CHAPTER 2

Expansions Past and Present

The U.S. economy began to expand rapidly in mid-2003, an expansion that carried through to 2004. Real gross domestic product (GDP) rose by 4.0 percent from the third quarter of 2003 to the third quarter of 2004. Employment grew steadily in 2004, with more than 2.6 million jobs created on net since the job market turned around in August 2003. The unemployment rate has declined from a high of 6.3 percent in June 2003 to 5.4 percent in December 2004—a rate below the average unemployment rate of the 1970s, 1980s, and 1990s. Inflation picked up modestly over the course of 2004 but remains low by historical standards, with consumer prices having increased by 3.3 percent during 2004. This state of affairs—strong growth, declining unemployment, and moderate inflation—is remarkable in light of the powerful contractionary forces at work since early 2000: the bursting of the high-tech bubble of the 1990s, revelations of corporate scandals, weak growth in the United States' major trading partners, the war in Iraq, and the impact of the terrorist attacks.

The recent recession and expansion took place against the backdrop of an economy undergoing fundamental changes. At the beginning of the twentieth century, the agricultural sector was the biggest employer; at the beginning of the twenty-first, the service-providing sector employed the most people. Technical progress has spurred productivity growth and raised living standards. The labor force increased enormously, as the population grew and the labor force participation rate of women rose over the course of the last century. The development of new financial instruments helped people become financially secure, and the expansion of the mortgage market has helped a record number of people own homes.

Given these large changes in the structure of the U.S. economy, the nature of economic expansions has probably also changed over time. Enough time has now elapsed in the current expansion to allow fruitful comparisons with previous expansions. The key findings are:

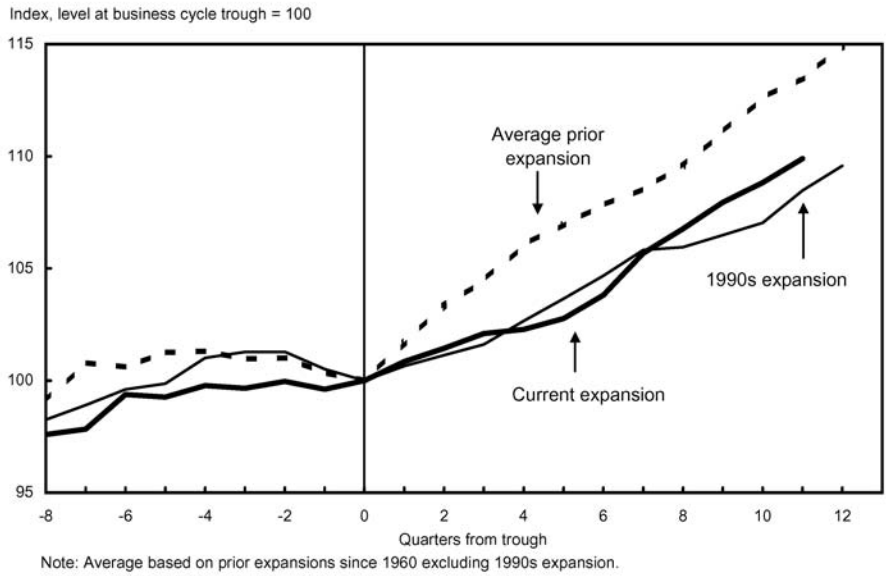
- The last two expansions—the one starting in 1991 and the current one—are similar to each other, but dissimilar to previous expansions. Both have exhibited relatively moderate overall growth in key economic variables.
- The last two expansions followed especially shallow recessions. Generally, shallow recessions are followed by shallow recoveries and deep recessions by robust recoveries.

- Stabilization policy—fiscal and monetary policy—has been particularly active during the last recession and expansion. The boost to disposable income from fiscal policy has been especially strong. Without these strong policies, the recession would have been deeper and longer.

Overview of the Current Expansion

Chart 2-1 plots the level of real GDP in the current expansion, the expansion of the 1990s, and the average of the five expansions from 1960 to 1990. The average provides a historical benchmark for the behavior of expansions; the year 1960 is chosen as a starting point to balance the need to smooth behavior over multiple expansions with the need to recognize that changes in the nature of the economy over time make earlier expansions less comparable to current ones. In each expansion, real GDP is normalized to 100 at the trough of the preceding recession (which is also the beginning of the expansion). Dates of the troughs are determined by the National Bureau of Economic Research. In the chart, each expansion begins at the vertical line at 0; points to the left of that line occur during the preceding recessions. The slope of each line is related to GDP growth: steeper slopes imply bigger changes in the level of real GDP per quarter, or faster growth.

Chart 2-1 **Real Gross Domestic Product**
The last two expansions have had more moderate GDP growth than the prior ones; but the preceding recessions were also more mild, showing smaller drops in GDP from peak to trough.



Note: Average based on prior expansions since 1960 excluding 1990s expansion.
Source: Department of Commerce (Bureau of Economic Analysis).

The behavior of real GDP is similar in the 1990s and current expansions, but both are different from the average prior expansion. In particular, real GDP has risen less robustly during the last two expansions than it did, on average, in the other expansions since 1960.

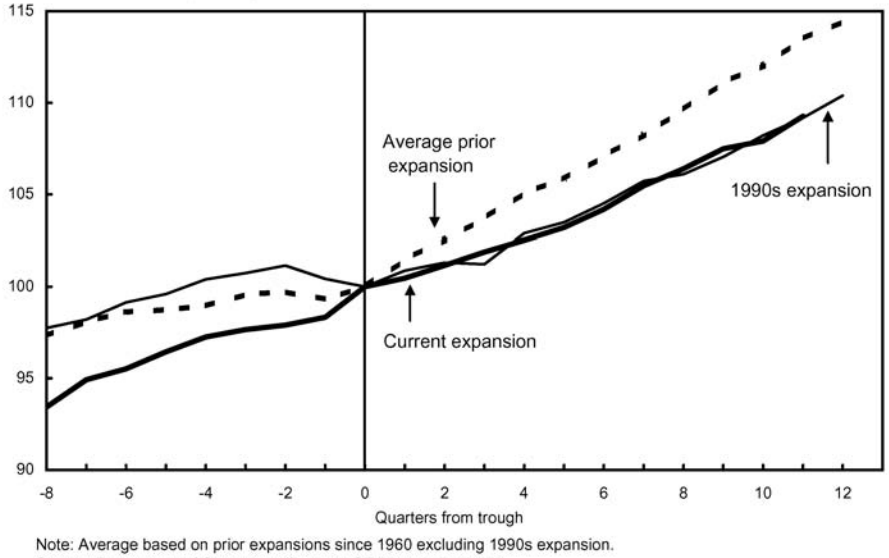
In the average contraction prior to 1990, the level of real GDP reached its peak approximately four quarters before the eventual trough; in the 1990-1991 contraction, GDP reached its peak two quarters before the trough. There were no consecutive quarters of decline in the most recent contraction, with revised data showing that real GDP dropped in the third quarter of 2000 and the first and third quarters of 2001, but grew in the intervening quarters.

Consumption

The largest component of GDP, real personal consumption expenditures, shows a similar pattern (Chart 2-2). Consumption behavior during the last two expansions has been almost identical, with the two recent expansions differing from prior expansions.

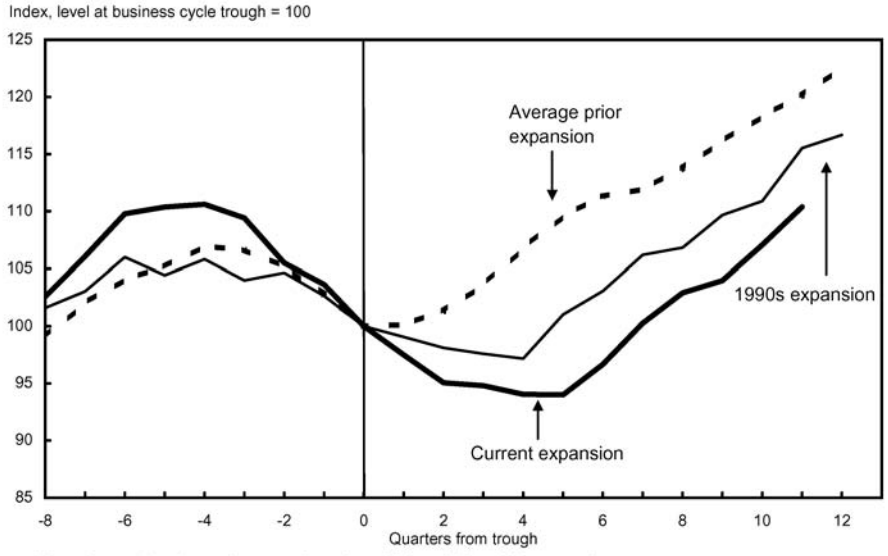
In the prior recessions, on average, consumption growth moderated starting six quarters before the recession's eventual trough, did not actually fall until two quarters before the trough, and began to rise in the quarter before the trough. In the 1990-1991 recession, consumption rose rapidly until two

Chart 2-2 **Real Personal Consumption Expenditures**
The behavior of consumption has been nearly identical over the last two expansions. Consumption did not fall during the last recession.



Note: Average based on prior expansions since 1960 excluding 1990s expansion.
Source: Department of Commerce (Bureau of Economic Analysis).

Chart 2-3 **Real Nonresidential Investment**
Nonresidential investment continued to fall in the two most recent expansions even after the business cycle trough had been reached.



Note: Average based on prior expansions since 1960 excluding 1990s expansion.
Source: Department of Commerce (Bureau of Economic Analysis).

quarters before the trough, dropped sharply until the trough, and mostly grew thereafter. The most recent recession stands out as different in that consumption continued to grow throughout. This likely reflects the important role of fiscal and monetary stimulus in supporting demand and the unusual extent to which the recession resulted from a collapse in investment following the bubble of the late 1990s.

Investment

In an average expansion prior to 1990, total nonresidential investment started to rise at the business cycle trough, but initially rose at a slower pace than consumption (Chart 2-3). In the expansion of the 1990s, however, investment continued to fall for four quarters after the trough, and in the most recent expansion, investment fell for five quarters after the overall economy had bottomed out.

Residential investment in the average of prior recessions began to drop eight quarters before the business cycle trough and rose quite sharply in the four quarters after the trough (Chart 2-4). The housing market has been strong in the current expansion, though housing investment has been increasing at a more moderate pace than in expansions before 1990. This pattern is likely the result of the unusual circumstance in which residential investment did not falter along with the broader economy. In turn, this lack

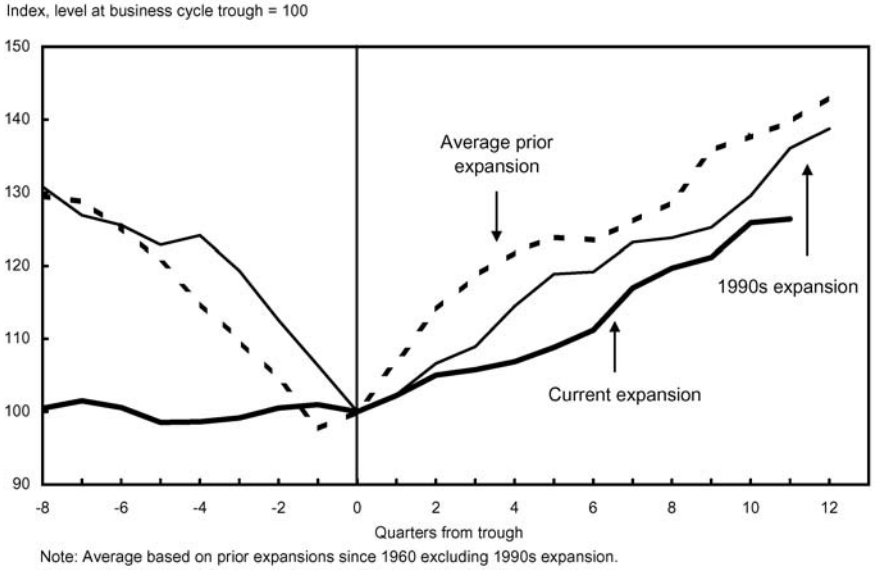
of faltering may be attributable to low mortgage rates and to the movement of households' funds out of equities and into housing.

Real house prices have also behaved quite differently across the two most recent expansions. Real prices dropped throughout the expansion of the 1990s, reaching a low in 1995. They have risen by a total of about 44 percent since then. More than half of this increase, about 25 percent, has occurred since 2000. The recent increases in house prices, which have been particularly large in some urban markets, have raised concerns that the housing market may be in a "bubble." It is worth noting in this context that home equity as a share of net worth dropped during the 1990s, as real stock prices rose rapidly while house prices fell for the first half of the decade. This share has been rising since the late 1990s, but remains below its high of about 22 percent reached in 1985. This rebalancing of portfolios, pushing up the share of home equity in net worth closer to its historical norm, raises the demand for housing. This increase in housing demand may thus be partly responsible for the recent run-up in house prices.

Exports

At the beginning of the current expansion, exports roughly matched the behavior of expansions prior to 1990, in which exports picked up relatively

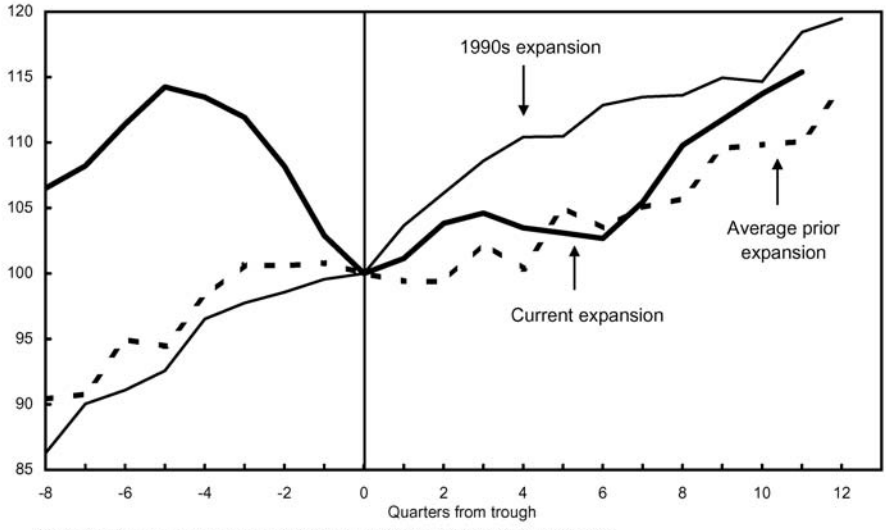
Chart 2-4 **Real Residential Investment**
Residential investment has grown moderately in the most recent expansion, after showing little if any decline in the preceding recession.



Note: Average based on prior expansions since 1960 excluding 1990s expansion.
Source: Department of Commerce (Bureau of Economic Analysis).

slowly at the start of the expansion (Chart 2-5). An increase in the rate of growth of exports during the last year has moved their behavior closer to that of the 1990s expansion. The decline in exports during the most recent recession was particularly large relative to previous ones, as economic growth among major U.S. trading partners slowed more than in most past business cycles; in contrast, exports continued to rise during the 1990-1991 recession. Thus both recent recessions and expansions show anomalous behavior, though in different ways.

Chart 2-5 **Real Exports of Goods and Services**
In the current expansion, exports have grown in line with the average prior expansion, after an especially sharp decline in the preceding recession.
Index, level at business cycle trough = 100

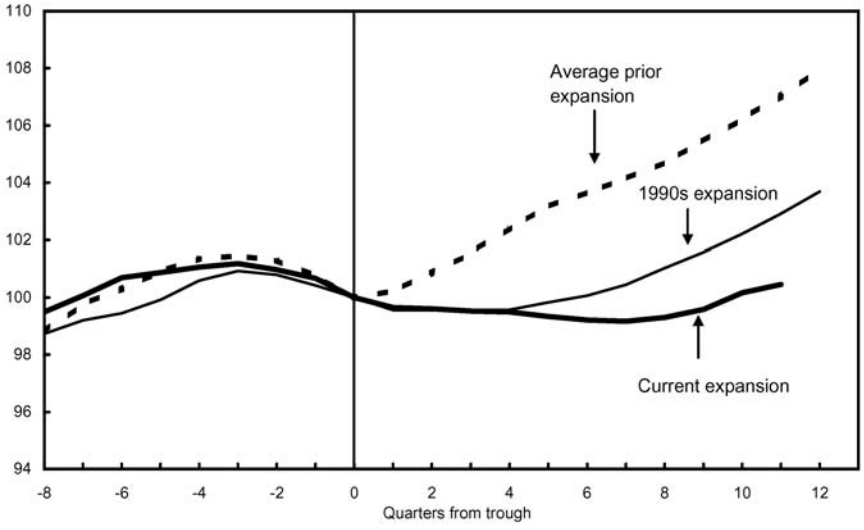


Note: Average based on prior expansions since 1960 excluding 1990s expansion.
Source: Department of Commerce (Bureau of Economic Analysis).

Labor Market

The behavior of the labor market was unusual in the most recent recession and the last two expansions. Before 1990, on average, payroll employment started to decline about three quarters before a business cycle trough—that is, employment on average has continued to rise in the early part of recessions (Chart 2-6). In an average expansion, employment begins to grow at the start of the expansion and reaches its previous peak three quarters after the trough. In the expansion of the 1990s, however, employment continued to fall for two quarters after the business cycle trough and did not reach its previous peak value until another six quarters had passed. In the most recent expansion, employment continued to fall for seven quarters after the recession had ended and appears to be on track to reach its prerecession level by early 2005. Though both of the

Chart 2-6 **Nonfarm Payroll Employment**
Employment continued to decline after the business cycle trough in the two most recent expansions, and subsequent growth has been more moderate than in prior expansions.
Index, level at business cycle trough = 100



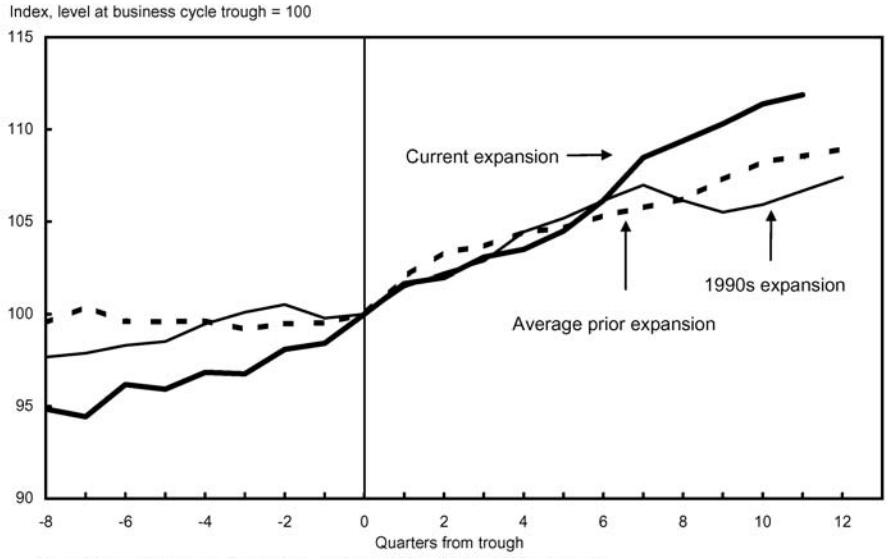
Note: Average based on prior expansions since 1960 excluding 1990s expansion.
Source: Department of Commerce (Bureau of Labor Statistics).

most recent expansions have shown relatively weak employment growth, they were also preceded by smaller declines in employment prior to the trough.

The recent behavior of productivity can account for much of the difference in employment growth (Chart 2-7). Productivity, defined as output per hour worked, had been growing in line with the rates seen in past expansions, but then accelerated four to six quarters after the most recent trough. At 11 quarters after a business cycle trough, productivity is usually about 8.5 percent above its value at the trough; it is currently about 12 percent above its trough value. During the most recent expansion, productivity growth has averaged 4.2 percent per year at an annual rate, up substantially from the 2.5 percent growth rate seen on average from 1995 to 2000. By contrast, though the level of productivity growth was quite high during the 1990s, at an annual growth rate of 2.1 percent, even three years after the 1991 trough the level of productivity was not as high relative to its trough value as had been the case in prior expansions. Hence current productivity growth particularly stands out.

In the short run, greater productivity growth sets the bar higher for employment growth. With increased productivity, a given amount of output can be produced with fewer hours worked, so real GDP must grow more quickly for employment to grow. In the long run, however, higher productivity growth leads to higher income per person, and will thus be expected to

Chart 2-7 **Nonfarm Business Productivity**
Nonfarm business productivity has increased at a much greater rate in the current expansion than in previous ones.



Note: Average based on prior expansions since 1960 excluding 1990s expansion.
Source: Department of Commerce (Bureau of Labor Statistics).

be positive for employment growth. This is because part of the increase in output is distributed to workers in the form of higher real wages and benefits and part to owners of capital in the form of profits. The fraction of national income accorded to profits has risen in recent years, with the share going to profits at 10.9 percent in the third quarter of 2004, up from an average of 9.3 percent during the 1980s and 1990s. The fraction accorded to wage payments and benefits has been approximately constant over longer periods of time. A return to the historical pattern would result in rising real wages.

The behavior of unemployment during the recent expansion, though atypical when compared with expansions from the 1960s through the 1980s, roughly matches the behavior of unemployment during the 1990s: a continued rise in unemployment after the beginning of the expansion, followed by a gradual decline about a year later.

Summary

The beginnings of the last two expansions have been characterized by moderate growth in key macroeconomic variables: real GDP, consumption, investment, employment, and unemployment. The beginning of the most recent expansion has seen slower growth in investment and employment than the last one. The pace of economic expansion picked up, however, in the

middle of 2003. The more moderate rate of employment growth is at least partly explained by unusually robust growth in productivity—which further indicates higher future real wage growth. Unemployment rose by less than in the last recession and expansion. Both of the most recent expansions were preceded by relatively mild recessions: the drop in real GDP was relatively small, and consumption did not drop at all in the most recent recession.

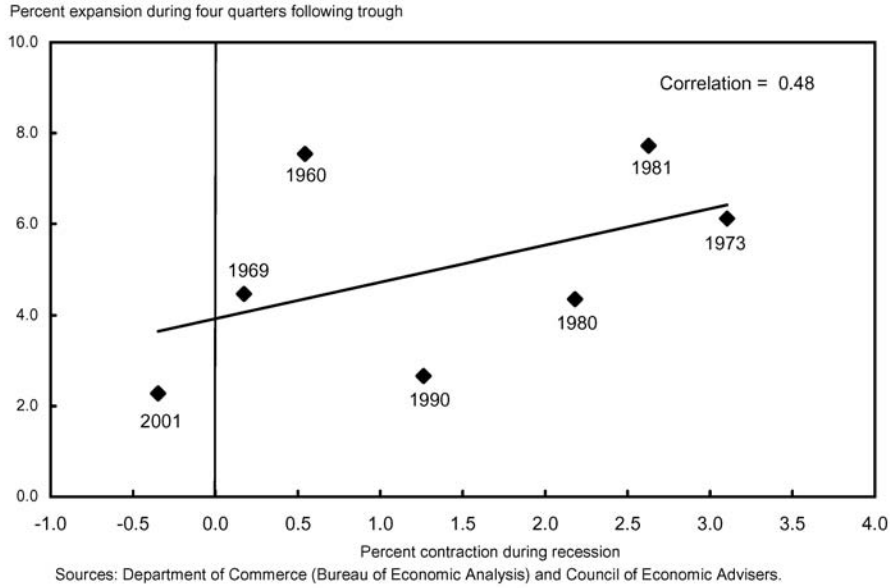
Symmetry in Recessions and Expansions

The last two expansions, though moderate, were preceded by shallow recessions. Past recessions were deeper and subsequent expansions more rapid. Together, the two sets of observations suggest that the rate of expansion may be related to the rate of contraction. This section evaluates that hypothesis.

Real GDP

Chart 2-8 plots the total percent contraction in real GDP during all recessions since 1960 against the percent expansion in real GDP in the four quarters following the trough. The latter time period is chosen to allow a uniform standard of comparison across expansions. Each point is labeled by

Chart 2-8 **Recessions and Expansions: Real GDP**
Real GDP tends to grow rapidly after deep recessions (such as that of 1981) and moderately after mild ones (such as that of 1969).



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

the year corresponding to the start of the recession as dated by the National Bureau of Economic Research. A regression line is drawn through the points; the position of the line is determined by a statistical procedure known as linear regression, which tries to determine the best possible line by minimizing the squares of the sums of the vertical distances between each point and the line. The line provides the best estimate for how much of an increase in real GDP at the beginning of an expansion can be expected for a given decline in real GDP during a recession.

The graph confirms the hypothesis. For example, the 1981 recession and its aftermath saw a sharp drop in real GDP followed by a sharp rise, while the 1990-1991 recession saw a shallow drop in real GDP followed by a shallow rise. The regression line is upward-sloping, providing statistical evidence that shallow recessions were followed by initially shallow expansions and sharp recessions by initially sharp expansions. An inset on the graph indicates a correlation of about 0.5. A correlation measures how closely two variables are related: a value of 1.0 indicates that the variables move together perfectly, 0 indicates that the variables are unrelated, and -1.0 indicates that the variables move in opposite directions. A value of 0.5 indicates a fairly strong relationship.

The most recent recessions and expansions have been fairly moderate. Indeed, real GDP actually rose over the course of the most recent recession; this is true whether the last recession is dated to have started in the fourth quarter of 2000 or the first quarter of 2001.

Components of Real GDP

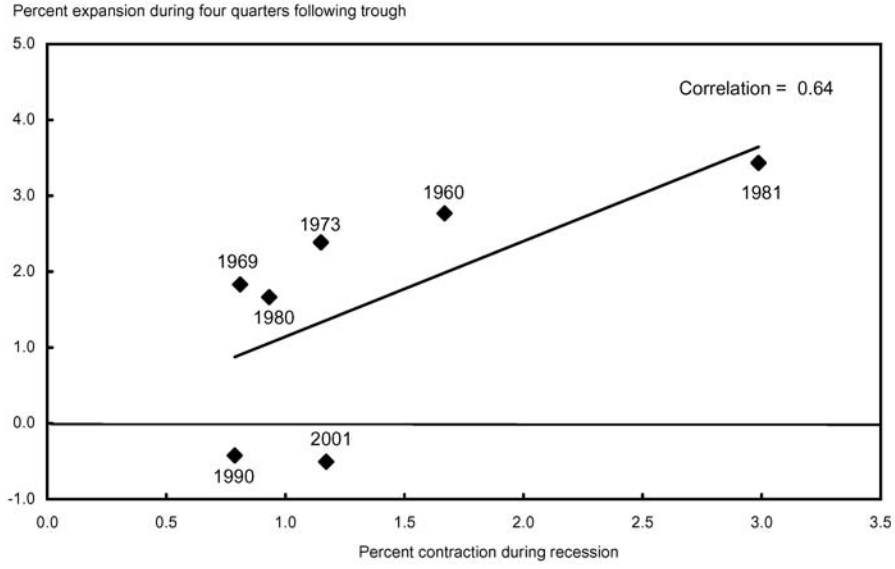
Given the symmetry in contractions and expansions of real GDP, one would expect some, if not all, of GDP's components—consumption, investment, government spending (on consumption and investment), and net exports—to show a similar pattern. The behavior of two major parts of overall investment, real investment in equipment and software and inventory investment, most strongly matches that of real GDP.

The Labor Market

The relationship between the drops in employment during contractions and the initial rises in employment during the subsequent expansions is even stronger than the relationship between GDP declines during recessions and GDP increases during expansions (Chart 2-9).

Drops in employment during contractions and rises during expansions are smaller than many of the other variables we have seen—ranging between a decline of 3 percent and an increase of 3.4 percent. The most recent contractions saw especially small declines in employment—between 0.8 percent and

Chart 2-9 **Recessions and Expansions: Nonfarm Payroll Employment**
Employment tends to grow rapidly after deep recessions (such as that of 1981) and moderately after mild ones (such as that of 1969).



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

1.2 percent. Employment continued to decline into the beginning of the expansions, though by less than 1 percent in each case. As noted above, given the rises in GDP of over 2 percent during the first year of each expansion, the difference reflects strong productivity growth.

A Possible Explanation: The Financial Accelerator

The charts above provide evidence that moderate recessions are followed, at least initially, by moderate expansions, and sharp recessions by initially rapid expansions. This is seen most strongly in the behavior of real GDP and employment.

The largest component of GDP to follow the same pattern, investment, suggests a possible explanation for this relationship. Investment is positively correlated with GDP growth, rising when GDP growth is rising and falling when GDP growth is falling. This relationship is known as the "accelerator model" of investment: higher GDP growth leads to more investment, which in turn leads to even faster GDP growth. A shock that leads to a large decline in investment will thus cause an even larger decline in GDP growth. When that shock disappears, and investment rebounds to its previous level, GDP growth will also show a similar rebound.

Research over the past two decades on the role of financial markets in investment has provided an explanation for the relationship between investment and

GDP growth. To buy new capital goods, firms rely on several sources of financing. These include internal funds, such as retained earnings or capital infusions from firm owners, and external funds, such as the proceeds from loans and the sales of stocks and bonds. The amount of internal funds is related to the firm's cash flow. In response to a slowdown in sales, cash flow will likely decline, reducing the amount of internal funds and therefore increasing the amount a firm needs to obtain from external finance. But lenders will be less willing to loan funds to firms with smaller cash flow, and the value of firms' collateral is also likely to have decreased, further reducing their ability to obtain loans. Hence firms might be forced to reduce their investment. This reduction in turn will lead to lower output, lower cash flow, and yet again lower investment—leading to a further deceleration in output. The effect can work in reverse during economic expansions, with rising GDP making it easier for firms to get financing for new investment projects. This theory provides a possible explanation for why changes in the amount of investment can have a multiplier impact on the broader economy.

The "financial accelerator" effect is roughly proportional to the size of the decline in GDP, since the change in cash flow and the value of collateral would be expected to be roughly proportional to the decline in output. There is no consensus, however, about the magnitude of the accelerator effect. One study assessing the response of investment by firms to a monetary policy tightening, both with and without a financial accelerator, showed that the presence of an accelerator can cause the decline in investment to double compared to a situation in which there is no accelerator effect. Another study noted that small firms, which are likely to be more limited in their ability to borrow than large firms, show much larger declines in inventory and sales growth during recessions than do large firms. This finding further suggests an important role for the financial accelerator.

The accelerator theory can also provide a link between asset price bubbles and recessions and expansions. When the prices of equities or real estate rise, the resulting increases in asset values raise the value of collateral, making it easier for firms to obtain financing for investment—thus further raising output growth. Conversely, declines in asset values from the bursting of asset price bubbles can discourage investment.

Although the financial accelerator theory helps explain why on average the depth of the recession corresponds to the initial strength of the expansion, the theory will not explain the behavior of all recessions and expansions. Investment is affected by things other than output growth, and, as will be discussed more fully later in the chapter, economic shocks can affect other components of GDP. In the most recent recession, for example, investment fell more rapidly than in the average recession, but the fall in output was not particularly large. The solid growth in consumption, boosted by expansionary monetary and fiscal policy, helped reduce the fall in output.

Summary

Moderate recessions are followed by moderate expansions and sharp contractions by rapid recoveries. This may be a consequence of the "financial accelerator" model of investment, in which firms' ability to borrow is related to the growth rate of output.

Seen in this context, the unusually moderate growth experienced at the beginning of the two most recent expansions seems less unusual, since the preceding recessions were also relatively mild. This observation begs the question of why the most recent recessions were mild. One possibility is that stabilization policy may have been more active and more effective during the last two recessions and subsequent expansions. This hypothesis can be assessed by looking at the two components of fiscal policy—taxes and spending—and at monetary policy.

Stabilization Policy

Before discussing specific details of stabilization policy, it will be useful to review what is known about the causes of business cycles, the effects of policy on economic activity, and the resulting challenges to the development and implementation of effective policy.

Business Cycles: Causes

Standard economic models suggest that long-run growth of real GDP is an outcome of technological progress, the accumulation of capital, and growth in the labor force. The models also suggest that either a larger labor force with a fixed capital stock or a larger capital stock with a fixed labor force will produce smaller and smaller additional amounts of output—a phenomenon known as *diminishing returns*. Hence capital accumulation alone and increases in the labor force alone will eventually result in higher levels of output but slower rates of output growth.

In the very long run, output will grow only if technological progress enables the production of more output for a given amount of capital and labor. In the short run, various *shocks*—unexpected events that cause large changes in the demand or supply of goods—can lead to recessions and expansions. The recessions and expansions can be seen as deviations from the long-run growth path.

Economic shocks can be divided into disturbances that affect aggregate demand and those that affect aggregate supply. *Aggregate demand* is the economy-wide demand for goods and services. It consists of consumer spending, investment, government purchases, and net exports (exports less

imports). *Aggregate supply* is the economy-wide supply of goods and services. Equilibrium in the economy occurs when aggregate demand equals aggregate supply.

Shocks that depress aggregate demand tend to lower output, lower employment (that is, raise unemployment), and put downward pressure on prices. For example, a decline in stock prices could lead to lower consumption spending. Shocks that raise aggregate demand have the opposite effect; they raise output, raise employment (lowering unemployment), and put upward pressure on prices. For example, greater optimism by firms about the state of the economy could lead to higher investment spending. Research has found that shocks to aggregate demand tend to affect output first rather than prices, but that these effects are temporary, lasting only a few years. However, such disturbances have long-lasting effects on the levels of prices and wages. That is, an increase in demand will lead to a temporary boost for output but a permanent rise in the price level (though not necessarily the inflation rate).

Shocks to aggregate supply, in contrast, tend to move output and prices in opposite directions. A beneficial shock to aggregate supply, such as a rise in productivity, raises output, lowers unemployment, and puts downward pressure on prices. An adverse shock to aggregate supply, such as an increase in the price of energy, has the opposite effects. To the extent that aggregate supply disturbances influence the determinants of long-run growth—the accumulation of capital, the supply of labor, and technological progress—supply shocks can also have long-lasting, even permanent, effects on the level and growth rate of output.

Economic Policy

The tools available to policymakers to affect the economy over a short horizon (up to a few years) can be divided into fiscal policy and monetary policy. *Fiscal policy* involves decisions about taxes, transfers (such as unemployment insurance, Social Security, or Medicare payments), and government purchases of goods and services. Changes in all of these affect aggregate demand. In the short run, lower taxes or higher transfer payments can lead to higher disposable incomes and thereby boost consumption spending. Government purchases directly affect spending and support aggregate demand.

The effects of tax cuts may depend on the expected duration of the cut. A prominent theory of consumption, the *life-cycle/permanent-income hypothesis*, argues that people choose their consumption to be in line with their expected lifetime resources. To the extent they are able, people keep their consumption constant over drops in income that are expected to be temporary by borrowing or using their savings. Expected temporary increases in income should be saved rather than consumed. Only sustained changes in income would translate into equal-sized changes in consumption. Under this theory,

permanent cuts should permanently raise consumer spending, as consumers would view disposable income as permanently higher, while temporary tax cuts should only be saved. But even temporary cuts could boost spending, however, if people cannot spend as much as they would like or need to due to constraints on their ability to borrow.

Tax changes can also increase the incentives for investment, boosting the investment part of aggregate demand. Some tax changes can also raise aggregate supply by, for example, boosting incentives for labor supply or permanently increasing the incentives to accumulate capital, or by removing distortions. These changes would be expected to augment the long-run growth rate of the economy.

Monetary policy in the United States is conducted by the Federal Reserve Board's Federal Open Market Committee (FOMC). The FOMC targets a short-term interest rate, the *Federal Funds rate*, the rate at which banks make overnight loans to one another. This interest rate in turn influences other short-term and long-term nominal and real (inflation-adjusted) interest rates in the economy. In turn, these interest rates affect interest-sensitive components of aggregate demand, such as investment and consumption of durable goods (goods used for long periods, such as refrigerators and cars). These components of demand are especially affected by changes in interest rates because firms often need to borrow to make investments and consumers need to borrow to purchase durable goods. Low real interest rates raise aggregate demand by boosting consumption and investment; high real rates reduce aggregate demand. The effects of monetary policy on output and other real variables will generally be temporary. In the long run, the output effects of the changes in aggregate demand caused by monetary policy largely disappear, leaving effects only on the level of prices.

Research suggests that price stability—a low and stable rate of inflation—may have important effects on aggregate supply and might therefore be conducive to GDP growth. High and widely-varying rates of inflation create substantial amounts of uncertainty about real rates of return, making it difficult for people to make decisions about investment.

Policy Design: Challenges

Policymakers use the elements of monetary and fiscal policy to try to reduce the size of economic fluctuations. Making recessions more moderate helps people by decreasing the amount of unemployment and limiting the amount of real income loss. Restraining expansions to sustainable levels reduces the risks of high inflation. Such policy is often called *countercyclical*, since the aim of the policy is to moderate the business cycle.

There is a broad consensus on the mechanisms by which fiscal and monetary policy affect the macroeconomy, but less agreement about the timing and

magnitude of their effects. Fiscal policy changes, especially tax policy changes, can work fairly rapidly. For example, a temporary investment incentive can cause firms to move investment forward and undertake projects now instead of in the future. But enacting such a policy through the legislative and executive branches of the government can take time. Monetary policy can be changed more quickly, as the FOMC has eight scheduled meetings per year and can meet more often if economic conditions warrant. In contrast to fiscal policy, however, it takes time for interest-rate changes to affect spending because investment plans take time to adjust to changing financial conditions.

This uncertainty about the duration and magnitude of policy effects means that policymakers considering changes in fiscal or monetary policy must forecast future aggregate demand and supply disturbances and their impact. For example, a policymaker considering a tax cut must think about the state of the economy in six months and beyond, when the tax cut will have its initial impact. The same is true for monetary policy, in which it can take even more time for policy changes to have an impact. Economic forecasting is inherently difficult. It is not easy to determine the state of the economy even six months out. Economic shocks are by definition unexpected. New kinds of shocks can make predictions even more difficult. For example, the oil-price shocks of the 1970s were likely hard to forecast, since such sharp increases had not been observed in the past.

Successful execution of policy requires not only choices about the type and extent of policy, but also about timing and duration. While these are all difficult decisions to make, there is evidence that there has been improvement over time. Technological improvements and economic research have allowed economists and policymakers to get more and better data more quickly on the state of the economy. Economic models have improved as new ideas are developed and some older ideas fail the test of time. Computers have allowed the simulation of more alternative policy scenarios. Policymakers learn from the past.

The following sections compare the behavior of fiscal and monetary policy across recessions and expansions since 1960 to assess differences in the application and effects of policy over time.

Fiscal Policy

The two components of short-run fiscal policy, taxes and government spending (consumption and gross investment), show different behavior across economic expansions. The following subsections consider each in turn.

Taxes

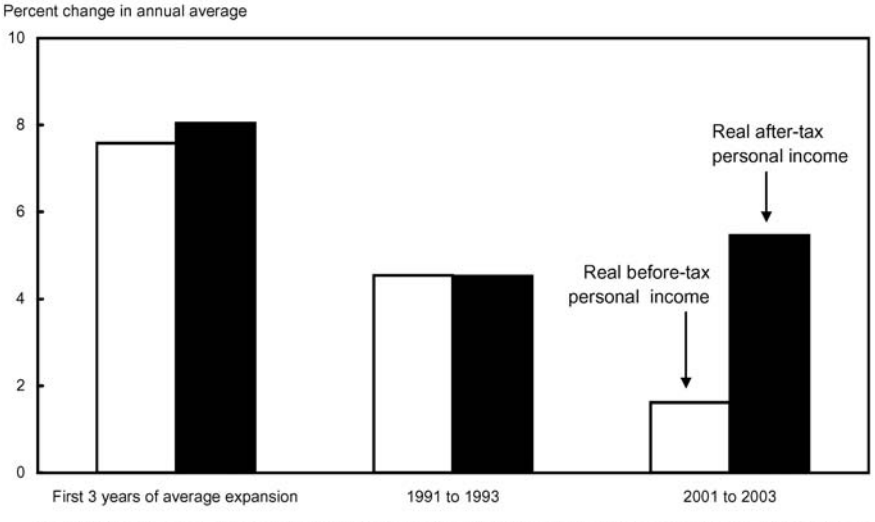
The President signed three major tax bills into law between 2001 and 2003: the Economic Growth and Tax Relief Reconciliation Act (EGTRRA) in June 2001, the Job Creation and Worker Assistance Act (JCWAA) in March 2002,

and the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA) in May 2003. A fourth bill, the Working Families Tax Relief Act (WFTRA), signed in October 2004, extends some provisions of the previous bills.

These bills—described in further detail in Chapter 3, *Options for Tax Reform*, and in the 2004 Economic Report of the President—were designed to boost both aggregate demand and aggregate supply. The aggregate demand effects came in several parts. First, tax cuts to individuals raised real disposable income (real income less taxes) and thereby supported consumption. Second, the tax cuts provided incentives for investment, both by lowering tax rates on personal capital income and by increasing the amount of investment allowed to be expensed by businesses. The investment incentives were also designed to have long-term effects on aggregate supply, by increasing the amount of capital accumulation.

The impact of the boost to aggregate demand can be assessed by plotting the growth of real income and real disposable income across expansions (Chart 2-10). During the first three years of an average expansion, disposable income growth is only slightly larger than personal income growth, suggesting that tax policy provides only a small boost. In the 1990s expansion, there was essentially no difference between real income growth and real disposable

Chart 2-10 **Growth in Personal Income During Expansion Years, Before and After Taxes**
Real after-tax income increased much more than before-tax income in the recent expansion compared with growth in previous expansions.



Note: Before-tax personal income deflated by the price index for personal consumption expenditures. Average based on prior expansions since 1960 excluding 1990s expansion.
Sources: Department of Commerce (Bureau of Economic Analysis) and Council of Economic Advisers.

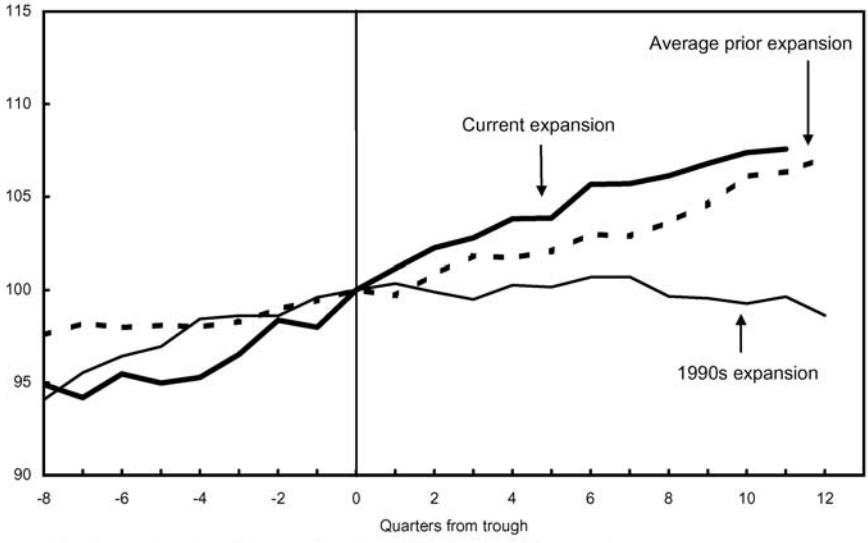
income growth. Tax policy neither stimulated nor contracted demand. In contrast, the difference has been quite large in the most recent expansion. After-tax income has grown at a much faster rate than before-tax income.

The timing of policy also likely helped stabilize the economy, which was facing multiple contractionary forces in 2000 and 2001. The first tax relief act was passed in the middle of the recession, so households received tax-cut checks at an opportune time. Indeed, the decline in the personal saving rate as a fraction of income indicates that, on average, people were spending, boosting aggregate demand. The incentives for investment also included in the tax relief act were important in light of the particularly sharp drop in investment during the last recession.

Government Spending (Consumption and Gross Investment)

Government spending (consumption and gross investment) (Chart 2-11) on average tends to rise as the economy goes into recession and continues to rise during the beginning of the subsequent expansion. In the 1990s expansion, however, government spending flattened out and began to decline. In the most recent expansion, government spending rose at a faster rate than average, providing a bigger boost to aggregate demand. A significant portion of this additional spending is attributable to increased defense and homeland security spending.

Chart 2-11 **Real Government Spending (Consumption and Gross Investment)**
Government spending has increased especially rapidly during the recent expansion.



Note: Average based on prior expansions since 1960 excluding 1990s expansion.
Source: Department of Commerce (Bureau of Economic Analysis).

Federal government revenues had been affected by both the recession, which had been under way for some time before the terrorist attacks of 9/11, and the subsequent moderate growth of output during the initial phase of the expansion. About half of the change in the Federal government's fiscal position from a surplus in fiscal year 2001 to a deficit in fiscal year 2004 was attributable to the weaker economy and related factors. Just under a quarter of the decline is attributable to increased spending, principally related to defense and homeland security, and a little more than a quarter of the decline is attributable to the tax cuts.

While it is undesirable to have government deficits, they are sometimes a prudent price to pay for stimulating economic growth. Without aggressive fiscal policy during the most recent recession and recovery, the large number of severe shocks facing the economy might well have caused the recession to have been much longer and deeper than it actually was, possibly further exacerbating the deficit. In contrast, reducing the deficit by reversing the tax cuts would have caused growth to slow even further.

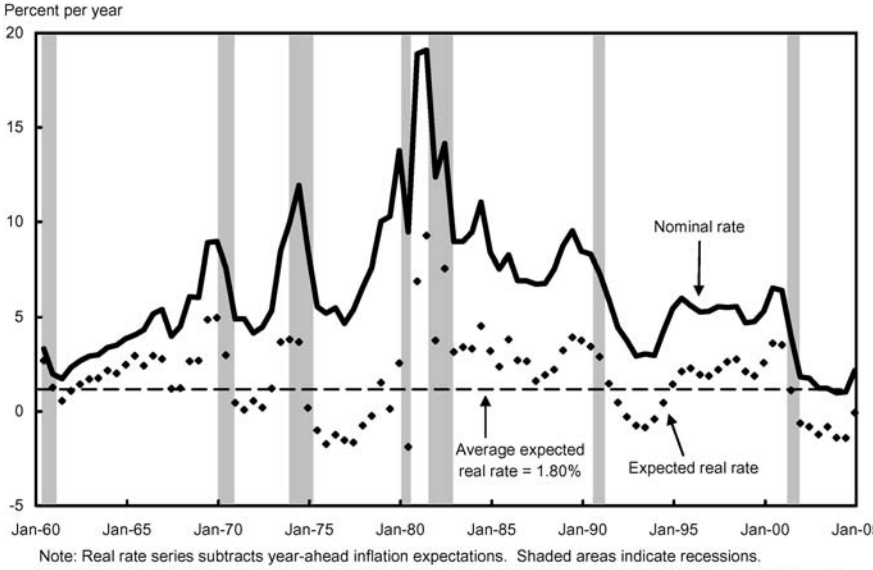
Fiscal policy provided significant stimulus during the most recent recession and recovery through both lower taxes and increased spending. Real government spending increased during the 1990-1991 recession, and then remained at roughly its trough level for the next year before beginning to decline. Hence spending provided only modest stimulus at the beginning of the 1990s expansion.

Monetary Policy

Low real interest rates help stimulate real GDP growth by boosting investment and purchases of consumer durables, thereby raising aggregate demand; high real rates likewise reduce real GDP growth. The Federal Reserve's principal policy tool, the Federal Funds rate, influences other nominal and real interest rates. When the real (inflation-adjusted) Federal Funds rate is low, monetary policy will be stimulative (sometimes referred to as *accommodative* or *loose policy*). When this rate is high, monetary policy will restrain real GDP growth (sometimes referred to as *tight* monetary policy). "Low" and "high" are both relative terms. In principle, it would be best to compare the real Federal Funds rate with whatever interest rate would make policy neither loose nor tight. This rate can be thought of as the long-run equilibrium rate the economy would tend to move toward as the effects of economic shocks wear off. In practice, this equilibrium rate is not observed. But over long periods of time, the economy tends to drift back to its long-run equilibrium; hence the average level of the real Federal Funds rate over a long period of time can provide a useful, though necessarily imperfect, approximation for the equilibrium rate.

In Chart 2-12, the solid line plots the nominal Federal Funds rate; the dots plot the expected real Federal Funds rate, obtained by subtracting a biannual survey measure of inflation expectations (the Livingston survey) from the nominal rate. The chart suggests that the real Federal Funds rate tends to fall during recessions and rise during expansions—exactly what would be expected from countercyclical monetary policy. But the timing of interest-rate changes relative to the recessions and expansions has changed over time. First, declines in the real Federal Funds rate have occurred longer before the beginning of the last two recessions than before the other recessions after 1960. In some prior recessions, real rates began to decline only after the recession began. Since it can take time for real interest rate changes to affect spending, earlier actions by the Federal Reserve can reduce the depth of recessions. Second, real rates have remained low during the last two expansions for longer than during previous expansions. The real Federal Funds rate has been well below its long-run average since the beginning of 2001. This would be expected to have provided additional stimulus at the beginning of the recovery and into the expansion. During the course of 2004, the Federal Reserve raised its target for the nominal Federal Funds rate from 1 percent to 2.25 percent. Although these increases in the nominal rate also meant an increase in the real rate, the real rate still remains well below its long-term average.

Chart 2-12 **The Real and Nominal Federal Funds Rate**
The real effective Federal Funds rate has remained below its long-term average since the beginning of the most recent recession.



Note: Real rate series subtracts year-ahead inflation expectations. Shaded areas indicate recessions.
Sources: Board of Governors of the Federal Reserve System, Federal Reserve Bank of Philadelphia, and Council of Economic Advisers.

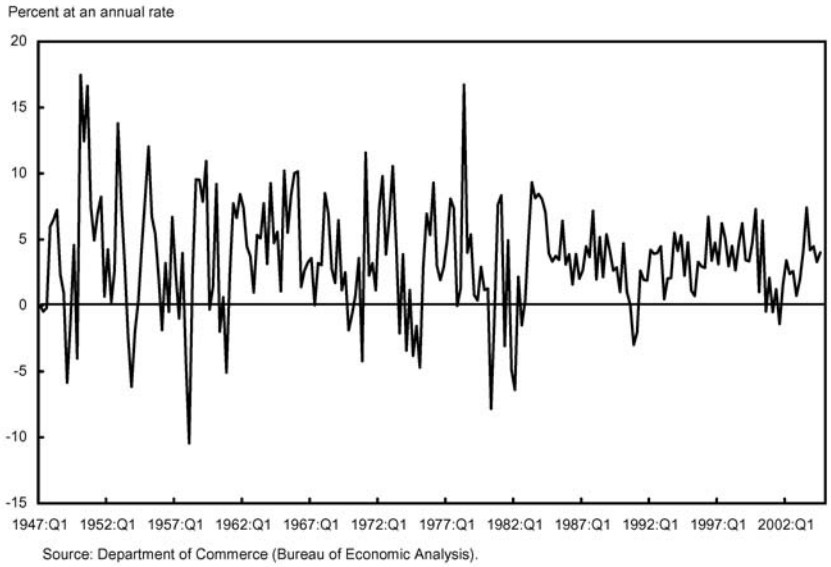
Fiscal policy played an especially important role in moderating the last recession and in supporting the subsequent economic expansion. During the most recent set of interest-rate cuts, the nominal Federal Funds rate was reduced to 1 percent, possibly leaving the Federal Reserve with reduced ability to provide additional stimulus. The Federal Reserve could have used other means of further easing policy. For example, it could have tried to target a long-term interest rate by buying or selling long-term bonds. Since long-term rates remained well above zero, such a policy would have given the Federal Reserve additional room to carry out further easing. The efficacy of this and other nontraditional policy methods is unproven.

In sum, monetary and fiscal policy together likely explain a significant part of the relative stability of the economy over the last two recessions and expansions (see Box 2-1 for further discussion).

Box 2-1: Is the Economy More Stable?

The relative moderation of the last two business cycles raises the possibility that the economy may be becoming more stable generally. In the 60 years since World War II, a visible shift in the volatility of the growth rate of real GDP occurred in the early 1980s (Chart 2-13). Does this indicate a change in the nature of the business cycle, and if so, what caused the change?

Chart 2-13 **Real GDP Growth**
Real GDP growth has become less volatile over the past 20 years.



Source: Department of Commerce (Bureau of Economic Analysis).

Box 2-1 — *continued*

A variety of reasons have been offered to explain this shift. One possibility is that more active, and more effective, stabilization policy had moderated economic fluctuations. Another is that the economy has had a run of good luck; it has not experienced the same kinds of macroeconomic disturbances seen in earlier years, such as the oil-price shocks seen in the 1970s and 1980s. Events of the past few years, such as the terrorist attacks of 9/11 and the bursting of the high-tech bubble of the 1990s, however, were significant shocks. The decline in volatility could also be largely attributable to better inventory management. This could be the result of the adoption of "just in time" methods, in which goods are manufactured and supplied on demand. Yet another possibility is that an increasing proportion of the economy is now in the service sector, which has tended to be more stable than the goods-producing sector. It is likely that all of these effects have worked together to reduce volatility.

Conclusion

Since the late 1980s, recessions and the initial stages of expansions have become more moderate. Some of this change reflects the general positive relationship between the size of recessions and size of expansions, which is caused at least in part by the relationship between firms' abilities to invest and the state of economic activity (the "financial accelerator"). The recent recessions and expansions have been especially moderate, suggesting the economy has become more stable in general. Part of this stability is likely attributable to more active and timelier stabilization policy.