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# CRS Report for Congress

## Economic Growth and the Business Cycle: Characteristics, Causes, and Policy Implications

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# Economic Growth and the Business Cycle: Characteristics, Causes, and Policy Implications

## Summary

Economic growth can be caused by random fluctuations, seasonal fluctuations, changes in the business cycle, and long-term structural causes. Policy can influence the latter two.

Business cycles refer to the regular cyclical pattern of economic boom (expansions) and bust (recessions). Recessions are characterized by falling output and employment; at the opposite end of the spectrum is an "overheating" economy, characterized by unsustainably rapid economic growth and rising inflation. Capital investment spending is the most cyclical component of economic output, whereas consumption is one of the least cyclical. Government can temper booms and busts through the use of monetary and fiscal policy. Monetary policy refers to changes in overnight interest rates by the Federal Reserve. When the Fed wishes to stimulate economic activity, it reduces interest rates; to curb economic activity, it raises rates. Fiscal policy refers to changes in the federal budget deficit. An increasing deficit stimulates economic activity, whereas a decreasing deficit curbs it. By their nature, policy changes to influence the business cycle affect the economy only temporarily because booms and busts are transient. In recent decades, expansions have become longer and recessions shallower, perhaps because of improved stabilization policy, or perhaps because of good luck.

Long-term growth receives less attention from policymakers than cyclical growth. Yet in a broader view of history, long-term growth is the more important of the two because it is the key to raising living standards. Long-term growth is caused by increases in labor, capital, and productivity. Policy changes in the areas of education, taxation, competition, basic research, and infrastructure can influence the economy's long-term growth rate, but only at the margins. Long-term growth has altered very little over most of U.S. history despite a broad array of policy changes. That fact is less surprising when one considers that the main contributor to long-term growth is technological progress, over which the government has little direct influence. In recent years, long-term growth has accelerated modestly because of higher productivity growth, driven mainly by what is popularly referred to as the "information technology (IT) revolution." Although the government had little direct influence over the IT revolution, it provided an environment in which those technological changes were allowed to thrive, which likely explains why many other economies did not experience a similar productivity acceleration.

This report will be updated as events warrant.

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# Economic Growth and the Business Cycle: Characteristics, Causes, and Policy Implications

## Introduction

Economic growth (increases in gross domestic product (GDP)) may appear to be unambiguously good because income can only rise over time if output rises. But quarterly GDP growth can be affected by four different factors, and each of these factors has different implications for policy and for general well-being. **Figure 1** illustrates these factors graphically over the past two business cycles. The four factors, listed by length of duration from transient to long-term, are as follows:

***Random or One-time Events.*** Some of the changes in quarterly growth rates from quarter to quarter are not persistent and may have no particular cause that can be systematically identified or predicted. Other changes are caused by one-time events that have no lasting impact on the national economy, such as the natural disasters that struck the economy in the fourth quarter of 2005. These disasters are widely credited with having caused below average growth in the fourth quarter of 2005 and above average growth in the first quarter of 2006 (because of rebuilding). Random contributions to economic growth can be thought of as roughly the distance between the line labeled quarterly GDP growth in **Figure 1** and the line labeled business cycle. As can be seen, the distance between these lines is usually modest, but at times can be large.

***Seasonal Fluctuations.*** Economic activity fluctuates in a predictable way over the course of the year. For example, agricultural output peaks at harvest time and consumption rises during the holidays. Since these seasonal fluctuations have no lasting effect on the economy and do not offer any predictive information about the economy's future path, they are routinely stripped out of the data before it is used by the general public. Therefore, seasonal effects are not shown in **Figure 1**.

***Business Cycle Effects.*** Over the course of several years, the economy routinely experiences a predictable pattern of boom (expansion), followed by bust (recession), followed by recovery that begins the pattern anew. This can be seen in the line marked "business cycle" in **Figure 1**.[1] Recessions are represented by the valleys that occur in the early 1990s and 2000s, expansions are represented by the inclines after a recession and peaks that occur later in the decades. Since the 1980s, an entire cycle has taken about a decade. While the government cannot prevent

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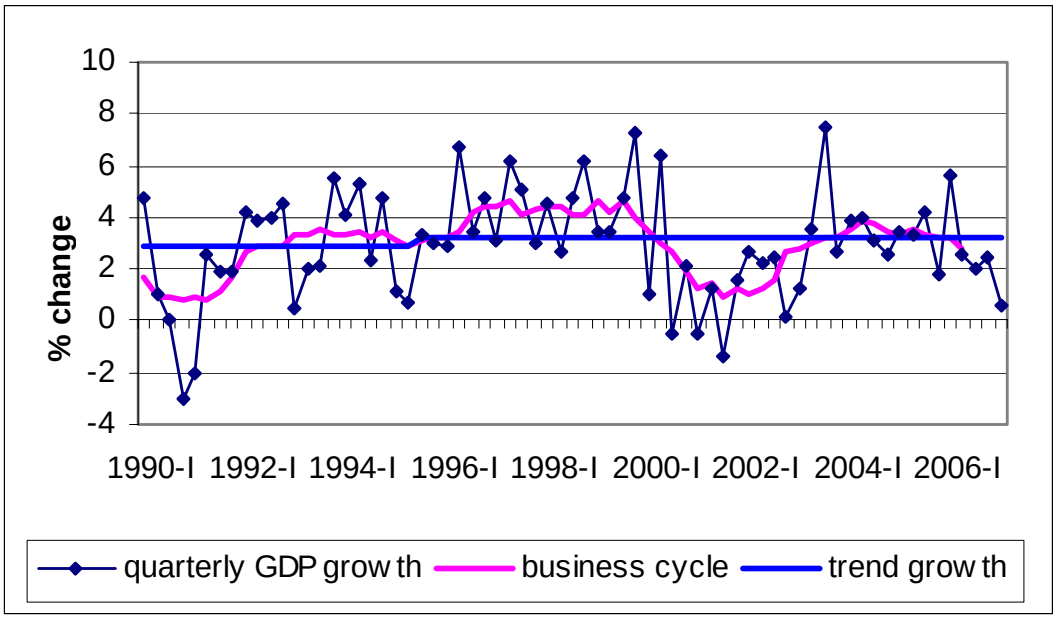
[1] The business cycle can be approximated using many different techniques. Figure 1 uses a simple eight quarter moving average.

cyclical fluctuations, it can attempt to soften the booms and busts of the business cycle through monetary and fiscal policy.

***Structural Growth.*** In the long run, economic progress is not driven by random, seasonal, or cyclical fluctuations. It depends on an increase in labor and capital (physical investment) inputs and productivity improvements. Structural growth can be represented by the trend line in **Figure 1**, which undergoes a slight increase in the mid-1990s that will be discussed later in the report. Over time, the growth rates of these inputs and productivity vary, but important, lasting shifts occur infrequently. Microeconomic policy changes can foster faster growth in labor, capital, and productivity at the margin. In addition, government budget deficits can reduce the growth of the capital stock.

**Figure 1. Quarterly GDP Growth, 1990:1-2007:1**




**Source:** Bureau of Economic Analysis, CRS calculations.

**Note:** Quarterly growth rates are annualized and seasonally adjusted. The business cycle series is calculated using an eight quarter moving average. The trend growth is calculated using an average with a break point at 1995:3.

This report focuses on the two most important sources of economic growth, cyclical and structural, and discusses how policy can influence them.

## The Business Cycle

In the long run, economic growth is determined solely by the growth rate of productivity and capital and labor inputs that determine the overall production of goods and services — what is sometimes referred to as the "supply side" of the economy. But in the short run, growth can be influenced by the rate of overall spending, also known as the "demand side" of the economy. Overall spending

includes consumer spending, business spending on capital goods, government spending, and foreign spending on U.S. exports.

Spending and production are equalized by prices. Because prices adjust gradually, spending can temporarily grow faster or slower than the potential growth rate of the supply side of the economy. Recessions are characterized by a situation where spending is not growing fast enough to employ all of the economy's labor and capital resources. Recessions can come to an end because government has used fiscal or monetary policy to boost spending or because spending recovers on its own when prices have gradually adjusted. Economic booms eventually give way to "overheating," which is characterized by a situation where spending is growing too fast, and labor, capital, and productivity cannot grow fast enough to keep up. In this scenario, faster economic growth can become "too much of a good thing" because it is unsustainable. Overheating is typified by a rise in inflation — because there is a greater demand for goods than supply of goods, prices begin to rise. Overheating typically gives way to recession when, in order to offset the rise in inflation, monetary policy is tightened to reduce overall spending to the point where it is growing at the same pace as overall supply again. In essence, policymakers trade off a lower rate of economic growth in the short run to achieve a more stable and higher average growth rate over time.

Although there is no foolproof way to differentiate between changes in growth being caused by cyclical forces and structural forces, movements in the inflation rate offer a good indication. When inflation is rising, growth is probably above its sustainable rate because overall spending is growing too fast, and when inflation is falling, growth is probably below its sustainable rate because overall spending is too sluggish. Inflation is not a perfect indicator of cyclical activity, however, because sudden spikes in the price of specific goods sometimes cause overall inflation to temporarily change. Volatile energy prices are the prime example of when a change in inflation may not correspond with the business cycle.

## Employment and the Business Cycle

Just as rapid economic growth can be too much of a good thing, so too can rapid increases in employment and decreases in the unemployment rate. As explained above, the economy's potential growth rate is determined by the growth rate of inputs to the production process, such as labor. When employment rises faster (slower) than the labor force grows, the unemployment rate will fall (rise). With enough employment growth, at some point all available labor will be utilized in the production process, and this will happen before the unemployment rate reaches zero. Unemployment never reaches zero because some workers will always be in the process of leaving an old job and finding a new one, and some workers will always be in the wrong place at the wrong time for the skills they have compared to the skills needed for local employment opportunities. The rate of unemployment consistent with employment for all workers who do not fall into these two categories is known

as the "natural rate of unemployment" or "full employment" or the "non-accelerating inflation rate of unemployment (NAIRU)."[2]

If overall spending is growing rapidly enough, unemployment can be temporarily pushed below the natural rate. When unemployment is pushed below the natural rate, too many jobs will be chasing too few workers, causing wages to rise faster than productivity. But wages cannot persistently rise faster than productivity because, again, overall spending cannot grow faster than production (assuming labor's share of income remains constant). Wages can temporarily rise faster than productivity, but the result would be rising inflation. In recessions, the process works in reverse. Because spending is insufficient to match potential production, businesses lay off workers. This causes the unemployment rate to rise above the natural rate. As unemployment rises, workers moderate their wage demands in order to find scarce jobs or keep existing jobs. As a result, inflation falls.

## Historical Patterns

As **Table 1** suggests, to date, the boom and bust pattern is predictable, but has proven unavoidable. Since World War II, the median length of a recession has been 10 months and the median cumulative contraction in output has been 2% of GDP. Two recessions, those beginning in 1973 and 1981, were unusually long. The 1981 recession followed a brief recession that had ended a year earlier; these two recessions are sometimes referred to collectively as the "double dip" recession. From 1945 to 1981, there were eight recessions; since 1982, there have been only two. Of course, the complement of less frequent recessions is longer expansions. Since World War II, there have been three very long expansions, occurring in the 1960s (lasting 106 months), 1980s (92 months), and 1990s (120 months, the historical record). The current expansion, which began in November 2001, may eventually turn out to be a long one as well — through June 2007, it was already the fourth longest since World War II.

The pattern of longer expansions and less frequent recessions that has prevailed since the 1980s expansion has been dubbed the "great moderation" by economists. Research has demonstrated statistically that there has been a fundamental change in the economy's behavior since the mid-1980s. Not only has the business cycle been smoother, random fluctuations in growth have also been smaller since then. Economists have three hypotheses for what has caused the great moderation: a change in the structure of the economy; better policy, notably monetary policy; or simply better luck.[3]

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[2] For more information, see CRS Report RL30391, *Inflation and Unemployment: What Is the Connection?*, by Brian Cashell.

[3] For more information, see CRS Report RL33959, *Why Has the Economy Become Less Volatile?*, by Marc Labonte.

**Table 1. Recessions since World War II**

| Period of Contraction | Months of Contraction | Cumulative Contraction in GDP | Maximum Unemployment Rate |
|---|---|---|---|
| November 1948-October 1949 | 11 | 1.7% | 7.9% |
| July 1953-May 1954 | 10 | 2.7 | 6.1 |
| August 1957-April 1958 | 8 | 3.7 | 7.5 |
| April 1960-February 1961 | 10 | 1.6 | 7.1 |
| December 1969-November 1970 | 11 | 0.6 | 6.1 |
| November 1973-March 1975 | 16 | 3.0 | 9.0 |
| January 1980-July 1980 | 6 | 2.2 | 7.8 |
| July 1981-November 1982 | 16 | 2.9 | 10.8 |
| July 1990-March 1991 | 8 | 1.5 | 7.8 |
| March 2001-November 2001 | 8 | 0.6 | 6.3 |

**Source:** National Bureau of Economic Research.

## What Causes the Business Cycle?

Expectations play an important role in the business cycle, and people's expectations are not always rational. John Maynard Keynes described the cause as "animal spirits," or people's tendency to let emotions, particularly swings from excessive optimism to excessive pessimism, influence their economic actions. For example, businesses make investment decisions based on their projections of future rates of return, which will depend on future sales and so on. These inherently uncertain projections change as current conditions change. If businesses believe economic conditions will be unfavorable in the future, they will not make investments today, reducing the growth rate of GDP from what it otherwise would have been. Likewise, households may postpone purchases of durable goods or housing if economic conditions look unfavorable. People's projections of the future may be overly influenced by the present or recent past.

"Economic shocks" also play a dominant role in the business cycle. A shock refers to any sharp and sudden change in economic circumstances on the demand or supply side of the economy that disrupts the steady flow of economic activity. A well known example are energy shocks: when the price of energy suddenly rises, it disrupts both production, because energy is an important input to the production process, and consumer demand, because energy products account for a sizeable portion of consumer purchases.[4] Other prominent shocks include natural disasters, global events that influence foreign trade, financial market unrest, and so on. A

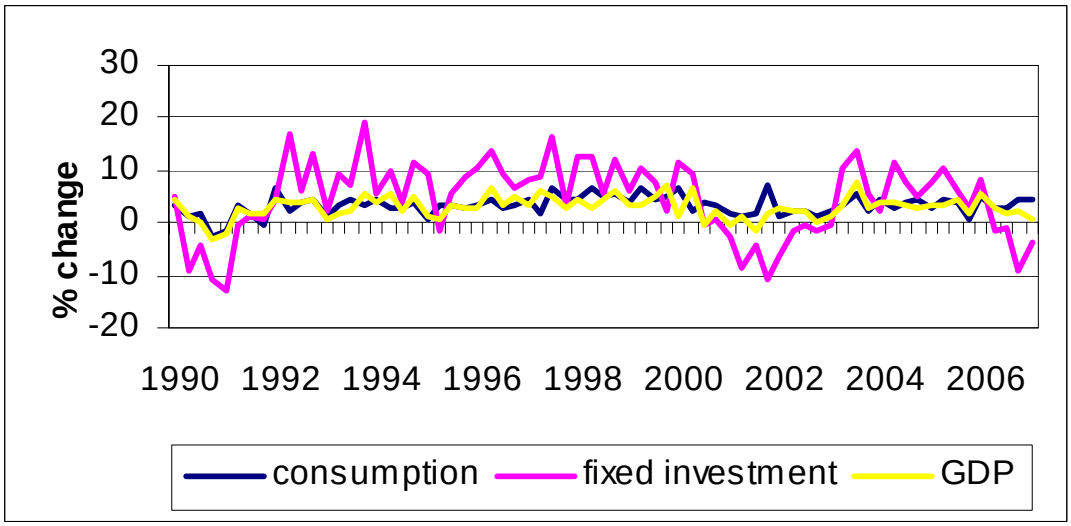
[4] For more information, see CRS Report RL31608, *The Effects of Oil Shocks on the Economy: A Review of the Empirical Evidence*, by Marc Labonte.

sudden change in expectations that affects consumer or investment spending can also be thought of as a shock to aggregate demand. Since these shocks are typically unpredictable, the business cycle remains unavoidable.

## Sectoral Effects of the Business Cycle

Recessions are often attributed to periods when consumers decide to spend less, and recoveries to a revival in consumer spending. As seen in **Figure 2**, this view is not very accurate — consumption is actually one of the most stable components of spending. While its growth rate falls in recessions, its growth rate usually stays positive and always falls by less than overall GDP growth, which suggests that causation typically runs from growth to consumption. Fixed investment is actually the most volatile component of spending. As seen in the Figure, it undergoes larger declines than GDP during recessions, and bigger booms than GDP during expansions.

**Figure 2. Quarterly Growth of GDP, Consumption, and Investment, 1990:1-2007:1**




**Source:** Bureau of Economic Analysis.

Business inventories are another component of GDP that play an important role in the business cycles. A buildup in inventories may result from lower sales than businesses had expected. When this occurs, businesses may have to "work off" the inventory buildup before they begin to produce again, thereby prolonging a downturn. If businesses have become more adept at managing inventories thanks to "just in time" inventory management, it may help to explain why recent recessions have been briefer and shallower.

The trade balance is typically counter-cyclical (helps soften the business cycle), all else equal. Representing the gap between saving and investment, the trade deficit would be expected to decline in a recession since investment would be expected to fall as a share of output. (Thought of differently, the trade deficit would also be expected to decline since the growth consumption of imports would fall as overall consumption growth fell.) Less foreign capital would be attracted to the United

States, causing the dollar to fall and exports to rise. In the 1990-1991 recession, the trade deficit fell, but in the most recent recession , it rose contrary to what theory predicted. However, national saving did not rise in the 2001 recession, as theory predicted — it fell more rapidly than investment. The largest cause of the fall in national saving at the time was the increase in the federal budget deficit.

# Long-Term Structural Growth

Policymakers, the media, and citizens focus much of their attention on business cycle issues — questions such as, "Will the economy enter a recession?" or "How much longer will the boom continue?" — and how different policy options will affect the business cycle. But the economy is self-equilibrating over time — a recession will eventually give way to an expansion, regardless of what policy option is selected (although some policy choices will help end a recession faster than others). Long-term growth is often neglected by comparison, yet sustained, permanent, widespread increases in living standards depend on long-term growth, not the business cycle. When reflecting on the differences in the average standard of living today compared to 100 years ago or 200 years ago, an argument can easily be made that long-term growth trumps short-term fluctuations in importance.[5]

In a recession, boosting short-term growth is mainly a question of finding ways to stimulate overall spending so that the economy operates at its productive capacity. In the long run, concerns about matching the level of spending to the productive capacity of the economy are irrelevant because it will happen on its own. Instead, long-term growth depends on increasing the economy's productive capacity.

The economy's productive capacity can be boosted in only two ways — by boosting the economy's inputs or by using existing inputs more productively. Inputs take the form of labor and physical capital (investment in plant and equipment).

## Labor Supply Growth

Labor inputs increase when employment or hours worked increase. In the long run, increases in employment will depend primarily on population growth, although changes in employment patterns such as the entrance of women into the workforce can also be important at times. Higher long-term employment will lead to higher GDP, but not necessarily higher living standards because living standards are determined by per capita GDP. If the worker-population ratio stays constant as the population increases, then the increase in the numerator (GDP) will be canceled out by the increase in the denominator (population). Increases in employment can increase living standards only if the employment-population ratio increases, but this ratio is relatively stable in the long run since working age individuals have high and stable employment rates. The coming decades could see a decline in the employment-population ratio caused by the aging of the population.

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[5] For more detailed analysis, see CRS Report RL32987, *Long-Term Growth of the U.S. Economy: Significance, Determinants, and Policy*, by Craig K. Elwell.

## Growth in the Capital Stock and the Role of Saving

Increases in the capital stock increase GDP because, to take the simplest example, a worker who has more equipment to use can produce more over a fixed time. Once an environment has been created where investment is profitable, the primary factor determining how quickly the capital stock can grow over time is the national saving rate — real resources are needed to finance capital investment, and these resources are only available to invest if they are saved rather than consumed.[6] Saving is transformed into investment through financial intermediation. National saving comes from three sources: households, businesses, and the government. When the government runs a budget deficit, it has a negative saving rate that reduces the resources available to finance investment spending.[7] Interest rates equilibrate saving and investment — when saving becomes scarcer, interest rates rise, which causes investment to fall as previously profitable investment projects become unprofitable at higher borrowing costs.

In recent years, national investment has greatly outstripped national saving, and the United States has had to borrow from foreigners to bridge the gap. The only way to borrow from foreigners is by running a trade deficit. As the saving rate has fallen, the trade deficit has risen, alleviating upward pressure on interest rates. Since trade deficits in recent years have been large enough to increase foreign indebtedness faster than GDP is increasing, the current pattern, by definition, cannot persist indefinitely. At some point in the future, although there is no consensus how soon, the trade deficit will have to decline, either through a rise in national saving or a decline in investment.[8]

As seen in **Figure 3**, fixed investment spending as a share of GDP fell below its post-war average in the early 1990s, but rose above average in the late 1990s, contributing to the high GDP growth rates of that period. Beginning in the 2001 recession, investment spending declined as a share of GDP. It began rising again in 2003, but has still not reached the levels of the late 1990s. The case can be made, however, that when considering the effect of investment spending on GDP growth, residential investment (housing construction) should be omitted because it is not an input into the production process, and therefore does not increase future output. If residential investment is omitted, then (non-residential) investment spending as a share of GDP shows little improvement since 2003. In other words, the recovery in investment spending since 2003 is being driven primarily by the housing boom, not business investment.

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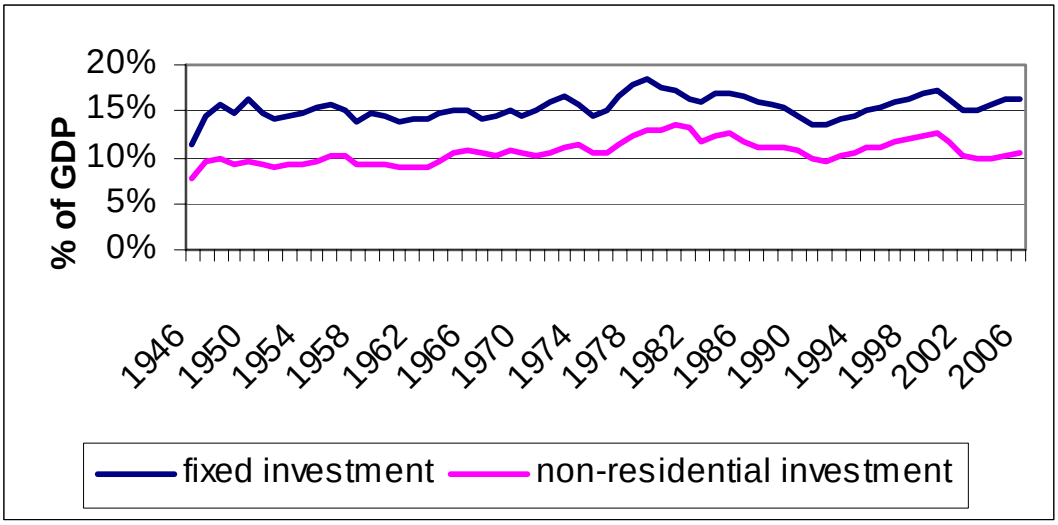
[6] For more on saving, see CRS Report RL33112, *The Economic Effects of Raising National Saving*, by Brian W. Cashell.

[7] See CRS Report RL31775, *Do Budget Deficits Push Up Interest Rates and Is This the Relevant Question?*, by Marc Labonte.

[8] See CRS Report RL33186, *Is the U.S. Current Account Deficit Sustainable?*, by Marc Labonte.

**Figure 3. Investment Spending as a Share of GDP, 1946-2006**




**Source:** Bureau of Economic Activity.

**Note:** Fixed investment is the sum of residential investment and non-residential investment spending. Fixed investment excludes changes in inventories.

## Productivity Growth

Both labor and capital are subject to diminishing marginal returns, which means that as more capital or labor is added to production, GDP will increase less, all else equal. In addition, there are natural limits to how much labor inputs (both hours worked and the labor force participation rate) can be increased, and the United States may already be operating close to those limits. This implies that a long-term strategy to boost growth cannot rely solely on increasing inputs. Herein lies the importance of productivity growth.

Even with a fixed amount of labor and capital, output can increase if inputs are used more productively. Productivity increases can be caused by efficiency gains, better business practices, technological innovations, research and development, or increasing the training or education of the workforce. Economists often refer to the latter as an increase in "human capital," since education can be thought of as an investment in skills. Its importance to productivity growth should not be underestimated since the creation and implementation of many technological innovations would not be possible without it.

In the long run, productivity growth can be thought of as the main force driving increasing living standards. This statement becomes intuitive when thinking of the goods and services available to the typical American household today that did not exist for earlier generations. Capital investment causes the economy to grow faster than it would based on productivity growth alone, but capital investment without productivity growth would not lead to sustained growth.

Empirically, the measure that corresponds to the definition of productivity described here is referred to as *total-factor productivity* or *multi-factor productivity*. It cannot be measured directly since adjustments must first be made for changes in labor and capital inputs. Perhaps for this reason, *labor productivity*, which is measured by simply dividing output by hours worked, is a more popular and well-known measure. But because labor productivity can increase due to increases in the capital stock or efficiency gains, it does not correspond directly to the conceptual notion of productivity growth.

As seen in **Table 2**, there was a significant acceleration in productivity growth in 1996. This acceleration reversed the productivity slowdown that lasted from 1974 to 1995, bringing it closer to the growth rate of 1949 to 1973. Most economists believe that the information technology (IT) revolution has been responsible for the productivity growth rebound. There is more disagreement on whether the rebound will be permanent. Some economists argue that after the initial burst of innovation caused by greater processing power and the invention of the internet, further innovation will be limited and the productivity boom will fizzle out. Other economists argue that the fruits of these technological breakthroughs will be longer lasting. The fact that productivity growth continued to be strong after the 2001 recession certainly bolsters the latter argument, but labor productivity growth has fallen each year since 2002 and fell below 2% in 2006 for the first time since 1995.[9]

**Table 2. Productivity Growth Rates, 1949-2006**
(Non-farm Business Sector)

| | 1949-1973 | 1974-1995 | 1996-2006 |
|---|---|---|---|
| Labor Productivity | 2.9% | 1.4% | 2.7% |
| Multi-factor Productivity | 1.9% | 0.4% | 1.4% |

**Source:** Bureau of Labor Statistics.

**Table 3** shows the relative importance of the three sources of long-term GDP growth, as estimated by the Congressional Budget Office (CBO).[10] Since 2002, multi-factor productivity growth has been a larger contributor to GDP growth than growth in the labor supply and capital combined. That pattern did not hold in the periods from 1974 to 1990 or 1991 to 2001, when multi-factor productivity growth was a smaller source of GDP growth in absolute and relative terms. CBO projects that multi-factor productivity will continue to be the most important source of GDP growth over the next ten years, as the growth rate of the labor supply continues to decline. The post-World War II baby boom explains why labor supply growth increased in the 1970s (as the baby-boomers entered the workforce), and has decreased since (as the baby-boomers have begun to retire). Because the growth in the labor supply is projected to decline further, CBO's projection that GDP growth

[9] For a more detailed analysis, see CRS Report RL32456, *Productivity: Will the Faster Growth Rate Continue?*, by Brian W. Cashell.

[10] The table is estimated in terms of potential growth in order to eliminate business cycle effects.

over the next 10 years will remain relatively constant depends on the assumptions that strong multi-factor productivity growth will continue and growth in capital spending will revive.

**Table 3. Estimated Sources of Potential GDP Growth, 1950-2017**
(Non-farm Business Sector)

| Annual Growth in Potential: | 1950-1973 | 1974-1990 | 1991-2001 | 2002-2006 | 2007-2017 (projected) |
|---|---|---|---|---|---|
| GDP | 4.0 | 3.4 | 3.5 | 3.1 | 3.0 |
| Labor Supply | 0.9 | 1.4 | 0.8 | 0.8 | 0.5 |
| Physical Capital | 1.1 | 1.2 | 1.4 | 0.7 | 1.1 |
| Multi-factor Productivity | 1.9 | 0.8 | 1.3 | 1.6 | 1.4 |

**Source:** Congressional Budget Office, *Budget and Economic Outlook*, January 2007, Table 2.2.

**Note:** Table is measured in terms of potential growth in order to eliminate cyclical effects.

Multi-factor productivity's relative contribution to rising living standards is even more important than the **Table** indicates for two reasons. First, much of the increase in capital is replacing rather than supplementing existing capital that has depreciated. Although replacement capital increases GDP (which is not adjusted for depreciation), it does not raise living standards. Second, as discussed above, living standards depend on the level of GDP per capita, not GDP. Only increases in the labor supply that exceed increases in population raise overall living standards, and most increases in the labor supply match population growth.

# Policy Implications

Policymakers' influence over economic activity is limited. Avoiding recessions or demonstrably raising the economy's long-term growth rate are policy goals that have proven elusive. Nevertheless, good or bad policies can make a difference at the margins, and even incrementally better performance can cumulate over time, so many policy improvements can have a low cost and high reward.

## Business Cycle Stabilization Policy

There is widespread consensus among economists that the prudent stabilization policymaking regime that has evolved since World War II is an important reason why the economy has become less cyclical and recessions have become shallower (although better luck may have also played a role). The government has two tools at its disposal to moderate the short-term fluctuations of the business cycle — fiscal policy or monetary policy. Fiscal policy refers to changes in the budget deficit. Monetary policy refers to changes in short-term interest rates by the Federal Reserve.

The government can use expansionary fiscal policy to boost overall spending in the economy by increasing the budget deficit (or reducing the budget surplus). If the increased deficit is the result of increased government spending, aggregate spending is boosted directly since government spending is a component of aggregate demand. Since the deficit is financed by borrowing from the public, resources that were previously being saved are now being used to finance government purchases or production of goods and services. If the increased deficit is the result of tax cuts, aggregate spending is boosted by the tax cut's recipient to the extent that the tax cut is spent (not saved or invested in financial securities).[11] In this case, resources that were previously being saved are now at the disposal of the tax cut's recipient, and to the extent that the recipient decides to increase his consumption, aggregate spending will rise. Likewise, if the government wished to reduce the growth rate of overall spending in the economy, it could reduce the deficit (called contractionary policy) by raising taxes or cutting spending, in which case the process would work in reverse. As discussed above, any boost in spending as the result of fiscal policy is temporary since spending cannot grow faster than the economy's productive capacity in the long run.

The Federal Reserve can use expansionary monetary policy to boost spending in the economy by lowering the overnight interest rate, called the federal funds rate. The Fed alters interest rates by adding or withdrawing reserves from the banking system. Lower interest rates increase interest-sensitive spending, which includes physical investment (i.e., plant and equipment) by firms, residential investment (housing construction), and consumer durable spending (e.g., automobiles and appliances) by households. To reduce spending in the economy, the Fed raises interest rates, and the process works in reverse.[12]

Expansionary monetary or fiscal policy will produce, at best, fleeting gains in output when the economy is operating at full employment. Expansionary policy works by boosting spending in order to bring idle labor and capital resources back into use. When the economy is already near full employment, there are few idle resources available, so the boost in spending quickly bids up prices in labor and capital markets, generating higher inflation and interest rates. In the brief lag between the boost in spending and the higher inflation, output might be temporarily boosted, but the economy cannot function for long above full capacity.

**Monetary or Fiscal Policy?** Monetary policy plays the primary role in economic stabilization today and has several practical advantages over fiscal policy. First, economic conditions change rapidly, and monetary policy is much more nimble than fiscal policy. The Fed meets every six weeks to consider changes in interest rates, and can call an unscheduled meeting any time in between. Changes to fiscal policy are likely to occur once a year at most. For example, there were three large tax

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[11] A tax cut that was financed by lower government spending would not stimulate aggregate spending because the increase in private spending among the tax cut's recipients would be offset by the decrease in government spending. In the Keynesian model, the key to a stimulus is the larger deficit, not the tax cut.

[12] For more information, see CRS Report RL30354, *Monetary Policy: Current Policy and Conditions*, by Gail E. Makinen and Marc Labonte.

cuts from the 2001 recession through 2006;[13] in the same period, interest rates were changed 29 times. Once a decision to alter fiscal policy has been made, the proposal must travel through a long and arduous legislative process lasting months before it can become law, while monetary policy changes are made instantly.[14]

Second, political constraints frequently lead to fiscal policy being employed in only one direction. Over the course of the business cycle, aggregate spending can be expected to be too high as often as it is too low. This means that stabilization policy must be tightened as often as it is loosened, yet increasing the budget deficit is much easier politically than implementing the spending cuts or tax increases necessary to reduce it. As a result, the budget has been in deficit in 44 of the past 49 years. By contrast, the Fed is highly insulated from political pressures,[15] and experience shows that it is as willing to raise interest rates as it is to lower them. Persistent budget deficits lead to the third problem.

Third, the long run consequences of fiscal and monetary policy differ. Expansionary fiscal policy creates federal debt that must be serviced by future generations. Some of this debt will be "owed to ourselves," but some (presently, about half) will be owed to foreigners. When expansionary fiscal policy "crowds out" private investment, it leaves future generations poorer than they otherwise would have been.[16] Expansionary monetary policy has no effect on generational equity. Furthermore, the government faces a budget constraint that limits the scope of expansionary fiscal policy — it can only issue debt as long as investors believe that the debt will be honored — even if economic conditions require larger deficits to restore equilibrium.[17]

Fourth, an economy, such as the United States, that is open to highly mobile capital flows changes the relative effectiveness of fiscal and monetary policy. If expansionary fiscal policy leads to higher interest rates, it will attract foreign capital looking for a higher rate of return. Foreign capital can only enter the United States on net through a trade deficit. Thus, higher foreign capital inflows lead to higher imports, which reduce spending on domestically-produced substitutes, and lower

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[13] The tax cuts are the Economic Growth and Tax Relief Reconciliation Act (P.L. 107-16), the Job Creation and Worker Assistance Act (P.L. 107-147), and the Jobs and Growth Tax Relief Reconciliation Act (P.L. 108-27).

[14] To some extent, fiscal policy automatically mitigates changes in the business cycle without any policy changes because tax revenue falls relative to GDP and certain mandatory spending (such as unemployment insurance) rises when economic growth slows.

[15] For more information, see CRS Report RL31056, *Economics of Federal Reserve Independence*, by Marc Labonte.

[16] An exception to the rule would be a situation where the economy is so depressed that virtually no crowding out takes place because the stimulus to spending generates enough resources to finance new capital spending.

[17] The analogous constraint on monetary policy is that after a certain limit, expansionary monetary policy would become highly inflationary. But from the current starting point of price stability, problems with inflation would presumably only occur after a point where the economy had returned to full employment.

spending on exports. The increase in the trade deficit would cancel out the expansionary effects of the increase in the budget deficit to some extent (in theory, entirely). This theory is borne out by experience in the past few years — as the budget deficit increased, so did the trade deficit.[18] Expansionary monetary policy would have the opposite effect — lower interest rates would cause capital to flow abroad in search of higher rates of return elsewhere. Foreign capital outflows would reduce the trade deficit through an increase in spending on exports and domestically produced import substitutes. Thus, foreign capital flows would magnify the expansionary effects of monetary policy.

In cases where economic activity is extremely depressed, monetary policy may lose some of its effectiveness. When interest rates become extremely low, interest-sensitive spending may no longer be very responsive to further rate cuts. Furthermore, interest rates cannot be lowered below zero. In this scenario, fiscal policy may be more effective. But the United States has not found itself in this scenario since the Great Depression, although Japan did in the 1990s.

Of course, using monetary and fiscal policy to stabilize the economy are not mutually exclusive policy options. But because of the Fed's independence from Congress and the Administration, there is no way to coordinate the two policy options. If compatible fiscal and monetary policies are chosen by Congress and the Fed, respectively, then the economic effects would be more powerful than if either policy were implemented in isolation. For example, if stimulative monetary and fiscal policies were implemented, the resulting economic stimulus would be larger than if one policy were stimulative and the other were neutral. But if incompatible policies are selected, they could partially negate each other. For example, a stimulative fiscal policy and contractionary monetary policy may end up having little effect on the economy one way or the other. Thus, when fiscal and monetary policymakers disagree in the current system, they can potentially choose policies with the intent of cancelling out each other's actions.[19] Whether this arrangement is better or worse for the economy depends on what policies are chosen. If one actor chooses inappropriate policies, then the lack of coordination usefully allows the other actor to try to negate its effects. But if both actors choose appropriate policies, the policies could be slightly less effective than if they had been coordinated.

**Are Recessions Unavoidable?** If recessions are usually caused by declines in aggregate spending, and the government can alter aggregate spending through changes in monetary and fiscal policy, then why is it that the government cannot use policy to prevent recessions from occurring in the first place? While recessions

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[18] See CRS Report RS21409, *The Budget Deficit and the Trade Deficit: What Is Their Relationship?*, by Marc Labonte and Gail E. Makinen.

[19] It is important to take this possibility into consideration when evaluating the potential effects of fiscal policy on the business cycle. Because the Fed presumably chooses (and continually updates) a monetary policy that aims to keep the economy at full employment, the Fed would need to alter its policy to offset the effects of any stimulative fiscal policy changes that moved the economy above full employment. Thus, the actual net stimulative effect of a fiscal policy change (after taking into account monetary policy adjustments) could be less than the effects in isolation.

should theoretically be avoidable, there are several real world problems that keep stabilization from working with perfect efficiency in practice.

First, many of the economic shocks that cause recessions are unforeseeable. Policymakers can only react to the shocks after they have already occurred; by then, it may be too late to avoid a recession. As their name suggests, economic shocks tend to be sudden and unexpected. Few energy analysts predicted that the price of oil would rise from less than $20 per barrel in 2001 to almost $70 per barrel in 2006; if the rise in price could not be predicted, then neither could its effects on the economy.

Second, there is a time lag between a change to monetary or fiscal policy and its effect on the economy because individual behavior adjusts to interest rate or tax changes slowly. For example, higher interest rates will reduce housing demand, but only gradually — the Fed has been raising interest rates since 2004, but the housing market did not cool off until 2006. Because of lags, an optimal policy would need to be able to respond to a change in economic conditions before it occurred. For example, if the economy were going to fall below full employment next year, policy would need to be eased this year to prevent it.

Third, for stabilization policy to be effective given lags, policymakers must have accurate economic forecasts. Yet even short-term economic forecasting — particularly in the case of turning points in the business cycle — is notoriously inaccurate. In January 2001, for example, the Congressional Budget Office, the Office of Management and Budget, the Federal Reserve, and virtually all major private forecasts predicted growth between 2.0% and 3.1% for the year.[20] In reality, the economy entered a recession two months later, and grew by 0.8% for the year. Given the important role of unpredictable shocks in the business cycle, perhaps this should not be a surprise.

Fourth, because forecasts are not always accurate, understanding of the economy is limited, and because the economy does not always respond to policy changes as expected, policymakers sometimes make mistakes. For example, if the natural rate of unemployment (NAIRU) rises and policymakers do not realize it, they may think that expansionary policy is needed to reduce unemployment. Economists believe that this is one reason inflation rose in the 1970s.

Fifth, in the case of monetary policy, changes in short-term interest rates do not lead to one-for-one changes in long-term interest rates. Long-term interest rates are determined by supply and demand, and many factors enter that equation besides short-term interest rates. Yet many types of spending may be more sensitive to long-term rates, reducing monetary policy's effectiveness. One reason the housing boom continued after 2004 was that mortgage rates increased far less than the federal funds rate.

Sixth, because policy changes do not lead to large and rapid changes in economic activity for the reasons listed above, it may take extremely large policy

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[20] Blue Chip, *Economic Indicators*, January 2001.

changes to forestall a recession. Yet policy changes of that magnitude could be destabilizing in their own right. For example, extremely large swings in interest rates could impede the smooth functioning of the financial system and lead to large swings in the value of the dollar. Large increases in the budget deficit could hamper the government's future budgetary flexibility. More modest policy changes are more prudent in light of uncertainty.

Finally, policy's influence on the economy is blunted by the open nature of the U.S. economy in an era of increasing globalization. As discussed above, the expansionary effects of increases in the budget deficit have been largely offset by increases in the trade deficit in recent years. Likewise, the contractionary effects of higher short-term interest rates have not led to significantly higher long-term rates because of the ready supply of foreign capital. Nevertheless, higher short-term interest rates have still had a contractionary effect on the economy through the larger trade deficit that accompanies foreign capital inflows. But in a situation where some observers feared that the economy might be suffering from a housing bubble, higher interest rates might have been a more desirable way to curb economic activity than an increase in the already record-high trade deficit. An open economy is also one that is more influenced by developments abroad — as the economy's openness has increased over time, foreign economic shocks (positive or negative) have had a larger effect on the United States, and domestic events, including policy changes, have had a smaller effect.

**Where Should the Tradeoff Lie Between Economic and Price Stability?** If policymakers were concerned with only economic growth, policy decisions would be considerably easier. Above average growth would lead to contractionary policy, and below average growth would lead to expansionary policy. Given uncertainty about the true state of the economy, policymakers could err on the side of caution when tightening to avoid recessions. Unfortunately, policymakers must weigh these considerations against the effects of a policy change on price stability (inflation). Typically, the same policy is needed to achieve both price stability and economic stability (the Fed's mandated goals) — a tightening of policy when economic growth is above its sustainable rate will also help to keep inflation from rising, and inflationary pressures are typically low during recessions. Of course, underlying policy decisions are uncertain estimates of the economy's sustainable rates of growth and unemployment, so policymakers must decide how optimistic their assumptions of both should be. More optimistic assumptions increase the risk of rising inflation, while more pessimistic assumptions increase the risk of sub-par growth.

Besides uncertainty, goals also become conflicted when inflation and economic activity do not move in the same direction. There are several possible reasons why inflation sometimes rises although economic activity is sluggish. First, prices of individual goods may rise for reasons unrelated to the business cycle. If the price of a specific good rises relatively quickly and other prices do not fall, then overall inflation will rise. Most goods account for too small a share of overall spending to boost inflation by more than a trivial amount. But a few goods, such as food, shelter, and especially energy, are very large as a share of overall spending. Energy increased the growth rate of the consumer price index by 0.5 percentage points from 2000 to 2006. The Fed has argued that temporary individual price shocks that cause overall

inflation to rise can be ignored as long as they do not feed through to other prices.[21] Yet it is difficult to argue that energy's recent effects on inflation have been only temporary, and non-energy price inflation has risen steadily since 2003. Second, inflation shows persistence over time — current inflation is influenced by past inflation, even when economic conditions have changed. Thus, an economic slowdown may not instantly lead to lower inflation. Third, expectations play an important role in determining inflation. Expectations change slowly, which partially explains inflation persistence, but economists generally believe that they eventually adjust to accurately reflect circumstances. In other words, persistently expansionary monetary policy will eventually lose its effectiveness, causing inflation to rise even if economic growth is sluggish, as occurred in the 1970s.

Because of the role of expectations, any short-term tradeoff between inflation and growth will not persist in the long run. In the long run, the economy will adjust to any attempts to keep unemployment below its natural rate, and that adjustment will come about through a rising inflation rate. In other words, monetary policy's effect on output is temporary, but its effect on inflation is permanent. Therefore, some economists argue that growth stability should be de-emphasized as a policy goal and price stability should be given primacy, perhaps through a formal change to the Fed's statutory mandate.[22] And indeed, a policy objective of maximizing economic stability would not deliver price stability, since price shocks would need to be completely ignored. But as long as policymakers are mindful of the limits of economic stabilization, there is no reason that monetary policy cannot be prudently used to reduce cyclical fluctuations without undermining price stability. After all, economic stability and price stability often go hand-in-hand.

**Should Stabilization Policy "Fine Tune"?** Another major debate is how vigorously stabilization policy should be pursued. This may seem surprising — why would policymakers not take every action they could to keep the economy at full employment? But given our limited understanding of economic fluctuations, skeptics argue that less policy intervention — what they refer to as "fine tuning" — can often achieve better long-term results. As discussed in the introduction, the rate of economic growth changes because of both changes in the business cycle and random fluctuations. It is not obvious how to differentiate between the two until after the fact. If monetary or fiscal policy is tightened in response to a random fluctuation that temporarily boosts GDP growth, then future growth would be inappropriately lower. Taken to the extreme, if policymakers altered policy in response to every change in GDP growth (random or cyclical), then the economy could become more unstable. Skeptics also argue that the economy will eventually return to full employment on its own through natural market adjustments, so there are no permanent effects to a more "hands off" policy approach.

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[21] The price shocks could not have caused overall inflation to rise unless it had been accommodated by the Fed. With a constant money supply, the rise in energy prices would have been offset by a fall in other prices. In that sense, the recent rise in inflation was not inevitable.

[22] For more information, see CRS Report 98-16, *Should the Federal Reserve Adopt an Inflation Target?*, by Marc Labonte and Gail Makinen.

But if policy was too "hands off," policymakers would under-react to major swings in the business cycle, most notably the onset of recessions. This could prolong a recession's length and increase its depth, posing (temporary) hardship in the form of higher unemployment. A policy of fine tuning may lead to policy errors at times; the relevant question is whether the cumulative errors that result are more or less harmful to the economy than a policy of responding less vigorously to economic fluctuations.

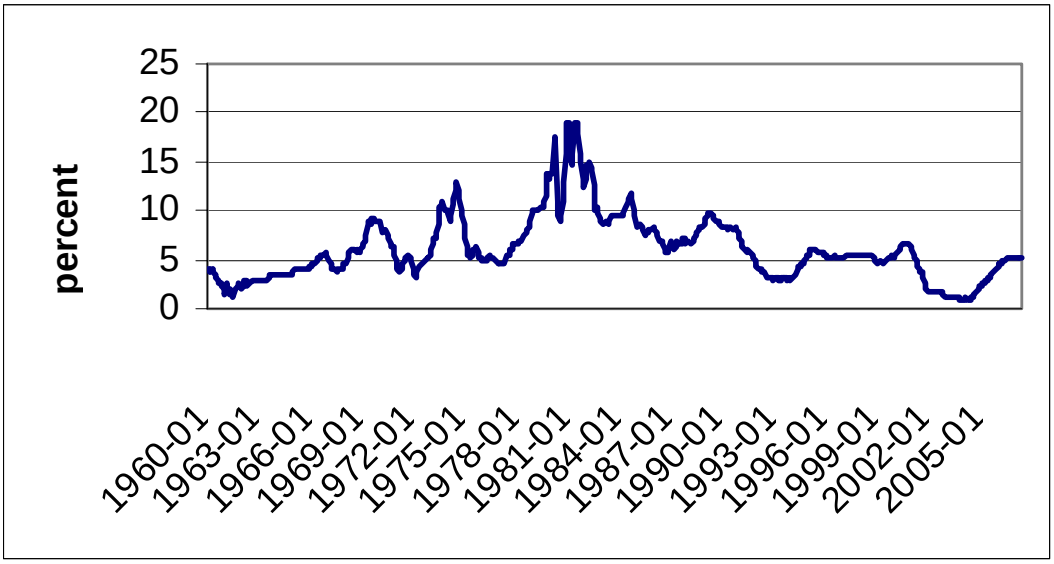
The importance of policy lags and forecasting accuracy (discussed in the previous section) color the fine tuning debate. Lags mean that by the time a policy change affects the economy, the state of the economy may have already changed. While a policy of "fine tuning" could be optimal if policymakers had perfect forecasts, it will fall short of optimal in the real world.

In practice, opponents of "fine tuning" argue that the Fed should respond more vigorously to changes in inflation and less vigorously to changes in output. While most economists would argue that the Fed has already moved in this direction, some would like to see this change codified through the adoption of an inflation target, and by changing the Fed's mandate to a single goal of price stability. This approach would reduce but not remove the Fed's response to business cycle fluctuations because changes in the business cycle have a major influence on the inflation rate in the short run.

Although some economists attribute the decline in the economy's volatility to a shift in monetary policy away from fine tuning, the Fed has still responded vigorously to changes in economic conditions, often responding in an anticipatory fashion. For example, the Fed reduced interest rates from 6.5% to 1.75% between January and December 2001, even though the recession, which began in March 2001, was not officially declared until November 2001. Clearly, the Fed is still willing to change interest rates quickly and drastically. Thus, either the Fed is still pursuing a policy of fine tuning although conventional wisdom says otherwise, or fine tuning cannot be defined in terms of large swings in interest rates.

However, "fine tuning" could have two other meanings. It could refer to frequent shifts in policy direction, with higher rates being quickly followed by lower rates and so on. As **Figure 4** illustrates, since the 1990s, the Fed has tended to pursue a consistent policy for an extended period of time before changing directions. For example, the Fed tightened monetary policy continually from June 2004 to June 2006. By contrast, in 1980 the federal funds rate was up 3 percentage points in March, then down 6.5 percentage points in May, then up 3 percentage points in November. It is less clear that policy shifts are less common today than in the 1960s, however.

**Figure 4. Federal Funds Rate, 1960-2007**




**Source:** Federal Reserve.

**Note:** Data are monthly market rate.

Fine tuning could also refer to a tendency to undertake sudden shifts in policy. When economic growth picked up speed in 2004, the earlier monetary stimulus was arguably no longer necessary to prevent a return to recession. The Fed decided to remove the stimulus very cautiously, raising rates one-quarter of a percent every six weeks in order to see how the economy would react. In the 1970s and 1980s, policy changes were often more sudden. In hindsight, if the Fed had raised rates more quickly since 2004, it would likely have posed little harm to the current expansion. But because of the unreliability of forecasts, the Fed had no way of knowing at the time that more rapid growth would persist. Thus, the 2004-2006 strategy minimized the risk that the monetary tightening would be destabilizing. The strategy was not without its own risks, however — it may help explain why inflation has been undesirably high since 2005, according to Chairman Bernanke's own definition.[23] This episode illustrates that fine tuning and price stability are not always at odds, as critics would have it.

## Policies to Promote Long-Term Growth

As stated above, increases to the economy's productive capacity (or "supply side") are the key to long-term, sustained improvements in living standards. The economy's productive capacity can be increased only by increasing productivity and inputs of labor and capital. While government has a great effect on long-term economic growth overall by fostering an environment conducive to capital investment and innovation, policy changes are likely to have economic effects that are indirect and incremental. For example, an economy cannot operate at an

[23] Chairman Bernanke has stated that he is uncomfortable with a core inflation rate (a rate of inflation that omits food and energy) that exceeds 2%.

advanced level without a monetary and financial system, justice system, markets, and property rights that are all efficient and well-functioning. But once those systems are in place, further reforms may have positive effects on growth, but the effects are likely to be too small to be discernable in the data.

Other policy areas where good policy can foster higher long-term growth include education, taxation, competition, basic research, openness to trade, and infrastructure.[24] Each of these policy areas involves public goods that the private sector would under-provide without government involvement. Regarding national saving, economists disagree whether government's proper role should be limited to eliminating the budget deficit so that its influence on saving is neutral, or whether it should be extended to encouraging higher household saving.[25] Advocates of the latter often argue that individuals are often too short-sighted to save as much as they desire later in life, and point to the negative household saving rate as supporting evidence. Advocates of a more neutral role for government argue that saving should be based on private choice, and the negative household saving rate is evidence that the myriad government incentives to save already available are ineffective. The importance of the falling saving rate to long-term growth can be seen in recent capital investment levels, which have been below the historical average in this decade. Another major challenge for long-term growth will be how to sustain growth in the labor supply in the face of the retirement of the baby boomers, either through higher immigration or policies that encourage labor force participation among older workers.

Nevertheless, expectations over how much policy changes can raise economic growth should be tempered. As discussed earlier, increasing inputs of capital and labor play an important supporting role in long-term growth, but productivity growth plays the primary role. Productivity growth relies on technological innovation, made possible by human capital accumulation, research and development, and entrepreneurship. Tax cuts or other policy changes can arguably alter labor and capital inputs — and a case can be made that even inputs cannot be altered much — but there is little evidence that government can effectively influence productivity growth directly. Recent history bears this out. The only notable change in long-term economic growth in the last four decades has been the surge in productivity growth since 1995. Although that surge would not have been possible without a generally favorable policy environment, the surge itself has been attributed to technological innovation, notably in high-tech industries, for which economists have not found any evidence that changes in government policy were primarily responsible.

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[24] At present, government policies to boost national saving would be unlikely to lead to higher growth rates via higher investment rates, because foreign lending has allowed the United States to achieve high investment rates already. Rather, it would increase Americans' income, since more of the income generated in the United States would accrue to Americans rather than foreigners. As noted above, boosting national saving would boost investment in the long run since foreign lending at current levels is not permanently sustainable.

[25] For more information, see CRS Report RL32119, *Can Public Policy Raise the Saving Rate?*, by Brian W. Cashell.

The general policy lesson from this experience would be that a policy environment where innovation and entrepreneurship can prosper, without heavy intervention in the marketplace, will result in more rapid economic growth. This principle is best demonstrated by comparing the United States to its peers.[26] Of the seven major advanced world economies, Canada is the only country besides the United States that has enjoyed a boost in per-capita GDP growth since 1996 (in fact, many countries' growth rates were lower in the latter period), and the United Kingdom and Canada are the only countries that have seen growth rates comparable to the United States since 1996, as seen in **Table 4**. This difference in economic experience since 1996 is all the more surprising since the technological innovations that are thought to have driven the increase in U.S. growth could be adopted by the other countries.

**Table 4. Average Per Capita GDP Growth, Major Advanced Economies**

| | 1985-1995 | 1996-2006 |
|---|---|---|
| United States | 1.9 | 2.2 |
| Canada | 1.3 | 2.3 |
| France | 1.6 | 1.5 |
| Germany | 2.1 | 1.4 |
| Italy | 2.2 | 1.1 |
| Japan | 2.9 | 1.1 |
| United Kingdom | 2.3 | 2.4 |

**Source:** International Monetary Fund.

Presumably, because education levels and capital per worker in all of these countries are roughly the same and the United States has the lowest national saving rate of the group, the main differences that can account for the disparate economic experience between the English-speaking economies and the rest are policy differences.[27] Namely, the English-speaking economies all have a reputation for pursuing more "laissez-faire" (non-interventionist) economic policies than the other

[26] It is not useful to compare growth rates in the United States to developing economies such as India or China because those countries are starting from a capital stock and productivity level that is an order of magnitude lower than exists in the United States. Therefore, developing countries can achieve very high rates of growth through "catch up" growth, by adopting already existing technologies. By contrast, the United States must generate growth by creating new technologies.

[27] An 11-year period should be long enough to rule out that the difference is caused by the business cycle, although some would argue that Japan's prolonged economic slump is cyclical in nature. The other potential broad explanation for the disparate results between countries could be cultural differences.

countries, although comparing differences in countries' overall economic policy is admittedly subjective.[28] Most economists agree that one important principle underlying the success of "laissez-faire" economies is that government should not try to "pick winners" by allocating economic resources to favored industries. Otherwise, it is difficult to isolate which policies are most important and what policy changes would have the largest effect on growth going forward. And it is useful to keep in mind that the surge in productivity growth since 1995 has raised the average growth rate of the economy by only 0.3 percentage points — even major economic changes have a limited effect. Nevertheless, if that differential could be sustained, the improvement in living standards would eventually accumulate into a substantial difference

[28] For an international study on the effects of government spending on growth, see CRS Report RL33343, *The Effects of Government Expenditures and Revenues on the Economy and Economic Well-Being: A Cross-National Analysis*, by Thomas L. Hungerford.