third of its earlier postwar rate, and it nearly ground to a halt between 1973 and 1981. Yet living standards continued to rise during these periods, because the fraction of the population employed increased dramatically. As the baby-boom generation matured, the proportion of children in the population fell, and the potential pool of workers increased. During the middle and late 1970s nearly all gains in living standards resulted from an increase in the share of the population at work.

In contrast, living standards have risen faster since 1981 because of accelerated productivity growth. While the rate of growth of real GNP per worker remains well below that achieved during the early postwar era, these gains represent a substantial improvement over the 1970s. In addition to the encouraging gains in productivity growth, increases in the fraction of the population working continue to contribute to rising living standards. During the current decade, as women have entered the labor force in increasing numbers, the employment to population ratio has grown rapidly. This effect has been offset by slower growth in the share of the population 16 years of age and older. The decline in the birth rate since 1960 ensured that during the 1980s the share of adults in the population would grow more slowly and that increases in this share would play a lesser role in raising living standards than they did in earlier decades.

In the longer term, strong growth in living standards at rates comparable to those of the early postwar era will require continued steady growth in productivity. Increases in the fraction of the population at work are likely to slow to about 0.8 percent per year; the share of working-age persons in the population is forecast to grow at 0.1 percent, and the employment-population ratio is forecast to grow

at 0.7 percent over the next 5 years (Chapter 1). Thus in the years ahead further gains in real GNP per worker will be the key to continuing rapid increases in living standards.

Gains in real GNP per worker are closely related to standard measures of productivity growth. These measures differ because labor productivity usually refers to output per hour in the business sector of the economy, rather than output per worker for the whole economy. If the second and last columns of Table 2-2 are compared, it is apparent that labor productivity growth is generally somewhat higher, but follows the same general pattern, as growth of real GNP per worker. This difference reflects both a decline in the number of hours worked per worker during the postwar period and slower measured productivity growth in the nonbusiness sector, which constitutes one-seventh of the economy. Nonetheless, the implication from these two productivity measures is that recent gains in living standards are the consequence of recent increases in labor productivity growth, and that future gains in living standards depend critically on continued labor productivity growth.

LABOR COMPENSATION AND PER CAPITA INCOME

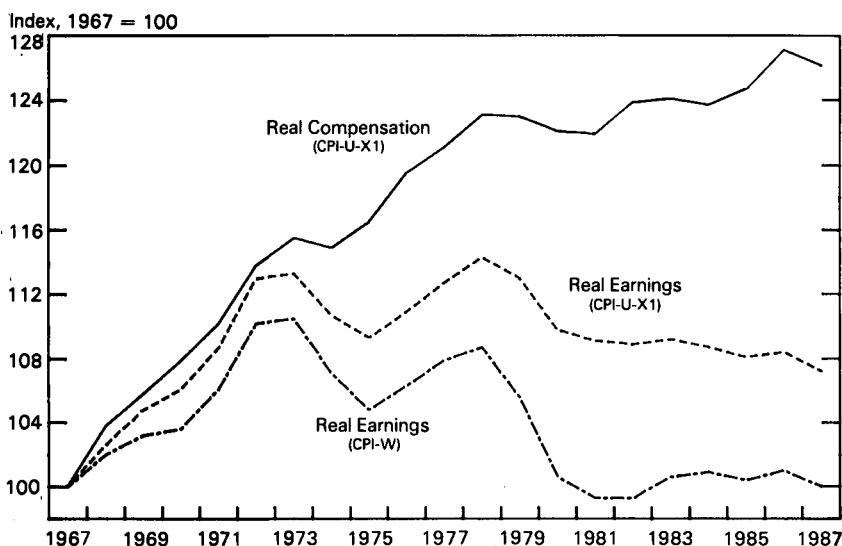
The growth of labor productivity exerts a powerful influence on the compensation earned by workers. Payments to workers, either in the form of wages and salaries or nonwage benefits, cannot consistently outstrip labor productivity growth without diminishing incentives for investment. Over time, slower investment is likely to mean slower growth in labor demand, labor productivity, and labor compensation. Conversely, strong labor productivity growth means that firms can increase their workers' pay and benefits without impairing profits.

The experience of the United States and other major industrial countries is broadly consistent with this linkage between hourly compensation and labor productivity growth. After a period of sluggish or declining growth during the 1970s, U.S. productivity and compensation growth rebounded after 1981. Recent rates of growth, however, remain below the levels attained between 1948 and 1973, when compensation and nonfarm business sector productivity grew by 2.7 percent and 2.3 percent, respectively. After 1973 the rates of productivity growth slowed considerably, and real compensation actually declined slightly. Since 1981 productivity growth has averaged 1.4 percent per year, up from 0.6 percent during the previous decade, while compensation growth has resumed its upward trend, averaging 0.7 percent per year. Similarly, in the other leading industrial countries there has been a significant slowdown in labor productivity and compensation growth since the early 1970s.

After the early 1970s measures of real labor earnings in the United States showed an even more pronounced slowdown in growth than real labor compensation. As shown in Chart 2-2, real hourly earnings (for production and nonsupervisory workers) grew rapidly during the late 1960s, reaching a peak in 1973. They then fell by 10.1 percent between 1973 and 1981, and in 1987 real hourly earnings remained 9.5 percent below their peak level. Other measures of earnings, such as real weekly earnings of usual full-time workers, are similar and were lower in 1986 than in 1973.

Chart 2-2

Real Hourly Earnings and Compensation
(Deflated by CPI-W and CPI-U-X1)



Note.—Data relate to average hourly earnings of production workers or nonsupervisory employees on nonfarm payrolls and to average hourly compensation in the nonfarm business sector (all persons). CPI-U-X1 is the consumer price index for all urban consumers incorporating a rental equivalence measure for homeownership costs. Data for 1987 are preliminary.

Sources: Department of Labor and Council of Economic Advisers.

The pattern exhibited by the real earnings data is broadly consistent with movements in labor productivity, but it significantly distorts the impression of what has been happening to the level of real payments to labor. The consumer price index (CPI), used to correct for inflation in constructing real earnings series, overstated increases in homeowner costs before 1982. This distortion caused the rate of inflation to be overstated and measures of real earnings to be too low. Furthermore, data on earnings do not include employer-provided benefits (such as most pensions and health insurance) and employer

contributions to social security. The share of such employer-provided benefits and contributions is estimated to have risen from 10 percent of labor earnings in 1967 to 16 percent in 1987.

Real labor compensation growth slowed during the 1970s, but nevertheless maintained an upward trend and is substantially above its levels of the early 1970s. The second line in Chart 2-2 shows the effect of using an alternative price index to correct for inflation when calculating real earnings. The BLS devised this index, the CPI-U-X1, to correct for the biases in the CPI during the 1970s. As seen in the chart, real earnings deflated by the CPI-U-X1 do not exhibit a substantial decline after 1973. If the measure of earnings is broadened to include other nonwage and nonsalary income, real hourly labor compensation of all workers is even higher. The third line in Chart 2-2 shows that real compensation grew between 1973 and 1981, and that it is presently 9 percent higher than in 1973.

In general, the real incomes of American families also have risen since 1973, with most of these gains recorded after 1981. Real family income measures the total labor compensation and nonlabor money income of households with two or more related persons. Real income for the median family, measured in 1986 dollars, declined from \$29,730 in 1973 to \$26,990 in 1981, and rose to only \$29,460 in 1986. As with measures of real earnings for workers, measures of real family incomes suffer from the bias in the CPI, which overestimates inflation during the 1970s. After correcting for this bias by using the CPI-U-X1, real family income still shows a \$790 decline between 1973 and 1981. However, the adjusted real median family income in 1986 was the highest in U.S. history, and \$1,430 higher than in 1973.

Changes in the composition of families account for part of the trend in real family income. Over time, an increasing number of people have set up households separate from their parents or children. Thus the number of separate households (made up of either families or unrelated individuals) has grown relative to the size of the population, and average family size has decreased.

Data on income per capita confirm that the trend toward lower family incomes during the 1970s was mainly due to smaller family sizes, not lower compensation. When the standard CPI is used to correct for inflation, real income per capita, measured in 1986 dollars, was unchanged at \$10,220 between 1973 and 1981, and then rose \$1,450 to \$11,670 in 1986. When the CPI-U-X1 is used to correct for inflation, income per capita rose \$680 between 1973 and 1981, and \$1,360 between 1981 and 1986.

Gains in real per capita income have been widespread across major demographic groups. When the CPI-U-X1 is used to adjust for infla-

tion, real per capita income for whites rose 7.7 percent between 1973 and 1981, and 13.1 percent between 1981 and 1986. For blacks, real per capita income rose 6.4 percent between 1973 and 1981, and 15.5 percent between 1981 and 1986. For Hispanics, real per capita income was up 14.0 percent between 1973 and 1981, and 7.6 percent between 1981 and 1986. These gains in real per capita income for major demographic groups, and the gains for the total population, are broadly consistent with movements in real GNP per capita and productivity.

DETERMINANTS OF PRODUCTIVITY GROWTH

Productivity growth, which contributes to gains in living standards and compensation, results from the combined effects of many factors. The productivity of labor is increased by human capital (such as education and work experience), by physical capital, by research and development, and by energy and other inputs that cooperate with labor in production. Studies that have sought to identify the total contribution of these factors generally have been able to account for about one-half of the productivity gains during the postwar period. In most studies a significant fraction of productivity growth remains ascribed to general "technological advance" that is not observed directly.

Nevertheless, there is some consensus concerning the factors that contributed to the slowing of productivity growth during the middle and late 1970s, and its subsequent reversal during the 1980s. These factors include a growing proportion of persons in the labor force with little work experience, a proliferation of new government regulations, a lower level of research and development (R&D) expenditures relative to GNP, and higher energy prices. The impact of these factors was reversed during the 1980s, yielding higher productivity growth, which seems likely to continue into the future.

In the coming years the increasing work experience of a maturing labor force and higher levels of educational attainment should yield significant gains in productivity. In addition, the policies and investments of the current decade should also contribute substantially to productivity growth. In the years ahead, the effects of tax reform, higher R&D spending, and the removal of burdensome regulation will improve productivity by encouraging greater efficiency in production.

SECTORAL DIFFERENCES IN PRODUCTIVITY GROWTH

The increase in productivity growth since 1981 has not occurred evenly across different sectors of the economy. Productivity in manufacturing rose at a rapid 4.2 percent annual rate between 1981 and 1987. These considerable productivity gains represent a substantial

improvement over the rates of growth achieved during the rest of the postwar era. From 1973 to 1981 productivity growth in this sector slowed to a 1.3 percent annual rate, after growing by 2.8 percent per year between 1948 and 1973. By comparison, the productivity performance of the nonmanufacturing sector during the last 20 years has been poor. In this sector unofficial measures of productivity growth slowed starting in the mid-1960s, remained unchanged between 1973 and 1981, and began to creep upward once again at a 0.4 percent annual rate during the current decade. Not only are these rates of growth substantially lower than those in the manufacturing sector, but they are also considerably lower than the 2.6 percent annual rate of growth realized in the nonmanufacturing sector between 1948 and 1966.

The BLS does not report official estimates of labor productivity growth for the nonmanufacturing sector or for the major components of this sector. However, the Department of Commerce's measures of real value added, together with BLS's measures of hours paid, can be used to estimate labor productivity growth for each industry between 1948 and 1986. These measures of the growth of real value added per hour are shown in Table 2-3. The data suggest that labor productivity has failed to grow in several nonmanufacturing industries since 1981, in contrast to the strong growth that has occurred in manufacturing.

TABLE 2-3.—*Growth in Value Added per Hour Paid, 1948-86*
[Average annual percent change, except as noted]

Sector	1986 output share (percent) ¹	1948 to 1973	1973 to 1981	1981 to 1986
Goods-producing:				
Farm	2.6	4.6	5.2	6.4
Mining	4.0	4.0	-6.8	4.8
Construction	5.7	.6	-2.7	-1.1
Manufacturing	27.3	2.8	1.3	4.5
Durable manufacturing	17.4	2.4	1.1	6.0
Nondurable manufacturing	9.9	3.4	1.7	2.1
Service-producing:				
Transportation	4.3	2.3	-.2	.7
Communication	3.2	5.2	4.3	3.8
Utilities	3.5	5.9	.4	1.2
Trade	21.7	2.7	.5	3.0
Wholesale	9.5	3.1	-.1	4.0
Retail	12.2	2.4	.5	2.5
Finance, insurance, and real estate	11.0	1.4	-.4	-.3
Services	15.4	2.2	.3	-.1
Government enterprises	1.5	-.1	1.2	-.8
BUSINESS	100.0	2.9	.6	1.7

¹ Detail does not add to total because of rounding.

Sources: Department of Commerce (Bureau of Economic Analysis), Department of Labor (Bureau of Labor Statistics), and Council of Economic Advisers.

By these value-added measures of productivity growth, productivity gains in agriculture and communications have been strong throughout the postwar period. In manufacturing, mining, and wholesale and retail trade, productivity grew rapidly until the early 1970s, slowed after 1973, and has accelerated since 1981 to match or exceed its early postwar performance. In transportation and public utilities, the pattern is similar to manufacturing, but productivity growth since 1981 has not returned to early postwar levels. In construction, in finance, insurance, and real estate (FIRE), and in services (including business services and personal services such as health care), value added per hour grew steadily until the mid-1960s and very little thereafter. Since 1981 productivity in these areas actually has fallen. In construction, for example, real value added per hour peaked in 1965 and now has fallen to its 1948 level. Given the strong recovery of productivity growth in manufacturing, and the apparent gains in mining and in wholesale and retail trade, it appears that the failure of total business sector productivity to regain its early postwar growth rate can be attributed largely to the continued sagging productivity in construction, FIRE, and service industries.

Alternative measures of productivity developed by the BLS confirm these differing patterns of productivity growth across industries. The BLS's productivity measures use gross output, instead of value added, to measure product. They are available on a selective basis for 150 industries for which the BLS has been able to quantify final output with reasonable reliability. For manufacturing industries, coverage is quite broad but not complete. The available data for manufacturing industries generally show a slowdown of productivity growth between 1973 and 1981, and an acceleration after 1981. The same holds true for most specific industries in mining and in wholesale and retail trade, though coverage is less extensive than for manufacturing.

In the transportation sector, airlines, railroads, and petroleum pipelines show a dramatic resurgence of productivity growth after a significant slowdown between 1973 and 1981. Only the series for bus carriers indicates continued sluggish productivity growth after 1981. Data on telephone productivity confirm the pattern of rapid growth in value added per hour in the communications industry indicated in Table 2-3. For FIRE, the only series available is for commercial banks; it shows a significant acceleration of productivity growth after 1981. For other service industries, coverage is limited; the available series for hotels and motels, laundry and cleaning, and beauty and barber shops cover about 7 percent of total employment in this sector. These data show declining or much slower growth in produc-

tivity since 1981. For construction, there is no available measure of productivity growth based on final output.

PROBLEMS OF PRODUCTIVITY MEASUREMENT

Based on measures of both value added and gross output per hour, productivity growth appears strong in agriculture, mining, manufacturing, communications, and wholesale and retail trade. In transportation and FIRE, the data show mixed results on the strength of productivity growth. In construction and services, measured productivity has stagnated or even fallen. The recent decline in value added per hour in construction, FIRE, and services occurred despite the introduction of new communication and information processing systems and many advances in health care technology. For these sectors, not only does the pattern of growth in value added per hour diverge from that seen in manufacturing, it also appears inconsistent with observed improvements in technology.

The forces behind the apparent deterioration of productivity in construction, FIRE, and services are not well understood. Problems in measuring value added and in apportioning output across sectors may partly explain the apparent poor productivity performance in these sectors. For example, measures of real value added are derived by deflating the nominal value of outputs and inputs by appropriate price deflators. Constructing price indexes that correctly account for changes in the quality of outputs and inputs can be difficult, especially when there is no physical output, or when changes in quality are hard to measure or even observe. The limited coverage of productivity measures based on gross output in construction, FIRE, and services indicates the problems faced in these sectors. The BLS currently is expanding the coverage of these productivity measures. In the meantime, however, they recommend that productivity measures based on value added should not be used as reliable measures of productivity in construction, FIRE, and services.

The quality of productivity measures in these sectors does not necessarily affect the reliability of measures for the business sector as a whole. Business sector productivity is not a weighted average of productivity in each industry, but is the real value of final goods, services, and structures produced per hour worked. However, since value added can be hard to measure both because of problems in measuring real output and real input, the potential for mismeasurement of business sector productivity exists as long as industries with poor measures of value added also produce final products. The final sales of construction, FIRE, and services account for about one-third of the final product in the business sector. Thus distortions of these sectors' value added increases the possibility of mismeasuring busi-

ness sector productivity. If the price index used to deflate the nominal value of final services understates the impact of quality changes, real output and business sector productivity also will be understated.

The possibility that problems of measurement may be the cause of apparently slower productivity growth in the business sector should not be overstated. For one thing, some studies indicate that only about 5 percent of final product is measured poorly. For another thing, the same procedures measured significant gains in valued added per hour in construction, FIRE, and services before the mid-1960s. Thus there is nothing inherent in these measurement procedures that would cause productivity growth in these sectors to appear to worsen in recent years. The disparity between measures of value added per hour in construction, FIRE, and services before and after the mid-1960s could be explained either by workers becoming less productive, or by increasingly severe problems of measurement. Currently, however, there is insufficient evidence to support either hypothesis.

In sum, there is clear evidence of a substantial improvement in the rate of productivity growth in manufacturing and several other sectors of the economy. These gains seem likely to continue. In contrast, there is no compelling explanation for the apparent decline in productivity in construction, FIRE, and services. It may be due partly to measurement problems. However, until improved output measures are developed, it is unlikely that productivity growth in these sectors will be better understood than it is now.

COMPETITION AND ADJUSTMENT IN MANUFACTURING

The increase in productivity growth in the business sector, and the increase in living standards since 1981, are explained largely by the dramatic strengthening of productivity growth in U.S. manufacturing. However, the benefits of stronger productivity growth in manufacturing have not been realized primarily in the real wages of manufacturing workers or in the profits of manufacturing enterprises. Instead, they have resulted in lower prices for manufactured products and greater purchasing power for consumers. This result reflects the normal operation of a competitive economy, supplemented by intense international competition in manufactured products.

In a competitive economy, relatively strong productivity growth in one sector generally will not translate into relatively faster real wage growth for that sector's workers or strong profit growth for that sector's enterprises. Price competition and the mobility of labor and capital ensure that sectoral differences in wage growth and profit growth will not persist. Instead, sectoral differences in productivity growth tend to result in lower costs in sectors with faster growing productivity, and these lower costs are passed on to consumers in the

form of lower product prices. Over the long run, wage growth in different sectors generally reflects average labor productivity growth in the whole economy. And since higher rates of return attract additional capital investment, profit rates in different sectors also tend over time to reflect the rate of return for the economy as a whole.

This process has been apparent in U.S. agriculture for many decades. Labor productivity in agriculture typically has increased two or three times faster than productivity in the U.S. economy as a whole. However, the earnings of agricultural workers and the profits of farm owners have not risen relative to comparable earnings and profits in the rest of the economy. Instead, consumers have been the primary beneficiaries of strong productivity growth in agriculture through declining relative prices of agricultural products.

Similarly, in U.S. manufacturing since 1981 the real hourly compensation of manufacturing workers has risen by 0.3 percent per year, while labor productivity growth has surged ahead at a 4.1 percent annual rate. Profits of manufacturing corporations generally leveled off during the 1980s but rose sharply in 1987. Relative to net sales, real after-tax profits of manufacturing corporations were still 10 percent below their 1978-79 averages through the first three quarters of 1987. The primary benefit from stronger productivity growth in U.S. manufacturing has been lower unit labor costs relative to the total private business sector. This reduction in costs has translated into substantial reductions in prices of manufactured products. Between 1981 and 1986 the relative unit labor costs for manufactured products have fallen by 13 percent, and the relative prices of manufacturing output have fallen by 10 percent.

Intense international competition enhanced productivity growth and influenced the allocation of its benefits among consumers, workers, and firms. The relative price of foreign manufactured products sold in U.S. markets fell sharply between 1980 and 1985. This decline in import prices was caused in large part by the strong appreciation of the U.S. dollar between 1980 and early 1985 (Chapter 3). Intense competition from foreign producers put pressure on U.S. manufacturers to keep their costs and prices down by limiting wage and profit growth and by enhancing productivity growth. The consumers of manufactured products thus were the primary beneficiaries of foreign competition and stronger productivity growth in U.S. manufacturing.

The adjustment of U.S. manufacturing to increased international competition was facilitated by the cooperation of labor and management. In manufacturing, where more than one-third of the wage and salary workers were union members in 1979, these adjustments required a break from the customary patterns of collective bargaining

agreements, in which wage increases often reflected trends in productivity growth and inflation. During the 1970s union real wage growth slowed just as productivity growth slowed, but the wages of comparable nonunion workers tended to grow even more slowly. As a consequence, the difference between the earnings of union and nonunion workers widened during the decade, implying higher relative costs for unionized firms. The combination of higher relative costs and increased foreign competition threatened the competitiveness of many U.S. industries. Manufacturing was particularly sensitive to these problems because of the relatively high levels of unionization and import competition in this sector. Continued growth of this sector required adjustments in wage demands and improvements in labor productivity.

The adjustment of U.S. workers and manufacturing firms in many cases has been especially difficult and costly. Some workers have been displaced, the real earnings of others have declined, and profits have fallen. Partially as a result of these changes, the level of unionization dropped to about 25 percent of wage and salary workers in manufacturing. Since 1984 the compensation of private nonfarm union workers has grown more slowly than for nonunion workers. As illustrated in Table 2-4, pay increases have been smaller for unionized workers in manufacturing than elsewhere in the economy. Effective nominal average wage increases in major collective bargaining settlements (agreements affecting more than 1,000 workers) in manufacturing have ranged between 1.5 percent and 5.2 percent from 1982 through 1987. Moreover, because inflation has averaged roughly 4 percent per year, many of these settlements have reduced workers' real wages.

This downward trend in real wages is due partly to the relatively large fraction of collective bargaining agreements negotiated during the 1980s that froze or cut wages. Before 1980 widespread negotiated wage freezes or outright cuts in pay were unusual, even during periods of low inflation. However, since 1981, particularly in the manufacturing sector, these agreements have become common. Even in 1987, after 5 years of economic growth, 15 percent of manufacturing workers covered by new major collective bargaining agreements accepted wage freezes or pay cuts over the life of their contracts. Moreover, the recent decline in the real compensation of union members has continued even when taking into account noncontingent lump-sum payments, which have appeared in many recent agreements.

By recognizing the challenges posed by foreign competitors, labor and management cooperated to improve the international competitiveness of U.S. manufacturing. The U.S. economy benefited substan-

TABLE 2-4.—*Measures of Changes in Compensation and Wages, 1981-87*

(Private nonfarm industries)

Sector	1981	1982	1983	1984	1985	1986	1987 ¹
Percent change ²							
Compensation:							
All industries.....	9.8	6.4	5.7	4.9	3.9	3.2	3.3
Union workers.....	10.7	7.2	5.8	4.3	2.6	2.1	2.8
Nonunion workers.....	9.4	6.0	5.7	5.2	4.6	3.6	3.6
Percent							
Average effective wage adjustment: ³							
All industries.....	9.5	6.8	4.0	3.7	3.3	2.3	3.1
Manufacturing.....	9.4	5.2	2.7	4.3	2.8	1.5	3.4
Nonmanufacturing.....	9.5	7.9	4.8	3.3	3.6	2.9	2.9
Percent of workers affected							
Settlements with no wage increase: ⁴							
All industries.....	6	36	27	16	15	21	14
Manufacturing.....	10	48	44	7	18	43	15
Nonmanufacturing.....	3	23	18	22	13	14	14

¹ Preliminary.² Percent change from December to December.³ Average effective wage adjustment in collective bargaining settlements covering 1,000 workers or more. Includes increases, decreases, and no changes in wages stemming from current settlements, agreements reached in a prior period, and cost-of-living adjustment clauses.⁴ Annual wage adjustments over the life of the contract for settlements covering 1,000 workers or more reached in year.

Source: Department of Labor, Bureau of Labor Statistics.

tially through increased productivity growth and improved living standards. Now that the foreign exchange value of the U.S. dollar has fallen back to the level of the early 1980s, U.S. manufacturing is exceptionally well positioned to expand sales in both domestic and foreign markets—a process that has been under way at a rapid pace for more than a year and that is likely to provide the key to continued growth for the U.S. economy in the years immediately ahead.

UNEMPLOYMENT AND INFLATION

After hovering close to 7.0 percent for nearly 2 years, the unemployment rate fell by nearly 1 percentage point during 1987 to its lowest level since 1979. This sudden drop in the unemployment rate has raised concerns that labor markets may be tightening to the point where wage inflation may begin to accelerate. In 1978, when the unemployment rate was 6.0 percent and before the second oil shock, there were already clear signs of increases in the rates of wage and price inflation. In the present situation, however, there is little evidence of an acceleration of inflation, and there are signs that further gradual reductions in the unemployment rate can be achieved without an increase in inflationary pressures.

Even at full employment, there is some "frictional unemployment" associated with job changes by current workers and entry of new workers into the labor force. Matching workers to jobs is costly and time consuming. Firms and workers seek employment relationships that best match the skills of the worker with the production requirements of the firm. Workers do not necessarily accept their first job offer, nor do employers fill vacancies with the first job applicant. Even when job opportunities are relatively abundant, workers who lose their jobs at one firm, workers who quit voluntarily to seek better jobs, and workers who enter or reenter the labor force often take some time to find suitable employment. Consequently, even when the supply of and demand for labor are evenly balanced in the aggregate, there will be some unemployment in the economy associated with job transitions.

Since demographic groups differ in their job turnover rates and in the frequency with which they leave and reenter the labor force, changes in the demographic composition of the labor force affect the level of unemployment. During the 1970s the composition of the labor force changed as increasing numbers of young persons, single persons, and married women entered the workforce. Since these groups have higher unemployment rates, the overall level of unemployment would have risen. This upward pressure on the unemployment rate was mitigated, however, by the growing fraction of workers with either higher levels of education or with white-collar and service sector jobs. These groups have lower unemployment rates relative to other labor force participants. Studies differ as to the combined effect of these changes in the labor force, but by the late 1970s they may have increased the unemployment rate by as much as a percentage point.

The growing number of two-earner families and the effects of unemployment insurance do not appear to have contributed to increases in frictional unemployment. The available evidence suggests that husbands with working wives do not remain unemployed for longer periods of time than husbands whose wives do not work. In fact the unemployment rates for married men with working wives are slightly lower than those for married men whose wives remain at home. Although studies show that unemployment compensation increases the duration of unemployment, the fraction of wages replaced by unemployment benefits has not risen significantly since the late 1960s. Moreover, the share of unemployed workers who receive unemployment benefits has fallen since the early 1970s, especially in recent years.

The factors that have caused frictional unemployment to increase since the early 1970s explain only a fraction of the total increase in unemployment rates since that time. Overall, U.S. unemployment rates have been substantially higher since 1973 than they were in the early postwar period. Between 1948 and 1973 the civilian unemployment rate averaged 4.8 percent; it averaged more than 6.0 percent in only 2 recession years, 1958 and 1961. Since 1973 the civilian unemployment rate has averaged 7.3 percent, and it has averaged less than 6.0 percent in only 2 years, 1974 and 1979. Furthermore, unemployment rates have risen for all demographic groups. Even adult married men, a group with traditionally low unemployment rates, have experienced the same proportional increase in their unemployment rates as teenagers, a group with traditionally high unemployment rates. Increases in frictional unemployment associated with shifting demographic patterns cannot explain these broad increases in unemployment rates since the early 1970s.

The deep recessions of 1974-75 and 1981-82 and the brief recession in 1980 partly explain higher average unemployment after 1973. During these years unemployment rates rose to their highest levels since the Great Depression; thus they have influenced the average level of unemployment during the last 15 years. The depth of these recessions, and limits on the feasible speed of securing reductions in the unemployment rate, especially in the face of a rapidly expanding labor force, also partly may explain the high average level of unemployment. However, there is no evidence that increases in frictional unemployment can account for unemployment rates in 1979 or 1987 that are higher than in the later years of expansions during the 1950s and 1960s. Moreover, demographic shifts that tended to increase unemployment during the 1970s more recently have been pushing down the frictional unemployment rate, reversing perhaps one-half of the earlier rise. Further downward movement in frictional unemployment from anticipated demographic shifts, especially the continuing decline in the share of younger workers, suggests that further reductions in unemployment are feasible in the coming years.

INFLATION AND UNEMPLOYMENT TRADEOFF

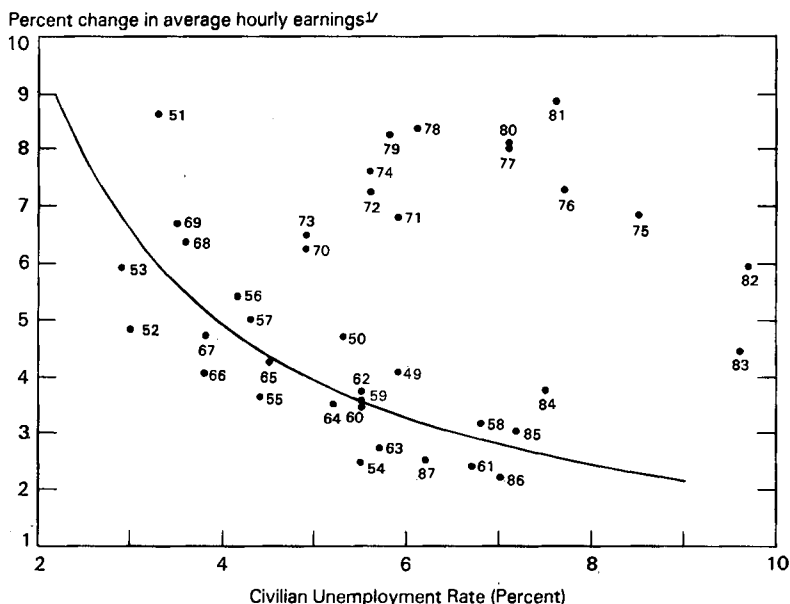
With the unemployment rate below 6.0 percent during the second half of 1987, some people have been concerned that further reductions in unemployment may not be possible without serious risk of accelerating inflation. The belief that further reductions in the unemployment rate may not be feasible is based on the view that there is a systematic tradeoff between lower unemployment and higher inflation, and that the unemployment rate has fallen to a level where inflation is likely to accelerate. This view states that when the unem-

ployment rate is low and labor markets are tight, firms will face increased pressures to raise wages in order to attract and maintain a qualified and stable work force. Thus without a corresponding increase in productivity, unit labor costs also will rise, and these increased costs will be reflected in higher product prices.

The performance of the U.S. economy during the 1950s and 1960s, as illustrated in Chart 2-3, was consistent with the notion of a stable tradeoff between inflation and unemployment. Unemployment tended to be low in the years when inflation rates were high.

Chart 2-3

Wage Inflation and Unemployment



^{1/} For production workers or nonsupervisory employees on nonfarm payrolls.

Sources: Department of Labor and Council of Economic Advisers.

During the stagflation of the 1970s, however, this empirical relationship ceased to hold. Years of high inflation often were associated with high unemployment rates. In the absence of a stable tradeoff between inflation and unemployment, some studies postulated that the tradeoff shifted over time due to changes in inflationary expectations. Support for this view came from the observation that during each of the prior postwar expansions, wage inflation tended to rise as the unemployment rate fell. However, the observation of a shifting relationship between inflation and unemployment explains little, if most of

the actual behavior of inflation and unemployment is attributed to unexplained shifts rather than to the purported relationship.

Recent data provide little evidence of a tradeoff between inflation and unemployment. In the United States the inflation rate as measured by the CPI has been running close to 4 percent per year since the end of 1981. The inflation rate fell temporarily to 1.1 percent in 1986, and then it rose temporarily to more than 5 percent in early 1987, mainly due to swings in energy prices. However, when energy prices are excluded from the CPI, inflation has been approximately 4 percent for 6 years (Chapter 1). During this 6-year period, the inflation rate has been essentially constant, while the unemployment rate has fallen almost 5 full percentage points—from 10.6 percent at its peak in November 1982 to 5.7 percent in December 1987.

Wages and earnings also have shown little evidence of accelerating as the unemployment rate has declined during the current expansion. The average unemployment rate fell from 6.9 percent in 1986 to 6.1 percent in 1987—below the level at which inflation was beginning to accelerate during the 1975–80 expansion. Unemployment rates fell in every region of the country during 1987, with especially sharp reductions in the Northeast and in the energy-producing States. Yet this substantial reduction in unemployment during 1987 was not accompanied by a sharp increase in nominal wage rates. For the year the wages of production and nonsupervisory workers increased by 2.5 percent, compared with an average annual rate of increase of 3.3 percent during the previous 4 years of the expansion.

Recent experience in other countries also appears to contradict the notion of a stable tradeoff between inflation and unemployment. In many Western European countries unemployment rates generally have been rising since the early 1970s, and they have risen throughout most of the current expansion. In contrast, rates of wage and price inflation in these countries generally have fallen since 1982, and they are now typically lower than they were in the middle and late 1970s. Based on the experience of the 1950s and 1960s, these reductions in inflation rates have been much smaller than would have been expected given the increases in unemployment rates. Comparisons of inflation rates with unemployment rates for Western European countries for the 1950s through the 1980s show no consistent relationship.

Evidence concerning a possible relationship between inflation and unemployment suggests that the U.S. economy can reduce unemployment rates further without suffering from accelerating inflation. Perhaps, as recent experience appears to show, there is no meaningful tradeoff. Over wide ranges, inflation and unemployment can move largely independently. Further reductions in unemployment that are

the result of natural economic adjustments, as opposed to monetary or fiscal stimulation, can occur without increased risk of accelerating inflation. Alternatively, if there is a shifting tradeoff between inflation and unemployment, the evidence in Chart 2-3 would suggest that the U.S. economy has returned to the relationship that existed in the 1950s and 1960s. If this is the situation, then it would also appear that further reductions of unemployment can occur without a serious risk of significant increases in inflation.

PROSPECTS FOR REDUCING UNEMPLOYMENT

In assessing the potential for further reductions in the unemployment rate, and the problems in securing such reductions, it is helpful to examine the distribution of unemployment by geographic region and by duration of unemployment. Regional data point to the promise of reducing the national unemployment rate toward the low levels now prevailing in some regions, and securing this reduction in regions where unemployment remains high. Data on the duration of unemployment point to the significance of long-term unemployment associated with job displacements of more experienced workers, and to the benefits of avoiding deep recessions and massive economic disruptions that tend to generate long-term unemployment on a broad scale.

While employment gains have been widespread across regions during the current expansion, substantial regional differences in unemployment rates continued to exist in 1987. As shown in Table 2-5, the unemployment rate in New England was 3.4 percent in 1987, well below the national average of 6.2 percent, and down 4.4 percentage points from the unemployment rate in this region during the recession year of 1982. In contrast, unemployment in 1987 in the West South Central region (Louisiana, Oklahoma, Texas, and Arkansas) was 8.9 percent, well above the national average, and 1.4 percentage points above the unemployment rate in this region during 1982. This energy-producing region was sheltered somewhat from the effects of the 1981-82 recession by continued high energy prices, but it suffered significantly from the sharp decline of energy prices in 1986.

The relatively low rates of unemployment in the Middle Atlantic, South Atlantic, and especially the New England regions indicate that there is no inherent barrier that prevents the unemployment rate from falling below 5 percent. Studies have shown that the difference among regional unemployment rates is not explained by differences in the characteristics of the region's labor force and the composition of the region's industrial base. The data reported in Table 2-5 show that the regions with relatively high unemployment rates during the

TABLE 2-5.—*Regional Unemployment Rates, Selected Years, 1976-87*[Percent¹]

Region	1976	1979	1982	1984	1987 ^a
New England.....	9.1	5.4	7.8	4.9	3.4
Middle Atlantic.....	9.6	7.0	9.4	7.6	5.0
South Atlantic.....	7.4	5.5	8.7	6.5	5.2
East North Central.....	7.3	6.1	12.5	9.4	7.2
West North Central.....	5.0	4.0	7.8	6.2	5.3
East South Central.....	6.2	6.1	12.0	9.8	8.2
West South Central.....	6.0	4.7	7.5	7.0	8.9
Mountain.....	7.2	5.0	8.8	6.2	7.3
Pacific.....	9.1	6.4	10.2	8.1	6.1
U.S. unemployment rate.....	7.7	5.8	9.7	7.5	6.2

¹ Unemployment as percent of civilian labor force.^a January-November average.

Source: Department of Labor (Bureau of Labor Statistics) and Council of Economic Advisers.

1975-80 expansion were not the same as those which had relatively high unemployment rates in 1987. Thus for the most part, regional characteristics do not appear to cause unemployment rates to be permanently higher in some parts of the country than in others.

Recent data indicate somewhat higher rates of wage increase in regions where unemployment rates are relatively low. The rate of wage inflation, however, remains moderate even in New England, where the unemployment rate has been at or below 4 percent since mid-1986. Since the national unemployment rate is well above New England's rate, the data on regional unemployment and wage inflation certainly do not suggest that the economy is about to suffer from a general acceleration of inflation.

Moreover, higher rates of wage increases in regions with relatively low unemployment rates can play an important role in reducing overall unemployment. Since workers tend to move to areas with higher relative wage rates and lower unemployment rates, they reduce unemployment when they leave one place, and they relieve tight labor market conditions when they arrive at another. Furthermore, higher wage rates in areas with low unemployment induce firms to shift jobs to areas with lower wage rates and higher unemployment. Through this process of shifting workers and jobs, unemployment rates in different regions tend to be equalized over time, and the aggregate unemployment rate gradually is reduced.

When unemployment rates approach frictional levels in some regions, efforts to drive down aggregate unemployment through stimulative policies may be especially inappropriate and counterproductive.

... time for workers to migrate to areas with rising wages and for firms to create new production capacity and new jobs in areas with high unemployment rates. These adjustments can occur naturally and gradually; they should not be forced. Resorting to stimulative macroeconomic policies could accelerate inflation without significantly affecting unemployment. Indeed, in a short time the need to combat inflation could lead to policies that would increase unemployment.

Reducing the unemployment rate further to the levels of the early 1970s requires reversing the effects of either or both of two trends: an increase in the proportion of workers who lose their jobs, and an increase in the length of time workers remain unemployed. Both of these trends have contributed to higher unemployment rates over the last 20 years. As indicated by the data in Table 2-6, an increase in the proportion of workers who lost their jobs accounts for almost all of the increase in unemployment rates between 1973 and 1987, although increases in the proportion of workers who quit their jobs or who entered the labor force were important contributors to rising unemployment rates between 1967 and 1973. Moreover, as indicated in Table 2-6, since 1973 there has been a significant increase in the portion of the unemployed who report that they have been out of work for 15 weeks or longer. Some studies have indicated that prolonged (and often repeated) spells of unemployment by experienced workers who lose their jobs are an important reason for the increase in the aggregate unemployment rate since the early 1970s.

TABLE 2-6.—*Unemployment by Reason and Duration, Selected Years, 1967-87*

Year	All unemployed	Reason for unemployment			Duration of unemployment		
		Job losers	Job leavers	Entrants	Less than 5 weeks	5-14 weeks	15 weeks and over
		Percent of civilian labor force			Percent distribution		
1967	3.8	1.6	0.6	1.7	54.9	30.0	15.1
1973	4.9	1.9	.8	2.2	51.0	30.1	18.9
1979	5.8	2.5	.8	2.5	48.1	31.7	20.2
1987	6.2	3.0	.8	2.4	43.7	29.6	26.7

Source: Department of Labor, Bureau of Labor Statistics.

Comprehensive data that detail the reasons for job loss and prolonged unemployment are not available. However, it reasonably may be inferred that deep and prolonged recessions and sudden massive shifts in relative prices and in the structure of output are primary causes of job loss, particularly for experienced workers. Certainly the recessions of 1974-75 and 1981-82 generated job losses on a large

scale. The sudden decline of energy prices in 1986 clearly resulted in widespread job losses in energy-producing states.

Recessions are costly to the economy in terms of lost output, but more importantly to the workers who lose their jobs. These costs continue even after the recovery from a recession has begun, since a substantial amount of time is required to bring the level of unemployment down to its prerecession levels. Elimination of all fluctuations in the economy is, of course, neither feasible nor practical. Such fluctuations are an essential counterpart of economic progress. Changes in relative prices and in the structure of output are necessary if the economy is to adjust to changes in demand and technology. However, there is no need to repeat the destructive sequence of expansions, marked by progressively rising inflation rates and punctuated by deep recessions, that afflicted the U.S. economy in the 1970s and early 1980s. Moreover, as discussed in last year's *Report*, avoiding a resurgence of inflation and the subsequent need for disinflation probably would remove an important cause of large swings in relative prices and real interest rates like those that buffeted the U.S. economy during the last 20 years.

The U.S. economy today can continue economic expansion and gradual reduction of the unemployment rate without resorting to potentially inflationary policies. Reduction of the U.S. trade deficit is under way, and it is projected to continue in 1988 and beyond. Thus the tradable goods sector of the U.S. economy (predominantly manufacturing) should expand more rapidly than the rest of the economy, reversing the pattern of 1985 and 1986. These gains should aid in the further gradual reduction of unemployment.

CONCLUSION

Since 1981 the United States has enjoyed large gains in employment and production, accelerated growth of productivity and real per capita income, and substantial reductions of unemployment without a resurgence of inflation. The gains during this extended period of economic growth have been shared widely by all major demographic groups. The achievements of the last 7 years did not result from specific government programs, but rather from a general approach to policy that emphasizes reliance on the private sector. The desire for economic gain, disciplined by the forces of competition in free and open markets, provided the essential incentives for the productive efforts, the physical and human investments, the technological innovations, and the entrepreneurial advances that form the foundation of prosperity and growth. Little progress generally results from governmental efforts to control, manage, or fine tune the processes that

generate growth. The proper role for government is to provide a stable economic environment in which private enterprise can flourish, to protect the rights of individuals so they can benefit from their labors, investments, and entrepreneurship, and to avoid the dulling or distortion of economic incentives through excessive taxation or burdensome regulation.

While private business has clearly been the direct source of the most important economic gains during the current expansion, government policy has played a critical role by shaping the economic environment for this success. The Administration's key priority was to enhance the stability of general economic conditions by avoiding a recurrence of the cycles of accelerating inflation, rising interest rates, and deep recessions that seriously impaired the performance of the economy during the 1970s and early 1980s. In pursuing these objectives, fiscal policy limited Federal spending, reduced marginal tax rates, and provided greater certainty about future tax policies. Monetary policy provided money growth that was sufficient to sustain economic expansion, while avoiding the resurgence of rapid inflation. And microeconomic policy promoted the efficient operation of markets and avoided intrusive regulation. The strong growth of the economy at low rates of inflation indicates that these policies have been very successful. Thus this Administration has made substantial progress toward the goals of "maximum employment, production, and purchasing power."

The Administration's economic program has become a blueprint for promoting and maintaining noninflationary growth worldwide. This approach to economic policy is especially important in today's highly interdependent world. The events of the 1970s and 1980s demonstrate that the U.S. economy is affected increasingly by events in the world economy and economic policies of other nations. The rapid growth of the U.S. economy has fostered growth in other countries as rising living standards have allowed Americans to buy more products from abroad. Likewise, rising living standards abroad will allow other nations to buy more products from the United States and enhance U.S. economic growth.

CHAPTER 3

Adjustment and Growth in a Changing World Economy

MAINTAINING NONINFLATIONARY GROWTH, while reducing external imbalances, is the primary objective of economic policy in the United States and other leading industrial nations. Market forces and economic policies have combined to reduce external imbalances, at least in volume terms, for more than a year. Further reductions are in prospect and are important to maintaining the long-run health of the world economy. Even more important, this progress should be continued in a manner that does not undermine economic growth, reignite inflation, or yield to the temptation of protectionism.

The problems associated with present external imbalances are real and require attention, but unfortunately they often are exaggerated or misunderstood. Despite a large increase in the U.S. external deficit since 1980 and problems in specific industries, overall employment growth in the United States has been very strong—the strongest of all the major industrial countries. The U.S. unemployment rate has dropped 5 percentage points since late 1982, while unemployment rates in many other industrial countries have risen and now are well above the U.S. rate. Improvement in the trade balance is expected to contribute to job growth when it is most needed—during 1988 when domestic spending is expected to grow only slowly. Nor has U.S. manufacturing performed poorly. During the past 5 years its share of total real output has been running at the postwar average, and in 1987 it stood just below its postwar peak. But despite substantial gains in employment, persistence of a large U.S. trade deficit fuels protectionist sentiment that threatens the open system of world trade and could impair future employment gains.

In the 1980s the measured rate of national saving has been low, and the United States has been a substantial net importer of foreign capital. Yet net foreign claims against the United States remain very small relative to U.S. income and wealth. Thus the general economic problems arising from the U.S. external deficit are primarily problems of the future—problems that will arise only if adequate progress is not maintained in reducing external imbalances. The immediate concern, therefore, is to continue visible progress in reducing these

imbalances in order to reassure financial markets and enhance prospects for sustaining noninflationary growth in the world economy.

Current external imbalances have arisen primarily from macroeconomic causes and require primarily macroeconomic solutions. The \$219 billion deterioration in U.S. real net exports of goods and services between 1980 and late 1986 was widespread across product categories and trading partners. Although some U.S. exports have suffered from barriers in some foreign markets, the growth of the U.S. trade deficit was not caused by an increase in unfair trade practices in foreign countries.

Instead, the growth of the U.S. trade deficit in the 1980s primarily reflects the influence of several interrelated macroeconomic developments. Rapid growth of spending (domestic demand) in the United States relative to both growth of spending in other countries and to growth of production (gross national product, or GNP) in the United States spurred U.S. demand for foreign imports and restrained foreign demand for U.S. exports. The need for many heavily indebted developing countries to reduce their international borrowing and improve their trade balances also cut into U.S. exports and tended to expand imports into U.S. markets. Growth of U.S. spending relative to production and income implied a deterioration in the national saving-investment balance, which, in turn, owed much to the persistence of a large Federal deficit late into the current expansion. An increasing net inflow of foreign capital offset a declining national saving rate and helped to finance reasonably robust U.S. investment. This capital inflow, which was partly motivated by high prospective after-tax returns on U.S. investment, was one among several important factors that contributed to the strong appreciation of the U.S. dollar between 1980 and early 1985. Dollar appreciation, in turn, was the critical proximate cause of much of the deterioration in the U.S. trade balance, because it made U.S. exports more expensive in foreign markets and foreign imports less expensive in U.S. markets.

Efforts to reduce external imbalances have focused on reversing their underlying macroeconomic causes and on facilitating structural adjustments essential to an altered pattern of world trade. In the United States, a continued slowing of domestic demand growth and further reductions in the Federal deficit promise continued improvements in the national saving-investment balance. In contrast, demand growth in other leading industrial countries has increased, due to government policies and market forces. In the United States relative price changes have encouraged economic adjustments directed toward higher output, increased employment, and greater investment in tradable goods industries. Relative price changes also appear to have assisted in reorienting economic activity toward stronger inter-

nally led growth in some countries with trade surpluses. A large correction in the foreign exchange value of the U.S. dollar has been especially important in improving international competitiveness of U.S. industry and, in turn, the U.S. real trade balance.

This chapter first assesses the economic significance of present external imbalances. It then discusses two of the key macroeconomic causes of present imbalances: the strong growth of domestic demand in the United States relative to other industrial countries, and the decline of the U.S. national saving-investment balance in the presence of persistently large Federal deficits. It next considers the role of exchange-rate movements and relative price changes in creating and correcting external imbalances. The chapter concludes with a discussion of the adjustment process that will sustain progress in reducing external imbalances in an environment of noninflationary growth.

THE SIGNIFICANCE OF EXTERNAL IMBALANCES

The external trade and payments position of the U.S. economy moved from surplus to substantial deficit in the early 1980s. This deterioration reflects several closely related phenomena. However, it does not signal a defect in the general performance of the U.S. economy, nor does it necessarily portend serious problems for the future. The significance of the U.S. trade and payments imbalance—the problems that it does and does not pose for the U.S. and the world economy—are best understood with reference to alternative measures of these imbalances.

MEASURES OF THE EXTERNAL BALANCE

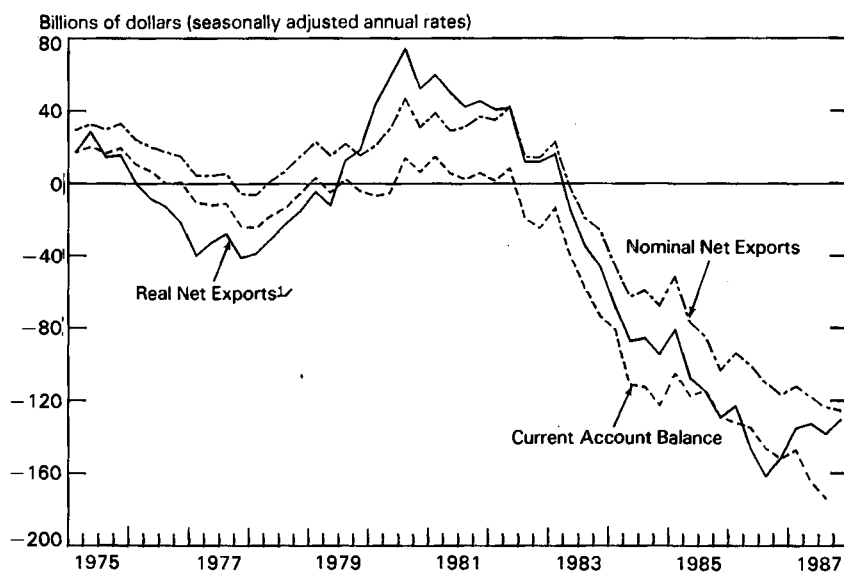
All measures of the U.S. external position show broadly similar movement during the past two decades and exhibit sharp deterioration since 1980–82. For example, as measured in the national income and product accounts (NIPA), the merchandise trade balance—the difference between exports and imports of goods alone—moved from a \$29 billion deficit in 1980–82 to a \$143 billion deficit in 1986. In 1987 the merchandise trade deficit grew further to \$153 billion. These movements in the merchandise trade balance indicate that, since 1980–82, the value of U.S. imports has grown far more rapidly than U.S. exports.

Expanding the measure of the trade balance to include services (and factor income) yields the NIPA concept of “net exports.” Chart 3–1 shows that nominal net exports were in surplus in 1980–82, before deteriorating through the end of 1987. Movements in nominal net exports have closely paralleled movements in the merchandise trade balance. However, since the United States runs a surplus of

trade in services, the deficit in nominal net exports is somewhat smaller than the deficit in merchandise trade.

Chart 3-1

Net Exports and the Current Account Balance



^{1/}Billions of 1982 dollars.

Note.—Net exports for fourth quarter 1987 are preliminary; current account balance not available.

Source: Department of Commerce.

Measuring the balance between exports and imports of goods and services in constant 1982 dollars, rather than in current dollars, produces the NIPA measure of “real net exports,” the measure most closely related to real GNP. As illustrated in Chart 3-1, real net exports fell more than nominal net exports between 1980-82 and late 1986; since then real net exports have improved, while nominal net exports have continued to deteriorate. The behavior of real net exports since late 1986 indicates that the external sector has made a net positive contribution to growth in real GNP and employment.

The recent divergence in the movements of real and nominal net exports primarily reflects movements in import prices. The price of imports, as measured by the import price deflator, fell between 1980-82 and late 1986, with an especially sharp drop in 1986 due to the fall in the price of imported oil. As a result, the increase in nominal spending on imports was less than the increase in the real quantity of imports. Since late 1986 import prices generally have been rising faster than the price deflator for domestically produced goods

and services. Consequently, nominal spending on imports rose more than the real quantity of imports and more than the nominal value of exports. This phenomenon usually is referred to as the "J-curve" effect of currency depreciation. The initial effect of depreciation is often to raise nominal spending on imports because of higher prices and to lead to a deterioration in the nominal trade balance. However, over time the depreciation will tend to improve both real and nominal net exports.

A deficit in net exports necessarily implies that total spending by domestic residents is greater than the value of domestic production (GNP) and domestic income. When domestic demand exceeds domestic production, the excess is imported and the country runs a deficit on goods and services. Accordingly, the decline of U.S. real net exports between 1980–82 and late 1986 corresponded to a growing gap between real domestic demand and real GNP. Similarly, the decline in nominal net exports corresponded to the growing gap between nominal domestic demand and nominal GNP.

The decline in nominal net exports also was closely related to the deterioration of the national saving-investment balance. This is a direct consequence of national income accounting relationships. Aside from some relatively minor items, the excess of national saving over national investment is equal to the excess of GNP over domestic demand and, therefore, equal to nominal net exports. As will be discussed later, growth of the government deficit (which counts as a negative element in national saving) played an important role in the deterioration of the national saving-investment balance.

The difference between national saving and national investment equals the flow of net foreign investment. When U.S. residents save more than is required to finance national investment, the remainder is available to finance net accumulation of foreign assets—either direct ownership of assets located abroad or ownership of stocks, bonds, or other financial claims on foreigners. Conversely, when national investment in the United States exceeds national saving, the excess is financed through net foreign accumulation either of direct claims on U.S. assets or of financial claims on U.S. residents (including the government). Since 1980–82 foreigners have increased their net claims on U.S. assets and U.S. residents as the deficit in international trade has grown.

Finally, except for some relatively minor accounting differences, the current account balance is conceptually similar to a measure of the national saving-investment balance. Moreover, the net capital inflow—which is conceptually similar to net foreign saving—equals the current account deficit, except for a statistical discrepancy. Thus the decline of the current account balance since 1980–82, illustrated

in Chart 3-1, describes the decline of national saving relative to national investment.

GROWTH OF EMPLOYMENT

A loss of jobs to foreign competitors and a general slowing of growth of the U.S. economy often are suggested as important adverse effects of the deterioration of the U.S. trade position since the early 1980s. In fact, however, the only significant declines in U.S. employment since 1979 occurred during the recessions of 1980 and 1981-82, when the U.S. current account was in surplus. The deterioration of the U.S. external position began in earnest in late 1982, which also marks the beginning of the longest peacetime expansion in U.S. history. As discussed in Chapter 2, employment growth during this expansion has been outstanding.

International comparisons of employment growth and reductions in unemployment do not indicate that the United States has been "losing jobs" to other industrial countries. Between 1982 and 1986 the United States sustained the strongest growth of employment in percentage terms among the seven large industrial countries that participate in the annual economic summits, creating about two and one-half times as many jobs as the other six countries combined. Especially striking is a comparison with Japan and West Germany, the two countries with the largest current account surpluses among the seven summit countries. The United States created 10 million new jobs between 1982 and 1986—almost five times as many jobs as Japan, and more than 100 times as many jobs as West Germany.

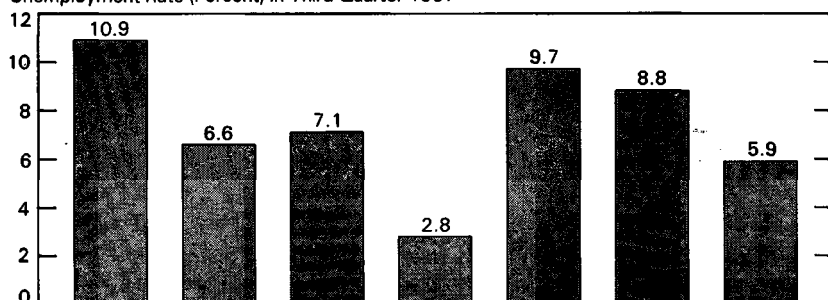
The large increase in employment does not simply reflect the size of the U.S. economy or an increase in the labor force. Since 1982 the United States has enjoyed the largest reduction in the unemployment rate of all seven of the summit countries. As the top panel of Chart 3-2 shows, as of the third quarter of 1987, the United States had the lowest unemployment rate among the summit countries, except for Japan. This reverses the situation that existed in the 1950s, 1960s, and early 1970s, when unemployment rates in Western Europe typically ran at about half the U.S. rate. Furthermore, as shown in the lower panel of Chart 3-2, unemployment rates in a number of Western European countries have increased since 1982. Despite 5 years of economic expansion, these unemployment rates now stand not only well above the U.S. unemployment rate, but also near or above the peak levels recorded for these countries between 1959 and 1981.

It has been suggested that employment in the United States would have grown even more and the unemployment rate would have dropped even further, if the U.S. external imbalance had not developed since 1982. Analysis of the strength of employment growth

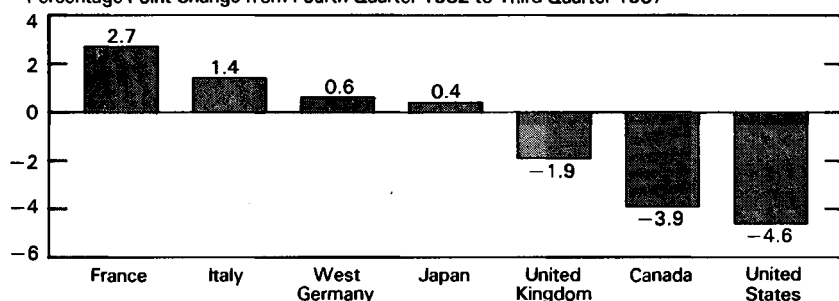
Chart 3-2

Unemployment Rates in the Seven Summit Countries

Unemployment Rate (Percent) in Third Quarter 1987



Percentage Point Change from Fourth Quarter 1982 to Third Quarter 1987



Note.—Unemployment rates used approximate the U.S. concept.

Source: Department of Labor.

over the course of the expansion, however, does not support this notion.

During the initial phase of the expansion, from the end of 1982 through the middle of 1984, output and employment grew very rapidly (Table 3-1). Real GNP rose at a 7.0 percent annual rate, setting a 35-year record for real GNP growth during a six-quarter period. Real domestic demand grew even more rapidly than real GNP—the fastest rate, over a six-quarter period, in nearly 35 years. In these six quarters employment rose at a very strong 3.9 percent annual rate.

The exceptionally strong growth of real domestic demand relative to the strong growth of real GNP is directly reflected in the \$99 billion deterioration of real net exports between the end of 1982 and the middle of 1984. With the same rate of real domestic demand growth, if real net exports had not deteriorated, real GNP would have grown at a 9.1 percent annual rate. However, an effort to meet domestic demand growth entirely with U.S. production, even if that

TABLE 3-1.—*Economic Growth, 1982-87*

(Average annual percent change, except as noted)

Item	1982 IV to 1984 II	1984 II to 1986 III	1986 III to 1987 IV ¹
Real GNP.....	7.0	2.7	3.4
Real domestic demand.....	9.1	3.6	2.6
Civilian employment.....	3.9	2.1	2.5
Change in real net exports ²	-99.0	-74.3	30.9
Change in civilian unemployment rate ³	-3.2	-5	-1.1

¹ Preliminary.² Change over the period in billions of 1982 dollars (seasonally adjusted annual rate).³ Change over the period in percentage points.

Sources: Department of Commerce (Bureau of Economic Analysis) and Department of Labor (Bureau of Labor Statistics).

had been feasible, probably would have been misguided. By March 1984 the Federal Reserve already was becoming concerned that the U.S. economy might be overheating and tightened monetary policy to forestall the risk of accelerating inflation. If real GNP had grown 9.1 percent rather than 7.0 percent, possible overheating of the economy—and a resurgence of inflation—surely would have been even more of a concern in 1984. A policy reaction to forestall such a development could have cut short the expansion. Thus it is not clear that more rapid growth of real GNP during the initial phase of the expansion would have been particularly good for the economy or would have contributed to employment growth in the longer term.

During the second phase of the expansion, from the second quarter of 1984 through the third quarter of 1986, the growth rates of real domestic demand, real GNP, and employment all declined from the very rapid rates recorded initially. Some slowing probably was inevitable as the expansion matured. The sharp oil price decline in early 1986 led to increased unemployment in the energy-producing States, and probably contributed to slower overall employment growth. The further decline in U.S. real net exports during this period probably also contributed to slower employment growth, and a smaller decline in real net exports probably would have been beneficial for the economy.

In the latest phase of the expansion, since the third quarter of 1986, improving real net exports have contributed positively to real GNP and employment growth. The unemployment rate dropped rapidly during this period. While further reductions in the unemployment rate appear possible for the future (Chapter 2), the feasibility of a significantly more rapid decline during the past five quarters is open to question.

Thus strong growth of domestic demand early in the expansion contributed to a growing trade deficit, without generally damaging

effects on overall employment growth. Now it is widely anticipated that improvements in real net exports will help to sustain growth of real GNP and employment during a period when growth of domestic demand is expected to be weak. The timing of movements in the trade balance may not have been exactly right to maintain the precisely optimal pace of employment growth. However, the deterioration of the trade balance did help to absorb some of the effect of very strong domestic demand growth when that could have been a serious problem for the economy. Improvement of the trade balance now promises to assist output and employment growth at a time when such assistance appears particularly useful.

STRENGTH OF MANUFACTURING

A related complaint about the trade and payments deficit is that it has crippled U.S. manufacturing and led to a massive loss of manufacturing jobs. This issue was examined extensively in Chapter 2. In the face of intense international competition, substantial and often difficult adjustments have been made in many manufacturing industries. The output of some manufacturing industries declined. However, the cause of the general decline in manufacturing output in 1981-82 clearly was the recession, not the trade imbalance. Since 1982 manufacturing output has recovered very strongly. In fact, manufacturing's share of total real output currently stands near the record level for the postwar era.

In the 1980s manufacturing's share of total employment has continued its long-term decline, and the absolute level of manufacturing employment at the end of 1987 remained below its peak level of 1979. These developments, however, reflect the generally stronger growth of productivity in manufacturing than in other sectors of the economy. Perhaps if foreign competition had been less intense, productivity growth in U.S. manufacturing would have been slower and more jobs would now exist in that sector. Americans as a whole, however, would be less well off. And unless real wage growth had been reduced to match slower productivity growth, manufacturing would not be as well positioned to expand exports in the future.

In comparison with other leading industrial countries, manufacturing has been relatively strong in the United States. Between 1979 and 1986 manufacturing output grew slightly more rapidly in the United States than in Canada and considerably more rapidly than in Western Europe. Only Japan recorded significantly stronger growth of manufacturing output, and only in Japan and Denmark did manufacturing employment increase. In Canada the decline in manufacturing employment was proportionally smaller than in the United States, reflecting Canada's slower growth of productivity. In France, Italy,

and the United Kingdom, the proportional decline in manufacturing employment was significantly larger than in the United States.

If there were no U.S. trade deficit, production of manufactured goods and employment in manufacturing industries in the United States probably would be higher than they are at present; but total U.S. production and total U.S. employment would not necessarily be any higher. As discussed in Chapter 2, there appears to be some room for further gradual reductions in the unemployment rate without automatically stimulating an acceleration of inflation. There is no evidence that output and employment in manufacturing and other tradable goods industries could have been increased sufficiently to replace net imports of tradable goods in 1987, without largely offsetting reductions of output and employment in other industries. Similarly, over time, as the trade deficit is corrected gradually, output and possibly employment in the manufacturing sector may expand more rapidly than in the rest of the economy. These changes, however, will reflect a shifting distribution of the economy's productive resources, not a net increase in the supply of those resources.

GROWTH OF FOREIGN DEBT

The present size of net foreign claims on the United States and their rate of increase often are cited as problems arising from continued large current account deficits. The recorded net international investment position of the United States, -\$264 billion in 1986 (the latest data available), represents the difference between U.S. assets abroad (\$1,068 billion) and foreign assets in the United States (\$1,332 billion). The net international investment position often is referred to as the net debt of the United States, even though the value of U.S. assets abroad and foreign assets in the United States include assets such as land, buildings, and stocks, as well as interest-bearing assets such as bonds and bank accounts.

The net international investment position of the United States has deteriorated over the last few years. In 1981 the U.S. net international investment position was \$171 billion (valued in 1986 dollars). The deterioration to -\$264 billion in 1986 reflects the cumulative effect of a string of large external deficits as well as some valuation changes. Estimates of the flow of net foreign investment suggest that the U.S. net international investment position may have grown roughly \$150 billion, to approximately \$400 billion in 1987.

The net international investment position of the United States may be overstated by these estimates. According to Department of Commerce estimates, in 1986 the United States received income of \$88 billion on assets owned abroad, and it paid \$67 billion on foreign-owned assets in the United States. This excess of receipts over pay-

ments reflects, in part, undervaluation of some U.S.-owned assets located abroad (especially direct investments made years ago that are valued at historical cost), as well as a generally higher rate of return on U.S.-owned assets abroad than on foreign-owned assets in the United States. Therefore, in terms of income received and paid, the United States may have been a net creditor in 1986. However, in the third quarter of 1987, for the first time in recent history, payments on foreign-owned assets exceeded income on assets owned abroad. By this measure, the United States crossed the boundary between net creditor and net debtor only in the middle of 1987.

Even at \$400 billion, net foreign claims on the United States are not large relative to the income generated by the U.S. economy that can be used to service them. Net foreign claims of \$400 billion represent less than 10 percent of U.S. GNP. Assuming a 5 percent real rate of return, the income required to service these claims would amount to less than one-half of one percent of U.S. GNP. And based on the amount of income paid on foreign-owned assets in the United States and U.S.-owned assets abroad, the income required for net debt service in 1987 was about 0.1 percent of U.S. GNP. Consequently, concerns about the current stock of net foreign claims on the United States may be overstated.

While the current level of net foreign claims should not be cause for alarm, persistent growth of such claims at an annual rate equivalent to $3\frac{1}{2}$ percent of U.S. GNP (about \$150 billion in 1987) would be a source of worry. At this rate, net foreign claims on the United States would reach 40 percent of U.S. GNP by the end of the century. Servicing these claims, assuming a 5 percent real rate of return, would consume about 2 percent of U.S. GNP—still not a large percentage, but a very substantial absolute sum. Relative to the size of the economy, U.S. net indebtedness would not be much larger than Canada's has been in recent years. However, the absolute figure would be very large—more than \$2 trillion in 1987 dollars. This could present difficulties for the world financial system, especially if for some reason foreigners suddenly become less willing to hold claims on the United States. Evidence of a steady reduction of the U.S. external deficit over the next few years will prevent these difficulties from emerging.

THE LEVEL OF NATIONAL SAVING

When a foreign net capital inflow is used to finance productive investment, even a relatively large and persistent inflow need not be a source of concern. The increased productive capacity financed by the capital inflow can generate the income to pay foreign creditors. Because of taxes and for other reasons, the entire return from invest-

ment is not always paid to creditors. Furthermore, a net capital inflow means that the level of productive capital stock in the importing country probably is higher than it would be otherwise. Hence, a country can gain from a net inflow of foreign capital, when this capital is used to increase productive investment. For much of its history—until about 1920—the United States was a fairly consistent net importer of foreign capital. For example, foreign borrowing helped to finance construction of U.S. railroads during the 19th century.

As indicated in Table 3-2, the recent net inflow of foreign capital has enabled the United States to maintain a ratio of gross investment to GNP that is close to the postwar average at a time when the ratio of national saving to GNP has been relatively low by postwar standards. The recent strong performance of the U.S. economy suggests that investment in the United States has paid an attractive return. Given the level of national saving, financing some investment through a net capital inflow—measured by net foreign saving—appears to have been worthwhile. The problem, to the extent that there currently is a problem, does not arise from the net capital inflow; it arises from the relatively low rate of national saving.

TABLE 3-2.—*Saving and Investment as Percent of GNP, 1949-87*

[Percent of GNP]

Item	1949-81 average	1982-86 average	1987 ¹
Current dollars:			
Gross private domestic investment	16.0	15.7	16.0
Gross national saving	16.3	13.7	12.6
Net foreign saving	- 3	1.9	3.3
Net national saving ²	8.0	2.7	2.2
Constant (1982) dollars:			
Gross private domestic investment	16.6	16.7	17.9
Gross national saving ³	16.9	14.6	14.2
Net private domestic investment ²	7.9	5.5	6.7
Relative price of investment (1982=100) ⁴	96.3	94.1	89.0

¹ Preliminary.

² As percent of net national product.

³ Gross national saving deflated by the implicit price deflator for gross private domestic investment.

⁴ Ratio of gross private domestic investment and GNP implicit price deflators, multiplied by 100.

Sources: Department of Commerce (Bureau of Economic Analysis) and Council of Economic Advisers.

National saving is a matter of concern because, when properly measured, national saving measures the increase in national wealth and thus the potential for future improvements in living standards. If the national saving rate is relatively low, future living standards may not rise as quickly. The relevant measure of national saving, however, must take into account the many forms of saving that contribute to rising living standards. Such saving includes not only the usually measured accumulation of claims to physical investments and the income streams they generate, but also investments in human capital

and in research and development leading to new products and technologies (discussed in Chapter 5), as well as the accumulation of consumer assets that contribute directly to production within the household. Making such adjustments, a recent study of broadly defined measures of national saving and capital formation found that the United States has not been a particularly "low-saving" country in the postwar period.

Moreover, even the narrow measures of national saving and national investment look more robust when recent declines in the relative price of capital goods are considered. Specifically, as indicated in Table 3-2, the ratio of real gross investment to real GNP recently has been somewhat higher than its average in the postwar period, thus implying that the recent net capital inflow has helped to finance a somewhat higher rate of real gross investment.

Nevertheless, the measured rate of gross national saving in recent years has been lower than the postwar average. Even allowing for problems in measuring depreciation, the standard measure of real net investment relative to real net national product (NNP) has not been particularly high in recent years. The standard measure of net national saving relative to NNP has been running at less than half its postwar average since 1981, and the net capital inflow has financed roughly half of net national investment. Broadening the measures of national saving and national investment to include human capital, research and development, and consumer durables diminishes the relative importance of the net capital inflow. However, it still appears that the national saving rate has been relatively low in recent years.

Whether the appearance of a low national saving rate actually portends slower growth of living standards is far from clear. The rate of national saving between 1973 and 1981—whether measured in nominal, real, gross, or net terms—was not particularly low by postwar standards. Yet, as discussed in Chapter 2, the rate of increase in living standards, measured by the rate of growth of real per capita GNP, was quite slow by earlier postwar standards. Since 1981 the rate of growth of real per capita GNP has increased, notwithstanding the decline in the measured rate of national saving. Judged by the outcome, therefore, the rate of national saving would appear to have risen since the middle and late 1970s, although not back to the level of the earlier postwar period.

In any event, a higher rate of national saving probably would mean more rapid improvement of living standards, and both natural economic adjustments and economic policies indicate an increase in the national saving rate. With national investment projected to remain strong but not increase substantially as a share of GNP, the anticipated increase in the national saving rate would imply a significantly

smaller net inflow of foreign capital and hence a significantly slower increase in net foreign claims on the United States. The anticipated increase in national saving relative to national investment also implies a reduction in the growth rate of real domestic demand relative to that of real GNP. This is consistent with the expectation that improvements in U.S. real net exports will make important contributions to output and employment growth in coming years. Because improvements in real net exports must come to a large extent in net trade in manufactured products, these anticipated developments also suggest continuing strength of output and employment growth in the manufacturing sector.

DEMAND GROWTH AND THE SAVING-INVESTMENT BALANCE

The external deficit of the United States has been improving in real terms since late 1986. Continued progress in reducing this deficit, in an environment of noninflationary growth, is an important goal of economic policy. Assessing the likelihood of such progress, and the policies that will help to sustain it, requires clear understanding of the macroeconomic forces that are fundamentally responsible for the growth of the U.S. external deficit. Specifically, strong demand growth in the United States after the worldwide recession of 1980–82 and relatively weak demand growth in other industrial countries during the early phases of recovery spurred the growth of U.S. imports and retarded the growth of U.S. exports. Simultaneously, the growth of the Federal deficit and its persistence late into the current expansion contributed to the deterioration of the U.S. national saving-investment balance and to a corresponding increase in the net inflow of foreign capital.

THE MACROECONOMIC CHARACTER OF THE EXTERNAL DEFICIT

The U.S. external position deteriorated between 1980 and 1986, with all measures of the trade and payments balance moving into substantial deficit. In particular, U.S. real net exports (measured in 1982 dollars) moved from a surplus of \$57.1 billion in 1980 to a deficit of \$145.8 billion in 1986, with the deficit reaching a maximum of \$161.6 billion on an annualized basis in the third quarter of 1986. As indicated in Table 3–3, all but one component of the trade balance—other goods—shared in the deterioration. The surplus in services was cut in half in real terms. Merchandise trade, which accounts for the bulk of total trade, absorbed over 80 percent of the total decline in real net exports. Most major end-use categories of the real merchandise trade balance (foods, feeds, and beverages; industrial supplies

and materials; capital goods; automobiles; and consumer goods) experienced a decline. Within merchandise, manufactured products moved from a surplus in 1980 to a large deficit in 1986. Agricultural exports, which are influenced by economic forces and policies somewhat different from other merchandise exports, also suffered from shrinking markets between 1980 and 1986. Furthermore, the aggregate trade balance deteriorated against most major regions and trading partners: against the industrial countries as well as the developing countries; against Europe and East Asia as well as Africa and Latin America.

TABLE 3-3.—*Selected Real Net Exports, 1980-87*

(Billions of 1982 dollars)

Item	1980	1982 IV	1986 III	1987 IV ¹
		Seasonally adjusted annual rates		
Net exports of goods and services.....	57.1	11.7	-161.6	-130.7
Services.....	68.9	55.3	31.4	22.9
Factor income.....	55.5	47.9	31.1	18.6
Other.....	13.3	7.3	.3	4.3
Merchandise.....	-11.8	-43.6	-193.0	-153.6
Foods, feeds, and beverages.....	16.9	12.2	2.6	6.0
Industrial supplies and materials (including petroleum).....	-61.9	-49.3	-94.7	-83.9
Capital goods (except automobiles).....	55.9	31.6	.6	10.9
Automobiles.....	-11.6	-16.7	-48.7	-43.2
Consumer goods.....	-17.2	-25.0	-61.5	-57.3
Other.....	6.1	3.6	8.6	13.3
MEMORANDUM:				
Nonagricultural exports minus nonpetroleum imports.....	31.9	-17.1	-137.2	-106.0

¹ Preliminary.

Source: Department of Commerce, Bureau of Economic Analysis.

Exceptionally strong growth of imports into the United States led the deterioration in real net exports. Between the beginning of the expansion and the third quarter of 1986, real imports grew at an average annual rate of 14.6 percent, more than double the average growth rate recorded between 1948 and 1980. Real exports also grew, but their 3.3 percent annual growth rate was much less than that of imports and about half the annual growth rate of real exports between 1948 and 1980.

Between the third quarter of 1986 and the end of 1987, real net exports improved by \$31 billion, narrowing the real trade deficit from 4.3 to 3.4 percent of real GNP. A \$74 billion increase in real exports outstripped a \$43 billion increase in real imports. The 15.4 percent annual rate of real export growth was more than double the average between 1948 and 1980. Strong gains in real merchandise exports were widespread across major product categories. At 6.4 percent, the annualized growth rate of real imports was well below the pace set between 1982 and late 1986 and about equal to the average

growth rate between 1948 and 1980. Increases in real merchandise imports were generally modest (negative in the case of consumer goods and petroleum products), except for capital goods excluding autos. Strong import growth in capital goods presumably reflected increased business purchases of durable equipment and substantial inventory accumulation. Contrary to the improvement in merchandise trade, the surplus in factor income deteriorated by \$13 billion—the effect of a growing stock of foreign claims on the United States. This led to a deterioration in the real trade balance in services; the surplus on services other than factor income showed the same pattern as merchandise trade.

The influence of broad macroeconomic forces, rather than specific developments in markets for particular products or trading relationships with particular countries, is readily apparent in the development of the U.S. real trade balance during the 1980s. Broad macroeconomic forces caused the strong growth of U.S. imports and the weak growth of U.S. exports across so many products and trading partners. Similarly, broad macroeconomic forces played a critical role in the recent resurgence of real export growth and in the general slowing of real import growth. These forces must continue to be major factors in the gradual process of reducing the U.S. external imbalance.

DIFFERENTIAL DEMAND GROWTH

During the 1970s both real domestic demand and real GNP in the United States generally grew more slowly than in Japan, Canada, and Western Europe. Differences between demand growth and real GNP growth, however, were relatively small in all countries, and trade imbalances remained small by recent standards. The situation changed during the 1980s, as indicated by the data in Table 3-4. During the general period of slow growth and world recession in 1980-82, U.S. real GNP fell slightly more rapidly than real domestic demand; thus as a share of real GNP, U.S. real net exports fell by 1.0 percentage point. In Canada the pattern was essentially the reverse; real domestic demand fell a little more rapidly than real GNP, and real net exports increased modestly.

During the period of world recession, real GNP growth in Japan slowed from a 5 percent average annual rate in the 1970s to 3.2 percent. Real net exports contributed about 1 percentage point to Japanese economic growth, since real GNP grew about 3 percent annually and real domestic demand grew about 2 percent per year. In West Germany, real domestic demand fell at a rapid 2.6 percent annual rate, but improving real net exports cushioned the effect on output growth, and real GNP fell at only a 1 percent annual rate. The pic-

TABLE 3-4.—*Growth in Real Domestic Demand and Real GNP in Major Industrial Countries, 1980-87*

(Average annual percent change)

Country/region	1980 I to 1982 IV		1982 IV to 1984 II		1984 II to 1986 III		1986 III to 1987 III ¹	
	Real domestic demand ²	Real GNP ³	Real domestic demand ²	Real GNP ³	Real domestic demand ²	Real GNP ³	Real domestic demand ²	Real GNP ³
United States	-0.5	-0.8	9.1	7.0	3.6	2.7	12.6	13.4
Japan	2.1	3.2	3.0	4.4	4.1	3.7	4.8	4.3
Germany	-2.6	-1.0	2.9	2.5	2.9	3.3	13.3	11.6
France	1.1	1.4	-5	.7	3.4	2.1	2.5	2.0
United Kingdom	-2	-0	4.1	2.3	3.4	3.3	5.7	5.2
Italy	-5	.1	3.2	2.8	3.4	3.0	3.0	2.4
Canada	-1.0	-3	6.7	7.1	4.1	3.6	5.0	4.1
Europe (Big Four) ⁴	-8	.0	2.2	2.0	3.2	2.9	3.2	2.4
G-7 less United States ⁴ .....	.1	1.0	2.8	3.2	3.6	3.2	3.8	3.1

¹ Data for United States and Germany are preliminary estimates for 1987 IV.

² Real domestic demand is real GNP minus real net exports.

³ Data for France, United Kingdom, Italy, and Canada are real GDP.

⁴ Data for Europe (Big Four) and G-7 less United States use GNP weights. Big Four consists of Germany, France, United Kingdom, and Italy.

Sources: Department of Commerce (Bureau of Economic Analysis) and country sources.

ture was mixed in the other three large European economies (France, Italy, and the United Kingdom).

During the initial phase of the expansion, from the end of 1982 to the middle of 1984, real domestic demand in the United States shot up at a 9.1 percent annual rate, exceeding by 2.1 percentage points the rapid growth rate of U.S. real GNP. The strong growth of demand and income reflected the recovery of the economy—from a particularly deep recession, aided by the shift to a quite expansionary monetary policy early in the second half of 1982, and spurred on by significant reductions in marginal tax rates on both labor and capital income. In most of the other six leading industrial countries, recovery was less robust, as indicated in Table 3-4. For these six countries, combined real GNP growth averaged 3.2 percent, slightly exceeding the 2.8 percent annual growth rate of real domestic demand. The very strong growth of real domestic demand in the United States, together with relatively weak demand growth in other industrial countries, clearly contributed to the strong growth of U.S. imports and the weak growth of U.S. exports during this period.

In the second phase of the expansion, from the middle of 1984 through the third quarter of 1986, growth of real domestic demand in the United States slowed to a 3.6 percent annual rate. As real net exports deteriorated further, U.S. real GNP grew at a moderate 2.7 percent annual rate. Growth of real domestic demand picked up in some of the other six leading industrial countries and equaled the U.S. rate during this period. Because U.S. imports already were substantially larger than U.S. exports by 1984, equal rates of demand

growth in the United States and abroad implied further deterioration of the U.S. trade balance.

Moreover, growth of real domestic demand during this period may give an exaggerated impression of the strength of spending, particularly for countries whose currencies appreciated against the dollar. In early 1986, the dollar prices of oil and many primary commodities fell. These price declines made possible increased purchases of oil and other primary commodities (measured in volume terms), even though the amount spent (measured in dollars) fell. And when spending is measured in foreign currencies that appreciated against the dollar, the effect of falling dollar prices of primary commodities was amplified. This observation partly explains how real domestic demand could grow more rapidly than real GNP in Japan between the second quarter of 1984 and the third quarter of 1986, and yet Japan's current account surplus could increase from 3.1 to 4.6 percent of GNP. Some of the benefits that Japan enjoyed from the large decline in the yen prices of oil and other primary commodities ended up in increased saving rather than increased spending. Similarly, during this period West Germany recorded a large increase in its current account surplus, from 0.5 to 3.6 percent of GNP, despite only a small excess of real GNP growth over real domestic demand growth.

In the most recent phase of the expansion, starting in late 1986 and continuing through 1987, the growth rate of real domestic demand in the United States slowed to 2.6 percent per year, due primarily to slower growth of consumption spending. In the other six leading industrial countries the growth rate of real domestic demand moved up slightly. The latest available data show that between their peak in the fourth quarter of 1986 and the third quarter of 1987 the current account surpluses of Japan and West Germany (as a share of GNP) declined by 1.4 and 1.8 percentage points, respectively. The reversal of the demand growth differential contributed to an improvement in U.S. real net exports, thus allowing the growth rate of U.S. real GNP to rise to 3.4 percent despite the slower growth rate of U.S. real domestic demand.

The growth rate of U.S. real domestic demand probably had to fall below the 3.6 percent annual rate experienced during the second phase of the expansion if the decline in U.S. real net exports was to be reversed. As discussed in Chapter 1, if the U.S. unemployment rate declines further and productivity grows further, the medium-term growth rate for U.S. real GNP is probably about 3.2 percent per year. Improvement of U.S. real net exports at an average annual rate equivalent to, for example, 0.8 percent of real GNP implies an aver-

age annual growth rate of real domestic demand of about 2.4 percent, which is very close to the 2.6 percent growth rate actually realized since the turnaround in real net exports began in late 1986.

In 1988 it appears likely that real domestic demand will grow relatively slowly in the United States, for the reasons discussed in Chapter 1. In particular, consumption spending is expected to grow relatively slowly as households seek to increase their saving rates above the low average level of 1987 (but probably not much above the rate achieved in the fourth quarter). Furthermore, investment spending for inventory accumulation is expected to decline. The strong growth of both real exports and real net exports is expected to play a key role in maintaining a moderate rate of economic growth.

Rapid growth of real domestic demand in other industrial countries, particularly those with large external surpluses, is critical to reducing their external surpluses, maintaining worldwide demand growth, and improving the U.S. external balance. If U.S. real domestic demand growth declines without an offsetting increase in other countries, total demand growth in the world economy would fall. If this happens, the rate of growth of world output also would fall. Output and employment growth in all the industrial countries, including the United States and the surplus countries, probably would be curtailed. The economic problems of many developing countries, especially those with large external debts, would become more severe.

Recent developments indicate that domestic demand in other industrial countries is beginning to strengthen. In surplus countries recent growth of real domestic demand has been running well ahead of growth of real GNP, reversing the pattern of export-led growth that had prevailed for many years. Between the third quarters of 1986 and 1987, domestic demand growth exceeded real GNP growth by 1.1 percentage point in West Germany and by 0.5 percentage point in Japan. Furthermore, recent domestic demand growth in Japan has been exceptionally strong—5.2 and 7.6 percent in the second and third quarters of 1987. In these two quarters domestic demand growth in Japan exceeded GNP growth by an average of 2 percentage points. Strong growth of real domestic demand in Canada and the United Kingdom also has contributed significantly to recent demand growth in the world economy.

The Organization for Economic Cooperation and Development (OECD) estimates that real GNP in Western Europe will grow only about 1½ percent per year during the next 2 years, while real domestic demand is expected to rise by 2¼ percent per year. Some countries that enjoyed relatively vigorous demand and output growth during the past 2 years may face worsening balance of payments po-

sitions. Consequently, it is especially important for countries with substantial external surpluses to increase their demand growth in order to maintain their own output and employment growth while their external surpluses contract. More rapid demand growth in surplus countries also is essential for the health of the world economy, because domestic demand growth is expected to be relatively weak in the United States, and a shrinking U.S. trade deficit will subtract from demand growth in other countries.

Market forces have provided, and are likely to continue to provide, strong incentives for rapid growth of domestic demand in surplus countries. In particular, the real appreciation of the yen and the lower dollar price of imported oil have substantially reduced the real cost of goods imported by Japan relative to goods and services produced in Japan. The passthrough of a substantial part of this decline in real import costs has boosted the purchasing power of Japanese consumers, thereby contributing to rising living standards and to growth of domestic demand. Moreover, yen appreciation has induced consumers to shift their purchases from domestic to imported goods. The passthrough of the benefits of currency appreciation and lower oil prices apparently has been important in stimulating stronger growth of consumer spending in West Germany as well.

The government of Japan has carried out commitments made at the Louvre Accord in February 1987 and the Venice Economic Summit in June 1987 to boost domestic demand growth. On May 29, 1987, the Japanese government announced a 6 trillion yen (\$41.3 billion) emergency stimulus package, including 5 trillion yen in public works and 1 trillion yen in tax cuts. At the end of last year the government of Japan approved a 1988 budget including \$58.7 billion for public works—20 percent above the figure a year ago and equal to the high level established by last year's supplementary budget.

West Germany also has taken actions to boost domestic demand growth. For example, the West German government increased the amount of tax cuts for 1988 and later years to about DM14 billion (\$8.7 billion), and it will provide special loans at preferential rates for private and public investment projects. In addition, the German Bundesbank moved to reduce short-term interest rates in late 1987.

Continued domestic demand growth in other industrial countries will contribute to the health of the world economy in another important way. A growth-oriented solution to the international debt crisis requires that the heavily indebted developing countries expand their exports. During the 1980s the United States increased its purchases of goods exported by these countries while other industrial countries reduced their purchases. Now, as the United States reduces its trade deficit, other industrial countries must absorb more of the exports of

these heavily indebted developing countries if they are to solve their debt problems. As a result, developing countries would be better able to service their debts and would provide better markets for the exports of the industrial countries.

THE ROLE OF THE FEDERAL DEFICIT

Because a deterioration in the U.S. external position corresponds to a decline in the national saving-investment balance and to an associated increase in the net capital inflow, the deterioration of the U.S. external position also must have an explanation in terms of factors that affect the national saving-investment balance and the net capital inflow. This explanation does not contradict the earlier discussion of differential demand growth in the United States and other countries, nor does it conflict with the later discussion of exchange-rate movements. All are part of the same puzzle. The importance of different forces affecting the external balance may be more readily apparent from one perspective than another, but all the pieces fit together in the end.

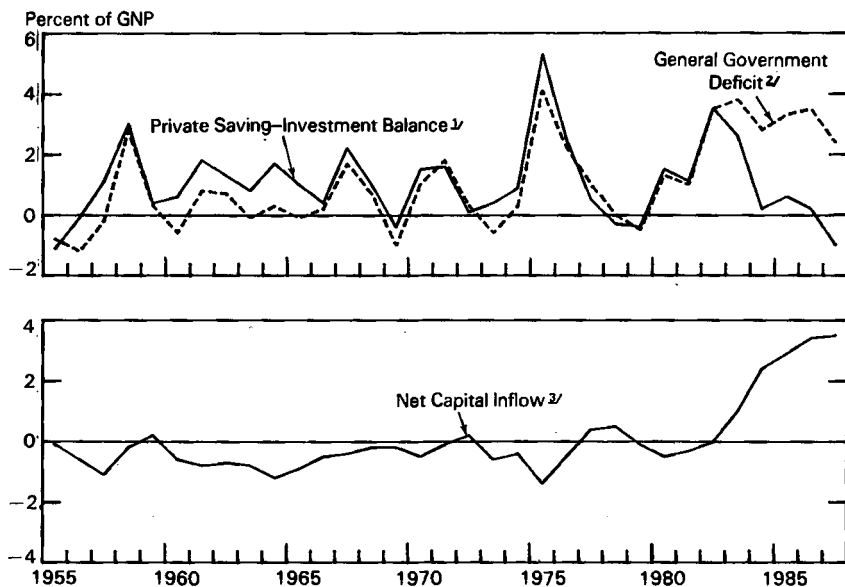
The deterioration of the national saving-investment balance and the corresponding increase in the net capital inflow since 1982 reflect primarily the decline in the national saving rate (as officially measured). The low rate of national saving since 1982 is accounted for primarily by the high rate of government dissaving which, in turn, is attributable to large Federal deficits. Measured on a NIPA basis, the government deficit (Federal, State, and local combined) has averaged 3.2 percent of GNP since 1982, compared with an average deficit of 0.3 percent of GNP between 1947 and 1982. The Federal deficit alone has increased to an average of 4.6 percent of GNP since 1982, compared with a pre-1982 average of only 0.6 percent of GNP. The personal saving rate also has been relatively low since 1982, but the rate of business saving has been relatively high. Since 1982 the private saving rate (personal plus business saving) has run about the same as its postwar average.

The causal linkages between the government deficit and national saving, national investment, and the capital inflow, however, are more complex than these averages suggest. As shown in the upper panel of Chart 3-3, movements in the general government deficit as a share of GNP have tended to parallel movements in the private saving-investment balance as a share of GNP. This parallelism has offsetting implications for movements in the net capital inflow, as measured by net foreign saving in the national income and product accounts: an increase in the private saving-investment balance implies a smaller net capital inflow, while an increase in the government deficit implies a larger net capital inflow. As shown in the lower panel of

Chart 3-3, movements in the net capital inflow generally have been smaller than movements in either the private saving-investment balance or the government deficit.

Chart 3-3

Components of the Saving-Investment Balance



1/ Gross private saving minus gross private domestic investment.

2/ Federal, State, and local deficit.

3/ Defined as net foreign saving.

Note.—Data for 1987 are preliminary.

Source: Department of Commerce.

In the United States the dominant economic factor affecting movements in both the government deficit and the private saving-investment balance has been the business cycle. Usually during recessions, private investment has declined more than private saving, so the private saving-investment balance has improved. Also during recessions government revenues tend to fall and government expenditures tend to expand, so the government deficit grows. In contrast, during expansions private investment usually grows relative to private saving, so the private saving-investment balance deteriorates. Also, government revenue tends to rise relative to government expenditure, so the government deficit declines. Because business cycle effects on the private saving-investment balance typically have been a little stronger than business cycle effects on the government deficit, the net capital

inflow has tended to decline during recessions and to increase during expansions.

In this regard, the recessions of 1980 and 1981–82 were not very different from earlier recessions. However, as is apparent in Chart 3–3, the pattern changed during the current expansion. As usual, the private saving-investment balance declined during 1983–86, reflecting the strong growth of private investment. But the government deficit did not decline during 1983–86 as it usually does during a vigorous expansion—a result more than accounted for by the persistence of quite large Federal deficits. Therefore, the net capital inflow grew much more than normal between the end of 1982 and late 1986.

In fiscal 1987, due to a large decline in the Federal deficit, the total government deficit dropped substantially from 3.6 to 2.5 percent of GNP. By itself, this reduction should have cut the net capital inflow and the current account deficit by nearly one-third from its level in fiscal 1986. However, the private saving-investment balance deteriorated substantially between fiscal 1986 and fiscal 1987, from 0.3 percent to minus 0.8 percent of GNP. This fall in the private-saving investment balance reflected both a strong gain in gross private domestic investment (due largely to higher inventory investment) and an outright decline in private saving (because of lower personal saving). Thus, despite a substantial decline in the government deficit, the net capital inflow and the current account deficit both increased modestly.

Future improvements in the private saving-investment balance and future reductions in the Federal deficit should cause the national saving-investment balance to improve and the net capital inflow to decline. Because the rate of inventory investment in the nonfarm sector at the end of 1987 is probably unsustainable for any significant length of time, downward adjustment in this component of private sector investment should contribute to an improved private saving-investment balance in 1988. The personal saving rate in 1987 was very low by postwar standards, although it rose in the fourth quarter. Assuming that the personal saving rate remains close to its fourth quarter 1987 level in 1988 (which implies growth of consumption spending about even with growth of real disposable income), the average saving rate in 1988 will be well above that of 1987—a further factor tending to improve the private saving-investment balance.

The Federal budget deficit as a share of GNP is expected to decline only modestly in 1988 after the large drop registered in 1987. However, the revised Gramm-Rudman-Hollings budget law mandates a gradual reduction in the Federal deficit in later years and a balanced budget by 1993. The budget compromise agreed to by the Administration and the Congress last autumn provides for further steps

in this gradual process. Of course, the desirability of particular measures to reduce the Federal deficit must be assessed on the basis of their likely effects on the economy.

The Federal deficit has grown because Federal outlays as a share of GNP have risen substantially since the 1960s (despite a lower share for defense spending), while Federal revenues as a share of GNP have risen modestly. Specifically, Federal outlays averaged 19.0 percent of GNP in the 1960s; they were 22.8 percent in 1987. Federal revenues also rose, but by less than the increase in Federal outlays: from 18.2 percent of GNP in the 1960s to 19.4 percent in 1987. Increases in taxes, without effective restraint on spending growth, could fail to reduce the budget deficit. Moreover, increasing taxes and undoing tax reform would impair incentives to work, invest, and produce—the foundations of future growth. Thus reduction of the Federal deficit, but only through appropriate means, is the proper policy for improving the national saving-investment balance.

Finally, the behavior of the net capital inflow cannot be viewed as entirely passive. The apparent attractiveness of U.S. investment to foreigners and the inflow of capital it helped to stimulate probably contributed to the appreciation of the dollar between 1980 and early 1985, which played a major role in the deterioration of the U.S. trade balance. In the overall equilibrium of the economy, this deterioration was the necessary counterpart of both the increase in real domestic demand relative to real GNP and the growing gap between national investment and national saving. If foreigners had not supplied capital willingly, the pattern of real domestic demand, real GNP, national investment, national saving, and the government deficit all would have been different.

Nevertheless, it is fair to say that the low rate of national saving, which reflects primarily the persistence of a large Federal deficit late into the current expansion, has played a key role in the development of the U.S. external deficit. It is equally and simultaneously true that the strong growth of real domestic demand in the United States and the relatively weak growth of real domestic demand in other industrial countries between 1982 and late 1986 played critical roles in the evolution of the U.S. external deficit. Therefore, reduction of this external deficit in an environment of continued economic growth in the United States and other countries requires two important and simultaneous developments. First, the U.S. national saving-investment balance must improve through government spending restraints leading to a reduced Federal deficit. Second, the growth of real domestic demand in other industrial countries must remain sufficiently high to sustain world output growth, while growth of real domestic demand

remains restrained in the United States, leading to a gradual contraction of worldwide external imbalances.

EXCHANGE RATES AND RELATIVE PRICES

Strong appreciation of the U.S. dollar between 1980 and early 1985 and its lingering effects in 1986 were important proximate causes of the deterioration of the U.S. trade balance—the ultimate causes lying with the economic forces that induced the dollar to appreciate. The full effects of dollar appreciation were not felt immediately; it took time for the relative prices of imports and exports to respond fully to exchange-rate changes, and it took more time for trade quantities to respond to changes in relative prices. As illustrated in Chart 1-1 of Chapter 1, there is about a six-quarter lag between movements in the foreign exchange value of the U.S. dollar and movements in U.S. real net exports. The recent upturn in real net exports beginning in late 1986 followed six quarters after the beginning of dollar depreciation in early 1985.

The improvement in the trade balance through the end of 1987, however, is somewhat smaller than normally would be expected from dollar depreciation through the middle of 1986, after allowing for lags. Analysis of this shortfall requires examination of the responses of relative export and import prices to dollar depreciation. This analysis is important for assessing the likelihood of recovering lost ground and of further improving real net exports commensurate with the further depreciation of the dollar since the middle of 1986.

THE EXTENT OF EXCHANGE-RATE MOVEMENTS

The value of the U.S. dollar increased substantially against the currencies of most industrial countries between 1980 and the first quarter of 1985. The extent of appreciation was somewhat uneven across currencies. The dollar rose 109 percent against the British pound and 79 percent against the West German deutsche mark, but only 14 percent against the Japanese yen and 16 percent against the Canadian dollar. According to the Federal Reserve staff's trade-weighted index of the foreign exchange value of the dollar against the currencies of 10 large industrial countries (used in subsequent discussions), the dollar rose substantially over this period. Adjusted for movements of the price level in the United States and in other industrial countries, the real foreign exchange value of the dollar rose a similar amount.

The dollar's appreciation during the early 1980s probably was spurred in part by the shift in monetary policy from perceived ease and accommodation in the late 1970s to an actual and ultimately

credible anti-inflationary stance. Continued dollar appreciation after 1982 probably also reflected the strong recovery in the United States in comparison with most other industrial countries, as well as the general restoration of confidence in the U.S. economy. High real interest rates in the United States during the early 1980s, as well as changes in U.S. tax laws that increased the attractiveness of investment in the United States, may have attracted foreign capital that tended to push up the value of the dollar. The increase in U.S. interest rates and the tightening of monetary policy that began in early 1984 may have contributed to the upward surge in the value of the dollar in 1984. No single factor, however, is the exclusive cause of the dollar's appreciation; several different factors probably played important roles.

Since February 1985 the U.S. dollar generally has been depreciating. Substantial declines have been recorded against the currencies of all the large industrial countries, except Canada. Based on the Federal Reserve's index, by the end of 1987 the dollar had fallen—in real and nominal terms—about 40 percent and was slightly below its 1980–81 level. The adjustment was less, however, against the currencies of some developing countries.

As with the dollar's appreciation in the early 1980s, the exact causes of its depreciation since early 1985 are difficult to isolate. The deceleration in U.S. real GNP growth after mid-1984 probably contributed to the dollar's fall. The intentions of the G-5 countries (France, Japan, the United Kingdom, the United States, and West Germany) to seek a lower dollar, as implied by the Plaza Agreement of September 1985, and their subsequent actions to back up these intentions probably hastened the dollar's fall. The easing of U.S. monetary policy that began in late 1984 and extended through 1986 also may have contributed to the dollar's decline.

THE DOLLAR AND RELATIVE EXPORT PRICES

The rising dollar in the early 1980s increased the relative price of U.S. produced goods exported to foreign markets. The price of U.S. exports in foreign currencies relative to overall foreign price levels rose 52 percent between 1980 and the first quarter of 1985. It is not surprising, therefore, that U.S. exporters became less competitive. In 1986 U.S. real exports of goods and services had fallen 3 percent below their 1980 level, compared with about 40 percent growth that would have been expected based on the trend rate of growth between 1948 and 1980.

Dollar appreciation, not slow productivity growth or spiraling wage costs, was the primary cause of the decline in the international competitiveness of U.S. manufacturing in the first half of the 1980s. Be-

tween the cyclical peak in the third quarter of 1981 and the first quarter of 1985, labor productivity in manufacturing increased at a 4.4 percent annual rate—more than one and a half times as fast as the 1948-80 average—and only slightly below the 5.0 percent growth rate of labor compensation in manufacturing. As a result, U.S. unit labor costs rose at only a 0.6 percent rate from late 1981 to the first quarter of 1985. This was less than the growth in a trade-weighted average of unit labor costs in 11 of the largest foreign industrial countries, measured on a national currency basis, during the first half of the 1980s. However, once dollar appreciation is factored in, the International Monetary Fund (IMF) estimates that unit labor costs for U.S. manufacturing, relative to unit labor costs for manufacturing in other industrial countries, rose substantially during this period.

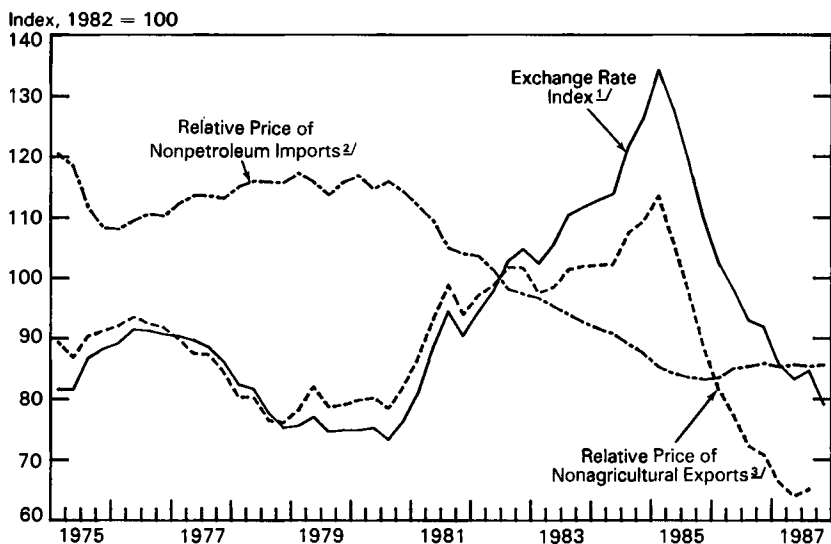
The depreciation of the U.S. dollar since early 1985 now has enabled U.S. exporters to regain the international competitiveness they lost earlier. Since the dollar began to decline, relative unit labor costs have fallen significantly. Continued strong productivity growth and wage restraint in U.S. manufacturing have contributed to improved cost competitiveness. Between the first quarter of 1985 and the fourth quarter of 1987, manufacturing productivity increased at a 3.7 percent annual rate, and hourly compensation of manufacturing workers grew at a 2.7 percent annual rate. As a result, unit labor costs for U.S. manufacturing have fallen at a 1.0 percent annual rate since the first quarter of 1985. Adding to this the effect of dollar depreciation, the IMF estimates that unit labor costs for U.S. manufacturing, relative to those in other industrial countries, fell 39 percent between the first quarter of 1985 and the second quarter of 1987 (the latest data available), and they are currently below their 1980 level.

Dollar depreciation also has contributed to a significant decline in the relative price of U.S. nonagricultural exports in foreign markets, as measured by a foreign currency price of U.S. nonagricultural exports divided by a foreign consumer price index (CPI). As Chart 3-4 illustrates, movements in the relative price of nonagricultural exports have been dominated by movements in the exchange rate. As the dollar appreciated in the early 1980s, the relative price of U.S. nonagricultural exports rose in foreign markets. As the dollar depreciated, this relative price declined, and it is now lower than it was in 1980.

As might be expected on the basis of improved price and cost competitiveness, U.S. exports recently have enjoyed very strong growth. Real nonagricultural exports have grown at a 19.5 percent annual rate since the third quarter of 1986—nearly triple their rate of growth between 1967 and 1980. Reflecting this export growth, U.S.

Chart 3-4

Relative Prices of Exports and Imports and the Exchange Rate



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

2/ Ratio of the implicit price deflator for nonpetroleum imports to the U.S. consumer price index.

3/ Ratio of the implicit price deflator for nonagricultural exports multiplied by the exchange rate index to a GNP-weighted consumer price index for the G-10 countries (excluding the United States) plus Switzerland.

Note.—Data for fourth quarter 1987 are preliminary.

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

manufacturing output has increased at a 5.4 percent annual rate, and manufacturing employment has increased by 380,000.

Econometric estimates suggest that nonagricultural exports rise about three-fourths of a percent for every 1 percent decline in their relative price, with about half the effect occurring within three quarters. Based on these estimates, the 43 percent decline in the relative price of nonagricultural exports between the first quarter of 1985 and the third quarter of 1987 should increase U.S. nonagricultural exports by about 30 percent within 2 years. By the end of 1987 real nonagricultural exports had risen 36 percent above their level in the first quarter of 1985. Since a part of this export gain probably was due to normal export growth associated with rising foreign incomes, it would appear that substantial further export growth should result from relative export price adjustments made through the third quarter of 1987.

Moreover, relative export prices in the third quarter of 1987 may not yet fully reflect the depreciation of the dollar since early 1987. Following the Louvre Accord in February 1987, exchange rates among the group of seven summit countries (the G-7 countries) remained fairly stable until the fourth quarter, allowing for much of the adjustment of relative export prices to exchange rates to occur by the end of the third quarter. However, the dollar continued to depreciate against the currencies of important trading partners outside the G-7 during the spring and summer, and it declined a further 6 to 7 percent against other G-7 currencies (except the Canadian dollar) in the fourth quarter. Therefore, there is reason to anticipate further reductions in relative prices of U.S. goods in foreign markets that will contribute to further increases in U.S. exports.

To correct the U.S. external deficit in a noninflationary manner, U.S. manufacturing industries must be able to expand output to serve domestic and foreign markets without incurring rapidly rising costs. Recent data on capacity utilization suggest that existing capacity in most manufacturing industries appears ample to meet output growth in the near term. The ability to expand capacity beyond existing levels is aided by the availability of unused capacity in the durable goods industries that produce business equipment, as well as by the slack that exists in the construction industry. The incentive to expand capacity is indicated by recent data that show manufacturers' profits from current production running well above their average rate in 1986. Additional incentive is provided by the knowledge that the correction of the trade imbalance should assure continued strong growth in the manufacturing sector. According to the most recent Department of Commerce survey of investment intentions, U.S. manufacturers plan to increase spending for plant and equipment in real terms by 8.6 percent in 1988.

THE DOLLAR AND RELATIVE IMPORT PRICES

The price of nonpetroleum imports relative to the U.S. consumer price index fell until the fourth quarter of 1985, at which time it was 28 percent below its 1980 level. Allowing 2 further years for this relative price decline to work its full effect on import quantities, econometric estimates suggest that a relative price decline of this magnitude would have induced about a 30 percent increase in real nonpetroleum imports. In the fourth quarter of 1985, nonpetroleum imports were about 90 percent above their 1980 level. The additional increase reflects large increases in U.S. income and real domestic demand, and the need for the heavily indebted developing countries to run external surpluses in order to service their debts. There is,

therefore, little mystery about the rapid growth of real imports between 1980 and the end of 1985.

From the end of 1985 to the end of 1986, U.S. real nonpetroleum imports increased 10 percent; from the end of 1986 to the end of 1987, they increased a further 6 percent. Some of these increases can be explained by the growth of real domestic demand (2.7 percent in 1986 and 3.2 percent in 1987) and, especially for 1986, by the delayed effects of earlier reductions in relative import prices. However, in view of the substantial depreciation of the dollar beginning in early 1985, the continued rapid growth of real nonpetroleum imports in 1986 and 1987 appears somewhat out of line with earlier empirical relationships. This continued strong growth of real imports, not a smaller than normal response of real exports, accounts for the failure of U.S. real net exports to improve as rapidly as would normally be expected, given the large adjustment in the foreign exchange value of the dollar.

Although the recent strength in real nonpetroleum imports is unusual given the sharp depreciation of the dollar, this strength is not unusual given the behavior of the relative price of such imports. As illustrated in Chart 3-4, the relative price of nonpetroleum imports increased very little during the period of dollar depreciation. At the end of 1987 it stood just 0.5 percent above its level in the first quarter of 1985 (and only 2.9 percent above its lowest level in the fourth quarter of 1985), despite a 40 percent depreciation of the dollar. Econometric studies suggest that the relative price of nonpetroleum imports normally would have risen about 25 percent in response to dollar depreciation, rather than the amount actually recorded. It appears that the very limited response of relative import prices largely accounts for the failure of real import growth to slow to the extent that normally would be expected, given the size of the dollar's decline.

PROFIT MARGINS AND IMPORT PRICES

A substantial decline in the cost of materials purchased by foreign exporters partially accounts for the slow rise in relative import prices in the United States since 1985. Measured in U.S. dollars, the price of oil in 1986 averaged about half its level in 1985. One commonly cited index of the dollar price of raw commodities fell 13 percent between early 1985 and late 1986. Other factors being equal, reductions in the dollar cost of raw materials allow foreign exporters to reduce the dollar prices of U.S. imports without reducing their profit margins. However, if appreciation of foreign currencies and movements in foreign labor costs are considered, the decline in materials costs only partly explains the limited increase of import prices in the

United States during the period of dollar depreciation. Apparently, the profit margins of foreign exporters have absorbed much of the effect of dollar depreciation.

The profit margins of exporting firms typically absorb some of the effect of movements in exchange rates. This appears to be true to a limited extent for U.S. firms exporting to foreign markets and to a greater extent for foreign firms exporting to the United States. When the dollar appreciates, U.S. exporters—whose costs often are determined in U.S. dollars—may not raise their prices in foreign markets (quoted in foreign currencies) in the same proportion as the dollar appreciates. Instead, to help preserve their market share abroad or for other reasons, they sometimes will absorb part of the effect of dollar appreciation by reducing their profit margins on export sales. Conversely, when the dollar depreciates, U.S. exporters may not cut their prices in foreign markets in the same proportion as the dollar's decline, and their profit margins may expand. Similarly, foreign exporters to the United States may not cut their prices in U.S. markets as much as the dollar appreciates or raise their prices here as much as the dollar depreciates.

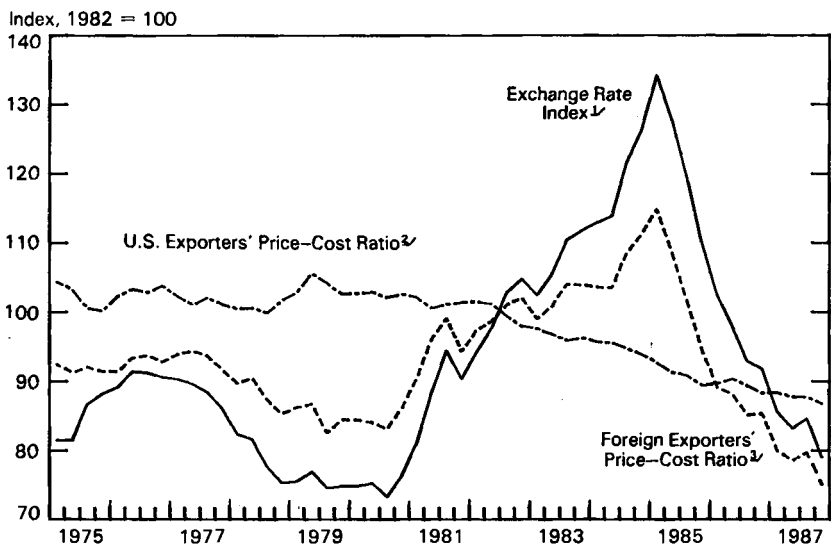
The evidence concerning adjustment of profit margins in response to exchange-rate changes is largely inferential. Some evidence is available in some specific cases, but there are no comprehensive data on profit margins in different national markets for U.S. firms or for foreign firms. It is possible, however, to construct proxy measures of the ratio of prices to costs that indicate general movements in profit margins. For U.S. exporters, the dollar price of U.S. nonagricultural exports is taken as a measure of prices received in foreign markets. If this price is divided by the U.S. producer price index (PPI) for finished goods, a proxy price-cost ratio for U.S. exporters can be constructed. For foreign exporters to the United States, the dollar price of U.S. nonpetroleum imports is one measure of prices received. If this price is divided by the foreign wholesale price index converted into U.S. dollars using market exchange rates, a proxy price-cost ratio for foreign exporters to the United States also can be constructed. An increase in this price-cost ratio generally suggests an increase in the corresponding profit margin, but the relationship probably is not exact. However, alternative measures of the price-cost ratio show generally similar movements.

The behavior of the price-cost ratios for U.S. and foreign exporters is illustrated in Chart 3-5. The levels of the two indexes are not particularly meaningful, but their movements in comparison with movements in the Federal Reserve's index of the foreign exchange value of the U.S. dollar are important. Basically, the price-cost ratio for U.S. exporters shows relatively little movement, although there is a

fairly consistent downward trend beginning in 1982. In contrast, the price-cost ratio for foreign exporters moves in fairly close sympathy, although somewhat less than in proportion, with movements in the exchange rate.

Chart 3-5

U.S. and Foreign Exporters' Price-Cost Ratios and the Exchange Rate



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

2/ Ratio of the implicit price deflator for nonagricultural exports to the U.S. producer price index for finished goods.

3/ Ratio of the implicit price deflator for nonpetroleum imports to a trade-weighted wholesale price index for eight industrial countries excluding the United States divided by the exchange rate index.

Note.—Data for fourth quarter 1987 are preliminary.

Sources: Department of Commerce, Department of Labor, Board of Governors of the Federal Reserve System, and Data Resources, Inc.

The behavior of the price-cost ratios relative to the exchange rate illustrated in Chart 3-5 is broadly consistent with the behavior of relative import and export prices illustrated in Chart 3-4. It appears that U.S. exporters basically price their products in dollars and in line with movements in domestic costs. The relative price of U.S. exports in foreign markets, therefore, moves in close sympathy with the exchange rate (Chart 3-4), while the price-cost ratio for U.S. exporters shows little relation with the exchange rate (Chart 3-5). The reverse largely holds for foreign exporters. The relative price of foreign exports moves to some extent in response to exchange-rate movements (indicated by the inverse relation between movements in the relative price of nonpetroleum imports and movements in the ex-

change rate in Chart 3-4), while the foreign price-cost ratio appears to absorb most of the effect of exchange-rate changes (Chart 3-5).

The decline in the price-cost ratio for U.S. exporters between 1982 and 1985 or 1986 is consistent with the fact that U.S. exporters were under heavy competitive pressure in foreign markets and chose to absorb some of this pressure in lower profit margins. The further decline of the price-cost ratio for U.S. exporters through 1987 is peculiar in view of the very large correction in the value of the dollar. Part of this anomaly may be due to deficiencies in the proxy measure of the price-cost ratio. An alternative measure, based on unit labor costs and raw materials prices rather than the PPI, does not show a decline in 1987; it is roughly constant throughout the 1980s. The strong growth of corporate profits for manufacturing firms in 1987 and the strong growth of exports suggest that profit margins were not falling.

The recent behavior of the price-cost ratio for foreign exporters suggests that their absorption of the effects of dollar depreciation at least partly explains the less-than-expected relative price increase of U.S. imports. The extent of such absorption also appears to have exceeded previous experience. Studies using alternative measures of the price-cost ratio or the profit margin for foreign exporters generally have confirmed these impressions.

Less than complete passthrough of measured dollar depreciation to import prices may result from changes in the pattern of international trade. For example, the sources of U.S. imports may have been shifting in the direction of exporters with relatively lower production costs measured in U.S. dollars, including exporters located in countries whose currencies have appreciated relatively little against the U.S. dollar. In addition, some products imported into the United States have been subject to quantitative restrictions imposed by the United States or by the countries of origin. The prices of such imported products in U.S. markets are influenced strongly by these restrictions, rather than by exchange rates.

Less than complete passthrough is also consistent with economic theory. Foreign producers whose costs tend to rise with increased output and whose sales have been falling (in both domestic and foreign markets) probably have been experiencing declining production costs, especially at the margin. Such producers naturally would cut their prices in line with declines in their marginal production costs, even if their profits (taking account of fixed costs) were falling. Furthermore, for a foreign producer whose dollar prices are higher than production costs, holding the dollar price constant and cutting the profit margin may retain more profits when the dollar depreciates than raising the dollar price and suffering substantial sales losses.

Moreover, if a large share of a foreign producer's total sales are in the U.S. market, primarily in competition with U.S. producers, there may be little alternative to maintaining dollar prices even when production costs in terms of dollars rise due to appreciation of the producer's home currency. Some of the profit shrinkage may be passed back to the foreign producer's workers and suppliers, who also recognize their indirect dependence on sales in the U.S. market. Because of the large size of the U.S. market, this situation is more likely to arise for foreign firms selling in the United States than for U.S. firms selling abroad. Finally, as a general marketing strategy, firms may find it advantageous to maintain stable prices despite fluctuations in production costs arising from exchange-rate changes or other factors. This may be especially important if brand loyalty is a significant sales factor, if production costs are a relatively small share of the final sales price, or if fluctuations in production costs are viewed as temporary.

Whatever the reason for the relatively limited passthrough of dollar depreciation to U.S. import prices through the end of 1987, the most recent depreciation of the dollar and some of the residual effects of earlier depreciation may have a more substantial effect on import prices in the future. During the past year dollar depreciation has become more general against a broader range of currencies, and some quantitative restrictions on imports that were previously important are becoming redundant. Presumably there is also a limit beyond which profit margins cannot reasonably be squeezed. Furthermore, foreign producers may now recognize that much of the dollar's depreciation since 1985 is likely to prove permanent, so previously delayed price adjustments may now be made.

In sum, U.S. exports appear to have a good potential for growth, while economic forces are working to slow, if not partially reverse, the growth of imports. Because of strong productivity growth, effective cost containment, and exchange-rate adjustment, U.S. exporters already have regained the international competitive position they held in 1980-81 when the United States had a substantial surplus of real net exports. The additional depreciation of the dollar during the fourth quarter of 1987, and the continuing passthrough of some of the effects of earlier depreciation, should enhance export competitiveness further. Provided that costs remain effectively contained and demand growth continues in foreign markets, real U.S. exports should continue their recent vigorous growth. For real U.S. imports, increasing passthrough to relative import prices of the effects of recent and earlier dollar depreciation should limit growth. Anticipated slow growth of real domestic demand is an additional factor limiting likely growth of imports. Thus with import growth restrained and

exports growing strongly, improvements in real net exports should contribute substantially to overall U.S. economic growth.

THE ADJUSTMENT PROCESS

Reduction of external imbalances requires substantial macroeconomic and structural adjustments that may be difficult to achieve rapidly without endangering the fundamental objective of maintaining economic growth with low inflation. To be successful, therefore, the process of reducing external imbalances must be gradual. It also must be persistent. The apparent response of financial markets to disappointing news about external imbalances suggests that an undesirably rapid pace of adjustment could be forced if external imbalances are not steadily reduced. Moreover, the incentives to undertake the necessary structural adjustments probably are enhanced when the need for, and reward from, such adjustments are apparent.

Consider the necessary macroeconomic adjustment in the United States. In the fourth quarter of 1987 the U.S. deficit in real net exports was equivalent to about 3 percent of real GNP. As a matter of arithmetic, elimination of this deficit requires that real GNP rise about 3 percent relative to real domestic demand, or equivalently, that real domestic demand fall by about 3 percent relative to real GNP. Yet, since the Korean war, there has been only one period longer than a year and a half when annual growth of real GNP has consistently exceeded annual growth of real domestic demand by close to a percentage point. This period lasted just over 2 years and it included 1980, when a sudden drop in real domestic demand drove the economy into a sharp recession. The danger is that without the assurance of substantial, persistent improvement in the trade balance, slow growth of real domestic demand increases the risk of recession. Prudence, therefore, suggests that several years be allowed to achieve the large necessary reductions in the U.S. real net export deficit.

For other countries, excessively rapid reduction of the U.S. net export deficit also poses significant macroeconomic problems. In the world as a whole, demand growth must equal output growth. Therefore, if slower domestic demand growth in the United States is not offset by more rapid domestic demand growth in other countries, world output growth would suffer, and the effects would not be limited to the United States. Slow growth or outright decline of U.S. imports means slow growth or outright decline of other countries' exports. This process could be mutually reinforcing, increasing the risk of worldwide recession. Moreover, there appear to be practical limits to the growth of real domestic demand that can be expected in other

countries. Given the objective of sustaining world output growth, therefore, there are practical limits to the desirable rate of reduction of external imbalances.

Because the tradable goods and services sector of the U.S. economy is roughly 40 percent of the total economy, the structural adjustments required to reduce the U.S. trade deficit are relatively larger than the macroeconomic adjustments. To reduce the real net export deficit by 3 percent of GNP, production of tradable goods (including tradable services) must expand by about 7.5 percent relative to consumption of tradable goods. Except in an economic downturn, U.S. consumption of tradable goods is unlikely to decline over a sustained period. Indeed, the need to expand productive capacity in the tradable goods sector is likely to keep domestic demand for tradable capital goods relatively strong. Therefore, reduction of the trade deficit in an environment of economic growth likely will require significant expansion of domestic production of tradable goods.

In 1987 production of tradable goods probably expanded at about a 5 percent rate (the growth rate of industrial production), and the rate of capacity utilization increased significantly. Sustaining output growth at a 5 percent rate probably would be feasible if productive capacity were expanded sufficiently rapidly. However, at this rate of output growth, it would take several years to close the gap between production and consumption of tradable goods. In a growing economy with the unemployment rate already down to 5.7 percent, pushing adjustment of the tradable goods sector too fast could generate undesirable cost pressures that, among other problems, could erode the international competitiveness of U.S. producers.

For other countries whose trade positions must adjust as the U.S. position improves, their structural adjustment problem is essentially the opposite. Production of tradable goods must decline relative to consumption of tradable goods. This adjustment will be easier and less painful to achieve, especially for workers and firms in the tradable goods sector, if it occurs gradually through a shift in the relative growth rates of tradable goods production and consumption, rather than suddenly through an absolute decline of tradable goods production. In the United States, it should be recalled, even though adjustments in tradable goods industries often were difficult during the period of the growing U.S. trade deficit, output of most tradable goods industries (particularly manufactures) continued to expand in line with the overall economy.

Moreover, outright contraction or very slow growth of tradable goods industries in foreign countries could impair overall economic growth there. Resources need to shift away from tradable goods and toward nontradable goods. However, unemployment of resources in

the tradable goods sector means temporary income losses that may limit spending and thereby impair domestic demand growth essential to maintaining overall growth in the world economy. These difficulties could be magnified if investment in the tradable goods sector drops precipitously without offsetting increases of investment in other sectors. Thus all trading nations share a common interest in avoiding adjustment pressures that are ultimately too strong and self-defeating.

CONCLUSION

Macroeconomic and structural adjustments in the United States and other countries have begun to reduce external imbalances in an environment of sustainable noninflationary growth. That process will continue in 1988 and beyond. Growth of real domestic demand has slowed in the United States, and it appears likely to remain relatively slow in the period ahead. Federal deficit reduction, together with prospective improvement in the private saving-investment balance, should improve the national saving-investment balance. Growth of real domestic demand abroad has accelerated due to government policies and market forces. Relative price adjustments resulting from the substantial correction in the foreign exchange value of the dollar already have brought, and will continue to bring, reductions in worldwide external imbalances. These relative price adjustments have helped to stimulate stronger internally led growth in foreign economies and to motivate necessary structural adjustments both in the United States and abroad.

Clearly, it is important to maintain policy momentum in the macroeconomic area, as well as to continue progress in reducing structural rigidities and barriers to adjustment, especially in economies with high unemployment rates. Reduction of marginal tax rates, of burdensome government regulations, and of inefficient government subsidies and, when appropriate, judicious easing of monetary policy and increased spending on worthwhile public investments can contribute to demand and output growth without raising risks of inflation. Elimination of restrictive work practices, excessive nonwage labor costs, expensive job security arrangements, rigid work rules and wage restraints, and other labor market practices that impair mobility and discourage job creation can contribute to both growth and adjustment. On the consumption side, reform of government policies that prevent efficient use of scarce land and removal of artificial restraints on mortgage and consumer credit can aid growth under appropriate circumstances.

Finally, maintenance of an open system of world trade is essential to the process of reducing external imbalances in an environment of noninflationary growth for the world economy. Specifically, the growth-oriented method for gradually reducing external imbalances requires stronger demand growth in foreign countries while demand growth remains restrained in the United States. This will allow improvements in the U.S. trade balance to come primarily from an expansion of exports, rather than a sharp cut in imports. For this method to work, foreign markets must be open to U.S. exports. The alternative method for reducing the U.S. trade deficit—protectionism at home and retaliatory market-closing measures abroad—is a prescription for worldwide economic stagnation. Especially now, when U.S. industries have regained international competitiveness and export growth appears likely to sustain economic expansion, the United States has a particular interest in avoiding protectionism and pursuing instead its program for freer and fairer trade.

CHAPTER 4

Expanding Trade and Avoiding Protectionism

TWICE IN THIS CENTURY the United States has taken the lead in setting a new course for the world's trading system. The first time was in 1930 with the passage of the Smoot-Hawley Act, which led to global protectionism and contributed to the Great Depression. The second time was after World War II with the process of trade liberalization brought about through the General Agreement on Tariffs and Trade (GATT). The result was more rapid recovery from the destruction of war, the unprecedented expansion of world commerce, and increased prosperity in the industrialized and developing countries.

The Smoot-Hawley Act and GATT both taught that the United States has a large influence on the world economy, for better or worse. Likewise, the actions taken in the coming months regarding American trade policy have the potential to influence the course of international trade for years to come.

Recognition of the immense benefits of trade is a fundamental principle of American economic policy. The framers of the U.S. Constitution saw the wisdom of prohibiting all tariffs and duties on the trade between the States. Today those trading States, together with the States that were added later, are among the most prosperous in the world. The same principles of trade apply to commerce between countries.

Although recent negotiations are improving U.S. access to a substantial portion of world markets, current domestic legislative proposals threaten to close U.S. markets and reverse many of the market-opening gains made over the past 40 years. On the positive side are the Canada-United States Free-Trade Agreement entered into on January 2, 1988, the United States-Mexico Framework Understanding signed on November 6, 1987, and other initiatives proposed by the United States in the ongoing Uruguay Round negotiations of GATT. On the negative side are proposed changes to domestic trade law contained in the Omnibus Trade and Competitiveness Act of 1987, the effects of which are potentially dangerous.

EXPANDING TRADE OPPORTUNITIES ABROAD

Both bilateral and multilateral initiatives are vital for expanding trade opportunities. In the past year bilateral agreements were successfully completed, and substantial progress was made at the multilateral GATT negotiations. During the coming year the multilateral GATT negotiations will become increasingly important.

CANADA-UNITED STATES FREE-TRADE AGREEMENT

In many respects a free-trade agreement between the United States and Canada is a natural consequence of longstanding friendship, common economic interests, and geographic proximity. Nevertheless, there is a history of numerous unsuccessful attempts over more than a century to reach a free-trade agreement. That an agreement was reached in 1987 stands as a major achievement. The two nations had to overcome special interests, internal pressures for the status quo, fears about loss of identity, and protectionism in order to craft a final document.

The outcome represents a victory for both countries. For the first time, the agreement firmly anchors free trade as the fundamental principle governing commerce between the two countries. It now remains for the U.S. Congress and the Canadian government to approve the understanding.

Canada and the United States are each other's largest trading partner. Measured in terms of national product, they will make up the largest free-trade area in the world. Chart 4-1 shows the relative importance of Canadian trade to the United States. In terms of bilateral trade, Canada represents 19 percent of all U.S. trade. As the chart shows, trade with Mexico represents 5 percent of U.S. trade, and trade with all other countries in the Western Hemisphere amounts to 7.5 percent.

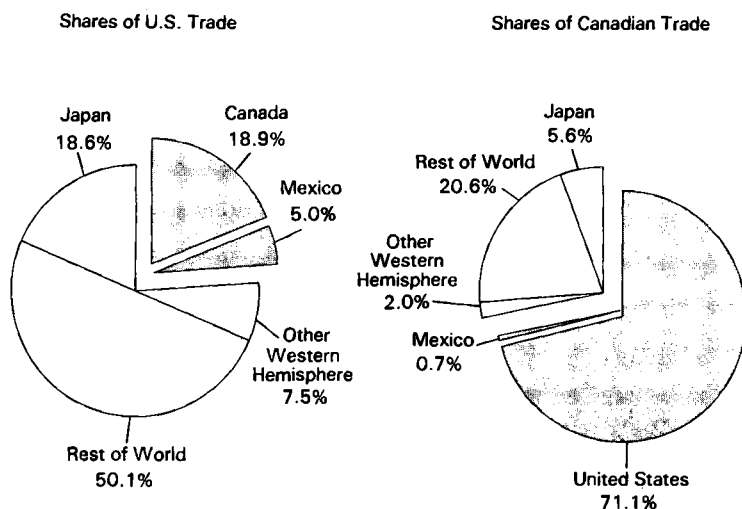
History

The United States and Canada share common origins as former British colonies. In spite of different political histories, the natural economic proclivities of the two nations have led them to greater cooperation and economic interdependence as the years have passed.

The earliest attempt at a free-trade agreement dates back over 140 years. Canada initiated discussions with the United States for bilateral free trade in the middle and late 1840s, in response to growing separation from the British market brought about by Britain's unilateral movement toward free trade and the repeal of the Corn Laws. In 1854, under the impetus of the U.S. desire for fishing rights on the east coast, a reciprocity treaty was signed covering free trade in natural products. The treaty was abrogated in 1866 by the United States,

Chart 4-1

Shares of U.S. and Canadian Merchandise Trade in 1986



Note.—Shares are based on the sum of bilateral exports and imports in dollars.

Source: Council of Economic Advisers, based on International Monetary Fund data.

due in some measure to British support for the South in the American Civil War and the ties between Britain and Canada.

In 1867 the Canadian provinces joined together in confederation. Seven years later the United States and Canada negotiated a new reciprocity treaty which failed to be confirmed by the U.S. Senate. Since that time sentiment in both countries has alternated on the notion of bilateral free trade, and the free-trade issue has been revisited frequently, including a half dozen times in this century.

Over the years the tariffs of both countries have been used to provide differing amounts of protection. In 1850 the average U.S. tariff level was 27 percent, and Canadian tariffs were 16 percent. U.S. tariffs rose to a high of 59 percent in 1932 following passage of the Smoot-Hawley Act, while average Canadian tariffs reached 24 percent in 1929. After World War II both countries' tariffs were reduced. The post-Tokyo Round average U.S. tariff was 4 percent, and the average Canadian rate was 7 percent, although tariffs on selected products were substantially higher.

Recognizing the natural economic benefits to both countries, the Canadian Royal Commission on the Economic Union and Develop-

ment Prospects for Canada concluded in August 1985 that it was in Canada's interest "to engage the United States more directly in bilateral free-trade negotiations." In the United States the Trade Agreements Act of 1979 already had instructed the President to study "the desirability of entering into trade agreements with countries in the northern portion of the western hemisphere" for the mutual expansion of market opportunities. On September 26, 1985, the Canadian Prime Minister requested that the United States and Canada consider the potential for negotiating a comprehensive free-trade agreement. The request was accepted, and the President notified the Congress on December 10, 1985, of his intent to enter into bilateral negotiations, which began formally on June 17, 1986.

Benefits of a Free-Trade Area

Three-fourths of the trade between the United States and Canada is already duty free. Moving to a free-trade area expands the range of duty-free trade to cover all goods.

The reasons for creating a free-trade area are essentially the same as the reasons for encouraging free trade generally. Moving to an open trading regime brings gains associated with the freer flow of goods and better allocation of resources to productive uses. Allowing the Nation's households and firms to trade freely with foreigners means that domestic sellers can add the net demand of foreigners to domestic demand, thus expanding their market. Similarly, buyers can add the net foreign supply to domestic supply, expanding the total supply and lowering the prices of goods they purchase. Because, on average, prices fall for the products for which the country is a net purchaser and rise for the products for which the country is a net seller (a terms-of-trade improvement), the cumulative effect of freer trade is to increase welfare in both countries. Gains by one do not imply losses to the other.

Another benefit from enlargement of the market is greater opportunity for economies of scale in production, marketing, and distribution. Many products can be produced and sold at lower cost per unit if a larger volume is manufactured. A larger volume generally means lower prices to the consumer and a greater variety of products which can be profitably offered for sale in the marketplace. In addition, the incentives to invest in research and development in order to enhance technical knowledge and create new products are greater in a larger market. Again, these benefits can accrue to both countries at the same time.

Many of the effects of the Free-Trade Agreement, such as enhanced growth and the momentum given to ongoing negotiations to open markets worldwide, are difficult to quantify. Benefits in the form of lower prices to consumers (reduced cost of living) and in-

creased profits to firms, however, can be modeled and quantified. Studies of the effects of the Free-Trade Agreement estimate that these economic gains to the United States are on the order of \$1.1 billion to \$2.9 billion annually. Most studies show that gains to Canada are of a similar absolute size. This stream of benefits is like an annuity that will grow over time with economic growth in the two countries. The present value of these gains ranges between \$30 billion and \$90 billion.

Because Canada is the smaller country, however, the effect of the free-trade area on returns-to-scale gains is more important for Canada. Studies show that these harder-to-quantify effects have the potential to increase Canadian gains severalfold.

If there are such obvious benefits to freer trade, then why is there opposition to it? One reason is the claim that removing trade barriers eliminates jobs or sends them abroad. But this argument is misleading because overall employment in an economy is determined by internal conditions and macroeconomic policy, not by the existence of trade barriers or the level of trade flows. The United States created nearly 15 million payroll jobs over the course of the current economic expansion, a period of U.S. trade deficits and relatively open U.S. markets. During the same period the European Community (EC) created virtually no net new jobs, even though they experienced trade surpluses. The same level of employment can be obtained in the total absence of foreign trade as when trade is completely free. But without foreign trade a nation will be worse off economically because, in effect, it will throw away part of its productive capability—the ability to convert surplus goods into other goods through foreign trade.

Free trade leads to industrial expansion in those industries in which a country has a comparative advantage. To expand in one sector, however, productive resources, including labor, must shift from other sectors. Thus employment may decline in some sectors, and there may be temporary unemployment during the transition. To halt such economic adjustments in order to prevent the loss of jobs in a particular sector, however, is to lose the benefits of international trade. (For a discussion of the Administration's proposal to aid the transition of workers to new employment, see the summary of the Worker Readjustment Program in Chapter 5.)

Elements of the Agreement

Visible Barriers. If both countries approve the agreement, beginning on January 1, 1989, all bilateral tariffs will be eliminated either immediately or in five or ten equal annual stages, depending on the product. Table 4-1 displays the average tariff rates by sector for each country as they apply to the other. In the clothing and footwear sectors, for example, Canadian tariffs on U.S. products are over 20 per-

cent. Other sectors in both countries are protected by tariffs ranging from 12 percent down to nearly zero. Because each country retains its own tariffs on third-country trade, the agreement provides for rules of origin that require articles imported into one country to be sufficiently processed in the importing country before they can be exported duty free to the other. Thus goods cannot be imported into the country with the lower tariff and then exported duty free to the other country.

TABLE 4-1.—*Canadian and U.S. Bilateral Tariffs by Sector*

[Percent]

Sector	Canada		United States	
	Share subject to tariffs	Average tariff ¹	Share subject to tariffs	Average tariff ¹
Agricultural products	40	9.0	56	4.1
Forest products	33	10.6	9	3.7
Textiles, apparel, and footwear	74	20.9	92	10.4
Energy and chemicals	44	11.7	57	1.8
Minerals and metals	46	9.2	46	3.2
Machinery and equipment	18	9.2	16	4.5
Miscellaneous manufactures	36	11.8	51	6.1
ALL SECTORS	27	10.4	30	3.3

¹ Canadian averages are weighted by imports from the United States and vice versa. Average tariffs are calculated using only those products subject to tariffs.

Source: U.S. International Trade Commission estimates based on 1985 trade data.

The agreement also eliminates almost all quantitative restrictions on trade between the United States and Canada. In energy, quantitative restrictions on imports or exports are prohibited, with exceptions for national security considerations, prevention of the exhaustion of a finite energy resource, and a special exception placing an upper bound on the sales of Alaskan oil to Canada. If restrictions are imposed to prevent resource exhaustion, access must be granted to the other party sufficient to maintain a prescribed proportion of their purchases relative to total supply.

Canada is the largest supplier of energy to the United States, and it is also the largest importer of U.S. coal. Two-way energy trade has amounted to about \$10 billion annually and is likely to increase as a result of the Free-Trade Agreement.

Canadians sometimes have argued that it is harmful for Canada to sell its energy resources to foreign countries. It is hard to support such a position when the move to free trade in energy implies higher prices for Canadian sellers, and when contracts to sell are freely entered into by both buyer and seller. From the Canadian point of view, the Free-Trade Agreement represents an assured market in the

United States. From the U.S. perspective, a unified market reduces uncertainties about future energy supply.

In agriculture, several significant quantitative restrictions will be liberalized, in addition to the elimination of tariffs and export subsidies. The United States has a comparative advantage in most fruit and vegetable trade. Seasonal quantitative restrictions remain in place, but they are relaxed under the agreement. Import restrictions on poultry products also will be lessened. Of general significance to agriculture, trade in fertilizers and other agricultural inputs will be liberalized.

Invisible Barriers. The past two decades have seen growth in the less visible, but economically damaging, nontariff and rule-based trade barriers. Invisible barriers to trade can take virtually an unlimited number of forms. Examples include discriminatory access to distribution systems for foreign goods relative to domestic goods, the application of standards and codes that restrict foreign goods, rules about government purchases (e.g., the "Buy American" provisions of U.S. law), failure to provide intellectual property protection for foreign processes and goods, and various procedural restrictions on foreign investment.

The Canada-United States Free-Trade Agreement makes progress in reducing a number of these barriers. For example, both countries now have agreed to provide national treatment to the investors of the other, subject to grandfathering existing regulations. Direct U.S. and Canadian investment in each other's economy currently totals over \$68 billion. The free movement of capital across geographic boundaries allows resources to move to the location of their greatest usefulness and profitability, making the opportunities of the combined market available to the resources of both regions. After 3 years Canada will screen direct acquisitions by U.S. investors only when the Canadian company being sold has assets of \$150 million or more in constant Canadian dollars. Canadian screening of indirect acquisitions (where a firm's ownership changes when ownership of its parent firm outside the country changes) by U.S. investors will be phased out completely. Other provisions eliminate certain performance requirements imposed by one party on investors of the other. Another section of the agreement ensures ease of border crossing by individuals traveling for business purposes.

The Canada-United States Free-Trade Agreement breaks new ground as the first bilateral agreement involving the United States which governs the entire financial sector. The agreement frees the capital, market share, and growth restrictions placed on U.S. banks in Canada (currently at least 15 U.S. institutions are affected), and it makes it possible for U.S. insurance firms to establish or acquire

closely held commercial banks and federally regulated insurance and trust companies. Canadian financial institutions will continue to enjoy the open access already received in the United States. In addition, they are granted certain guarantees giving security of access to the U.S. financial sector.

The General Agreement on Tariffs and Trade is supplemented by an agreement on government procurement describing rules for foreign participation in domestic government procurement. After February 14, 1988, provisions of the code will apply to purchases by covered agencies of signatory governments of 130,000 special drawing rights (in 1987 \$167,000) or greater in value. The previous cutoff was 150,000 special drawing rights. Under the Free-Trade Agreement that threshold is reduced for U.S.-Canadian procurement to \$25,000. Previously, approximately three-fifths of Canadian government procurement was not covered by the code due to the high threshold. The procurement market affected by this agreement is estimated to be on the order of \$500 million in Canada and almost \$3 billion in the United States. Measures which strengthen current code disciplines and negotiations to improve the openness of the government procurement process are provided for in the agreement.

Both countries have agreed to refrain from using domestic technical standards as a barrier to trade. For example, they have agreed not to use in-country requirements for accreditation of testing facilities and certification bodies, and to recognize each other's systems for laboratory accreditation. Moreover, both countries will work to harmonize Federal standards when appropriate and to consult about potential problems before new standards are implemented.

Both Canada and the United States already have similar and effective laws for protecting intellectual property. However, the agreement resolves a number of problems in this area. In particular, Canada will extend copyright protection to the retransmission of copyrighted programming. Both countries have agreed to work in the Uruguay Round negotiations to enhance intellectual property rights protection worldwide.

The Canada-United States Free-Trade Agreement is the first major agreement to apply binding rules to trade in the services sector. Scores of service categories are covered, including telecommunications network-based enhanced services, computer services, professional services (accountants, architects, engineers, scientists, management consultants), tourism, insurance, construction engineering, and retail and wholesale trade. The basic principles underlying the agreement for services are national treatment (equivalent treatment of foreign and domestic nationals), access to domestic distribution systems,

establishment of a commercial presence, transparency of rules and procedures, and dispute settlement arrangements.

Currently there are relatively few barriers to U.S.-Canadian trade in services, and bilateral trade is already open in most areas. The Free-Trade Agreement insures that the environment will remain open, governed by the principles enunciated in the agreement.

Other Provisions. The machinery and transport equipment sector, which includes road vehicles, accounted for \$55 billion of bilateral trade in 1986, over 45 percent of bilateral trade between Canada and the United States. Under the Automotive Products Agreement of 1965 between Canada and the United States, a large part of trade in automotive products is already duty free. Under the Free-Trade Agreement, tariffs on all original equipment, tires, and parts will be eliminated; the Canadian embargo on used-car trade will be phased out in 5 years; and duty waivers on imports of automobile products linked to exports of automobiles to the other party will be stopped. At least one-half of the assembly costs and production materials in automobiles freely traded across the border must originate in the exporting country. To meet this requirement, averaging over a 12-month period on the relevant vehicle class is permitted. Recognizing the fast-changing nature of the automobile industry, the agreement mandates the establishment of a select panel to assess the state of the industry and make further recommendations for later consideration.

The concern over cultural identity, primarily by the Canadians, led the negotiators to exempt cultural industries from the provisions of the Free-Trade Agreement. Cultural industries include the publication of books, magazines, periodicals, or newspapers; the production and sale of films and video and audio recordings; the sale of music; and communication media for the general public (radio, television, and cable television). However, if one party takes actions which normally would have been prohibited, the other party is permitted to take measures of an equivalent commercial effect. Actions inconsistent with free trade, therefore, should be taken only rarely and for strongly held reasons.

The Institutional Features. As with any agreement between two sovereign parties, arrangements must be made to resolve misunderstandings and disputes that arise after implementation. Devising a dispute resolution mechanism suitable to both countries was a major difficulty in reaching a final agreement. The solution chosen to resolve disputes successfully and ingeniously blends the binational settlement process with the separate laws of each nation.

The agreement establishes the Canadian-United States Trade Commission to supervise implementation of the agreement and resolve disputes. The Commission, composed of members from both

countries and led by Cabinet-level representatives, will meet at least once a year in regular sessions. Either country may request ad hoc consultations; if consultations are unsuccessful in resolving a dispute, either country may request a meeting of the Commission. If the Commission is unsuccessful in resolving a dispute promptly, it may establish a panel consisting of two members chosen by each country and a fifth member chosen by both countries from a predetermined roster. The recommendation of the panel would form the basis for the Commission's final determination, normally resulting in the non-implementation or removal of a measure. If a country fails to implement the findings of a panel, then the other country has the right to suspend equivalent benefits.

The safeguards provisions, which address problems faced by industries harmed by increased fair trade, are separated into two parts. One part regulates safeguards for third-country trade. The United States and Canada are excluded from any actions taken by the other under Article XIX (the safeguards article) of GATT, unless goods of the other party contribute importantly to and are a substantial cause of the injury. If the other party is included in the action, the remedy cannot cut back imports from the other party to less than the level of imports over the base period specified by the agreement, with allowance for growth.

The other part addresses agreement-related injuries where it can be established that duty reductions resulting from the agreement caused the injury. In this case, the remedy cannot exceed the lesser of the most-favored-nation rate of duty in effect at that time, or pre-agreement rates of duty. Furthermore, the remedy can remain in effect for only 3 years.

In cases involving antidumping and countervailing duty law, the agreement sets up a separate binational dispute settlement mechanism. A panel is made up of two members chosen by each country and a fifth member chosen by both countries from a predetermined roster. The panel would replace judicial review by both the United States and Canada. Each country would continue to apply its own domestic antidumping and countervailing duty laws, but, upon request, the binational panel would review the administrative record of a disputed decision. After reviewing the antidumping or countervailing duty order for its consistency with the relevant law (statutes and judicial precedent) of the country applying the order, the panel has binding authority to sustain or remand the decision back to the relevant investigating authority.

No future changes to antidumping or countervailing duty law would apply to the other party, unless it is specifically stated to apply to the other country in the legislation, the changes are fully consist-

ent with the GATT antidumping code and subsidies code, the other party is notified, and prior negotiations are entered into upon request. If a panel requires modification of the changes to the statutes because they are inconsistent with GATT, or because they overturn a prior decision of a binational dispute settlement panel, compulsory negotiations are mandated for 90 days. If a solution is not found, the other party may enact comparable legislation, take equivalent executive action, or terminate the agreement with 60 days' notice.

Viewed from the perspectives of economics, history, and international relations, the Canada-United States Free-Trade Agreement represents a remarkable achievement. In its implications for the future of U.S.-Canadian trade, the benefits which it secures for both countries, and the example which it sets for trade liberalization worldwide, it is truly an historic document.

THE UNITED STATES-MEXICO FRAMEWORK UNDERSTANDING

On November 6, 1987, the United States and Mexico signed an understanding concerning a framework of principles and procedures for consultations regarding trade and investment relations between the two countries. A bilateral consultative mechanism was set up to review trade and investment issues, resolve disputes, and negotiate the removal of trade barriers. The agreed upon principles and procedures supplement those in GATT.

Mexico is the third largest purchaser of U.S. goods, behind Canada and Japan. In 1986 U.S. exports to Mexico were \$12.4 billion, while U.S. imports from Mexico were \$17.6 billion, of which some \$3.4 billion was crude petroleum. In trade terms the United States is more than 10 times as large as Mexico's second most important trading partner (Japan). The United States accounts for a full two-thirds of Mexico's total trade with the world.

In spite of the importance of trade between the United States and Mexico, the two countries have been without a formal mechanism to govern their commercial relations. Although the United States and Mexico generally grant one another most-favored-nation treatment and other benefits similar to those found in GATT, there was no formal channel to pursue the complaints that inevitably arise with such a large volume of trade. Agreeing to overcome this deficiency, the Presidents of the United States and Mexico decided in August 1986 to pursue the idea of a bilateral framework understanding. Formal discussions began in February 1987.

Under the bilateral mechanism, either party may request consultations at any time, to be held within 30 days of the request. Annual consultations will be held to review the status of the two countries' trade and investment relationship. The United States and Mexico

also agreed to initiate discussions promptly in such areas as investment, intellectual property, electronics, textiles, agriculture, steel, and services sector information exchange.

The United States-Mexico Framework Understanding reflects the size and importance of the two countries' bilateral economic relationship. This step adds further stability to the relationship and signals the mutual commitment to resolve trade and investment problems expeditiously.

GENERAL AGREEMENT ON TARIFFS AND TRADE

In the past 35 years both world production and international trade have grown rapidly. Real global output rose at an average annual rate of 4.5 percent, while the real volume of international trade expanded by 6.5 percent per year. Through more efficient use of global resources, increased international trade leads to higher global living standards. GATT is partly responsible for the flowering of world trade.

GATT is a multilateral agreement that defines the responsibilities and operating rules of international trade that have been agreed upon by 95 signatory governments (contracting parties). As its preamble states, GATT's goal is to raise living standards through "reciprocal and mutually advantageous arrangements directed to the substantial reduction of tariffs and other barriers to trade and to the elimination of discriminatory treatment in international commerce." Four basic principles underlie GATT: (1) Member countries should work to lower trade barriers in general, and to eliminate the use of quotas in particular; (2) any barrier to trade should be applied on a nondiscriminatory basis to all member countries (the principle of most-favored-nation treatment); (3) once a tariff concession is made, it cannot later be rescinded without extending compensation to affected trade partners; and (4) trade conflicts should be settled by consultation.

The Uruguay Round of multilateral trade negotiations, officially launched at a Ministerial Meeting of GATT contracting parties in Punta del Este, Uruguay, in September 1986 is the eighth GATT-sponsored negotiating round since World War II and the first since the 1973-79 Tokyo Round. While an attempt was made to address nontariff barriers in earlier rounds, real progress was not made until the Tokyo Round, which resulted in nine agreements or codes pertaining to issues such as customs valuation, import licensing, technical standards for products, subsidies and countervailing duties, government procurement, antidumping duties, and rules governing trade in civilian aircraft.

This Administration played the principal role in developing a broad consensus among GATT members to launch the Uruguay Round. The centerpiece of the U.S. approach to the Uruguay Round is a bold effort to bring GATT discipline to agricultural subsidies and agricultural trade barriers. Also, due in large part to the efforts of U.S. negotiators, barriers to trade in services, restrictions on foreign investment, and the protection of intellectual property rights (beyond the limited area of counterfeiting) are on the negotiating table for the first time. In pressing for the launching of GATT's most ambitious multilateral trade negotiation ever, the United States is seeking to revitalize and strengthen an institution which has served it and the rest of the world well.

Functioning of the GATT System

The Punta del Este Ministerial Declaration endorsed a three-pronged approach to improve the functioning of the GATT system: enhanced surveillance (on a country basis as well as on a subject basis) of the contracting parties' trade policies; greater ministerial involvement; and closer links between GATT, the International Monetary Fund (IMF), and the World Bank. The Administration believes that these are among the most important reforms to GATT contemplated in the Uruguay Round. Besides fostering transparency and predictability, periodic individual country reviews under the surveillance mechanism would encourage trade policies that benefit the functioning of the international trading system in conformity with GATT intents and precedents. Increased ministerial involvement is expected to raise countries' political accountability within the GATT system and reinforce the free-trade principles on which it was founded. Improving GATT's policy management by linking its activities more closely to those of the IMF and the World Bank would ensure that their activities are complementary in improving the outlook for continued trade liberalization among GATT member states.

Dispute Settlement

Another institutional issue aimed at improving the effectiveness of the GATT system is reform of the dispute settlement mechanism of the General Agreement. There is widespread recognition that the existing consensual dispute settlement procedures do not always foster expeditious resolution of trade disputes. The United States has suggested possible improvements which might include an enhanced GATT mediation role, process timetables, improved panel procedures, avenues for recourse should panel reports be blocked, and the possibility of binding arbitration in certain instances.

Intellectual Property Rights

Reward for creativity and innovation are the principal driving forces for technological change which, in turn, is a great source of dynamism for world trade. But because of inadequate laws, or laws inadequately enforced, patent, trademark, and copyright infringement has grown worldwide. Legitimate firms have reduced incentives to invest in research and development when some of the returns will be pirated. Intellectual property thieves do not devote the large sums of capital needed to develop a new product. Hence, they are able to undersell legitimate competitors. And since the pirates only copy proven successes, they need never absorb the cost of failures. The U.S. International Trade Commission has estimated that lost sales due to infringement of intellectual property are up to \$20 billion annually.

Under the auspices of GATT, the Administration seeks a comprehensive intellectual property agreement to establish and enforce intellectual property rights. The U.S. negotiating team has proposed a consultation and dispute settlement mechanism combined with strong rules governing domestic and border enforcement. Such an agreement covering inter- and intracountry measures would increase legitimate trade by raising standards of protection and the obligation to enforce them.

Services

Despite their large and growing role in world trade, now accounting for approximately 20 percent of the total, services have never been a significant area of negotiation in GATT before the Uruguay Round. Difficult new issues arise in services trade that do not arise in goods trade. For example, trade in services often requires local production of the service and, therefore, involves sensitive right-of-establishment and investment issues. The GATT concept of national treatment is based on the notion that a good receives the same treatment as domestic products once it has crossed the border into the importing country. The concept does not immediately carry over to services trade, because it must be applied to service providers as well as to the service itself. The issue of defining the proper "border," and when it is crossed, is different.

This Administration seeks a GATT services agreement which will provide a framework for future negotiations. The United States has proposed an umbrella agreement stating general trade liberalizing principles and second-level agreements or protocols for individual sectors. U.S. goals for services trade include greater transparency of domestic laws; nondiscrimination and national treatment for foreign-provided services; discipline on state-sanctioned monopolies; antisub-

sity provisions; and consultation and dispute settlement mechanisms for trade in services. Since liberalization of trade in services is expected to continue for many years, the framework developed in the Uruguay Round must incorporate the flexibility needed to allow for growth and consideration of new issues.

Investment

Direct investment encourages trade in goods and services, boosts development, and contributes to the efficient allocation of resources throughout the world. With a free market in foreign investment, capital is allocated to those projects with the highest rates of return.

The United States is an example of the benefits of foreign direct investment, both as a host country and as an investor. In the 19th century the United States became a leading economic power with the help of foreign capital. After World War II, the United States became a leading provider of foreign direct investment in the world. More recently, the United States again has been attracting increased capital flows from abroad.

Unfortunately, many countries have attempted to stifle or distort the free flow of foreign investment, an action that also affects trade flows. Distortions include domestic content requirements, exchange controls, licensing requirements, technology transfer requirements, and requirements for a minimum level of exports by the foreign corporation operating in the host country. The U.S. goal in these negotiations is to identify and systematically address investment restrictions which have a trade-distorting effect and then to bring those practices within the framework of GATT.

Agriculture in the Uruguay Round

The United States has proposed the elimination of all policies that distort world agricultural production, prices, and trade. Since domestic farm programs and trade policy are fundamentally bound together, free trade in agriculture requires reform of domestic agricultural policies as well as border measures such as tariffs and quotas.

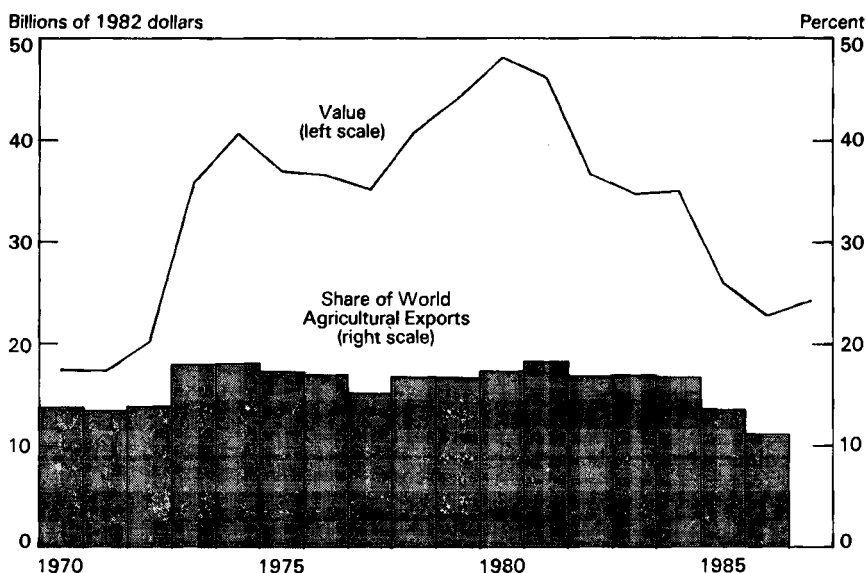
World Agriculture in Disarray. The current round of multinational trade negotiations has begun at a time of stress in world agriculture. Recently, both world market prices and trade volumes have been low, and farm programs worldwide have become more costly and distortionary.

Chart 4-2 shows the changes in the real value of U.S. agricultural exports and the U.S. share of world exports. World and U.S. agricultural exports both expanded rapidly in the 1970s, reached a peak in 1980, and have fallen since then. The U.S. share of world agricultural trade rose from 14 percent in 1972 to over 18 percent in 1981. Agricultural prices rose dramatically during the 1970s, increasing nominal

exports sixfold while the real value of exports doubled. Then in the 1980s U.S. agricultural export prices and quantities fell for most commodities. In 1987 the quantities, values, and market shares for U.S. agricultural exports rose and prospects are good for the rest of the decade.

Chart 4-2

U.S. Agricultural Exports



Note.—U.S. value for 1987 estimated; world value not available.

Sources: Department of Agriculture, Food and Agricultural Organization, and Council of Economic Advisers.

World farm production, prices, and trade have been governed by numerous distortionary agricultural programs that frequently work at cross purposes. Many countries use a variety of policy measures that subsidize production or raise prices to consumers. These measures include tariffs, import quotas, variable import levies, export subsidies, price supports, direct government payments based on output levels, paid land diversions, production or input quotas, and subsidies for storage and inputs such as fertilizer, credit, insurance, fuel, and transportation.

One summary indicator of farm program effects, the producer subsidy equivalent (PSE), measures the loss of farm income that would result from the removal of a given set of policies (often reported as a percent of farm revenues). An analogous measure, the consumer subsidy equivalent (CSE), measures the total policy contribution to costs

of farm output, often reported as a percent of expenditures. Table 4-2 shows average PSE and CSE measures for a variety of countries.

TABLE 4-2.—*Agricultural Subsidies for Producers and Consumers, Selected Countries, 1979-86*

[Percent of value¹]

Country	Producers			Consumers		
	1979	1982	1986	1979	1982	1986
Australia ²	7	13	11	(³)	(³)	(³)
European Community (EC-10) ⁴	38	33	41	-22	-30	-32
Japan.....	68	67	79	-43	-43	-47
United States ⁵	11	15	34	-10	-10	-17
Taiwan.....	(³)	15	23	(³)	-25	-29
South Korea.....	(³)	60	58	(³)	-52	-65
Nigeria ⁶	-89	-34	-27	(³)	63	40
India.....	(³)	-27	-11	(³)	12	3

¹ Producer figures are subsidy equivalents as percent of farm sales value (PSEs); consumer figures are percents of value at first sale after the farm gate (CSEs). For dairy subsidies, sales value of primary dairy products is used. For Taiwan, Korea, Nigeria, and India, consumer subsidies are percents of consumer values at wholesale or retail levels. Positive figures indicate net subsidy; negative figures indicate that policies provide a net tax relative to no such policies. Commodity coverage varies, but for each country major grains, oilseeds, sugar, and livestock products are included, except as noted for Nigeria.

² Estimates do not include state policies, which would raise PSEs.

³ Not available.

⁴ Estimates do not include individual country policies, which would raise PSEs and lower CSEs. For 1979, data are for EC-9.

⁵ State policies are minor and are not included, but general Federal subsidies such as for farm credit are included.

⁶ Commodity coverage is limited to wheat, corn, rice, sugar, cotton, and cocoa.

Sources: Department of Agriculture (Economic Research Service), Organization for Economic Cooperation and Development, and Council of Economic Advisers.

In many developing countries, where farmers are a large but not particularly influential segment of the economy, producers are taxed and consumers subsidized for many agricultural goods. Thus PSEs are negative and CSEs are positive for most developing countries over a wide range of commodities. (See, for example, the average PSE and CSE for Nigeria and India.)

During the last decade policy distortions have been slowly reduced in developing countries, especially in Asia and Latin America. At the urging of the United States, the International Monetary Fund, and the World Bank, farm prices in developing countries have been allowed to rise so that they more nearly reflect world market levels.

In most wealthy nations, where agriculture is a small part of the economy and generally has been heavily subsidized, farm programs have become increasingly distortionary, leading to higher farm prices relative to world prices, more restrictive import barriers, and increased government subsidies. Crops such as sugar or wheat are grown at high cost in nations using price supports and import barriers, and then surpluses are exported to the world market with the aid of large subsidies. World prices of many commodities have been depressed by these policies, imposing a severe economic burden on export-dependent countries that would have a comparative advantage in the absence of these distortions.

In the United States, farm programs have become particularly costly and complex. Table 4-2 shows that overall PSEs in the United States doubled in the 4 years from 1982 to 1986. The 1981 Agriculture and Food Act mandated high price supports at a time when world market prices were falling. In 1983 farmers were paid to cut back output; surpluses were reduced temporarily, but U.S. participation in world markets also declined. The Food Security Act of 1985 reduced price supports, increased the removal of land and other resources from production, expanded the use of Federal Government programs to aid exports, and maintained target prices at up to twice the market price or more. In 1985 the United States also began the Export Enhancement Program, to counter the subsidies of other exporters (mainly the EC). As a result of these policies, Federal outlays for commodity programs reached \$26 billion in 1986, and net farm incomes have been high, despite low market prices.

Agricultural production and consumption also is distorted throughout Europe. The Nordic countries, Switzerland, Austria, and the EC all maintain high producer and consumer prices and restrict imports. During the 1980s EC surpluses have been sold on world markets with the help of export subsidies. Table 4-2 shows that the average PSE for the EC is above 40 percent, and EC buyers pay over 30 percent more because of these farm programs. The Common Agricultural Policy cost taxpayers and consumers of the EC about \$60 billion in 1986.

Japan has long been a net agricultural importer, but it distorts world agricultural trade by holding its domestic prices high and limiting access to its markets. For wheat and rice, Japan now has a support price greater than five times the world market price. Japanese producer and consumer prices for many agricultural goods are often twice the world market price. Japanese consumers spend about 20 percent of their income for food, compared to less than 15 percent spent by consumers in the United States.

Many countries continued to pursue policies that increased agricultural trade distortions during a period of slowly liberalizing world trade partly because, at the urging of the United States over 30 years ago, GATT prohibitions on import quotas and export subsidies were not applied to agriculture. During the GATT negotiations held over the past 30 years, few important agreements have been reached for liberalizing trade in agricultural commodities.

The most serious distortions and barriers related to international agricultural trade are caused by domestic programs in the industrialized countries that transfer income from consumers and taxpayers to owners of agricultural resources. Because these programs have been considered part of domestic policy, rather than international trade

policy, it has been particularly difficult to include them in international negotiations.

The U.S. GATT Proposal in Agriculture. In July 1987 the United States put forward a GATT proposal on agriculture consisting of three major parts: (1) an elimination, gradually over 10 years, of all subsidies that distort agricultural trade either directly or indirectly; (2) an elimination, gradually over 10 years, of all barriers to agricultural imports; and (3) international harmonizing of health and sanitation regulations so that differences cannot be used as indirect trade barriers.

The U.S. proposal would not prohibit GATT contracting parties from transferring income to agricultural groups. Nor would it restrict bona fide foreign aid or domestic food assistance. Only those programs that have a direct or indirect effect on international trade, including output subsidies, would be restricted.

Reactions to the U.S. proposal have been encouraging. The October and December meetings in Geneva of the negotiating group on agriculture included additional formal proposals. The proposals by both Canada and the Cairns Group (an informal organization of self-proclaimed "nonsubsidizing" nations that includes major exporters from developed and developing nations) were consistent with the U.S. initiative. These proposals sent a clear signal that Canada and other Cairns Group members would be working together with the United States in this GATT round.

The EC and Japan have been expected to resist efforts to liberalize agricultural trade. However, at the October GATT meeting the EC endorsed multilateral reductions of subsidies and the separation of income support from production. As was expected, the EC also suggested a number of short-term measures involving supply controls and market sharing that would run counter to a move to freer trade. Their proposal as a whole, however, leaves the negotiations on track.

Formal GATT proposals from the Nordic countries, Japan, and some other importers were made available in December. The Japanese agreed that subsidies generally should be reduced, but they have emphasized the maintenance of some of the current array of import barriers. Japan and some other countries have argued that, since they are already major importers of farm goods, their production subsidies and import barriers are not a significant problem. However, they undoubtedly would import much more in the absence of barriers. The Japanese recognize that they have much to gain from the Uruguay Round because of Japan's position as a major exporter of manufactured goods. Domestic political pressures in Japan in support of agriculture are strong, but international and domestic pressures to join in the move toward free trade are also considerable.

Consequences of Liberalization. Because liberalization offers very significant potential benefits, organizations such as the World Bank, the Organization for Economic Cooperation and Development (OECD), and the U.S. Department of Agriculture have studied the likely pattern of prices, production, and trade flows that would follow as a consequence of world policy reform. A variety of studies have used different methodologies, different underlying assumptions, different base periods for comparison, and somewhat different policy scenarios. Given these differences, the conclusions are remarkably robust.

Removing agricultural barriers and ending subsidies is projected to foster a major expansion in international trade. Compared to what agricultural trade would likely be in the mid-1990s without reforms, world wheat exports are projected to rise somewhat, and coarse grain and rice exports are projected to expand substantially. In red meats and dairy products, international trade is projected to more than double. East Asia, Europe, and other restricted markets are expected to experience major growth in imports. The United States is expected to profit from a major expansion in exports of several commodities such as tobacco, coarse grain, and meats. U.S. coarse grain sales also would expand in the domestic market because of the expansion of the U.S. livestock industry, which in turn would be free to sell meat directly to currently restricted import markets.

Export prices under free trade are projected to be slightly higher for coarse grains and poultry, in the range of 10 to 30 percent higher for wheat, rice, and sugar, and up to 50 percent higher, or more, for beef and dairy products. Prices paid to U.S. producers of program crops are projected to be higher under free trade than current world prices, but lower than current target prices (or support prices in the case of sugar and dairy products).

Removing trade barriers also would reduce substantially the instability of world commodity prices, a factor now used as a rationale for many farm programs. Because consumers and producers in many countries now are insulated from world markets, weather and yield shocks are not dampened and absorbed through supply and demand responses in the full world market. Free trade is projected to reduce world price variability by 20 to 80 percent for major farm commodities. Large reductions in price variability are projected for beef, wheat, and dairy products, and smaller changes are expected for coarse grains and sugar.

Potential world welfare gains from free trade are substantial. A variety of estimates for large but limited groups of countries and commodities range from \$40 billion to \$70 billion per year. Trade liberalization that included all industrialized and developing countries and all major crop and livestock markets probably would increase world

well-being by significantly more. One careful study has found that, compared to projections without reform, U.S. farmers would gain from multilateral liberalization, and, compared to a potential unilateral reduction in subsidies, their gains would be substantial. Farmers in the developing countries clearly would gain, although their urban consumers would lose. Consumers in Europe, East Asia, and other restricted markets also would benefit. They would enjoy lower food and fiber costs, because they would be allowed to import without restriction from the United States and other efficient producers. Their income gains would be spent on increased imports of nonfarm goods as well, thus improving trade balances.

Under the GATT proposal, the United States would end its distortionary and costly farm production subsidies and the output restrictions that accompany them. However, the United States and other nations would be free to provide transition support and income transfers as long as such aid did not subsidize production or otherwise interfere with trade. The removal of barriers would expand the use of the more efficient agricultural resources in the United States and could increase the demand for farm inputs and marketing services as well.

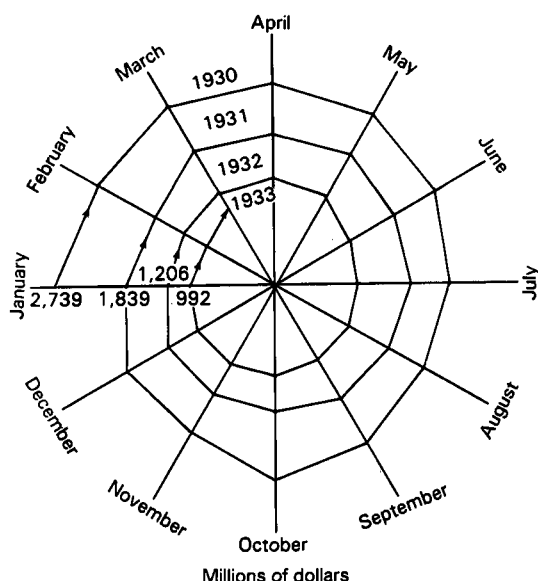
Potential now exists to achieve the first substantial reform since the series of ever-increasing agricultural distortions began. Major international agreement requires patience and persistence, but success in the Uruguay Round would improve well-being throughout the world.

THE PROTECTIONIST THREAT AT HOME

The United States has gone through numerous periods in its history when the sentiments for protectionism gained ascendancy. These episodes typically were associated with times of economic downturn or regionalist sentiment, the early counterpart of special interest politics today. The most recent period of this nature occurred more than 50 years ago with the passage of the Smoot-Hawley Act of 1930, probably one of the most damaging pieces of legislation ever signed in the United States. Passed after the stock market crash of 1929, Smoot-Hawley attempted to benefit U.S. agriculture and manufacturing by raising tariff rates. But it had the opposite effect and caused retaliatory tariffs to be put in place by foreign trade partners. More than 60 nations responded within 2 years with tariffs of their own. World trade fell dramatically. Chart 4-3 shows the spiraling decline in world trade between the beginning of 1930 and the first part of 1933. Far from being beneficial, Smoot-Hawley helped turn the 1930s into a depression.

Chart 4-3

Contracting Spiral of World Trade



Note.—Data are total imports of 75 countries.

Sources: Charles P. Kindleberger, *The World in Depression, 1929-39* (Berkeley, California: University of California Press, 1973); data from League of Nations, *Monthly Bulletin of Statistics*, February 1934.

The concerns and frustrations over trade felt today by the Congress, the President, and the American public stem from the large trade deficits which the United States has been running since 1982. As discussed in Chapter 3, the macroeconomic cause of the trade deficit is related to the tremendous growth in Federal spending (22.8 percent of gross national product (GNP) in 1987 versus 20.6 percent in 1979) relative to the also substantial growth in taxes (19.4 percent of GNP in 1987 versus 18.9 in 1979) and the harmful effect of the resulting Federal deficit on the savings-investment balance in the United States. Yet the Congress has responded by seeking to eliminate various foreign trade practices. Many provisions of the trade bill (H.R. 3) passed by the House of Representatives, and the version passed by the Senate, both of which embody these frustrations, are distinctly protectionist. Protectionism is also the motive of recent legislative proposals such as the Textile and Apparel Trade Act (H.R. 1154) passed by the House of Representatives. Ironically, since the macroeconomic causes of the trade deficit are not addressed by these actions, they are likely to have little or no influence on reducing the

trade deficit, although their protectionist influence could be harmful and long lasting.

The lesson from Smoot-Hawley is that passage of protectionist trade legislation by the United States will increase protectionist activity in the rest of the world, poison the international climate for trade diplomacy in general, and slow the process of trade liberalization for years to come. Since the United States is a major trading nation, it could suffer major economic losses in the event of increased global protectionism.

PROTECTIONIST TEXTILE LEGISLATION

Two of the most protected industries in the United States today are textiles and apparel. The costs which this protection places on the American family and consumer are enormous, running in the range of \$200 to \$400 per year per household.

In a major protectionist effort, the House of Representatives passed in 1987 the Textile and Apparel Trade Act which would raise the wall of protection even higher, adding another \$280 to \$420 in costs per household over the first 5 years. Similar textile legislation was passed by the Congress in 1986 and vetoed by the President. The current bill would set a 1 percent annual growth limit on U.S. global imports of textiles and apparel, freeze shoe imports at 1986 levels, and, for the first time, restrict imports from Canada and the European Community.

The textile and apparel industries do not need greater protection. In 1986 textile industry profits rose 67 percent. Capacity utilization for textile mills was 94.2 percent in the third quarter of 1987, compared with an average capacity utilization rate of 81.2 percent for all U.S. industries. U.S. textile and apparel exports rose 15 percent in 1986 and are estimated to rise another 18 percent in 1987. Average hourly earnings and employment in both sectors continued to rise through the third quarter of 1987. And while the Congress would seek to limit textile import growth to 1 percent a year, U.S. consumption of textiles rose 8.7 percent in 1986.

Regrettably, the Congress frequently considers the larger economic interests of American consumers to be less important than the interests of particular industries. As with other protectionist measures, consumers would have to pay for the special interest legislation, losing more in increased costs than the gains to those who benefit from the legislation. In the United States, the equivalent rate of tariff protection on textiles and apparel already amounts to roughly 50 percent—ten times higher than average U.S. tariffs. H.R. 1154 would cost consumers between \$25 billion and \$37 billion in the first 5

years, above and beyond the \$20 billion to \$40 billion annually they already pay because of existing tariffs and quotas.

In addition to generating net economic losses for the country as a whole, the textile bill would act like a regressive tax, hurting those most who can afford it least. Because of the large share of income they are forced to devote to clothing, low-income families—especially those with children—would be burdened disproportionately by this legislation.

EMBRACING PROTECTIONISM—THE OMNIBUS TRADE BILL

The most threatening proposal being considered by the Congress is the Omnibus Trade and Competitiveness Act of 1987, the House and Senate versions of which amount to about 1,000 pages. The bill, which now must be considered in conference committee, includes many features which have only a tangential relationship to trade policy or which are inconsistent with U.S. policy in GATT. Among these are sections dealing with education grants, plant closing restrictions (Chapter 5), subsidies to agricultural programs, changes to domestic tax laws, and investment screening regulations. With so many provisions grouped together in one bill, the President is given little opportunity to consider them on their separate merits. Furthermore, the Administration is on record stating that many of the provisions are unwise and damaging to U.S. interests.

Although the trade bill would include tariffs and trade barriers, as Smoot-Hawley did, it represents a fundamentally different kind of protectionism. In the area of trade policy, the legislation would change the rules for administering U.S. trade law and for granting protection to U.S. producers.

Helpful Features

Every President since 1934 has had authority to enter into international trade agreements involving the reduction of tariffs, and to reduce U.S. tariffs by Presidential proclamation to carry out the country's trade objectives. This authority originally was employed to extricate the country from the economic disorder created by high tariffs after passage of the Smoot-Hawley Act. Tariff proclamation authority was renewed for every President thereafter until January 3, 1980. Reinstatement of this authority is a desirable feature of the trade bill.

A second desirable feature is the so-called "fast track" trade agreement authority which was used in the Canadian free-trade agreement negotiations and in the last round of GATT. Under a modification of the operating rules of the House of Representatives and Senate, the President is allowed to negotiate a trade agreement and present it with necessary implementing legislation to the Congress for accept-

ance or rejection without amendment within a specified period of time. This authority is important for U.S. credibility in international negotiations, because foreign countries are assured that agreements made at the bargaining table will not be undone later, apart from overall acceptance or rejection. However, the Senate version of the trade bill contains harmful "reverse fast track" provisions allowing the Congress to remove fast track authority at any time.

A third desirable feature of the trade bill is the authority to implement the Harmonized System of tariff schedules. Common tariff schedules greatly facilitate international interaction in trade issues. It is regrettable, and a keen source of disappointment to the Administration, that the Congress chose not to grant this authority in earlier legislation in time for the United States to join in implementing the new system on January 1, 1988. The United States, which was one of the original and principal supporters of the development of the Harmonized System, is now the only major trading country not to have implemented it.

Harmful Features

Unfortunately, the protectionist features of the trade bill outweigh the helpful features in number and in potential for harm. Legislation whose result is protectionist (increasing the number of trade cases filed and the amount of protection offered in response to them) would hamper the attainment of U.S. trade objectives in the rest of the world, damage global perceptions of the United States, and invite retaliation on U.S. products.

Many other countries perceive international trade agreements such as GATT as mechanisms to restrain U.S. antidumping and countervailing duties, whereas the United States views them as a way to control foreign subsidies and alleged unfair trade. In recent years the United States has filed more antidumping and countervailing duty cases than any other nation. The extensive use of U.S. antidumping and countervailing duty law as applied to Canada, for example, was the major difficulty in reaching agreement in the Canada-United States Free-Trade Agreement. The Canadians insisted on establishing a binational panel to review issues related to these laws before an agreement could be reached.

With passage of the omnibus trade bill, damaging protectionism would become embedded in U.S. trade law. Among the dangers are changes to the law designed to: (1) increase the number of cases brought against foreign competitors; (2) rearrange legal definitions and structures to increase the likelihood of finding injury or "unfairness" once a case is brought; and (3) increase the likelihood and magnitude of protection once a case is concluded.

The omnibus trade bill would remove Presidential judgment and discretion from the protection-granting process. Converting important portions of U.S. trade law to mechanical rules for bringing trade cases against foreign trade partners and eliminating case-by-case evaluation by the President would be a serious change in current practice.

Table 4-3 summarizes the four main sections of current U.S. trade law. The origins of present provisions date back many years, and their forms often represent decades of experience. Adjustments to the statutes, the most recent in 1984, frequently have been made to enhance industry access to protection under the various sections. The changes recently suggested, however, represent a sharp break from the past; they would throw out the wisdom that has been crafted into the statutes over time and replace it with untried and potentially dangerous alternatives.

TABLE 4-3.—*Principal U.S. Trade Law Provisions*

Statute	Focus	Criteria for action	Response	Responsibility
Section 201: Fair Trade (Escape Clause)	Increasing imports	Increasing imports are substantial cause of injury	Duties, quotas, tariff-rate quotas, orderly marketing arrangements, adjustment assistance	President (ITC recommendation)
Section 301: Unfair Trade	Foreign practices violating a trade agreement or injurious to U.S. trade	Unjustifiable, unreasonable, or discriminatory practices, burdensome to U.S. commerce	All appropriate and feasible action	President (Interagency recommendation)
Section 701: Subsidized Imports	Manufacturing, production, or export subsidies	Material injury or threat of material injury	Duties	ITC—Injury determination Commerce—Subsidy determination
Section 731: Dumped Imports	Imports sold below cost of production or below foreign market price	Material injury or threat of material injury	Duties	ITC—Injury determination Commerce—Dumping determination

Note.—Origin of current provisions: Tariff Act of 1930 (Smoot-Hawley), as amended; Trade Act of 1974, as amended; Trade Agreements Act of 1979, as amended; Trade and Tariff Act of 1984.

Source: Council of Economic Advisers.

Section 201. The escape clause provisions of current U.S. trade law provide assistance to industries injured as a result of an increase in fairly traded imports. The law is not designed to provide permanent protection, but to aid workers and firms temporarily as they adjust to increased imports. The petitioner submits its case to the U.S. International Trade Commission, which then undertakes an investigation, including public hearings, to determine if the growth in imports is a substantial cause of serious injury. If the U.S. International Trade Commission finds affirmatively and recommends that import relief be granted, the President must decide what method and amount of relief he will provide, including possible adjustment assistance.

Granting relief inevitably burdens other parts of the U.S. economy. Therefore, in his decision, the President is required to consider whether such relief is in the overall national economic interest. Relevant considerations include the impact of relief on industries and firms facing higher prices for their inputs, the effect of the relief on other U.S. international interests, the probability that the relief will be effective in promoting adjustment, and the costs imposed on taxpayers, consumers, workers, communities, and other "innocent" parties. In other words, a favorable recommendation by the U.S. International Trade Commission does not and should not lead automatically to protection being granted.

Changes proposed in the trade bill would narrow the definition of domestic industry used in Section 201 cases to cover only the domestic portion of production, only that subset of the industry which produces the like or competitive article causing the damage, and/or only the geographic area where the imports are concentrated. Narrowing the definition of domestic industry, of course, means that an injury finding would be easier, since non-injured parts of the industry would be removed from consideration.

Another change would alter the procedures for recommending protection once injury is found. The proposal would change the law to say that only those commission members who voted affirmatively (found injury) in the review would be eligible to vote on recommendations about relief. Without the moderating voice of the minority dissenters who failed to find that the foreign fairly traded goods injured the domestic industry, more protection is likely to be granted.

When a Section 201 case reaches the President, proposed changes in the Senate version would effectively require the President to accept the recommendation for protection, or else, in the House version, he would be removed from the process altogether. In the House version the President's authority would be given to the United States Trade Representative (USTR).

In the Senate bill the exceptions to granting protection would be rigidly curtailed. The President would be required to impose protection unless he certifies that protection endangers national security, disproportionately burdens agriculture, results in a net U.S. job loss, causes serious injury to a downstream industry, or burdens the poor disproportionately. The burden of proof would be changed, too. Protection would be imposed unless the President takes action to prevent it. With fewer reasons why protection could be rejected, and with overall national economic interest not among them, the probability of protection would be increased substantially.

Antidumping and Countervailing Duty Law. In the United States, as in GATT, dumping is considered unlawful when it injures domestic,

import-competing industries. Dumping is deemed to occur when a product is sold in the United States at less than "fair value," that is, at a price lower than it is sold in the selling country's home market, or below its cost of production. Companies might engage in dumping because they maintain high prices in their less competitive home market, or because they lower export prices in hopes of capturing foreign market share. Furthermore, because exchange rates vary over time, firms may choose to hold dollar prices constant to retain export market shares and let profit margins in their domestic currency change.

Section 731 of the Tariff Act of 1930, as amended, directs the Department of Commerce to examine claims of dumping to determine whether imports are being sold at less than fair value. If the Department rules in the affirmative, the U.S. International Trade Commission then determines whether a U.S. industry has suffered material injury or the threat of material injury as a result of the specified imports.

Countervailing duty law is intended to offset any unfair advantages foreign producers might enjoy as a result of government production or export subsidies. In Section 701 of the Tariff Act of 1930, as amended, the Department of Commerce determines whether the specified imports have received foreign government subsidies. If the Department finds in the affirmative, the U.S. International Trade Commission determines whether a domestic import-competing industry has suffered material injury or the threat of material injury as a result of the subsidized imports. If the International Trade Commission rules in the affirmative, countervailing duties are assessed on the offending products.

There are legitimate reasons for opposing dumping and subsidies. However, improper use of antidumping and countervailing duty law also can be damaging to the country imposing it. Dumping and subsidies are, in and of themselves, beneficial to the importing country (and are costly to the exporting country), because the buyers of the product obtain their goods more cheaply (at the expense of the selling company or country). Subsidies and dumping are harmful to the importing country as a whole if the lower prices drive competitors out of existence (as in predatory pricing) or cause unnecessary adjustment costs to the domestic industry and labor (as in foreign business cycle dumping), and prices of products sold by foreign suppliers subsequently are raised above what they would have been.

The threat of ultimately higher prices, burdensome and unnecessary adjustment costs, and reduced competition is the fundamental reason for opposing dumping and subsidies. But the remedy for dumping also raises domestic prices by imposing duties. If abused,

duties have the effect of reducing competition from foreigners in the domestic market as well as harming domestic buyers of the product through higher prices.

Thus care must be taken to ensure that misuse of antidumping and countervailing duty law does not make the cure worse than the disease. The interests of competition and the benefits to consumers and domestic producers, as well as the interests of the import-competing industry, all must be considered.

Because current law already offers adequate protection from harmful dumping and subsidies, changes to expand the use of antidumping duties would be protectionist. For example, in some cases dumping margins are extremely difficult to establish clearly, since the foreign country may not be selling the exported good in its home market, legitimate related costs of selling may be higher in the foreign market, and the costs of foreign production may be difficult to ascertain. Under current law, when a product's fair value is calculated, it is assumed that exporters must sell at a price high enough to provide an 8 percent profit margin, even though the before-tax average rate of profit on sales reported in 1986 for manufacturing, wholesale, and retail trade in the United States was less than 5 percent.

Trade bill proposals for antidumping and countervailing duties would move the law closer to a mechanism for granting protection independent of a legitimate threat to the domestic economy. One proposed change to U.S. antidumping and countervailing duty law would require antidumping cases against products which are not dumped themselves, but which incorporate inputs alleged to have been purchased by the manufacturer at a price below fair value. The amendment proposed in reaction to this newly defined "input dumping" is protectionist and GATT-illegal, and it makes the law less administrable because the foreign producer may not know if he is purchasing dumped inputs or what their fair value is supposed to be. The effect of the proposal is to expand the range of activities against which protection can be offered and encourage the initiation of cases.

Proposals to increase the likelihood of protection once a case is brought would alter the way dumping margins and subsidies are computed. One which would harm American subsidiaries of foreign firms would change the way indirect selling expenses are treated in determining foreign market value for transactions between related parties. The proposal would require that the administering authority not deduct "indirect selling expenses from the foreign market value in order to offset expenses deducted from an exporter's sale price." For example, firm XYZ-Europe produces a product at a cost of \$100.

Its selling expenses in Europe are \$20 and its profit margin is \$5. The product, therefore, sells for \$125 per unit. Firm XYZ-America, the subsidiary, sells the same product in the United States for \$125 per unit. According to the new proposal, the product would have a dumping margin of 25 percent. The Department of Commerce would be required to deduct U.S. selling expenses and profit on sales as not part of the product cost. In America, the product cost would be \$100, while in Europe the product cost would be \$125. Thus would come a charge of dumping, whereas a proper calculation would find none.

Historically, the definition of subsidies has been based on quantifiables such as government provision of capital, loans or loan guarantees on better than commercial terms, provision of goods or services at preferential rates, forgiveness of debts, and contributions toward manufacturing expenses. In subsidy cases the Department of Commerce has uniformly held that generally available benefits, applicable to all companies and industries within an economy, are not counter-avoidable subsidies. This position conforms with GATT interpretations.

The trade bill would define a subsidy to include actually conferred benefits which bestow a "competitive advantage" on a class of beneficiaries, regardless of the number of firms or industries receiving the advantage. Expanding the definition, of course, widens the class of actions which could be found countervailable. Applying such a definition to the United States, for example, one might ask whether national weather forecasts would be considered subsidies to agriculture, since the forecasts create greater competitive advantage for U.S. agricultural beneficiaries. The subjectivity of such a definition is dangerous in its possibilities for protectionist abuse and creates unfair uncertainty for trading partners about its application.

Section 301. Section 301 of the Trade Act of 1974, as amended, provides the President with extremely wide discretionary authority to act against the unfair trade practices of U.S. trade partners. This authority can be used to enforce the rights of the United States under a trade agreement, to respond to a foreign practice that has the effect of denying benefits to the United States under a trade agreement, or to eliminate any foreign practice that is unjustifiable, unreasonable, or discriminatory and which burdens or restricts U.S. commerce. "Unjustifiable" is usually taken to mean any act, policy, or practice in violation of, or inconsistent with, the international legal rights of the United States. "Unreasonable" is taken to mean unfair and inequitable, while "discriminatory" typically means acts, policies, or practices which deny national or most-favored-nation treatment to U.S. goods, services, or investments.

Under Section 301 the President can take all appropriate and feasible actions within his power to enforce U.S. rights to obtain the elimination of the objectionable act, policy, or practice. The response can be on a nondiscriminatory basis or solely against the guilty trade partner or party. It can be taken without regard to whether the goods or sector employed were involved in the act, policy, or practice identified as the original cause of the action. Among the responses, the President may suspend or withdraw benefits of trade agreement concessions or impose duties on goods or services as he deems appropriate. The President can act in response to petitions filed by private parties or on his own initiative. Investigations are administered by the Office of the U.S. Trade Representative in cooperation with other U.S. Government agencies. USTR negotiates with the foreign government, resolves the dispute if possible, and recommends actions to the President after interagency consultation.

The Section 301 statute has shown itself to be effective when used in a judicious and discerning manner. This Administration has been more vigorous in its active use of Section 301 than any other, increasing the yearly caseload by more than 50 percent and, for the first time, initiating at the President's request a number of cases such as the Japanese tobacco products case. But the mere act of instigating a Section 301 case does not magically ensure a solution to the problem at hand. While many Section 301 cases have been successful, others resulted in long and inconclusive negotiations, or only modest gains relative to the effort expended. In a sense, cases that end in retaliation or counterretaliation, as some have, represent failures of policy and diplomacy.

Because the Senate trade bill mandates mechanical retaliation against unjustifiable foreign trade practices without regard to whether retaliation is in the national economic interest, or without exercise of Presidential discretion, long-run gains to the United States could be sacrificed. More cases would be brought, but this would be less desirable than if the cases were brought on the basis of discretion.

The trade bill also requires retaliation against countries deemed deficient in their provision of intellectual property rights, and against countries which do not give reciprocal treatment in the telecommunications area. Since the United States has the most open telecommunications market in the world, virtually every country could be covered, even countries which in segments of the market are as free as the United States was only some 10 or 15 years ago before the breakup of the national telephone system.

Schemes for Deficit Reduction by Threats of Trade Sanctions. The trade bill would require retaliation against countries which are found to have "excessive and unwarranted" trade surpluses with the United

States. The term "excessive" is defined according to a formula, and "unwarranted" means that USTR has found the country to have a pattern of unfair trade practices that have an adverse effect on U.S. commerce and contribute to the trade surplus of the country. The provision would allow 6 months to reach an agreement to improve the bilateral trade balance by 10 percent annually, or retaliation is mandated. It does not specify what would be done to reinstate free trade and reduce international tension after the United States has branded one of its trading partners as an "unfair trader" and imposed a retaliatory set of tariffs.

Apart from a misplaced faith in negotiations as the method for reducing the U.S. trade imbalance, belief that bilateral trade balances should be required to stay within some fixed range exhibits a certain amount of confusion over the nature of international trade. Consider the simplest possible example of three countries A, B, and C, each of which produces a single good a, b, and c. Each country can make use of only two of the goods: country A trades some of its a to B, using the revenues to buy c from C; B trades some of its b to C, using the revenues to buy a from A; and similarly for country C. Each country has balanced trade, although no pair of countries has bilaterally balanced trade. Forcing bilateral balance not only would severely restrict trade, but in this case it also would shut down trade altogether.

Situations similar to this example are not difficult to find. For example, in 1986 the United States had a trade surplus with respect to Australia (primarily selling machinery and transport equipment), Australia had a trade surplus with Japan (selling primarily food and raw materials), and Japan had a trade surplus with the United States (selling primarily motor vehicles and sound and image reproduction equipment). Although the stylized example is simplistic, it shows how simplistic it is to believe that trade sanctions should be used to keep bilateral trade balances within a mathematical norm. Retaliations also would damage U.S. international relations. Finally, limitations on bilateral trade balances may not be in U.S. interests in the 1990s when America may need trade surpluses to pay back some of its borrowing of the 1980s.

The Climate for Protection and Removal of Presidential Discretion. The House bill would transfer the President's authority under Sections 201 and 301 (as well as under other sections not discussed here, such as Sections 337 and 406) to USTR, and both the House and Senate bills would transfer to USTR the President's authority to determine whether foreign government practices are unfair under Section 301. In combination with the mandating of Section 301 cases, these transfers of authority would represent a major change in the operation of U.S. law.

Since protection benefits the few at the expense of the many, the President, who speaks for the Nation, usually has been less willing to institute protection than those who speak for selected interests. By design, the executive branch as a whole is also broader in its perspective than its component agencies. The Departments of Agriculture, Commerce, and Labor, for example, have missions to speak for important components of the population, just as members of the Congress represent different regions. The President, however, can take the entire country and economy into consideration, as well as foreign policy objectives, through the interagency process which advises the President from many sources.

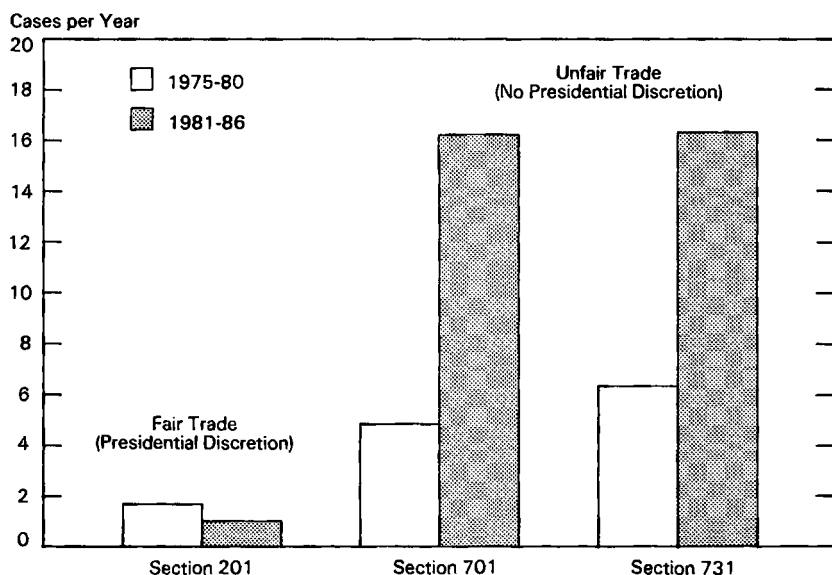
The need for advocating and balancing different interests within the American economic structure was recognized by the founding fathers. U.S. trade law similarly should seek to preserve necessary checks and balances. Thus Presidential discretion should not be removed in Section 201 and 301 cases, as has been suggested, since no single agency has as broad a perspective as the President.

The proposed procedural changes in U.S. trade law and removal of the President from his traditional role in the process are a sad, but perhaps expected, consequence of the growing demand for protection in the United States. Chart 4-4 compares the amount of protection granted in the United States under Section 201, dealing with fair trade where the President has discretion, and interventions under Sections 701 and 731, dealing with unfair trade where he does not, in the periods 1975 to 1980 and 1981 to 1986. As shown, protection granted under Section 201 changed little, but the number of petitions resulting in interventions under Section 701 increased 335 percent, and the number resulting in interventions under Section 731 increased 258 percent. It is difficult to believe that the frequency of foreign subsidies during this Administration are more than three and one-third times what they were previously, or that dumping has risen to more than two and one-half times its previous level (especially since the strong dollar during the latter period made selling to the United States easier for foreigners rather than harder). More likely, the higher intervention rate derives from changes made in U.S. trade law in 1979, the large trade deficit, and the consequent increased demand for protection inside this country.

The net effect of the definitional changes, the procedural changes, the loss of checks and balances, and the removal of Presidential discretion would be to further increase the amount of protection afforded domestic import-competing producers. Since passage of the Trade Act of 1974, the President has found that it was in the national economic interest to grant protection in response to 46 percent of the Section 201 U.S. International Trade Commission recommendations.

Chart 4-4

Trade Interventions



Source: Council of Economic Advisers, based on data from Office of U.S. Trade Representative.

Thus, in the absence of Presidential participation, protection under Section 201 could more than double if trade bill proposals became law. The figure would be substantially higher if curtailing the President's role also created an incentive for industries to file more cases. Mandating the initiation of cases under Section 301 would increase their number while reducing the success ratio. Enlargements of the definition of actionable practices and altered procedures for deciding cases would make Sections 701 and 731 affirmative findings and the subsequent market interventions easier.

The Pork Barrel. In addition to the procedural issues, there are many "pork barrel" amendments in the two trade bills. The Senate version of the trade bill contains a provision establishing a lamb import quota fashioned after the protectionist U.S. meat import law. This provision would place an upper bound on the amount of lamb that could enter the United States each year. Such a restriction is contrary to U.S. obligations under GATT. This trade barrier, like its sister meat import quota, would raise the cost of meat in the United States. Protection on meat is equivalent to voting a new tax on product users, and handing part of it over to domestic sellers. Part of the

users' losses (in the form of higher prices paid) would go to domestic producers, but another part (resulting from the cessation of consumer purchases because of higher prices) would end up in no one's hands and thus be wasted.

The legislation also contains protectionist provisions for steel, adding additional products to those currently being protected by voluntary restraint agreements with foreign sellers, a form of quota. Users of wire fence panels, wire fabric, and reinforcing mesh would have to pay higher prices because of these imposed barriers to trade. Since another provision would include downstream steel products (those products incorporating steel components) in the quota of the country where the basic steel input was melted and poured, these products also would cost more to Americans. The bill also calls for the amount of U.S. coal purchased by Japan to be "taken into consideration" in any agreement with Japan regarding imports of steel. That is, U.S. willingness to buy Japanese steel would be linked to Japanese willingness to buy U.S. coal, thus distorting the market.

In addition to the above examples, the trade bills also contain provisions that would provide payments to special interest groups. One such provision is the proposed exception to the requirement that the tobacco program be operated at no net cost to the U.S. taxpayer for government-assisted exports. Pressure to use the public treasury to subsidize tobacco exports could increase Commodity Credit Corporation outlays by many millions of dollars.

Another handout is the sugar duty drawback provision. It is a usual practice in international trade for a firm that imports a product for domestic processing and then exports the good again to receive a refund or "drawback" of the duty paid upon reexport. The drawback normally is applied within a reasonably short period of time after actual import and reexport. The trade bill would extend the drawback period for sugar retroactively to allow drawbacks for exports as late as October 2, 1991, claimed against imports as early as October 30, 1977. This means that future exports (which need not have been imported themselves, and which may have nothing to do with earlier sugar which was not reexported because it was more profitable to sell domestically) would receive duty drawbacks. In effect, the law arranges to give money from the public treasury to refiners of sugar in the United States. Estimates place the transfer at more than \$265 million, and possibly higher than \$700 million. Because the U.S. Customs Service has not been able to verify potential claims, the loss to the treasury could be even higher.

CONCLUSION

In the area of trade policy, the United States today faces a choice. It can continue its commitment to foster an environment of trade liberalization, or it can turn to protectionism. The choice will be determined by how the Nation shapes domestic law and how it deals with its trade partners in the international forum, rather than by public statements of intentions.

U.S. negotiators have made substantial and historic progress this past year in forging agreements with other countries which free major international markets from trade restrictions. Pacts with Canada and Mexico, and U.S. participation in the ongoing Uruguay Round of GATT negotiations, offer real hope for the future of American trade relations. The U.S. GATT proposal for major reform of agricultural policies that distort international trade offers the prospect for progress in that important sector.

At the same time, spurred by its unwillingness to reduce Federal Government spending and the desire, nevertheless, to appear responsive to the large American trade deficit, many in the Congress appear ready to reconfigure U.S. trade law. Due regard for the macroeconomic and Federal deficit-related causes of the trade deficit suggests, however, that the proposed legislation is unlikely to have any substantive effect on the trade balance. A reasoned review of the various proposed trade provisions suggests that they are protectionist in nature, violate our international obligations under GATT, increase costs to consumers and business purchasers of imported inputs, and distort existing U.S. trade law. The recent textile and apparel legislation also would be damaging and costly.

Because protection favors some groups at the expense of the rest of the country, there always will be pressures from within the United States to provide greater protection. The same pressures exist abroad. But now, as bilateral and multilateral negotiations show signs of success, it is time to resist pressures for protection and international confrontation. The choice is between contraction or further liberalization. Contraction points down the road of economic stagnation, while liberalization will result in continued growth, strengthening the groundwork for international trade well into the 21st century.

CHAPTER 5

Knowledge, Markets, and Economic Progress

THE ECONOMY OF THE UNITED STATES has generated rising standards of living for most of its history. During this century, real output increased twelvefold, while population tripled, approximately quadrupling the goods and services available to the average American. Output per hour of work doubled in the first half of the century and has since doubled again. This enormous and sustained gain in productivity has led to rapid increases in living standards. Real per capita income rose at a 1.7 percent annual rate in the first half of the century and at a 2.0 percent annual rate in the postwar period.

Long-term economic progress is assessed not only by output and productivity, but also in terms of the means and choices that allow people to enjoy full, healthy, and satisfying lives. Gains in real per capita income improve well-being, as reflected in other indicators. The infant mortality rate in the United States declined from roughly 150 per thousand in 1900 to 11 per thousand in 1987. Life expectancy increased from 47 years in 1900 to 75 years for persons born in 1987. Retirement from work, a rare phenomenon a century ago and associated primarily with ill health, is now the norm, thanks to longer lifespans and higher incomes.

Steadily rising income and its broader benefits are not inevitable. In many societies throughout much of history, living standards rose only slowly and at times even declined. Indeed, the postwar period may be unique in terms of both the high overall rate of increase in real per capita income in the world and the widespread nature of the gains. In a world linked by trade, the benefits of economic progress are shared widely. Increased productivity and growth in one country enhance prospects for growth in other countries.

This chapter examines the factors that underlie increases in living standards over the long term and considers the role of government in supporting and sustaining the determinants of economic progress. Business cycle fluctuations aside, the output available for current consumption, or for investment to augment future consumption, is determined by (1) the quantity and quality of labor, capital, and natural resources; (2) the technology used in production processes; and

(3) the mechanisms that allocate inputs in production processes and distribute goods and services to final users. Government policies enhance the rise in living standards when they encourage increases in supplies of factors of production, support the advance and application of knowledge that increases productive efficiency, and improve allocative mechanisms.

In the United States, government policies have played an important positive role in supporting increased standards of living. Constitutional and common law traditions that protect individual rights and private property have provided the foundation for freedom and economic progress. Resulting improvements in well-being continue to attract those in search of better opportunities. Individual efforts to earn maximum returns in a competitive environment promote effective allocation of resources. Individuals have powerful incentives to increase supplies of productive resources, especially their own knowledge and skills (human capital), and to develop new products and technologies that promise economic rewards. In addition, government has supported public education, which has played a critical role in increasing the supply of human capital, and has financed basic research that contributes to economic advance but may generate little private reward. Recent actions in the United States to reduce high marginal tax rates and to remove burdensome regulations, both of which impair economic efficiency and diminish incentives for growth, have strengthened prospects for further improvements in living standards. These policies also have set an example for growth-oriented policies in other countries.

Expansion of the physical capital stock is a major contributor to economic progress and productivity. During the postwar years physical capital accounted for approximately one-third of output growth and 40 percent of growth in output per hour of work. Most measures of investment include only physical capital. It is estimated, however, that human capital accounts for three-quarters of the Nation's total stock of productive capital. Thus much investment is not identified as such in standard accounts of national income. Recognizing the importance of knowledge and effective resource allocation to economic progress, studies of the sources of growth have come to include contributions of human capital, technical innovations, and shifts in productive resources.

In the past in the United States, and still in some very poor countries, investments in human capital that led to better diets and improved health increased human capacity for physical labor. Today, the forms of human capital most important for progress are those that expand skill and knowledge. Investment in education, training, and work experience increases productivity and earnings. Individuals,

families, and businesses gain directly, and society at large benefits indirectly. The widely shared benefits of investment in human capital, and problems in borrowing to finance it, suggest that government should encourage such investment. The strong incentives of individuals and families to invest in the most useful forms of human capital also suggest the value of individual choice and market allocation mechanisms. Investments in human capital, and the government's role in promoting them, are the main issues discussed in the first major section of this chapter.

Advances in scientific and technical knowledge and their application to the development of new products, services, and technologies are widely recognized as important for economic progress. Without definition and enforcement of property rights that allow discoverers of valuable new knowledge to reap at least part of the benefits, incentives for these socially valuable activities would be inadequate. Governmental support also is needed for advances in knowledge in areas that are public by their nature, such as national security. As with investment in human capital, economic incentives are critical in allocating resources to research and development. These are the main issues discussed in the second major section of this chapter.

Finally, one of the key advantages of a competitive market system is its ability to respond quickly and appropriately to the rapidly changing conditions that accompany high rates of economic progress. Interventions that slow necessary adjustments in a dynamic economy are impediments to economic growth. Governmentally imposed barriers and distortions that diminish incentives for work, investment, and innovation, or that divert resources from their most productive uses, are further barriers to progress. In particular, growth often requires reallocations of labor. Policies intended to reduce adjustment costs and protect existing jobs often can reduce employment and stifle growth. The harmful effects of such policies and the benefits of a more flexible, market-oriented approach to economic adjustment are the main subject of the third major section of this chapter.

HUMAN CAPITAL

The United States devoted roughly \$500 billion in 1987 to gross investment in formal education. Another \$100 billion was spent for worker training, not including informal efforts to improve skills and performance on the job. Investment in human capital is thus more than one-third larger than the approximately \$440 billion spent last year for gross private nonresidential investment in physical capital.

Human capital investment has contributed substantially to the productive capacity of the labor force and the growth of the U.S. economy. Recent studies indicate that, in the postwar period, increases in human capital have contributed 10 to 20 percent of real output growth and a similar percentage of the gains in output per hour of work.

Over the last 40 years, the education and skill of the U.S. labor force has improved continuously but unevenly. An index of human capital, primarily representing schooling and work experience, developed by the Bureau of Labor Statistics (BLS), grew at an average rate of about 0.25 percent per year over the postwar period. During the mid-1970s, as many new workers entered the labor force, the average human capital per worker stopped increasing. In contrast, during the 1980s this index has grown by almost 0.5 percent per year.

INVESTMENTS IN EDUCATION, TRAINING, AND WORK EXPERIENCE

Aggregate rates of human capital investment are affected by population growth and the age distribution of the population. In the United States, both the population and the labor force have grown steadily. Better health and increased longevity have increased potential years of working life. Demographic changes, such as the aging of the baby-boom generation, and labor market trends, such as increased employment of women outside the home and earlier retirement, also have affected patterns of schooling, training, and work experience.

Education

Direct annual expenditures for schooling, public and private, are currently about \$310 billion. About 60 percent, or \$185 billion, is spent on grade schools and high schools and the rest on post-secondary schooling, which includes vocational schools as well as colleges and universities. Expenditures for schooling have remained in the range of 6 to 7 percent of gross national product (GNP) for two decades, after having risen rapidly during the schooling of the baby-boom generation. The number of students has declined from a peak of almost 61 million in the mid-1970s to just under 58 million in the mid-1980s.

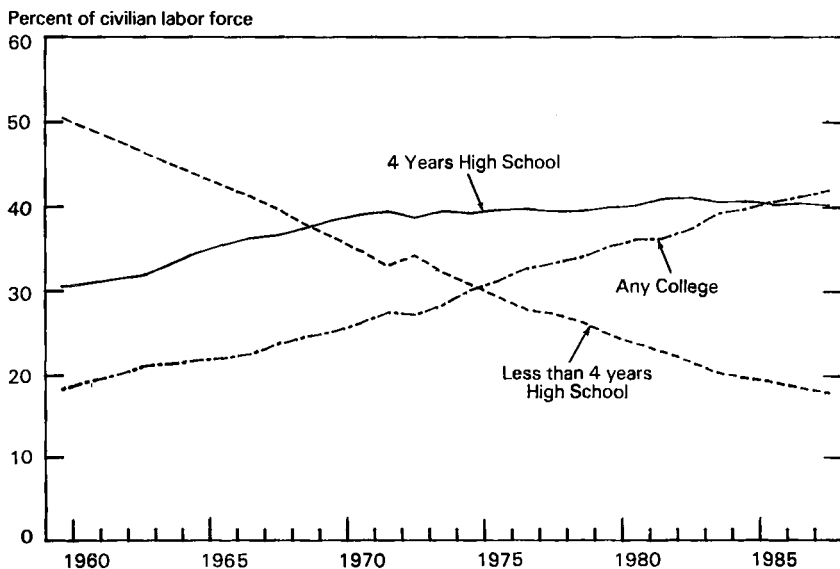
A large component of total investment in schooling at the higher levels, in addition to direct costs, is the forgone earnings of the students themselves. The time and effort devoted to study could otherwise be spent at work or leisure. The forgone earnings of students aged 16 and over are estimated to be about \$200 billion per year, most of which is accounted for by post-secondary students. The share of total social costs of education attributable to the postponed earnings of students has increased in recent years, because a larger

proportion of schooling is for post-secondary students with higher potential wages. In the early 1970s about 15 percent of the student population was enrolled in post-secondary schools, compared with 23 percent today.

Increases in years of schooling of the labor force are indicated in Chart 5-1. During the last 30 years the percent of the labor force not completing high school has fallen by more than half, while the percent having attended college has more than doubled. These trends have occurred primarily because retirees have had relatively little schooling. High school completion rates have been fairly stable for a decade at about 85 percent of persons 20 to 24 years old, and the proportion of persons 25 to 29 years old with 4 years or more of college has remained about 22 percent.

Chart 5-1

Years of Schooling of the Labor Force



Note.—Data are for March and relate to highest years of schooling attained.
Source: Department of Labor.

Data on hours of work by educational level and gender indicate that the amount of schooling has increased for both male and female workers, but more so for males. The BLS estimates that in 1948 two-thirds of the hours worked by men, and more than half the hours worked by women, were accounted for by those with fewer than 12 years of schooling. These proportions have declined to 17 percent for men and 13 percent for women. In 1948 only about 12 percent of

total work hours were accounted for by those with more than 12 years of schooling, compared with more than 40 percent now. Currently, about 25 percent of work hours of men and 18 percent of work hours of women are performed by those with 16 or more years of schooling.

Years of schooling and expenditures are inputs to the process of acquiring human capital; they do not measure learning. A variety of measures have documented the decline in the academic achievement of American students at every level during the 1960s and 1970s, with evidence of partial reversal of this trend in the 1980s. Some of the decline of Scholastic Aptitude Test (SAT) scores in the 1960s can be attributed to the increasing proportion of high school students taking the test. But in the 1970s the proportion taking the test declined while scores continued to fall; now the proportion of students taking the SAT is rising again, and scores are rising.

Concerns about student achievement are due not only to evidence of academic declines, but also to indications that achievement has been low relative to perceived requirements for success in today's economy. Although basic literacy rates have increased steadily during this century, a number of surveys document low reading comprehension and other academic deficiencies among U.S. students compared with students in other countries. Young Americans score particularly poorly in science and mathematics. Yet evidence indicates that mastery of these subjects is useful in many occupations, not only in science and engineering.

Not all of the benefits of education are reflected in increased productivity and earnings. Education may contribute to a person's well-being in other ways as well. For many people, learning is enjoyable. Formal education contributes to continued learning. Education also provides information and skills that encourage fuller appreciation and enjoyment of science, art, and culture, as well as effective participation in public affairs. Schooling contributes to more efficient household management, to better health and nutrition, and to the higher educational achievement and earnings of one's children.

The clearest relationship between education and economic success is indicated by earnings patterns. Workers with more schooling consistently earn more. In 1986, for example, the median income of persons with only an elementary school education was about \$9,000 per year, compared to high school graduates' median income of about \$20,000. Persons with 4 or more years of college had median incomes of about \$33,000.

As Table 5-1 indicates, after declining in the 1970s, the relative incomes of those with more education increased in the 1980s. During this decade, incomes of those with fewer than 4 years of high school

have declined compared to high school graduates, while the relative incomes of college-trained workers have risen. Thus the returns to investments in schooling have increased. Gains have been especially pronounced for younger workers, who will continue to benefit from more schooling for many years.

TABLE 5-1.—*Relation of Income and Education, Selected Years, 1969-86*

(Index, income of high school graduates = 1.00)

Years	Males			Females		
	1-3 years high school	1-3 years college	4 years college ¹	1-3 years high school	1-3 years college	4 years college ¹
1969-71	0.89	1.16	1.39	0.84	1.17	1.44
1974-76 .....	.87	1.09	1.28	.82	1.14	1.33
1979-81 .....	.83	1.08	1.26	.82	1.14	1.30
1984-86 .....	.81	1.12	1.37	.78	1.16	1.39

¹ Excludes those with more than 4 years of college.

Note.—Data are 3-year averages of indexes of median annual income for year-round, full-time workers, aged 25 and over.
Source: Department of Commerce, Bureau of the Census.

Changes in relative earnings are due to cyclical and demographic factors and to longer term economic changes. People with more schooling, for example, usually are more able to maintain employment and earnings during recessions. The relative earnings of college graduates declined during the 1970s as the highly schooled baby-boom generation entered the labor market, but they rose recently as this group gained experience in the 1980s. Over the longer term, increased demand for technical and managerial skills may be expected to raise the future relative earnings of workers with more education.

Earnings are higher for those with more years of schooling for reasons other than the productive value of education. Personal characteristics such as ability and effort, which contribute to success in both school and the workplace, account for some of the earnings differential. Higher earnings also are associated with factors such as parental income, gender, race, and geographic location. Research has confirmed, however, that schooling raises earnings even after accounting for the effects of these other measurable factors.

Estimated real private rates of return for investments in schooling in the United States have been 10 to 13 percent for secondary schooling and 8 to 10 percent for higher education during the 1970s and early 1980s. These estimates may be biased upward, because they cannot fully adjust for workers' ability and effort. Recent increases in relative earnings for more educated workers, however, suggest that estimates based on data from the mid-1980s would show even higher rates of return. Studies during the last 30 years consistently have shown that rates of return on investments in education

have been comparable to those available on alternative long-term investments.

A number of studies have shown that schooling increases earnings for managers and the self-employed, as well as for employees, and have suggested that the benefits of schooling are greater in more dynamic economic environments. More schooling for farmers, for example, increases the payoff from agricultural research, increases the rate of adoption of innovative technology, and reduces the lag between price changes and appropriate market responses. Returns to schooling are higher in industries with more technical progress and productivity growth.

Workers with more schooling not only have higher earnings but also safer, more comfortable working conditions and lower rates of unemployment. The unemployment rate for workers with fewer than 4 years of high school is double that for workers with 4 years of high school. Workers with a college education had unemployment rates of less than 4 percent throughout the last 15 years, and they experienced smaller cyclical swings in unemployment than those with less schooling. But increased schooling of the labor force has not resulted in lower overall unemployment rates; unemployment rates of all schooling groups have risen over the last 20 years (Chapter 2).

Training and Experience

The human capital that workers accumulate while employed includes formal training and learning-by-doing. Post-school training is pervasive in the United States. About 40 percent of workers report having taken training to improve their job skills. Workers with more years of schooling also acquire more training on the job.

While much on-the-job training is of general value, some has value only in a specific firm. The worker bears the cost of general training, usually in the form of lower wages, because its value will be fully reflected in wage growth, whether the worker stays at the current firm or goes to another. The cost of firm-specific human capital investment is borne jointly by the worker and the firm, and the benefits of future productivity improvements are shared. Thus firm-specific investments encourage both the worker and the firm to maintain the employment relationship. Conversely, when job tenure is expected to be long, both the worker and the firm have more incentive to invest jointly in training.

The investment in formal, employer-sponsored training has been estimated to be about \$60 billion per year and has been rising. About half this total reflects the wages and forgone output of employees receiving training. The \$60 billion does not include the value of reduced wages that workers accept for jobs that offer training, nor

does it include the informal, everyday activities of workers and firms to improve productivity.

In addition to schooling and training, the work experience of the labor force is an important source of productive human capital. Unpublished estimates by the BLS indicate an increase in the approximate years of work experience for private business workers from 17.4 years in 1950 to 18.1 years in 1964. Since 1964 average experience has fallen by more than 15 percent to 15.3 years in the mid-1980s. For men, average work experience has fallen by about 10 percent since peaking in the late 1950s, and it has held steady at about 17.6 years in the 1980s. The average work experience of women rose by about 15 percent between 1950 and 1965, to 13.2 years. In the late 1960s and the 1970s, many young women entered the labor force, and average experience fell back to about 11.6 years, where it has remained since about 1980.

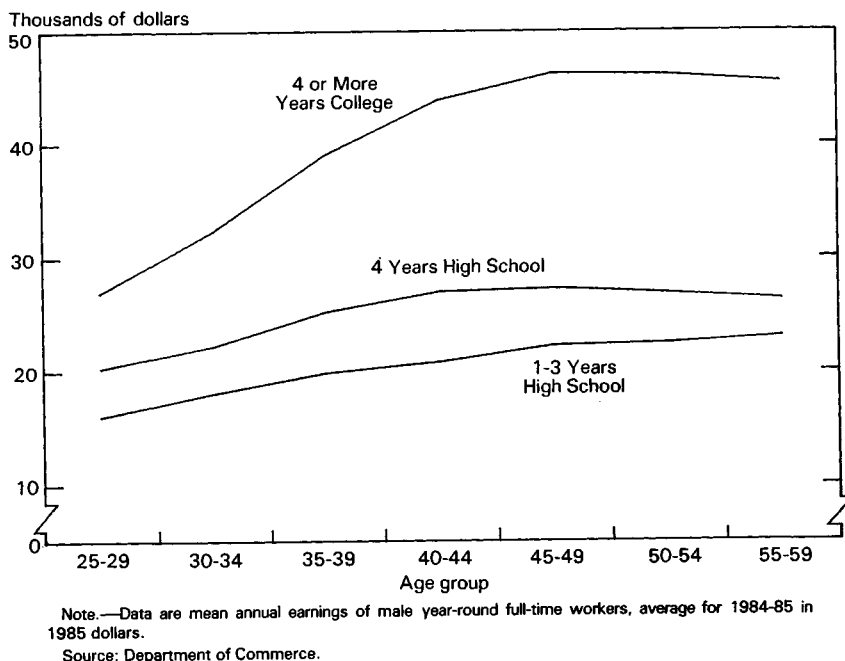
Four major demographic and labor market factors have contributed to these changes in work experience. First, more years in school have meant that workers enter the labor force at a later age. Second, with the labor market entry of the baby-boom generation during the 1970s, the age distribution of the labor force has shifted dramatically toward younger workers. Third, men are leaving the labor force at earlier ages than in the past. In 1948 about half the men 65 and over and 90 percent of those 55 to 64 were in the labor force. In the 1980s less than 20 percent of men 65 and over and about 70 percent of those 55 to 64 are labor force participants. Fourth, the share of women in the labor force has risen from less than 30 percent in 1948 to 45 percent today, and women generally have had less work experience than men.

Wages tend to rise with age through most of work life. Chart 5-2 shows that older workers have higher earnings and also that earnings rise faster and peak later for those with more schooling. This increase in wages over work life has become more pronounced during the 1980s. Younger workers are paid less, because they devote more time and effort to on-the-job learning. Their wages also rise as training and experience increase productivity. Some of the wage gains associated with experience are due to workers' finding employment that better matches their skills and interests. Younger workers change jobs frequently while they learn about the labor market, occupations, and particular jobs, and while employers learn about the capabilities of particular workers. Job or occupation change is part of a search process, and when a better job match is found, earnings and profits improve.

Work experience and training of the U.S. labor force will rise for the next two decades as a result of the large group of workers now

Chart 5-2

Earnings by Age and Education



gaining experience and the smaller group of young workers entering the labor market. These demographic factors should contribute to reduced unemployment and improved productivity growth.

RATIONALES FOR GOVERNMENT SUPPORT

Human capital investment contributes to the well-being of individuals and to the long-term performance of the economy. But economic returns alone do not imply that the government should regulate or subsidize investment. Government involvement in human capital formation is predicated on three premises. First, there are major social benefits to increased levels of education that are not fully realized in the returns to individuals. Second, government support of human capital investment widens economic opportunity. Third, there are particular difficulties in private financing of investment in schooling.

Social, political, and economic interaction is facilitated by a common language, basic skills, and shared knowledge. A broad base of educated individuals allows for a more efficient economy and a more viable democratic system. The effectiveness of the military,

moreover, is enhanced by a higher level of general knowledge and skills in the population, especially as national security relies increasingly on complex technology. These broad societal benefits of education provide one rationale for government funding and regulation of primary and secondary schooling.

Giving every child the opportunity for an education is considered necessary for a democratic society. Human capital contributes to individual earnings, and public support for schooling has been used to widen economic opportunities. Government support for human capital investment is also one way to help reduce dependence on other transfer programs. Most Federal funds devoted to education and public training programs are directed toward people with low incomes.

Private financing of human capital investment is relatively difficult, because most such investments are made by the young, and human capital itself cannot serve as collateral. For other investment opportunities, one can usually borrow funds by demonstrating profitability and pledging the investment itself as collateral, but for investments in schooling it is difficult for a lender to enforce repayment. Thus schooling generally is financed by the assets or income of parents or other family members. Parents commonly borrow to finance investments in their children's human capital. Adult students use their own resources, and if continued employment is assured, they may be able to obtain assistance from their employers. For individuals with insufficient access to private resources, there may be grounds for public support to help secure financing for education.

Public support for worker training generally is not provided, because training is funded jointly by the worker receiving lower wages and by the firm paying direct costs and allowing work time to be used for learning. Workers and firms realize the rewards from investments in job training through increased future wages and productivity.

POLICY ISSUES

Public policy affects all human capital investment, directly through government spending or indirectly through taxation and regulation. Education is the third largest object of government spending, after national defense and social security. State and local governments provide most of the public spending for education. The Federal Government pays about 6 percent of the approximately \$185 billion annual direct cost of primary and secondary education, and about 12 percent of the approximately \$125 billion in direct costs for higher education. Federal spending for training programs is about \$5 billion. The Federal Government also provides training for its own em-

ployees, spending close to \$20 billion each year for military training alone.

Government operation of schools is not a necessary consequence of government support of education. At the primary and secondary levels, State and local governments both fund and manage school systems. In post-secondary education almost all Federal support is provided to the student directly, allowing choice among public and private institutions. State government support of higher education also allows wider individual choice than at the lower levels.

Primary and Secondary Education

Poor achievement levels in primary and secondary schools have neither obvious causes nor simple remedies. Schools and teachers differ in their effectiveness, but there is no consensus on the underlying reasons. Low quality of teachers, low spending on teachers relative to school administration, curricula that fail to stress basic academic subjects, inadequate school discipline, poor early childhood preparation, and home environments that fail to encourage learning are among the suggested explanations.

Increased spending has not been effective in improving student performance. Public school expenditures per student rose steadily and most rapidly as student achievement was declining. In the early 1980s real spending per student was more than double that in 1960. Student-teacher ratios have fallen and the education and experience of teachers have increased, but none of these changes has been linked statistically with better student performance.

State and local school districts have introduced a number of reforms to promote quality. Some school systems have required students to meet minimum standards, and some have rewarded teachers for gains in student achievement. Many States have instituted state-wide testing for high school graduation, and some withhold funds or exercise other sanctions when local school districts have poor records of academic progress. Several States are using alternative certification to attract new teachers who are proficient in their subject but lack the required coursework in teacher education. Such flexible certification gives school systems wider latitude in hiring teachers and removes barriers that prevent skilled people from entering teaching.

A dominant role for State and local governments is consistent with principles of federalism. Traditionally, Federal spending for primary and secondary schooling has been quite limited and directed toward the disadvantaged. Close to \$4 billion per year is provided to State and local school districts to serve low-income students. Other major Federal programs support vocational, bilingual, and special education.

The Federal Government also supports research and the dissemination of information on student achievement in order to encourage choice and accountability in the Nation's schools. The ability of families to choose the schools their children attend is a critical factor in improving the quality of education. This Administration has proposed legislation and supported reforms that would encourage wider opportunities for parental choice and greater accountability in education assistance programs. More scope for choice would provide incentives for schools to improve. In school systems that are accountable for the quality of education, special programs and good reputations attract students. Schools that perform poorly face declining enrollments and reduced budgets. Magnet schools provide an alternative that incorporates parental choice, allowing parents and students to select among particular schools in a public school district.

One direct way for government to encourage schools to respond to demand for better education would be to provide financial support directly to families through vouchers. Families could use the vouchers at any school that meets basic standards. Voucher-type programs currently are used in Federal food and housing assistance programs, medicare, and in higher education. The GI Bill, which is an example of a successful Federal educational voucher program, has helped many veterans complete schooling, receive vocational training, and increase their earnings capacities. Competition among schools for students and support provides market incentives lacking in the current system of government-operated schools. Even partial voucher systems allowing choice among public schools would offer substantially increased competition and accountability, thereby promoting educational achievement.

Post-Secondary Education

Many U.S. institutions of higher education are operated by State and local governments. These institutions provide subsidies to local residents and others in the form of low tuition. Private operation and funding, however, play a much larger role than in primary and secondary schooling. Private schools account for close to one-third of total college and university expenditures, and proprietary schools are a major source of formal occupational education. State systems allow a large degree of student choice. Thus the higher education system in the United States, in contrast to primary and secondary education, has allowed students and their families some choice among institutions, thereby encouraging higher quality. One measure of the success of this approach is the large and growing number of students from other nations that choose to study in this country.

Consistent with the policy emphasis on choice and accountability, the major Federal programs in post-secondary education provide aid

directly to students. In the last decade the number of student aid grants has increased by more than 65 percent. The largest Federal expenditure for support of post-secondary education is in the form of grants to low-income students. Close to \$4 billion in such grants was provided in 1987. The Guaranteed Student Loan Program makes funds available by providing government guarantees to banks and other private lending sources. More than \$9 billion annually is borrowed under this program. Students are responsible for repayment of principal and interest (after the period of schooling), but the Federal Government guarantees repayment if students fail to meet their obligations. These loans carry interest rates far below those that would be required without Federal backing. Other aid in the form of loans, work-study programs, and grants is provided to students through the educational institutions themselves.

Student loan defaults cost about \$1.5 billion in 1987. A large proportion of defaults are concentrated at relatively few schools. Student loan default rates exceed 50 percent at more than 500 schools, which make up about 7 percent of the post-secondary institutions that participate in loan programs. By more strongly encouraging the repayment of loans, the Federal Government can increase the amount available for investment in education. Sanctions now are applied to students, but incentives for schools to provide better monitoring and better education also should help encourage loan repayment.

Worker Training

Workers and firms invest in job training and retraining to obtain the future private returns that result from increased productivity. Many government policies influence investments in job training and experience. Direct government support of training programs is intended to raise the earnings capacity of the disadvantaged and to ease the adjustment of displaced workers to new jobs. During the last 25 years the Federal Government has spent more than \$115 billion on training and related programs, including classroom training, training on the job, and job search assistance, but there is no consensus that these training programs have significantly increased the earnings of participants. Past evaluations have been inconclusive, partly because of methodological problems. Evidence suggests that training for the disadvantaged has improved the earnings of adult women, but it has had little, and perhaps even adverse, effect on the earnings of youths and adult males. This Administration has encouraged recent efforts to develop more effective training programs with designs that facilitate better evaluation.

Education in Science and Engineering

Private and social returns to education and training are affected not only by the years of schooling but also by the student's field of study. Undergraduate specialization in engineering, for example, generally leads to high earnings. Because they can command high starting salaries, engineers are less likely to postpone labor market entry and forgo current earnings in order to pursue post-baccalaureate education. As a result, most Americans with the requisite abilities and interest do not pursue masters or doctoral training. Post-baccalaureate study in the sciences and engineering, however, is vital for research and innovation. A major factor in maintaining the high level of research and development (R&D) activity in the United States is the attraction of U.S. graduate programs for students and scientists from abroad, about half of whom remain to pursue careers in this country. Foreign students comprise a growing proportion of full-time graduate students in science and engineering, having risen from 17 percent of the total in 1977 to 27 percent in 1986.

Most people who complete doctoral degrees in science and engineering pursue careers in research, for which much of the funding is provided by the Federal Government. This close link has encouraged Federal support for graduate studies and post-doctoral training in the sciences. The Federal Government provides fellowships and part-time employment for graduate students in federally funded research projects carried out under the supervision of faculty or other senior researchers. Some of the Federal support for post-baccalaureate training is similar to the joint funding of specific on-the-job training by firms and workers in the private sector. Since the Federal Government is a large consumer of R&D, it captures some of the benefits from training through a larger supply of scientists and engineers. Furthermore, R&D carried out in the private sector may have benefits that extend broadly through society.

SCIENCE AND INNOVATION

Research and development leads to scientific discoveries and new technologies that enhance economic progress. In the United States private and public expenditures for formal R&D have reached more than \$120 billion per year. The contribution of this investment to the productivity of the economy and the quality of life is large and pervasive.

Research and development usually is divided into three categories: basic research, which investigates scientific questions with no readily foreseeable applications; applied research, which is intended for application; and development, which aims to produce particular prod-

ucts or processes. Formal investments in knowledge are described largely in these terms, but the distinctions are somewhat arbitrary. Solving problems of development can shed light on basic scientific problems, and some firms undertake basic research in hopes of eventual commercial applications. In addition, many informal R&D efforts are not measured as R&D.

Technological progress, which is at least partly a result of formal and informal R&D investments, has led to higher incomes, better working conditions, and a greater variety and abundance of products. Standard productivity measures, however, cannot capture many of the most visible improvements made possible by advances in science and technology. Much publicly supported R&D, for example, is devoted to public goods such as national defense and public health, the benefits of which are not measured as increased productivity. Even R&D that helps create better products and more efficient production processes provides benefits that are not easily measured, such as improvements in computers and calculators.

EXPENDITURES AND RETURNS

U.S. expenditures for R&D have increased considerably in real terms since World War II, as shown in Chart 5-3. Expenditures grew at about 9 percent per year from 1941 to 1967, when they abruptly leveled off. Since 1977, expenditures have been rising again with rapid growth of defense R&D, growth of privately sponsored industrial research, and restoration of government support for basic research. For the last 10 years, total real R&D expenditures have been growing at a rate of approximately 5 percent per year.

Private Investment

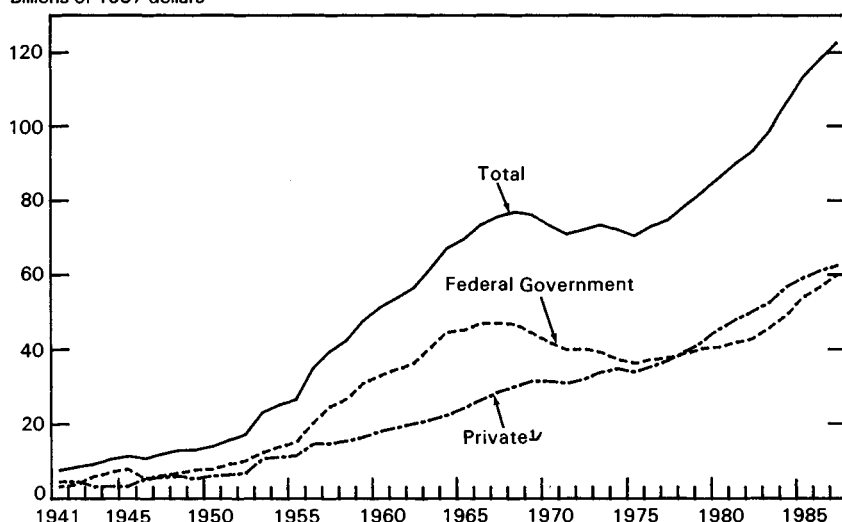
In 1987 approximately half of total national R&D expenditures were funded by private sources, up from about one-third in 1965. For the last 15 years private sources have provided more than two-thirds of U.S. expenditures on industrially performed R&D. About three-quarters of funding for nondefense R&D is provided by private sources, and about 20 percent of funding for basic research is private. The emergence of the private sector as a major provider of R&D funding is one of the most important developments in science and technology in the last two decades.

Private R&D has a strong relationship to economic growth. According to one study, from 1948 to 1985 private R&D investment accounted for an estimated 7 percent of growth in output per hour of work and about 13 percent of growth in productivity in the nonfarm business sector. Estimates of rates of return to private R&D vary considerably, but are consistently high. Privately funded basic research

Chart 5-3

Research and Development Expenditures

Billions of 1987 dollars



✓ Private includes a small amount of State and local government funds.

Note.—GNP implicit price deflator used to deflate expenditures.

Sources: Department of Defense (1941-52) and National Science Foundation (1953-87).

has particularly strong effects on productivity growth, in part because its results raise the overall level of technology in an industry.

The gains to society from private R&D that are not captured by the firm performing it are significant. Knowledge produced by private R&D spreads first to technologically related firms and then throughout the economy. Patent studies reveal that firms whose technological neighbors invest relatively large amounts in R&D produce more patents per dollar of their own R&D and have higher rates of productivity growth than do firms in less research-intensive environments. Firms cannot simply adopt research, however; they generally must do a certain amount of research themselves to be able to take advantage of knowledge that other firms produce.

The extensive spillover benefits from private R&D are also apparent in the fact that firms often imitate the innovations of their rivals. One study found that 60 percent of patented inventions had been imitated within 4 years. The fast depreciation of patent values confirms that knowledge created by research and innovation spreads quickly and can be appropriated by other firms.

Federal Support

Federal spending for R&D was about \$60 billion in 1987, almost half of the national total. In addition, a special tax credit is intended to encourage private investment in research. Defense R&D has increased from 51 percent of Federal R&D spending in 1977 to 69 percent today. From 1980 to 1987 Federal spending for basic research (defense and nondefense) increased by about 25 percent in real terms to \$9.7 billion. During the same period nondefense basic research grew from 28 to 46 percent of Federal nondefense R&D.

From the late 1940s to the mid-1960s, federally sponsored R&D advanced mainly defense and space technology. From 1967 to 1977 overall Federal funding for R&D slowed, but larger amounts were devoted to health and applied research, especially in the social and environmental sciences. Applied energy research and demonstration projects, heavily funded in the 1970s, have been curtailed in recent years as unproductive and inappropriate objects of Federal support. Recent concerns about international competitiveness, health, and national defense have prompted a surge in Federal support of basic and defense research.

Returns to federally sponsored research are sometimes dramatic and easy to see. Federal investment in satellite technology, for example, revolutionized the communications industry. Federal expenditures on defense and medical research help prevent war and improve health, but these results, by contrast, are more difficult to quantify. The results of basic research diffuse gradually into industries and lead to increased innovation. One study of commercial innovations in chemistry has found that university research, which was largely federally funded, accounted for a large proportion of footnotes in the scientific articles that announced the innovations.

The most direct measurement of returns to Federal R&D tries to discern its effect on productivity, taking R&D (along with labor and capital) to be an input, and production of goods and services to be the output. Such studies have not shown a strong relationship between industrial productivity and Federal R&D. One study has found a rate of return of only 1.5 percent to Federal R&D, compared to returns to private R&D of between 9.2 and 33.4 percent. These meager results have been questioned as a measure of the contribution to overall well-being, however, because most Federal R&D is directed toward public goods that do not generate significant private returns. In some areas, such as agriculture and health, returns to Federal R&D appear to be robust. If public expenditures stimulate private R&D, moreover, a portion of the high returns to private R&D could be attributable to complementary Federal research. Studies of wheth-

er Federal R&D increases private R&D have yielded conflicting results.

Case studies of Federal R&D also have attempted to measure returns to investment. Some have shown high returns to particular Federal R&D investments, but these results cannot be generalized. It is difficult to assign R&D inputs, especially in basic research, to the appropriate outputs. Furthermore, researchers tend to study successful R&D projects and may fail to account adequately for the costs of unsuccessful efforts.

International Comparisons

Because of intense competition in international markets, the level of U.S. investment in R&D has been questioned. The United States invests far more in R&D than any other country in the free world, spending more than two and one-half times as much as Japan, the next largest investor. The United States, Japan, West Germany, France, and the United Kingdom all devote about 2.5 percent of GNP to R&D. If defense R&D is excluded, Japan's and West Germany's outlays relative to GNP are higher than those of the United States by nearly 1 percentage point. The United States leads Japan and West Germany, however, in the ratio of nondefense R&D expenditures to manufacturing sales. The U.S.S.R. reportedly devotes the largest share of GNP to R&D. The productivity effects of this spending, much of which is probably military, appear mixed.

In part because of its large investments, the United States sells much more in R&D outputs, such as patent licenses, plans, and blueprints, than it buys. The balance of U.S. receipts minus payments for royalties and fees has grown 3.4 percent annually in real terms from 1961 until 1986, reaching almost \$1.7 billion in 1986. Relatively large amounts of technological knowledge enter the United States in the form of improved products, and large amounts diffuse out in the form of licensed technology. Another indication that scientific knowledge is an important U.S. export is the large role American universities play in training scientists and engineers from other countries.

The United States has led the worldwide advance in science and technology for many years, but the size of the U.S. lead has diminished. The number of patent applications made abroad by U.S. citizens, for example, fell by about half between 1969 and 1982, while Japanese external patent applications grew by almost 55 percent. The U.S. real trade balance in high-technology products, often used as an indicator of competitiveness, fell by \$41 billion (1987 dollars) between its peak in 1980 and 1986. This decline, however, coincided with a large increase in the value of the dollar and a decline in all other trade sectors.

The term "competitiveness" suggests to some that growth in one country disadvantages others. In fact, the United States gains from scientific and technological progress made by other countries. That penicillin was discovered in England and relativity in Switzerland does not diminish their contributions to U.S. health and scientific understanding. Advances in science and technology, which diffuse into and out of the United States and every other country, would be deterred by the closing of national borders to the transfer of knowledge.

The decrease in the the U.S. lead in science and technology has prompted some to call for increased government support for R&D. It is not clear, however, that U.S. firms invest too little in R&D or that their returns are not competitive. One recent study has suggested that applied R&D yields a higher return to Japanese firms, which in some industries may be better than U.S. firms in transforming externally produced technologies into marketable applications. Both the levels and overall returns to R&D investment in the United States, however, compare favorably to those in Japan. Another study of American and Japanese manufacturing firms found that Japanese firms spend about the same amounts on research relative to sales as U.S. firms, and they appear to gain similar returns.

ROLE OF GOVERNMENT

Because returns to investments in knowledge are difficult to measure, government research policy has no straightforward guide. Private firms must estimate the appropriate levels of R&D under conditions of greater uncertainty than is common for other kinds of investment. Private firms, however, unlike governments, both bear the costs and realize the gains from their investments in knowledge. The costs of government research, by contrast, are borne by taxpayers, while the benefits accrue to the public at large or to particular industries or firms. Private firms have incentives to invest the amount that produces the greatest net return, but governments do not face similar incentives or constraints. Thus governments usually can encourage R&D most efficiently by defining and enforcing property rights so that private researchers and their sponsors can undertake such activities profitably.

Providing incentives for R&D often involves extending the application of property rights in new ways. The definition of property rights in the use of satellites and their orbits, for example, has advanced telecommunications substantially. The definition of new property rights creates incentives for continued technological advancement that leads, in turn, to the more productive use of resources.

Defining property rights to research in a way that creates incentives for private firms to sponsor it is sometimes difficult or impossible. Purely basic research, for example, creates new knowledge that spreads into the world at large, improving life in unpredictable ways. Experience suggests that payoffs from basic research can be very high, even if they cannot be fully anticipated. The basic research that unraveled the molecular structure of DNA (deoxyribonucleic acid), for example, led to the birth of a new industry—genetic engineering. Individuals and firms that sponsor research can expect to capture only a fraction of the total yield it produces. One study estimates that the social returns of industrial innovations are about double the private returns. Firms tend to invest only where their gains are expected to cover costs. Thus, for basic research that produces unpatentable but potentially valuable new knowledge, an absence of public support would leave social benefits unexploited. The appropriate amount of basic research, the desirable level of public support, and the best allocation of resources among competing research opportunities are difficult to determine. Policymakers must estimate the prudent level of investment without exact quantitative evidence of rates of return, weighing the costs of diverting resources from productive private uses.

Firms sometimes may capture significant returns from research even without well-defined rights to innovations, if the research is applied to a product or service for which they represent a large share of the market. A very large computer firm, for example, may find it profitable to invest in relatively basic research on superconductivity, because it may hope to create highly profitable new products on the basis of resulting innovations.

If no single firm has a large enough share of the industry to fund research profitably, users of that research may form organizations to sponsor it. Private cooperative research efforts in the computer industry and voluntary organizations of farmers that fund research on plant disease are examples.

For potential innovations with many beneficiaries, however, the costs of organizing and operating a voluntary organization may be high, and access to the innovation by nonparticipants may be almost impossible to preclude. Compulsory funding through specific taxes or, if benefits are broad and indirect, through general funding is then sometimes used. Government funding of relatively basic, agricultural and health research often is justified in these terms.

Public goods that require large research inputs present a much clearer case for government support. Projects such as the superconducting super collider, if they are to be carried out at all, must be supported by government. National defense and protection from

contagious diseases depend on specialized research for which private individuals do not have adequate incentives. About 80 percent of federally funded R&D is devoted to defense or basic research.

INTELLECTUAL PROPERTY RIGHTS

Investment in knowledge, like other investment, depends on rights to future returns. Even in research that is publicly supported, the incentives created by property rights have powerful effects.

Patent, licensing, trademark, copyright, and trade secrets laws are critical in determining the share of the returns from commercially valuable ideas and inventions to which an inventor or investor is entitled. The dramatic advance of commercial biotechnology since 1980, for example, was aided by the U.S. Supreme Court decision that microorganisms produced by genetic engineering were patentable. Building on the long-established principle that specially bred lines of plants and animals belong to their breeders, genetically engineered higher organisms, such as improved goats and cattle, now are protected by property rights. Legislation such as the Plant Variety Protection Act of 1970 and subsequent regulatory changes have made property rights in agricultural innovations easier to establish. As a result, research previously supported by government can be undertaken profitably by private firms, which now fund more than 60 percent of agricultural research.

This Administration has supported many actions that protect intellectual property, including stronger international enforcement of property rights, facilitation of joint ventures, and improved procedures for regulatory review. For example, incentives for pharmaceutical innovations have been strengthened by reducing the time for regulatory approval and extending patent life to make up for most of the time lost during government review.

International enforcement of intellectual property rights is increasingly important as national economies become more closely linked by trade and investment. U.S. firms encounter myriad problems in protecting their intellectual property abroad. Some countries offer only limited protection to process patents. Others do not recognize patents on pharmaceuticals and chemicals or copyrights on computer software. Most newly industrialized countries lack rules sufficiently flexible to offer protection to new technologies such as biotechnology and satellite communications.

This Administration strongly supports protection of intellectual property rights through the General Agreement on Tariffs and Trade, and it is working to end piracy that erodes incentives to innovate (Chapter 4). U.S. inventors have been defended against the importation of goods made abroad with unlicensed technology by vig-

orous enforcement of existing trade law. The Administration also supports changes in the law to strengthen intellectual property provisions. The United States has proposed that the Organization for Economic Cooperation and Development (OECD) work to establish a framework in which nations cooperatively support basic scientific research and training and enforce intellectual property rights.

Intellectual property rights, broadly conceived, include not only the right to exclude others from the use of one's knowledge, but also the right to share knowledge for productive purposes. Private firms may want to conduct joint research in order to realize economies of scope and scale. In the past, fear of inappropriate application of antitrust laws has inhibited cooperative research among competing firms. By defining antitrust liability more clearly, the National Cooperative Research Act of 1984 opened the way to research joint ventures which may make research profitable in areas where property rights are difficult to define or enforce. In the computer industry, for example, cooperative research already has yielded important innovations and marketable products. Fear of antitrust liability sometimes has prevented firms from broad licensing of intellectual property. This Administration supports legislation that would promote the dissemination of new technology by preventing the award of multiple antitrust damages in cases where patent licensing has no anticompetitive effect.

Federally sponsored research can benefit from the incentives created by property rights. The Patent Law Amendments of 1980 provided a uniform system for assigning title to inventions made at universities that conduct government-sponsored research. Between 1980 and 1986 cooperative ventures increased, and the number of patents issued to American academic institutions grew by 70 percent. Before these reforms, patenting such inventions was uncertain, and cooperative research ventures between private firms and universities were difficult to establish because of the complex regulations that accompanied Federal funding. The Technology Transfer Act of 1986 also should allow government scientists to respond better to market demands by simplifying the process by which Federal laboratories' discoveries may be patented and developed. For example, a Federal laboratory and a private biotechnology firm jointly are exploring vaccines against poultry disease.

INCENTIVES IN GOVERNMENT RESEARCH

The Federal Government does not have the appropriate information and incentives to determine the most useful outputs of R&D, except when the government is the principal user. For example, in areas of defense research such as aviation, computers, and semicon-

ductors, the Federal Government was for many years not only the primary funder but also the primary user of the R&D product. Government thus had extensive knowledge of its needs and could guide research toward successful applications.

Federal support for R&D in health and agriculture often is mentioned as an example of government research that has produced large social benefits. Research in these fields illustrates the importance of close contact between the performers and users of R&D. The close association of most schools of agriculture and medicine with the decentralized farming and health care industries may allow scientists to have more contact with the ultimate users of R&D outputs when deciding how to allocate R&D resources than would be the case were research more centrally directed.

In contrast to research concerning public goods, the Federal Government's efforts to fund innovations in the private sector often have been unsuccessful. Government-sponsored energy research and research into building materials and low-cost housing design produced little that was ultimately marketable.

Support of synthetic fuels is perhaps the most notable example of inappropriate government-directed investment in recent years. Citing the dangers of dependence on imported oil, the previous Administration proposed spending \$88 billion to speed the development of synthetic fuels. The Energy Security Act of 1980 established price supports, direct subsidies, tax credits, and loan guarantees to encourage participation in the program.

After the synfuel program began, higher world energy prices induced greater supplies and conservation. In 1981, after deregulation, oil prices declined. However, the synfuel policy was based on the assumption that oil prices would reach \$40 to \$70 per barrel. Weak energy prices and political controversy helped convince the Congress to reduce the Synthetic Fuels Corporation's funding substantially in 1984. With the fall of world oil prices, much of the Federal Government's support of windmills and other quixotic energy projects came to an end. The history of these energy initiatives suggests that government should not try to impose new technologies on an industry which is unwilling to commit its own resources to them, and that political influence can make policies that are obvious economic failures difficult to abandon.

MARKET FLEXIBILITY

Economic growth requires many adjustments, including the expansion of productive activities and the abandonment of those that prove unproductive. In a dynamic economy, markets for all productive fac-

tors—labor, capital, and natural resources—must accommodate shifting patterns of demand and changing technologies. As the economy grows, capital is assembled and used in new configurations, and industrial as well as occupational shifts take place in the labor force. The value of aggregate output is increased when factors of production shift to more highly valued uses in response to changes in demand and in costs of production. Many changes result from investments in human and other forms of capital and from new technology. The development of aircraft and computers, for example, has opened new opportunities for consumption, production, and employment.

Increased income per capita, as well as relative price changes, lead to shifts in demand patterns. Consumers with higher incomes demand a wider variety of products and more services relative to goods; they spend a smaller share of their income on the basic necessities of life. At the turn of the century, households spent more than 30 percent of disposable income on food, compared to about 15 percent today. Thus, choices available to consumers have increased as has discretionary spending for travel, recreation, and other services.

Changes in output, consumption, and technology are essential features of economic progress. Rigidities and distortions in markets can impede natural responses to economic change, reducing potential gains from investment and slowing productivity and income growth. Maintaining the flexibility of labor markets is particularly important for a healthy economy.

MARKET BARRIERS AND DISTORTIONS

Throughout the world there is increasing recognition that economic growth requires the reduction of structural barriers and distortions within domestic markets, as well as the reduction of protectionism in international trade. Constraints on capital and labor markets stand in the way of shifts in comparative advantage, barring allocation of resources to more productive uses. Taxation and regulation are major sources of market distortion, inhibiting activities that otherwise would expand or providing subsidies to activities that otherwise would be curtailed.

Taxation

In general, taxes are distortionary, because they interfere with the efficient allocation of productive resources and reduce incentives to work, save, and invest. These burdens can be limited by keeping marginal tax rates as low as possible and by imposing similar tax rates on similar products, resources, or activities.

The Tax Reform Act of 1986 moved the U.S. tax system substantially in the direction of lower and more equal marginal tax rates. As discussed in Chapter 2 of the 1987 *Report*, tax reform reduced the

marginal Federal tax rate on labor income from 25.8 percent to an average 21.7 percent, and it has significantly lessened differences in tax rates on the income from alternative forms of investment. The higher after-tax yield of labor income encourages work and investments in human capital, which in turn increase the productivity of labor. More equal taxation of investments also encourages a more productive distribution of capital, because investors' decisions will be made on the basis of expected economic returns rather than tax consequences.

It is estimated that over the long term tax reform will increase real net national product by approximately 2 percent and raise aggregate consumption by roughly 4 percent. The net improvement in economic welfare is equivalent to about \$50 billion per year.

Tax distortions, however, cannot be avoided entirely. Any practical system of taxation induces distortions, as discussed in Chapter 2 of the 1985 *Report*. Costs of resource misallocation have been estimated to range between 20 and 50 cents per additional tax dollar collected. The costs of private compliance with personal income taxes are estimated to add another 5 to 7 cents per dollar collected. Because government outlays must be financed by tax revenues—now or in the future—and because taxes have such sizable indirect costs, government spending should be undertaken only if the expected value of the activity is substantially higher than its outlay costs. Government services and transfer programs that fail to meet this test should be cut back.

Regulation

Although often intended to correct externalities and other market imperfections, government regulation frequently causes distortions that reduce allocative efficiency and impede growth. The regulation of financial services, for example, has reduced the efficiency of capital markets. While in force, Federal interest rate ceilings on bank deposits lowered the returns available to small savers and constrained the amount of credit that depository institutions could provide to businesses and homeowners. Similarly, interstate banking laws restrict the flow of funds to productive investments and interfere with diversification of risks, thus reducing the gains that would be available to both savers and borrowers in nationwide capital markets.

During the past 50 years, regulation of agriculture has posed significant obstacles to economic efficiency and adjustment. Agricultural regulation has restricted imports, subsidized production, raised prices, and kept land idle. Federal outlays and consumer costs of farm commodity programs are estimated to have been about \$22 billion in 1987. Furthermore, the regulation of agriculture has slowed the movement of labor and capital to other industries. It has wasted

resources by distorting investment within agriculture and by diverting investment from more profitable activities.

Rent controls, remaining controls on trucking, natural gas regulation, automobile fuel economy standards (discussed in Chapter 5 of the 1986 *Report*), import barriers such as voluntary agreements to restrict imports of automobiles, and some rules designed to control environmental risks (discussed in Chapter 6 of the 1987 *Report*) are all examples of regulations that reduce market flexibility. Price controls distort resource allocation. Regulation often reduces incentives for investment by insulating firms from competition, by creating hidden subsidies and uncertainty about future changes in rules, and by requiring adherence to rigid standards that preclude innovation and the introduction of lower cost methods of production. Safety and health regulations that require the installation of particular equipment, for example, may stifle incentives for developing better ways of improving workplace safety.

In recent years the United States has made substantial progress in deregulating oil prices as well as major industries such as airlines (Chapter 6), buses, and railroads. Deregulation of transportation industries has been associated with a resurgence of productivity growth (Chapter 2); one study has estimated savings for the economy of roughly \$50 billion per year. Procedures also have been established for review of Federal regulations on a systematic basis to ensure that new regulations are worth their costs.

LABOR MARKET FLEXIBILITY

Flexibility in labor markets is particularly significant for allocative efficiency and growth, because labor is the dominant input to production. In the United States, labor has contributed about 70 percent to output for well over a hundred years. Compensation of employees now accounts for almost 75 percent of national income, up from about 55 percent at the turn of the century.

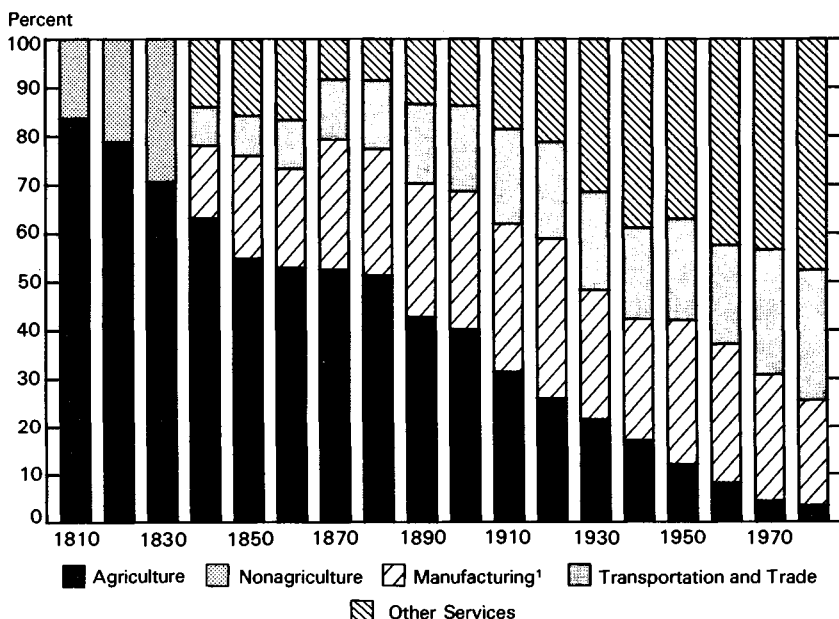
In addition to improving the allocation of productive resources, flexible labor markets expand employment opportunities and further contribute to growth by encouraging investment. Adaptable labor markets increase returns to investment, particularly in knowledge, by rewarding the acquisition of skills that are in demand and the adoption of cost-saving innovations in production.

As discussed in Chapter 2, U.S. labor markets have been remarkably successful in generating new jobs for a growing labor force and in accommodating structural change. Primarily as a result of strong growth in productivity, the share of the U.S. labor force devoted to agriculture fell from more than 80 percent in 1810 to about 3 percent today, as shown in Chart 5-4. The share of the labor force in

manufacturing rose earlier in this century, but has declined in recent decades, also reflecting strong productivity growth. Shares in finance, government, and other services have increased. Employment has shifted toward jobs that are safer and less physically arduous, and that demand more human capital. Work fatality rates in service industries, for example, are less than one-sixth of those in agriculture. Employment in manual and farm occupations, which accounted for about three-fourths of U.S. jobs in 1900, fell to less than 40 percent in 1970, and the decline has continued.

Chart 5-4

Labor Force Shares by Industry



¹Also includes fisheries, mining, and construction.

Sources: Department of Commerce and Department of Labor.

Contrary to popular notions, increased unemployment in the post-war years in the United States has not been associated with unusually rapid changes in industrial structure. Measures of the structure of employment by industry in the United States do not indicate greater turbulence or increasingly rapid shifts in employment, across either major or more narrowly defined industrial sectors. The level of unemployment accounted for by workers' changing industry has been steady since 1970.

Flexible labor markets facilitate change, but they do not preclude job attachment or long careers in a single firm. Long-term employment is common among American workers. About half stay with a single employer for 8 or more years, and almost 30 percent do so for at least 20 years.

Most changes in employment patterns take place as a result of employment growth and voluntary job change. Workers, particularly the young, change jobs as they find opportunities that better suit their skills and preferences. Evidence shows that the changing employment patterns of workers under 25 years of age account for much of the sectoral reallocation of jobs. In manufacturing, voluntary quit rates have ranged from about 15 to 25 percent of the work force in recent years, and layoffs typically have accounted for less than half of all job separations.

However, job losses that occur in mid-career as a result of declining employment in particular industries or firms can pose serious problems for workers and their families, leading to unemployment, reduced earnings, and other hardships. The BLS estimates that, between 1981 and 1985, 5.1 million workers lost jobs they had held for more than 3 years, due to slack work, job abolition, or a plant or business closing. On average, a little more than one-half million of these workers lost jobs each year because their plants closed or their employers went out of business. Most of the affected workers experienced some unemployment, and some had lengthy unemployment spells. Other research based on these data, however, has found that the duration of joblessness over the year for displaced workers was similar to that of average workers who had spells of unemployment.

Evidence suggests that earnings losses do not persist over the long term. Losses for workers whose jobs were abolished vary considerably, reflecting losses in specific human capital and sometimes higher wages associated with unionization. On average, wages upon reemployment have been about 90 percent of prior wages. Losses typically have been higher in smaller and weaker labor markets. Workers with more job tenure experienced larger losses, as did those with less education. More educated workers had less unemployment. Workers with more schooling have better access to labor market information, a greater capacity to identify new opportunities, and more skills of general value. In addition, forgone earnings during unemployment are higher for workers with more human capital. Evidence shows that schooling eases the transition for those leaving agricultural as well as industrial jobs.

Employment growth and a general absence of impediments to mobility have facilitated the voluntary reallocation of labor to expanding sectors. When jobs have been lost involuntarily, problems for individ-

uals typically have been temporary and usually mitigated by their general knowledge and skills and by the availability of alternative employment.

POLICIES FOR LABOR ADJUSTMENT

The flexibility of the U.S. labor market, and the relative ease with which workers can move between geographic areas and avail themselves of better job opportunities, have contributed substantially to economic growth. Government can improve labor adjustment by reducing existing market interventions and avoiding the imposition of new ones.

A number of labor market regulations, such as the minimum wage, many occupational safety and health rules, and occupational licensing, impair flexibility and adjustment. Many studies have shown that the minimum wage is a barrier to work and job-training opportunities for inexperienced and unskilled workers. Erosion in the real value of the minimum wage has contributed to substantial recent employment growth and reduced unemployment among black teenagers, both of which are documented in Chapter 2. Further lowering of the minimum wage would increase employment and accumulation of human capital among young people, thereby raising future wages as well as economic output.

Providing unemployment insurance and training may produce net economic gains by broadening public support for the removal of trade barriers and other market distortions. But programs intended to ease the transitions of workers to new jobs can slow economic change by creating work disincentives and other sources of inefficiency. Improving current policies that directly address adjustment—unemployment insurance, pension rules, and retraining—would increase market flexibility and enhance prospects for growth. Establishing protection for existing jobs, such as requiring advance notice of layoffs, would introduce new market rigidities.

Reducing the Inefficiencies of Unemployment Insurance

The Federal-State unemployment insurance program, established more than 50 years ago, provides partial wage replacement for experienced workers who lose their jobs because of temporary layoffs or job terminations. With few restrictions, States establish the amount as well as the duration of compensation and the structure of payroll taxes. Weekly benefits replace about 35 percent of prior wages on average; in most States compensation may be received up to 26 weeks. Total benefits were about \$14 billion in 1987. Benefit outlays are greater in years of higher unemployment; for example, they were \$23.8 billion in 1982, about 70 percent higher in nominal dollars than in 1987.

Compensation is intended to reduce earnings losses that result from changing market conditions and thus to cushion labor adjustment. By replacing a portion of wages during unemployment, benefits support the search for a new job. At the same time, benefits tend to prolong unemployment by reducing its costs for workers and allowing them to search longer, but they do not appear to increase subsequent wages. Recent Federal reforms and State actions to tighten eligibility and job search requirements have reduced work disincentives substantially. Additional policy options to enhance reemployment incentives and the effectiveness of job search efforts are being explored.

Further improvements can be realized in the program's financing. Risk rating, or experience rating, is fundamental to private insurance, because, when higher premiums are charged to insure against greater risk, insured parties have an incentive to reduce risk. Since the unemployment insurance system is only partially experience rated, it provides incentives that increase unemployment. When a firm can lay off workers temporarily and spread much of the cost to other firms that also pay taxes into the program, it is more likely to generate layoffs. Strengthening experience rating would reduce unemployment by making individual firms bear more of the cost, thereby encouraging them to explore alternatives to temporary layoffs, such as rescheduling work or modifying inventories.

Financial transfers that are generated by the tax structure of the unemployment insurance system subsidize declining firms and those in seasonal or cyclical industries at the expense of growing or stable firms. Studies have found that agricultural and construction firms are heavily subsidized by firms engaged in trade and in finance, insurance, and real estate. States have made a number of changes during the 1980s to improve experience rating, partly in response to Federal law. The Department of Labor, in an effort to increase information and accountability, recently has required more complete State reporting of experience rating.

Improving Pension Rules

Pension termination insurance, which has been a Federal responsibility since 1974, has been funded by a flat premium per worker. As a result, firms that fund their pension plans inadequately have been subsidized at the expense of firms that maintain sound funding. These indirect subsidies to poorly funded plans have reduced incentives for adequate funding and benefited failing firms at the expense of healthier firms. This Administration strongly supported recently enacted legislation that establishes partial risk rating of pension premiums and improved pension funding rules. This legislation will reduce the automatic financial transfers generated by the system. An

additional step would allow pensions to be insured privately, provided basic standards are met. Private pension insurance would have major advantages. Premiums would be based on risk, thus preserving incentives for adequate pension funding as well as eliminating remaining automatic subsidies, and insurance would likely be provided at an even lower cost for well-funded plans.

Government regulation of pensions can distort resource allocation through the effect on job tenure and training as well as through cross subsidies among firms. Rules such as those requiring early vesting may increase worker mobility, but at the same time such rules diminish employer incentives to provide training. Employer investments in job training are based on expectations of future returns from increased worker productivity. To the extent that employment contracts are precluded from offering pension inducements for longer worker tenure with the firm, the amount of training is likely to be reduced, along with future productivity. Among other features of privately negotiated employment contracts, pension provisions reflect the benefits and costs of job attachment to workers and firms. Government mandates with regard to pensions and other employment benefits can prevent employers from offering the most desirable pay packages to workers and can slow investment in human capital.

Retraining

Government-supported retraining may facilitate reemployment following job loss. Job training and retraining, however, are primarily a private responsibility. Since private firms know best what skills they require, they can tailor training to their needs. In its role as employer, the Federal Government provides substantial amounts of training for military and other Federal occupations. As discussed earlier, however, the wider effectiveness of government-run training programs in raising earnings over the long term has not been established.

The Administration's proposed Worker Readjustment Assistance Program (WRAP) would replace Trade Adjustment Assistance (TAA) and other existing retraining programs. In addition to training, TAA provides compensation which, in combination with unemployment insurance, can be received for as many as 78 weeks. Evidence shows that TAA has failed to facilitate adjustment and has prolonged unemployment. WRAP would offer training to all experienced workers who have lost their jobs, in recognition that adjustment costs are unrelated to the cause of job loss, whether changing trade patterns or other factors. At the options of States, vouchers for purchasing training in the market could be offered along with traditional retraining services and job search assistance.

Costs of Job Protection

Government actions to insulate industries and jobs from international competition, or to protect existing jobs by requiring employers to provide advance notification of layoffs and plant closings, would reduce market flexibility and diminish overall employment opportunities. Proponents argue that advance notice of layoffs would ease worker adjustment. Mandated notice, however, as called for in proposed trade legislation, would constrain the responses of firms to changing market conditions and reduce employment. Because required notice means that employers would incur greater liabilities in the event of business contractions, hiring during expansions would be curtailed. Higher costs and increased risks also would discourage new business formation. In contrast, when job security provisions are chosen in the marketplace, they can be weighed against other forms of compensation according to workers' preferences and employers' costs.

Employers frequently provide their workers with advance notice. Recent government surveys have found that advance notice of the specific date of an impending layoff was given in about one-half to two-thirds of the cases surveyed, and general notice in one-third to three-fourths of the cases. On average, general notice was given 46 days in advance. Notice was not the result of collective bargaining alone; the likelihood of receiving notice was about equal in union and nonunion establishments.

Although labor market performance is affected by numerous forces, including macroeconomic and tax policies, an important reason for high unemployment and lack of job growth in Europe has been labor market rigidities. Many European governments severely restrict an employer's ability to dismiss workers, and they require substantial severance pay and notice prior to layoff. Unemployment benefits are higher and last longer than in the United States, commonly replacing at least 70 percent of prior wages for a year or more, and more of the unemployed qualify for benefits. Financing, moreover, is not experience rated. Employment in Western Europe has been flat since 1970; during the same period, employment in the United States has increased by more than 40 percent. Unemployment rates in Western Europe have approximately tripled since the early 1970s, and they are now higher than in the United States, thus reversing earlier patterns. The incidence of long spells of unemployment is substantially higher in Western Europe than in the United States, as is unemployment among youth.

European governments have realized that the inflexibility of their labor markets due to job security mandates, along with a variety of other labor market interventions, have impaired growth in employ-

ment and spawned high unemployment rates, particularly among youth. During the 1980s, European countries have begun to reverse previous policies of increasing job protection, unemployment compensation, and other measures that impose constraints on labor markets and distort incentives. A number of countries have reduced the costs of employment termination by relaxing job protections and increasing the ability of employers to effect dismissals. Government-mandated severance pay in Western Europe has been reduced from the levels of the late 1970s. In a majority of OECD countries, unemployment benefits, which had risen during the 1970s, have been reduced. Stricter eligibility conditions have been applied and work incentives strengthened. In a number of countries, minimum wages have been held constant in nominal terms and reduced in real terms. Several countries have reduced minimum wages for youth.

Policies such as those in Western Europe that had attempted to reduce adjustment costs by preserving existing jobs at the expense of new jobs have been recognized as shortsighted, benefiting some workers by shifting high costs to others. In addition to the steps that individual countries have taken to reverse such policies, the OECD and the Venice Economic Summit formally recognized the need for removing labor market barriers and increasing flexibility. At its May 1987 Ministerial meeting, the OECD concluded that improved functioning of labor markets is essential for sustained economic growth.

CONCLUSION

Investments in human capital and in science and technology have made substantial contributions to productivity and economic progress. In the future such investments may assume even greater importance. Market incentives provide the primary mechanism for the accumulation and allocation of investments in knowledge and skill as well as in physical capital. Government support for education and research can improve prospects for long-term economic growth, but it should be linked closely to private incentives. Public support of most education and training and of research should be limited to investments for which individuals and firms do not have adequate incentives and for which benefits exceed costs, including costs that arise from tax distortions. Many government interventions, including those that are designed to spur increases in knowledge, generate costs and inefficiencies that in the end retard growth.

Economic progress requires change, and to realize the gains from investments in human capital and in research and development it is vital that markets remain flexible and responsive. To resist change and to introduce protection that slows change will stifle investment

and diminish opportunities for future growth. Policies that reduce market barriers and strengthen the incentives of individuals and businesses to invest and to innovate are the surest ways to improve economic performance. Government can encourage further advances in knowledge and economic progress by maintaining flexible markets and a stable framework in which property rights are protected and initiatives are rewarded.

CHAPTER 6

Airline Deregulation: Maintaining the Momentum

DURING THE LAST DECADE there have been dramatic changes in the way America's transportation sector is regulated. The railroad, bus, trucking, and airline industries all have become more efficient as a result. Since virtually all aspects of the economy depend on the transportation system, gains in this sector help the overall economy, thereby improving U.S. competitiveness. The principal force underlying these changes in productivity has been a deregulatory environment that allowed greater price flexibility for businesses while reducing government interference.

The deregulation of trucking, railroads, buses, and airlines began in the 1970s when government officials recognized that regulation was stifling competition. After the regulatory bodies began to reduce their control over prices and entry, the Congress enacted landmark legislation loosening or abolishing Federal controls over the transportation industries. For example, the Staggers Rail Act of 1980 allowed railroads to set prices freely in markets where they could not exercise market dominance. Railroads no longer are subject to rate regulation in these markets, and price intervention on the part of the Federal Government has been reduced. The Motor Carrier Act of 1980 relaxed government regulation of trucking. Because barriers to entry have been lowered, many new competitors have entered the market. Trucking firms now have greater freedom in setting rates. The Bus Regulatory Reform Act of 1982 relaxed both entry and fare restrictions for the intercity bus industry. Although government regulation has not been eliminated entirely from these industries, the role of the government has been reduced significantly.

While deregulation substantially improved productivity and efficiency in the transportation sector, the Airline Deregulation Act of 1978 has had the greatest immediate impact on the public. The benefits to travelers from airline deregulation have been estimated to exceed \$11 billion per year.

The deregulation of the airline industry has permitted greater competition which, in turn, has led to a dramatic restructuring of the airline industry. The industry has become more streamlined. Fares

generally are much lower than they would have been under regulation, and a wider menu of travel options is available to the consumer. Although there had been concern about air service to small communities following deregulation, such service, as measured by the frequency of flights and flight length, has improved.

Despite the economic gains from deregulation, complaints about a possible decline in the level of safety and an increase in flight delays have increased. It is sometimes argued that regulation should be restored. These concerns must be examined in the context of the evolution of the airline industry since deregulation. While airline safety is a serious public concern, the record indicates that safety has not deteriorated under deregulation; in fact, it appears to have improved. Moreover, while airport and airspace congestion has worsened, this is a direct result of the *success* of deregulation. More people are flying now than ever before, but the local and Federal authorities charged with managing the airports and airspace have been unable to adjust to the dramatic growth in demand. Congestion is a natural consequence of the fact that growth in demand for air travel has exceeded the supply of airport and airspace services.

The solution to the problem of increased congestion lies not in resurrecting an outmoded system of regulation with onerous restrictions on entry and fares. Rather, the solution lies in devising economic approaches that will enable the supply of airport and airspace services to keep pace with the growing demands of the American public for air transport.

THE REGULATORY ENVIRONMENT

For nearly four decades before the enactment of the Airline Deregulation Act in 1978, the Civil Aeronautics Board (CAB) exercised extensive regulatory control over the domestic airline industry. The CAB controlled the entry and exit of carriers on interstate routes and approved the fares charged on those routes. The CAB appears to have tried to stabilize the industry, attempting to shield existing carriers from entry and price competition, and to provide service to a large number of communities. To the extent that airlines competed, they focused on features other than price, such as departure frequency and food quality. This competition over service quality limited the CAB's ability to use price and entry regulation to achieve its goals concerning profits, service, and stability.

In order to provide service to more places, the CAB attempted to favor short-haul service in two ways. First, for long-haul routes, fares were set at high levels relative to costs, and fares for short-haul routes were set at low levels relative to costs. As a result, passengers on

long-haul routes paid significantly higher prices than they would have under competition.

Second, direct subsidies were given to airlines that served small communities. The Federal Government frequently has used subsidies to ensure that services were provided to less densely populated areas. For example, subsidies have been provided for post offices and telephone service in small towns and remote areas. Thus it is not surprising that subsidies were given to the airline industry for similar purposes.

These direct subsidies have created a number of problems. For example, because airlines were subsidized on the basis of the number of departures, they had an incentive to schedule flights with multiple stops, thereby resulting in lengthy flight times from small communities to major cities. Since the subsidies did not vary with the time of day, airlines typically scheduled their service to small communities during off-peak periods. Because the planes used on these subsidized routes often were borrowed from other routes, they were not efficiently tailored to the size of the subsidized markets.

Even with the subsidy program, many carriers chose to limit service provided to small communities. From 1970 to 1975, the CAB permitted certificated carriers to reduce their service to small communities by nearly 25 percent. At the same time, unsubsidized commuter carriers not under the CAB's regulatory jurisdiction were increasing service to these communities.

Subsidies to airlines peaked in 1981 at \$109 million. As traffic on commuter airlines grew, fewer subsidies were needed to maintain service; consequently, subsidies now have fallen to less than \$30 million. A 1987 study by the Department of Transportation (DOT) projected that an end to these subsidies would result in a loss of service to 70 of the 102 airports (excluding Alaska) currently in the program. None of these 70 communities board more than 13 passengers per day, and over half board fewer than five passengers per day. In addition, almost half of these airports are less than 75 miles from other communities with air transportation, and only eight are more than 150 miles from alternative air transport. Although the Airline Deregulation Act would have ended these subsidies in 1988, legislation has just been enacted extending the program for another 10 years.

In order to maintain service to small communities and stability in the industry, the CAB regulated entry into the profitable long-haul markets and exit from the less-profitable short-haul markets. The type and extent of route regulation depended on the category of the carrier. Route restrictions were imposed on all interstate carriers, except for commuter airlines and charters. For example, carriers often were precluded from operating beyond a stated point. In addi-

tion, carriers sometimes were required to make intermediate stops. Restrictions on entry into the major interstate "trunk" markets were particularly stringent. From 1938 through 1978, the CAB did not permit a single new interstate trunk airline to enter the market.

The CAB did allow limited entry in some markets. After World War II the Congress pressured the CAB to permit the creation of "local service" airlines. These airlines replaced much of the federally subsidized service that the trunks provided to smaller communities. Initially, local service airlines were precluded from competing with the trunk airlines. Then, in an effort to reduce the growing cost of the subsidy, the government allowed local airlines to offer service in selected markets served by the trunks. This policy helped foster limited competition between the trunks and the local service airlines.

The few areas where the CAB did not regulate rates, entry, and route structure included small commuter airlines, airlines providing charter services, and intrastate carriers. However, the CAB did limit commuters by setting the maximum gross takeoff weight at 12,500 pounds, which permitted approximately 20 seats. This limitation subsequently was relaxed somewhat, but it still served to restrict commuter service to less densely populated markets.

Intrastate airline carriers had complete flexibility in choosing routes and fares. The intrastate carriers in California and Texas charged significantly lower fares than the interstate trunks charged on routes of similar distances yet made profits. The fare per mile in unregulated markets was often half as much as fares in comparable regulated markets. Fare comparisons between interstate and intrastate markets made it easy to see that there could be substantial gains from deregulation.

RESULTS OF DEREGULATION

Several factors have affected the performance of the airline industry over the last decade. Deregulation, while important, must not be given undue credit or unjust blame for the recent performance of the industry. Technical innovation, for example, has contributed to improvements in fuel efficiency and safety. The performance of the domestic economy also is linked to the overall health of the domestic airline industry, because more people travel when the economy is doing well. Since 1982 the United States has enjoyed its longest post-war peacetime economic expansion. Thus it is important to differentiate between the gains resulting from economic expansion and those resulting from deregulation. Even controlling for such changes in the economy, however, it is clear that deregulation has had a substantial positive effect.

LOWER FARES

The most important economic benefits that have resulted from U.S. airline deregulation are decreases in fares and increases in the frequency of service. The use of discount fares, which offer reductions from the standard coach fare, has increased dramatically. In 1976, 15 percent of travelers enjoyed discount fares; by 1987 this number had grown to 90 percent. The substantial rise in the availability of discount fares has been accompanied by a 15 percent decrease in these fares, adjusting for inflation.

Since the old regulatory policies tended to keep long-haul fares relatively high, the greatest reductions in discount fares have occurred for longer flights. For example, discount prices for flights over 2,500 miles have dropped by 35 percent in real terms. The availability of discount fares has increased significantly in short-haul markets as well. For flights less than 500 miles, the prices of discount tickets have dropped by about 10 percent in real terms.

In contrast to discount fares, average full undiscounted coach fares have increased by more than 10 percent in real terms; however, only about 10 percent of current ticket sales are for full coach fare. Changes in real coach fares also vary with trip length. For trips less than 2,000 miles, average coach fares have increased. For trips exceeding 2,000 miles, real average coach fares have declined.

The widespread reduction in fares is caused by several factors. The elimination of regulated fares was important in long-haul markets. In high-density markets, two other factors contributed to lower fares. First, high passenger volumes in these markets permitted airlines to reduce their cost per passenger mile by making more efficient use of their equipment. Second, these markets also tended to have more discretionary travelers, who could take advantage of discount fares. Indeed, discount fares are used most widely in those markets with the highest passenger volume.

EFFICIENT ROUTING: THE HUB AND SPOKE

The route structure that evolved under regulation has undergone major changes as a result of increased competition. Free entry into city-pair markets has permitted the airlines to develop much more efficient routing patterns than under regulation. The most significant change has been the growth of a "hub-and-spoke" delivery system. As the name suggests, airlines have developed a series of networks analogous to a bicycle wheel. The hub represents the center of the network; the spokes link different origin and destination points. For example, a flight from Hartford to San Diego may be routed through a hub at Chicago.

Leading hubs of all major airlines have shown large increases in traffic since 1978. In several cases airline departures from the major hubs have more than doubled. In addition, the expansion of the hub-and-spoke system following deregulation has permitted four major innovations benefiting fliers.

First, service to airports with low traffic volume has been expanded. While demand may not be sufficient to justify direct flights from small airports to certain other locations, the new distribution system allows the traffic from small airports to be combined at the hubs with traffic from other spokes. This traffic then is routed through the various spokes of the hub. Thus being connected to a hub allows convenient access to many destinations.

Second, flight frequency is greater at both hubs and spokes, allowing the traveler to find more convenient flight times. Pooling traffic at the hubs permits greater departure frequency to and from the smaller airports. The convergence of traffic from the various spokes also permits more frequent hub service. With the expanded set of options, most travelers now are able to schedule their departures closer to their preferred times.

Deregulation appears to have led to an overall increase in the frequency of service; however, there is a wide variation across different markets based on passenger travel demand. Using a random sample of markets from 1976 and 1984, researchers have found that service improved across all market groups. Significantly, markets with the lowest passenger volumes experienced the greatest increase in both service and estimated welfare gain per traveler.

Although some communities have lost scheduled service, only in rare instances has deregulation been the primary cause. A study which took into account the economic and demographic changes in the United States has concluded that the introduction of deregulation has helped to slow the rate at which small communities have lost service. Moreover, deregulation has allowed commuters and regional carriers to expand more rapidly, feeding passengers into the hubs and thereby strengthening the hub-and-spoke system. Since 1978 the regional and commuter airlines have more than doubled the number of their passengers and added service to over 140 airports not previously served by these carriers.

While the growth of hubs has improved the frequency of service, it also has increased average travel time somewhat. Hub-and-spoke configurations are partly responsible for this increase, since they typically involve a tradeoff between departure frequency and travel time. More flights to a particular destination may be available, but some of these flights may involve brief stopovers in other cities. Comparing airline regulation in 1977 with a simulated deregulation scenario, re-

searchers have found that the average time increase for flights under 2,500 miles has been less than 10 percent, while average flight times have decreased about 4 percent on trips over 2,500 miles. A study has shown that consumers place greater value on the increase in departure frequency than on the losses that result from the small average increase in travel time. In some cases, the hub-and-spoke system has had a salutary effect on travel time. For example, hub-and-spoke networks have resulted in a dramatic reduction in flights with two or more intermediate stops, thus leading to a reduction in travel time for many city-pairs.

A third benefit from hub-and-spoke networks is that larger aircraft can be used, because traffic has been consolidated. Bigger planes cost less to operate per seat mile than smaller planes. In addition to the cost savings, larger aircraft usually are thought to afford greater comfort, so fliers also benefit in this quality dimension.

A fourth benefit of the growth of hub-and-spoke systems is that more fliers have the opportunity to book on a single airline for their entire flight. Research has shown that fliers strongly prefer traveling on a single carrier to reach a destination rather than changing airlines on one-stop flights. Benefits include better coordination of flight times and better baggage services. The consolidation of airlines at a hub can provide more opportunities for passengers to choose single-line service. In 1977, 68 percent of all connecting passengers changed airlines, whereas only 12 percent do today.

EFFECTS ON LABOR

While airline productivity has increased, the effects of deregulation on the airline labor market have been mixed. Employment in the airline industry has increased as a result of increased air travel. From 1977 to 1986 total airline employment increased by more than one-third. Because of general changes in the economy and dramatic changes in energy prices, it is difficult to isolate the effect of deregulation on wages. From 1977 to 1984 it appears that airline wages did as well as other sectors of the economy, if not better.

The aggregate impact on wages masks an important change in the wage structure resulting from deregulation. The introduction of deregulation led to intense pressure to cut costs so that lower prices could be offered. This downward pressure on costs induced airlines to seek work rule changes as well as changes in wage rates. These changes have in some cases led to a dual wage structure in which newly hired workers earn less for performing the same jobs than previously hired workers.

INCREASES IN PRODUCTIVITY, PROFITS, AND WELFARE

Besides leading to lower fares and increased service, airline deregulation has resulted in more productive uses of inputs, such as labor and equipment. The hub-and-spoke system, for example, has helped to deploy aircraft fleets more efficiently, so more passengers can be served better using the same resources. For example, commercial planes flew with 55 percent of their seats filled in 1976 and this load factor increased to 60 percent in 1986. Moreover, airlines have installed more seats in their aircraft since deregulation to accommodate the growth in demand. U.S. airline productivity increased by 7 percent from 1976 to 1983, while the productivity of non-U.S. carriers decreased by nearly 40 percent over the same period. This comparison lends strong support to the view that deregulation has had a dramatic positive impact on U.S. airline productivity growth.

The effect of deregulation on industry profits is difficult to estimate. The difference between the average return on capital invested in the airline industry in the period following deregulation and in the decade preceding deregulation is relatively small. Both before and after deregulation the industry experienced financial losses during periods of sharp fuel price increases and economy-wide recessions. Attempts to control for macroeconomic factors and changes in input prices suggest that the financial performance of the airline industry is better than it would have been under continued regulation. One study has estimated that profits in 1977 would have increased by more than \$4 billion if the airlines had been fully deregulated at that time.

To measure the overall welfare effects of deregulation, it is necessary to quantify effects on airlines and travelers. Travelers have been affected principally through reduced fares, increased frequency of service, and changes in travel time between destinations. Both business travelers and pleasure travelers have benefited. Moreover, travelers using all sizes of airports experienced a net average gain in welfare. The welfare increase for the average traveler amounts to roughly \$20 per trip. Summing the estimated aggregate gains to travelers and airline companies yields a total of approximately \$15 billion in annual benefits from deregulation.

INTERNATIONAL CONSEQUENCES

The U.S. experience with deregulation has been influential in leading other countries to deregulate air travel. Great Britain recently privatized its major state-owned airline. Canada and Japan are considering similar moves. New Zealand has taken steps parallel to those in the United States to deregulate its air transport industry, and Australia plans to phase in airline deregulation by the early 1990s. After

nearly 3 years of debate the European Community (EC) has approved the first steps of a liberalization package that took effect at the start of 1988. Greater entry by carriers within the EC will be permitted, and it is estimated that fares for flights within Europe will decline by an average of 10 to 15 percent.

The International Air Transport Association (IATA) plays a major role in attempting to cartelize international air travel by providing a forum for price coordination exempt from the antitrust laws. Limitations on international competition also result from government regulation of entry and prices in international markets. Through a series of bilateral agreements, countries have divided international markets. In many cases only one carrier from each country is permitted to serve a particular route. These restrictions on entry and price competition have led to a market structure reminiscent of the domestic U.S. market under the CAB. Fares tend to be higher, and firms compete, if at all, on service rather than on price. Governments sometimes negotiate bilateral agreements that not only limit total capacity but also divide the airline traffic and profits between themselves. The principal source of price competition in European markets comes from charter services, which are outside of IATA's purview. Indeed, charter services currently account for more than half of all travel in Europe.

In order to promote competition in international aviation, the United States has entered into a number of bilateral negotiations with other nations to increase the access of U.S. carriers to foreign destinations in return for greater foreign access to U.S. destinations. Where these agreements permit greater entry and price flexibility, the increased competition on international routes has resulted in lower fares.

The United States is pursuing further liberalization of international airline travel through similar bilateral negotiations. Although such negotiations are only a first step toward greater international competition, they could result in global economic gains. Allowing U.S. carriers free entry into foreign markets would provide significant benefits to consumers and domestic carriers. Offering foreign airlines free access to U.S. destinations would provide much more convenient international direct flight service to consumers worldwide.

MANAGING THE INCREASED DEMAND FOR AIRSPACE

Deregulation has given rise to the highest levels of commercial air travel ever experienced in the world. If not managed properly, increased air traffic could lead to greater congestion, and in some situations could raise safety concerns. The deregulated environment has

been quite effective in maintaining air safety. The growth of air traffic, however, has raised some important issues concerning the compatibility of airline deregulation with continued government management of airspace and airport services. If the benefits of deregulation are to be enhanced, market forces should be introduced to reform those elements of the air transport industry that are still regulated by the government.

SAFETY

Airline accidents have declined steadily since the 1950s and this trend has continued since the advent of deregulation in 1978. From 1978 to 1986 departures increased by 28 percent, miles flown by 48 percent, revenue passenger miles by 61 percent, and revenue passengers by 52 percent. In light of this large increase in air travel, the accident rate statistics under deregulation appear even more favorable. The decline in fatality rates is particularly encouraging, since load factors and the number of seats per plane have risen since the end of regulation. Chart 6-1 shows that accident and fatal accident rates for all scheduled passenger and cargo operations have declined dramatically during the last 30 years, reaching an all-time low in the period since deregulation.

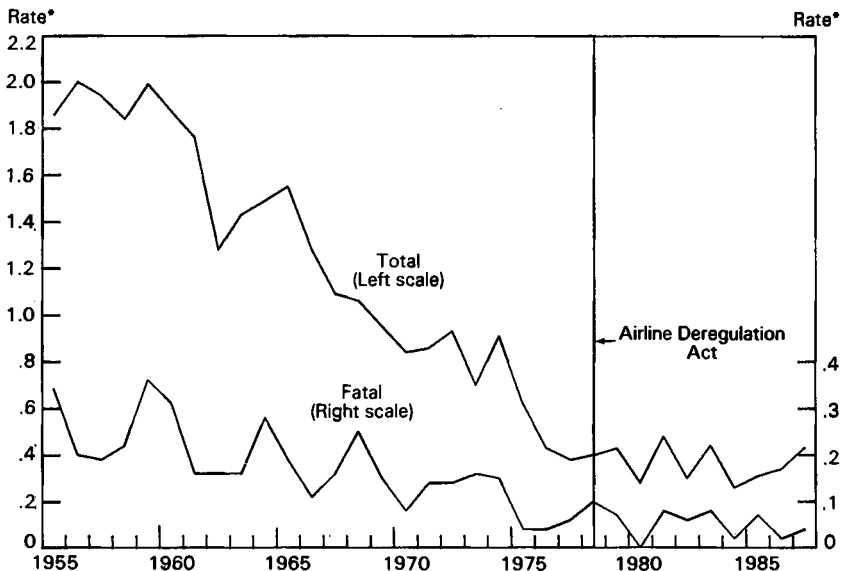
Even if extremes rather than averages are compared, air safety looks quite good following deregulation. A comparison of the worst year for accidents following deregulation with the previous 30 years shows that in only 3 years prior to 1978 were there fewer accidents. A similar picture emerges if the best year achieved under regulation is used as the benchmark for safety. In 4 of the 10 years following deregulation, there have been fewer accidents than in regulation's best year, notwithstanding the sharp increase in air travel.

Improvements in flight safety performance have not been confined to the major carriers. Although only recent data are available for nonscheduled service, commuters, and air taxis, their safety records from 1971 to 1978 can be compared with those from 1979 to 1986. For nonscheduled operations, accidents per 100,000 flight hours have fallen 7 percent, and fatalities per 100,000 flight hours have declined 53 percent. Accident and fatality rates for commuters and air taxis have shown similar improvement, falling 27 percent and 36 percent, respectively. These statistics demonstrate that safety performance has improved in all segments of the industry since deregulation.

Critics of deregulation have argued that airline safety would deteriorate under competition, because competitive pressures would induce firms to cut back on safety expenditures. Under such circumstances the incentives to reduce costs could result in the airlines exposing passengers to greater risks. In addition, price regulation had

Chart 6-1

Airline Accident Rate



*Accidents per 100,000 departures.

Note.—Data relate to scheduled passenger and cargo operations of U.S. certificated air carriers; data for 1987 are preliminary.

Sources: Civil Aeronautics Board and National Transportation Safety Board.

forced airlines to focus their competition on nonprice factors such as safety, and deregulation would end that incentive. Thus it was argued, airlines would pay less attention to safety in a deregulated environment, and the skies would become less safe.

After nearly a decade of experience with deregulated air travel, these fears have proven to be unfounded. Studies have found no evidence of a decline in the safety performance of the airline industry following deregulation. Furthermore, there appears to be little or no correlation between safety and financial performance in the airline industry, either before or after deregulation. In addition, profitability appears to have had no effect on maintenance expenditures, and there is no systematic evidence that airlines have cut corners on safety.

If deregulation were leading to reduced safety precautions, then this change should affect the characteristics of accidents that do occur. For example, if airlines were taking less time to train pilots or were overworking them, then the share of accidents caused primarily by pilot error should rise. Similarly, if there were less emphasis on

maintenance, then the percentage of accidents primarily due to equipment failure should rise. The statistics show, however, that the proportion of accidents primarily due to pilot error as well as the share primarily due to equipment failure have changed little since deregulation.

The relative ranking of the factors contributing to fatal airline accidents before and after deregulation also has been quite stable. Pilot error is the most common factor followed by the weather and then by air traffic control. Maintenance is the least common factor. In the decade prior to deregulation, pilot error was a contributing factor in 32 fatal accidents, while maintenance was a contributing factor in 2 accidents. In contrast, pilot error was a contributing factor in 12 accidents and maintenance in only 1 accident in the period since deregulation.

Recently the public has expressed concern that the rapid growth in air traffic stemming from deregulation has put unusual stress on the air traffic control system. At the same time there have been reports that air traffic controllers may feel overburdened. Since reaching a low in late 1981 following the illegal strike by the air traffic controllers union, controller staffs have been growing to meet the increasing demand. The evidence does not support the claim that changes in controller staffing have led to a decline in safety. Indeed, the share of accidents primarily due to air traffic control error has not changed since deregulation.

Although the accident and fatality statistics point to improved rather than deteriorating safety since 1978, some observers have claimed that the "safety margin" is declining. However, measurement of the safety margin is problematic. Near midair collision statistics play a major role in this concept. Unfortunately, there is no consistent near midair collision data that would permit a comparison of performance before and after deregulation. In addition, a 1985 change in the procedures for processing near midair collision reports makes it difficult to discern reliable trends after deregulation.

A near midair collision is defined as an incident in which the possibility of a collision occurs as a result of aircraft coming within 500 feet of each other. A pilot or crew member also can report a near midair collision if the individual believes that a hazard existed between two or more aircraft, even if the 500-foot criterion were not met. Near midair collisions then are categorized as critical (the most serious), potential, and no hazard (collision improbable). Approximately 70 percent of the total increase in near midair collision reports from 1985 to 1986 has been in the "no hazard" category. The number of reported near midair collisions does not appear to be cor-

related with any measure of accidents, fatalities, or number of actual midair collisions.

Midair collisions constitute a very small fraction of all aircraft accidents involving a commercial carrier. Most accidents occur at takeoff or landing and do not involve another aircraft. Since the passage of the Airline Deregulation Act of 1978, only one midair collision involving a domestic commercial jetliner has occurred in the United States. Since near midair collision reports do not appear to be correlated with air carrier accidents or accident rates, and actual midair collisions involving commercial jets have been rare, the concern about the safety margin appears to be exaggerated.

An often neglected but very significant consequence of deregulation is that lower fares and more frequent service have caused air travel to be substituted for other modes of transportation. Since air travel is safer than other forms of intercity travel, overall transportation safety is improved as people substitute a safer form of transport for a less safe one. Between 1980 and 1984, for example, deaths per billion passenger miles for passenger car travel averaged 35.7, whereas for airline travel they averaged 0.3. Thus, for every billion miles of air travel that people substitute for car travel, there will be approximately 35 fewer deaths. A study has estimated that more than 800 lives are saved each year because people now travel by plane rather than by car.

It is important to recognize that deregulation did not affect the Federal Government's role in the regulation of safety. The Federal Aviation Administration (FAA) has continued to monitor airlines' safety-related activities. One study has concluded that airlines consider the FAA standards to be "bare-bones" minima for operation, and they routinely do more than the FAA calls for. For example, the airlines have voluntarily set standards for aviation equipment through a nonprofit corporation owned by the airlines.

While there is likely to be a valuable role for an external body to oversee safety in the airline industry, government regulation represents but one of many approaches that could be adopted. In many other industries, private organizations such as Underwriters Laboratories and insurance groups provide monitoring and safety standards. The market provision of such services might work similarly in the airline industry.

As the safety statistics suggest, competition does not appear to provide airlines an incentive to reduce safety. In fact, market forces may reinforce airline safety considerations. When an airline experiences an accident, the price of its stock suffers a loss. If carriers attempted to reduce safety precautions to an unacceptable level, they could be affected adversely by FAA enforcement actions, increased

insurance premiums, increased costs of borrowing, and a loss of reputation. Thus, firms will consider these consequences when they develop their safety management practices.

In summary, the evidence shows that safety has not deteriorated as a result of airline deregulation. Even if safety were declining, a return to price and entry regulation would not be the answer. Protecting airline profits through regulation of price and entry is unlikely to result in improved safety, since there is scant evidence that changes in financial variables lead to changes in safety performance. With a return to regulation, however, the safety gains from intermodal substitution of air travel for other, less safe forms of transport would be forgone.

DELAYS

One feature not addressed by airline deregulation was the management of delays. Delays occur when the demand for system capacity exceeds the available supply. Delays usually are caused by congestion. Just as highways often become congested during rush hours, so do airports and airspace. Most delays occur at crowded airports during peak periods, just as most highway delays occur during rush hour traffic jams around major cities. In 1987, for example, 85 percent of total recorded delays were associated with only 22 airports.

The primary responsibility for managing the U.S. airspace continues to lie with the FAA. The policies adopted by the FAA have an important effect on the amount and distribution of delays. To understand appropriate remedies for problems related to delays, it is useful to have some understanding of how the air traffic control system works.

In the United States more than 600 airport control towers clear planes for takeoff and landing. To help regulate traffic between airports, there are 20 domestic en route air traffic control centers which span the continental United States. These facilities help manage more than 40 million flights per year. To simplify this task, the airspace is divided into a number of sectors. Each sector corresponds to a parcel of airspace within which a controller is responsible for the safe passage of aircraft. Of the 47,000 people employed by the FAA, about 15,000 are air traffic controllers.

Weather conditions play a major role in contributing to delays. Because bad weather reduces an airport's capacity to handle flights, it can generate delays. The FAA reports that in 1987 approximately 70 percent of flight delays were weather-related, and 23 percent were volume-related. More specifically, the FAA estimates that 11 percent of delays were due directly to traffic volume at airports, while 12 percent resulted from high traffic volume at en route centers. Prior to

deregulation in the 1970s, all volume-related delays constituted less than 5 percent of total delays, and weather accounted for roughly 80 percent of total delays.

Unfortunately, incomplete measurement of delays, together with changes in the definition of "delay," make it difficult to assess long-term trends. The FAA attempts to measure only major delays due to air traffic control. Prior to 1982 only delays over 30 minutes were reported. Since then the FAA has recorded delays of 15 minutes or more. The number of delays varies greatly from one year to the next, due mainly to the vagaries of weather.

While delays are unpleasant, some amount of delay at peak periods is usually appropriate. Actions taken to control delays should balance the benefits of reducing delay during peak periods against the cost of additional capacity. Even if it were possible to eliminate all delays, such a policy would not necessarily be efficient, because the costs of eliminating delays during peak periods would exceed the benefits. For example, although it might be possible to build a superhighway that could accommodate all rush hour traffic, most of the lanes of this highway would remain empty for the vast majority of the day. The costs incurred in building such a highway are likely to far exceed the benefits of eliminating congestion and delays at rush hour.

Current Approaches for Managing Congestion

The FAA and DOT have taken a variety of actions to address concerns about air traffic congestion. After the strike by air traffic controllers in 1981, the FAA adopted a new policy to minimize the number of aircraft that the system must track at any one time without reducing the overall volume of daily flight activity. When congestion is anticipated at the destination airport, the FAA requires that a plane wait on the ground. This policy, while perhaps addressing safety, actually may have introduced significant delays. If planes were allowed to circle in the vicinity of destination airports, waiting for weather or congestion to clear, unnecessary delays could be avoided.

To help ease the delay problem, the FAA has undertaken a major restructuring of the airspace along the east coast. The FAA significantly expanded air traffic capabilities through an improvement in routing procedures. This change required only a very small addition of personnel and equipment. The airspace reorganization is analogous to reducing traffic jams by increasing the number of lanes on a roadway and improving the timing of stoplights. The creation of additional departure routes and airways was accomplished primarily through better charting, efficient realignment of existing paths, and increased coordination among air traffic facilities. Similar plans for restructuring airways along the west coast are under development.

The Department of Transportation periodically has attempted to enlist the help of the airlines in sorting out scheduling problems. In 1984 and again in 1987, the DOT brought the airlines together to engage in scheduling discussions aimed at reducing delays. The DOT believes that these meetings have helped to reduce excessive bunching of departures at peak periods.

Since pricing mechanisms are not used to allocate takeoffs and landings at the most desirable times, the airlines have little incentive to transfer some of their peak traffic to off-peak periods. Reliance upon DOT meetings to deal with scheduling issues arises at least in part because pricing of airport usage does not reflect congestion costs.

Due to the increasing concern about delays and service, the DOT recently required airlines to provide information on all delays, except those related to maintenance. Beginning in September 1987, monthly tabulations covering approximately 80 percent of all flights have been made available on a flight-by-flight basis. Delay statistics for all flights at the reporting airports also are being calculated.

If airport services were priced to reflect congestion costs accurately, then prices would convey much of the information that this disclosure rule attempts to provide. In the absence of price signals, the DOT statistics may encourage some travelers to switch to flights that are less likely to experience delays. The response of travelers would provide an incentive for the airlines to improve scheduling and operations.

While the publication of delay statistics provides consumers and planners with some information about the specific sources of delay, the disclosure requirement may not lead to improved consumer service. For example, the willingness of an airline to hold a connecting flight for the late arrival of another flight may be affected. Particularly at a hub, one plane arriving late could cause a number of other planes to be held for connecting passengers. If the airline holds the connecting flights, its on-time performance record will be harmed. If it does not hold the flight and passengers miss their connections, the airline's performance may appear better. Thus, actual delays experienced by travelers could increase as the reported statistics appear to improve.

To meet capacity needs in the longer term, the FAA is attempting to increase the pace at which the airport and airways system is being modernized. The agency is in the process of designing and building a new system of radars, communication devices, and computer hardware and software as part of the National Airspace System Plan. These improvements will allow the system to handle more air traffic. The FAA is also in the process of training more controllers. Unfortu-

nately, the implementation of many aspects of the National Airspace System Plan are much behind schedule. Technical problems have slowed the development and introduction of improved facilities to accommodate more volume.

In the United States, there is only one major new commercial passenger airport planned to be built before the turn of the century. Direct airport capacity expansion faces a number of significant obstacles. There is strong opposition in many communities to the construction of new airports as well as to the expansion of existing local airports. Local noise standards limit traffic growth at many airports. A number of communities recently have passed ordinances explicitly restricting airport traffic. The Federal authorities who manage the overall capacity of the system often have goals conflicting with those of the local communities.

The Federal Government and the airlines have taken a number of steps to address the problems related to delays with varying degrees of effectiveness. The recent trend in delays looks promising. Total delays as recorded by the FAA declined by 15 percent from 1986 to 1987, even though traffic volume continued to climb. Despite this improvement, it is likely that the delay issue will resurface periodically, unless fundamental structural changes are made in the way the airspace is managed and in the way decisions about investment in capacity are made.

MAKING THE SYSTEM MORE RESPONSIVE AND EFFICIENT

Because traffic volume has risen since deregulation, it has become increasingly difficult for the supply of airspace services to keep up with the demands imposed upon the system. Part of the problem is the way the system currently is financed. Instead of paying for services actually rendered by the air traffic control system, operators and travelers pay taxes only indirectly related to costs. The primary source of funding for the system is an 8 percent tax on each airline ticket sold. In 1987 the ticket tax yielded \$2.7 billion in revenues, accounting for 88 percent of the revenues collected from users. The remaining revenues come from a tax on aviation fuel, a 5 percent tax on cargo, and a \$3 passenger tax on international departures. These revenues flow into the Airport and Airway Trust Fund, out of which part of the Federal spending related to air transportation is financed.

FAA expenditures for fiscal 1987 totaled \$4.9 billion. The difference between FAA expenditures and revenues raised from user taxes in 1987 was \$1.9 billion. Not all of this difference represents a subsidy from the general public, since the public should pay for the use of the airspace by government agencies such as the Department of Defense. Nonetheless, a sizable portion of this revenue shortfall does

represent a subsidy from U.S. taxpayers to the aviation system. The FAA estimates that commercial airlines pay roughly 90 percent of the costs they impose on the system. General aviation, which includes small, privately owned aircraft and business jets, pays less than 10 percent of the costs they impose on the system. The total subsidy from taxpayers to the beneficiaries of general aviation and air carrier activity was approximately \$1.1 billion for fiscal 1987.

There are two basic problems with this policy for funding air traffic control and safety services. First, the primary beneficiaries of airline travel are not bearing the full cost. Ending the subsidy to the air transport sector not only would help allocate the supply of airspace services rationally and result in better allocation among transportation modes, but it also would result in a small decrease in the Federal budget deficit. The second problem is that the payments made by travelers and operators are not linked to the use of specific services. The charges are related only tangentially to the costs they impose on the system.

To develop a sensible response to short-term congestion problems and long-term planning issues, it would be useful to obtain information on the value people place on airspace services, a task best accomplished by asking users to pay for services actually rendered. More accurate information on how travelers value capacity would make it possible to determine where adjustments in system capacity are needed.

There are a variety of short- and long-term options that could enhance the efficiency of the air traffic control system. In the short term, the most attractive options include the introduction of realistic pricing of services that could ease particularly troublesome bottlenecks in the system. In the longer term, it is possible to design efficient approaches which avoid the types of delays that have been experienced in the recent past, and that also can meet the demands of a rapidly changing airline industry.

Short-Term Options for Easing Congestion

Virtually none of the measures developed by Federal authorities to address the short-term congestion problem incorporates economic approaches. Because of the way the system currently is managed, airlines have very little incentive to consider the costs they impose on others when flying at peak periods. Charges to aircraft operators do not reflect the full costs of using the airspace and airport facilities at these times. For example, if a plane lands at a congested airport during a peak period, all other planes waiting to land are delayed. Similarly, if a plane takes off during a peak period, planes waiting in line behind it are delayed. Operators will not take these costs into

account unless a system is implemented in which they are charged for them.

There are two basic approaches that would help alleviate the congestion problem during peak periods while at the same time promote a more efficient use of available capacity. One would set a price for takeoffs and landings that adequately reflects direct and indirect costs. Direct costs include normal operating and maintenance costs, while indirect costs include the costs of congestion. The other approach would limit the quantity of takeoff and landing slots during peak periods and allow these slots to be bought and sold. Both the fee system and the slot system would allow passengers who value peak-period travel the most highly to have access to airports during these periods. Those passengers who have greater flexibility could elect to take flights during off-peak periods and, thus, take advantage of the lower fares that would be offered then.

The best way to strike an appropriate balance between the costs and benefits of congestion is to introduce tradable slots or variable fees that reflect the costs that each individual imposes on other travelers at peak times. These economic approaches would ensure that operators and customers take congestion costs into account in their travel decisions. Reducing the level of congestion at airports would increase the value of peak-period flights and would promote economic efficiency.

Variants of these approaches already are in use. Airports typically assess landing fees based on aircraft weight because runway wear is generally thought to be related to aircraft landing weight. Few of these fees, however, vary with airport usage or time of day. Distinctions between peak and off-peak periods rarely are made. In addition, the fees typically are quite low. For example, a small private plane can land during a peak period at Washington's National Airport for no more than \$6.00.

Airports receiving funds from the Airport and Airway Trust Fund are constrained to some extent in the fees they may charge to users. Fees must be nondiscriminatory; this is interpreted to mean that they must be related directly to costs. Such a condition does not preclude the use of peak landing and takeoff fees, provided that costs are interpreted to include the congestion costs that each airplane imposes on others. These congestion costs should be included in the calculation of peak prices to the extent feasible.

Under the current fee system, on-time performance cannot be purchased. Those travelers who incur high costs when delayed have no way to signal their costs to the system. Passengers cannot simply pay a premium to assure that their flights will arrive on schedule. Except at a very limited number of airports, airlines wishing to offer better

on-time services cannot pay more to obtain a takeoff or landing preference. The current system rations airspace and airport services through waiting time and delays, whereas a pricing mechanism would permit a more efficient allocation of landings and takeoffs among those who place different values on their time. Without accurate information on the costs of delays, the airlines and airports lack the criteria to decide how to improve flight schedules to suit passenger demands.

If landing fees adequately reflected congestion costs, some passengers and flights would be induced to switch to off-peak periods when fees were lower. Some airports have begun to use such fees. For example, in 1968 peak and off-peak fees were introduced for general aviation at three major New York airports. The peak-period fee was raised to \$25, while the off-peak landing fee remained at \$5. This fee schedule resulted in a 30 percent decrease in peak-period traffic and a 19 percent overall decrease in general aviation activity. In addition, there was a marked decrease in delays.

This example shows that the introduction of peak/off-peak pricing differentials can be quite effective. Recently, Boston's Logan Airport announced plans to implement general aviation fees intended to address congestion problems. In 1972 London's Heathrow Airport adopted a peak-load pricing approach. Some U.S. airlines have objected to the charges at Heathrow on the grounds that they discriminate against transatlantic traffic. These arguments notwithstanding, it is clear that proper application of peak-load pricing has the potential to reduce congestion and enhance the efficiency of airline service significantly.

An alternative to peak-period fees is a restriction on the number of landing and takeoff slots available during peak periods. At most airports there are no restrictions on landings and takeoffs other than those imposed by air traffic controllers. Planes typically are handled on a first-come, first-served basis. At O'Hare, La Guardia, Kennedy, and National Airports, however, the FAA has limited the number of takeoff and landing slots available. The FAA, in consultation with the airlines, has allocated slots to the carriers by criteria related to historical usage. The FAA can change this allocation and require one airline to transfer slots to another.

Beginning in April 1986, the FAA authorized the purchase and sale of slots at the four "slot-constrained" airports. Although all airlines currently are free to participate in this slot market, the FAA retains the right to withdraw this privilege and reallocate slots at its discretion. An initial 6-week experiment in 1982, in which over 190 slots were bought and sold, provided evidence of the workability of a slot market. During this experiment a private firm began to offer special-

ized brokerage services for the airlines. Since April 1986 there have been more than 1,000 slot transactions at the four slot-constrained airports. However, many of the slots have been transferred on only a temporary basis. The uncertainty surrounding the FAA's ability to direct the reallocation of slots or even to close the slot market may make short-term leasing arrangements more desirable for the airlines than outright purchases or sales.

Allowing purchases and sales of slots is a major improvement over the previous system, which allocated slots by committee. The committee process did not allocate slots on the basis of their most highly valued use. In contrast, the slot market allows firms that have a better product to expand their operations by buying slots from other firms. Since the exchange is voluntary, both the buyer and the seller are better off. In addition, consumers generally will be better off, since the airlines have more flexibility to respond to the demands of travelers with different valuations of time. Thus the tradable slot system is similar to the fee system in that it tends to reduce delays while increasing efficiency.

Slots and fees can be tailored to meet particular problems that arise in the air traffic control system. For example, two types of service could be offered in the event of bad weather or problems with the air traffic control system. In the event of such a contingency, some firms could receive priority service, which would entitle them to have priority in taking off or landing. Operators would be assessed a fee for this service, or, alternatively, special rights to priority service could be auctioned or allocated to operators.

The details of a tradable slot or variable fee approach would vary, depending on the needs and characteristics of the various airports. But overall, such economic incentives could help address short-term congestion problems. Moreover, these schemes could be extended to other aspects of the airspace system. For example, a cost-based pricing system for air traffic control and other airspace services could be explored. In Europe, charges are assessed for the usage of some airspace services. At present, users are not charged directly for using the air traffic control network in the United States. By effectively leaving these services unpriced, the system encourages overutilization of this resource. As in the case of allocating services for landing and takeoff, it is important to develop pricing schemes that reflect the actual costs that users impose on the air traffic network. Such schemes could provide valuable information on ways to improve services provided by air traffic controllers.

Economic incentives are but one means of addressing some of the short-term congestion problems. Airport capacity is determined by more than the number of runways. Many other factors limit the over-

all capacity of the air traffic system. The FAA already has increased capacity through improved routing and planning. It is also possible to increase capacity by adding more support staff at terminals, by changing the distribution of air traffic controllers, and by improving air traffic control procedures. The effectiveness of these changes will depend on where the bottlenecks in the system lie. However, all such changes can be used in conjunction with economic incentives to help address short-term congestion problems.

Long-Term Options for Air Traffic Management

Variable fees and tradable slot systems, two useful approaches for controlling short-term congestion, also could aid in expanding air travel capacity over the long term. For example, revenues from fees or the auction of slots could be used to expand the capacity of the system where it is most needed. In some cases such expansion might include adding runways; in other situations new controllers or computers might be more appropriate. Even if the revenues from fees or slots were not used to add directly to capacity, these approaches could provide very useful information for long-term planning. The price of a slot during the peak period at an airport provides a good measure of what people would be willing to pay for a small increase in capacity at that airport. When this value exceeds the cost of adding capacity, then an increase in capacity is warranted.

To reap the full benefits of deregulation, it is necessary to have a system that is responsive to changes in capacity needs. The current system for planning capacity was developed under an environment in which change was predictable. Routes and traffic patterns were stable as a result of CAB regulation. This stability disappeared with deregulation. The FAA has found itself in the unenviable position of trying to manage the capacity of a rapidly changing industry without having the necessary information.

Capacity planners could make two changes that would help enhance the benefits of deregulation. First, the planning function needs to be linked to data on the value of capacity additions. At present, very little information is available on the value of adding capacity because users are not asked to pay directly for the services they are offered. Second, planning should be more responsive to the needs of local airports. Decentralizing planning would help achieve this goal.

There are several alternatives for restructuring the current system that could help address some of the basic concerns related to congestion. These include redefining the role of the FAA, restructuring the FAA, and changing the organization of the air traffic control system. The FAA currently must try to implement two largely independent mandates: the regulation of aviation safety and the general promotion of aviation. Some observers have argued that the FAA is well-

sued to handle aviation safety regulation, but a government agency may be less well-suited to meeting the capacity needs of an industry that is evolving quickly.

One proposal would have the FAA retain its primary role in regulating safety, but relinquish its role as a central planner in the air traffic control system. Some groups have recommended that the control of air traffic be placed under the supervision of a special Federal corporation that would distribute airport grants, hire air traffic controllers, and contract out services. The corporation would have more flexibility than a Federal agency in hiring and paying its employees and in procurement. A board of directors representing the users of the system would help make the corporation more responsive to the needs of its users than the current system is.

Recognizing the potential for inefficiency in a federally sponsored corporation, another proposal calls for placing the supply of air traffic services in the hands of the private sector. Instead of a Federal corporation, a nonprofit corporation owned by the various users would be created. Unlike the current air traffic control system, such a corporation would be funded from user fees, including charges for the use of the controller network. Financing the system on the basis of user fees would provide improved information on where capacity expansion is most needed. A private, user-funded corporation would be free from the constraints of the budget process faced by a Federal corporation, and would have a strong incentive to provide services that meet the needs of travelers. A similar nonprofit, user-owned corporation has operated for over 50 years providing extensive airline radio communications and navigation services. In addition, this corporation has played an important role in setting aviation engineering and communications standards.

Another possibility is for local airports to own and operate their own air traffic control towers. These control towers still would follow the standards set by the FAA and the entity in charge of controlling air traffic. The staffing and investment decisions for such control towers, however, would be made by the management of the local airport. By returning this function to the local airports, the system could become more responsive to the needs of users. The FAA currently allows 17 small Level I control towers to be operated privately. Moreover, a private concern has expressed interest in buying and managing the remainder of the federally owned Level I control towers.

In contrast to the United States, Great Britain implemented a system in 1972 which encouraged widespread use of the private sector in managing various airspace functions. A private company now competes with a governmental body in the training of air traffic

controllers. Airports in Great Britain contract with this company or with the government to supply their air traffic control needs. The largest British airports charge variable landing fees and use these revenues to finance airport growth. In this way, local British airports can respond directly to changes in demands for their facilities.

Two main themes underlie these proposals to reorganize the air traffic control system. The first relates to the value of separating safety regulation from the provision of air traffic services. While the two activities are linked, the Federal Government may not be in the best position to implement policies that ease congestion. The second is that user fees directly related to services are necessary to understand more clearly the level of services needed now and in the future. Only with a pricing system that allows operators and air travelers to register the extent to which they value various services will it be possible to plan sensibly for the needs of the future. Moreover, this pricing system can be used to generate the revenues needed to improve the system.

CONCERNS ABOUT MARKET ORGANIZATION AND MONOPOLY

Deregulation has led to greater price competition, lower average fares for travelers, and a more efficient industry structure. The evidence suggests that the industry is much more competitive now than under regulation, and that attempts to reregulate would produce substantial net losses for both consumers and the airline industry. Nonetheless, concern has been voiced that the emerging industry structure is oligopolistic in character, allowing firms to exert substantial control over various markets. Four specific issues have been raised. First, the viability of new entrants and smaller carriers in the deregulated marketplace has been a source of concern. Second, the growth of particular airlines at hub airports, along with some recent mergers, have raised questions about consolidation in the industry. Third, since information about flights and fares has become more important in airline competition, the influence of airline-owned computerized reservation systems used by travel agents has come under scrutiny. Fourth, by making entry more difficult, capacity limitations set on airport usage may pose a threat to competition.

THE VIABILITY OF NEW ENTRANTS AND SMALLER AIRLINES

Deregulation has radically transformed the organization of the airline industry. Freedom of entry has played an important role in this change. Under regulation, the existing interstate airlines were pro-

tected against new entry. The number of carriers gradually dwindled until 1978, when there were only 36 certificated airline operators left.

Since deregulation many new airlines have emerged. More than 200 firms have been certified since 1978. As in any dynamic industry, some firms have failed, some have merged, and others have grown on their own. As of July 1987 there were 78 certificated airline carriers, although nearly one-half operated outside of the continental United States. More than three-fourths of carriers flying today received their certification following deregulation.

There was some initial concern that smaller carriers would have difficulty entering the industry to compete against large incumbents. Studies indicated that larger airlines had lower costs per seat mile than smaller airlines; however, company size itself was found to confer no advantages on a particular route. The differences instead were found to be attributable to the different types of service offered by large trunks and local carriers. Smaller airlines tended to make shorter flights with smaller planes than the major carriers. Bigger planes flying longer distances operated at lower costs per seat mile. In other words, there appear to be economies of scale in aircraft size and usage, but not necessarily in overall airline size.

The evolution of airline operations toward hub-and-spoke systems following deregulation, however, may provide some advantages to larger airlines. The ability of a single airline to offer a variety of routes at convenient departure times may be valuable to prospective passengers. Carriers may be able to use their aircraft more efficiently by having multiple hubs rather than a single hub. The economics of disseminating fare information and using this information for developing fare structures also may favor larger firms.

Since deregulation the success of local and regional airlines has helped to relieve concerns about the viability of smaller airlines co-existing with the trunks. Local and regional carriers have enjoyed greater profitability than the large trunk airlines. The common stock of small carriers has performed better than stocks of the larger airlines. Furthermore, many smaller airlines have found market niches, in which they have prospered, such as feeder services to larger carriers or connections between less densely populated areas.

New entrants generally have enjoyed cost advantages over the established airlines. The employment contracts and management organization developed under regulation were not compatible with a deregulated environment. New carriers have been able to achieve lower labor costs and improved utilization of equipment. The established airlines have responded to the competitive pressure by reducing operating costs, thereby mitigating the advantages of entrants.

MERGERS AND CONSOLIDATION AT HUBS

In order to coordinate and consolidate traffic in a hubbing network, a carrier must have a large number of flights at its hub airports. Naturally, as an airline routes more of its traffic through its hubs, its share of flights at those airports will grow. Thus some increase in airline concentration at individual airports is a consequence of building an efficient route structure.

Airline hub-and-spoke networks have expanded in two ways: through internal growth by offering more flights and leasing more gate space; and through mergers of existing airlines. Expanding the reach of an airline's network by adding new hub locations and spoke routes affords more opportunities for single-line travel.

Yet expansion of a carrier at an existing hub, through the merger of two airlines' operations at a particular airport, has raised concerns that firms may be able to exert market power. Potential anti-competitive problems from mergers can be addressed through normal anti-trust review. The application of the antitrust laws to the airline industry is not an issue of deregulation *per se*, but a matter of general competitive policy.

Changes in airline organization and operation that cause traffic at a hub airport to be concentrated in the hands of one or two airlines do not, by themselves, reveal much about the competitive level in the industry. Where barriers to entry are low and alternatives are available, the benefits of competition can be achieved regardless of airline concentration or the actual number of competitors in a market. Where those conditions do not hold, conclusions about the vigor of competition must be drawn with more caution. Thus the potential impediments to competition must be analyzed in order to evaluate the consequences of consolidation in the airline industry.

At hubs where one or two carriers already use a large share of the gate space, another airline may find it difficult to establish a major presence there. The relevant statistic, however, may not be the concentration at the individual airport. Competition among hubs at different locations provides a significant disciplinary force. The hub airports in one carrier's system are the spoke airports of other carriers' systems. If travelers living near a concentrated hub become dissatisfied with the fare and service of the dominant carrier(s), they often have the option of taking another airline to its hub and flying to their destinations from there.

For long journeys passengers can choose among a number of hubs in order to reach their destination. A traveler from Boston to Phoenix, for example, can choose among nine connecting points, including Chicago, Kansas City, and St. Louis. Many hubs have been created since deregulation, and airlines are continuing to add new hubs

to their systems, such as Charlotte, Cincinnati, Dayton, Philadelphia, and Raleigh-Durham. In addition, metropolitan areas with multiple airports may experience competition among them, since an attempt by an airline to raise its fares at one airport may be disciplined by travelers switching to an airline at another airport.

Competitive conditions for shorter flights are different from those for longer ones. Interhub competition is most effective for the longer flights. On shorter routes flying through an out-of-the-way hub to arrive at one's ultimate destination may not be a feasible alternative. For example, flying from Minneapolis to Madison via Chicago may not be a very good substitute for a nonstop flight from Minneapolis to Madison. On thinly traveled shorter routes, service from small commuter airlines may provide alternatives to the dominant carriers feeding into the hub. For shorter distances surface transportation, such as cars, buses, and trains, may provide a viable alternative means of travel.

On routes where reasonable alternatives are quite limited, there have been complaints of monopoly pricing. These cases often involve markets with small traffic volume that can accommodate only single plane scheduled service. In some cases, regular air service to small communities is feasible only as a result of pooling passengers, which is made possible by the existence of a hub into which traffic from small communities can feed. A policy that would weaken the hubbing structure also would reduce the network economies available from careful route coordination. Such a policy could result in the denial of air service to these communities altogether.

Recent research has found that fares tend to be higher on routes on which there are fewer competitors. Yet it is not clear if increases in concentration actually imply higher prices. Moreover, even if this were true, if travelers paying these higher prices received higher quality service, they could be better off. More research will be necessary to determine how specific changes in industry concentration have affected consumer welfare.

While the concentration of major carriers at the national level and at some hubs has increased recently, it is not clear that concentration has risen in the economically relevant markets, namely, individual city-pair markets. Easier entry into these markets appears to have brought more airlines into competition on more routes. Preliminary research suggests that the average number of carriers per route is higher today than it was under regulation.

COMPUTERIZED RESERVATION SYSTEMS

The development of computerized reservation systems (CRS) by a few airlines has been pointed to as a danger to free competition

among the airlines. Prior to CRS most travel agents would look up flights and fares in the *Official Airline Guide*. Then they would call each airline individually to check seat and fare availability. CRS provides an up-to-date listing of flights, fares, and seat availability on a terminal screen. Reservations, seat assignments, and ticket purchases then can be made by computer.

The initial plans to develop a computerized system of reservations and flight information dates back to 1953. Technical difficulties in implementation were formidable. The data processing requirements stretched the limits of existing computer hardware and software. In the late 1960s and early 1970s, attempts were made to develop a common system for airlines and travel agents. After an industry-wide effort to develop a CRS broke down in the early 1970s, two airlines invested heavily to develop and market their own systems. The success of these systems spurred others to enter, and now three other domestic airline-owned systems compete for travel agents.

While CRS was developed prior to deregulation, it is well-suited to a market environment in which prices are changing constantly. The key benefit provided by CRS is information. The development of the hub-and-spoke structure has made finding convenient connections extremely important. While fare structures have grown more complex, CRS allows prices, schedules, and routes to be accessed and conveyed to the traveler in an inexpensive and timely manner.

CRS also has played an important role in managing the information that enables airlines to offer deep discount fares. The airlines themselves had to develop sophisticated techniques for monitoring the inventory of seats on their flights in order to plan their route structure and thus to use their aircraft efficiently. CRS has helped contribute to the rapid advances in the management and productivity of the U.S. airline industry.

Because CRS provides airlines with the ability to react quickly, change their fares, and disseminate information, it functions as an important marketing and advertising tool. The order in which the offerings appear on the travel agent's computer screen, however, has been a point of controversy. The owner-developer of each system initially listed its own flights first and permitted others to purchase preferential placement on the screen.

There are two sides to the CRS market. CRS owners negotiate with travel agents to use their services. They also negotiate with other airlines to list their flights on a particular CRS.

Since entry into the travel agency business is unrestricted, agents compete with each other to offer the best service to their customers. Thus travel agents will choose a system that best helps them to in-

crease earnings, so CRS services and screen presentations are developed to suit their demands and those of their customers.

Airlines purchasing CRS services argued it was unfair for CRS owners to charge airlines different prices for their booking services. In response to these concerns, the CAB required CRS owners to charge the same price for all airline bookings. Whether in fact CRS prices could be anticompetitive is a matter that currently is being litigated.

Airlines without their own CRS have complained that the preferential placement of the CRS owner's information puts the non-owners at a competitive disadvantage. Just before its demise, the Civil Aeronautics Board issued an order requiring nondiscriminatory flight listings on a CRS. This order effectively limited the options available to CRS owners in listing flights on the computer screen. There has been vigorous debate over the desirability of the rule. Proponents argue that the airlines that owned CRS systems have been able to capture excessive profits as a result of having access to all the information in a CRS system. Opponents argue that the government's attempt to regulate screen display places an unnecessary restraint on competition and that the potential to exercise monopoly power is limited by the existence of several firms that currently offer CRS services.

AIRPORT CAPACITY LIMITS

Capacity constraints can present obstacles to entry and competition. Setting well-defined limits on airport landings and takeoffs could reduce delays. The price of such a measure, however, could be a weakening of competition, since a major disciplinary force in the airline market is the threat of entry by another carrier. The working of competitive forces could be compromised significantly by capacity restrictions that make it more difficult for carriers to expand service at an airport.

The difficulties generated by capacity limitations may be eased through the introduction of appropriate market incentives. When there are such constraints, the allocation method for these limited landing rights has important competitive consequences. Without flexibility to reallocate the slots among rival airlines, those airlines holding the slots are protected against the entry of other carriers. If these slots were tradable, however, new airlines could bid for slots and enter the market. In this way, some of the cartelizing effects of capacity limits could be mitigated.

Regardless of whether the landing and takeoff rights are tradable or not, the setting of capacity limits may create incentives that could result in airline operators being reluctant to have the airport expand

in the future. Airlines holding slots could have an incentive to oppose an increase in the capacity of the airport because such expansion would lower the value of the slots. Thus temporary capacity constraints could turn into long-term limits on capacity growth. A very similar situation has arisen with the issuance of taxi medallions in major cities. The number of authorized taxis in many cities today was set many years ago. There has been much reluctance, even in the face of consumer dissatisfaction, to augment the number of medallions. Taxi owners argue the local authority would be acting improperly if it took actions to diminish the value of the taxi owners' existing assets.

The structure of contracts between airports and airlines also may provide some incentives to slow capacity expansion. Airlines play an important role in determining capacity changes at airports. Airports typically are operated by local authorities, and airport construction usually is financed through the issue of revenue bonds. In order to assure a stream of revenue to support the bond issue, the airport authority signs long-term leases with the airlines for the use of the airport facilities. In return for long-term commitments, as is common in similar long-term agreements, the airlines receive some voice in future capital investments at the airport. These lease contracts typically grant to the airlines leasing a majority of the facilities the power to veto major airport alterations and capital improvements.

There have been some complaints that the current operation of slot markets has not been fully effective in allocating landing rights efficiently, and periodic lotteries and auctions have been suggested as a remedy. At the four slot-constrained airports, the FAA can take back a certain percentage of slots from the incumbent airlines and hold a lottery in which new entrants and smaller carriers have a greater chance of winning slots than the larger incumbent airlines. While this procedure may facilitate entry by new carriers, it does so in an inefficient manner. The slots are not allocated by a price mechanism; they are distributed arbitrarily. The careful coordination of incoming and outgoing flights is extremely important for effective route planning. Taking slots from existing hub-and-spoke operations and reallocating them without regard to route structure does not promote airline efficiency.

An alternative allocation mechanism to those involving explicit capacity limits is variable landing and usage fees. Such fees would allow the number of operators who can choose to land during a period to vary, subject to safety considerations. Instead of setting a predetermined limit on takeoffs and landings, changes in technology, airport staffing, and airway management then can be used to augment capacity at points of peak demand.

The effective limit will be determined by the demand for airspace at the specified fee. A variable fee structure avoids the incentives for airlines to be opposed to capacity growth. The airlines will prefer lower fees at peak periods, so they will desire an increase in airport capacity, as mentioned above. The use of variable fees also allows the airport to observe demand at different prices for different time periods. Moving toward variable landing and usage fees may help to avoid potential threats to competition posed by capacity limits and to foster capacity expansion.

CONCLUSION

The passage of the Airline Deregulation Act of 1978 has led to substantial gains, both for the airline industry and the general public. Productivity within the industry has improved, air fares have declined on average, and airlines are providing more frequent service. The total social benefits resulting from airline deregulation during the last decade are estimated to be on the order of \$100 billion.

The U.S. experience with deregulation is beginning to have an impact on the way other countries manage air travel. Several countries are following the lead of the United States in relaxing price and entry regulation, thereby enhancing the efficiency of the world's transportation system. Changes designed to reduce barriers to international competition would be the next step. An opening of all markets would bring benefits to travelers, airlines, and the global economy.

One of the principal benefits of deregulation has been to make air travel available to many Americans who would not even have considered this transportation option 10 years ago. The rapid growth of air travel has, however, strained the limits of the air traffic system in some areas. The Airline Deregulation Act eased entry constraints and promoted greater competition among airlines, but it did not foresee the changes that would be needed to accommodate a revitalized airline industry.

To make the system more responsive to future changes, it might be helpful to introduce variable landing and takeoff fees at airports. Revenues from the fees then could be used to enhance the capacity of the system. It is time to reexamine how planning decisions are made, with an eye toward developing market-based approaches that are better suited to meeting the needs of air travelers. The introduction of such changes is the key to increasing the benefits from airline deregulation.