Unlocking the Secrets of the fed

How Monetary Policy Affects the Economy and Your Wealth-Creation Potential

DAVID M. JONES

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the fed

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This book is dedicated to my blessed grandchildren: Caitlin, Dylan, and Josh, who are profound sources of joy, pride, faith, love, and unbounded optimism.

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preface

As one of the pioneers of "Fed Watching," I have an eternal affinity for the mystery and power of central banking. In the past, a veil of secrecy has shrouded central bank deliberations and policy intentions. In contrast, the watchword today is transparency regarding goals and tactics. In my 33 years of closely observing our Federal Reserve (the "Fed") from the outside (preceded by five years as an economist at the New York Fed on the inside), I have never seen central banking more in the spotlight than at this moment.

This book is aimed at helping finance professionals—including portfolio managers and bank and nonbank asset-liability decision-makers—along with conscientious individual investors gain insight into the Fed's behavior, with a view to forecasting future monetary policy actions and related movements in interest rates and the stock market. I will examine closely the Fed's policy objectives, operating techniques, and favorite financial and economic indicators. Also, I will thoroughly review the modern-day Fed's main challenges and concerns in order to gain greater insight into its policy actions.

Contributing to higher central bank visibility, in addition to a deliberate Greenspan Fed effort at greater transparency, has been the founding of the European Central Bank (ECB) and the launching of the euro, scheduled to be fully phased in as a single currency originally for 11 (now 12) major European countries by 2002. Also, there was the much-publicized need for central bank cooperation in coping with the 1998 global financial crisis and, of course, in dealing with the fall-

out from the stunning September 11, 2001, terrorist attacks on the United States.

The major function of a central bank is to serve as the bankers' bank; basically, the central bank is our economy's lender of last resort. Importantly, the Fed is the only government agency that can create new money out of thin air through the purchase of Government securities or other assets. The Fed must, however, maintain sufficient monetary discipline to achieve its primary dual objectives of stable prices and sustainable economic growth. The central bank must also maintain the integrity of the payments system, assuring, for instance, that the arrangements for the settlement of payments are efficient and secure, and most importantly, seeing to it that checks written in dollars on any bank would be honored at par (full value) at any other bank in the United States.

Secondarily, a central bank may also serve in a supervisory capacity, overseeing banks or other financial institutions. Under the terms of the Gramm-Leach-Bliley Act of 1999, for instance, the Fed enhanced its supervisory powers by becoming "umbrella supervisor" of financial holding companies that will own the nation's largest banks, securities houses, and insurance companies. Within the financial holding company structure, individual subsidiaries will also be regulated according to their respective functions by the relevant government agencies. Specifically, securities subsidiaries will be regulated by the Securities and Exchange Commission (SEC), banks by the Office of the Comptroller of the Currency (OCC) or State banking departments (depending on whether they obtain a national or State charter), and insurance companies by State insurance commissioners.

Most significantly, there is the remarkable celebrity of Federal Reserve Chairman Alan Greenspan, who, at least until recently, has been more revered than any other central bank head. The Fed Chairman heads, by common acclaim, the leading economic policy institution in the world; it is in effect the

macroeconomic-policymaker of first resort. Fed Chairman Greenspan has been given most of the credit, along with market-savvy former Treasury Secretary Robert Rubin, for the recent, record-long 120-month U.S. economic expansion.

As a policy pragmatist, Chairman Greenspan pursues a flexible, open policy approach. Favoring transparency, he seeks to keep the markets up to date on his views on the economic outlook and to inform the financial markets of shifts in Fed policy intentions well ahead of the actual Fed policy moves. The Fed Chairman has also proven adept at dealing with financial crises, including the stock market crash of 1987, the global financial contagion of 1998, and, most recently, the terrorist attacks of 2001.

Unquestionably, the biggest crisis faced by Fed Chairman Greenspan and his fellow policymakers has been the psychological, financial, and economic fallout from the unimaginable September 11, 2001, terrorist attacks on the U.S. These devastating attacks, involving four hijacked commercial aircraft, toppled the twin 110 story towers of the World Trade Center in New York and severely damaged the Pentagon in Washington, D.C., killing more than 3,000 people.

Fed Chairman Greenspan holds that the main job of a modern-day central banker is to read capital markets and react appropriately. To keep our capital market-driven economy on track, the Fed must today scrutinize such indicators as stock prices, bond yields, credit-risk spreads, and the spread between short- and long-term interest rates. All of these indicators shed light on the availability and cost of finance to borrowers in the capital markets. To be sure, the Fed must never lose sight of its primary focus, which is the economy; but it must certainly consider these capital market factors to the extent that they influence the economy.

One of the most difficult tasks of the contemporary central banker is to manage market psychology in a manner that enhances the monetary policy transmission process. This Fed effort to avoid excessive swings in market psychology is crucial in a monetary policy transmission mechanism that

increasingly relies on capital market asset price adjustments (i.e., stocks, bonds, foreign exchange, etc.) to influence aggregate demand and ultimately output (real GDP) growth and inflation. For example, as the evidence increasingly suggested that recovery was underway in the early months of 2002, longer-term interest rates spiked higher as investors began to expect higher future short-term rates. However, Fed officials sought to temper this upward pressure on longer-term interest rates by suggesting that the sustainability of the recovery was uncertain, and that they were in no hurry to tighten their policy stance.

One of the biggest nightmares of the contemporary central banker is the asset price bubble. The essence of these unpredictable asset price bubbles is speculative bidding by frenzied investors for such assets as equities or real estate. These bubbles, which are typically financed by double-digit credit expansion, reflect mainly investor enthusiasm rather than consistent estimation of real value. As investors become increasingly divorced from reality in the advanced stages of asset price bubbles, the "greater fool" theory becomes the dominant force; you are willing to pay any price for equities or real estate because you are totally confident that somebody else ("the greater fool") is willing to buy it from you at a higher price. The essential problem with asset price bubbles is that they pose the threat of destabilizing swings in investor psychology, consumer and business confidence and spending, as evidenced by the boom-bust behavior of our economy in 2000–2001.

U.S. central bankers are legally responsible for maintaining stable prices of goods and services, not with controlling prices of equities or real estate. In this regard, it is important to note that the latest high-tech stock price bubble inflated to its maximum size at a time when prices of goods and services remained remarkably stable. Moreover, when asset price bubbles unexpectedly flare-up, it is difficult for central bankers to deflate them through jaw-boning or tightening actions with-

out bursting the bubble. Basically, it is like trying to stick a pin in a balloon and letting only a limited amount of air out of it without the usual explosion. At best, Fed policymakers can only react to the economic pressures accompanying hard-to-predict asset price bubbles, both on the upside when asset prices are rising and, conversely, on the downside once the asset price bubbles burst and asset prices are plummeting.

Historically, the most famous asset price bubbles were the Dutch tulip bubble of the 17th century, the English South Seas and French Mississippi bubbles of the 18th century, and the Japanese bubble of the late 1980s in the 20th century. But the asset price bubble giving Fed Chairman Greenspan perhaps his greatest challenge was the high-tech stock price bubble on the eve of the 21st century. Despite the Fed Chairman's admonitions about "irrational exuberance" back in December 1996, the high-tech stock bubble entered its advanced stage in the period from the fall of 1998 through early 2000. This wildly bullish financial psychology was fueled in part by the Fed's own easing moves in the fall of 1998 aimed at countering the effects of the global financial crisis together with the extra liquidity injected by the Fed in late 1999 to cope with the century date change. Also contributing to the high-tech stock bubble was the arrival of desktop day-trading and all-day financial cable TV channels offering bullish market news and hot-stock tips.

The high-tech stock bubble burst in March 2000. The NASDAQ stock index, composed mostly of high-tech stocks, peaked out at 5,048 on March 10, 2000, and 12 months later had fallen to 1,923 on March 12, 2001, a whopping 60% decline. The decline in the NASDAQ Stock Index was extended to a low of 1,423 immediately following the September 11 terrorist attacks, marking a huge 72% decline from its March 2000 peak. This collapse in high-tech stocks helped pull down the broader stock indexes such as the S&P 500 which fell 23% during the 12-month period following its peak and extended this decline in the wake of the terrorist attacks. The stock price decline, operating through a diminu-

tion of the wealth effect, resulted in a sharp curtailment of consumer spending in the closing months of 2000 which carried into 2001. Rising energy prices, which acted like a tax increase on consumers, also helped depress consumer spending. The Fed most likely anticipated that previously soaring stock prices might have to fall at some point, but the timing was still uncertain. However, the Fed was clearly taken by surprise by the spike in energy prices, which began in 1999 and continued largely unabated through 2000, before peaking late that year. Also, critics asserted that the Fed tightened too much in 1999 and 2000.

The main danger faced in early 2001 by Chairman Greenspan and his fellow policymakers was that, in the wake of the bursting of the high-tech stock price bubble, negative investor psychology might interact with crumbling consumer and business confidence to further depress spending and push the economy to the brink of, if not over the edge into recession. This concern was, of course, compounded by the stunning September 11 terrorist attacks, which heightened uncertainty, shattered confidence and sharply depressed spending, at least temporarily.

This book will underscore the important role that psychology plays in our nation's economic expansions and contractions. Of particular concern for contemporary central bankers are the asset price bubble-induced extremes of soaring optimism and the deepest pessimism.

Some critics, with the benefit of hindsight, have argued that the Greenspan Fed should have burst the late-1990s stock market bubble sooner with as much Fed tightening as might have been required. Other critics, in contrast, roundly condemn the Fed for any tightening at all in the 1999–2000 period, in light of remarkably subdued prices of goods and services. These latter critics pin the blame for the stock market collapse and the recession squarely on the Fed.

As regards the impact of Federal Reserve actions on the economy and the average American's wealth-creation poten-

tial, this book represents in part an update of my earlier book *The Buck Starts Here: How the Federal Reserve can Make or Break Your Financial Future* published by Prentice Hall in 1995. Today, with approximately 50% of U.S. households holding stocks in their financial portfolios, the impact of Fed policy actions on the stock market takes on an even greater significance. In turn, the impact of stock price fluctuations, operating through the so-called wealth effect, has become a more important influence on consumer spending; of course, the traditionally most powerful influence on consumer spending has been income growth.

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Dr. Jones received his M.A. and Ph.D. degrees from the University of Pennsylvania and his B.A. degree with honors from Coe College. From 1963 to 1968 he was an economist at the Federal Reserve Bank of New York. Among his duties at the New York Fed was head of the Business Conditions Section where the Bank's economic forecasts were prepared. He was also an economist on the Domestic Trading Desk where Federal Reserve open market operations were carried out. From 1968 to 1972, before joining Aubrey G. Lanston and Co., Inc., Dr. Jones was Vice President and Financial Economist at Irving Trust Company in New York.

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Dr. Jones has lectured at many seminars and banking schools and is a frequent commentator on Federal Reserve policy, financial market developments, and the economic outlook on CNBC, CNN, PBS (Nightly Business Report), and other television network and cable news shows. Dr. Jones has also been featured in *Smart Money* and *Money* magazines.

CHAPTER 1

Celebrity Status—A Mixed Blessing

Few would challenge the assertion that Federal Reserve Chairman Greenspan had reached the pinnacle of success as he began a fourth 4-year term as head of the U.S. central bank in June 2000. Indeed, until quite recently, most have found it difficult to do anything other than heap praise on the introverted, almost shy Fed Chairman and his fellow policymakers for presiding over a record-long economic expansion in which real GDP growth was unexpectedly strong, inflation was uncharacteristically subdued, business investment and productivity were surprisingly high, and, most impressively, the unemployment rate plunged to a three-decade low of 3.9%. Moreover, the stock market had soared to a record high in early 2000 after a spectacular 5-year bull run. This endeared Chairman Greenspan to the roughly 50% of American households owning stock either directly or indirectly through mutual funds and pension funds. Truly, the modest, self-effacing 75-year-old Fed Chairman had reached celebrity status bordering on deification. No one could challenge the Fed Chairman as the nation's preeminent macroeconomic policymaker.

HERO TO VILLAIN

Underscoring his popularity, Chairman Greenspan was the first person called upon by George W. Bush on his first trip to Washington, D.C. in December 2000 as president-elect. The Fed Chairman's popularity was given an earlier boost in January 1993 when Greenspan was invited to sit in a highly visible seat of honor between First Lady Hillary Rodham Clinton and Tipper Gore, the Vice President's wife, at President Clinton's first State of the Union Address. Even the harried Governor of California, Gray Davis, called on Greenspan in early 2001 to help with California's energy crisis involving a shortage of electrical generation capacity. Needless to say, it was difficult to imagine how the Fed Chairman could single-handedly reverse California's misguided regulatory policies and strict environmental restraints, which had precluded the building of new electric power plants in that state for more than a decade despite a surge in demand. Also evidencing his growing fame, Chairman Greenspan has been the object of a barrage of recent books extolling his virtues, including Bob Woodward's humbly titled book *Maestro*.

Less than six months later, however, critics were howling that Chairman Greenspan had failed to foresee the sudden and sharp plunge in economic growth in the closing months of 2000, which carried over into 2001, and that he had tightened monetary policy too much in 1999 and 2000. The Fed's forecasting errors in 2000–2001 may have arisen in part from the fact that Fed officials misread the economy's suddenly growing post-bubble vulnerability; they were too ready to believe that they could achieve that often-elusive "soft landing." The Fed's basic aim in its 1999–2000 tightening actions was to slow real GDP growth to at least the economy's trend potential, if not slightly below for awhile, to prevent further increases in already high labor utilization rates and reduce the risk of inflationary imbalances. Of course, the Fed reversed course in 2001, engaging in one of the most concentrated periods of monetary policy easing on record.

BUBBLE BURSTS

To be sure, Fed officials could not have anticipated the precise timing of the bursting of the high-tech stock bubble in March 2000. Nevertheless, they still faced a big challenge in dealing with the negative fallout. At least Fed Chairman Greenspan had warned of "irrational exuberance" as far back as December 1996; he could say, "I told you so." To compound the problem, Fed officials made two mistakes regarding the surprise surge in energy prices. Most importantly, they initially failed to foresee the substantial increase in energy prices. Economic models do a poor job of forecasting such supply shocks. Moreover, once the outburst in energy prices was in full force in 1999 and 2000, Fed officials mistakenly expected that energy price increases would boost overall inflation rather than operating mainly to depress aggregate demand, as turned out to be the case.

Fortunately, after peaking in late 2000, oil prices reversed course and began to move irregularly lower in 2001, mainly owing to slumping demand against the background of weakening global growth. To the surprise of many, oil prices actually fell 20% in the weeks immediately following the September 11, 2001, terrorist attacks on the U.S. by Islamic extremists. In the wake of these terrorist attacks, there was a sharp reduction in air travel and a plunge in activity in other sectors of the U.S. economy as well. This slump in economic growth weakened demand for energy and contributed to the surprising fall in oil prices.

TERRORIST ATTACK FALLOUT

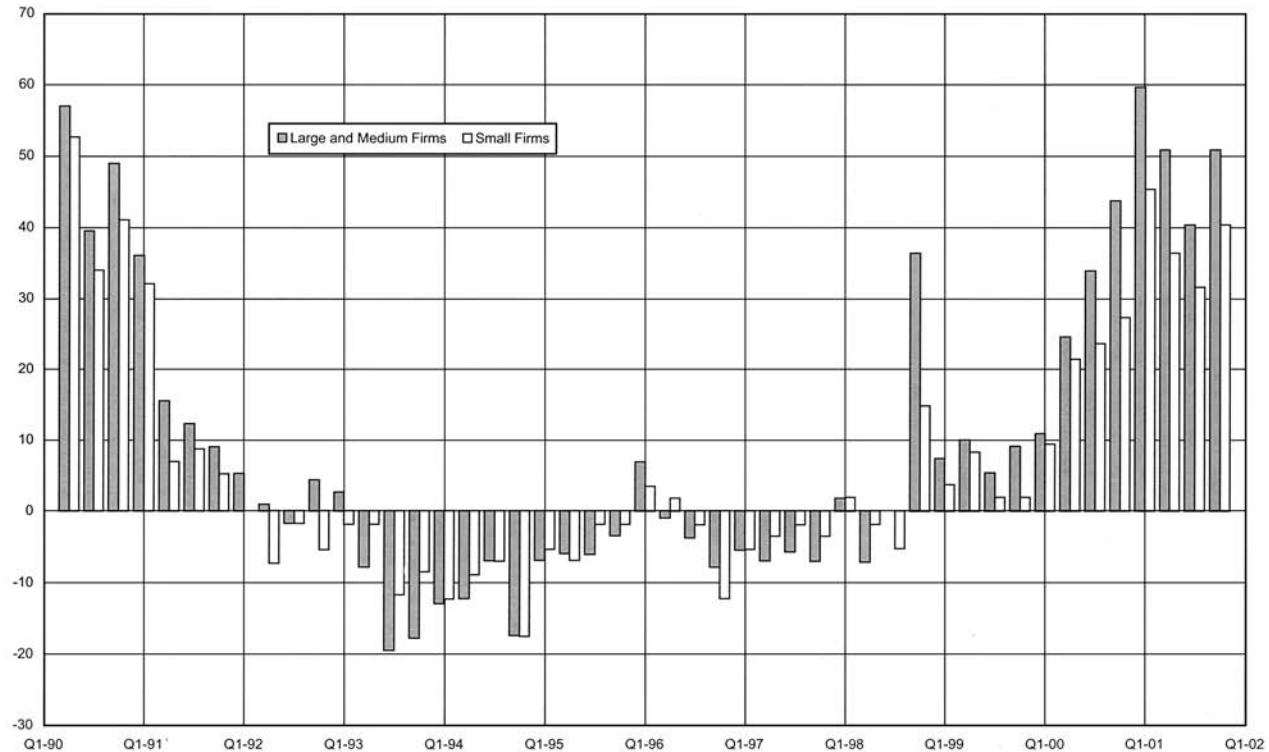
In the wake of the terrorist attacks on the U.S., the Bush administration launched an all out military, diplomatic, political, and financial campaign against all terrorists with a global reach. As a result, stock market investors suddenly faced risks ranging beyond those associated with normal economic or financial fundamentals. Specifically, stock prices became increasingly sensitive to developments on the diplomatic and military fronts in the U.S. campaign against terrorists.

The sudden stall-out in economic growth at the turn of the year reflected the combined effects of declining stock prices, which operated through an attenuated wealth effect to curtail consumer spending, and temporarily rising energy prices, which acted like a tax increase on debt-heavy consumers and squeezed corporate profit margins. Also behind the shockingly sharp slowing in economic growth were the secondary effects of the Fed's earlier tightening actions including an increase in credit-risk spreads in the bond market and a tightening of credit standards at banks, particularly for business borrowers (see Exhibit 1.1).

BUSINESS-LED DOWNTURN

The upshot was an unprecedented situation in which the business sector led the economic downturn as an investment spending boom-bust cycle came on top of a major inventory correction. Specifically, on the heels of the unexpectedly pronounced slowing in demand beginning in mid-2000, there was an unintended build-up in business inventories. As debt-heavy businesses sought to liquidate these unwanted inventories, there was a sharp drop in manufacturing output and employment. Moreover, in light of mounting excess capacity, declining profitability, shrinking cash flow, and weakening sales, businesses cut back their investment spending, especially their spending on new high-tech equipment and software, after an extended period of over-investment based on unrealistically high rate of return expectations. This business investment boom-bust cycle, which in the past has led to excess capacity and deflation, threatened to deepen the downturn and delay the hoped-for recovery. Such an investment cycle tends to be slow to respond to Fed policy actions. Unfortunately, the September 11 terrorist attacks virtually guaranteed that the already-weakened, post-bubble U.S. economy would fall into recession, particularly with consumer and business confidence severely shakened and spending curtailed, at least temporarily.

EXHIBIT 1.1 Bank Lending Terms on Business Loans Net Percentage of Domestic Respondants Tightening Standards for Commercial and Industrial Loans (Percentage 1990–2002)



The National Bureau of Economic Research (NBER) officially dates the recession as beginning in March 2001. Arguably, however, the economy could more accurately be described as teetering on the brink of recession through the summer, and was not pushed over the edge into all-out recession until after the September 11 terrorist attacks.

Thus, no sooner had he reached the almost heavenly pinnacle of success, than the Fed Chairman was brought down to earth with a thud. A chorus of critics were asking, "What have you done for me lately?" In addition, there was the potential for greater friction between the Fed Chairman and at least some members of the new Bush administration's economic team. The new Bush administration was initially committed to a large tax cut that some feared could compromise longer-term fiscal discipline.

In congressional testimony on January 25, 2001, however, Fed Chairman Greenspan observed that, given upward revised estimates of the Federal surplus over the coming decade, a near-term tax cut would not be inconsistent with longer-term fiscal responsibility. According to Congressional Budget Office (CBO) estimates at that time, the Federal surplus would amount to a hefty $5.6 trillion in the coming decade. The Fed Chairman argued it was possible to use this surplus to both pay down Federal debt and cut taxes.

SHRINKING BUDGET SURPLUS

In his more recent testimony before the Senate Budget Committee on January 24, 2002, the Fed Chairman noted that the CBO's estimate of the Federal budget surplus in the coming decade had been sharply slashed by no less than $4 trillion to $1.6 trillion. This stunning reduction in the estimated Federal surplus for the next 10 years reflected the effects of the economic downturn, lower estimates of realized capital gains in the wake of stock market declines, and legislated tax and

spending actions, including emergency appropriations following the September 11, 2001, terrorist attacks.

Largely reflecting the negative effect on tax revenues of the recent pronounced slowing in economic growth, reduced capital gains from a slumping stock market, along with the Bush tax cuts and emergency spending, the Federal surplus in fiscal year 2001 (ending September 30) fell to $127.1 billion from $236.4 billion in fiscal year 2000. In fiscal year 2002, the Federal budget will likely be pushed back into deficit owing to the economic downturn and legislated tax and spending actions, including increased spending for homeland security as well as for the military campaign against terrorism.

RELATIONS BETWEEN GREENSPAN AND THE NEW BUSH ADMINISTRATION

Regarding personalities, Chairman Greenspan has not had an altogether smooth relationship, particularly on the issue of taxes, with Lawrence Lindsey, an ardent supply-sider and former Fed Governor, who is President Bush's chief economist. In contrast, the Fed Chairman served together with Treasury Secretary Paul O'Neill and Vice President Richard Cheney in the Ford Administration. Accordingly, Chairman Greenspan has had long-term personal friendships and a high professional regard for these two senior officials in the new Bush administration. The personal respect is the highest and professional ties are currently the closest between Fed Chairman Greenspan and Vice President Cheney, the key person influencing particularly foreign policy and also domestic economic policy views and high-level personnel appointments, including nominations for vacant Fed Governor slots, in the Bush administration. By both temperament and experience, Vice President Cheney may be more qualified to be President than any Vice President in our history.

Unfortunately, by way of contrast, Treasury Secretary O'Neill has gotten off to a rocky start. As a competent and

experienced person, but one with a distaste for petty Washington politics, O'Neill gave up his job as chairman of a major aluminum company to become Treasury Secretary. But he initially seemed impervious to Washington political scrutiny when he only belatedly parted with his substantial stockholdings in the company in response to mounting criticism. More disturbingly, O'Neill initially made misleading statements on U.S. dollar policy, mishandled Argentina's bail-out plan, and, amazingly, expressed disdain for capital market participants. On U.S. dollar policy, O'Neill confusingly stated that he was not in favor of a strong dollar, but instead a strong economy; also, he showed contempt for the capital markets when he offhandedly observed that with perhaps a couple of weeks of training he, too, could become a bond trader. To O'Neill's disadvantage, he had no capital market work experience in contrast to his highly successful predecessor Robert Rubin, the Wall Street wonder.

More recently, O'Neill has been criticized for being mainly a cheerleader for the stock market and the economy in the wake of the September 11 terrorist attacks, rather than making honest and credible statements on the near-term outlook. Evidencing O'Neill's diminished standing as a macroeconomic policymaker, he was slighted in favor of former Treasury Secretary Robert Rubin, who testified on September 26, 2001, with Fed Chairman Greenspan, at a closed-door session with lawmakers arranged by Senator Max Baucus (Democrat-Montana), Chairman of the Senate Finance Committee, to consider a post-terrorist attack fiscal stimulus package. More recently, O'Neill damned the post-terrorist attack Bush fiscal stimulus package with faint praise when he called its tax cut proposals "show business;" he also hindered compromise when he called the Democratic version of the stimulus package "pathetic." This post-terrorist attack stimulus package was temporarily blocked in the Democrat-controlled Senate. In sum, O'Neill has turned in a clumsy performance as head of a so far unimpressive Bush domestic economic policy team.

In striking contrast, Bush's foreign policy team may be the best assembled by any president since World War II.

FLEXIBLE MONETARY POLICY APPROACH

Truly, on the brighter side, the Fed is the leading economic policy institution in the world. Moreover, monetary policy is a more flexible government policy tool than fiscal policy and thus is a more effective countercyclical policy weapon, particularly in fighting sharp, short-lived cyclical downturns which have proven particularly difficult to predict. The greater flexibility of monetary policy has also proven effective in crisis management situations such as the 1987 stock market crash and the 1998 global financial crisis; most recently, the Fed's crisis management capabilities were again called upon in the wake of the September 11 terrorist attacks on the U.S.

Ultimately, the Greenspan Fed has pursued the "soft landing" theory in its effort to keep the economy on a sustainable growth track. In order to make this theory work, the Fed hopes to preemptively tighten to counter excessive and potentially inflationary "highs" in economic growth, relative to the economy's supply-determined potential, in order to also eliminate the deep "lows." The idea is for Fed officials to promptly identify problems, take risks in adjusting the Fed's policy stance boldly to cope with these problems, and be willing to reverse course, if necessary. In this connection, Fed attempts to achieve a "soft landing" in 1988–1989 failed, resulting in the 1990–1991 recession, while such attempts in 1994–1995 succeeded. In the 1994–1995 experience, the Fed tightened preemptively in seven steps to head off the threat of inflation; subsequently, a pronounced slowing in economic growth in 1995 prompted the Fed to reverse course and ease its policy stance three times in 1995 and early 1996. More recently, Fed tightening moves in 1999–2000 were also aimed mainly at a "soft landing;" but again the unsuccessful effort

ended with recession, officially dated as starting in March 2001.

Certainly modern-day U.S. central banking is more art than science. Moreover, as in most endeavors, timing is everything, whether the Fed is tightening preemptively to head off inflationary pressures as in 1994, or more recently, in 2001 when it was easing its policy stance in order to try to counter economic weakness. In his semi-annual testimony to the Senate on July 24, 2001, Fed Chairman Greenspan noted in response to an inquiry as to whether the Fed's easing moves in 2001 had helped in reviving the economy that "I'm not saying there is a black box, or anything of that nature, but the complexity of our economy is such, and the way liquidity flows through the system is such, that you essentially get very complex differences in the way monetary policy plays out." Chairman Greenspan added, "[B]ut at the end of the day, it does seem to be effective."

INCREASING ROLE OF CAPITAL MARKETS

To an increasing extent, the monetary policy transmission mechanism operates through volatile market psychology and related capital market asset price adjustments (bonds, stocks, foreign exchange, etc.) to influence aggregate demand, and ultimately output (real GDP) growth and inflation. Today, more than two-thirds of total credit is supplied to individuals, businesses, and government by way of the capital markets, while less than one-third is supplied by commercial banks, the Fed's traditional point of contact.

Perhaps the biggest challenge facing U.S. central bankers is to establish credibility and consistency in pursuit of their longer-term aim of maximum sustainable growth. Clearly, the stakes could not be higher, given the fact that the Fed is in the public spotlight as never before. To complicate matters further, the Fed is operating in a new environment of instant communications, deregulation, and globalization, which

transmit financial shocks around the world at virtually the speed of light. In addition, Fed policymakers must recognize that human nature is ageless and unyielding; collective psychology is potentially just as volatile as it ever was, despite advances in finance and technology. We continue to see collective psychology alternating between excessive enthusiasm and deep despair. Therefore, Fed officials must be particularly sensitive to the increasingly important role that volatile financial market psychology and wide swings in business and consumer confidence and spending play in economic "booms" and, especially, "busts."

"JUST-IN-TIME" BUSINESS DECISION-MAKING

Facing another more immediate challenge, the Fed must be aware of "just-in-time" business decision-making made possible by the information technology (IT) revolution. This is particularly the case in hard-to-predict contemporary downturns. For example, in the economic slowdown in the second half of 2000 and 2001, businesses rapidly rebalanced inventories and sharply curtailed investment spending in a more telescoped or compressed time frame than in the past.

This "just-in-time" decision-making has been aided by computer-processed real-time information on such items as sales, orders, shipments, inventories, profits, and excess capacity. Specifically, innovations such as more advanced supply-chain management and flexible manufacturing technologies have, as Chairman Greenspan observed in his July 18, 2001, semi-annual congressional testimony, enabled firms to adjust production levels more rapidly to changes in sales. In response, the Fed has found it necessary to speed up its countercyclical easing actions to match this faster pace of private-sector decision-making.

MANAGING MARKET PSYCHOLOGY

In a similar vein, one of the most difficult tasks facing Fed policymakers is to manage capital market psychology in a manner that enhances the monetary policy transmission process. In this delicate and complex effort, Fed officials have sought to come up with a policy statement that avoids exaggerated market responses to these policy pronouncements. In this "work in progress," the Fed currently focuses in its policy announcement in the post-meeting press release on the Fed's outlook for the economy and the balance of risks to good economic performance. In December 2000, Fed policymakers perceived, in a major though perhaps somewhat belated shift in policy emphasis, that the balance of risks were weighted toward conditions that might generate economic weakness. At each of their preceding policy meetings in 2000, Fed officials had perceived that the balance of risks was weighted toward conditions that could produce heightened inflation.

In this capital market-driven economy, the monetary authorities must establish good two-way communications with capital market participants, including stock market investors. Actually, Fed Chairman Greenspan usually communicates in speeches and congressional testimony his intentions to shift policy well ahead of actual Fed policy moves, starting the adjustment in capital market asset prices earlier than in the past. At the same time, capital markets communicate to the Fed as to whether, in their collective judgement, the Fed is on track or falling behind the curve in its policy actions. The collective judgement of the capital markets is, of course, manifested in such indicators as stock prices, bond yields, both levels and spreads, and the foreign exchange value of the U.S. dollar.

Regarding the stock market, the bottom line is that stock market investors must be convinced that the Fed can be successful in its countercyclical actions aimed at keeping the economy on a sustainable, noninflationary growth path that maximizes profits and lifts stock prices over the longer-term. Ideally, in such circumstances stock prices will trend higher

and bond yields will trend lower, as was the case during most of the 1990s. Helping to push bond yields lower were declining federal deficits that evolved into budget surpluses toward the end of the decade, as well as falling investor inflation expectations.

Generally speaking, Fed Chairman Greenspan has also been successful in his crisis management efforts, injecting liquidity to meet a crisis-related jump in the public's precautionary demands, but withdrawing this liquidity promptly once the crises had subsided and financial conditions had stabilized. This was true in both the 1987 stock market crash and the 1998 global financial crisis. Clearly, the ultimate test of the Fed's crisis leadership capabilities has been to deal with the psychological, economic, and financial fallout from the September 11 terrorist attacks.

EXTREMES AND PERCEPTIONS OF FED EFFECTIVENESS

Interestingly, the detailed Fed transcripts covering the 1995 (and 1996) FOMC meetings, released in early 2001 and early 2002, revealed that Fed Chairman Greenspan was worried that Fed credibility might be at times too good and thus as much hindrance as help. These lightly edited verbatim transcripts of FOMC meetings are released by the Fed with a five-year delay in order not to inhibit current frank and full discussion by policymakers. Specifically, Fed Chairman Greenspan was worried as early as 1995 that a bubble could be developing in the stock and bond markets partially in response to investors' belief that whatever the economic conditions, the Fed would respond correctly and keep the economy on a strong, but noninflationary growth path. Subsequently, at the May 21, 1996, and September 24, 1996, FOMC meetings, then Fed Governor Lawrence Lindsey worried that rising stock prices could destabilize the economy.

In essence, many investors may have gone too far in believing that the Fed could do no wrong. They wrongly

believed that the Fed was virtually guaranteeing an uninterrupted economic advance that would generate large profits and continue to lift stock prices to new highs. These investors missed the point. While the Fed might, through effective countercyclical actions, be able to smooth economic cycles and even lengthen expansion and shorten contractions, it will never be able to completely eliminate these cycles, because they are the manifestation of potentially volatile human behavior.

Ironically, this excessively optimistic investor perception that the Fed could always keep the economy on the right track quickly gave way in early 2001 to the much more critical view that the Fed missed the boat in failing to forecast the abrupt slowing in economic growth in the second half of 2000 and the first half of 2001 and that it had earlier tightened too much in 1999 and 2000. In essence, perceptions of the effectiveness of Fed actions may have been exaggerated in each direction; that is, just as it is an exaggeration to assert that the Fed could do no wrong when things are good, so also is it an exaggeration to hold that the Fed has got things all wrong as the economy weakens.

Importantly, as the record-long expansion reached its tenth anniversary in March 2001, it appeared that the Fed was still "behind the curve," despite its third easing action in as many months aimed at countering sudden economic weakness. However, the Fed cut rates yet again by 50 basis points on April 18 between FOMC meetings and again at the FOMC meeting on May 15, bringing Fed easing actions more "in line with the curve." Nevertheless, despite its five aggressive "catch up" easing moves in the first five months of 2001, along with additional 25 basis point cuts at both the June 26–27 and August 21 FOMC meetings, the Fed still faced powerful forces pushing economic growth lower, even before the September 11 terrorist attacks on the U.S. These forces included heavy consumer and business debt burdens, declining

profits, falling asset values, excess capacity, contracting investment, bulging inventories, and widespread worker layoffs.

The devastating September 11 terrorist attacks could not have come at a worse time. Prior to these attacks, the post-bubble high-tech sector was reeling, corporate profits were declining, worker layoffs were mounting, and stock prices were testing their March lows. The Fed responded to the terrorist attacks appropriately by injecting unusually large amounts of temporary liquidity through both System RPs and discount window borrowings to keep the payments system functioning efficiently.

The Fed also moved in a timely manner to cut rates by 50 basis points on September 17, 2001, prior to the reopening of stock trading on that day. This intermeeting Fed easing move was aimed at stabilizing the financial markets and countering weakening tendencies in the economy. Subsequently the Fed cut rates by 50 basis points at both its October 2 and November 6 FOMC meetings, and by another 25 basis points at the December 11 FOMC meeting. This brought the Fed's target for the Federal funds rate down to 1.75%, the lowest level in four decades, from 6.5% in early January 2001 when the Fed's latest aggressive series of easing moves began.

Regarding these additional post-terrorist attack easing actions, Fed policymakers stated in connection with their October 2 easing move that "[t]he terrorist attacks have significantly heightened uncertainty in an economy that was already weak." At the November 6 meeting, Fed officials noted that "[h]eightened uncertainty and concerns about a deterioration in business conditions both here and abroad are damping economic activity." At the December 11 FOMC meeting, Fed authorities observed that "[e]conomic activity remains soft." Striking a slightly more positive chord, the FOMC members also observed that "weakness in demand shows signs of abating." They added, however, that "those signs are preliminary and tentative."

HEIGHTENED POST-TERRORIST ATTACK UNCERTAINTIES

With respect to the heightened uncertainties following the September 11 terrorist attacks, Fed officials had to contend with at least three important considerations: First, the Fed had to assess the severity of the economic slowdown before September 11; second, the Fed had to consider the post-terrorist attack psychological influences on households and businesses; third, the Fed had to judge the impact of unexpected events—ranging from additional terrorist incidents at home to how well the war on terrorism is going abroad—in shaping the economic outlook.

Concerning the prospects for economic recovery, Fed Chairman Greenspan was cautious in remarks to a civic group in San Francisco on January 11, 2002, thereby dimming hopes of a growing consensus on Wall Street that a recovery was imminent, if not already underway. The Fed Chairman warned, "I would emphasize that we continue to face significant risks in the near term." He noted that corporate profits and investment remain weak, unemployment could continue rising for sometime, and household spending will be slowed by a number of factors. In words reminiscent of his "50 mile per hour headwind" viewed as impeding recovery in the early 1990s, Greenspan added, "[I]t is still premature to conclude that the forces restraining economic activity here and abroad have abated enough to allow steady recovery to take hold." On the brighter side, the Fed Chairman stated that the nation's economic condition had improved somewhat in recent months, as the pace of job losses dropped off and companies made considerable progress in working off bloated inventories of goods and supplies. Significantly, he also expressed confidence in the fact that technological advances had fundamentally improved the economy's productivity, allowing growth over the longer-term future to exceed that in the past.

According to subsequent press reports, however, Fed Chairman Greenspan felt that the market overreacted on the negative side to his comments on January 11. Apparently,

Greenspan was seeking to convey a more balanced, if not somewhat positive, view of the economic outlook, while trying to underscore the economy's resiliency. In his subsequent testimony to the Senate Budget Committee on January 24, 2002, Greenspan was more upbeat in observing that "there have been signs recently that some of the forces that have been restraining the economy over the past year or so are starting to diminish and that activity is beginning to firm." In a startling admission, Greenspan stated in regard to his January 11 remarks that he had unintentionally "implied that I didn't think the economy was in the process of turning."

Of course, the strength of any future economic rebound will ultimately depend critically on the pace of underlying productivity growth. In the 1990s, for example, rising productivity was the key factor behind a record-long economic expansion in which the unemployment rate fell to a three-decade low, while inflation remained subdued. In contrast, weak productivity growth in the 1970s was associated with "stagflation" in which growth stalled, the unemployment rate rose, while, to the surprise of many, inflation soared.

CHAPTER 2

New Challenges

Central bankers must police the economy in the same way that State troopers seek to keep drivers from speeding, or, conversely, driving too slowly on our major freeways. For example, when our economy's growth exceeds its "speed limit," thereby threatening inflation as pressures on labor and other productive resources begin to mount, the Fed responds by hiking interest rates (or writing a speeding ticket) in order to curtail aggregate demand and slow output (real GDP) growth to a more sustainable, noninflationary pace. Conversely, when economic growth threatens to weaken excessively (or fall below the minimum speed limit), the Fed will respond by cutting interest rates (or writing a slow-driving ticket) in order to stimulate aggregate demand and boost real GDP growth to a pace closer to sustainable growth. Indeed, over the long-run, the Fed is seeking to provide financial conditions that foster "maximum sustainable growth," akin to motoring at a brisk but steady speed that avoids traffic tickets but still gets you to your destination in good time and safely.

DECLINING FED EMPHASIS ON MONETARY AGGREGATES

In 1975, reflecting in part the monetarist critique of Fed policymakers and in part disappointment with the economy's

performance at that time, Congress passed a concurrent resolution encouraging the Fed to set targets for money supply growth. Following the passage of this resolution, the FOMC, the Fed's most important policymaking body, adopted for the first time annual target ranges for money growth and announced them publicly. Subsequently, in 1978, Congress passed the Full Employment and Balanced Growth Act (also called the Humphrey-Hawkins Act) which required the Fed to set, semi-annually, monetary targets for calendar years and to report to Congress each February and July any deviations from its monetary targets, as well as to discuss the Fed's outlook for economic growth, inflation and employment. (The Full Employment and Balanced Growth Act of 1978 expired in early 2000, but the Fed still reports to Congress semi-annually in February and July of each year.)

From 1979 to 1982, money-growth targets took center stage in the conduct of monetary policy. Fed policy was implemented during this period by estimating total reserve growth necessary to meet the Fed's money-growth target and by holding more or less to the associated path for nonborrowed reserves. (Total reserves are defined as discount window borrowings plus nonborrowed reserves.) This allowed the Federal funds rate and other interest rates to be free to move in response to market forces to whatever level would be consistent with the money-growth objective over time.

It is important to remember in this regard that monetary policy was focused at that time on the need to defeat double-digit inflation, and Fed policymakers were in this situation less certain about the magnitude of the increases in nominal and real interest rates that would be required to achieve the objective of reducing inflation than they were about the money-inflation relationship. At the very least, the diversion of public attention to money-growth targets, allowed Paul Volcker, who was Fed Chairman at that time, to claim it was market forces, not the Fed, that were pushing politically sensitive interest rates to the astoundingly high levels required to curtail aggregate demand and to slow output growth to a

pace more in line with its trend potential in order to win the war against inflation.

Starting in late 1982, however, Fed officials became increasingly reluctant to adjust their policy stance in response to deviations in monetary growth relative to the Fed's target for this aggregate, as the velocity of money has become less predictable. As it deemphasized monetary aggregates, the Fed gradually returned to an interest rate strategy in which Fed authorities adjusted their target for the Federal funds rate primarily in response to current or projected excesses (deficiencies) in actual output growth relative to their estimate of the trend rate of growth in potential output. (This is the so-called output gap.)

On the upside, Fed officials worried that prolonged excesses in actual output growth relative to its trend potential would produce growing strains on labor and product markets thereby threatening increasing wage and price pressures. The Fed would respond in this situation by hiking interest rates in order to curtail aggregate demand and slow actual output growth to a pace more in line with its trend potential pace, thereby closing the output gap. The Fed's aim in this regard is to achieve sustainable output growth; over the long haul, this should of course be the maximum pace of output growth that is consistent with stable prices.

In passing, it should be noted that an academic version of such an interest rate strategy can be found in the "Taylor rule." It involves prompt adjustments in the Fed's target for the Federal funds rate in response to movements in output and inflation. The "Taylor rule" is named after John Taylor, a respected Stanford University Professor, formerly a member of the President's Council of Economic Advisors, and presently a senior Treasury Department official, rumored to be a possible successor to Fed Chairman Greenspan. Specifically, the "Taylor rule" holds that, in economic expansions, the Fed should hike its Federal funds rate target by 1.5 percentage points for every 1 percentage point increase in inflation beyond the Fed's unofficial target for inflation.

Conversely, in periods of economic weakness, every 1 percentage point shortfall in real GDP growth relative to its trend potential triggers a Fed rate cut of 0.5 percentage point.

In his remarks on March 28, 2001, at the Homer Jones Memorial Lecture entitled "Does Money Matter?" Fed Governor Laurence Meyer calculates not an operating target, but instead a long-run "reference value" for M2 growth consistent with his estimate of the trend rate of growth in potential output and his target for inflation. (It should be noted in this regard that the Fed does not currently set an official explicit target for inflation.) Fed Governor Meyer starts with the famous quantity theory equation $M\ V = P\ Y$, where M is the money supply, V is velocity, P is the price level and Y is the level of output. This can be rewritten, in terms of growth rates, as $m + v = p + y$, where lowercase letters are the growth rates of M, V, P, and Y, respectively. Rewriting the growth relationship as an equation for money growth, $m = p + y - v$. To solve for the reference value for money growth, we need a definition of the money supply, a target for inflation (stable prices) and estimates of the trend rate of growth in potential output and the trend growth of velocity.

Fed Governor Meyer favors the M2 definition of the money supply owing to the fact that it has the virtue of being broad enough to internalize many technological changes that would affect its composition such as sweeps from demand deposit accounts into interest-bearing savings accounts, but at the same time, sufficiently narrow in scope to represent assets principally used for transactions. The M2 monetary aggregate consists of nonbank public holdings of currency, demand deposits, other checkable deposits (OCDs), overnight RPs, overnight eurodollars, household money market mutual fund balances (MMMFs), money market demand accounts (MMDAs), savings and small-denomination time deposits.

The Fed Governor's target for inflation, measured as the chain GDP price deflator, is 1.5%. As regards the trend rate of growth in potential output, Fed Governor Meyer currently prefers 3.5%–4%. However, he emphasizes that this estimate of the trend rate of growth in potential output should be updated at least annually to incorporate the best prevailing judgement about the underlying trend. Finally, the Fed Governor estimates that the trend growth of velocity (V2) is zero, though he warned that owing to deregulation and innovation short-term swings in velocity have increased and it has become less predictable. Based on these crucial assumptions, Fed Governor Meyer calculates a "reference value" for long-term M2 growth of 5%–5.5%, consisting of the sum of his inflation target (1.5%), and his estimate of the trend rate of growth in potential output (3.5%–4%) minus the trend growth in velocity (0).

MARKET CHALLENGES

New challenges faced by contemporary central bankers include deregulation, securitization, and globalization. In the securitization process, for example, banks may pool loans, mortgages, or credit card receivables to create securitized financial instruments (such as mortgage-backed securities) that are ultimately removed from bank balance sheets and sold into the capital markets to mutual funds, among others.

The upshot is that the bulk of total credit is today supplied to individuals, businesses, and the government by way of the capital markets, while a declining share is supplied by commercial banks, the Fed's traditional point of contact. The opposite was true in the mid-1970s when commercial banks accounted for the lion's share of the supply of total credit, with a much smaller share accounted for by the capital markets. Today, the major nonbank lenders and investors in the capital markets include not only mutual funds, but also hedge funds, pension funds, insurance companies, and

finance companies. Of course, there are also big players in the form of Government Sponsored Enterprises (GSEs) such as Fannie Mae and Freddie Mac.

To complicate matters further, deregulation and financial innovation have made the velocity of money less predictable during the past two decades, thereby diminishing the significance of policy targets for monetary aggregate growth. To drive this point home, Martin Mayer, in his excellent new book *The Fed*, states that "[s]ecuritization, derivatives, worldwide markets and the vastly increased liquidity of once nonmarketable assets (represented in the household world by home equity loans and easy access to margin values of stock market investments) have made the idea of the 'quantity' of money a historical curiosity, like belief in a flat Earth."

The "new reality" is that in order to determine whether financial conditions are favorable for sustainable growth, modern-day central bankers must put more emphasis on market psychology, stock price movements, bond yields, credit-risk spreads, and other indicators of the terms on which borrowers can raise funds in the capital markets and less emphasis on traditional bank credit or monetary aggregate measures. Most importantly, Fed officials must be sufficiently market savvy to deal with a situation in which a major outbreak of negative investor psychology threatens to trigger a crumbling in consumer and business confidence and a resulting slump in spending that will have a severely depressing effect on real (inflation-adjusted) GDP growth. Gross Domestic Product, or GDP, which is our broadest measure of economic output, is defined as the dollar value of all goods and services domestically produced.

GROWING ROLE OF PSYCHOLOGY IN ECONOMIC CYCLES

Another challenge for contemporary central bankers is the growing role played by wide swings in psychology in economic cycles. Economic models do a poor job of capturing

this emotional "wild card." A sudden shattering of confidence is particularly dangerous after a long period of mounting optimism, not unlike that which we have seen during the latest record-long expansion. Pinpointing the timing of such a sudden breach of confidence is extremely difficult. Moreover, perhaps the greatest danger to economic stability lies in the potential, particularly after an asset price bubble bursts, for a self-reinforcing interaction between negative investor psychology and declining consumer and business confidence and spending. This threatened interaction between negative market psychology and falling consumer confidence takes on all the more contemporary significance in light of the fact that approximately 50% of U.S. households now own equities. In the last prolonged bear market in 1973–1974, only slightly more than 10% of households owned equities. Today, if this interaction between negative market psychology and eroding confidence is allowed to get started, without countering Fed interest rate cuts, it could pull the economy into recession, as has recently occurred.

During most of 2000 and 2001, the most talked about factor, at least until the September 11, 2001, terrorists attacks, was the melt-down in the NASDAQ stock index, composed mostly of previously high-flying technology stocks (see Exhibit 2.1). To be sure, the bursting of the high-tech stock bubble in March 2000 and the resulting 60% decline in the NASDAQ stock index over the succeeding 12 months, helped pull down the broader stock indexes such as the S&P 500 and Wilshire 5000, both of which fell more than 20% in the 12-month interval following their peaks, thereby entering bear territory. These stock price declines have operated through an attenuated wealth effect to depress consumer spending. Nevertheless, the plight of high-tech stocks was so widely publicized that it seemed to have a negative psychological impact beyond the 50% of the U.S. households that own stocks.

EXHIBIT 2.1 NASDAQ Composite Stock Index
Weekly levels (1995–2002)

Previously, the wealth effect was strikingly powerful and positive especially during the period from 1995 through early 2000 when stock prices were soaring. Essentially, the wealth effect links fluctuations in stock prices and property prices to consumer spending. For every $1 increase in wealth (or net worth), there is an estimated 4-cent increase in consumer spending. During the spectacular 1995–2000 stock market rally, approximately $12 trillion in additional household net worth was created. Since the stock price bubble burst in early 2000, household net worth has contracted by approximately $5 trillion.

Contributing to the high-tech stock bubble in particular (the NASDAQ stock index rose a stunning 83% in 1999 alone) was the arrival of desktop day-trading with real-time quotes and all-day financial cable T.V. channels to provide an unlimited supply of "hot"—though usually contextless market news and stock recommendations. Clearly, the trappings were in place to reinforce the addictive nature of day-trading, much like gambling in Las Vegas. The big flaw in the high-tech stock market was the limited number of shares issued by Internet companies, which meant that the entire company's value was determined by the optimists who bought the relatively small number of shares issued. The solution to this flaw was not enacted until early 2001 when Congress lifted the ban on single-stock futures. These financial instruments make it cheap and easy for investors to bet that a company's stock price will fall without having to find the actual shares to borrow and sell short. Another flaw leading to the high-tech stock price bubble may have been the practice of "laddering," expressly prohibited by securities law, in which investment banks made big allocations of new stock offerings (IPOs) to large professional investors, who, in return, promised that they would buy more shares of the new stock at a higher price after it started trading. In addition, there were large-scale misguided insider "lock-ups" of IPO stock offerings, further limiting the suply of new issues.

During the latter part of 1999 and early 2000, the wealth-induced increase in aggregate demand exceeded growth in potential supply, exerting more strains on an already tight labor market, threatening increases in wages and prices. It is no coincidence that consumer confidence reached its zenith in early 2000, just as stock prices peaked.

In late 1999 and early 2000, the Fed tightened its policy stance in order to slow aggregate demand growth to a pace more in line with growth in potential supply. The Fed's tightening actions came on the heels of several quarters of extremely strong real GDP growth that were well in excess of the economy's noninflationary "speed limit" of 3.5%–4% at that time. Specifically, real GDP growth surged by a revised 4.7% in the third quarter of 1999, before nearly doubling to a stunning 8.3% in the fourth quarter of 1999. After temporarily slowing to 2.3% in the first quarter of 2000, real GDP growth shot up again by 5.7% in the second quarter of 2000 (see Exhibit 2.2). The original official Commerce Department estimates of real GDP growth for these four consecutive quarters ended in the second quarter of 2000, were 5.7%, 8.3%, 4.7%, and 5.6%, respectively, which probably had a significant impact on Fed worries about an overheating economy at that time. Initially, in June and August 1999, the Fed had tightened largely to absorb the extra liquidity injected in 1998 to cope with the global financial crisis. But, by the winter of 1999 and into the spring of 2000, the Fed found it necessary to tighten mainly to counter an outburst of real GDP growth in excess of the economy's growth potential. This outburst in growth was reflected in a shrinking pool of available workers willing to take jobs, one of Fed Chairman Greenspan's favorite job market indicators.

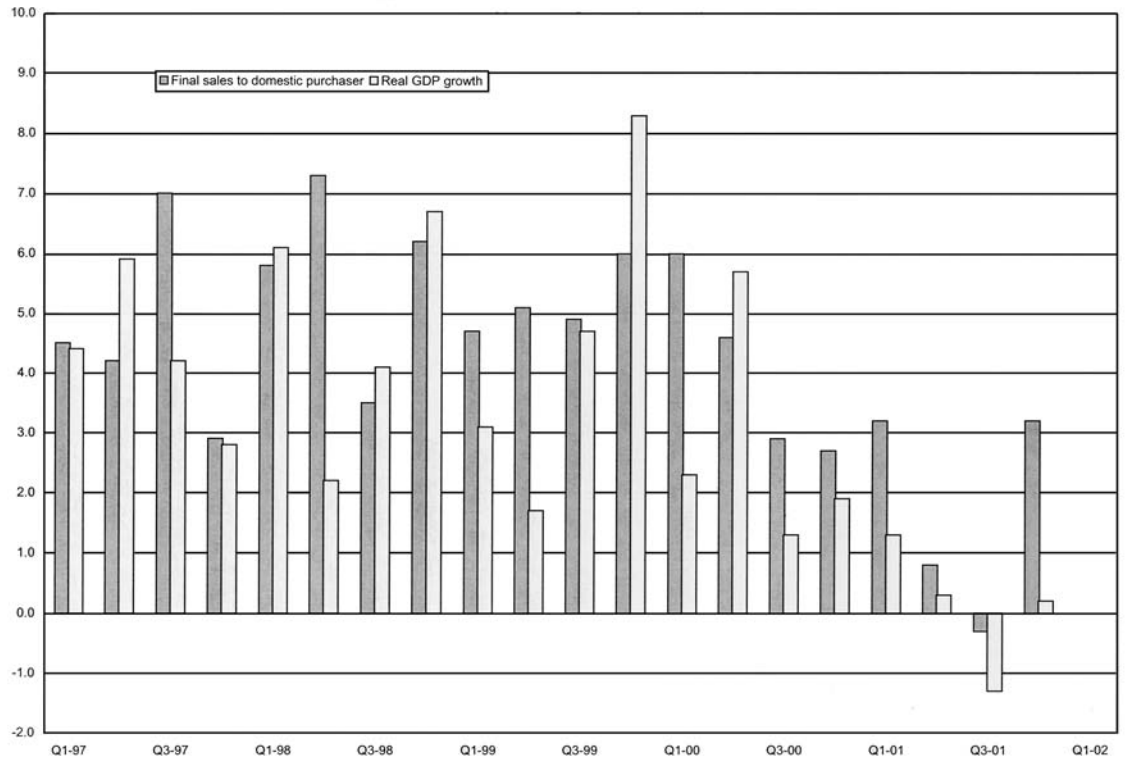
FED RATIONALE FOR 1999-2000 TIGHTENING MOVES

In early 2001, Fed officials were apparently smarting from mounting criticism that their previous 1999–2000 tighten-

ing actions were excessive, and that they failed to foresee that the economy would hit a wall at the end of 2000. Both Fed Chairman Greenspan and Fed Governor Meyer have sought to provide the rationale for the Fed's 1999–2000 tightening moves and explain the sudden late 2000 slump in U.S. economic growth. Specifically, in their important remarks on May 24, 2001, both the Fed Chairman and Fed Governor Meyer highlighted the bursting of the high-tech stock price bubble and rising energy prices as primary causes of the sudden economic downturn. Fed Chairman Greenspan observed that "policy cannot fully anticipate the buildup or ending of speculative excesses." He added that "[o]ur only realistic alternative is to lean against the economic pressures that may accompany a rise in asset prices, bubble or not, and address forcefully the consequences of a sharp deflation of asset prices."

In subsequent remarks to the National Association of Business Economics on November 27, 2001, Fed Governor Meyer noted, in expanding on reasons for the downturn, that there had been a "coincidence of forces" that caused the economy "to slow much more than the Fed expected or intended." Most important, according to Governor Meyer, "was the shock that hit the economy in late 2000 and early 2001 in the form of a reassessment of the profitability of producing and owning high-tech equipment." Governor Meyer went on to declare that "[t]his shock was manifest in both the financial markets and the real economy. It resulted in a sharp correction in equity prices in the technology sector—the bursting of the technology bubble—and at, the same time, it led to a sharp retrenchment in the demand for and production of high-tech equipment." Also cited by Fed Governor Meyer as part of the "coincidence of forces" that led to the economic slump, was, "[b]esides the effect of monetary policy, a sizable rise in energy prices over 1999 and 2000 and into early 2001 [that] contributed to an erosion of aggregate demand."

EXHIBIT 2.2 Real GDP Growth and Final Sales to Domestic Purchasers
Quarterly percent changes, SAAR (1997–2002)



As justification for the Fed's 1999–2000 tightening actions, which clearly contributed to the pronounced slowdown in the economy in 2000–2001, Fed Governor Meyer, in his May 24 remarks in Edinborough, Scotland, noted that "[f]rom my perspective it was essential to slow the economy at least to trend, preventing further increases in utilization rates. Indeed, some, including myself, believed it might be necessary to slow the economy to slightly below trend for awhile to further reduce the risk of inflationary imbalances."

In his May 24 remarks to the Economic Club of New York, the Fed Chairman offered a somewhat more sophisticated, though not inconsistent rationale for the Fed's tightening moves in 1999–2000. Basically, Chairman Greenspan chose a neo-Wicksellian theoretical framework for justifying the Fed's 1999–2000 tightening actions. It will be recalled that these Fed tightening moves consisted of three Fed rate hikes in 1999, and an additional three Fed rate hikes in 2000, with the last of these Fed rate increases in May 2000 amounting to 50 basis points, twice the normal size.

The central tenet of Wicksellian theory is that the "natural" rate of interest is the hypothetical cost of capital that would balance savings and investment in the economy at stable prices. (Knut Wicksell was a Swedish economist born in 1851.) This "natural" rate of interest might be approximated by a long-term Treasury or high-grade corporate bond yield. Applying this theory to contemporary circumstances, Chairman Greenspan observed that in 1999 a surge in investment outstripped what we could finance on a sustainable basis from domestic savings and funds we could attract from abroad. The short fall of savings to finance this surge in investment caused the real corporate bond yield to rise, opening a potentially inflationary gap over the Fed's prevailing target for the Federal funds rate. The surge in investment largely reflected century date change demands for computer equipment and software, and, more generally, near-euphoria regarding the rate of return imagined on capital investments in connection with the IT revolution. Chair-

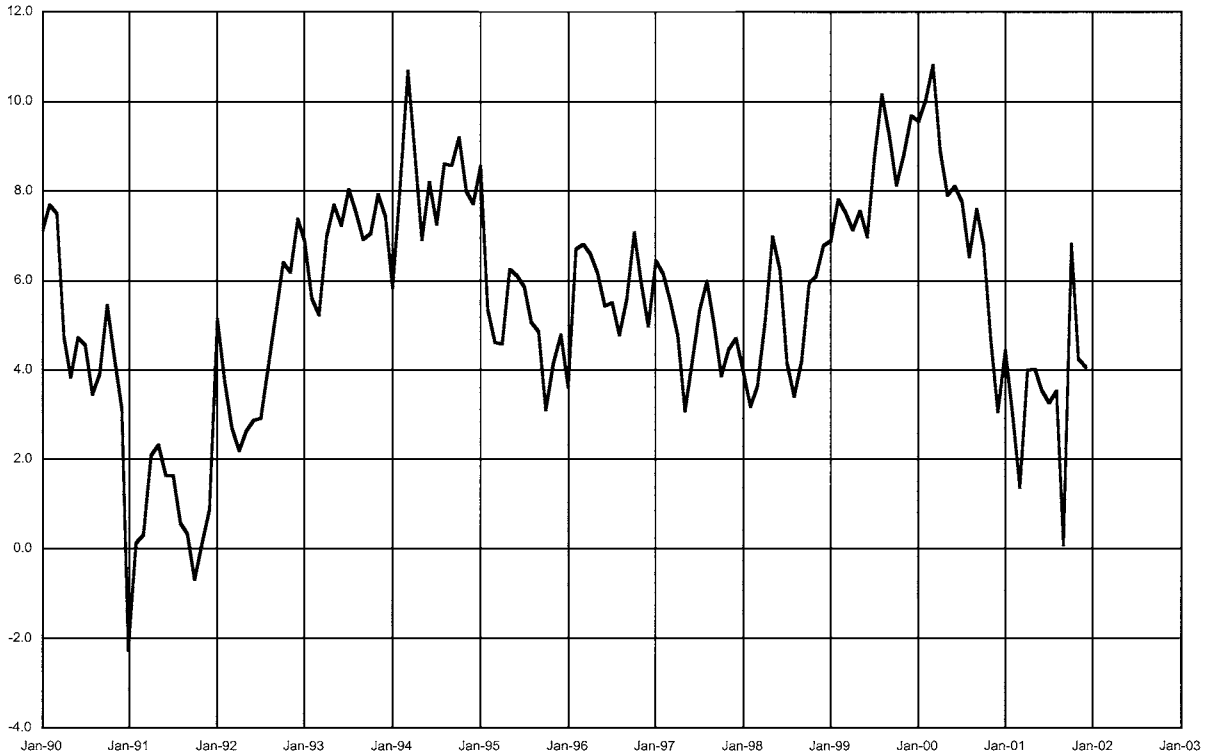
man Greenspan suggested that it was this widening gap by which the real corporate bond yield exceeded the Fed's prevailing funds rate target that triggered the Fed's rate hikes in 1999–2000. Alternatively, for the Fed to have maintained an unchanged Federal funds rate target in these circumstances would have required a major and potentially inflationary Fed infusion of liquidity into the financial system.

In sum, regardless of how convincing the Fed's rationale for its 1999-2000 tightening actions may have been, the harsh reality is that it went too far, and then waited too long to reverse course. At the very least, the outsized Fed rate hike in May 2000 was one too many. Indeed, through late 2000 we were still seeing the byproducts of Fed tightening as reflected in an increase in credit-risk spreads in the bond market and a tightening of credit standards at banks, which undoubtedly contributed to the latest slump in economic growth. Moreover, many critics argue (with hindsight) that the Fed should have reversed course and started easing perhaps as early as October 2000, or at the latest November, as signs of a pronounced weakening in domestic demand growth were clearly in evidence.

ESSENTIALS OF THE ECONOMIC SLOWDOWN

Importantly, as stock prices began a pronounced decline over most of 2000 and into 2001, a diminution of the wealth effect eventually caused an unexpectedly sharp slowing in the rate of growth of consumer spending at retail outlets beginning in mid-2000, and intensifying later in the year (see Exhibit 2.3). Also serving to depress consumer spending was an increase in energy prices, which acted like a tax increase on consumers. As demand unexpectedly slumped, businesses experienced an unintended buildup in inventories of goods and supplies. As businesses sought to trim these unwanted inventories, manufacturing output and employment contracted in the closing months of 2000 and early months of 2001.

EXHIBIT 2.3 Retail Sales
Year-over-year percent change (1990–2002)



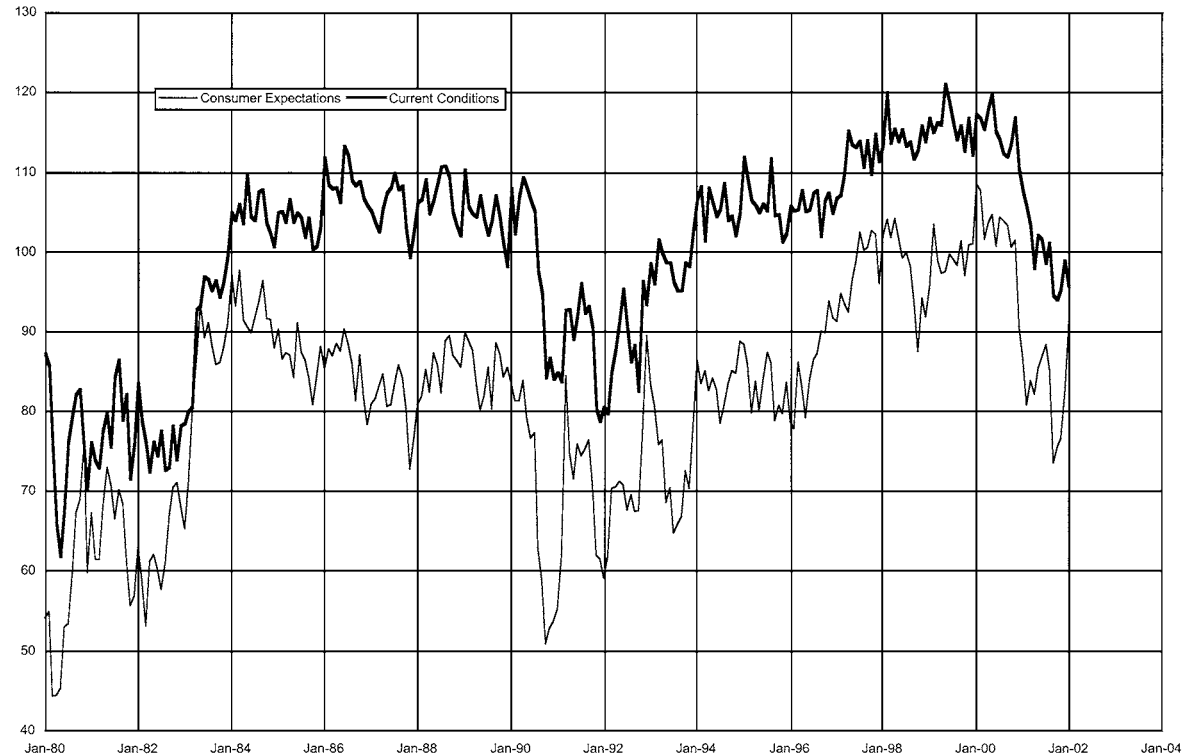
Business also sought to cut back on a previously furious "double digit" pace of investment spending on high-tech equipment. An extended period of high-tech over-investment had taken place against the background of extreme optimism regarding the rate of return on business high-tech investments associated with the IT revolution, together with the heavy requirements involving new computers and other information processing equipment leading up to the century date change. The announcements of layoffs in connection with business efforts to cut costs, trim unwanted inventories, and cut back on investment spending were instantly communicated to workers still on the job, thus shaking their confidence about the future.

According to the survey of consumer sentiment by the University of Michigan, the initial deterioration in consumer attitudes reflected mainly a decline in expectations of future business conditions and job prospects (see Exhibit 2.4). In contrast, consumers initially viewed current conditions and the prevailing job situation in a relatively favorable light. Specifically, consumers were encouraged by the favorable impact of low interest rates on current business conditions, especially the positive impact of low mortgage rates on refinancings and the housing sector.

The deterioration in consumer expectations apparently reflected the widespread reports of worker layoffs. Although most workers still held jobs, at least initially, their expectations about future job prospects were jolted by reading about the layoffs of other workers.

After falling sharply, consumer sentiment stabilized in the spring and early summer of 2001. Subsequently, however, a crumbling of consumer sentiment appeared to start in early September, on the heels of extremely weak August employment data. In August, there was an unusually large spurt in the unemployment rate to 4.9% from 4.5%. As a result, within the total consumer sentiment index, both the current conditions component and the expectations component registered pronounced declines in early September—before the terrorist attacks on the United States.

EXHIBIT 2.4 University of Michigan Consumer Sentiment Levels (1980–2002)



Even more strikingly, the Conference Board's consumer confidence index plummeted to 97.6 in September from a downward-revised 114.0 in August. In October the consumer confidence index plunged further to 85.5, followed by another decline to a revised 84.9 in November. Originally, the November consumer confidence index was estimated at 82.2.

But, in contrast, the consumer sentiment index rose to 82.7 in October from 81.8 in September. Moreover, in a sign that the post-terrorist attack slump in consumer attitudes and spending might not turn out as severe as feared, consumer sentiment rose to 83.9 for November, and then climbed higher to 85.8 in early December. For all of December, the consumer sentiment index edged up further to 88.8, and then spurted still higher to 94.2 in early January 2002. In December, the consumer confidence index finally rebounded to 93.7 from November's revised 84.9 reading, raising the hopes that recovery would begin no later than mid-2002.

As a rule, however, caution should be used in interpreting these sentiment and confidence measures immediately after shocks such as the September 11, 2001, terrorist attacks. During such periods, these confidence and sentiment indexes may become less accurate predictors of spending, as the conflicting emotions of fear, on one hand, and patriotism, on the other hand, run high. Nevertheless, the farther we get beyond the stunning September 11 terrorist attacks, the more meaningful readings on consumer sentiment and confidence should again become as indicators of consumer spending intentions.

BATTERED HIGH TECH SECTOR

The collapse of the previously high-flying, credit-driven technology sector has reinforced the 2000–2001 downturn. In particular, it was difficult to predict how fast high-tech companies, which had here-to-for only known good times, would be able to adjust to suddenly softening demand. In addition, there had been significant business over-investment in high-

tech capital equipment driven by an unrealistically high expected rate of return on investment in capital equipment associated with the IT revolution, in general. Also, there was the necessity to invest heavily in new high-tech equipment in 1998 and 1999 to cope with the century date change, in particular.

In essence, high-tech businesses were forced to cut back on investment spending after an extended period of over-investment based on unrealistically optimistic expectations regarding revenues and profits. For many high-tech companies the harsh reality was that these hopeful projections of revenue and earnings growth would simply never be realized.

In early 2001, the technology sector faced a major over-supply situation in which inventories were ballooning as demand, both domestically and abroad, was unexpectedly weakening. At the same time, pricing power was eroding, profit margins were shrinking, and excess capacity was mounting. This situation was complicated by the meltdown in technology stocks that has closed-off outside financing for many technology companies.

Disturbingly, in 2001, high-tech telecommunications companies, formerly starry-eyed with the promise of providing high-speed Internet connections, were failing in record numbers. After piling up some $650 billion in debt in the preceding few years, losses to investors from the failure of these companies were expected to approach the $150 billion government cleanup of the savings-and-loan industry a decade earlier. Moreover, the assets of the troubled telecom companies will likely be worth little, as the restructurings play out. Because the industry's high-tech gear becomes outdated at such a rapid clip, bond investors may not be able to salvage much more than 10 cents on the dollar, with banks also taking a hit. Past bankruptcy waves, such as those that swept the rail, retail, steel and, more recently, movie theater businesses left bond holders with about 40 cents on the dollar, while bank lenders usually got most of their money back.

By September 2001, new orders for nondefense high-tech capital equipment had fallen by a stunning 50% from their peak level. Of some encouragement, however, these orders posted increases in October and November 2001 and January 2002.

BROADER PROBLEMS FACED BY THE FED

In his January 25, 2001 congressional testimony, Fed Chairman Greenspan observed, more generally, that whether the unprecedented current downturn led by the business sector deepens into recession depends on whether there is a "breach of the fabric of consumer confidence." In his subsequent semi-annual testimony on February 13, 2001, to the Senate Banking Committee, Chairman Greenspan expanded on this point in noting that there may not be a seamless transition from high, to medium, to low confidence on the part of consumers, businesses, or investors. The Fed Chairman warned that one big risk is that "consumer confidence could crumble like a dam being breached." With an uncharacteristic literary flair, he added that "the torrent carries with it most remnants of certainty and euphoria that built up in earlier periods." The Fed Chairman's concern with the potential crumbling of consumer confidence was more prophetic than he could ever have imagined; on the heels of the September 11 terrorist attacks uncertainty was heightened and consumer and business confidence was deeply shaken, at least temporarily.

In dealing with this volatile human confidence factor, and its potential to severely depress spending, the only solution for central bankers is to be aggressive in pursuing a countercyclical policy approach. Basically, in these circumstances, Fed interest rate cuts must be sufficient to arrest the deterioration in confidence at least to the extent that it is reflected in weaker spending. The hallmarks of an effective policy approach are good timing, deliberate but sizeable Fed

rate cuts, and effective Fed communications with the financial markets and the public at large.

Importantly, in dealing with a virtually unprecedented situation in which the business sector led the 2000–2001 downturn, the Fed Chairman and his fellow policymakers faced uncertain developments at two critical junctures as 2001 unfolded. At the first juncture, in the spring of 2001, the primary issue was whether consumer spending and housing activity, which usually have led the economy into recession, could be cushioned from the slumping business sector. Actually, consumer spending and housing activity held up fairly well in early 2001, despite a negative equity wealth effect, still-high energy prices, heavy consumer debt burdens and mounting worker layoff announcements. Undoubtedly, low mortgage rates helped buoy housing activity.

At the second juncture, in the summer of 2001, the critical issue was whether the lagged effects of Fed interest rate cuts and the mailing of tax rebate checks would boost aggregate demand sufficiently to start a recovery later in 2001. Disappointing July and August economic data kicked off a vigorous debate between optimists and pessimists. The optimists emphasized the rapid, computer-driven speed of adjustment in business inventory rebalancing and the aggressive pull-back in capital spending. Heartened by the unexpectedly strong 2.5% second-quarter 2001 increase in nonfarm productivity growth (later revised to a 2.1% increase), the optimists anticipated a fairly prompt return to the economy's elevated growth "potential." In contrast, the pessimists questioned the rapid speed of adjustment theory, holding instead that the speed of adjustment, especially in employment and hours worked, was no more rapid than in the 1990–1991 recession. The pessimists also emphasized the economy's near-term vulnerability to declining corporate profits, a likely further weakening in the labor market, and still high consumer and business debt burdens. The pessimists' case was bolstered by extremely weak August employment data, which

helped trigger the already noted crumbling of consumer sentiment in early September, prior to the terrorist attacks.

REAL CAUSES OF RECESSIONS

Regardless of how hard they try, economists have not been able to pinpoint the true causes of recessions. To be sure, we know that certain leading indicators such as a pronounced flattening in or increasingly pronounced inversion of the yield curve, as well as stock market declines often precede recessions. But we also know that financial markets themselves can be fickle; they do not always behave in a rational manner that consistently foreshadows economic downturns. The upshot is that we may not be able to pinpoint the ultimate causes of recessions because they are primarily psychological and difficult to measure.

It is, however, quite conceivable that the beginning of the end for the latest record-long economic expansion came with the bursting of the high-tech stock price bubble in March 2000. The high-tech stock rally started in earnest in 1995 as a rational response to the great promise of the IT revolution; but in its later stages, beginning in the fall of 1998 and continuing through early 2000, the high-tech bubble became increasingly divorced from reality. "Momentum" trading became the watchword; it was the modern-day manifestation of the "greater fool theory." The few voices of caution fell on deaf ears.

To the contrary, as a participant in the speculative frenzy, you are willing to pay any price for a high-tech stock because you are convinced, owing to promised upside "momentum," that you can sell it to a "greater fool" at a higher price. Traditional valuation measures or earnings prospects were simply ignored, at least until the bubble broke in March 2000. The bottom line is that the high-tech bubble was destined to break; once it broke, and the NASDAQ suffered a 60% decline in the ensuing 12 months, psychology was shattered. Nearly everyone felt the jolt of this widely publicized stock market collapse.

Interestingly, the economic downturn was also foreshadowed by an inverted yield curve in early 2000. In contrast with its usual mildly upward sloping shape, an inverted yield curve is characterized by a situation in which the level of short-term rates exceeds that of long-term interest rates. In such a situation of negative interest margins and usually declining profits, commercial banks and other lenders that borrow short term and lend longer term tend to tighten-up on the availability of funds to borrowers.

In a recent op. ed. article in the *New York Times*, Yale professor Robert J. Schiller, who is a proponent of the offshoot discipline of behavioral economics, in which irrational behavior can at times trump usually assumed rational behavior, cited earlier writings on the important role of psychology in economic fluctuations by the renowned British economist A.C. Pigou. In 1929, Pigou wrote that psychological factors account for about half of fluctuations in industrial production. Pigou spoke of "psychological interdependence," "sympathetic or epidemic excitement," and "mutual suggestion." This brings to mind a sort of irrational herd psychology that may at times become increasingly divorced from reality.

Today, these hard-to-measure psychological factors are just as relevant as in 1929. Recessions are generally related to a decline in confidence. As confidence erodes, consumers are less willing to spend, and businesses are less willing to invest in new plant and equipment, or to employ new workers.

The latest illustration of this psychology-driven process can be found in late 2000 and early 2001. Most striking was the abruptness of the decline in confidence in late 2000 and the related intensification of a slowdown in spending that had started in mid-2000. Economic growth simply hit a wall late in 2000. In his semi-annual February 13, 2001 congressional testimony Chairman Greenspan observed that in response to such a downturn "humans prefer to withdraw from action, postpone decisions, and generally hunker down, waiting until a renewed, more comprehensive basis for action emerges."

Although one can argue that under normal conditions the predominant direction of causation most likely runs from the economy to psychology, the importance of psychology as the primary cause of recessions was vividly demonstrated in the aftermath of the September 11, 2001 terrorist attacks. Consumer sentiment, which had already been deteriorating in the summer, was further shaken after the terrorist attacks and both individuals and businesses cut back on their spending, at least temporarily. Initially, air travel fell by more than 30%, though it subsequently recovered somewhat. In addition, retail sales fell an unexpectedly large 2.4% (subsequently revised to a decline of 2.2%) in September, following a revised 0.2% increase in August. The August retail sales increase was originally estimated at 0.4%. In response to the post-terrorist attack slump in demand, businesses turned decidedly more cautious. According to a *New York Times* report, surveys showed that eight days after the terrorist attacks (September 19) 87% of companies said it was too soon to decide whether to cut their investment spending. But only a week later (September 26), 53% had decided to cut their investment spending, some by 15%–20%.

In contrast with the sharp, post-terrorist attack decline in the business sector, consumer spending, especially on motor vehicles, has held up fairly well, in a low interest rate environment. Interestingly, the surprising strength in October 2001 motor vehicle sales reflected extremely attractive financing incentives made possible largely by aggressive Fed rate cuts. However, the terrorist attacks have prompted people to stay and spend closer to home; the economic downturn has also prompted them to spend less on luxury items and more on practical goods. At the same time, there is likely to be a massive post-terrorist attack reallocation of business capital spending away from sectors such as telecommunications, where demand is weakening and profitability declining to other sectors such as health care, protection, safety and security, where demand is strengthening and profitability increasing.

EXHIBIT 2.5 Business Cycle Expansions and Contractions, 1900–1991

Business Cycle Reference Dates		Duration (in months)	
Trough	Peak	Contraction (Trough from Previous Peak)	Expansion (Trough to Peak)
December 1900	September 1902	18	21
August 1904	May 1907	23	33
June 1908	January 1910	13	19
January 1912	January 1913	24	12
December 1914	August 1918	23	44
March 1919	January 1920	7	10
July 1921	May 1923	18	22
July 1924	October 1926	14	27
November 1928	August 1929	13	21
March 1933	May 1937	43	50
June 1938	February 1945	13	80
October 1945	November 1948	8	37
October 1949	July 1953	11	45
May 1954	August 1957	10	39
April 1958	April 1960	8	24
February 1961	December 1969	10	106
November 1970	November 1973	11	36
March 1975	January 1980	16	58
July 1980	July 1981	6	12
November 1982	July 1990	16	92
March 1991	March 2001	8	120

Source: National Bureau of Economic Research, Inc.

The bad news is that this kind of behavior helps explain why some downturns may be difficult to reverse. The good news is that the depressing effect of major crises are typically sharp but short-lived. Moreover, it is important to note that recessions have become shorter in duration in the post-World War II period because of automatic fiscal policy stabilizers and, especially, increasingly well-executed countercyclical monetary policy actions. The average length of all peacetime U.S. recessions since World War II is 11 months, only slightly more than half as long as the 20-month average length of prewar recessions since 1900 (see Exhibit 2.5). Postwar

peacetime expansions have lasted a much longer 43 months on average, nearly twice as long as the 26 month average length of prewar expansions. This calculation of the average duration of postwar peacetime expansions does not include the latest, record-long 120-month expansion.

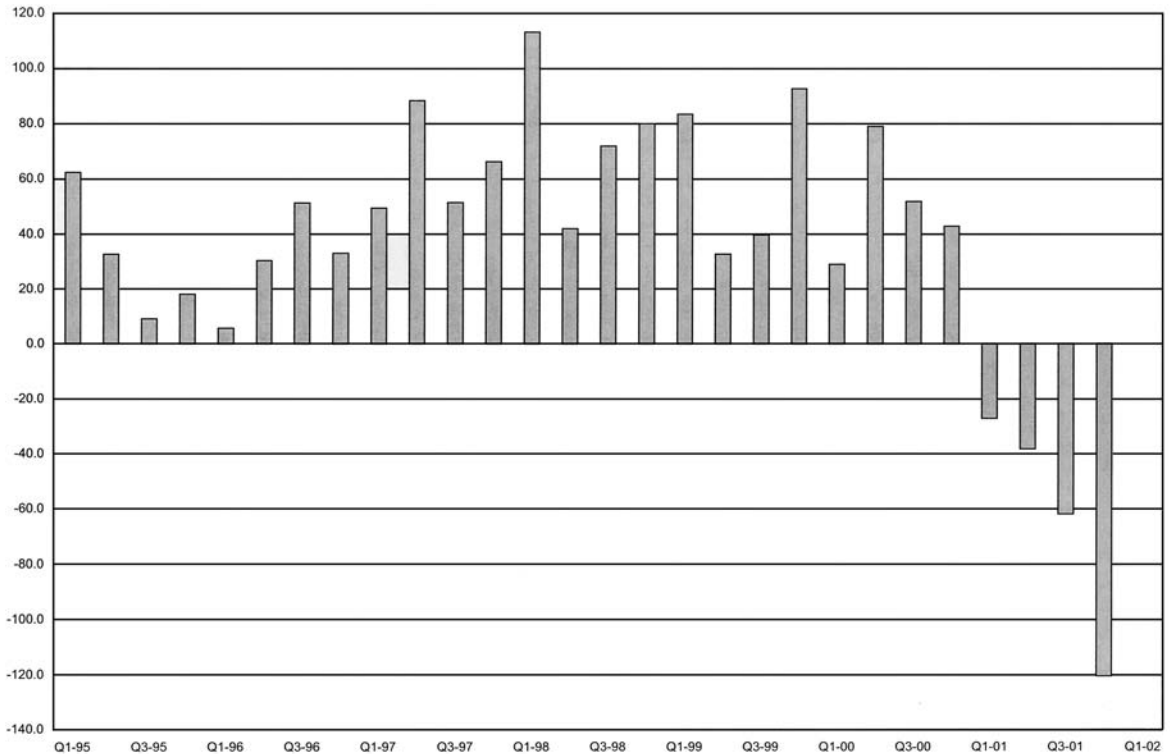
Economists at the NBER (National Bureau of Economic Research), the organization that officially dates recessions, say that, based on the behavior of four key indicators, including output, employment, trade and income, the economy actually entered recession in March 2001. A more persuasive argument, however, is that although the economy was already poised on the brink of recession, it was not pushed over the edge into a full-blown recession until after the September 11 terrorist attacks.

"JUST-IN-TIME" DECISION-MAKING

A major contemporary challenge faced by the Fed is computer-aided "just-in-time" business decision-making, made possible by the IT revolution. The good news is that major inventory corrections and even adjustments in capital spending now take place more rapidly in a more compressed time frame than in the past; the bad news is that the jolt to the economy is more concentrated and unless countered by aggressive Fed easing actions, could trigger a self-reinforcing economic downturn.

The 2000–2001 downturn revealed these more rapid and compressed business decisions to rebalance inventories and curtail investment spending on new equipment and software, after a prolonged period of over-investment. Amazingly, it appeared that the business inventory correction was moving ahead at full speed as the change in constant-dollar inventory stocks actually declined by $27.1 billion in the first quarter of 2001, $38.3 billion in the second quarter, $61.9 billion in the third quarter of 2001 and a huge $120.0 billion in the fourth quarter. In contrast business inventory accumulation had soared by $78.9 billion and $51.7 billion, as recently as the second and third quarters of 2000, respectively (see Exhibit 2.6).

EXHIBIT 2.6 Change in Business Inventories
Change in billion of 1996$, SAAR (1995–2002)



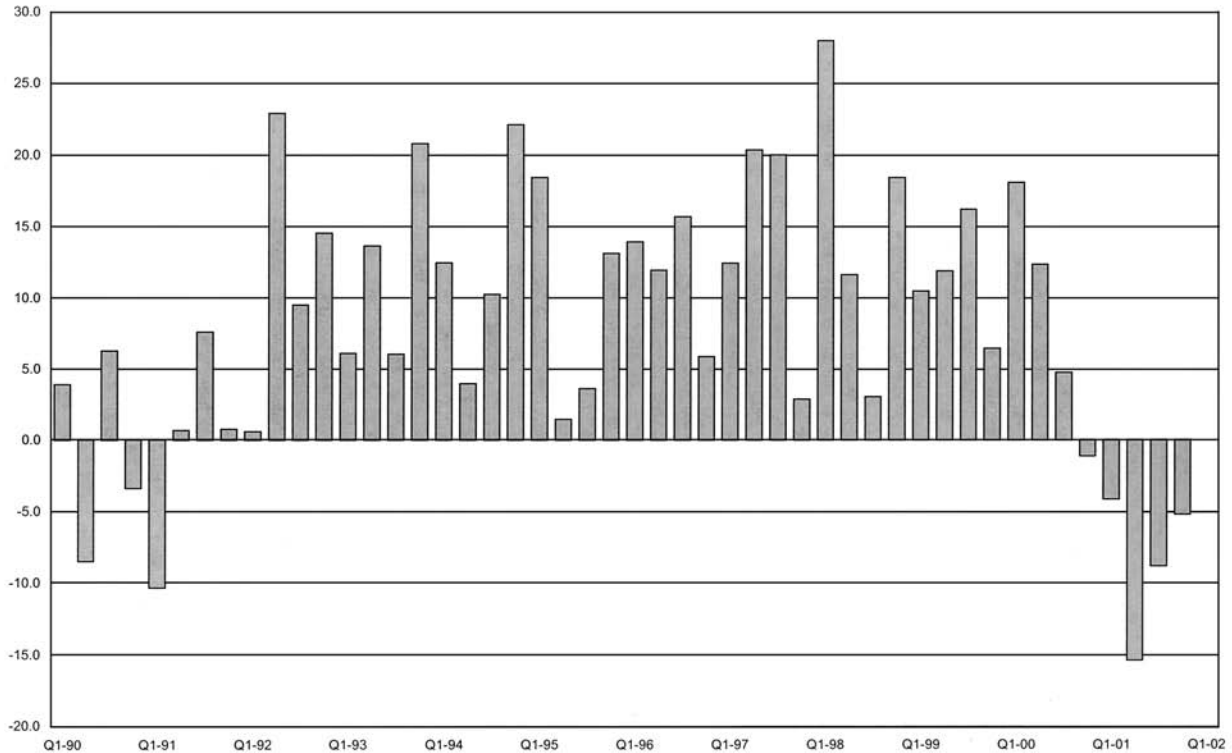
In his July 18, 2001 semi-annual congressional testimony, Fed Chairman Greenspan cautioned, however, that the inventory rebalancing in the high-tech sector would take awhile longer especially in the case of telecommunications, where major liquidations were yet to occur. Obviously the huge $61.9 billion third-quarter and $120.0 billion fourth quarter declines in business inventory accumulation reflected in part this effort at rebalancing high-tech inventories, as well as business efforts to trim more traditional inventory stocks such as motor vehicles.

Similarly, against the background of weakening sales, declining profits, deteriorating cash flow and mounting excess capacity, businesses have been unusually quick to curtail investment spending, particularly on new equipment and software. In the second quarter of 2001, capital spending on equipment and software declined by a hefty 15.4% in contrast to a 12.4% double-digit increase only four quarters earlier. In the third quarter of 2001, there was another large 8.8% decline in business fixed investment in equipment and software, followed by another smaller 4.8% decline in the fourth quarter.

The weakening in business-fixed investment in equipment and software initially became evident in the third quarter of 2000 when the rate of increase slowed to 4.7% (see Exhibit 2.7). Subsequently, business fixed-investment in equipment and software actually declined by 1.1% and 4.1% in the fourth quarter of 2000 and the first quarter of 2001, respectively.

Partly in recognition of the business sector's "just-in-time" decision-making process, the Fed appropriately sped up its countercyclical policy adjustments in 2001. The Fed's policy moves have been tailored to the business sector's more rapid decision-making, in a more compressed time frame, with respect to inventories and capital spending. This is an excellent example of the Greenspan Fed's commendable adaptability in its monetary policy approach.

EXHIBIT 2.7 Business Investment Spending on Equipment and Software
Quarterly percent changes, SAAR (1990–2002)



It will be recalled that Fed Chairman Greenspan was the first among major policymakers to recognize the far-reaching consequences of the IT revolution for economic decision makers. As far back as his July 1997 Humphrey-Hawkins semi-annual congressional testimony, for example, the Fed Chairman observed that producer capacity (plant and equipment) can adapt and expand more expeditiously than in the past to meet demands. Specifically, Chairman Greenspan noted that "[i]n recent years, technology has engendered a significant compression of lead times between order and delivery for production facilities. This has enabled output to respond increasingly faster to an upsurge in demand, thereby decreasing the incidents of strains on capital capacity and shortages so evident in earlier business expansions."

DEFINITIONS OF KEY TERMS

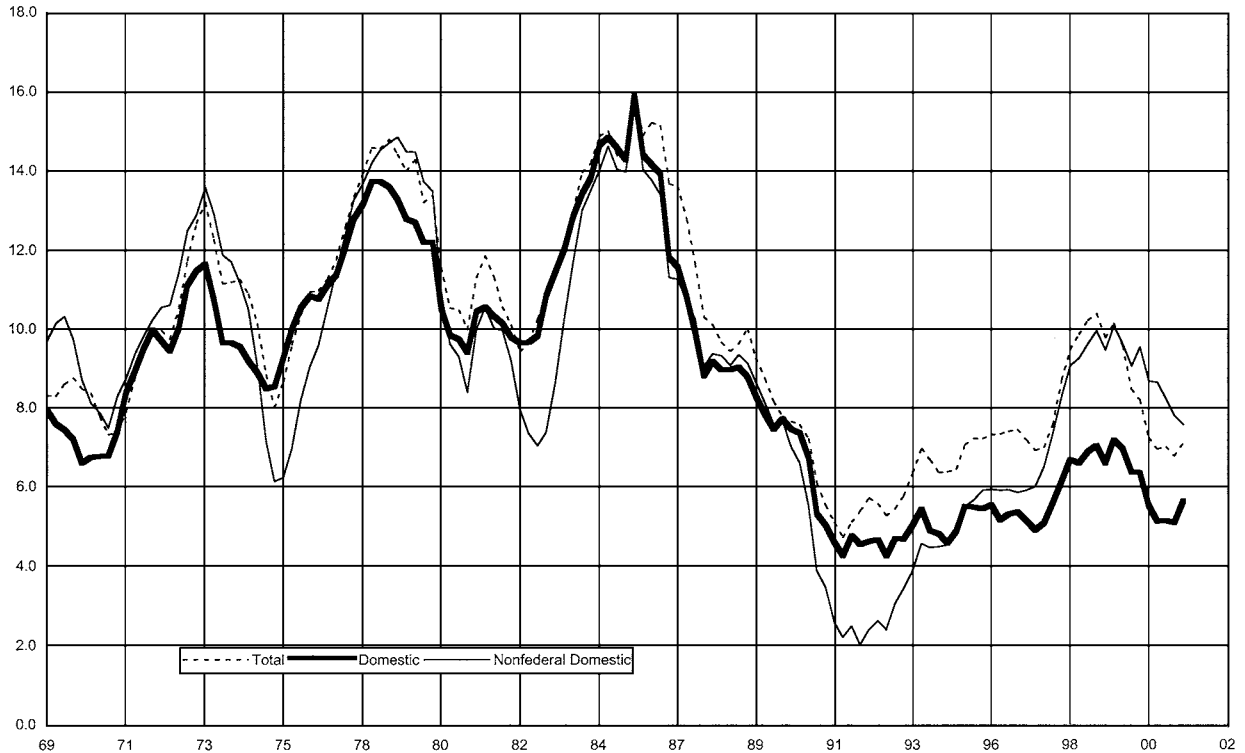
In the longer-run, the Fed's main task is to provide financial conditions that foster maximum sustainable growth. As already noted, capital markets have come to dominate commercial banks as the main source of credit supplied to individuals and businesses in support of their spending. The primary nonbank lenders and investors in the capital markets include Fannie Mae, Freddie Mac, mutual funds, hedge funds, pension funds, insurance companies and finance companies. The following definitions of key terms are useful to keep in mind:

- *Financial conditions* can be defined as the terms on which borrowers raise funds in the capital markets and from commercial banks. "Tight" financial market conditions mean that individuals and businesses find it costly and difficult to obtain funds in the capital markets through bond or stock offerings, the issuance of short-term commercial paper, or from loans by commercial banks. This would be reflected, for example, in rising prime and short-term commercial paper rates, increasing corporate bond yields, rising mort-

gage rates and falling stock prices. There would also be an increase in credit-risk spreads in the bond market and a tightening of credit standards at banks. Conversely, "easy" financial market conditions mean that borrowers can obtain funds in the capital markets or from commercial banks on favorable terms, namely at low cost with abundant availability.

- *Capital markets* can be defined as markets for bonds, stocks, foreign exchange or other financial instruments. In effect, these capital markets serve the function of intermediating funds from lenders and investors, on one hand, to borrowers seeking to raise funds, on the other hand, both domestically and internationally. The cost of capital refers to the terms on which borrowers raise funds in the capital markets through equity or debt offerings. Ideally, capital markets work best when they are free from burdensome regulation, involving large numbers of buyers and sellers and with efficient price discovery and full disclosure. Conceivably, the element of disclosure may even be broadened to include that of central bank policy intentions.
- *Credit availability* can be defined as the supply of credit made available from commercial bank and nonbank sources to individual, corporate and government borrowers. The Fed's "credit" aggregate measure is defined as domestic nonfinancial debt outstanding, including the debt offerings of individuals, corporations, State and local governments and the Federal government (see Exhibit 2.8).

EXHIBIT 2.8 Nonfinancial Debt
Year-over-year percent change (1969–2002)



CHAPTER 3

Potential Growth and Seven Rules for Central Bankers

A country's growth "potential" is supply-determined and thus outside direct central banker control. "Potential" supply growth is determined by the expansion of an economy's capacity to produce goods and services. Specifically, it can be defined as the sum of labor force growth plus growth in productivity (output per worker hour). One or twice a century a country may be lucky enough to experience a permanent acceleration in productivity growth, usually attributable to a combination of rapid technological innovation and a high rate of business capital accumulation.

In the 1990s, the IT revolution triggered a boom in business spending on high-tech equipment, starting in the second quarter of 1992, which paid off in an acceleration in structural productivity growth, starting in 1996. Thus, in the second half of the 1990s, the Greenspan Fed came to focus not only on aggregate demand growth, but also to a greater than usual extent on growth in potential supply which had apparently been boosted recently by that rare permanent increase in structural productivity growth. For this reason, Fed Chairman Greenspan was more tolerant of unexpectedly high real GDP growth during the 1996–2000 period than some thought prudent at that time.

In his semi-annual congressional testimony on February 13, 2001, Fed Chairman Greenspan proclaimed that there was persuasive evidence that there had been a major acceleration in U.S. structural productivity growth during the 1995–2000 period. This rare event, which a country may experience only once or twice a century, can boost the standard of living for most people. The Fed Chairman declared that evidence from the second half of 2000 confirms the increase in structural productivity growth. He noted that during this period productivity held up well, despite emerging weakness in most parts of the economy. Fed Chairman Greenspan reasoned that if the spurt in productivity growth were only cyclical (temporary), rather than structural (permanent), productivity would have fallen more sharply than it actually did in the second half of 2000, when economic growth plummeted. The argument that the gain in productivity growth is structural is also supported by the fact that the most impressive productivity gains came late in the economic expansion (1996–2000); in contrast, cyclical productivity gains typically come early in expansions.

To be sure, the U.S. Bureau of Labor Statistics (BLS) has recently revised down its estimates of productivity growth for 1999 and 2000. Specifically, BLS estimates of 1999 productivity growth were revised down to 2.3% from 2.6% while estimates for 2000 were revised even more sharply lower to 3.0% from 4.3%. Nevertheless it still appears that structural productivity growth may have climbed to upwards of 2.5%–3% in the 1995–2000 period, up from 1%–1.5% in the quarter-century preceding 1995.

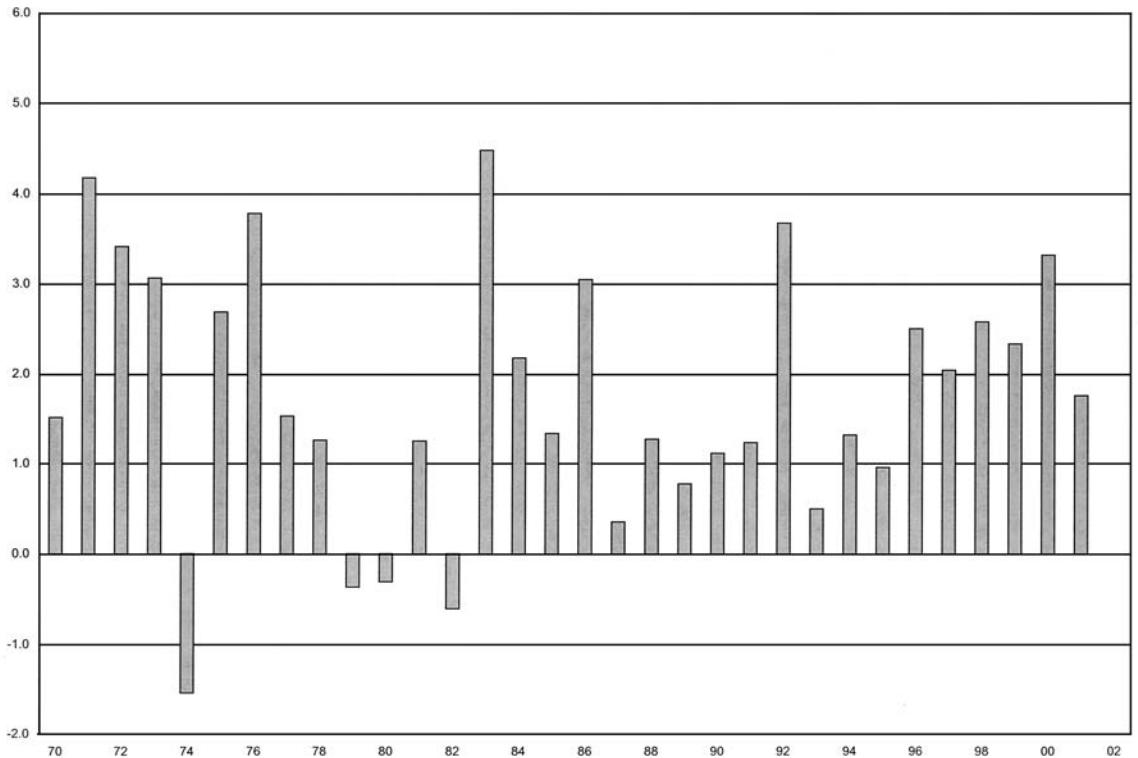
In the current decade, however, less favorable conditions may lower the pace of productivity growth to 2%–2.5%. In particular, greater perceived risks have led to a significant pullback in business investment spending, especially on high-tech equipment. At the same time, in the wake of the terrorist attacks, businesses are shifting resources away from boosting efficiency and toward improving security.

RARE INCREASE IN STRUCTURAL PRODUCTIVITY

The past decade's welcomed though rare jump in structural productivity growth stemmed from a high-tech business investment boom. Specifically, businesses engaged in heavy capital-deepening spending on new equipment embodying the latest information processing and communications technologies, beginning in 1992. The term "capital deepening" describes the increase in productivity as a result of an increase in the capital-to-labor ratio, or an increase in the amount of capital relative to labor. Not only did new high-tech businesses invest heavily in such new equipment and software, but also existing businesses sought to restructure and invest heavily in high-tech equipment in order to operate smarter, leaner, and more efficiently. The double-digit growth in business fixed investment, starting in the early 1990s, paid off handsomely in a surge in structural productivity growth during the 1995–2000 period (see Exhibit 3.1).

As already noted, a country rarely experiences a substantial increase in structural productivity growth. Such an increase in structural growth will boost an economy's supply-determined growth "potential." Specifically, an economy's "trend" growth "potential," or how fast it can grow at full employment, is determined by labor force growth plus growth in productivity. During the 1995–2000 period, U.S. "trend" growth "potential" was estimated by most analysts at 3.5%–4%, up from 2%–2.5% during the quarter-century preceding 1995. In the current decade, with an increase in perceived risk following the September 11 terrorist attacks, U.S. growth potential is estimated at a somewhat lower 3%–3.5%.

EXHIBIT 3.1 Nonfarm Productivity Growth
Annual average, year-over-year percent change, SAAR (1970–2001)



AVOIDING IMBALANCES

The Greenspan Fed's primary aim has been to avoid imbalances by keeping aggregate demand growth in line with this productivity-enhanced growth in potential supply. In the latter part of 1999 and early 2000, however, Fed Chairman Greenspan perceived that wealth-induced increases in aggregate demand exceeded growth in potential supply, even after allowing for the increase in structural productivity growth. Such an imbalance typically triggers Fed countercyclical rate hikes, and this was no exception.

In 2001, in contrast, the Fed Chairman and his fellow policymakers perceived that demand growth was falling short of growth in potential supply. This triggered one of the most concentrated series of Fed rate cuts on record, consisting of eleven Fed rate cuts, starting in January and ending in December of that year, aimed at countering weakening aggregate demand growth.

The late-1990s improvement in productivity growth largely reflected already noted business capital-deepening investment in equipment embodying the latest technologies. This rapid technological innovation was associated with the information technology (IT) revolution. The last time a major outburst in technological innovation occurred in the U.S. was in the 1920s when there were major advances in such areas as autos, radio, television, and air travel. These advances in 1920s technology provided the foundation for economic growth and increased profits over the next 50 years or more.

FACTORS BEHIND PRODUCTIVITY IMPROVEMENT

Historically, the key factors behind rare increases in structural productivity growth include a high rate of business investment spending and rapid technological innovation, both of which were in evidence during much of the 1990s. Historical examples of rapid technological innovation are

electrification in the 1890s and the already noted high rate of technological innovation in the 1920s. In addition, a boost in structural productivity growth requires effective education and job training programs that improve the quality of the labor force. Also, an economy's growth potential can benefit from solid labor force growth. Labor force growth is, in turn, derived from total population growth. Projections of population growth are of course based on estimates of such things as birth and death rates and the rate of net immigration, the latter greatly benefiting the U.S. To derive the rate of labor force growth from population growth it is necessary to determine the number of people of working age (16–64) and the labor force participation rate.

Suspecting correctly that a permanent surge in productivity growth, arising from the high-tech business investment boom, had lifted the noninflationary "speed limit" for real GDP growth, Chairman Greenspan was more tolerant of rapid growth during the 1996–2000 period than many thought prudent at that time. In his July 1996 Humphrey-Hawkins semi-annual congressional testimony, Greenspan hinted that he favored this new growth-oriented approach when he declared that he would "welcome" faster economic growth provided that it was "sustainable." He went on to state that "we do not have firm judgements on the specific level or growth rate of output that would engender economic strains. Instead we respond to evidence that these strains themselves are developing."

REJECTION OF RIGID ASSUMPTIONS

In this connection, Greenspan appropriately not only rejected rigid assumptions concerning how high strain-inducing output growth might be, but also, more importantly, he challenged rigid estimates of Nonaccelerating Inflation Rate of Unemployment (NAIRU). In the early 1990s, the academic community estimated NAIRU at approximately 6%. In the-

ory, the unemployment rate could not be pushed below this level without kicking off increased wage and price pressures. In fact, this NAIRU estimate proved to be too high. By the late 1990s NAIRU had fallen perhaps as low as 4.5%. Most importantly Fed Chairman Greenspan was willing to tolerate far higher output growth and a lower unemployment rate than generally thought acceptable at that time.

In sum, the essence of Fed policy is to provide the financial conditions necessary to keep the economy on a sustainable growth path. In doing so Fed policymakers seek to keep aggregate demand growth in line with growth in potential supply to avoid imbalances or undue strains on labor or product markets. Excessive domestic demand growth not only can exert strains on the labor market but can also boost imports and thus increase the U.S. trade deficit.

On the supply side, taking into account broader Federal budget implications, the faster the economy's noninflationary growth "potential," the larger the projected increase in Federal revenue, and therefore the greater the potential annual Federal budget surpluses. But this, of course, assumes that actual real GDP growth can keep pace with its newly elevated noninflationary "speed limit." Actual real GDP growth slowed precipitously in the third and fourth quarters of 2000, falling to 1.3% and 1.9% respectively. In the first quarter of 2001, real GDP growth eased back to 1.3%, before slowing further to 0.3% in the second quarter, and actually falling a revised 1.3% in the third quarter, followed by a moderate 1.4% increase in the fourth quarter. The important point is that real GDP growth continued for six consecutive quarters, from the second quarter of 2000 through the fourth quarter of 2001, at a pace far below the economy's estimated "speed limit" for real GDP growth.

Conditions in the current decade do not appear to be as favorable as the 1990s for sustaining the remarkable structural productivity gains. In the wake of the September 11 terrorist attacks, for example, Fed Chairman Greenspan expects that "[t]he level of productivity will presumably undergo a

one-time downward adjustment as our economy responds to higher levels of perceived risk, but once the adjustment is completed, productivity growth should resume at rates in excess of those that prevailed in the quarter-century preceding 1995." Although he shrewdly avoids giving his own estimates in public, this suggests that the Fed Chairman sees productivity growth in the current decade settling somewhat lower to perhaps an annual average of 2%–2.5%, down from 2.5% –3% in the 1995–2000 period, but above the pace of 1%–1.5% for the quarter-century preceding 1995. Helping to shore up productivity growth in the current decade is, in Fed Chairman Greenspan's view, the fact that businesses have only started to exploit the cost savings available from increased technology, which still offers a very high rate of return on investment. Adding an assumed 1% in labor force growth, this suggests our economy's annual average growth potential (the sum of productivity growth plus labor force growth) in the current decade is 3%–3.5%, down from 3.5%–4% in the 1995–2000 period, but above the paltry growth potential of 2%–2.5% in the quarter-century preceding 1995.

AGGREGATE DEMAND-SUPPLY BALANCE

Basically, central bankers focus on the impact of financial conditions on typically volatile aggregate demand growth. It is well known that when central bankers hold nominal interest rates fixed in the face of aggregate demand shocks, monetary policy ends up reinforcing rather than damping such shocks. For example, a positive shock to aggregate demand from a positive equity wealth effect would, if the Fed keeps its nominal interest rate target fixed, likely result in procyclical excesses in economic growth. Traditionally, growth in potential supply, which is determined by the sum of labor force and productivity growth, is more stable.

When shocks cause aggregate demand growth to exceed growth in potential supply and resource utilization rates are tightening, the Fed responds by raising interest rates to counter the threat of inflation. The resulting tightening in financial conditions will slow aggregate demand growth bringing it into better balance with growth in potential supply, thereby lessening the inflation threat. Aggregate demand for goods and services, of course, consists of consumer spending, residential housing fixed-investment, business fixed-investment (spending on new structures and equipment), government spending, and net exports. Tighter financial conditions will first depress interest-sensitive components of aggregate domestic demand such as consumer spending on autos and other big-ticket durable goods, housing activity, and business-fixed investment.

Conversely, when aggregate demand growth falls short of growth in potential supply, the Fed cuts interest rates thereby easing credit conditions. This will in turn stimulate first the interest-sensitive components of aggregate demand. Other channels of Fed policy influence include the stock market, operating through the wealth effect to influence consumer spending, and the dollar, which influences net exports.

Typically, it takes 6 to 12 months before a shift in the Fed's policy posture can work its way through the commercial banking system and the capital markets to influence economic activity, and as long as 18 months before inflation is impacted, though these policy time lags may have recently shortened somewhat. As in the past, the commercial banking system continues to be the point of contact for Fed policy; but, as already noted, the capital markets currently provide the bulk of the funds raised by consumers and businesses in support of their spending, and since capital market asset price adjustments typically begin before actual Fed policy shifts, the monetary policy time lag may currently be shorter than in the past.

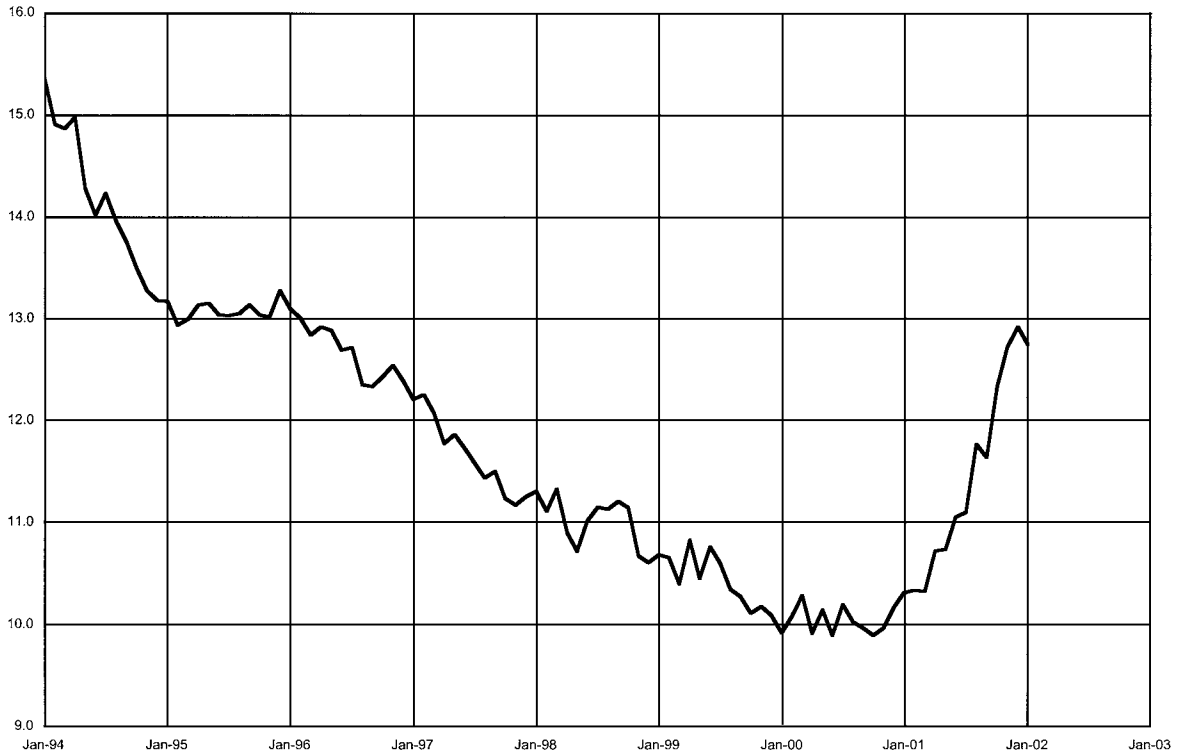
Technically, this monetary policy lag can be broken into an "inside lag" and an "outside lag," as originally conceived of by professor Milton Friedman. The "inside lag" represents the

time lag between any given shock and the Fed's policy response. The "outside lag" represents the time lag between Fed actions and their impact on aggregate demand and output.

In the latter part of 1999 and early 2000, Fed officials perceived that the wealth-induced growth in aggregate demand exceeded growth in potential supply, even after allowing for the welcomed acceleration in structural productivity growth. Evidencing this condition of increasing labor market strain was a decline in the pool of available labor willing to work (see Exhibit 3.2). The tightness in the labor market was particularly acute in early 2000 when the pool of available labor willing to work edged below 10 million. The Fed Chairman was worried that this excessive growth in aggregate demand was intensifying strains on an already tight labor market, threatening increases in wages and prices. Also, excessive domestic demand growth was spilling over into record-sized U.S. trade deficits.

Through countercyclical actions, the Fed tightened in February, March, and May 2000, with the aim of slowing aggregate demand growth to a pace more in line with the growth in potential supply. In his July 18, 2001, semi-annual congressional testimony, Fed Chairman Greenspan observed that by the summer of 2000, "it started to become apparent that the growth of demand finally was slowing, and seemingly by enough to bring it into approximate alignment within the expansion of potential supply, as indicated by the fact that the pool of available labor was no longer being drawn down. It was well into the autumn, however, before one could be confident that the growth of aggregate demand had softened enough to bring it into more lasting balance with potential supply." Previously, in June and August 1999, the Fed had initially tightened mainly to absorb the extra liquidity provided by the Fed in 1998 to cope with the global financial crisis, and in November 1999, primarily to try to counter a surge in real GDP growth above the economy's trend potential.

EXHIBIT 3.2 Pool of Available Labor Willing to Work
Level, millions (1994–2002)



SEVEN NEW RULES FOR CONTEMPORARY CENTRAL BANKERS

In order to be effective, modern-day central bankers should abide by the following seven rules in their monetary policy actions:

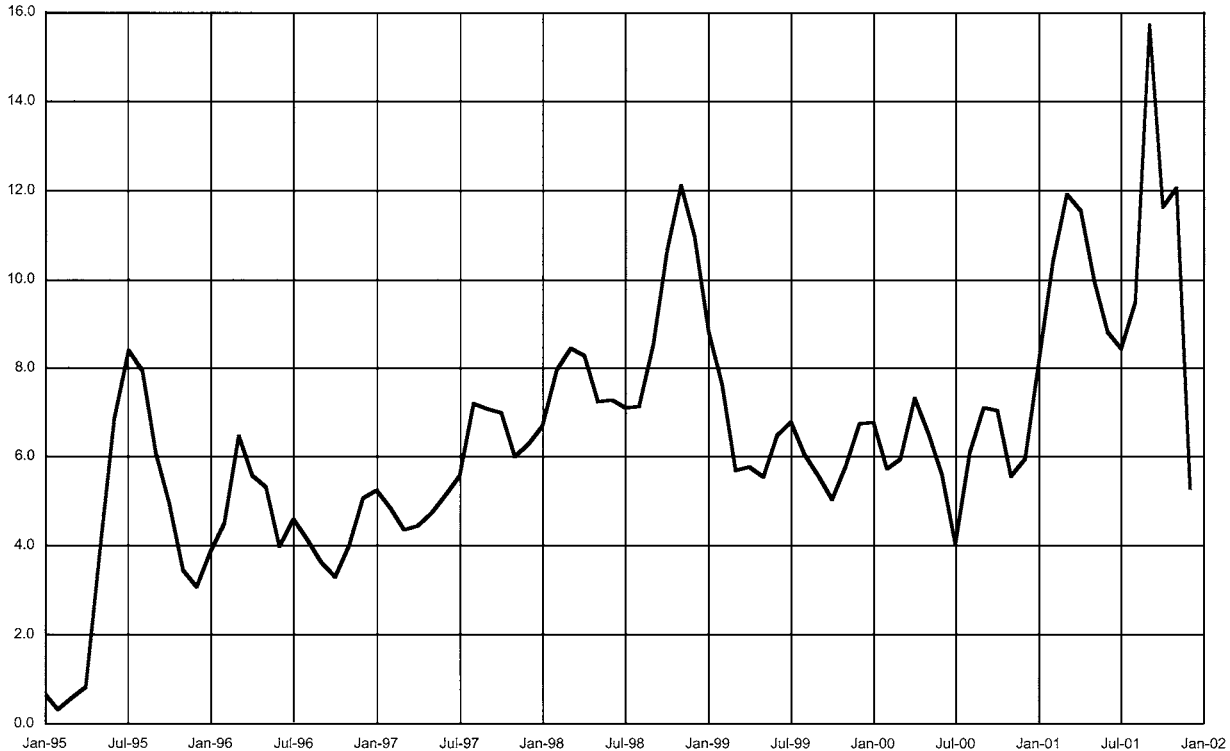
- *Let the capital markets be your guide, especially when the economic outlook is uncertain*. For instance, if a central bank is seeking to ease its policy stance sufficiently to counter an economic downturn, then it should rely mainly on the collective judgement of all those buyers and sellers of capital market instruments to tell it if it is on the right course or in market terminology "even with the curve." In the event that the capital market response to your easing move includes rising stock prices, a steepening yield curve and perhaps even a strengthening currency, you know that you are on the right track. In response to the Fed's surprise April 18, 2001 easing move, for example, stock prices rallied and the yield curve steepened as short-term rates declined in lock-step with the Fed's rate cut, but long-term rates actually increased on investors' expectations of an economic rebound, if not the eventual renewed threat of inflation. Conversely, if the central bank is "behind the curve" in its easing actions, then stock prices will fall, bond yields will decline, and its currency will likely weaken as investors expect the economy will continue to lose steam.
- *Be transparent about your monetary policy intentions*. When a central bank reveals its intentions as soon as they are known, capital market asset price adjustments can begin well ahead of actual central bank policy shifts, thereby shortening the time lag between actual monetary policy shifts and the impact on economic activity. In the past, in contrast, central bankers have favored secrecy. The prevailing view was that by leaving market participants in the dark about impending monetary policy moves, central bankers would lessen the chances of a financial market overreaction to Fed actions. In fact, the current view is that

markets work better when there is full disclosure, including that of central bank policy intentions.

- *Make every effort to establish credibility and consistency in the eyes of market participants*. You must be accountable to the public for your actions. The Fed is an independent agency of congress and is thus accountable to the public through the legislative branch of government. In addition, the central bank must carefully explain the reasons behind its actions. For example, the Fed carefully explains not only its decisions to change its policy stance, but also its decisions not to change its policy stance. In contrast, the ECB failed to adequately explain the reasons behind its surprise May 10, 2001 rate cut and thus undermined its credibility.
- *Try to promptly identify any economy-wide imbalances, distortions, or undue strains on labor or productive capacity.* You should be willing to take risks in preemptively adjusting your policy stance to counter these imbalances, distortions, or strains, but also be willing to reverse course, if necessary. Remember in this era of instant communications, the markets will respond instantly to your word or deed and the feedback from the public will be continuous. The idea is to be proactive in your statements and actions; show the public that you mean business. In this regard, the modern-day Bank of England is apparently taking its cue mainly from the Greenspan Fed's flexible policy approach in acting promptly to correct imbalances, and in its willingness to reverse its policy stance if necessary. In contrast, the ECB seems, at least most of the time, to be fated to be much more passive; indeed, it often seems to be following a mostly stand-still approach, perhaps owing to powerful opposing political forces among the twelve central banks composing the ECB. As in the first two decades of the Federal Reserve System's existence, when the twelve regional Fed district banks exercised considerable power, the executive committee of the ECB may be stifled by the considerable power of the twelve member central banks.

- *In countries with well-developed capital markets, recognize that the monetary policy transmission process today takes place largely through capital market asset price adjustments* (i.e., stocks, bonds, foreign exchange, etc.), which influence aggregate demand and ultimately real GDP growth and inflation. The growing role of capital markets in the monetary policy transmission mechanism and the declining role of banks reflects the modern-day forces of deregulation, securitization, and globalization.
- *You should place less emphasis than in the past on monetary aggregate growth*. This is because deregulation and innovation, particularly since the early 1980s, have made the velocity of money less predictable. Indeed, the public's short-term demand for money has become increasingly volatile, as evidenced by extremely wide swings in 3-month M2 growth rates in the past five years (see Exhibit 3.3). This diminishes the significance of any particular policy target for monetary aggregate growth.
- *It is important to be adaptable in changing your monetary policy responses to fit changing circumstances*. A good example is the Fed's deliberate choice to adjust its policy stance more rapidly in 2001 to fit changed circumstances. In a departure from the past, the business sector led the 2001 U.S. downturn; in the past, consumer spending and housing activity have usually led economic downturns, but these two components of aggregate demand held up remarkably well through most of the 2001 recession. Moreover, businesses, benefiting from real-time information on such key items as sales, orders, inventories, profit margins, and excessive capacity, are making more rapid "just-in-time" decisions on inventories and capital spending in a more compressed time frame, owing to the information technology (IT) revolution. In recognition of these developments, the Fed has deliberately adjusted its policy stance more aggressively, partly in order to keep up with "just-in-time" business decision-making.

EXHIBIT 3.3 M2 Monetary Aggregate
3-month growth rate (1995–2002)



CHAPTER 4

Major Concerns

The modern-day objectives of Fed policy are stable prices and sustainable growth. As amended in 1978, the *Federal Reserve Act* of 1913 states that

> The Board of Governors of the Federal Reserve and the Federal Open Market Committee shall maintain long run growth of the monetary and credit aggregates commensurate with the economy's long run potential to increase production, so as to promote effectively the goals of *maximum employment*, *stable prices*, and moderate long-term interest rates. (Italics added)

POLICY OBJECTIVES

The Greenspan Fed has combined the dual monetary policy aims of stable prices and maximum employment (sustainable economic growth) in a longer-run context. Importantly, in the longer term, Fed Chairman Greenspan appropriately views price stability as a prerequisite for sustainable growth. Thus, the Greenspan Fed's primary aim is to achieve "maximum sustainable growth" over the longer-haul. As noted in the preceding chapter, an economy's sustainable growth potential is supply-determined; specifically, it is determined

by the sum of labor force growth plus growth in productivity. This means that "maximum sustainable growth" in the current decade could be estimated at 3%–3.5%, down from 3.5%–4% during the 1995–2000 period, but up from 2%–2.5% during the quarter-century preceding 1995. The economy's elevated noninflationary "speed limit" during the 1995–2000 period was, as already noted in Chapter 3, attributable to an acceleration in structural productivity growth, which, in turn, reflected a high-tech business investment boom during the period from the second quarter of 1992 through the second quarter of 2000.

Above all, the Fed must establish *credibility* and *consistency* in pursuing its longer-term aim of "maximum sustainable growth." Central to this effort must be good two-way communications between Fed officials and the financial markets. Fed Chairman Greenspan, as the primary spokesman for the Federal Reserve, usually communicates in speeches or congressional testimony any intentions to shift policy well ahead of actual Fed policy moves. As a result, capital market psychology shifts and capital market asset price adjustments usually start well before actual Fed policy shifts. The upshot is a shorter time lag between actual Fed policy shifts and their impact on the economy. Traditionally, it has taken 6–12 months before a Fed policy shift impacts the economy, and even longer, perhaps as long as 18 months, before inflation is impacted.

FOREIGN CENTRAL BANKS

The European Central Bank (ECB) has had a more difficult time trying to establish credibility and consistency. Fundamentally, the ECB has been burdened by the attempt to manage a "virtual" euro currency since it began operations in January 2000. Not until January 2002 was the actual euro placed into circulation to replace the respective currencies of the 11 (now 12) member countries. Previously, each of the 12 currencies remained in circulation in 2000 and

2001. Moreover, the ECB, which by law has only one objective—stable prices—has suffered from time to time from destabilizing pronouncements threatening the infant central bank's independence by left-wing ministers of finance in such influential countries as Germany. Former German Finance Minister LaFantaine, in calling for even lower interest rates and greater ECB emphasis on growth and jobs immediately after the ECB's formation, undoubtedly caused considerable damage to ECB credibility and, perhaps, even to its initially perceived independence. In addition, ECB credibility has been hurt at times by too many central bank spokesmen offering contradictory viewpoints on the appropriate level of interest rates and the euro.

Curiously, on May 10, 2001, despite having insisted for months that Europe had no need to follow the U.S. in easing monetary policy, the ECB unexpectedly cut its benchmark rate to 4.5% from 4.75%. In buttressing its case for previously not cutting rates, despite four easing moves by the Fed and three rate cuts by the Bank of England since the beginning of the year, the ECB cited the fact that European inflation was 2.6%, exceeding its maximum target limit of 2.0%. Far from comforting the European markets, the ECB's easing move was viewed widely as being contradictory and tentative. Critics argued that in suddenly moving to cut its benchmark rate, the ECB undermined its credibility and provided new evidence of a politically-conflicted, unsteady decision-making process.

Underscoring its quirky decision-making record, was the ECB's determination, after its completely unexpected May 10 easing move, to keep its policy stance unchanged for an extended period through its August 2, 2001, meeting, the final meeting date before summer vacation, despite indications that Euro-zone economic growth appeared headed below 2% in 2001. The ECB's Trichet said "inflation is ebbing but remains a concern."

In contrast, the Bank of England acted on the same day, August 2, 2001, to cut its base lending rate to 5% from

5.25%, marking its fourth rate cut so far in 2001. The Bank of England stated that its easing move represented a response to "weaker than expected" global growth. The Bank of England cut its base lending rate again on September 17, following the terrorist attacks on the U.S. and yet again on October 4, bringing its base lending rate down to 4.5%.

The ECB finally got around to cutting its benchmark rate to 4.25% from 4.5% on August 30, 2001, but indicated that it would be in no hurry to act again. ECB president Wim Duisenberg stated, "I cannot forecast when a next move in whatever direction will come." He added that "there is no such thing as bias in our decision today." In the wake of the September 11 terrorist attacks on the U.S., however, the ECB, in a coordinated move with the Fed and other major central banks, cut its benchmark rate by 50 basis points to 3.75% from 4.25%.

STOCK MARKET BUBBLES

It is important to emphasize that congressional legislation dictates, as already noted, that the Fed is charged with maintaining stable prices of goods and services and maximum employment (sustainable growth), not with controlling stock prices. Thus, there is no law that says that the Fed should try to control stock prices; realistically, it could not do so with any precision even if it wanted to. Furthermore, critics say it would be, as a matter of principle, inappropriate for the Fed to try to substitute its judgement for the collective judgement of the large numbers of buyers and sellers in the market.

Nevertheless, the Fed must at least be aware of stock price movements to the extent that they operate through the wealth effect to influence spending. In his semi-annual congressional testimony on July 18, 2001, Fed Chairman Greenspan observed that monetary policy, which focuses on the economy, will examine and evaluate financial factors only to the extent that they impact the economy. But this has been particularly the case recently as the wealth effect has had a significant

influence on spending. Moreover, it is in the nature of asset price bubbles that investor, consumer, and business psychology overshoots both on the optimistic side when the asset price bubble is in its final highly speculative stages, and on the deeply pessimistic side after the bubble bursts, as it inevitably will. In *The Fed*, author Martin Mayer observed that the Fed has no choice but to be concerned with the behavior of asset prices. Mr. Mayer stated that

> [i]t is not only a matter of 'wealth effects' that promote excess consumption and thus create pressures on either the domestic price level or the trade deficit. In conditions of modern finance, cheap money from an escalating equities market can promote over-investment and an eventual collapse in economic activity from the failure of previous investments to generate an adequate (or any) return.

In his unsuccessful effort to avoid a stock market bubble, Fed Chairman Greenspan warned of "irrational exuberance" in December 1996 when Dow-Jones Industrials were around 6,500. The Fed even tightened its policy stance in March 1997 amid a storm of criticism from both the political left and right contending that stable prices of goods and services did not justify the Fed's action. Bullish investors simply shrugged off the Fed Chairman's late-1996 admonitions and early-1997 tightening move, and rallied Dow-Jones Industrials to a peak of 11,722 in January 2000. The NASDAQ stock index, composed mainly of high-tech stocks, peaked at 5,048 in March 2000 up from only 1,000 in late 1996.

It is safe to conclude that the Fed Chairman's effort at jawboning the stock market was utterly unsuccessful. Seemingly chastened, the Fed Chairman observed in congressional testimony on June 17, 1999, that whether the soaring stock market "means that an unstable bubble has developed" is difficult to assess. He added that "bubbles generally are per-

ceptible only after the fact." In this connection, Greenspan noted that "[t]o spot a bubble in advance requires judgement that hundreds of thousands of informed investors have it all wrong." He concluded that "[b]etting against markets is usually precarious at best."

With the aid of hindsight, this inability to identify bubbles until after the fact proved to be the case especially with the high-tech stock bubble; this bubble was not recognized by the vast majority of investors until after it burst in March 2000. After the high-tech stock bubble burst, however, it had a major negative impact on investor psychology and, with a time lag, on consumer and business confidence.

MANAGING INVESTOR PSYCHOLOGY

Managing, or at least trying to influence investor psychology is the key to Fed success. Stock market investors must be convinced that the Fed can be successful in its countercyclical actions and periodic crisis management efforts aimed at keeping the economy on a sustainable, noninflationary growth path that maximizes profits and lifts stock prices over the longer term. At times, however, too much Fed credibility in the eyes of investors can be as much hindrance as help. Official verbatim transcripts of the Fed's 1995 FOMC meetings indicate, for example, that Greenspan was worried that a bubble was developing in both the stock and bond markets, partially in response to investors' belief that whatever the economic conditions, the Fed would respond correctly and keep the expansion on a sustainable track.

Of course, the opposite proved to be true, when Fed officials failed to foresee that the economy would hit a wall by the end of 2000. Critics were loudly proclaiming that the Fed tightened too much in 1999 and early 2000 and then failed to ease soon enough in late 2000 when the economy threatened to stall out completely.

However, it must be admitted that the Greenspan Fed moved aggressively, starting in early 2001, partly to try to compensate for this oversight. The Fed cut rates aggressively three times in the first three months of the year. Then, in perhaps one of its most masterful tactical moves, the Fed surprised the financial markets by cutting its Federal funds rate target and discount rate 50 basis points a fourth time on April l8 between policy meetings. This fourth outsized 50 basis point Fed rate cut seemed to finally pull the Fed "even with the curve." Financial market participants responded positively and stocks rallied in the wake of this mid-April Fed easing action, while bond prices fell (yields rose) as investors perceived that the Fed was finally on the right path in its easing actions, thereby enhancing prospects for a rebound in economic growth, perhaps with an eventual renewed threat of inflation. The Fed eased a fifth time in May, a sixth time in June, and, following unexpectedly weak economic indicators in July and August, a seventh time in August 2001.

Interestingly, the stock market reacted negatively to the Fed's seventh easing move in August, hinting that in the markets' collective judgement the Fed was again falling behind the curve. Investors were apparently disappointed by the Fed's gloomy assessment of the near-term economic outlook. Market participants tended to focus in particular on the Fed's gloomy observation that "business profits and capital spending continued to weaken and growth abroad is slowing, weighing on the U.S. economy."

However, on the brighter side, Fed officials also observed at the August meeting that "[h]ousehold demand has been sustained." At the preceding June FOMC meeting, in contrast, the Fed referred to the "weak expansion of consumption."

On September 17, following the terrorist attacks on the U.S., the Fed eased an eighth time. Subsequently, the Fed eased a ninth and tenth time at the October 2 and November 6 FOMC meetings, respectively, triggering a stock market rally. In turn, the Fed's eleventh rate cut in 2001 came at the December 11 FOMC meeting. In connection with this last

easing move in 2001, the Fed stated that "[e]conomic activity remains soft." At the same time, striking a slightly more positive chord, the Fed added that "weakness in demand shows signs of abating." The Fed cautioned, however, that "those signs are preliminary and tentative."

INVESTOR PSYCHOLOGY INTERACTS WITH CONSUMER CONFIDENCE

In the early months of 2001, Fed Chairman Greenspan was dealing with a dangerous situation of rapidly eroding investor psychology and deteriorating consumer and business confidence. The collapse in technology stock prices pulled the broader S&P 500 stock average down in a highly publicized stock market meltdown that was certain to grab the public's attention. The main danger was that once a self-reinforcing interaction between negative investor psychology and crumbling consumer and business confidence got underway and began to severely depress spending, the economy could be dragged into recession. Further depressing consumer spending might be their desire to increase an abnormally low savings rate in light of their contracting equity portfolios and uncertain economic conditions.

The problem was that the linkage between investor psychology, consumer confidence, and consumer spending had never been tested on the downside at a time when 50% of U.S. households own stock. In early 2001, for example, investor psychology was extremely negative, but consumer confidence rebounded in March after sharp declines in late 2000 and consumer spending also held up better than expected. Positive influences in early 2001 on consumer confidence and spending included a still strong job market, solid income growth, and rising property values. However, employment figures for March and especially April were extremely weak and consumer confidence resumed its downtrend in April, after a temporary uptick in March. Moreover,

March retail sales were weaker than expected. In addition, April motor vehicle sales softened, suggesting that declining confidence and growing job jitters may be starting to cause consumers to pull back on spending on big-ticket items. In contrast, retail sales rebounded in April, and May consumer sentiment unexpectedly moved higher. Subsequently, for the June–July period, the Fed's Beigebook, which covers regional economic activity in all 12 Federal Reserve districts, warned that the persisting weakness in manufacturing activity was spreading to other sectors, including trucking, office real estate, and shipping. Extremely weak August employment data then triggered a crumbling in consumer sentiment in early September, prior to the terrorist attacks.

As matters turned out, Fed officials waited until their regularly scheduled March 20 FOMC meeting to cut interest rates further by another 50 basis points and then surprised the markets by cutting rates by an additional 50 basis points between FOMC meetings on April 18, the fourth such outsized Fed rate cut in as many months. In a generally downbeat assessment, the Fed noted in its official statement in connection with its March 20 FOMC meeting that persistent pressures on profit margins restrained investment spending and, through declines in equity wealth, consumption. The Fed also noted the emergence of excess productive capacity and the potential for a weakening in global economic conditions.

As the March 20 meeting was approaching, battered stock market participants were calling for an even larger 75 basis point Fed rate cut, and they registered considerable disappointment when the Fed failed to answer their pleas. But market participants were pleased with the additional 50 basis point Fed rate cut on April 18, and the stock market, which was already moving higher earlier in the day, rallied forcefully on the news of the Fed's surprise easing move. In its mid-April rate cut, the Fed focused attention on the business sector by stating that "capital investment has continued to soften and the persistent erosion in current and expected profitability, in combination with rising uncertainty about the

business outlook, seems poised to dampen capital spending going forward." Also on the negative side, the Fed cited "the possible effects of earlier reductions in equity wealth on consumption and the risk of slower growth abroad." At its May 15 FOMC meeting, the Fed cut rates yet again by 50 basis points, followed by two additional smaller 25 basis points rate cuts at the June 26–27 and August 21 FOMC meetings.

Following the September 11 terrorist attacks, the Fed cut rates in four rapid-fire steps. These included outsized cuts of 50 basis points on September 17, between FOMC meetings, and subsequently at the FOMC meetings on October 2 and November 6. On December 11, the Fed moved yet again to cut rates by a normal-sized 25 basis points.

CENTRAL BANK RATE ADJUSTMENTS AND DEFLATION

As pointed out in a recent article by staff economists at the Federal Reserve Board of Governors, central bankers face particular hurdles in trying to battle the downside forces of negative psychology, economic weakness, and deflation. The main concern is that nominal interest rates are bounded on the downside by zero. As a result, once the central bank has lowered its target nominal interest rate to zero in its effort to counter economic weakness, its hands are tied; but if, at the same time, price deflation should worsen, real interest rates will actually begin to rise, beyond the Fed's control. This undesired but uncontrollable increase in real interest rates will further depress aggregate demand, involuntarily pushing the economy even deeper into recession and deflation.

This problem was experienced by the Bank of Japan in the 1990s. As the 1990s came to an end, the Japanese economy, having faced a decade of stagnation, experienced deflation that chipped away at asset values, increased credit risks, pinched wages and salaries, and prevented sustained growth. The Bank of Japan pursued a "zero" short-term nominal interest rate policy in an effort to stimulate the slumping

economy. But, as deflation mounted, real interest rates actually increased thereby further depressing the already faltering Japanese economy.

It should be noted in passing that the same deflation problem applies to nominal wages that, of course, are also bounded by zero. Although, in practice, owing to social convention and union power, nominal wages are much more sticky or inflexible on the downside than nominal interest rates, it is at least theoretically possible that a drop in the demand for labor in a weakening economy could drive nominal wages to zero. But if, at the same time, price deflation should worsen, real wages will begin to rise thereby exerting further upward pressure on the presumed already high unemployment rate in the depressed economy.

As a last resort, the Bank of Japan sought in early 2001 to flood the financial system with liquidity by pursuing a quantitative reserve aggregate target, but that effort, at least initially, seemed akin to "pushing on a string." The coincidental weakening in the Japanese yen, however, at least improved prospects for an export-led Japanese recovery, though weakening U.S. economic growth threatened to overwhelm these positive foreign exchange rate effects on Japanese exports and put that country's export-led recovery in doubt. The key to a successful Japanese recovery is not only a rebound in the U.S. economy, which continues to serve as the "locomotive" for global growth, but also for the new Koizumi government to follow imaginative and unexpectedly bold policies. These policies should lessen structural rigidities, deregulate markets, reform the financial sector, and bolster public confidence so as to overcome ingrained pessimism.

BASIC POLICY APPROACHES

Modern-day central bankers follow two basic policy approaches. First, central bankers must follow a generally countercyclical policy approach. In essence, central bankers must "lean

against the wind," in the words of former Fed Chairman William McChesney Martin. They must keep economic growth on a sustainable track by countering excessive upside forces threatening inflation, or conversely, trying to counter downside forces threatening recession. For example, when excessive growth threatens inflation, the Fed responds by hiking interest rates in order to curtail aggregate demand and slow real GDP growth to a more sustainable, noninflationary pace. Conversely, when economic growth threatens to weaken excessively, the Fed will respond by cutting interest rates in order to stimulate aggregate demand and ultimately boost real GDP growth.

The idea is for the Fed to tighten its policy stance preemptively when aggregate demand growth exceeds growth in potential supply and is pressuring labor and other productive resources, thereby threatening inflation. A good example of preemptive Fed tightening moves can be found in 1994. Beginning in early 1994, the Fed tightened preemptively in seven steps in order to counter intensifying inflation pressures. By acting promptly and decisively the Fed was able to nip inflation in the bud and keep what turned out to be a record-long economic expansion on course. Conversely, the Fed acts to ease its policy stance when an undesirable weakening in economic growth threatens recession. A good example of countercyclical Fed easing can be found in connection with the 1990–1991 recession, and, more recently, in the Fed's effort to counter the economic downturn in 2001.

The Greenspan Fed has pursued a "soft landing" theory. In order to make this theory work, the Fed acts preemptively to hike interest rates with the aim of countering excessive and potentially inflationary "highs" in economic growth in order to also eliminate the deep "lows." Fed efforts to achieve a "soft landing" in 1988–1989 failed, and the economy fell into recession in 1990–1991. Contributing to this downturn were a government regulator-induced bank credit crunch and the brief Gulf War, which spiked oil prices. Government regulators,

who were embarrassed by the late-1980s collapse of the saving and loan industry, were determined to clamp down on banks by demanding higher capital requirements, increased deposit insurance premiums, and stricter standards for classifying bad loans; in response, financially strapped banks abruptly cut off the supply of new credit to borrowers. More recently, Fed efforts to achieve a "soft landing" in 1999–2000 also appear to leave something to be desired as the economy first flirted with recession in the spring and summer of 2001, and then sank into an all-out recession following the September 11 terrorist attacks on the U.S.

In contrast, Fed efforts to achieve a "soft landing" in 1994–1995 were highly successful. In this case, Fed officials were aggressively proactive in tightening to fight the threat of inflation in 1994 and early 1995, but then willing to reverse course with subsequent easing actions later in 1995 and early 1996, when economic growth suddenly slowed.

Technically, the traditional "soft landing" describes a situation in which the economy begins from a position below its maximum output limit, with growth above "trend" potential. A "soft landing" is achieved if growth slows to "trend" potential just as the economy converges to its maximum output limit. Conversely, a reverse "soft landing" describes a situation in which the economy starts from a position above its maximum output limit with growth above "trend" potential. In order for a reverse "soft landing" to be achieved, growth must slow to a below-trend pace until actual output converges on the maximum output limit at which point growth returns to its trend potential pace and remains there.

A second policy approach the Fed may at times pursue is the crisis management approach. In order to fight a sudden financial crisis, the Fed supplies temporary liquidity to meet the public's increased demands arising from the crisis. Subsequently, the Fed will withdraw this extra liquidity, once the financial markets have stabilized. Three good examples of this Fed crisis management approach can be found in the stock market crash of 1987, the global financial crisis of 1998 and

the terrorist attacks on the United States in 2001. In order to meet crisis-related liquidity needs following the 1987 stock market crash, the Fed injected additional liquidity and, in addition, cut interest rates in five small steps from October 1987 through February 1988. During the subsequent period from March 1988 through February 1989, the Fed both absorbed this extra liquidity once the financial markets had stabilized, and then engaged in additional countercyclical tightening actions in its unsuccessful effort to achieve a "soft landing." Instead, the economy plunged into the 1990–1991 recession.

Another example of the Fed's crisis management approach was evident in the global financial crisis which started in Asia in 1997 and spread worldwide. The global financial crisis came to a head in August 1998 when Russia abruptly devalued and declared a debt moratorium. This financial shock posed the problem of systemic risk for many financial institutions that were, at that time, engaged in overleveraged speculation in emerging country debt.

One major hedge fund, which was particularly overexposed, was threatened with failure. Its demise posed the risk of severely harming major creditors or possibly bringing down other large similarly exposed financial institutions. The New York Federal Reserve Bank took the initiative, at the risk of moral hazard, in arranging a financial rescue package for this large hedge fund, Long Term Capital Management (LTCM). The New York Fed convened a meeting of the major creditors of LTCM and urged them to put up funds for a bailout of this troubled hedge fund.

Interestingly, Peter R. Fisher, a senior New York Fed official who was deeply involved in the LTCM rescue effort in the fall of 1998, was later telephoned several times in the fall of 2001 by a senior official of Enron, the giant energy trading company, as it teetered on the brink of bankruptcy. At the invitation of the new Bush administration, Fisher had moved to the U.S. Treasury Department as the Under Secretary of the

Treasury for Domestic Finance. The Enron official (President Laurence "Greg" Whalley) asked Under Secretary Fisher to intercede with Enron's banks to urge them to lend Enron more desperately needed money, just as the Fed had done three years earlier with creditors of LTCM. Fisher's boss, Treasury Secretary Paul O'Neill, who had received several telephone calls himself from Enron's chairman, Kenneth Lay, asked Fisher to look into the Enron situation and make recommendations. It should be noted in passing that Fed Chairman Greenspan also received a telephone call from Enron's chairman as Enron sought to stave off bankruptcy, though the Fed did nothing for Enron, in contrast with its earlier rescue of LTCM. To Fisher's credit, he looked at Enron's situation and decided not to help.

According to Fisher, there was significant difference between the LTCM rescue in 1998 and the lack of government aid for Enron in 2001. Specifically, capital markets had time to adjust to the Enron problem, while, in contrast, there was virtually no time to adjust to LTCM's difficulties. The decline in Enron's stock took place over most of 2001, and both the energy market and the capital market had time to adjust to additional information on Enron's financial difficulties in the fall of that year. In contrast, the capital market did not have time to adjust properly to the August 1998 Russian default and devaluation. Therefore, the LTCM difficulties had a potentially negative impact on both creditors and the functioning of financial markets. In essence, in the judgement of Fed officials, the LTCM problems posed significant systemic risk.

Enron had transformed itself from a "plain vanilla" utility company into a complex energy trading firm. In this process it created a host of special partnerships (special purpose entities) allowing it to manipulate accounting rules in a manner that obscured risks, hid losses, overstated revenues and profits, and understated the company's debt burden.

In the end, Enron was forced to restate earnings for the past five years, reducing them by $600 million, mocking the assurances of its auditor, Arthur Anderson, and shattering the

confidence of Wall Street. Enron, which had the dubious distinction of being the largest corporation to declare bankruptcy up to that point, represented the failure of not only a high-risk business model that failed to generate adequate returns, but also the breakdown of the system of checks and balances of corporate governance and disclosure. Investors in Enron securities were failed by regulators, accountants, Wall Street analysts, and even the company's own Board of Directors.

To counter the 1998 global financial crisis, the Fed sought to supply extra liquidity to meet the public's emergency needs, accompanied by Fed interest rate cuts in September, October, and November 1998. This paved the way for other major central banks in Europe and elsewhere to cut interest rates to help fight the global financial crisis. In connection with its surprise October easing move between FOMC meetings, Fed officials noted that "growing caution by lenders and unsettled conditions in financial markets more generally are likely to be restraining aggregate demand in the future." In effect, Fed policymakers were worried that the global financial crisis would cause U.S. financial markets to "seize up," cutting off financing for even credit-worthy borrowers.

Subsequently, once financial conditions had stabilized, the Fed withdrew this extra liquidity. There were a total of three Fed interest rate hikes in 1999. The June and August Fed tightening actions were mainly for the purpose of mopping up extra liquidity injected to cope with the global financial crisis in 1998; however, the November 1999 Fed rate hike was primarily aimed at countering a surge in real GDP growth in excess of the economy's growth potential.

The 1997–1998 global financial crisis largely reflected rapid portfolio shifts by global money managers out of developing country debt into safe-haven U.S. Government securities. This breath-taking movement of financial capital around the world has been made possible by deregulation and globalization. During the 1990s, developing countries, particularly in Asia, benefited greatly from a heavy inflow of foreign financial

capital. However, the ready availability of this capital caused developing countries to grow too rapidly, resulting in accelerating inflation, increasing trade deficits, declining key currency reserve holdings, and depreciating currencies. These global financial upheavals serve as a major source of concern to central banks and world agencies like the International Money Fund (IMF). They must cooperate to provide the extra liquidity necessary to cope with these unforeseen global financial crises, which are almost certainly destined to recur in the future.

Curiously, Argentina's recent default and devaluation in January 2002 has posed very little threat of either financial contagion or systemic risk for financial institutions, in contrast with Russia's default and devaluation in the 1998 global financial crisis. In part, the limited impact of Argentina's crisis reflected greatly reduced leveraged speculation by financial institutions in emerging country debt. This speculation in emerging country debt was much higher at the time of the Russian default and devaluation in August 1998. Also, the absence of major financial ripples from Argentina's crisis partly reflected circumstances peculiar to that country. Specifically, Argentina suffered from unusually widespread corruption, an ineffective legal system, an antiquated and unstable political system, outsized growth in government outlays for such items as free health services and a tuition-free university education, and a mushrooming government debt burden. Unfortunately, this financial crisis caused the people of Argentina to turn to a left-wing Peronist leader with anti-U.S. and anti-market tendencies. Thus far he has seemingly shunned foreign investment while betraying the trust and confidence of Argentina's domestic financial market participants.

Unquestionably, the biggest crisis management challenge faced by the Greenspan Fed have been the September 11, 2001, terrorist attacks on New York and Washington, D.C. These terrorist attacks, in addition to causing more than 3,000 fatalities, destroyed a massive 25–30 million square feet of office space, interrupting communications, commercial transactions and securities settlements. The Fed responded

immediately with massive liquidity injections through System RPs and discount window borrowings in order to shore up the payments system.

The U.S. stock market did not reopen until September 17. Prior to the beginning of stock trading on that day, the Fed announced 50 basis point cuts in its Federal funds rate target to 3.0% from 3.5% and the discount rate to 2.5%–3.0%. Other major central banks, including the ECB, engaged in coordinated easing actions with the Fed in an effort to counter the negative financial and economic effects of the terrorist attacks. At its October 2 and November 6 FOMC meetings, the Fed cut rates again by 50 basis points, respectively, bringing its target for the Federal funds rate down to 2.0%, the lowest since 1961. At its December 11 FOMC meeting, the Fed lowered its federal funds rate target still further to 1.75%. Subsequently, at its January 29–30, 2002, FOMC meeting, the Fed maintained an unchanged Federal funds rate target. At this meeting, Fed officials stated that "the outlook for economic recovery is becoming more promising."

REGULATORY "MISSION CREEP"

In the wake of the bursting of the high-tech stock price bubble and particularly the more recent widely-publicized Enron bankruptcy, Fed officials must guard against "mission creep" in their politically sensitive, but secondary regulatory responsibilities. Regulatory "mission creep" means that the Fed's regulatory responsibilities are increasing and cutting into precious time that senior monetary authorities might better use in their macroeconomic duties. Instead of worrying about politically tainted regulatory issues, Fed officials should be using most of their time and independence in continually diagnosing the health of the economy and crafting the appropriate policy actions. The political cries for reregulation have already begun in the wake of the

substantial harm done to employees and shareholders by the watershed Enron debacle. The Enron scandal threatened to erode America's fondness for deregulated, unfettered markets, which grew steadily stronger through the 10-year boom that abruptly ended in 2001.

In effect, the Fed's strengthened role as an "umbrella supervisor" of financial holding companies that may own the nation's largest banks, securities houses, and insurance companies, under the Gramm-Leach-Bliley (GLB) Act of 1999, cuts both ways. The GLB Act helps the Fed to the extent that information on financial institutions gained by the Fed as a regulator can aid in the formulation and execution of its primary monetary policy responsibilities. At the same time, however, increased political demands on the regulatory side could conceivably impinge on the Fed's critically important independence in carrying out its primary monetary policy duties. For example, while the Fed remains the "umbrella supervisor" of financial holding companies, individual subsidiaries of these financial holding companies will be regulated by other government agencies according to their respective functions. In particular, securities subsidiaries will be regulated by the SEC, which has recently come under intense criticism in connection with the Enron bankruptcy, and this criticism could easily spill over to the Fed.

This problem of potential Fed regulatory "mission creep" is compounded by the fact that Fed Chairman Greenspan, clearly a victim of his notoriety and success, has been named by Congress to head the airline bailout board. This high profile board, headed by Chairman Greenspan, must, in the wake of the September 11 terrorist attacks, determine which airlines survive and which do not. Thus, the nation's foremost macroeconomic policymaker must delve into the hot-button microeconomic issues of corporate survival.

As if this extra duty for the Fed Chairman were not enough, he was also asked by President Bush to serve on a special working group looking into needed regulatory,

reporting, 401K pension, and accounting changes in the wake of the Enron debacle. Joining Fed Chairman Greenspan on this task force are the heads of the SEC (Harvey Pitt) and CFTC (James Newsome). The chairman of this working group is Treasury Secretary Paul O'Neill.

MONETARY-FISCAL POLICY MIX

Given the newly gained popularity of central banking, Fed officials, and especially Fed Chairman Alan Greenspan must not only understand the nuts and bolts of monetary policy but must be savvy politicians as well. The Fed Chairman, in particular, must deal effectively with both Congress (the Fed is an independent agency of Congress and thus is accountable to the public through the legislative branch of government) and the White House. To a greater extent than any of his predecessors (though Arthur Burns was unquestionably a close second), Fed Chairman Greenspan has offered advice to Congress and the White House regarding the government's appropriate fiscal policy posture.

But the Fed Chairman must walk a political tightrope when he offers fiscal policy advice. The Fed Chairman must offer, above all, objective fiscal advice when asked by Congress or the White House, while at the same time staying far enough above the political fray not to become embroiled in partisan politics or infighting. The "Greenspan trade off" is a good example of objective fiscal policy advice. Appropriately, Greenspan advised President Clinton that the real test of his 1993 plan for greater fiscal discipline was whether the negative effects on the economy of higher taxes and curtailed spending necessary to cut deficits would be more than offset by the positive effects of lower real long-term interest rates stemming from the promise of longer-term fiscal discipline, as turned out to be the case.

FISCAL DISCIPLINE

As a rule, over the longer haul, increased fiscal discipline should be combined with a sound but accommodative monetary policy to reduce real long-term interest rates and help prolong economic expansion. Greater longer-term fiscal discipline is appropriate for economies like the United States, plagued by a low savings rate, where output is not chronically constrained by demand, and the unemployment rate is low. Conversely, greater longer-term fiscal stimulus is appropriate for economies such as Japan's, plagued by a high savings rate, where output, particularly over the past decade, has been chronically constrained by lackluster domestic demand, and the unemployment rate has been abnormally high.

As a countercyclical government policy weapon, monetary policy is preferable to fiscal policy. This is because monetary policy is more flexible than fiscal policy, which is subject to endless political bickering over taxes and spending. To be sure, there may be times (such as the present) when both fiscal and monetary stimulus may be required to counter a sudden slump in economic growth and assure recovery. In arriving at the appropriate future fiscal policy posture, the necessary calculation must be that the favorable impact of tax cuts in stimulating consumer and business spending more than offsets the negative effect, in the form of upward pressure on real long-term interest rates, from reduced longer-term fiscal discipline. The problem with using fiscal policy as a discretionary countercyclical weapon is that while monetary authorities can cut interest rates instantaneously to counter economic weakness, government tax cuts or countercyclical discretionary spending increases may be delayed by political wrangling until after the downturn has given way to recovery.

Of course, the Federal budget already has so-called built-in automatic stabilization features. In an economic slowdown, for example, the Federal surplus declines or the deficit increases as revenues decline and countercyclical spending for such nondiscretionary items as unemployment

compensation increases. Conversely, in an economic expansion, the Federal deficit declines or the surplus increases as stronger growth produces more revenue, while spending for such nondiscretionary items as unemployment compensation decreases as more workers find jobs.

The Clinton administration pursued an ideal policy mix of increased fiscal discipline, combined with a prudently accommodative monetary policy. Moreover, the responsibility for countercyclical policy actions was left entirely to monetary policy. For example, the Fed cut interest rates extensively to counter the 1990–1991 recession even prior to Clinton's election; conversely, the Fed hiked interest rates in 1994 preemptively to battle the threat of inflation. The favorable fiscal-monetary policy mix pursued by the Clinton administration resulted in low real long-term interest rates, which stimulated interest-sensitive components of aggregate demand such as business investment spending and housing activity, thereby extending the duration of the expansion. The "crowding-in" of private sector businesses, able to raise funds in the debt and equity markets at an attractively low cost of capital—a result of increased fiscal discipline and reduced Federal government borrowing—stimulated business investment spending in high-tech equipment, thereby boosting productivity growth and improving the standard of living for most Americans.

DEFICIT-CUTTING PLANS

As a result of a series of tough government fiscal discipline measures, the Federal deficit was initially put on a declining path in 1993, the same year that the business high-tech investment boom began to gain steam. The Federal deficit was reduced over a five-year period from a high of $290.4 billion in 1992 (4.7% of GDP) to only $22 billion in 1997 (see Exhibit 4.1). Budget surpluses emerged in 1998 ($69.2 billion), climbed to $125.5 billion in 1999, and further to a surplus of $236.4 billion in 2000 (2.4% of GDP), a remarkable

accomplishment on the fiscal front. In 2001, the budget surplus contracted to $127.1 billion.

EXHIBIT 4.1 Ratio of the Federal Deficit (–) or Surplus to GDP

Fiscal Year	Ratio	Level (billions of $)
1970	–0.3	–2.8
1971	–2.1	–23.0
1972	–2.0	–23.4
1973	–1.1	–14.9
1974	–0.4	–6.1
1975	–3.4	–53.2
1976	–4.2	–73.7
1977	–2.7	–53.7
1978	–2.7	–59.2
1979	–1.6	–40.7
1980	–2.7	–73.8
1981	–2.6	–79.0
1982	–4.0	–128.0
1983	–6.0	–207.8
1984	–4.8	–185.4
1985	–5.1	–212.3
1986	–5.0	–221.2
1987	–3.2	–149.8
1988	–3.1	–155.2
1989	–2.8	–152.5
1990	–3.9	–221.2
1991	–4.5	–269.4
1992	–4.7	–290.4
1993	–3.9	–255.1
1994	–2.9	–203.3
1995	–2.2	–164.0
1996	–1.4	–107.5
1997	–0.3	–22.0
1998	0.8	69.2
1999	1.4	125.5
2000	2.4	236.4
2001	1.3	127.1

The groundwork for the shrinking deficit was provided by the Bush deficit-cutting plan of 1990. The Bush plan raised taxes, mainly on the rich, breaking President Bush's "read-my-lips" promise not to raise taxes, cut defense spending, and placed strict caps on discretionary nondefense spending. In 1993, the Clinton deficit-cutting plan followed the example of the Bush plan in further raising taxes, mainly on the rich, cutting defense spending even more deeply, and maintaining caps on discretionary nondefense spending. In 1997, yet another congressional deficit-cutting act largely validated the Bush and Clinton deficit-cutting plans, and reaffirmed the caps on discretionary nondefense spending.

The Clinton deficit-cutting plan was largely formulated by his conservative economic advisors, including then Treasury Secretary Lloyd Bensen, Robert Rubin, then head of the National Economic Council, Leon Panetta, OMB director, and Alan Greenspan, a silent partner. Clinton's deficit-cutting plan hinged on Greenspan's calculation that the direct negative impact on the economy of increasing taxes and cutting government spending would be more than offset by the positive effect of declining real long-term interest rates, reflecting the promise of increased fiscal discipline. This "Greenspan trade off" resulted in declining real long-term interest rates that reflected reduced competition between shrinking government borrowing demands and the increasing private sector borrowing demands by consumers, home buyers, and especially businesses. This favorable, low-cost environment for private sector borrowing was particularly important in encouraging the high-tech business investment boom.

Financial assets, including both stocks and bonds, flourished in this environment of declining Federal deficits, strong real GDP growth, rising structural productivity growth, increasing profits, low inflation, and declining interest rates. Amazingly, as already noted, Federal deficits contracted during the 1993–1997 period and gave way to Federal surpluses in 1998, 1999, 2000, and 2001 as government spending was

disciplined and tax receipts were boosted by surging capital gains thrown off by the powerful stock market rally, tax rate increases mainly on the rich (just as their incomes began to rise relative to other incomes), and, of course, overall strong economic growth in the 1996–2000 period.

PROPOSED BUSH TAX CUT

The new Bush administration proposed in early 2001 a $1.6 trillion tax cut for the coming decade. The twin purposes of this tax cut were to stimulate the slumping economy and to return a portion of the estimated $5.6 trillion surplus over this 10-year period to the people so that Congress could not end up spending the funds. The tax cut finally agreed upon by the Bush administration and congress was $1.35 trillion over 11 years. In addition, to provide fiscal stimulus to counter economic weakness, the tax cuts were front-loaded, with taxpayers receiving rebate checks in the summer and fall of 2001 amounting to $300 for single people and $600 for couples filing joint returns. In the final tax bill, the top tax rate was cut in stages to 35% from 39.6%. President Bush had originally proposed a cut in the top tax rate to 33%. The bottom tax rate was cut to 10% from 15% for the first $6,000 of income for all tax payers effective January 2002.

To the surprise of many, especially Democrat politicians, Fed Chairman Greenspan endorsed a tax cut, at least in principle. He declared in congressional testimony on January 25, 2001, that the rising estimates of the Federal surplus over the coming decade made it possible to both pay down the Federal debt and cut taxes. The Fed Chairman also argued that the tax cut was a good insurance policy against recession, though, judging from past experience, he felt that it was possible that political wrangling could delay its main impact until after recovery had begun. Chairman Greenspan found the $5.6 trillion estimate of the Federal surplus in the coming 10 years to be more persuasive in light of more evidence confirming the

substantial increase in structural productivity growth, which, in turn, increased the noninflationary "speed limit" for real GDP growth, thereby increasing the estimates of Federal revenue that could be generated over the coming decade.

The Fed eased aggressively, beginning in early 2001. This highly concentrated series of Fed rate cuts came in response to the sudden slowing in economic growth in late 2000, which spilled over into 2001 and, in the wake of the terrorist attacks on the United States, culminated in a moderate recession. Indeed, it could be argued that both Fed easing and tax cuts are appropriate to try to stimulate an economy that virtually hit a wall in late 2000. The economy teetered on the brink of recession in the summer of 2001 and then was pushed over the edge by the September 11 terrorist attacks.

In the wake of the terrorist attacks, the White House proposed an additional $75 billion fiscal stimulus package consisting mainly of corporate and individual tax cuts, though it was temporarily blocked in the U.S. Senate, the victim of seemingly inevitable partisan conflict. This proposed fiscal stimulus package came on top of a $40 billion emergency appropriations spending package and a $15 billion in disaster relief for the airlines. Finally, on March 8, 2002, after recovery already appeared to be underway, Congress passed a scaled-down version of the post-terrorist attack stimulus plan, providing for just under $50 billion of additional fiscal stimulus through an extension of unemployment benefits and accelerated depreciation on business investment in new capital equipment.

As a rule, discretionary tax cuts would appropriately reinforce the Federal budget's natural tendency—acting in its automatic stabilizer role—to move towards smaller surpluses or larger deficits during recessions, thus providing needed stimulus to the economy. Ideally, the budget should, in contrast, move towards smaller deficits or larger surpluses during economic expansions, thereby helping to limit output growth to a sustainable pace. In the longer-term, fiscal discipline

must be sufficient to keep the Federal budget roughly in balance over the course of the entire business cycle to keep real long-term interest rates low and so achieve achieving the lowest possible cost of capital for private sector businesses.

CHAPTER 5

Monetary Policy Process and Indicators

To fully understand how the Federal Reserve can affect the average American's wealth creation potential, it is important to take a look at the nuts and bolts of monetary policy. Generally speaking, as the monetary authorities seek to achieve the goals of price stability and sustainable growth, there are three basic channels of Fed influence: interest rates, both levels and spreads; the stock market, operating mainly through the wealth effect on consumer spending; and the dollar, which, of course, influences net exports. For example, when the Fed tightens its policy stance, interest rates will increase, depressing activity in such interest-sensitive sectors as housing, and stock prices may decline, producing a negative wealth effect on spending. Also, higher U.S. interest rates should strengthen the dollar, resulting in weaker exports, stronger imports, and a rising trade deficit, which acts as an increasing drag on the economy. Conversely, when the Fed eases its policy stance, interest rates will decline, stimulating interest-sensitive sectors such as housing, and stock prices will tend to rise, producing a positive wealth effect on spending. In addition, declining U.S. interest rates will weaken the dollar, resulting in strengthening exports, weakening imports, and a declining trade deficit that boosts economic growth.

STRUCTURE

The structure of the Federal Reserve System consists of a Board of Governors located in Washington, D.C. and 12 district Federal Reserve Banks located in Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Kansas City, Minneapolis, Dallas, and San Francisco. The President of the United States, with the advice and consent of the U.S. Senate, appoints the seven members of the Board of Governors to 14-year terms. These long terms were set deliberately to protect them from the changing political climate. The Board leadership, however, has a shorter tenure. The Chairman and Vice Chairman of the Board of Governors are each appointed by the president to hold these titles for four-year terms, renewable at the president's pleasure and with the advice and consent of the Senate.

Each of the 12 district Federal Reserve Banks has a president, who is chosen by its respective Board of Directors, with the approval of the Board of Governors in Washington. Each Reserve Bank's Board of Directors consists of nine members; six are elected by the member banks in that district and three are appointed by the Board of Governors in Washington.

Although the structure of the Federal Reserve System may seem somewhat unwieldy with a Board of Governors in Washington and all those Reserve Banks spread around the country, this structure has in fact proven quite helpful in the Fed policymaking process. Actually, this structure allows regional Reserve Bank officials to highlight important differences in labor market strains specific to certain regions. In addition, regional reports (anecdotal or statistical) may help confirm or call into question what the aggregate statistics are saying about the economy. Also, the Reserve Bank presidents tend to reinforce Fed independence from undue political pressure since they come from outside the Washington beltway and tend to have political support in their

respective regions. Moreover, directors of Reserve Banks (past and present) along with other regional contacts may provide a counterweight to political pressure in Washington, D.C.

Today, the power within the Federal Reserve System clearly rests mainly with the Fed Chairman and the Board of Governors in Washington, D.C. This is a far cry, however, from the intentions of the founders of the Federal Reserve System in 1913 who sought to diffuse control rather than centralize it. The main idea of "Wall Street" was that there would not be one central bank for all America, but 12 district Federal Reserve Banks, headed originally by "Governors." The Fed district bank heads were originally called "Governor" rather than "President," as they are called today, in order to make it clear that their role was comparable to that of the Governor of the Bank of England. At the opposite extreme, President Woodrow Wilson originally preferred a more centralized Federal Reserve System. What we got was a compromise.

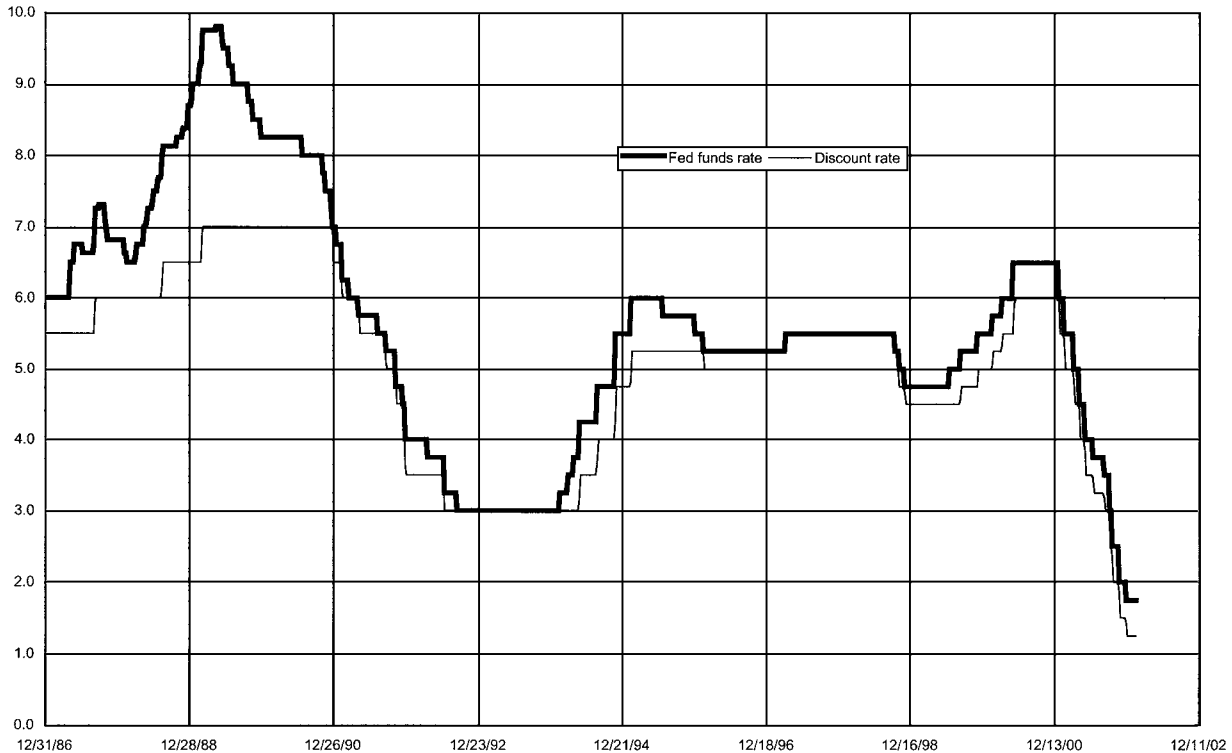
In contrast with the original idea of diffusing control, after two decades of experience, the Banking Act of 1935 sought to centralize power in an American central bank run from Washington, D.C., the precise opposite of the intention of some of the founders. This legislation, which established the foundation for the current Washington-centered Federal Reserve System, created the FOMC to run open market operations and gave the Fed Board of Governors the power to raise or lower reserve requirements. In addition, this important banking law decreed that henceforth the heads of the Fed district banks would be called "President" rather than "Governor." Contrary to the wishes of Marriner Eccles, the main architect of the Banking Act of 1935, however, the Reserve Bank Presidents, as members of the FOMC, continued to exert considerable noncentralized monetary policy control.

POLICY INSTRUMENTS

Regarding its policy instruments, the Fed has two primary policy tools that are used frequently and one additional instrument that is used infrequently. In addition, Fed jawboning might be considered a fourth policy weapon. The Fed's most frequently used instrument is open market operations, consisting of purchases (or sales) of government securities for the purpose of increasing (or decreasing) bank reserve availability. Such increases (or decreases) in bank reserve availability are reflected in the Federal funds rate, which is the rate on bank reserve balances held at the Fed that are loaned and borrowed among banks, usually overnight. The Fed maintains a target for the Federal funds rate. When the Fed acts to tighten bank reserve availability, it raises its Federal funds rate target; conversely, when it acts to ease bank reserve availability, the Fed lowers its Federal funds rate target (see Exhibit 5.1).

The second Fed policy tool is the discount rate. The discount rate is the rate that the Fed charges depository institutions for the privilege of borrowing funds at its discount window. This largely symbolic policy instrument is usually moved in lock-step with Fed changes in its Federal funds rate target as a way of underscoring Fed countercyclical resolve. In the past, in a "full pass-through," the Fed would intend that a given change in the discount rate would pass through fully to a like-sized change in the Fed's target for the Federal funds rate. In its less frequently used "partial pass-through," the Fed would intend that a given change in the discount rate (say 50 basis points) would only partially pass through to a smaller change in the Fed's target for the Federal funds rate (say 25 basis points). Today, the FOMC typically adjusts its Federal funds rate target first, and then the Board of Governors, which is responsible for discount rate adjustments, meets independently to approve a corresponding change in the discount rate.

EXHIBIT 5.1 Fed Funds Rate and Discount Rate
Levels, weekly (1987–2002)



A third infrequently used policy instrument is reserve requirements. The Federal Reserve Act of 1913 provided that banks hold all reserves against their deposit liabilities either as vault cash or deposits at district Federal Reserve Banks. Subsequently, as already noted, the Banking Act of 1935 gave the Federal Reserve Board of Governors authority, within prescribed limits, to set minimum ratios for the reserves that member banks are required to hold against their demand and nonpersonal time deposit liabilities. (It should be noted that there have been zero reserve requirements on nonpersonal time deposits since January 17, 1991.) From 1935 through 1979, the Federal Reserve Board of Governors actively used reserve requirement adjustments as a primary policy instrument. When the Board of Governors sought to be more restrictive, for example, it increased the required reserve ratio thereby reducing the maximum amount of banking system deposits (credit) that a given supply of total reserves could support. Conversely, when the Board of Governors sought to ease credit conditions, it reduced the required reserve ratio, thereby increasing the maximum amount of banking system deposits (credit) that a given supply of total reserves could support. The last time the Federal Reserve lowered reserve requirements was in February 1991 and, previously, in December 1990, in an effort to counter a severe credit crunch which helped pull the economy down into recession in 1990–1991. The reduction in reserve requirements increased the amount of interest-bearing loans and investments (credit) that banks could extend (for a given amount of total reserves), while simultaneously lowering their nonearning required reserves, thereby potentially improving bank profitability.

The banking system's deposit (credit) expansion potential can be expressed in terms of the conventional reserve-deposit multiplier:

$$D^* = R \times \frac{1}{r} = \frac{R}{r}$$

where

D^* = the maximum amount of banking system deposits
R = total reserves
r = the legal ratio of required reserves to deposits

For example, if the legal reserve requirement ratio for deposits is 0.10, this means that $1 in total reserves can support a maximum of $10 in banking system deposits.

A fourth informal Fed policy weapon worthy of mention is "moral suasion" or "jaw-boning." Considered in the broadest sense, two examples of successful "jaw-boning" aimed at reassuring the financial markets and bolstering the confidence of the general public were Fed statements in October 1987, that it was prepared to supply the liquidity needed in the wake of the stock market crash, and in the wake of the terrorist attacks of September 2001 that "The Federal Reserve System is open and operating. The discount window is available to meet liquidity needs." (See Chapter 8.) Additional examples of Fed "jaw-boning" range from Fed efforts to get banks to tighten up on business lending terms in 1966 to more recent efforts in late 2000 to persuade banks not to tighten their business lending terms too much. According to the January 2002 Fed quarterly senior bank lending officer survey, banks are continuing to tighten business lending terms, contrary to the Fed Chairman's admonitions to banks to avoid being too tough with business borrowers. Another example of Fed "jaw-boning" that failed was the Fed Chairman's warning to the stock market about "irrational exuberance" in December 1996. This unsuccessful Fed effort to avoid a stock market bubble came at a time when the Dow-Jones industrial average was trading at about 6,500. This stock index ultimately peaked at 11,722 in January 2000, as stock market participants shrugged off the Fed Chairman's admonitions.

In passing, it should be noted that some have criticized Fed Chairman Greenspan for not increasing margin requirements on stock purchases, or the fraction of the purchase

price of securities that had to be in the buyer's own money. It was argued that this should have been done in order to restrain stock market speculation. Under the Banking Act of 1935, with the 1929 stock market crash in mind, Congress ordered the Fed to police the "purpose of credit" as regards loans obtained to buy securities. The idea was that the important credit resources of the banking system were not to be disproportionately used to finance speculation in the stock market. Presently, margin requirements are 50%. However, previously, Fed Chairmen William McChesney Martin and Arthur Burns kept them above 65% from 1963 to 1971.

Of course, it could be argued that an increase in margin requirements would be ineffective in heading off a stock price bubble, because modern finance has created so many ways to use credit to control stock purchases, including derivatives in the form of options, futures or swaps. But the point is that the "announcement effect" alone of a timely Fed increase in margin requirements might have helped curtail the speculative bubble in stock prices in its advanced stage during the period from late 1998 through early 2000. Interestingly, according to the Fed's verbatim transcripts of the September 24, 1996, FOMC meeting, Fed Chairman Greenspan considered an increase in margin requirements as one potentially decisive remedy for "a stock market bubble problem at this point" but he feared that such an action would raise "major concerns" in the markets.

FOMC DELIBERATIONS

The Fed's most important policymaking body is the FOMC, and it is in charge of the Fed's most important policy instrument: open market operations. The FOMC, which consists of the seven members of the Board of Governors plus five voting Reserve Bank presidents, meets eight times per year on a regularly scheduled basis and, if evolving financial and economic

circumstances demand it, at other times through special telephone conferences.

The mechanics of scheduled FOMC meetings at Federal Reserve headquarters on Constitution Avenue in Washington, D.C. are straightforward, as best described by former Fed Governor Laurence Meyer in his lecture "Come with Me to the FOMC." They typically begin with the approval of the minutes of the previous FOMC meeting. The first substantive agenda item is a presentation by the Manager of the System Open Market Account, who works at the Federal Reserve Bank of New York. This presentation covers developments in the domestic financial markets as well as in the foreign exchange markets. The Manager of the System Open Market Account provides details of Fed open market operations and any foreign exchange rate intervention during the period since the last FOMC meeting.

The next item on the FOMC meeting agenda is the presentation of the Board staff's forecast by the Director of Research and Statistics. Also at this time, the Board's Director of the International Finance Division makes a presentation at most FOMC meetings. The staff forecast had previously been circulated to members of the FOMC—usually on the Thursday preceding the scheduled FOMC meeting—in a document known as the Greenbook. The Greenbook consists of Part I, focusing on the forecast and analysis of the outlook, and Part II, mainly a detailed analysis of recent developments in the economy and financial markets. International developments are an important part (i.e., in separate sections) of both Part I and Part II of the Greenbook. The Board staff's forecast is a judgmental forecast, constructed with the help of a variety of equations which describe the behavior of various components of aggregate demand. Another document, which contains up-to-date regional information used by FOMC members, is called the *Beigebook*. The Beigebook, which covers economic developments in each of the 12 Federal Reserve Bank districts, is the only one of the Fed's policy documents to be released on a

contemporaneous basis to the public. It is released about two weeks prior to each FOMC meeting. At the conclusion of the presentation of the Board staff's forecast, the Fed Chairman asks if there are any questions for the staff. Once this question-and-answer session is concluded, the first of two extremely important FOMC "go-rounds" begins.

In the first "go-round" (the term refers to a "go-round" of FOMC participants seated around their impressively large boardroom table), each FOMC member briefly presents his or her own views of the economic outlook. In the first "go-round," the 12 Reserve Bank Presidents usually go first because they have information that the seven Fed Governors do not, especially concerning developments in their respective regions, including real-time information on consumer spending, housing activity, business investment, and wages and prices gathered from speaking to local individuals and businesses. Each presentation averages about five minutes long and focuses on the policy problem at hand. Rather than offering detailed forecasts, FOMC members tend to position themselves relative to the Board staff's forecast: stronger or weaker growth, higher or lower inflation. Most significantly, Fed Chairman Greenspan does not participate in the first "go-round."

After a coffee break, the second FOMC "go-round" is introduced by a presentation on Fed policy options by senior Board staff who hold the position of "Economist" on the FOMC. The policy options are detailed in a document called the *Bluebook*. Very often in recent years there have been only two options in this key FOMC document: no change in the Fed's policy stance, or change in the likely direction called for by circumstances at that time. The policy options will include the size of the proposed Fed adjustments in its target for the Federal funds rate, the normal size being 25 basis points. The staff briefer does not recommend a particular course of action; rather, he or she will offer some options and the rationale for each. The wording of the directive is pretty

automatic once the FOMC makes its decision. There is a separate discussion of the balance of risks statement which is not part of the directive but is included in the press release.

Most importantly, the second "go-round" is launched by Fed Chairman Greenspan himself, who expresses his views on the economic outlook and the appropriate course of policy action. It is the Chairman's practice to invite comments on a specific policy proposal covering the Federal funds rate target and the balance of risks. Each FOMC member follows with his or her views on the appropriate Fed policy stance, including the target for the Federal funds rate and whether the balance of risks are tilting toward economic weakness or inflation. When the decision is quite clear, discussion in the second "go-round" may be quite limited. In contrast, when the appropriate policy course is less clear, there may be more extensive discussion.

The next item on the typical FOMC agenda is the formal vote on the policy option proposed by the Chairman. Although there may be differences of opinion among FOMC members, there is typically a real effort to reach a policy consensus. The Fed Chairman tries to accommodate as many FOMC members as possible, consistent, of course, with what he is willing to accept. One or two dissents from the vote of the FOMC majority are not unusual, but more than two dissents are rare. It should be noted that prior to the formal vote, all 12 Reserve Bank presidents, as well as the seven members of the Board of Governors, participate in each of the two key "go-rounds." However, the formal FOMC vote involves only the five voting Reserve Bank presidents at that time, along with the seven members of the Board of Governors. In the formal vote, the Fed Chairman votes first, the Vice Chairman of the FOMC second, and the other voting FOMC members in alphabetical order. Whatever the FOMC's policy decision—change or no change—the current practice is to make an announcement at 2:15 p.m. (EST) on the day of the meeting in the form of a press release.

Most conveniently for Fed watchers, the FOMC, beginning on February 4, 1994, has immediately announced its policy decisions, and the primary reasoning behind them (see the Appendix to this chapter). Moreover, beginning on July 6, 1995, the FOMC announced changes in its specific Federal funds rate target level. At least prior to 2001, the normal-sized change in the Fed's Federal funds rate target is as already noted 25 basis points, or one-quarter of a percentage point; but more aggressive Fed actions may involve changes of 50 basis points, or even 75 basis points, in one case, during the Greenspan era (see Exhibit 5.2). In 2001, 8 out of 11 Fed rate cuts were 50 basis points.

EXHIBIT 5.2 **Federal Reserve Policy Actions Under Greenspan (1987–Present)**

	Date	Type of Policy Shift	Bias*	Vote	Fed Funds Target	Discount Rate
1987	8/18	Unchanged	Tighter	11 to 0	6.75	5.50
	9/3	Tightening			6.75–7.00	5.50
	9/4	Tightening Full Pass Through			7.25	6.00
	9/22	Tightening	Symmetric	11 to 0	7.375	6.00
	10/22	Easing			7.125	6.00
	10/28	Easing			7.00	6.00
	11/3	Unchanged	Easier	11 to 0	7.00	6.00
	11/4	Easing			6.75–6.875	6.00
	12/15 & 12/16	Unchanged	Symmetric	9 to 2	6.75–6.875	6.00
1988	1/28	Easing			6.50–6.75	6.00
	2/9 & 2/10	Easing	Symmetric	10 to 1	6.50	6.00
	3/29	Tightening	Symmetric	10 to 1	6.75	6.00
	5/9	Tightening			7.00	6.00
	5/17	Unchanged	Tighter	9 to 2	7.00	6.00
	5/25	Tightening			7.25	6.00
	6/22	Tightening			7.50	6.00
	6/29 & 6/30	Tightening	Tighter	8 to 3	7.50–7.625	6.00
	8/9	Tightening Full Pass Through			8.00–8.25	6.50
	8/16	Unchanged	Tighter	10 to 1	8.00–8.25	6.50
	9/20	Unchanged	Tighter	12 to 0	8.00–8.25	6.50

EXHIBIT 5.2 (Continued)

	Date	Type of Policy Shift	Bias*	Vote	Fed Funds Target	Discount Rate
1988	11/1	Unchanged	Tighter	11 to 1	8.00–8.25	6.50
(cont.)	11/22	Tightening			8.375	6.50
	12/13 & 12/14	Tightening	Tighter	11 to 1	8.625–8.75	6.50
1989	1/5	Tightening			8.875–9.00	6.50
	2/7 & 2/8	Unchanged	Tighter	10 to 2	8.875–9.00	6.50
	2/14	Tightening			9.00–9.125	6.50
	2/24	Tightening Full Pass Through			9.75–9.875	7.00
	3/28	Unchanged	Tighter	11 to 1	9.75	7.00
	5/16	Unchanged	Symmetric	11 to 1	9.75–9.875	7.00
	6/6	Easing			9.50–9.625	7.00
	7/5 & 7/6	Easing	Symmetric	10 to 1	9.25	7.00
	7/27	Easing			9.00	7.00
	8/22	Unchanged	Easier	10 to 1	9.00	7.00
	10/3	Unchanged	Easier	9 to 2	9.00	7.00
	10/19	Easing			8.75	7.00
	11/6	Easing			8.50	7.00
	11/14	Unchanged	Easier	10 to 1	8.50	7.00
	12/18 & 12/19	Easing	Symmetric	9 to 2	8.25	7.00
1990	2/6 & 2/7	Unchanged	Symmetric	8 to 3	8.25	7.00
	3/27	Unchanged	Symmetric	9 to 2	8.25	7.00
	5/15	Unchanged	Symmetric	10 to 1	8.25	7.00
	7/2 & 7/3	Unchanged	Easier	11 to 0	8.25	7.00
	7/13	Easing			8.00	7.00
	8/21	Unchanged	Easier	11 to 0	8.00	7.00
	10/2	Unchanged	Easier	7 to 4	8.00	7.00
	10/29	Easing			7.75	7.00
	11/13	Easing	Easier	11 to 0	7.50	7.00
	12/7	Easing			7.25	7.00
	12/18	Easing Partial Pass Through	Easier	11 to 0	7.00	6.50
1991	1/9	Easing			6.75	6.50
	2/1	Easing Full Pass Through			6.25	6.00
	2/5 & 2/6	Unchanged	Easier	11 to 0	6.25	6.00
	3/8	Easing	Easier	11 to 0	6.00	

EXHIBIT 5.2 (Continued)

	Date	Type of Policy Shift	Bias*	Vote	Fed Funds Target	Discount Rate
1991	3/26	Unchanged	Symmetric	10 to 0	6.00	6.00
(cont.)	4/30	Easing Partial Pass Through			5.75	5.50
	5/14	Unchanged	Symmetric	10 to 0	5.75	5.50
	7/2 & 7/3	Unchanged	Symmetric	10 to 0	5.75	5.50
	8/6	Easing			5.50	5.50
	8/20	Unchanged	Easier	10 to 0	5.50	5.50
	9/13	Easing Partial Pass Through			5.25	5.00
	10/1	Unchanged	Easier	10 to 0	5.25	5.00
	10/31	Easing			5.00	5.00
	11/6	Easing Partial Pass Through	Easier	8 to 2	4.75	4.50
	12/6	Easing			4.50	4.50
	12/17	Unchanged	Easier	11 to 1	4.50	4.50
	12/20	Easing Partial Pass Through			4.00	3.50
1992	2/4 & 2/5	Unchanged	Easier	12 to 0	4.00	3.50
	3/31	Unchanged	Easier	12 to 0	4.00	3.50
	4/9	Easing			3.75	3.50
	5/19	Unchanged	Symmetric	12 to 0	3.75	3.50
	6/30 & 7/1	Easing Full Pass Through	Easier	10 to 2	3.25	3.00
	8/18	Unchanged	Easier	10 to 2	3.25	3.00
	9/4	Easing			3.00	3.00
	10/6	Unchanged	Easier	8 to 4	3.00	3.00
	11/17	Unchanged	Easier	9 to 3	3.00	3.00
	12/22	Unchanged	Symmetric	12 to 0	3.00	3.00
1993	2/2 & 2/3	Unchanged	Symmetric	12 to 0	3.00	3.00
	3/23	Unchanged	Symmetric	10 to 2	3.00	3.00
	5/18	Unchanged	Tighter	10 to 2	3.00	3.00
	7/6 & 7/7	Unchanged	Tighter	11 to 1	3.00	3.00
	8/17	Unchanged	Symmetric	12 to 0	3.00	3.00
	9/21	Unchanged	Symmetric	12 to 0	3.00	3.00
	11/16	Unchanged	Symmetric	12 to 0	3.00	3.00
	12/21	Unchanged	Symmetric	10 to 2	3.00	3.00

EXHIBIT 5.2 (Continued)

	Date	Type of Policy Shift	Bias*	Vote	Fed Funds Target	Discount Rate
1994	2/3 & 2/4	Tightening	Symmetric	10 to 0	3.25	3.00
	3/22	Tightening	Symmetric	8 to 2	3.50	3.00
	4/18	Tightening			3.75	3.00
	5/17	Tightening Full Pass Through	Symmetric	10 to 0	4.25	3.50
	7/5 & 7/6	Unchanged	Tighter	10 to 1	4.25	3.50
	8/16	Tightening Full Pass Through	Symmetric	12 to 0	4.75	4.00
	9/27	Unchanged	Tighter	11 to 1	4.75	4.00
	11/15	Tightening Full Pass Through	Symmetric	12 to 0	5.50	4.75
	12/20	Unchanged	Tighter	11 to 1	5.50	4.75
1995	1/31 & 2/1	Tightening Full Pass Through	Symmetric	12 to 0	6.00	5.25
	3/28	Unchanged	Tighter	11 to 0	6.00	5.25
	5/23	Unchanged	Symmetric	11 to 0	6.00	5.25
	7/5 & 7/6	Easing	Easier	10 to 1	5.75	5.25
	8/22	Unchanged	Symmetric	11 to 0	5.75	5.25
	9/26	Unchanged	Symmetric	11 to 0	5.75	5.25
	11/15	Unchanged	Symmetric	10 to 1	5.75	5.25
	12/19	Easing	Symmetric	11 to 0	5.50	5.25
1996	1/30 & 1/31	Easing Full Pass Through	Symmetric	10 to 0	5.25	5.00
	3/26	Unchanged	Symmetric	10 to 0	5.25	5.00
	5/21	Unchanged	Symmetric	10 to 0	5.25	5.00
	7/2 & 7/3	Unchanged	Tighter	11 to 1	5.25	5.00
	8/20	Unchanged	Tighter	11 to 1	5.25	5.00
	9/24	Unchanged	Tighter	11 to 1	5.25	5.00
	11/13	Unchanged	Tighter	12 to 0	5.25	5.00
	12/17	Unchanged	Tighter	12 to 0	5.25	5.00
1997	2/4 & 2/5	Unchanged	Tighter	10 to 0	5.25	5.00
	3/25	Tightening	Symmetric	10 to 0	5.50	5.00
	5/20	Unchanged	Tighter	9 to 1	5.50	5.00
	7/1-7/2	Unchanged	Tighter	10 to 0	5.50	5.00
	8/19	Unchanged	Tighter	10 to 0	5.50	5.00
	9/30	Unchanged	Tighter	10 to 0	5.50	5.00

EXHIBIT 5.2 (Continued)

	Date	Type of Policy Shift	Bias *	Vote	Fed Funds Target	Discount Rate
1997	11/12	Unchanged	Tighter	11 to 1	5.50	5.00
(cont.)	12/16	Unchanged	Symmetric	11 to 1	5.50	5.00
1998	2/3 & 2/4	Unchanged	Symmetric	12 to 0	5.50	5.00
	3/31	Unchanged	Tighter	11 to 1	5.50	5.00
	5/19	Unchanged	Tighter	10 to 2	5.50	5.00
	6/30 & 7/1	Unchanged	Tighter	10 to 1	5.50	5.00
	8/18	Unchanged	Symmetric	10 to 1	5.50	5.00
	9/29	Easing	Easier	11 to 0	5.25	5.00
	10/15	Easing Full Pass Through			5.00	4.75
	11/17	Easing Full Pass Through	Symmetric	10 to 1	4.75	4.50
	12/22	Unchanged	Symmetric	11 to 0	4.75	4.50
1999	2/2 & 2/3	Unchanged	Symmetric	11 to 0	4.75	4.50
	3/30	Unchanged	Symmetric	11 to 0	4.75	4.50
	5/18	Unchanged	Tighter	11 to 0	4.75	4.50
	6/29 & 6/30	Tightening	Symmetric	9 to 1	5.00	4.50
	8/24	Tightening Full Pass Through	Symmetric	9 to 1	5.25	4.75
	10/5	Unchanged	Tighter	10 to 0	5.25	4.75
	11/16	Tightening Full Pass Through	Symmetric	10 to 0	5.50	5.00
	12/21	Unchanged	Symmetric	10 to 0	5.50	5.00
2000	2/1 & 2/2	Tightening Full Pass Through	Risks weighted toward inflation	10 to 0	5.75	5.25
	3/21	Tightening Full Pass Through	Risks weighted toward inflation	10 to 0	6.00	5.50
	5/16	Tightening Full Pass Trough	Risks weighted toward inflation	10 to 0	6.50	6.00
	6/27 & 6/28	Unchanged	Risks weighted toward inflation	10 to 0	6.50	6.00
	8/22	Unchanged	Risks weighted toward inflation	10 to 0	6.50	6.00
	10/3	Unchanged	Risks weighted toward inflation	10 to 0	6.50	6.00

EXHIBIT 5.2 (Continued)

	Date	Type of Policy Shift	Bias*	Vote	Fed Funds Target	Discount Rate
2000 (cont.)	11/15	Unchanged	Risks weighted toward inflation	10 to 0	6.50	6.00
	12/19	Unchanged	Risks weighted toward weakness	10 to 0	6.50	6.00
2001	1/3	Easing Full Pass Through	Risks weighted toward weakness	10 to 0	6.00	5.50
	1/30 & 1/31	Easing Full Pass Through	Risks weighted toward weakness	10 to 0	5.50	5.00
	3/20	Easing Full Pass Through	Risks weighted toward weakness	10 to 0	5.00	4.50
	4/18	Easing Full Pass Through	Risks weighted toward weakness	10 to 0	4.50	4.00
	5/15	Easing Full Pass Through	Risks weighted toward weakness	9 to 1	4.00	3.50
	6/26 & 6/27	Easing Full Pass Through	Risks weighted toward weakness	9 to 1	3.75	3.25
	8/21	Easing Full Pass Through	Risks weighted toward weakness	10 to 0	3.50	3.00
	9/17	Easing Full Pass Through	Risks weighted toward weakness	10 to 0	3.00	2.50
	10/2	Easing Full Pass Through	Risks weighted oward weakness	10 to 0	2.50	2.00
	11/6	Easing Full Pass Through	Risks weighted toward weakness	10 to 0	2.00	1.50
	12/11	Easing Full Pass Through	Risks weighted toward weakness	10 to 1	1.75	1.25
2002	1/29 & 1/30	Unchanged	Risks weighted toward weakness	10 to 0	1.75	1.25
	3/19	Unchanged	Risks are balanced	10 to 0	1.75	1.25

* Bias indicated on date of regularly scheduled FOMC meeting. Wording of bias changed as of February 2000.
Source: Federal Reserve and Aubrey G. Lanston & Co.

It should be noted that an announcement will be made even if the FOMC should vote not to change monetary policy. Prior to May 1999, a Fed decision not to change its policy stance was accompanied by a terse two sentence statement: "[T]he Federal Open Market Committee meeting ended at 12:35 p.m. (EST). There is no announcement." However, beginning in May 1999, the Fed appropriately started explaining the reasoning behind not only FOMC decisions to change monetary policy, but also decisions not to change policy. With an effort at even greater transparency, Fed officials announced in March 2002 that the results of the FOMC vote on policy actions (including dissents) would be made available immediately in the official press release on the day of the FOMC meeting rather than delaying this information on the FOMC vote until the minutes are released after the succeeding FOMC meeting.

POLICY STATEMENT ON BALANCE OF RISKS

The immediate announcement of FOMC policy decisions following each meeting also includes the important wording of its policy statement. The FOMC policy statement has a direct bearing on market psychology because the policy announcement provides important information concerning whether the Fed is predisposed to ease its policy stance, tighten its policy stance, or perhaps do nothing. Prior to December 1998, financial market participants had to wait 5–6 weeks until the minutes of the FOMC meeting were released to learn the prevailing policy bias, thus leading to leaks and rampant speculation as market participants sought to determine the Fed's policy tilt. The policy statement might, for example, have been biased toward a tighter Fed policy stance, foreshadowing a near-term Fed rate hike; conversely, the policy announcement may have been biased toward an easier policy stance, suggesting a near-term Fed rate cut. Alternatively, the policy statement may have been symmetric, which meant no Fed predilection about near-term policy action.

In December 1998, however, Fed authorities declared that henceforth they would announce changes in the Fed's policy bias regarding the likely direction of short-term interest rates immediately, if it represented a significant shift in Fed thinking. During 1999, however, the problem was that financial market participants usually overreacted to the Fed's immediately announced changes in its policy bias while tending to underreact to actual Fed policy moves. In May 1999, for example, the financial markets overreacted in a negative direction to the Fed's announcement of a shift to a tighter policy bias. Yet, in June 1999, an actual Fed move to tighten its policy stance set off wild rallies in both stock and bond markets, partly owing to the Fed's misleading shift back to a symmetric policy bias.

In order to solve this problem of exaggerated capital market responses to policy bias announcements, Fed Chairman Greenspan established an internal committee under Vice Chairman Roger Ferguson that was charged with changing the wording of the policy statement to focus more broadly on the Fed's views concerning the economic outlook and the balance of risks to good economic performance rather than narrowly on the more explicit Fed interest rate bias. These changes in the wording of the policy statement were implemented at the two-day February 1–2, 2000, FOMC meeting. At this and each subsequent FOMC meeting through November 2000, Fed policymakers perceived that the balance of risks were weighted toward conditions that could produce heightened inflation. However, in a significant shift in emphasis, the monetary authorities perceived at their December 19, 2000, FOMC meeting that the balance of risks had shifted toward conditions that could generate economic weakness.

This new Fed perception at its final policy meeting in 2000 of the balance of risks as tilting towards economic weakness triggered declines in market interest rates well ahead of the Fed's actual 50 basis point easing move between FOMC meetings on January 3, 2001. There was another 50 basis point Fed easing move at its regularly scheduled two-day FOMC meeting

on January 30–31, 2001, and additional Fed rate cuts at its March 20 FOMC meeting. In addition, the Fed cut rates again between meetings on April 18, followed by yet another Fed rate cut at its May 15 FOMC meeting. The Fed cut rates again at the June 26–27 and August 21 FOMC meetings, but the declines were each only 25 basis points, half the size of the five 50 basis point cuts in the first five months of the year.

In the wake of the September 11 terrorist attacks, the Fed cut rates by 50 basis points on September 17 between policy meetings and again at the October 2 and November 6 FOMC meetings. At the October 2 meeting, the Fed observed that "[t]he terrorist attacks have significantly heightened uncertainty in an economy that was already weak." At the November 6 meeting, the Fed stated that "heightened uncertainty and concerns about a deterioration in business conditions both here and abroad are damping economic activity." At this latter meeting, the Fed also made room for still more rate cuts by stating that "the risks are weighted mainly toward conditions that may generate economic weakness." Accordingly, the Fed cut rates yet again at its December 11 FOMC meeting. The Fed kept its Federal funds rate target unchanged at its January 29–30, 2002, FOMC meeting, but continued to view risks as weighted toward weakness. At the subsequent March 19, 2002, FOMC meeting, however, the Fed again maintained an unchanged Federal funds rate target, but shifted to the view that risks are equally balanced between inflation on the upside and economic weakness on the downside.

On balance, the Fed has arrived at policy statement wording that communicates its thinking more clearly to financial market participants, thereby effectively guiding market psychology. Thus, the wording of the Fed's postmeeting press release appears to be crucial to the Fed's effort to influence market psychology. The modification of the wording of the Fed's policy statement in February 2000 came at a time when there was increasing Fed reliance on adjustments in capital

market asset prices to influence aggregate demand and ultimately output growth and inflation.

FED FORECASTING PROCESS

Central bankers must hinge their policy moves to a significant extent on economic forecasts. As Fed Chairman Greenspan observed in his May 24, 2001, remarks to the Economic Club of New York, "[I]f we only react to past or current developments, lags in the effects of monetary policy could end up destabilizing the economy, as history has amply shown." Thus, by necessity, general expectations about future economic developments inevitably play a crucial role in Fed policymaking.

In his May 24 remarks, the Fed Chairman also noted that

> [b]ecause point forecasts are extraordinarily difficult to fashion we are forced also to consider the probability distribution of possible economic outcomes. Against these distributions we endeavor to judge the consequences of various alternative policy scenarios, especially the consequences of a policy mistake.

Fed Chairman Greenspan went on to explain that "[t]he center of the forecast distribution, of necessity, is still important to our deliberations but, more than many people realize, policymaking is to a substantial extent focused on the potential deviations from the central forecast and the costs should these outcomes prevail." A perfect illustration of this forecasting process, in which Fed officials focus on deviations from their central tendency forecast and particularly on the costs should these outcomes prevail, can be found in the minutes of the October 2, 2001, FOMC meeting. At this meeting, Fed policymakers held a central tendency forecast of a mild and short contraction, followed by a gradual recovery in 2002. But Fed authorities envisioned a possible deviation

from this central tendency forecast in the form of "a potentially much weaker outcome in the nearer term." Chairman Greenspan added with regard to the Fed's general forecasting process that "[i]n short, our policy behavior is the result of examining the implications of the interaction of probability distributions and loss functions."

As can be seen in the minutes of each FOMC meeting, there is discussion of both Fed staff economic projections and the informal consensus of the individual forecasts of FOMC members. At times, the tone, if not the substance of FOMC member forecasts may differ from the Fed staff forecast. At the March 20, 2001 FOMC meeting, for example, the Fed staff held, according to the minutes, that "after a period of slow growth associated in part with an inventory correction, the economic expansion would gradually regain strength over the next two years and move toward a rate near the staff's current estimate of the growth of the economy's potential output."

In a somewhat more sober assessment, however, FOMC members themselves "viewed evolving business conditions as consistent on the whole with a continued softness in economic activity." The FOMC members observed that although "consumer spending had strengthened early in the year and housing activity had remained at a relatively high level," these positive developments "needed to be weighed against an appreciable weakening in business investment spending and the near-term restraining effects of a draw down in inventories." It was further noted that "[b]eyond the inventory correction, the members continued to anticipate an acceleration of the expansion over time, *though likely on a more delayed basis and at a more gradual pace than they had forecast earlier.*" (Italics added.) The March 20 minutes also revealed that Fed officials had an unscheduled telephone conference on April 11 at which no action was taken, a week before a second telephone conference on April 18, at which the Fed decided to cut its Federal funds rate target by 50 basis points (see Exhibit 5.3).

EXHIBIT 5.3 Minutes of the Federal Open Market Committee March 20, 2001

A meeting of the Federal Open Market Committee was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., beginning at 9:00 a.m. on Tuesday, March 20, 2001.

Present:
Mr. Greenspan, Chairman
Mr. McDonough, Vice Chairman
Mr. Ferguson
Mr. Gramlich
Mr. Hoenig
Mr. Kelley
Mr. Meyer
Ms. Minehan
Mr. Moskow
Mr. Poole

Messrs. Jordan, McTeer, Santomero, Stern, and Stewart, Alternate Members of the Federal Open Market Committee

Messrs. Broaddus, Guynn, and Parry, Presidents of the Federal Reserve Banks of Richmond, Atlanta, and San Francisco respectively

Mr. Kohn, Secretary and Economist
Mr. Bernard, Deputy Secretary
Mr. Gillum, Assistant Secretary
Ms. Fox, Assistant Secretary
Mr. Baxter, Deputy General Counsel
Ms. Johnson, Economist
Mr. Stockton, Economist

Ms. Cumming, Messrs. Fuhrer, Hakkio, Howard, Hunter, Lindsey, Rasche, Reinhart, Slifman, and Wilcox, Associate Economists

Mr. Kos, Manager, System Open Market Account

Ms. Smith and Mr. Winn, Assistants to the Board, Office of Board Members, Board of Governors

Mr. Ettin, Deputy Director, Division of Research and Statistics, Board of Governors

Mr. Simpson, Senior Adviser, Division of Research and Statistics, Board of Governors

Messrs. Madigan, Oliner, and Struckmeyer, Associate Directors, Divisions of Monetary Affairs, Research and Statistics, and Research and Statistics, Board of Governors

Mr. Whitesell, Assistant Director, Division of Monetary Affairs, Board of Governors
Ms. Low, Open Market Secretariat Assistant, Division of Monetary Affairs, Board of Governors

Mr. Barron, First Vice President, Federal Reserve Bank of Atlanta

Messrs. Eisenbeis and Goodfriend, Mses. Krieger and Mester, and Mr. Rolnick, Senior Vice Presidents, Federal Reserve Banks of Atlanta, Richmond, New York, Philadelphia, and Minneapolis respectively

Ms. Orrenius, Economist, Federal Reserve Bank of Dallas

Mr. Trehan, Research Advisor, Federal Reserve Bank of San Francisco

Mr. Haubrich, Consultant, Federal Reserve Bank of Cleveland

By unanimous vote, the minutes of the meeting of the Federal Open Market Committee held on January 30–31, 2001, were approved.

By unanimous vote, David Wilcox was elected to serve as an Associate Economist for the period until the first regularly scheduled meeting of the Committee after December 31, 2001.

The Manager of the System Open Market Account reported on developments in foreign exchange markets. There had been no operations in foreign currencies for the System's account since the previous meeting.

EXHIBIT 5.3 (Continued)

The Manager also reported on developments in domestic financial markets and on System open market transactions in U.S. government securities and federal agency obligations during the period January 31, 2001, through March 19, 2001. By unanimous vote, the Committee ratified these transactions.

The Committee then turned to a discussion of the economic and financial outlook and the implementation of monetary policy over the intermeeting period ahead. A summary of the economic and financial information available at the time of the meeting and of the Committee's discussion is provided below, followed by the domestic policy directive that was approved by the Committee and issued to the Federal Reserve Bank of New York.

The information reviewed at this meeting suggested that economic activity continued to expand very slowly in the first quarter. Growth of final spending apparently picked up slightly, with consumer expenditures recording another moderate gain, business purchases of equipment and software increasing sluggishly after a fourth-quarter decline, and homebuilding remaining relatively firm. However, inventory overhangs were still apparent in some industries, and manufacturing production was cut sharply further. Overall employment gains were relatively well maintained, and labor markets were still tight though showing signs of softening. Price inflation had picked up a little but, abstracting from energy, had remained relatively subdued.

After a sluggish fourth quarter, private nonfarm payroll employment rose at a slightly higher rate on average in January and February, though still considerably below the pace of the first three quarters of 2000. Manufacturing and related industries, notably help-supply and wholesale trade, experienced further large declines in payrolls in the January-February period. However, hiring elsewhere held up relatively well, especially in construction, which recorded a surge in employment in January. While the labor market remained tight on balance, the unemployment rate increased to 4.2 percent in February, and other indicators such as initial claims for unemployment insurance suggested that pressures in labor markets had begun to abate.

The contraction in industrial production that began in October accelerated and broadened in the first two months of the year. In manufacturing, output fell further in the motor vehicle sector, and production continued to decelerate in high-tech industries. The rate of capacity utilization in manufacturing dropped noticeably in January and February to a level further below its long-run average.

Against a background of slowing income gains and a sizable pullback in consumer sentiment since last autumn, consumer spending evidently grew only moderately on balance in January and February. Purchases of motor vehicles picked up in response to increased marketing incentives put in place by Chrysler and General Motors, and retail sales of items other than motor vehicles climbed moderately. Spending on services was held down in January (latest data) by reduced expenditures for heating services as winter temperatures returned to more seasonal levels following unusually cold weather late last year; excluding heating, however, spending on other services rose slowly.

The decline in mortgage rates that began around the middle of last year continued to provide support to residential building activity. Total housing starts rose somewhat further in January and February, reflecting net increases in both single-family and, especially, multifamily units. Sales of new homes dropped sharply in January (latest data), after having surged in December, but remained quite robust by historical standards. Sales of existing homes rebounded in January after having fallen considerably in December and were up slightly on balance over the two months.

The limited available information suggested that business fixed investment was firming early this year after a decline in the fourth quarter of last year. Nominal shipments of nondefense capital goods other than aircraft and parts changed little on balance in December and January, while prices of high-tech equipment continued to fall. Moreover, orders for nondefense capital goods turned up briskly in January after a sharp fourth-quarter drop. Nonresidential construction activity continued its robust rise early in the year. Strength in building activity was widespread across the sector, most notably in new office construction.

Business inventories on a book-value basis increased in January at about the rapid fourth-quarter pace; inventory positions appeared to be especially large for construction materials, metals, electrical equipment, paper, chemicals, and textiles. In the manufacturing sector, overall stocks jumped in January while shipments fell, and the aggregate inventory-shipments ratio rose to its highest level in two years. In the wholesale trade sector, aggregate stocks fell again in January and the sector's inventory-sales ratio edged down to the middle of its very narrow range for the past year. Retail stocks continued to climb in January, but sales rose by more; the sector's inventory-sales ratio also edged lower, but it remained near the top of its range for the past twelve months.

EXHIBIT 5.3 (Continued)

The U.S. trade deficit in goods and services changed little in December but posted a new record high for the fourth quarter. The value of exports dropped substantially in that quarter, with notable declines occurring in agricultural products, aircraft, automotive products, computers and semiconductors, consumer goods, and telecommunications equipment. The value of imports remained at the high level recorded in the third quarter. Lower imports of automotive products, chemicals, computers and semiconductors, and steel were offset by higher imports of consumer goods and telecommunications equipment and smaller increases in other categories of trade. Economic growth in the foreign industrial countries was at a moderate rate on average in the fourth quarter. Expansion in the euro area picked up, while growth in Canada and the United Kingdom slowed significantly. The Japanese economy rebounded in the fourth quarter but was little changed on balance over the second half of the year, and recent indicators suggested a sharply weaker performance in the early part of this year. In addition, growth in the major developing countries slowed markedly in the fourth quarter, with the slowdown in most of those countries reflecting weaker demand for their exports.

Price inflation had picked up a bit recently. The consumer price index (CPI) jumped in January (latest data), reflecting a surge in energy prices; moreover, the index increased considerably more during the twelve months ending in January than it did during the previous twelve months. The core component of the CPI also accelerated in January and on a year-over-year basis, but by lesser amounts than did the total index. The increase in the core personal consumption expenditure (PCE) chain-type price index in January matched that of the core CPI; on a year-over-year basis, however, the pickup in core PCE inflation was a little smaller than that for the core CPI. At the producer level, core finished goods retraced in February only part of the sizable step-up in prices recorded in January, and core producer price inflation was up somewhat on a year-over-year basis. With regard to labor costs, recent data also pointed to some acceleration. Compensation per hour in the nonfarm business sector advanced appreciably more rapidly in the fourth quarter of 2000 and for the year as a whole. That trend also showed through to the average hourly earnings of production or nonsupervisory workers through February, which exhibited a roughly similar acceleration.

At its meeting on January 30-31, 2001, the Committee adopted a directive that called for maintaining conditions in reserve markets consistent with a decrease of 50 basis points in the intended level of the federal funds rate, to about 5-1/2 percent. This move, in conjunction with the easing on January 3, was intended to help guard against cumulative weakness in economic activity and to provide some support to a rebound in growth later in the year. In the existing circumstances, the members agreed that the balance of risks remained weighted toward conditions that could generate economic weakness in the foreseeable future. Though rapid advances in underlying productivity were expected to continue, the adjustments to stocks of capital, consumer goods, and inventories to more sustainable levels were only partly completed, and financial markets remained unsettled.

Open market operations were directed throughout the intermeeting period toward maintaining the federal funds rate at the Committee's reduced target level of 5-1/2 percent, and the funds rate stayed close to that target. However, incoming economic data, a steady flow of disappointing corporate earnings reports, related sharp declines in stock prices, and a notable drop in consumer confidence led market participants to conclude that more monetary easing would be required. Yields on Treasury securities, both short- and long-term, moved appreciably lower. However, rates on high-yield private debt obligations fell only a little, and banks further tightened standards and terms on business loans, given the weakening outlook for profits. Broad indexes of U.S. stock market prices moved sharply lower, with the tech-heavy Nasdaq experiencing an especially large drop. Nonetheless, the trade-weighted value of the dollar rose somewhat over the intermeeting interval in terms of many of the major foreign currencies. The dollar strengthened most against the currencies of countries that were seen to have the greatest potential for economic weakening, notably Japan. The dollar also posted a small gain against an index of the currencies of other important trading partners.

The broad monetary aggregates continued to grow rapidly in February, though at slightly lower rates than in January. The strength in M2 was concentrated in its liquid components, apparently in response to the further narrowing of opportunity costs, the yield advantage of money funds relative to longer-term investments, and the appeal of a safe haven from volatile equity markets. M3 grew somewhat less rapidly than M2; a pullback in the issuance of bank-managed liabilities, particularly large time deposits, was associated with slower expansion of bank credit. Growth of domestic nonfinancial debt decelerated noticeably in January (latest data), reflecting reduced expansion of debt in the nonfederal sectors coupled with a larger contraction in the amount of federal debt outstanding.

EXHIBIT 5.3 (Continued)

The staff forecast prepared for this meeting suggested that, after a period of slow growth associated in part with an inventory correction, the economic expansion would gradually regain strength over the next two years and move toward a rate near the staff's current estimate of the growth of the economy's potential output. The period of sub-par expansion was expected to foster an appreciable easing of pressures on resources and some moderation in core price inflation. The forecast anticipated that the expansion of domestic final demand would be held back to an extent by the decline in household net worth associated with the downturn that had occurred in equity prices, the lingering effects of last year's relatively high interest rates, and the continuation of relatively stringent terms and conditions on some types of loans by financial institutions. As a result, growth of spending on consumer durables was expected to be appreciably below the rapid pace in the first half of last year, and housing demand would increase only a little from its recent level. Business fixed investment, notably outlays for equipment and software, was projected to resume relatively robust growth after a period of adjustment of capital stocks to more desirable levels; growth abroad was seen as supporting the expansion of U.S. exports; and fiscal policy was assumed to become more expansionary.

In the Committee's discussion of current and prospective economic developments, members commented that the recent statistical and anecdotal information had been mixed, but they viewed evolving business conditions as consistent on the whole with a continued softness in economic activity. Members noted that consumer spending had strengthened early in the year and housing activity had remained at a relatively high level. These positive developments needed to be weighed against an appreciable weakening in business investment spending and the near-term restraining effects of a drawdown in inventories. Looking ahead, while sales and production data suggested that excess inventories were being worked off, the adjustment did not appear to have been completed. Beyond the inventory correction, the members continued to anticipate an acceleration of the expansion over time, though likely on a more delayed basis and at a more gradual pace than they had forecast earlier. They noted a number of favorable underlying factors that would tend to support a rebound, including solid productivity growth, stable low inflation, generally sound financial institutions, lower interest rates, and relatively robust expansion in many measures of money. However, the members saw clear downside risks in the outlook for consumer and investment spending in the context of the marked decline that had occurred in equity prices and consumer confidence, and in expected business profitability, and they were concerned that weaker exports might also hold down the expansion of economic activity. With regard to the outlook for inflation, some recent measures of increases in core prices had fluctuated on the high side of earlier expectations, but apart from energy prices and medical costs, inflation was still relatively quiescent. With the growth in output likely to remain below the expansion of the economy's potential for a while, members anticipated that inflation would remain subdued.

Mirroring the statistics for the nation as a whole, business conditions in different parts of the country displayed mixed industry patterns, but members reported that overall business activity currently appeared to be growing at a sluggish pace in most regions, and business contacts were exhibiting a heightened sense of caution, or even concern, in some industries. In their review of developments in key sectors of the economy, members indicated that they saw favorable prospects for continued moderate growth in consumer expenditures, though considerable uncertainty surrounded this outlook. Downside risks cited by the members included the substantial declines that had already occurred in measures of consumer confidence and equity wealth, and the possibility that consumer sentiment might be undermined even further by continued volatility and additional declines in the stock market and by rising concerns about job losses amid persistent announcements of layoffs. Members also referred to the retarding effects on consumer expenditures of elevated levels of household debt and high energy costs. Against this background, consumers might well endeavor to boost their savings, and even a fairly small increase in what currently was a quite low saving rate would have large damping effects on aggregate demand that could weaken, if not abort, the expansion. To date, however, overall consumer spending had remained relatively strong and seemingly at odds with measures of consumer confidence and reduced equity wealth. How this divergence might eventually be resolved was a significant source of uncertainty and downside risk. On balance, while there were reasons to be concerned about the outlook for consumer spending, members believed that recent spending trends and the outlook for further growth in employment and incomes pointed to continued expansion in this key sector of the economy, though likely at a relatively sluggish pace.

EXHIBIT 5.3 (Continued)

Another major source of downside risk to the expansion was business fixed investment. Spending for equipment and software declined in the fourth quarter, and the available statistical and anecdotal reports pointed to weakness during the first half of this year, largely reflecting developments in high-tech industries. Substantial downward adjustments to expected near-term business earnings had persisted, suggesting that firms saw investment as much less profitable than they had before and that cash flows would be constrained. Many businesses also were inhibited in their investment activities by less accommodative financial conditions associated with weaker equity markets and tighter credit terms and conditions imposed by banking institutions. As a consequence, a substantial volume of planned investment was being postponed, if not cancelled. The capital stock had grown at an unsustainable pace for a time, so some downshifting in investment was inevitable. Moreover, those earlier very substantial investment outlays seemed to have created excess capacity in a number of industries, and how large an adjustment in spending for business equipment might now be underway was still unclear, especially with regard to high-tech industries. At the same time, the information available for the first quarter indicated considerable strength in nonresidential construction activity, including large outlays on public sector infrastructure projects in some areas. On balance, business spending for plant and equipment was likely to pick up only gradually this year. Over the longer term, however, a return to more robust business investment seemed likely, and indeed business earnings forecasts beyond the nearer term had not declined very much, reflecting continuing expectations of substantial profit opportunities related to persisting strong gains in productivity.

Housing activity was generally holding up well across the country as the effects of appreciably reduced mortgage interest rates apparently compensated for the negative effects of declining financial wealth on the demand for housing. While housing construction was generally described as elevated, some members referred to overbuilding or weakness in some local housing markets. It was noted that homebuilders were generally optimistic about the prospects for the year ahead, given their current backlogs and expectations of further growth in employment and incomes.

The ongoing adjustments in business inventories had played a significant role in curbing the growth of economic activity in recent months, but such adjustments seemed likely gradually to become a more neutral factor over the balance of this year. In the motor vehicle industry, inventory liquidation had been especially pronounced and the process now seemed largely completed. However, the inventory-correction process in high-tech industries apparently was not as far along. In the absence of renewed weakness in overall final demand, which could not be ruled out given current consumer and business confidence, production would need to pick up at some point to accommodate ongoing final demand. Some members observed that the adjustment in inventories might require more time than they had anticipated earlier. In any event, completion of the process clearly would foster an upturn in manufacturing activity.

Members commented on the downside risks to U.S. exports and the U.S. expansion from what appeared to be softening economic conditions in a number of important foreign economies. In some countries, the risks were exacerbated by the apparent inability or unwillingness of government officials to address underlying structural problems in their economies and financial systems. Members noted anecdotal reports of weakening business conditions in a number of Asian and South American nations. The potential impact on exports of less vigor in the global economy would be augmented, of course, by the strength of the dollar in foreign exchange markets.

Although labor markets in general remained tight throughout the nation, anecdotal reports of less scarce labor resources were becoming more frequent in some areas or occupations. Some price increases had been noted; however, apart from the energy and health care sectors, price inflation had remained relatively subdued, evidently reflecting the combination of diminished growth in overall demand and strong competitive pressures in most markets. With regard to the outlook for wages and prices, members commented that the prospects for an extended period of growth in demand at a pace below the economy's potential should ease pressures on labor and other resources and help to contain inflation.

EXHIBIT 5.3 (Continued)

In the Committee's discussion of policy for the intermeeting period ahead, most of the members preferred and all could support a further easing of reserve conditions consistent with a 50 basis point reduction in the federal funds rate, to 5 percent. The members agreed that a strengthening in the economic expansion over coming quarters was a reasonable expectation, but absent further easing in monetary policy that pickup was unlikely to bring growth to an acceptable pace in the foreseeable future. Business investment would be held back by lower earnings expectations and a capital overhang of unknown dimensions; consumption was subject to downside risks from previous decreases in equity wealth and declining confidence; and the strong dollar and weaker foreign growth would constrain exports. Inflation was likely to be damped by ebbing pressures on labor and product markets. While many of the members generally believed that additional policy easing might well prove to be necessary at some time, the easing favored by most members incorporated what they viewed as an adequate degree of stimulus under current economic conditions and represented an appropriately calibrated step given the uncertainties in the economic outlook. It was noted in this regard that in combination with the two easing actions earlier this year, the Committee would have implemented in a relatively short period a considerable amount of monetary easing whose economic effects would be felt over time. However, some commented that the amount of financial stimulus was much smaller than might otherwise be expected from policy easing of this cumulative amount because it had been accompanied by further declines in stock market prices, more stringent financing terms for many business borrowers, and a stronger dollar, all of which would be holding down domestic spending and production. Indeed, financial markets had come to place some odds on a larger move of 75 basis points in recent days, importantly reflecting the possibility of a presumed policy response to the sizable declines in equity prices that had occurred as earnings prospects proved disappointing. Most members agreed, however, that in the context of their focus on the economy, smaller, possibly more frequent, policy adjustments were appropriate to afford them the opportunity to recalibrate policy in rapidly changing and highly uncertain circumstances.

A few members expressed a preference for a 75 basis point reduction in the federal funds rate. In their view, a more forceful action was justified by current and prospective economic conditions.

The members agreed that even with a further 50 basis point reduction in the federal funds rate, the risks to the economy would remain decidedly to the downside. This conclusion would be reflected in the press statement to be released after today's meeting. The statement also would emphasize the need for close monitoring of rapidly evolving economic conditions. The members anticipated that in the relatively long interval before the next regularly scheduled meeting on May 15, 2001, economic developments might suggest the desirability of a Committee conference call to assess business conditions across the nation and to consider the possible need for a further policy adjustment.

At the conclusion of this discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the System Account in accordance with the following domestic policy directive:

The Federal Open Market Committee seeks monetary and financial conditions that will foster price stability and promote sustainable growth in output. To further its long-run objectives, the Committee in the immediate future seeks conditions in reserve markets consistent with reducing the federal funds rate to an average of around 5 percent.

The vote encompassed approval of the sentence below for inclusion in the press statement to be released shortly after the meeting:

Against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the Committee believes that the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future.

Votes for this action: Messrs. Greenspan, McDonough, Ferguson, Gramlich, Hoenig, Kelley, Meyer, Ms. Minehan, Messrs. Moskow and Poole.

Votes against this action: None.

The Chairman called for a recess after this vote and convened a meeting of the Board of Governors to consider reductions of one-half percentage point in the discount rate that had been proposed by all the Federal Reserve Banks. After the recess, the Chairman informed the Committee that the pending reductions had been approved.

It was agreed that the next meeting of the Committee would be held on Tuesday, May 15, 2001. The meeting adjourned at 1:15 p.m.

EXHIBIT 5.3 (Continued)

Telephone Conferences
On April 11, 2001, the Committee reviewed economic and financial developments since its last meeting and discussed the possible need for some further easing of monetary policy. The data and anecdotal information were mixed: They did not indicate that the economy had been weakening further, but they raised questions about the potential strength of a rebound in growth over coming quarters. In particular, heightened business concerns about future sales and further downward revisions to expected earnings threatened to restrain capital spending for some time. In the circumstances, the members could see the need for a further easing of policy at some point, though some had a strong preference for taking such actions at regularly scheduled meetings. They all agreed that an easing on this date would not be advisable, inasmuch as the attendant surprise to most outside observers risked unpredictable reactions in financial markets that had been especially volatile in recent days, and additional important data would become available over the near term.

A week later, on April 18, 2001, the Committee held a telephone conference meeting for the purpose of considering a policy easing action. The members noted that the statistical and anecdotal information received since the last conference call had supported their view that an easing of policy would be appropriate. In addition to the continuing concerns about business plans for capital investment, consumer spending had leveled out and confidence had fallen further. In these circumstances, lower interest rates were likely to be necessary to foster more satisfactory economic expansion. With financial markets more settled, and with nearly a month until the Committee's May meeting, an easing move was called for at this time.

Although a few preferred to wait until the next scheduled meeting, all the members supported or could accept a proposal for an easing of reserve conditions consistent with a reduction of 50 basis points in the federal funds rate to a level of 4-1/2 percent. The Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the System Account in accordance with the following domestic policy directive:

The Federal Open Market Committee seeks monetary and financial conditions that will foster price stability and promote sustainable growth in output. To further its long-run objectives, the Committee in the immediate future seeks conditions in reserve markets consistent with reducing the federal funds rate to an average of around 4-1/2 percent.

The vote encompassed approval of the sentence below for inclusion in the press statement to be released shortly after the meeting:

Against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the Committee believes that the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future.

Votes for this action: Messrs. Greenspan, McDonough, Ferguson, Gramlich, Hoenig, Kelley, Meyer, Ms. Minehan, Messrs. Moskow and Poole.

Votes against this action: None.

Chairman Greenspan indicated that shortly after this meeting the Board of Governors would consider pending requests of eight Federal Reserve Banks to reduce the discount rate by 50 basis points.

Donald L. Kohn
Secretary

Fortunately, Fed Chairman Greenspan, who is widely respected as a master "numbers cruncher," usually provides his own special insights at monetary policy meetings, introducing often obscure but relevant indicators to round out the FOMC deliberations. In policy deliberations, Fed Chairman

Greenspan has led by example. First and foremost, he possesses a remarkable intellectual capacity for contemplating abstract and complex ideas on one hand, while crafting effective and timely practical policy actions, on the other hand. For the logically minded Greenspan, it is thus not surprising that one of his favorite hobbies is solving complex calculus problems. Secondly, Greenspan's leadership approach appropriately has involved establishing a collegial atmosphere in which each policy maker is allowed to speak his or her mind, encouraging a healthy intellectual competition of ideas and policy prescriptions. In the end, however, Greenspan never ceases to impress his fellow policymakers with his penetrating insights, not to mention the depth and breadth of his analysis.

To sum up, the Fed distinguishes itself by engaging in a thorough and insightful diagnosis of the health of the economy and its likely future performance, much like a doctor would diagnose the health of a patient. In addition, after careful consideration, Fed officials decide on the appropriate medicine for the economy in the form of finely calibrated monetary policy actions. Essentially, it is this exhaustive and contemplative policy process that has elevated the Fed to the position of being the world's premiere government policymaking body. Needless to say, the notable successes of the Greenspan Fed would not have been possible were it not for the invaluable contributions of the Fed's outstanding research staff.

POLICY TRANSMISSION PROCESS

The monetary policy transmission process has always been a long and variable one even in the past when the banking system, which is the point of contact for monetary policy, was the dominant source of credit for consumers and businesses. Typically, it has taken 6–12 months for any given shift in monetary policy to work its way through the bank-

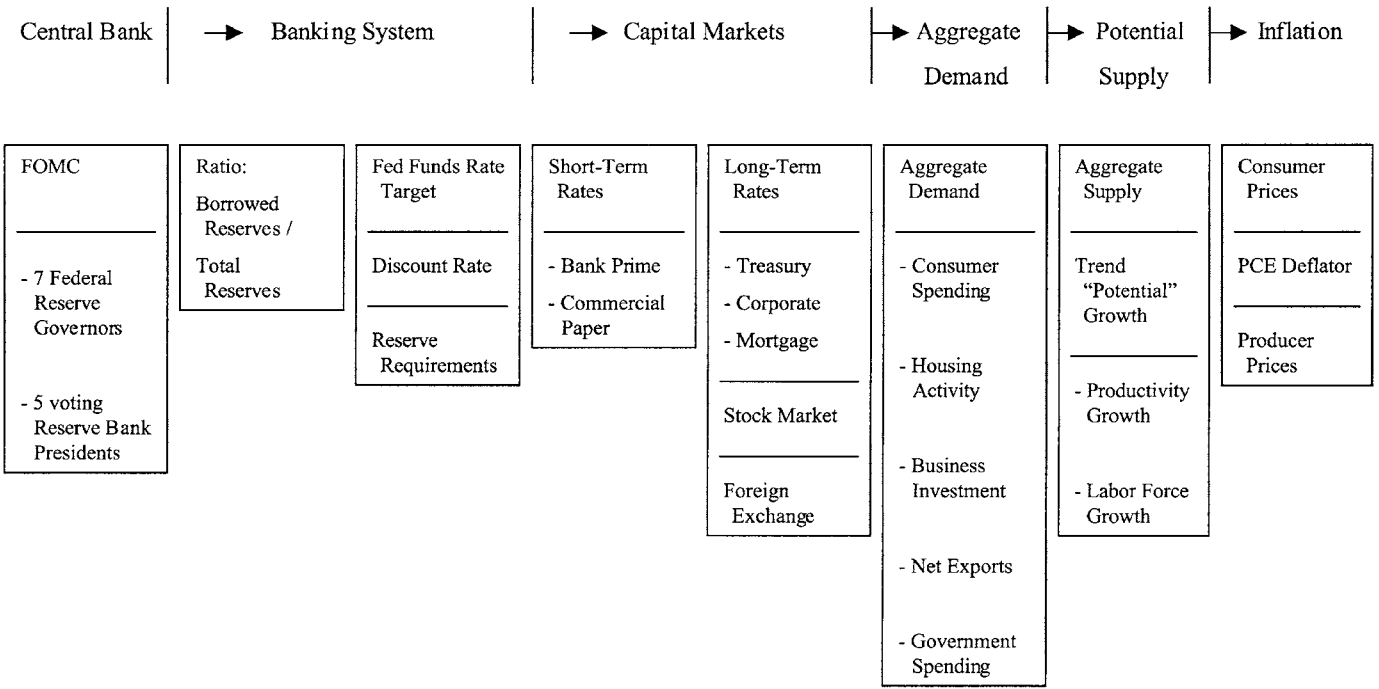
ing system and the capital markets to impact real economic activity, and even longer, perhaps as long as 18 months, to influence price behavior (see Exhibit 5.4). But with Fed Chairman Greenspan's efforts to inform the financial markets of a change in Fed policy intentions well ahead of *actual* Fed policy shifts, the policy time lag between actual Fed policy changes and the impact on the economy may be shortening somewhat. This is, of course, because capital market asset price adjustments begin as soon as the Fed chairman reveals his intentions to change the Fed's policy stance.

With a rising share of credit supplied through the capital markets, the Fed must operate to a major extent through shifts in prevailing market psychology and near-term expectations that drive adjustments in capital market asset prices which, in turn, affect aggregate demand and ultimately output growth and inflation. This is why, as already noted, the main job of a modern-day central banker is to read capital markets, including the cost of equity and debt capital, credit-risk spreads, and other capital market indicators, rather than emphasizing the more traditional monetary and bank credit aggregate indicators.

Historically, the Fed policy transmission mechanism has worked largely through the availability and cost of credit supplied by the banking system. In the past, commercial banks were at the center of an intermediation process in which large amounts of savings by individuals and others were pooled as deposits on the liability side of bank balance sheets and channeled into loans to individuals and businesses and investments on the asset side of bank balance sheets. Essentially, banks borrow funds on a short-term basis and lend and invest on a longer-term basis, to benefit from the usually positive net interest margin. This expansion of credit (loans and investments) in turn supports consumer and business spending thereby ultimately influencing the pace of real economic activity and inflation.

EXHIBIT 5.4 Federal Reserve Policy Transmission Mechanism

Objectives: Stable prices and maximum employment (sustainable growth)
Long-Term Aim: Maximum sustainable growth



In order to effect a policy shift, the Fed has traditionally begun by changing the composition of bank reserves with respect to the share of total reserves accounted for by bank borrowings at the Fed discount window. For example, a Fed move to tighten its policy stance means a rising share of borrowings to total reserves and a corresponding increase in the Federal funds rate. Conversely, a Fed move to ease its policy stance will be reflected in a declining share of borrowings to total reserves and a declining Federal funds rate. Borrowed reserves are those reserves that banks borrow temporarily at the Fed discount window for purposes of adjusting their reserve positions. Because of a tradition against borrowing at the Fed discount window, and the public's perception that increases in such bank discount window borrowings may be a sign of the borrowing bank's financial weakness, banks have been increasingly reluctant to borrow at the discount window. Thus, banks forced to borrow temporarily at the Fed's discount window will be prompt to turn to other comparable short-term sources of loanable funds such as Federal funds or RP borrowings.

Banks facing greater Fed restraint and a rising cost of loanable funds would find their net interest margins (difference between cost of loanable funds and earnings on loans and investments) declining, which, in turn, pressures profits. In these circumstances of a flatter or even inverted yield curve, banks will have less incentive to increase their loans and investments, resulting in a decline in the availability and increase in the cost of bank credit to consumers and businesses. Facing a decline in the availability and increase in the cost of bank credit, consumers and businesses will cut back on their borrowing and spending, resulting in a curtailment of aggregate demand and, ultimately, a decline in real GDP growth that eases inflation pressures. Conversely, a Fed move to ease its policy posture steepens the yield curve and thus increases banks' incentive to increase the availability and reduce the cost of bank credit. The abundance of bank credit made available on easier terms will stimulate consumer and

business borrowing and spending giving a boost to aggregate demand and increasing real GDP growth.

Taking the individual investor's point of view, Fed easing moves reduce the attractiveness of rates on money market mutual funds relative to the yield on bonds. As a result, investors will be tempted to shift their funds out of money markets into bonds, thereby exerting downward pressure on bond yields. As bond yields decline, stocks become relatively more attractive triggering investors to shift funds out of bonds into stocks, thereby increasing stock prices.

Today, the Fed's policy transmission process works to a far greater extent through capital market asset price adjustments, and less through the availability of bank credit. This is because the bank share of total credit supplied has, as already noted, fallen from about two-thirds in the mid-1970s to less than one-third at present. Correspondingly, the capital market share of total credit supplied has soared to more than two-thirds from only about one-third in the mid-1970s. As in the past, the Fed initiates a policy shift by changing the composition of bank reserves in terms of the ratio of discount window borrowings to total reserves. The corresponding change in the Federal funds rate—up with a tightening in reserve availability and down with an easing in reserve availability—is promptly followed by a change in the same direction in the prime bank lending rate and other short-term market interest rates, including those on adjustable rate bank loans and short-term funds raised in the commercial paper market. As short-term borrowing costs rise, borrowers will find longer-term borrowing costs relatively more attractive, resulting in increased corporate bond and fixed-rate mortgage offerings, which will eventually drive up longer-term interest rates.

Rising longer-term interest rates will, in turn, make bonds more attractive relative to the return on stocks. As a result, investors will sell stocks and place the proceeds in bonds, and stock prices will decline. As capital market expectations of future Fed restrictive intentions are formed, these portfolio

asset adjustments between money market investments, bonds, and stocks will be hastened and intensified.

Conversely, a Fed easing in its policy posture will push short-term market interest rates lower. As borrowers shift to relatively more attractive short-term sources of funds, thereby reducing their longer-term borrowings, longer-term interest rates will also decline. Fed easing actions will push short-term rates on liquid investments so low that investors will be motivated to shift funds into relatively higher yielding bonds, and then, as bond yields decline, into relatively more attractive stocks, thereby pushing stock prices higher. This lower interest rate environment will stimulate consumer borrowing and spending for items like motor vehicles and homes, while, at the same time, the lower cost of debt and equity capital will stimulate increased business investment spending.

FED'S FAVORITE INDICATORS

It will be recalled from Chapter 4 that by law the Fed is obligated to pursue a policy course that facilitates an increase in production in line with the economy's long-run potential in order to achieve *maximum employment*, *stable prices*, and moderate long-term interest rates. The Fed's favorite indicators of real economic activity include industrial production and, especially, the ISM, formerly called the National Association of Purchasing Management (NAPM) index of manufacturing activity (see Exhibit 5.5). If this index is below 50, there is a contraction in manufacturing activity; if it is above 50, manufacturing activity is expanding. Among the Fed's other favorite indicators of real economic activity are payroll employment from the U.S. Bureau of Labor Statistics' (BLS) establishment survey (see Exhibit 5.6), which includes jobs data from both the manufacturing sector and the much larger services sector, and the unemployment rate that is computed from the BLS household survey data. In March 2001, total employment in the establishment payroll survey

was 132.2 million, while total employment in the household survey, which includes the self-employed, was higher at 135.8 million. Also, the Fed watches closely the data on new orders for durable goods and on backlogs (orders less shipments). The Fed is especially interested in new orders and shipments for nondefense capital goods as good indicators of business capital spending. In addition, the Fed carefully scrutinizes motor vehicle sales and housing activity.

The Fed's favorite financial indicators include bond yields, credit-risk spreads (the difference in interest rates paid by lesser rated corporations and those paid by high-quality corporations to borrow in the bond market as seen in Exhibit 5.7), and short- versus long-term interest rate spreads. As a rule, when the Fed eases its policy posture, as it did in 2001, short-term interest rates will decline significantly more than long-term interest rates, thereby steepening the yield curve and setting the stage for faster economic growth. Conversely, when the Fed acts to tighten its policy posture, as in 1999 and early 2000, the yield curve will flatten or even invert as short-term interest rates rise by a greater amount than long-term interest rates, thereby setting the stage for slower economic growth (see Exhibit 5.8). Other Fed financial indicators include equity prices (see Exhibit 5.9), foreign exchange rates, Federal funds futures, and Eurodollar futures. The latter two items are good indicators of market expectations of future Fed policy moves.

In essence, in seeking to determine if financial conditions are supportive of sustainable economic growth, the Greenspan Fed is closely observing the terms on which individuals and businesses can raise funds either at banks or, especially, in the capital markets. That is, Fed officials scrutinize their quarterly senior bank loan officer survey to determine if banks are changing the terms on loans to businesses, mortgage borrowers, or consumers. Similarly, Fed policymakers even more closely track capital market indicators such as stock prices, bond yield levels, credit-risk spreads, the steepness of the yield curve, or liquidity premiums paid by investors as they seek to determine the terms on which borrowers of different credit

risks can raise funds in these capital markets where the bulk of credit is supplied. Of course, the proof of the pudding is in whether individuals and businesses can raise adequate amounts of funds in the financial markets on reasonable terms in support of their spending plans. If so, the first economic sectors to show success will be the interest sensitive-sectors such as housing.

The Fed's favorite inflation indicators are consumer prices (see Exhibit 5.10) and the personal consumption expenditures deflator. In 2000, the FOMC began to present in its semi-annual congressional testimony the inflation forecast in terms of the personal consumption expenditures deflator rather than consumer prices. Fed Chairman Greenspan was worried that the consumer price index (CPI, which had been the object of the Fed's inflation forecast since Humphrey-Hawkins legislation was passed in 1978, under which the Fed issued these forecasts) tended to overstate actual inflation. In 1996, the Boskin Commission found that the CPI overstated true inflation by 1.1%. After major Bureau of Labor Statistics (BLS) adjustments in the CPI to compensate for this overstatement, however, it may be that consumer prices now understate true inflation.

To be a successful Fed watcher you need to follow some guidelines:

- *You must, above all, watch what the Fed actually watches, and thus responds to, not what you think the Fed should watch*. The Fed has its own favorite financial indicators. Among the Fed's favorite financial indicators are stock prices, interest rates (both levels and spreads), the real Federal funds rate and the Fed's quarterly senior loan officer survey of bank lending terms. It uses these financial indicators in an effort to effectively read the capital markets, and respond appropriately. But remember Fed authorities emphasize financial indicators only to the extent that they influence the economy, which is the Fed's primary focus. You can nearly always correctly anticipate Fed easing or tightening actions when actual economic growth turns out significantly below or above the economy's potential.

EXHIBIT 5.5 ISM (Formerly NAPM) Index of Manufacturing Activity
Level with recession shading (1980–2002)

EXHIBIT 5.6 Nonfarm Payroll Employment
Month-to-month change (1995–2002)

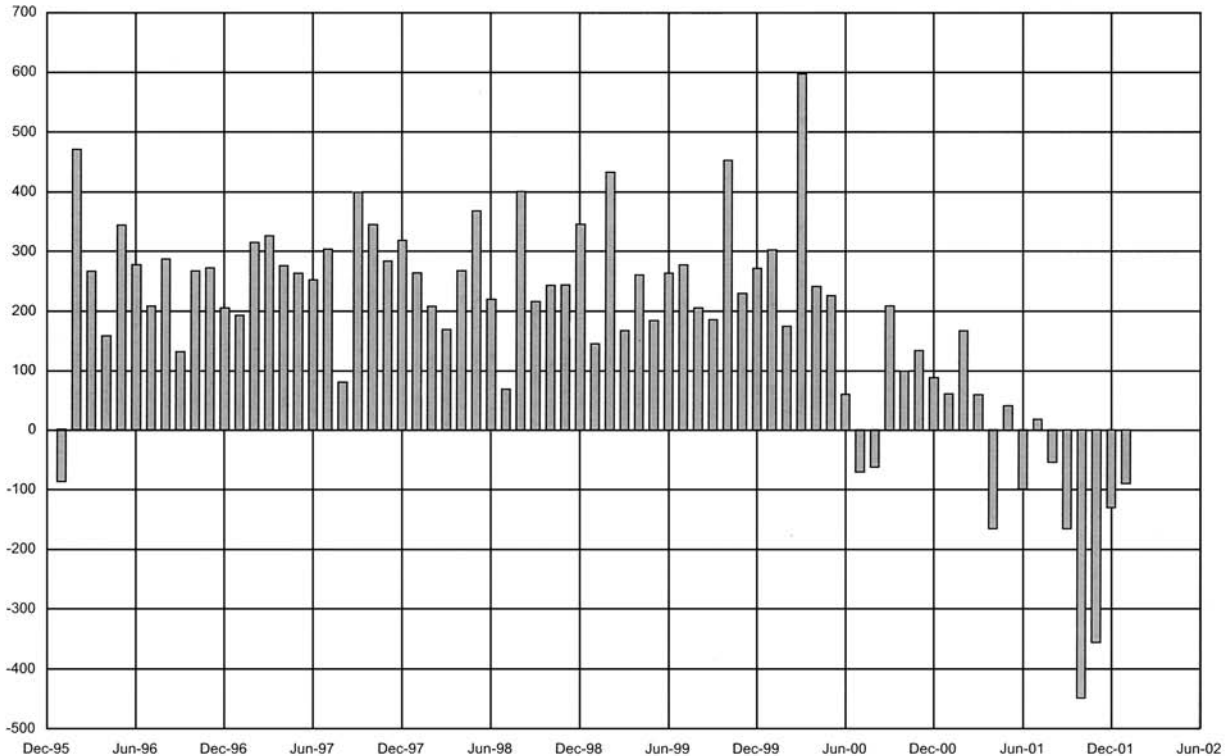


EXHIBIT 5.7 Moody's Corporate Bond Yields
Weekly yields (1990–2002)

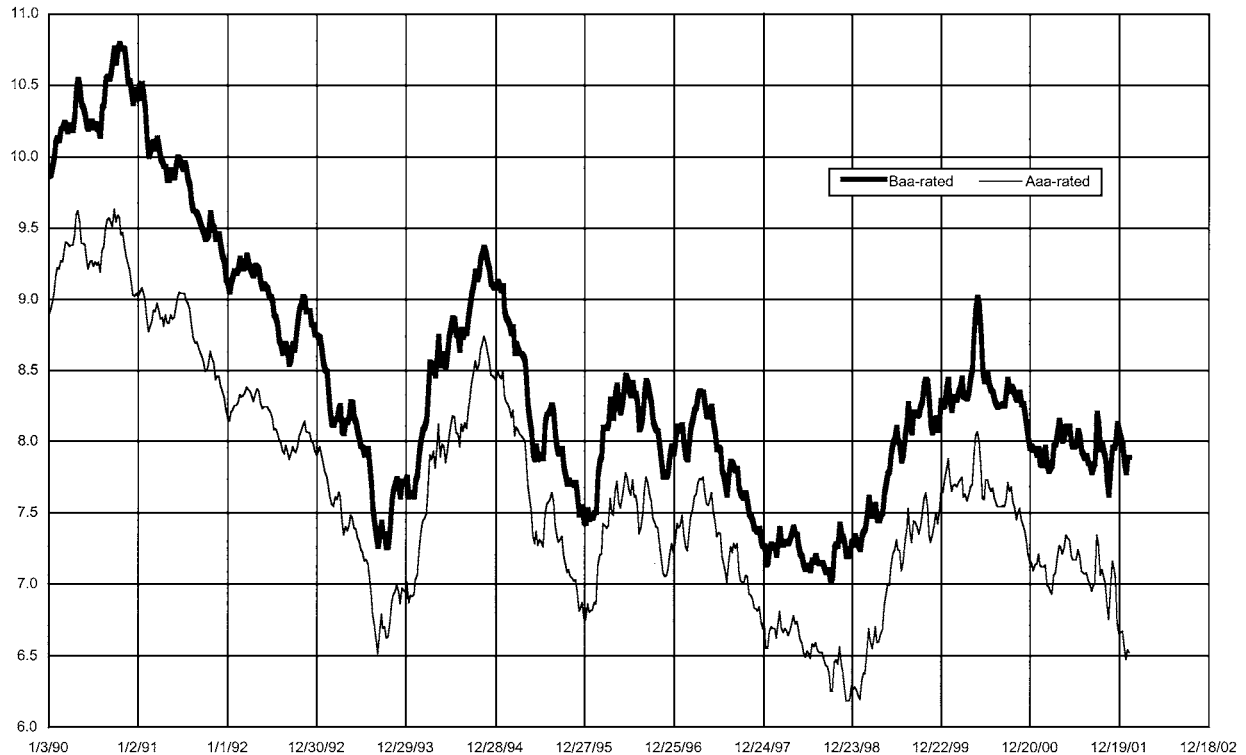


EXHIBIT 5.8 Treasury 30-Year Bond and 2-Year Note
Weekly yields (1999–2002)

EXHIBIT 5.9 Standard & Poor's 500 Stock Index
Weekly levels (1990–2002)

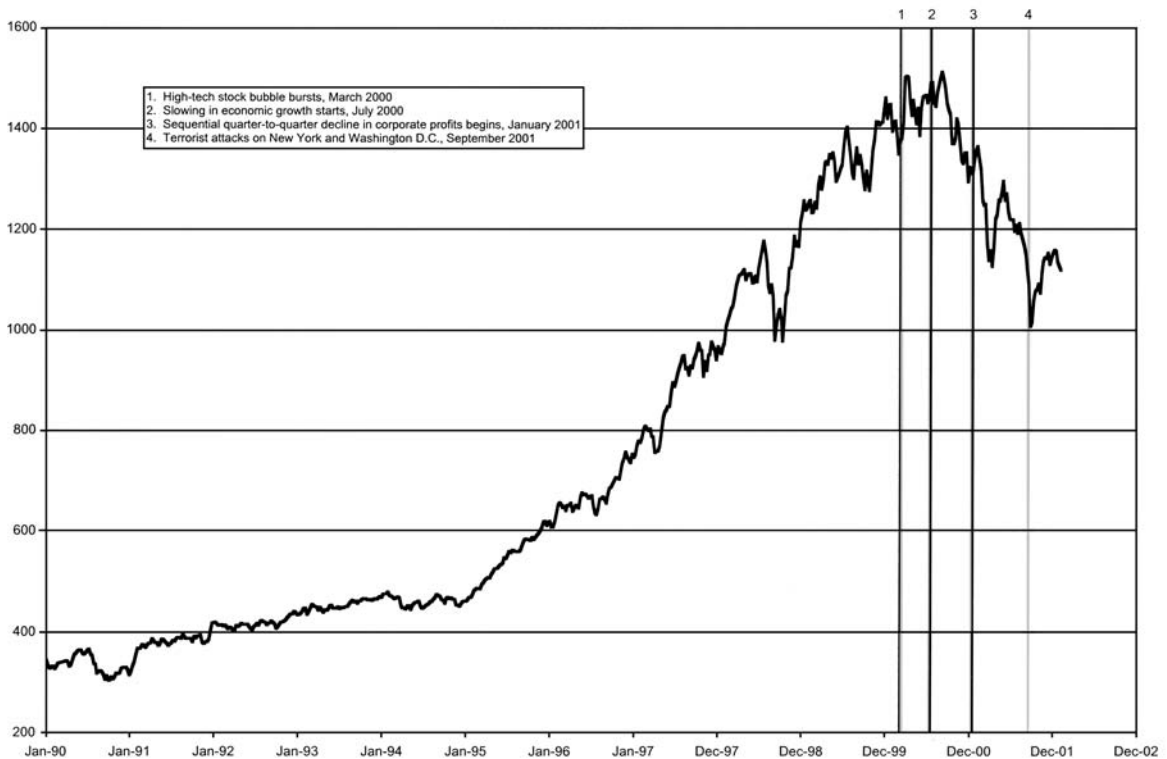
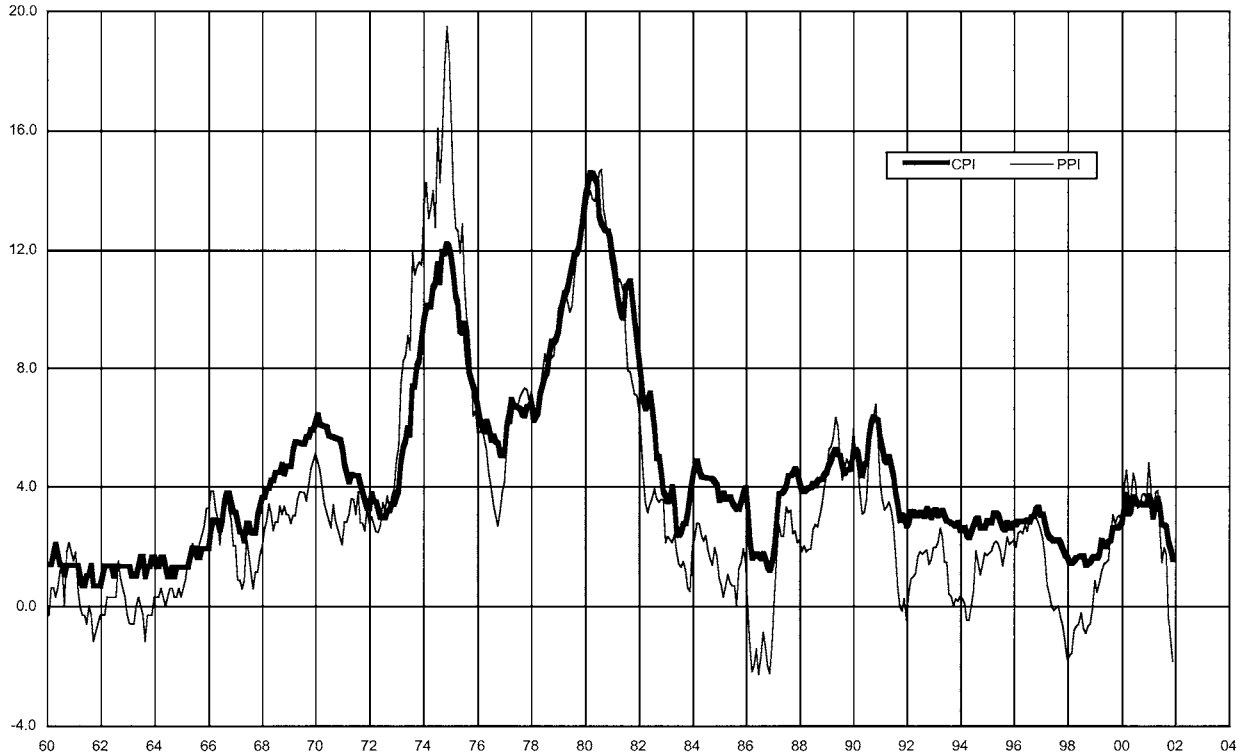


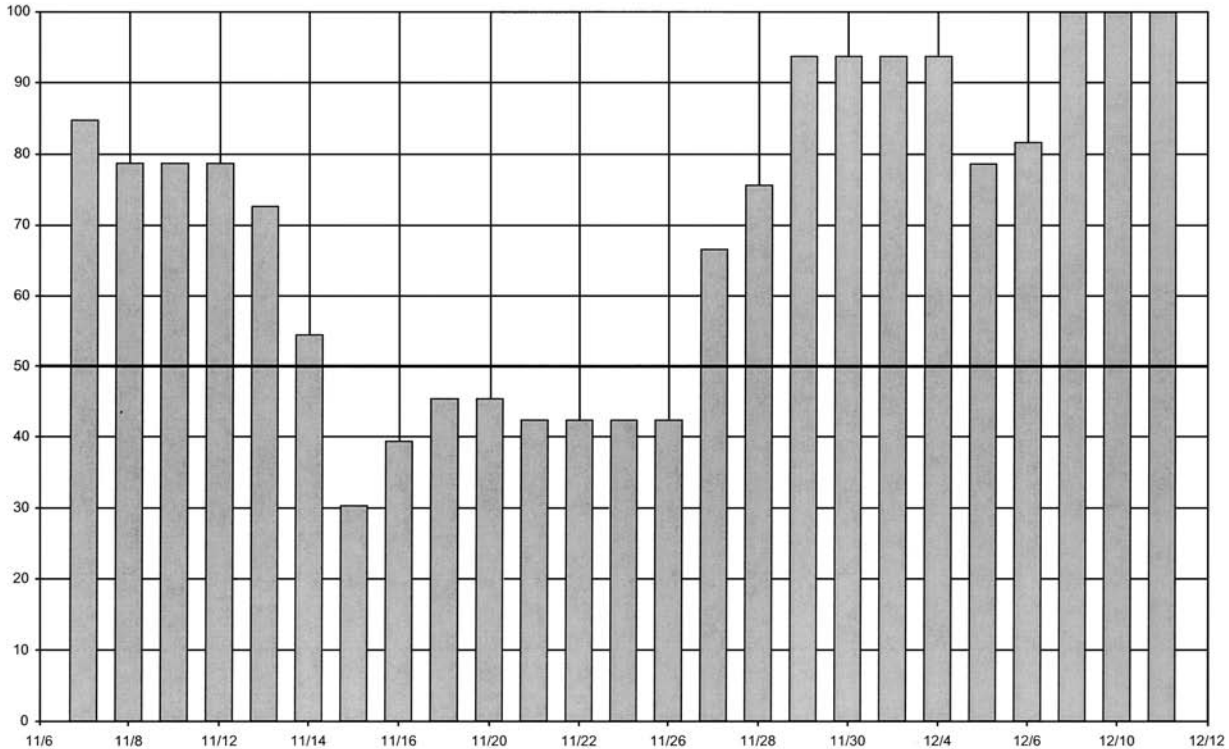
EXHIBIT 5.10 Inflation Indicators—CPI, PPI
Year-over-year percent change (1960–2002)



- *You should look for an extended series of Fed (easing or tightening) actions when monetary officials perceive that the risks to the economy of not acting further are high*. This was particularly the case during 2001, when monetary policymakers perceived that, unless the Fed eased further, the risk of recession was high. The FOMC minutes for the December 11, 2001, meeting noted, for example, that although several FOMC members saw the Fed's decision to cut rates by another 25 basis points "a close call," these policymakers "favored it on balance given their weighting of the possible consequences should restraining forces in the economy persist to a greater extent than they currently expected."

- *Importantly, you must be aware that the Fed may be influenced in its policy deliberations not only by current and expected economic growth relative to the economy's potential*, but also by market expectations regarding whether the Fed will shift its policy and, if so, by how much. This Fed sensitivity to market expectations regarding its policy actions is particularly acute when the economy would be extremely vulnerable if the financial markets were to be disappointed by inadequate Fed moves, or the lack there of. For example, there was intense market speculation regarding the odds of a 25 basis point Fed rate cut at the December 11, 2001, FOMC meeting. The last thing the Fed wanted to do, at a time when post terrorist attack financial and economic conditions remained unsettled, was to disappoint market participants who were betting heavily on a Fed rate cut. As can be seen in Exhibit 5.11, the odds of a 25 basis point rate cut at the December 11 meeting, as determined in the Federal funds futures market, reached 100% just prior to the December FOMC meeting.

EXHIBIT 5.11 Odds of a 25 Basis Point Fed Rate Cut at its December 11, 2001 FOMC Meeting
Percent (November 7–December 11)



- *Of course, the Fed Chairman can also influence market expectations regarding future Fed actions, proving that communications is a two-way street.* On January 11, 2002, for example, Fed Chairman Greenspan gave what the markets interpreted as a surprisingly cautious assessment of the economic outlook. In the wake of Greenspan's guarded remarks, the odds of a 25 basis point Fed rate cut at the January 29–30 FOMC meeting, as determined in the Federal funds futures market, immediately shot up to 60% from 20% at the beginning of January. However, subsequent press reports strongly implied that Fed Chairman Greenspan felt that the market had overreacted on the negative side to his January 11 comments; this reinterpretation of Greenspan's January 11 remarks caused the odds of another Fed 25 basis point rate cut at the January 29–30 FOMC meeting to fall back to 20%. On January 24, 2002, these odds fell even further to 10% on Fed Chairman Greenspan's more upbeat comments in testimony before the Senate budget committee.

- *You should keep an eye out for the major destabilizing threat to the economy from asset price bubbles, typically consisting of speculative surges in stock prices or real estate values.* The best that monetary authorities can do is react to the economic pressures associated with these unpredictable asset price bubbles, both on the upside when they are rapidly inflating and on the downside after they burst, as they inevitably will. You should be looking for the destabilizing effects on confidence and spending from asset price bubbles, as has been most recently evident in the case of the high-tech stock price bubble which burst in March 2000. Declining stock prices, operating mainly through a negative equity wealth effect, had a depressing impact on consumer confidence and spending, which became increasingly evident in the second half of 2000 and carried over into 2001.

ANATOMY OF A FED RATE CUT

To gain insight into Fed policy shifts, it is useful to examine the anatomy of a particular Fed rate cut. The Fed's sudden January 3, 2001, rate cut of 50 basis points, twice the normal size, is chosen for a closer look. This aggressive Fed easing move which took place between scheduled FOMC meetings was signaled at the December 19, 2000, FOMC meeting when Fed officials announced that although they were keeping their Federal funds target unchanged at 6.5%, they were making a significant change in their policy directive. In a major change in policy emphasis, Fed policymakers perceived at their December meeting that the balance of risks were weighted toward conditions that could produce economic weakness. The Fed also indicated that it "will continue to monitor the evolving economic situation." This was a strong signal that the Fed was prepared to cut rates in the intermeeting period. At each of the preceding FOMC meetings in 2000, the Fed had perceived, in contrast, that the balance of risks were weighted toward conditions that could produce heightened inflation. This abrupt change in the policy directive, which implied a prompt Fed rate cut, triggered an immediate decline in market interest rates well ahead of the Fed's actual policy shift.

The day before the Fed's January 3, 2001, rate cut there was the report that the NAPM index of manufacturing activity plunged to 43.7 in December 2000 from 47.7 in November. This implied that the economy was in the midst of a major business inventory correction that was having a severely depressing impact on manufacturing output and employment. Also, the Fed was concerned at the time with a large drop in consumer confidence. There are two major measures of consumer confidence. One is the University of Michigan's survey of consumer sentiment which covers approximately 500 consumers in depth regarding their views on current business conditions and job circumstances and their expectations of future business conditions and job

prospects in the coming six months. The other is the Conference Board's index of consumer confidence (see Exhibit 5.12), which covers a much greater 5,000 consumers, but more superficially. The Conference Board's survey of consumer confidence is conducted through the mail and is thus not as timely as the University of Michigan's consumer sentiment index, which is conducted through telephone interviews. As reasons for its aggressive early January easing step, the Fed stated that this action was taken "in light of further weakening of sales and production, and in the context of lower consumer confidence, tight conditions in some segments of financial markets, and high energy prices sapping household and business purchasing power."

QUESTIONS AND ANSWERS FOR FED WATCHERS

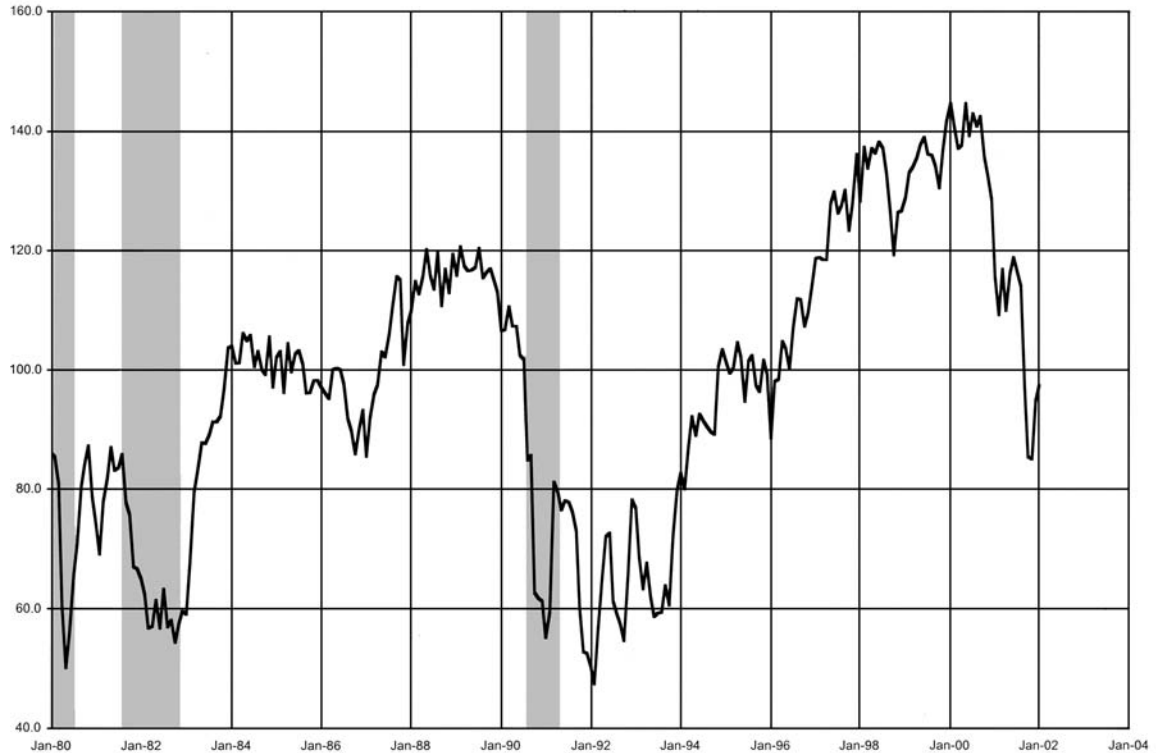
Question: What are the Fed's policy objectives?

Answer: Stable prices and sustainable economic growth.

Question: How would you describe Fed Chairman Greenspan's operating technique?

Answer: Fed Chairman Greenspan favors a flexible, open policy technique. The idea is to promptly identify imbalances, distortions, or undue strains on labor or product markets, and take risks in quickly adjusting monetary policy to counter these unhealthy economic conditions. Moreover, the monetary authorities should be prepared to reverse their policy stance, if necessary. Significantly, Fed Chairman Greenspan favors being transparent regarding policy intentions; this starts the adjustment of capital market asset prices in response to market expectations regarding Fed policy moves well ahead of actual Fed policy actions, thereby shortening the policy time lag.

EXHIBIT 5.12 Consumer Confidence Index
Level with recession shading (1980–2002)



Question: What is the monetary policy transmission process?

Answer: Monetary policy works through channels that include short-term private interest rates, long-term private interest rates, equity prices, and the dollar exchange rate. The effect of monetary policy moves on capital market rates and asset prices, including equity prices, depends on the changes in the Fed's target for the Federal funds rate relative to expectations already embedded in the capital markets and on changes in those expectations as a result of policy actions, and statements accompanying those actions. Other things being equal, a Fed move to reduce its Federal funds rate target will lower short- and long-term private interest rates, raise equity prices and depreciate the dollar, thus powerfully boosting aggregate demand growth and output.

Question: Why haven't the Fed's aggressive easing moves in 2001 been more effective?

Answer: The Fed's easing actions have been blunted by the fact that, contrary to expectations, the dollar has remained strong rather than depreciating, and the stock market has slumped rather than appreciating. Most importantly, the stock market has failed to appreciate owing to the revaluation of equity values as a result of the reassessment of the profitability of owning and producing high-tech equipment. This financial shock was manifested in the bursting of the equity bubble in the technology sector. At the same time, the dollar has remained strong mainly because, despite the temporary U.S. economic downturn, longer-term prospects point to stronger growth than in other major industrial countries owing mainly to less government regulation and to more flexible and efficient financial, labor, and product markets together with a greater spirit of entrepreneurialism manifested in higher U.S. productivity growth.

Question: How can monetary and fiscal stimulus complement each other when shocks are large and adverse and when interest rates are already low?

Answer: Clearly monetary policy is viewed as having a comparative advantage in short-run stabilization. That advantage is based on the ability of monetary policymakers to change their policy stance virtually instantly in response to unexpected shocks. This contrasts with the cumbersome, contentious, and lengthy process of legislating fiscal policy measures involving either tax cuts or spending increases. Unquestionably, the "inside lag" between any given shock and the response to this shock is shorter for monetary policy than fiscal policy. However, the "outside lag" between the policy response and its effect on aggregate demand and output may be longer for monetary policy than for some types of fiscal policy actions. For example, the impact of some fiscal policy actions on aggregate demand can be quite prompt as in the case of extensions of unemployment insurance, tax rebates or surcharges, changes in tax withholding rates, and immediate business tax credits or accelerated depreciation for business investment spending on new equipment. Moreover, with respect to the relatively long and variable "outside lag" for monetary policy, it should be noted that bond markets have become very aggressive in building in expectations of rising short-term rates over time into today's long-term interest rates. In addition on the fiscal policy side, higher long-term rates today, reflecting the prospect of reduced future fiscal discipline, would offset at least part of the intended stimulus from tax cuts or government spending increases. Therefore, in the event that shocks are adverse and large, and the Fed's interest rate target is already low, timely discretionary fiscal stimulus should be used to back up monetary stimulus in the effort to boost a sagging economy.

Question: What are the Fed's two basic policy approaches?

Answer: Primarily, the Fed tries to follow a countercyclical policy approach in which it aims to smooth economic cycles, though, human nature being what it is, it will never be able to completely eliminate them. Specifically the Fed tightens its policy stance to counter potentially inflationary excesses on the upside and, conversely, it eases its policy stance to counter undesired weakness on the downside. Largely reflecting increasingly effective countercyclical monetary policy actions, along with the automatic stabilization features of fiscal policy, U.S. post-World War II expansions have been getting longer and recessions shorter. The second Fed policy approach is crisis management. When facing a major crisis, the monetary authorities inject unusual volumes of liquidity into the system to meet the public's special liquidity needs—and then act to drain this liquidity once financial conditions have stabilized. Examples of Fed-managed crises include the stock market crash of 1987, the global financial contagion of 1998, and, most recently, the terrorist attacks on the United States in 2001.

Question: What is a soft landing?

Answer: The Fed adheres to a soft landing theory in order to limit cyclical highs with a view to avoiding the lows. Technically, a soft landing can be defined as a situation arising when growth is above its trend "potential" and actual output is below its maximum limit. In a soft landing, the Fed tightens preemptively so that growth recedes to its trend "potential" just as output converges on its maximum limit. Conceptually, this maximum output limit would be consistent with full employment. At the maximum output limit, the unemployment rate would be pushed down to its estimated NAIRU (Nonaccelerating Inflation Rate of Unemployment). Essentially this represents the lowest level to which the unemployment rate can be pushed without causing an acceleration in wages and prices.

Question: Why doesn't the Fed follow a simple inflation target? For example, why couldn't it follow a target for the rate of increase in overall prices of 2% like the ECB?

Answer: Because by law the Fed has two objectives, stable prices and maximum employment (or sustainable economic growth). The ECB has by law only one target: stable prices. Moreover, there is a debate in the United States as to which is the best measure of inflation. Is it consumer prices, the chain weighted GDP deflator, the PCE deflator or some other measure? Perhaps most importantly, in trying to follow a rigid inflation target, the central bank may be too slow to ease in response to weakening growth, if, as was the case recently with the ECB, actual inflation exceeds its official target.

APPENDIX
OFFICIAL STATEMENTS OF FOMC ACTIONS: 1994–PRESENT

Friday, February 4, 1994 at 11:05 am—FOMC meeting
"Chairman Alan Greenspan announced today that the Federal Open Market Committee decided to increase slightly the degree of pressure on reserve positions. The action is expected to be associated with a small increase in short-term money market interest rates.

The decision was taken to move toward a less accommodative stance in monetary policy in order to sustain and enhance the economic expansion.

Chairman Greenspan decided to announce this action immediately so as to avoid any misunderstanding of the committee's purposes, given the fact that this is the first firming of reserve market conditions by the committee since early 1989."

Tuesday, March 22, 1994 at 2:20 pm—FOMC meeting
"Chairman Alan Greenspan announced today that the Federal Open Market Committee decided to increase slightly the degree of pressure on reserve positions. This action is expected to be associated with a small increase in short-term money market interest rates."

Monday, April 18, 1994 at 10:06 am—FOMC telephone conference call
"Chairman Alan Greenspan announced today that the Federal Reserve will increase slightly the degree of pressure on reserve positions. This action is expected to be associated with a small increase in short-term money market interest rates."

Tuesday, May 17, 1994 at 2:26 pm—FOMC meeting
"The Federal Reserve today announced two actions designed to maintain favorable trends in inflation and thereby sustain the economic expansion.

The Board approved an increase in the discount rate from 3 percent to 3.5 percent, effective immediately, and the Federal Open Market Committee agreed that this increase should be allowed to show through completely into interest rates in reserve markets.

These actions, combined with the three adjustments initiated earlier this year by the FOMC, substantially remove the degree of monetary accommodation, which prevailed throughout 1993. As always, the Federal Reserve will continue to monitor economic and financial developments to judge the appropriate stance of monetary policy.

In taking the discount action, the Board approved requests submitted by the Boards of Directors of eleven Federal Reserve Banks—Boston, New York, Philadelphia, Richmond, Atlanta, Chicago, St. Louis, Minneapolis, Kansas City, Dallas and San Francisco. The discount rate is the interest rate that is charged depository institutions when they borrow from their district Federal Reserve Bank."

Wednesday, July 6, 1994 at 2:18 pm—FOMC meeting
"The meeting of the FOMC ended at 12:35 pm and there will be no further announcement."

Tuesday, August 16, 1994 at 1:18 pm—FOMC meeting
"The Board of Governors approved an increase in the discount rate from 3.5% to 4% effective immediately.

The Federal Open Market Committee agreed that this increase would be allowed to show through completely into interest rates in reserve markets.

These measures were taken against the background of evidence of continuing strength in the economic expansion and high levels of resource utilization. The actions are intended to keep inflationary pressures contained and thereby foster sustainable economic growth.

The Federal Reserve will continue to monitor economic and financial developments to gauge the appropriate stance of policy. But these actions are expected to be sufficient, at least for a time, to meet the objective of sustained, non-inflationary growth.

In taking the discount rate action, the Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of Boston, New York, Richmond, Kansas City, and Dallas. The discount rate is the interest rate that is charged depository institutions when they borrow from their district Federal Reserve Banks."

Tuesday, September 27, 1994 at 2:18 pm—FOMC meeting
"The FOMC meeting ended at 1:00 pm. There will be no further announcements."

Tuesday, November 15, 1994 at 2:20 pm—FOMC meeting
"The Federal Reserve Board today approved an increase in the discount rate from 4% to 4.5%, effective immediately.

In a related move, the Federal Open Market Committee decided that the increase in the discount rate should be reflected fully in interest rates in reserve markets.

These measures were taken against the background of evidence of persistent strength in economic activity and high and rising levels of resource utilization. In these circumstances, the Federal Reserve views these actions as necessary to keep inflation contained, and thereby fosters sustainable economic growth.

In taking the discount rate action, the board approved requests submitted by the boards of directors of the Federal Reserve Banks of New York, St. Louis, and Kansas City. The discount rate is the interest rate that is charged depository institutions when they borrow from their district Federal Reserve banks."

Tuesday, December 20, 1994 at 2:17 pm—FOMC meeting
"The FOMC meeting ended at 12:45 pm. We have no further announcements."

Wednesday, February 1, 1995 at 2:14 pm—FOMC meeting
"The Federal Reserve Board today approved an increase in the discount rate from 4.75% to 5.25% effective immediately.

In a related move, the Federal Open Market Committee agreed that this increase should be reflected fully in interest rates in the reserve markets.

Despite tentative signs of some moderation in growth, economic activity has continued to advance at a substantial pace, while resource utilization has risen further. In these circumstances, the Federal Reserve views these actions as necessary to keep inflation contained, and thereby fosters sustainable economic growth.

In taking the discount action, the Board approved requests submitted by the boards of directors of the Federal Reserve Banks of Boston, New York, Richmond, Chicago, St. Louis, Kansas City and San Francisco. The discount rate is the interest rate that is charged depository institutions when they borrow from their district Federal Reserve banks."

Tuesday, March 28, 1995 at 2:13 pm—FOMC meeting
"The FOMC meeting ended at 1:15 pm. There is no further announcement."

Tuesday, May 23, 1995 at 2:13 pm—FOMC meeting
"The FOMC meeting ended at 12:15 pm. There is no further announcement."

Thursday, July 6, 1995 at 2:15 pm—FOMC meeting
"Chairman Alan Greenspan announced today that the Federal Open Market Committee decided to decrease slightly the degree of pressure on bank reserve positions.

As a result of monetary tightening initiated in early 1994, inflationary pressures have receded enough to accommodate a modest adjustment in monetary conditions.

Today's action will be reflected in a 25 basis point decline in the Federal funds rate from about 6% to about 5.75%."

Tuesday, August 22, 1995 at 2:13 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 12:25 p.m. There is no further announcement."

Tuesday, September 26, 1995 at 2:14 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 1:20 p.m. There is no further announcement."

Wednesday, November 15, 1995 at 2:16 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 1:30 p.m. There is no further announcement."

Tuesday, December 19, 1995 at 2:15 pm—FOMC meeting
"Chairman Alan Greenspan announced today that the Federal Open Market Committee decided to decrease slightly the degree of pressure on reserve positions.

Since the last easing of monetary policy in July, inflation has been somewhat more favorable than anticipated, and this result along with an associated moderation in inflation expectations warrants a modest easing in monetary conditions.

This action is expected to be reflected in a decline in the federal funds rate of 25 basis points, from about 5.75% to about 5.50%."

Wednesday, January 31, 1996 at 2:16 pm—FOMC meeting
"The Board of Governors approved a reduction in the discount rate from 5.25 percent to 5 percent, effective immediately.

In a related move, the Federal Open Market Committee agreed that the reduction would be reflected fully in interest rates in the reserve markets. This is expected to result in a reduction in the federal funds rate of 25 basis points, from about 5.50 percent to about 5.25 percent.

Moderating economic expansion in recent months has reduced potential inflationary pressures going forward. With price and cost trends already subdued, a slight easing of monetary policy is consistent with contained inflation and sustainable growth.

In taking the discount action, the Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of New York, Philadelphia, Cleveland, Atlanta, Minneapolis and Dallas. The discount rate is the interest rate that is charged depository institutions when they borrow from their district Federal Reserve Bank."

Tuesday, March 26, 1996 at 11:39 am—FOMC meeting
"The Federal Open Market Committee meeting ended at 10:35 am. There is no further announcement."

Tuesday, May 21, 1996 at 2:15 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 1:15 pm. There is no further announcement."

Wednesday, July 3, 1996 at 2:15 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 12:50 pm. There is no further announcement."

Tuesday, August 20, 1996 at 2:17 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 12:45 pm. There is no further announcement."

Tuesday, September 24, 1996 at 2:14 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 1:40 pm. There is no further announcement."

Wednesday, November 13, 1996 at 2:16 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 12:25 pm. There is no further announcement."

Tuesday, December 17, 1996 at 2:14 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 12:20 pm. There is no further announcement."

Wednesday, February 5, 1997 at 2:16pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 11:35 am. There is no further announcement."

Tuesday, March 25, 1997 at 2:14pm—FOMC meeting
"The Federal Open Market Committee decided today to tighten money market conditions slightly, expecting the federal funds rate to rise 0.25 percentage point to around 5.50 percent.

This action was taken in light of persisting strength in demand, which is progressively increasing the rise of inflationary imbalances developing in the economy that would eventually undermine the long expansion.

In these circumstances, the slight firming of monetary conditions is viewed as a prudent step that affords greater assurance of prolonging the current economic expansion by sustaining the existing low inflation environment through the rest of this year and next. The experience of the last several years has reinforced the conviction that low inflation is essential to realizing the economy's fullest growth potential.

No change was made in the Federal Reserve discount rate, which remains at 5 percent."

Tuesday, May 20, 1997 at 2:15pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 12:45 p.m. EDT. There is no further announcement."

Tuesday, July 2, 1997 at 2:16 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 11:55 am. There is no further announcement."

Tuesday, August 19, 1997 at 2:15 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 12:40 pm. There is no further announcement."

Tuesday, September 30, 1997 at 2:15 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 12:45 pm. There is no further announcement."

Wednesday, November 12, 1997 at 2:15 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 1:10 pm EST (Wednesday). There is no further announcement."

Tuesday, December 16, 1997 at 2:15 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 12:45 pm EST. There is no announcement."

Wednesday, February 4, 1998 at 2:12 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 10:50 am EST. There is no announcement."

Tuesday, March 31, 1998 at 2:15 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 1:05 pm EST. There is no announcement."

Tuesday, May 19, 1998 at 2:13 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 1:35 pm EST. There is no announcement."

Wednesday, July 1, 1998 at 2:15 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 12:40 pm EST. There is no announcement."

Tuesday, August 18, 1998 at 2:15 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 12:45 pm EST. There is no announcement."

Tuesday, September 29, 1998 at 2:17 pm—FOMC meeting
"The Federal Open Market committee decided today to ease the stance of monetary policy slightly, expecting the federal funds rate to decline 0.25 percentage point to around 5.25 percent.

The action was taken to cushion the effects on prospective economic growth in the United States of increasing weakness in foreign economies and of less accommodative financial conditions domestically. The recent changes in the global economy and adjustments in U.S. financial markets mean that a slightly lower federal funds rate should now be consistent with keeping inflation low and sustaining economic growth going forward.

The discount rate remains unchanged at 5 percent."

Thursday, October 15, 1998 at 3:15 pm—FOMC telephone conference call
"The Federal Reserve today announced the following set of policy actions: The Board of Governors approved a reduction in the discount rate by 25 basis points from 5 percent to 4.75 percent. The federal funds rate is expected to fall 25 basis points from around 5.25 percent to around 5 percent.
Growing caution by lenders and unsettled conditions in financial markets more generally are likely to be restraining aggregate demand in the future. Against this backdrop, further easing of the stance of monetary policy was judged to be warranted to sustain economic growth in the context of contained inflation.
In taking the discount rate action, the Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of New York, Philadelphia, Atlanta, Chicago, St. Louis, Minneapolis, Kansas City, and San Francisco. The discount rate is the interest rate that is charged depository institutions when they borrow from their district Federal Reserve Banks."

Tuesday, November 17, 1998 at 2:17 pm—FOMC meeting
"The Federal Reserve today announced the following set of policy actions: The Board of Governors approved a reduction in the discount rate by 25 basis points from 4.75 percent to 4.50 percent. The federal funds rate is expected to fall 25 basis points from around 5 percent to around 4.75 percent.

Although conditions in financial markets have settled down materially since mid-October, unusual strains remain. With the 75 basis point decline in the federal funds rate since September, financial conditions can reasonably be expected to be consistent with fostering sustained economic expansion while keeping inflationary pressures subdued.

In taking the discount rate action, the Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of New York, Philadelphia, and

Dallas. The discount rate is the interest rate that is charged depository institutions when they borrow from their district Federal Reserve Banks"

Tuesday, December 22, 1998 at 2:13 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 12:55 pm EST. There is no announcement."

Wednesday, February 3, 1999 at 2:12 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 11:40 am EST. There is no announcement."

Tuesday, March 30, 1999 at 2:12 pm—FOMC meeting
"The Federal Open Market Committee meeting ended at 12:35 pm EST. There is no announcement."

Tuesday, May 18, 1999 at 2:11 pm—FOMC meeting
"While the FOMC did not take action today to alter the stance of monetary policy, the Committee was concerned about the potential for a buildup of inflationary imbalances that could undermine the favorable performance of the economy and therefore adopted a directive that is tilted toward the possibility of a firming in the stance of monetary policy. Trend increases in costs and core prices have generally remained quite subdued. But domestic financial markets have recovered and foreign economic prospects have improved since the easing of monetary policy last fall. Against the background of already-tight domestic labor markets and ongoing strength in demand in excess of productivity gains, the Committee recognizes the need to be alert to developments over coming months that might indicate that financial conditions may no longer be consistent with containing inflation."

Wednesday, June 30, 1999 at 2:15 pm—FOMC meeting
"The Federal Open Market Committee today voted to raise its target for the federal funds rate 25 basis points to 5 percent. Last fall the Committee reduced interest rates to counter a significant seizing-up of financial markets in the United States. Since then much of the financial strain has eased, foreign economies have firmed, and economic activity in the United States has moved forward at a brisk pace. Accordingly, the full degree of adjustment is judged no longer necessary.

Labor markets have continued to tighten over recent quarters, but strengthening productivity growth has contained inflationary pressures.

Owing to the uncertain resolution of the balance of conflicting forces in the economy going forward, the FOMC has chosen to adopt a directive that includes no predilection about near-term policy action. The Committee, nonetheless, recognizes that in the current dynamic environment it must be especially alert to the emergence, or potential emergence, of inflationary forces that could undermine economic growth."

Tuesday, August 24, 1999 at 2:14 pm—FOMC meeting
"The Federal Open Market Committee today voted to raise its target for the federal funds rate by 25 basis points to 5.25 percent. In a related action, the Board of Governors approved a 25 basis point increase in the discount rate to 4.75 percent.

With financial markets functioning more normally, and with persistent strength in domestic demand, foreign economies firming and labor markets remaining very tight, the degree of monetary ease required to address the global financial market turmoil of last fall is no longer consistent with sustained, noninflationary, economic expansion.

Today's increase in the federal funds rate, together with the policy action in June and the firming of conditions more generally in U.S. financial markets over recent months, should markedly diminish the risk of rising inflation going forward. As a consequence, the directive the Federal Open Market Committee adopted is symmetrical with regard to the outlook for policy over the near term.

In taking the discount rate action, the Federal Reserve Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Kansas City, and San Francisco. The discount rate is the interest rate that is charged depository institutions when they borrow from their district Federal Reserve Banks."

Tuesday, October 5, 1999 at 2:12 pm—FOMC meeting

"The Federal Open Market Committee decided today to leave its target for the federal funds rate unchanged.

Strengthening productivity growth has been fostering favorable trends in unit costs and prices, and much recent information suggests that these trends have been sustained.

Nonetheless, the growth of demand has continued to outpace that of supply, as evidenced by a decreasing pool of available workers willing to take jobs. In these circumstances, the Federal Open Market Committee will need to be especially alert in the months ahead to the potential for costs to increase significantly in excess of productivity in a manner that could contribute to inflation pressures and undermine the impressive performance of the economy.

Against this background, the Committee adopted a directive that was biased toward a possible firming of policy going forward. Committee members emphasized that such a directive did not signify a commitment to near-term action. The Committee will need to evaluate additional information on the balance of aggregate supply and demand and conditions in financial markets."

Tuesday, November 16, 1999 at 2:15 p.m.—FOMC meeting

"The Federal Open Market Committee today voted to raise its target for the federal funds rate by 25 basis points to 5.50 percent. In a related action, the Board of Governors approved a 25 basis point increase in the discount rate to 5 percent.

Although cost pressures appear generally contained, risks to sustainable growth persist. Despite tentative evidence of a slowing in certain interest-sensitive sectors of the economy and of accelerating productivity, the expansion of activity continues in excess of the economy's growth potential. As a consequence, the pool of available workers willing to take jobs has been drawn down further in recent months, a trend that must eventually be contained if inflationary imbalances are to remain in check and economic expansion continue.

Today's increase in the federal funds rate, together with the policy actions in June and August and the firming of conditions more generally in U.S. financial markets

over the course of the year, should markedly diminish the risk of inflation going forward. As a consequence, the directive the Federal Open Market Committee adopted is symmetrical with regard to the outlook for policy over the near term.

In taking the discount rate action, the Federal Reserve Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of Boston, Cleveland, Richmond and Kansas City. The discount rate is the rate charged depository institutions when they borrow short-term adjustment credit from their district Federal Reserve Banks."

Tuesday, December 21, 1999 at 2:13 p.m.—FOMC meeting
"The Federal Open Market Committee made no change today in its target for the federal funds rate.

Based on the available evidence, however, the Committee remains concerned with the possibility that over time increases in demand will continue to exceed the growth in potential supply, even after taking account of the remarkable rise in productivity growth. Such trends could foster inflationary imbalances that would undermine the economy's exemplary performance.

Nonetheless, in light of market uncertainties associated with the century date change, the Committee decided to adopt a symmetric directive in order to indicate that the focus of policy in the intermeeting period must be ensuring a smooth transition into the Year 2000. At its next meeting the Committee will assess available information on the likely balance of supply and demand, conditions in financial markets, and the possible need for adjustment in the stance of policy to contain inflationary pressures."

Wednesday, February 2, 2000 at 2:14 p.m.—FOMC meeting
"The Federal Open Market Committee voted today to raise its target for the federal funds rate by 25 basis points to 5.75 percent. In a related action, the Board of Governors approved a 25 basis point increase in the discount rate to 5.25 percent.

The Committee remains concerned that over time increases in demand will continue to exceed the growth in potential supply, even after taking account of the pronounced rise in productivity growth. Such trends could foster inflationary imbalances that would undermine the economy's record economic expansion.

Against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the Committee believes the risks are weighted mainly toward conditions that may generate heightened inflation pressures in the foreseeable future.

In taking the discount rate action, the Federal Reserve Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Kansas City and San Francisco. The discount rate is the rate charged depository institutions when they borrow short-term adjustment credit from their district Federal Reserve Banks."

Tuesday, March 21, 2000 at 2:15 p.m.—FOMC meeting
"The Federal Open Market Committee voted today to raise its target for the federal funds rate by 25 basis points to 6 percent. In a related action, the Board of Governors approved a 25 basis point increase in the discount rate to 5-1/2 percent.

Economic conditions and considerations addressed by the Committee are essentially the same as when the Committee met in February. The Committee remains concerned that increases in demand will continue to exceed the growth in potential supply, which could foster inflationary imbalances that would undermine the economy's record economic expansion.

Against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the Committee believes the risks are weighted mainly toward conditions that may generate heightened inflation pressures in the foreseeable future.

In taking the discount rate action, the Federal Reserve Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Minneapolis, Kansas City and San Francisco. The discount rate is the rate charged depository institutions when they borrow short-term adjustment credit from their district Federal Reserve Banks."

Tuesday, May 16, 2000 at 2:13 p.m.—FOMC meeting

"The Federal Open Market Committee voted today to raise its target for the federal funds rate by 50 basis points to 6-1/2 percent. In a related action, the Board of Governors approved a 50 basis point increase in the discount rate to 6 percent.

Increases in demand have remained in excess of even the rapid pace of productivity-driven gains in potential supply, exerting continued pressure on resources. The Committee is concerned that this disparity in the growth of demand and potential supply will continue, which could foster inflationary imbalances that would undermine the economy's outstanding performance.

Against the background of its long-term goals of price stability and sustainable economic growth and of the information already available, the Committee believes the risks are weighted mainly toward conditions that may generate heightened inflation pressures in the foreseeable future.

In taking the discount rate action, the Federal Reserve Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of Boston, Cleveland, Richmond, and San Francisco. The discount rate is the rate charged depository institutions when they borrow short-term adjustment credit from their district Federal Reserve Banks."

Wednesday, June 28, 2000 at 2:15 p.m.—FOMC meeting

"The Federal Open Market Committee at its meeting today decided to maintain the existing stance of monetary policy, keeping its target for the federal funds rate at 6-1/2 percent.

Recent data suggest that the expansion of aggregate demand may be moderating toward a pace closer to the rate of growth of the economy's potential to produce. Although core measures of prices are rising slightly faster than a year ago, continuing rapid advances in productivity have been containing costs and holding down underlying price pressures.

Nonetheless, signs that growth in demand is moving to a sustainable pace are still tentative and preliminary, and the utilization of the pool of available workers remains at an unusually high level.

In these circumstances, and against the background of its long-term goals of price stability and sustainable economic growth and of the information currently available, the Committee believes the risks continue to be weighted mainly toward conditions that may generate heightened inflation pressures in the foreseeable future."

Tuesday, August 22, 2000 at 2:14 p.m.—FOMC meeting
"The Federal Open Market Committee at its meeting today decided to maintain the existing stance of monetary policy, keeping its target for the federal funds rate at 6-1/2 percent.

Recent data have indicated that the expansion of aggregate demand is moderating toward a pace closer to the rate of growth of the economy's potential to produce. The data also have indicated that more rapid advances in productivity have been raising that potential growth rate as well as containing costs and holding down underlying price pressures.

Nonetheless, the Committee remains concerned about the risk of a continuing gap between the growth of demand and potential supply at a time when the utilization of the pool of available workers remains at an unusually high level.

Against the background of its long-term goals of price stability and sustainable economic growth and of the information currently available, the Committee believes the risks continue to be weighted mainly toward conditions that may generate heightened inflation pressures in the foreseeable future."

Tuesday, October 3, 2000 at 2:12 p.m.—FOMC meeting
"The Federal Open Market Committee at its meeting today decided to maintain the existing stance of monetary policy, keeping its target for the federal funds rate at 6-1/2 percent.

Recent data have indicated that the expansion of aggregate demand has moderated to a pace closer to the enhanced rate of growth of the economy's potential to produce. The more rapid advances in productivity also continue to help contain costs and hold down underlying price pressures.

However, the utilization of the pool of available workers remains at an unusually high level. Moreover, the increase in energy prices, though having limited effect on core measures of prices to date, poses a risk of raising inflation expectations. The subdued behavior of those expectations so far has contributed importantly to maintaining an environment conducive to maximum sustainable growth.

Against the background of its long-term goals of price stability and sustainable economic growth and of the information currently available, the Committee believes the risks continue to be weighted mainly toward conditions that may generate heightened inflation pressures in the future."

Wednesday, November 15, 2000 at 2:12 p.m.—FOMC meeting
"The Federal Open Market Committee at its meeting today decided to maintain the existing stance of monetary policy, keeping its target for the federal funds rate at 6-1/2 percent.

The utilization of the pool of available workers remains at an unusually high level, and the increase in energy prices, though having limited effect on core measures of prices to date, still harbors the possibility of raising inflation expectations. The

Committee, accordingly, continues to see a risk of heightened inflation pressures. However, softening in business and household demand and tightening conditions in financial markets over recent months suggest that the economy could expand for a time at a pace below the productivity-enhanced rate of growth of its potential to produce.

Nonetheless, to date the easing of demand pressures has not been sufficient to warrant a change in the Committee's judgment that against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks continue to be weighted mainly toward conditions that may generate heightened inflation pressures in the foreseeable future."

Tuesday, December 19, 2000 at 2:16 p.m.—FOMC meeting

"The Federal Open Market Committee at its meeting today decided to maintain the existing stance of monetary policy, keeping its target for the federal funds rate at 6.5 percent.

The drag on demand and profits from rising energy costs, as well as eroding consumer confidence, reports of substantial shortfalls in sales and earnings, and stress in some segments of the financial markets suggest that economic growth may be slowing further. While some inflation risks persist, they are diminished by the more moderate pace of economic activity and by the absence of any indication that longer-term inflation expectations have increased. The Committee will continue to monitor closely the evolving economic situation.

Against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the Committee consequently believes that the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future."

Wednesday, January 3, 2001 at 1:13 p.m.—FOMC telephone conference call

"The Federal Open Market Committee decided today to lower its target for the federal funds rate by 50 basis points to 6 percent.

In a related action, the Board of Governors approved a 25-basis-point decrease in the discount rate to 5.75 percent, the level requested by seven Reserve Banks. The Board also indicated that it stands ready to approve a further reduction of 25 basis points in the discount rate to 5.5 percent on the requests of Federal Reserve Banks.

These actions were taken in light of further weakening of sales and production, and in the context of lower consumer confidence, tight conditions in some segments of financial markets, and high energy prices sapping household and business purchasing power. Moreover, inflation pressures remain contained. Nonetheless, to date there is little evidence to suggest that longer-term advances in technology and associated gains in productivity are abating.

The Committee continues to believe that, against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future.

In taking the discount rate action, the Federal Reserve Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of New York, Cleveland, Atlanta, St. Louis, Kansas City, Dallas and San Francisco."

Thursday, January 4, 2001 at 5:16 p.m.—FOMC completing action initiated January 3, 2001
"Completing action initiated yesterday, the Board of Governors today approved a discount rate of 5.5 percent, acting on requests submitted by the Boards of Directors of all twelve Reserve Banks.

Yesterday, in conjunction with the Federal Open Market Committee's decision to lower the federal funds rate target by 50 basis points, the Board approved pending requests from Federal Reserve Banks to reduce the discount rate by 25 basis points, to 5.75 percent, and said that it would approve a further 25 basis point reduction once the Reserve Banks submitted requests.

The discount rate is the rate charged depository institutions when they borrow short-term adjustment credit from their district Federal Reserve Banks. The rate change is effective immediately except in the St. Louis district, where the rate becomes effective as of Friday, January 5, 2001."

Wednesday, January 31, 2001 at 2:15 p.m.—FOMC meeting
"The Federal Open Market Committee at its meeting today decided to lower its target for the federal funds rate by 50 basis points to 5.5 percent. In a related action, the Board of Governors approved a 50 basis point reduction in the discount rate to 5 percent.

Consumer and business confidence has eroded further, exacerbated by rising energy costs that continue to drain consumer purchasing power and press on business profit margins. Partly as a consequence, retail sales and business spending on capital equipment have weakened appreciably. In response, manufacturing production has been cut back sharply, with new technologies appearing to have accelerated the response of production and demand to potential excesses in the stock of inventories and capital equipment.

Taken together, and with inflation contained, these circumstances have called for a rapid and forceful response of monetary policy. The longer-term advances in technology and accompanying gains in productivity, however, exhibit few signs of abating and these gains, along with the lower interest rates, should support growth of the economy over time.

Nonetheless, the Committee continues to believe that against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future.

In taking the discount rate action, the Federal Reserve Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of New York, Philadelphia, Cleveland, Atlanta, Chicago, St. Louis, Minneapolis, Dallas and San Francisco."

Tuesday, March 20, 2001 at 2:13 p.m.—FOMC meeting
"The Federal Open Market Committee at its meeting today decided to lower its target for the federal funds rate by 50 basis points to 5 percent. In a related action, the Board of Governors approved a 50 basis point reduction in the discount rate to 4.5 percent.

Persistent pressures on profit margins are restraining investment spending and, through declines in equity wealth, consumption. The associated backup in inventories has induced a rapid response in manufacturing output and, with spending having firmed a bit since last year, inventory adjustment appears to be well underway.

Although current developments do not appear to have materially diminished the prospects for long-term growth in productivity, excess productive capacity has emerged recently. The possibility that this excess could continue for some time and the potential for weakness in global economic conditions suggest substantial risks that demand and production could remain soft. In these circumstances, when the economic situation could be evolving rapidly, the Federal Reserve will need to monitor developments closely.

The Committee continues to believe that against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future.

In taking the discount rate action, the Federal Reserve Board approved requests submitted by the Boards of Directors of all twelve Reserve Banks."

Wednesday, April 18, 2001 at 10:54 a.m.—FOMC telephone conference call

"The Federal Open Market Committee decided today to lower its target for the federal funds rate by 50 basis points to 4.5 percent. In a related action, the Board of Governors approved a 50 basis point reduction in the discount rate to 4 percent.

The FOMC has reviewed prospects for the economy in light of the information that has become available since its March meeting. A significant reduction in excess inventories seems well advanced. Consumption and housing expenditures have held up reasonably well, though activity in these areas has flattened recently. Although measured productivity probably weakened in the first quarter, the impressive underlying rate of increase that developed in recent years appears to be largely intact.

Nonetheless, capital investment has continued to soften and the persistent erosion in current and expected profitability, in combination with rising uncertainty about the business outlook, seems poised to dampen capital spending going forward. This potential restraint, together with the possible effects of earlier reductions in equity wealth on consumption and the risk of slower growth abroad, threatens to keep the pace of economic activity unacceptably weak. As a consequence, the Committee agreed that an adjustment in the stance of policy is warranted during this extended intermeeting period.

The Committee continues to believe that against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future.

In taking the discount rate action, the Federal Reserve Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of Boston, New York, Philadelphia, Cleveland, Atlanta, Minneapolis, Dallas, and San Francisco."

Tuesday, May 15, 2001 at 2:15 p.m.—FOMC meeting

"The Federal Open Market Committee at its meeting today decided to lower its target for the federal funds rate by 50 basis points to 4 percent. In a related action, the

Board of Governors approved a 50 basis point reduction in the discount rate to 3.5 percent.

A significant reduction in excess inventories seems well advanced. Consumption and housing expenditures have held up reasonably well, though activity in these areas has flattened recently. Investment in capital equipment, however, has continued to decline. The erosion in current and prospective profitability, in combination with considerable uncertainty about the business outlook, seems likely to hold down capital spending going forward. This potential restraint, together with the possible effects of earlier reductions in equity wealth on consumption and the risk of slower growth abroad, continues to weigh on the economy.

With pressures on labor and product markets easing, inflation is expected to remain contained. Although measured productivity growth stalled in the first quarter, the impressive underlying rate of increase that developed in recent years appears to be largely intact, supporting longer-term prospects.

The Committee continues to believe that against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future.

In taking the discount rate action, the Federal Reserve Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of New York, Richmond, Chicago, St. Louis and San Francisco."

Wednesday, June 27, 2001 at 2:12 p.m.—FOMC meeting

"The Federal Open Market Committee at its meeting today decided to lower its target for the federal funds rate by 25 basis points to 3.75 percent. In a related action, the Board of Governors approved a 25 basis point reduction in the discount rate to 3.25 percent. Today's action by the FOMC brings the decline in the target federal funds rate since the beginning of the year to 275 basis points.

The patterns evident in recent months—declining profitability and business capital spending, weak expansion of consumption, and slowing growth abroad—continue to weigh on the economy. The associated easing of pressures on labor and product markets are expected to keep inflation contained.

Although continuing favorable trends bolster long-term prospects for productivity growth and the economy, the Committee continues to believe that against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future.

In taking the discount rate action, the Federal Reserve Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of Boston, New York, Philadelphia, Atlanta, Chicago, Dallas and San Francisco."

Tuesday, August 21, 2001 at 2:13 p.m.—FOMC meeting

"The Federal Open Market Committee at its meeting today decided to lower its target for the federal funds rate by 25 basis points to 3.5 percent. In a related action, the Board of Governors approved a 25 basis point reduction in the discount rate to 3 percent. Today's action by the FOMC brings the decline in the target federal funds rate since the beginning of the year to 300 basis points.

Household demand has been sustained, but business profits and capital spending continue to weaken and growth abroad is slowing, weighing on the U.S. economy. The associated easing of pressures on labor and product markets is expected to keep inflation contained.

Although long-term prospects for productivity growth and the economy remain favorable, the Committee continues to believe that against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future.

In taking the discount rate action, the Federal Reserve Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of Boston, New York, Philadelphia, Richmond, Chicago, Kansas City and Dallas."

Monday, September 17, 2001at 8:20 a.m.—FOMC telephone conference call

"The Federal Open Market Committee decided today to lower its target for the federal funds rate by 50 basis points to 3 percent. In a related action, the Board of Governors approved a 50 basis point reduction in the discount rate to 2.5 percent. The Federal Reserve will continue to supply unusually large volumes of liquidity to the financial markets, as needed, until more normal market functioning is restored. As a consequence, the FOMC recognizes that the actual federal funds rate may be below its target on occasion in these unusual circumstances.

Even before the tragic events of last week, employment, production, and business spending remained weak, and last week's events have the potential to damp spending further. Nonetheless, the long-term prospects for productivity growth and the economy remain favorable and should become evident once the unusual forces restraining demand abate. For the foreseeable future, the Committee continues to believe that against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are weighted mainly toward conditions that may generate economic weakness.

In taking the discount rate action, the Federal Reserve Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of Richmond, Chicago, Minneapolis, Dallas, and San Francisco."

Tuesday, October 2, 2001 at 2:15 p.m.—FOMC meeting

"The Federal Open Market Committee decided today to lower its target for the federal funds rate by 50 basis points to 2.5 percent. In a related action, the Board of Governors approved a 50 basis point reduction in the discount rate to 2 percent.

The terrorist attacks have significantly heightened uncertainty in an economy that was already weak. Business and household spending as a consequence are being further damped. Nonetheless, the long-term prospects for productivity growth and the economy remain favorable and should become evident once the unusual forces restraining demand abate.

The Committee continues to believe that, against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future.

In taking the discount rate action, the Federal Reserve Board approved requests submitted by the Boards of Directors of the Federal Reserve Banks of Boston, New York, Cleveland, Richmond, Atlanta, St. Louis, Kansas City and San Francisco."

Tuesday, November 6, 2001 at 2:20 p.m.—FOMC meeting
"The Federal Open Market Committee decided today to lower its target for the federal funds rate by 50 basis points to 2 percent. In a related action, the Board of Governors approved a 50 basis point reduction in the discount rate to 1.5 percent.

Heightened uncertainty and concerns about a deterioration in business conditions both here and abroad are damping economic activity. For the foreseeable future, then, the Committee continues to believe that, against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are weighted mainly toward conditions that may generate economic weakness.

Although the necessary reallocation of resources to enhance security may restrain advances in productivity for a time, the long-term prospects for productivity growth and the economy remain favorable and should become evident once the unusual forces restraining demand abate.

In taking the discount rate action, the Federal Reserve Board approved the request submitted by the Board of Directors of the Federal Reserve Bank of Richmond."

Tuesday, December 11, 2001 at 2:14 p.m.—FOMC meeting
"The Federal Open Market Committee decided today to lower its target for the federal funds rate by 25 basis points to 1.75 percent. In a related action, the Board of Governors approved a 25 basis point reduction in the discount rate to 1.25 percent.

Economic activity remains soft, with underlying inflation likely to edge lower from relatively modest levels. To be sure, weakness in demand shows signs of abating, but those signs are preliminary and tentative. The Committee continues to believe that, against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future.

Although the necessary reallocation of resources to enhance security may restrain advances in productivity for a time, the long-term prospects for productivity growth and the economy remain favorable and should become evident once the unusual forces restraining demand abate.

In taking the discount rate action, the Federal Reserve Board approved the requests submitted by the Boards of Directors of the Federal Reserve Banks of Boston, New York, Philadelphia, Chicago and San Francisco."

Wednesday, January 30, 2002 at 2:16 p.m.—FOMC meeting
"The Federal Open Market Committee decided today to keep its target for the federal funds rate unchanged at 1.75 percent.

Signs that weakness in demand is abating and economic activity is beginning to firm have become more prevalent. With the forces restraining the economy starting to diminish, and with the long-term prospects for productivity growth remaining favorable and monetary policy accommodative, the outlook for economic recovery has become more promising.

The degree of any strength in business capital and household spending, however, is still uncertain. Hence, the Committee continues to believe that, against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future."

Tuesday, March 19, 2002 at 2:19 p.m.—FOMC meeting

"The Federal Open Market Committee decided today to keep its target for the federal funds rate unchanged at 1.75 percent.

The information that has become available since the last meeting of the Committee indicates that the economy, bolstered by a marked swing in inventory investment, is expanding at a significant pace. Nonetheless, the degree of the strengthening in final demand over coming quarters, an essential element in sustained economic expansion, is still uncertain.

In these circumstances, although the stance of monetary policy is currently accommodative, the Committee believes that, for the foreseeable future, against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the risks are balanced with respect to the prospects for both goals.

The Committee decided to include in its announcements following its meetings the roll call of the vote on the federal funds rate target, including the preferred policy choice of any dissenters. This action accelerates the release of this information, currently available in the Minutes with a lag. To conform to this new practice, the Board of Governors also decided to report in the written announcement the roll call of any vote on the discount rate, also including the preferred policy choice of any dissenters.

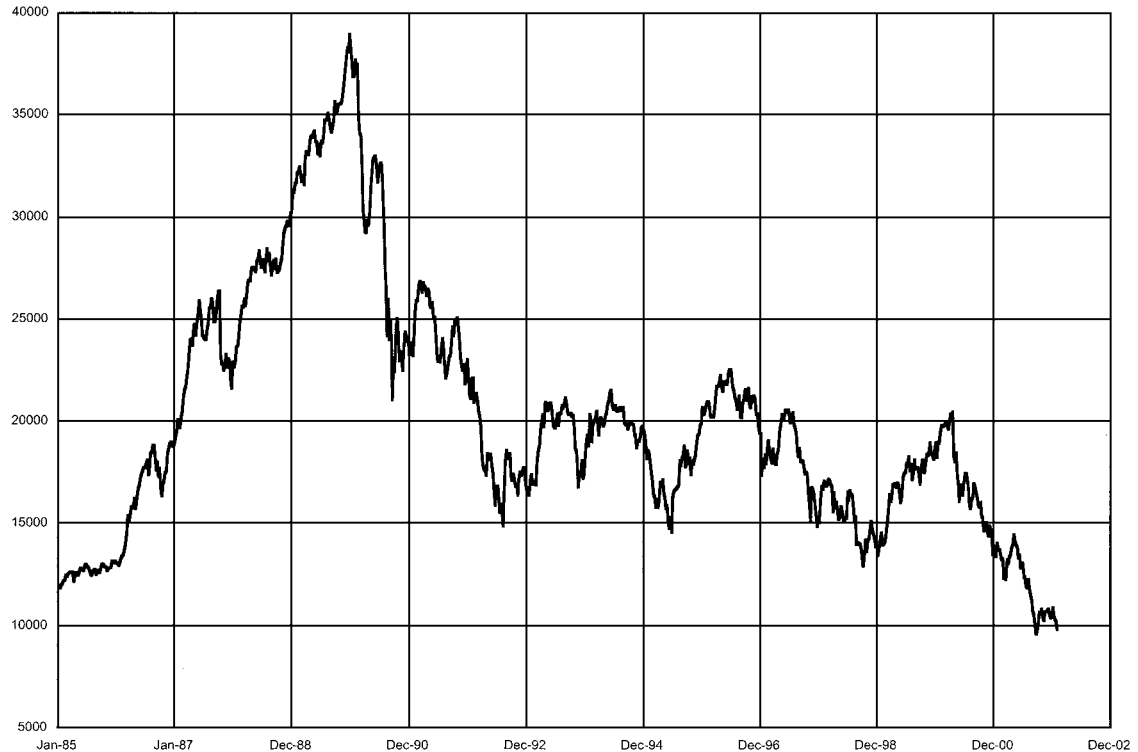
Voting for the FOMC monetary policy action were: Alan Greenspan, Chairman; William J. McDonough, Vice Chairman; Susan S. Bies; Roger W. Ferguson, Jr.; Edward M. Gramlich; Jerry L. Jordan; Robert D. McTeer, Jr.; Mark W. Olson; Anthony M. Santomero, and Gary H. Stern."

CHAPTER 6

Asset Price Bubbles—Beware

Perhaps the biggest nightmare for contemporary central bankers is the asset price bubble. In the second half of the 1980s Japan experienced a classic asset price bubble, consisting of soaring stock prices and wildly appreciating real estate values. Most recently, the United States has experienced a high-tech stock price bubble, which burst in March 2000. Interestingly, the percentage declines in the Japanese Nikkei and U.S. NASDAQ stock indexes, following the bursting of the respective bubbles, were both in the 60%–70% range (see Exhibit 6.1), though it should be noted that the NASDAQ index consists mainly of high-tech stocks while the Nikkei is more broadly representative of all major Japanese industries. This has occurred despite major Japanese–U.S. differences in culture, financial structure, regulation, and free market orientation. Historically, of course, there was Holland's famous tulip bulb bubble of the seventeenth century and the English South Seas and French Mississippi bubbles of the eighteenth century. In a typical asset price bubble, frenzied trader speculation, fueled by excessive credit growth, will inflate the asset price bubble until it becomes so large that it breaks. As technology stocks soared in 1999, George Vanderheiden, a veteran mutual-fund manager at Fidelity Investments scribbled a message on the white board outside his office door: "Tulip bulbs for sale." Mr. Vanderheiden was, of course, making a wry message on stock market excess.

EXHIBIT 6.1 NIKKEI 225 Stock Index
Weekly levels (1985–2002)



For modern-day central bankers, asset price bubbles are a huge headache because they cannot be fully anticipated and threaten destabilizing swings in collective psychology, spending, and growth. In 1995, Fed Chairman Greenspan observed at the annual Kansas City Fed conference in Jackson Hole, Wyoming, that

> [w]e no longer have the luxury to look primarily to the flow of goods and services, as conventionally estimated, when evaluating the macroeconomic environment in which monetary policy must function. There are important, but extremely difficult, questions surrounding the behavior of asset prices and the implications of this behavior for the decisions of households and businesses.

Interestingly, leading up to Fed Chairman Greenspan's now infamous "irrational exuberance" reference on December 5, 1996, then Fed Governor Lawrence Lindsey (now President Bush's chief economist) argued at the September 24, 1996, FOMC meeting, according to just released verbatim transcripts, that the Fed should essentially consider broadening its mission beyond containing prices of goods and services to target asset prices. In this connection, he stated that "[a]s in the United States in the 1920s and Japan in the late 1980s, the case for the central bank to burst the bubble becomes overwhelming."

During the latter part of the 1995–early 2000 period, stock price increases, operating through a positive wealth effect, sharply boosted consumer spending, while reducing savings to abnormally low levels. An excellent Fed Board staff study determined that during the 1995–2000 period it was the top quintile of income earners, who disproportionately benefited from rising equity prices, that accounted for virtually all the increase in aggregate consumption and the reduction in net savings flows. This result is not particularly surprising in view of the fact that in 1998 the top 20% of income earners held

disproportionately high 83% of all publicly traded corporate equities and 74% of all mutual fund shares.

In his semi-annual congressional testimony to the House of Representatives on February 27, 2002, Fed Chairman Greenspan observed with respect to the economic downturn that "we have already seen significant spending restraint by the top one-fifth of income earners, presumably owing to the drop in equity prices." Significantly, however, he added that "[m]oderate-income households have a much larger proportion of their assets in homes, and the continued rise in the value of houses has provided greater support for their net worth."

In late 1999 and early 2000, Fed officials perceived that wealth-induced increases in aggregate demand exceeded growth in potential supply, even after allowing for increased structural productivity gains. The resulting strain on an already tight labor market threatened increases in wage and price pressures.

Once the asset price bubble bursts, as it inevitably will, there will be a slump in investor psychology and a likely breach of consumer and business confidence, which will threaten to depress spending and push the economy over the edge into recession. Largely reflecting a decline in stock prices, household net worth—total assets such as houses and stocks, minus total liabilities such as mortgages and credit card debt—fell 2% in 2000. This marked the first decline in household net worth in at least 55 years. Likewise, in 2001, household net worth again apparently contracted as stock prices registered the first back-to-back annual declines in more than two decades.

INVESTOR PSYCHOLOGY

The problem is that the extreme swings in investor psychology and consumer and business confidence that are usually associated with asset price bubbles are extremely difficult to predict. Economic models simply cannot capture such wide swings in

investor psychology and consumer and business confidence. As a result, modern-day central bankers are almost always "behind the curve" in seeking to counter asset price bubble effects. In his semi-annual congressional testimony on July 18, 2001, Fed Chairman Greenspan asked the hypothetical question, "Do central banks have the capability to eliminate booms and busts in economic activity?" He answered "no," because there is no tool to change human nature. Greenspan explained

> [t]oo often people are prone to recurring bouts of optimism and pessimism that manifest themselves from time to time in the buildup or cession of speculative excesses. As I have noted in recent years, our only realistic response to a speculative bubble is to lean against the economic pressures that may accompany a rise in asset prices, bubble or not, and address forcefully the consequences of a sharp deflation of asset prices should they occur.

This latter observation takes on all the more significance because it is repeated virtually word-for-word from the Fed Chairman's own earlier May 24, 2001, remarks to the Economic Club of New York (see Chapter 2).

The watchword as an asset price bubble emerges is *psychology*. Market psychology becomes excessively optimistic and divorced from reality at the peak of the asset price bubble only to fall to the darkest depths of pessimism once the asset price bubble bursts, as it inevitably will. Robert Schiller in his book *Irrational Exuberance* defines a speculative stock bubble as a situation in which temporarily high prices are sustained largely by investors' enthusiasm rather than by consistent estimation of real value. Schiller cites the misguided "new era" thinking in such periods as the 1920s, the 1950s, and the 1990s. In the 1920s and the 1950s, the false assumption was that somehow businesses were able to plan better for the future than previously, thus presumably making it possible for these prescient businesses to avoid economic downturns. Also, in the 1950s,

the "new era" fallacy was tied to the "baby boom" explosion in consumption, which was supposed to bring unending prosperity accompanied by spectacular stock market gains.

The most commonly used phrase by those caught up in both the Japanese asset price bubble in the second half of the 1980s and the U.S. high-tech stock price bubble in the second half of the 1990s was that "[t]his one is different." In the case of the Japanese asset price bubble, mainly driven by soaring real estate prices, accompanied by surging stock prices, investors wrongly believed that real estate prices in cities like Tokyo were destined to rise seemingly forever.

Likewise, a decade later, investors believed just as fervently that high-tech stock prices could only move in one direction—up. The widespread view in the advanced stage of the high-tech stock price bubble was that "momentum" would easily carry stock prices higher and that the risk premium of holding stocks in your portfolio was virtually nonexistent. The more favorable economic climate, heralded as the "new economy," was thought to be more or less permanently founded on such ideal underpinnings as increased globalization, the boom in high-tech industries, rising productivity, moderating inflation, falling interest rates, and surging profits.

Needless to say, the damage done to the economy by the bursting of asset price bubbles can be severe. But the extent of this damage will depend critically on government policy responses.

ASSET PRICE BUBBLES AND THE FED

The high-tech stock price bubble has proven to be a major problem for the Greenspan Fed. To start with, in the summer and fall of 2000, Fed officials seemed to be overconfident; and initially insensitive to the economy's post-bubble vulnerability. They were convinced that the often-elusive "soft landing" could be achieved, following the Fed's tightening actions in 1999 and early 2000. Moreover, policymakers not only initially failed to anticipate major energy

price hikes, but also wrongly assumed that increased energy prices would spill over into higher inflation, instead of mainly depressing aggregate demand, as turned out to be the case. As recently as the November 15, 2000, FOMC meeting the Fed revealed its unfounded inflationary fears when it stated that "the increase in energy prices, though having limited effect on core measures of prices to date, poses a risk of raising inflation expectations."

Also, perhaps the last thing that Fed Chairman Greenspan wanted was to be accused of easing prematurely in order to bail out battered stock market investors who should have been more prudent in the first place. Earlier, in fall 1998, stock market traders and investors had cheered when the Fed eased to counter the depressing effects of the global financial crisis and then supplied extra liquidity in late 1999 in connection with the century date change. This Fed-induced dose of financial market bullishness had fueled a surge in stock prices in 1999, which carried over to record highs in early 2000 before the bubble burst. Undoubtedly, the Fed Chairman was concerned that this experience had created a major moral hazard; that is, stock investors were motivated to behave in a riskier manner than they otherwise would have behaved on the expectation that the Fed would always be there to bail them out. More immediately, since Fed policymakers can not anticipate asset price bubbles or their demise, monetary policy moves must by nature be reactive. Specifically, as already noted, the best the Fed can do is to react to the upside economic pressures that accompany a rise in asset prices, and, conversely, try to respond forcefully to the negative economic consequences of a sharp deflation in asset prices, once the bubbles burst.

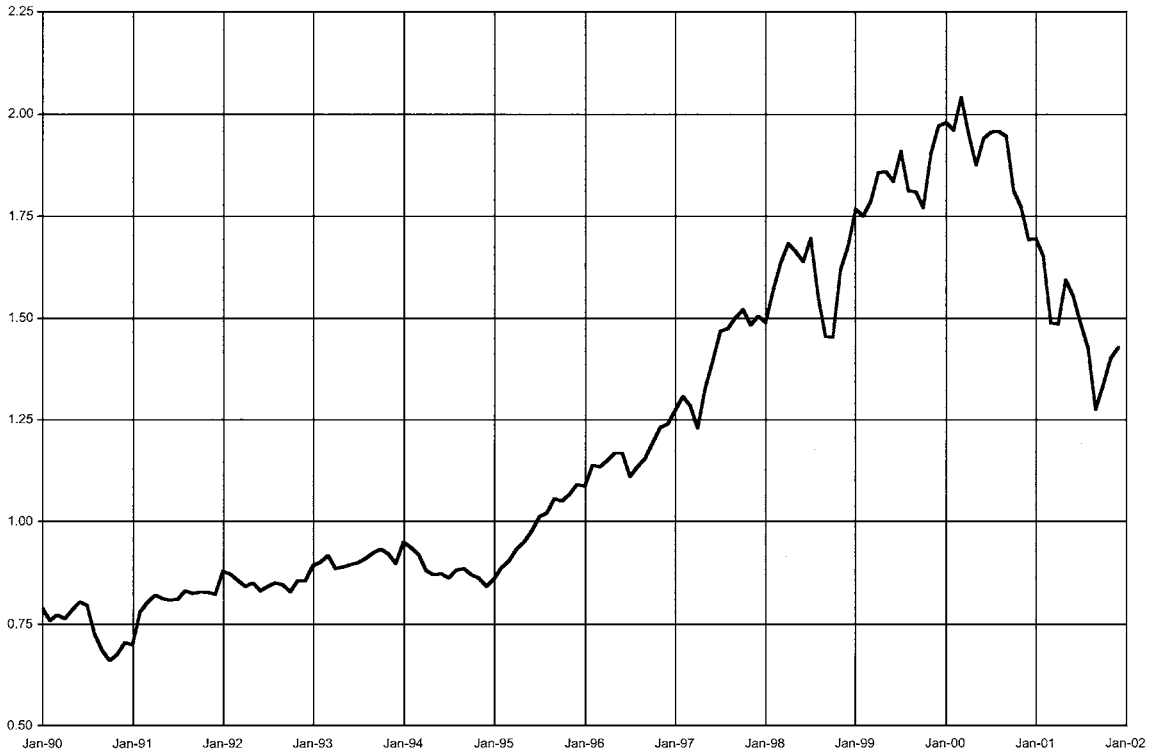
The main problem posed by the bursting of the high-tech stock bubble has been a far-ranging negative psychological fallout; not only has investor psychology been severely depressed, but consumer and business confidence have been shaken as well. Fed officials failed to foresee the resulting pronounced slowing in economic growth near the end of 2000.

Specifically, there was a slowing in consumer demand, beginning in mid-2000 and intensifying later in the year, reflecting declining stock prices, which operated through an attenuated wealth effect (see Exhibit 6.2), to depress consumer spending. In addition, there were increasing energy prices, which acted like a tax increase on consumers. Fortunately, energy prices peaked in late 2000 and turned lower, thus eliminating at least this one source of drag on aggregate demand.

After a spectacular rally in 1999 and early 2000, the NASDAQ stock index, composed mainly of technology stocks, suffered a major meltdown over the remainder of 2000 and into 2001. As already noted, the NASDAQ stock index plunged a whopping 60% in the 12 months following its peak in March 2000. This plunge in high-tech stock prices eventually pulled down the broader stock indexes. The increasing the cost of equity capital, combined with prospects for slower growth, mounting excess capacity and lower expected rates of return caused businesses to cut back sharply on planned investment in new structures and especially high-tech equipment. Unusually severe winter weather also contributed to the pronounced slowing in economic growth in late 2000.

In the wake of weaker than expected demand, businesses experienced an unintended buildup in their inventory stocks. As businesses sought to trim these unwanted inventories manufacturing output and employment contracted. The Fed's major concern was that this downturn associated with inventory rebalancing and capital spending cut-backs could deepen into recession in the event that consumer and business confidence crumbled and pulled down spending accordingly. In response to the unexpectedly pronounced slowing in economic growth, the Fed eased aggressively in the first five months of 2001. But for at least the first three of these Fed interest rate cuts, the Fed appeared "behind the curve;" not until the fourth of these Fed rate cuts in mid-April did the Fed appear to be pulling "even with the curve." The Fed cut rates again on May 15 and June 27.

EXHIBIT 6.2 Monthly Wealth Effect Proxy: Ratio of Wilshire 5000 Stock Index to Disposable Personal Income
Monthly level (1990–2002)



Clearly, there could be a need for still more Fed easing steps to counter the economic weakness and build a base for a rebound in the economy. Moreover, it seemed likely that it would take Fed rate cuts longer to gain traction, as consumers and businesses sought to repair debt-burdened, post-bubble balance sheets. This was also the case following the bursting of the asset price bubble at the end of the 1980s. Also acting as a major depressant in the 2000–2001 downturn was, of course, the slumping high-tech sector which was suffering a post-bubble payback for earlier speculative stock market excesses and substantial over-investment in high-tech equipment and software. To compound the problem, there were also the heightened uncertainties following the September 11, 2001, terrorist attacks.

NATURE OF ASSET PRICE BUBBLE

The essence of any asset price bubble is that frenzied investors become increasingly divorced from reality. This act of throwing caution to the wind has typically occurred in the advanced stages of "bubble" experiences, as local, bank-financed speculation in equities, real estate or other assets abounds. This has been true even though the initial appreciation in the prices of stocks or other assets may have been well-grounded in promising high-return business opportunities or technological breakthroughs. More precisely, the bubble experience is one in which speculative market psychology takes over at an advanced stage and investors begin to follow the "greater fool" theory: when you are willing to pay any price for equities, real estate, or even tulip bulbs, because you are totally confident that somebody else (the "greater fool") is willing to buy them from you at a higher price.

The most recent manifestation of this "greater fool" theory was found in the "momentum" trading craze that gripped high-tech stocks, at least until the bubble burst in March

2000. Investors and especially traders were prepared to pay any price for high-tech stocks on the misplaced faith that sheer upward "momentum" would carry those stock prices to still higher levels where they could be sold to yet another "greater fool." As in other asset price bubbles, caution was lacking and the market for high-tech stocks became increasingly divorced from reality, particularly during the period from fall 1998 through early 2000. Traditional valuation methods were largely ignored by speculators in these high-flying technology stocks at least until the NASDAQ stock index finally peaked at 5,048 on March 10, 2000. By March 12, 2001, however, the NASDAQ stock index had plummeted to 1,923 and was threatening to fall still further.

Once the high-tech stock bubble burst, investors promptly reverted to fundamental valuation guidelines, including greater emphasis on earnings prospects, and more realistic price-to-earnings (P-E) multiples. For some high-tech companies P-E multiples had soared to 100 or higher; traditionally, growth company multiples have not risen much above the 30s, with the normal multiple for all stocks averaging about 15. Clearly a reassessment of high-tech stocks with P-E multiples three or four times the traditional multiple for growth companies had to be forthcoming, particularly in light of a significant slowing in earnings growth. As a rule, P-E multiples should roughly equal annual earnings per share growth.

HISTORICAL EXPERIENCE

A common thread running through historical experience with asset price bubbles is that the few voices of caution at that time were discredited long before the bubbles burst. Indeed, as the buying mania becomes dominant, investors fail to heed such voices. This was as true of the Dutch tulip bubble of the seventeenth century or the English South Seas and French Mississippi bubbles of the eighteenth century as it was of the more recent Japanese asset price bubble of the

twentieth century. Most recently, the same was true of the high-tech stock bubble on the eve of the twenty-first century.

The famous South Seas bubble of the eighteenth century is a case in point. In the early 1700s, the government of England granted the South Sea Company a monopoly over all trade with the resource-rich South Seas (South America). Despite this favored treatment, the South Sea Company found difficulty generating even moderate profits. But this seemed irrelevant to ardent speculators who frantically bought South Sea Company stock, ignoring those who urged caution. One of those speculators was, of all people, the brilliant scientist and mathematician Sir Isaac Newton. Commenting on the collective psychology of stock market speculators, he reportedly said, "I can calculate the motion of heavenly bodies, but not the madness of people."

The first time around, Newton, after realizing that the price of South Sea Company stock had become completely divorced from reality, astutely sold out at a profit. But temptation was too great even for this renowned thinker as the price of South Sea Company stock continued to climb. Unfortunately, Newton bought in again near the top. Newton's failure to recognize when this bubble would burst cost him dearly; he suffered huge loses the second time around.

In 1717, the French Parliament granted the Company of the West exclusive rights to trade with and exploit the resources of the Mississippi River Valley and the vast Louisiana Territory that were under French control at that time. At first, shares in the Company of the West sold slowly with little price appreciation; but French financier John Law, who was the architect and promoter of this venture, drummed up enthusiasm by providing exaggerated accounts of new world riches and mineral resources. Law even extolled the virtues of local people, who were glorified in Louisiana by the granting of duchies, earldoms, and marquisettes. The reality, of course, was that much of the territory under French control was unconquered wilderness at that time. But the only thing that

French speculators knew was that the prices of shares of the Company of the West would seemingly never stop climbing. Amazingly, they saw that stock that had come to market at 500 livres was in no time selling for 10,000 livres; and investors ignored downside market risk, believing instead that the price of the Company of the West stock could only move higher. Eventually, however, the speculative fever broke and professional traders began selling the stock. Unfortunately, the French government then devalued all the company's notes and shares and fixed the prices. This broke the speculative "Mississippi" bubble once and for all.

CONTEMPORARY ASSET PRICE BUBBLES

A classic feature of the U.S. technology stock bubble of the late 1990s was that few recognized that it was a bubble until it was too late. Indeed, people did not know it was a bubble until after it burst. In its early phase, the technology stock rally was actually soundly based on the information technology (IT) revolution. The IT revolution produced a multitude of promising high-return business prospects. Investors saw the potential for rapid revenue growth and dreamed of spectacular future earnings gains, which, in most cases, were never realized. Certainly, the rapid development of the Internet promised to transform information collection, commerce, and the media every bit as much as the airplane transformed travel earlier in the twentieth century. In its early stages, the technology stock market bubble was fueled by positive psychology not unlike the stock market euphoria of the 1920s, which was based in part on the exciting new technology of the automobile, radio, movies, and air travel that paved the way for remarkable economic growth and rising profits over the next 50 years or more.

Also contributing to the high-tech stock bubble was the arrival of desktop trading with real-time quotes and financial T.V. networks to provide a day-long supply of razzle-dazzle

market news and stock recommendations. The trappings were in place to make desktop stock trading as easy as playing the slot machines in Las Vegas. Accordingly, day trading flourished; many doctors, lawyers, and other professionals gave up their lucrative jobs in favor of full-time day trading and the pursuit of that elusive stock trading fortune. Also, a major flaw in the high-tech stock market was that it was biased in favor of bulls. The limited number of shares issued by many Internet firms "meant that the entire company's value was determined by the optimists who bought the relatively small number of shares issued." The solution for this flaw was not enacted by Congress until early 2001. It lifted the ban on single-stock futures. These financial instruments make it cheap and easy for the pessimists to sell overvalued stocks short.

On a more cautionary note, however, it must be remembered that even soundly based bull markets can evolve in their later stages into out-of-control financial bubbles. Indeed, this was the case in the late 1920s when investor psychology became increasingly divorced from reality, setting the stage for the 1929 stock market crash and the Great Depression of the 1930s. In a similar vein, the bursting of Japan's huge asset price bubble in the second-half of the 1980s resulted in a collapse in confidence and extremely depressed financial and economic conditions throughout most of the 1990s. There was also, the much milder U.S. asset price bubble in the second-half of the 1980s which produced less pronounced economic damage in the form of the relatively mild 1990–1991 recession when it burst.

The amount of financial and economic damage that asset price bubbles do once they burst depends on how the government responds, for its mistakes and indecision can make this damage extensive. The Japanese experience illustrates the point. Not only did the Bank of Japan allow its asset price bubble to grow too large in the second-half of the 1980s before tightening. It waited too long after the bubble

burst before easing. Moreover, the Japanese Ministry of Finance made the huge mistake of increasing consumer taxes in 1997 in the midst of severely depressed economic conditions. The result was shattered confidence on the part of Japanese consumers and businesses which, owing to government indecision and ineptness, eventually evolved into pervasive pessimism. Once hard-core pessimism sets in, countercyclical government policies become increasingly ineffective.

In the U.S. experience, it is useful to draw a sharp distinction between the government's misguided-policies following the bursting of the 1929 stock market bubble and its more informed policies following the bursting of the milder asset price bubble of the second half of the 1980s. The government's misguided policies after the 1929 stock market crash, of course, produced disastrous economic consequences. The milder 1980s asset price bubble was characterized by speculative corporate takeover and real estate activities, mushrooming public and private debt expansion, and soaring real estate and stock prices.

The U.S. government did not distinguish itself following the bursting of the 1929 stock price bubble. In particular, following the 1929 stock market crash, the monetary authorities made the fatal error of allowing the money supply to contract by more than 33% from 1929 to 1933 as bank failures mounted, rather than pursuing a countercyclical policy of aggressive monetary ease. In addition, in the early 1930s, there was the negative impact of global capital barriers and trade disputes, triggering "beggar-thy-neighbor" actions by various countries and the infamous protectionist Smoot-Hawley tariff legislation by the U.S. Congress. In contrast, the bursting of the U.S. asset price bubble in the late 1980s resulted in the brief and fairly mild 1990–1991 recession.

The Greenspan Fed was prompt to ease aggressively following the late-1980s bursting of the asset price bubble. The Fed cut its Federal funds rate target no less than 24 times from mid-1989 through September 1992, reducing the Fed-

eral funds rate from 9¾% to 3%, the lowest in three decades. These determined Fed easing steps had the beneficial effects of bringing the bad loan-plagued banking system back to health (by increasing the net interest margin between the cost of loanable funds and earnings on loans and investments) and allowing the massive refinancing of debt at lower interest rate levels by individuals and businesses.

In 2001, the main challenge faced by the Greenspan Fed was to limit the downside threat from the interaction between negative investor psychology, fueled in part by the highly-publicized bursting of the high-tech stock bubble, and declining consumer and business confidence. To be sure, consumer spending in early 2001 was not as weak as might have been expected, based on declining stock prices and increasing energy prices. Nevertheless, there remained the threat, as expressed by none other than Chairman Greenspan himself, that a major breach in consumer and business confidence could eventually depress spending sufficiently to push the economy over the edge into recession. Of course, the Fed Chairman could not have foreseen the September 11 terrorist attacks that made recession all but inevitable.

CHAPTER 7

Top-Rated Contemporary Fed Leaders

Given the important role of the Federal Reserve as an influence on our economy and the wealth-creation potential of the majority of Americans, it is worthwhile to assess the performance of contemporary Fed leaders. Since the Fed culture is truly Chairman-focused, it is important to examine the personalities as well as the performance of contemporary Fed Chairmen.

In modern times, the best starting point for ranking Fed leaders is the 1951 "Accord" between the Fed and the U.S. Treasury which gave the Fed a significant measure of independence in carrying out the monetary policies it deemed appropriate. Prior to the "Accord," it will be recalled that the executive branch of our government ordered the Fed to "peg" interest rates at low levels to help limit the cost of financing World War II. After the war, however, the demand by the Truman Administration that the Fed continue to "peg" interest rates threatened to make the Fed "an engine of inflation." President Truman favored the continuation of this Fed effort to "peg" interest rates at low and unchanged levels for personal reasons. While in the army in World War I, he bought Liberty Bonds with his soldier's pay; but after return-

ing home, Truman suffered capital losses on his Liberty Bonds, partly reflecting Fed tightening moves in 1920.

The 1951 Fed-Treasury "Accord," which William McChesney Martin helped draft as a senior Treasury official before becoming Fed Chairman, ended this Fed practice of pegging interest rates. This crucial "Accord" gave Fed leaders sufficient independence to be able to use their discretion to shape monetary policy to fit current and expected economic conditions.

During the five decades since the "Accord," there have been a total of five Fed Chairmen. Only three of these Fed leaders are worthy of top ranking. These top leaders include William McChesney Martin, Jr., the longest serving, who was Fed Chairman from 1951 to 1970, Paul Volcker, the successful inflation fighter, who served as Fed Chairman from 1979 to 1987, and Alan Greenspan, the deft and politically savvy leader, who presided over a record-long peace-time expansion while serving as Fed Chairman from 1987 to the present. In passing, it should be noted that two additional Fed leaders served in the post–"Accord" period.

First, there was Arthur Burns, who served as Fed Chairman from 1970–1978. Burns suffered from an excessively cozy political association with the Nixon administration. He subjected himself to a direct conflict of interest when he accepted the position of head of Nixon's Interest and Dividends Committee under price controls, imposed in August 1971. Burns claimed that he took this unusual job to keep the outspoken Texas Democrat, Treasury Secretary John Connally, from getting it. Moreover, in the early 1970s, Burns consistently underreacted on the restraint side, despite growing signs of escalating inflationary pressures. The other Fed Chairman was G. William Miller, who amazingly seemed uninterested in macroeconomic policy issues, and earned, by common consensus, a failing grade while serving briefly as Fed Chairman from 1978–1979.

CONDITIONS PRODUCING GREAT LEADERS

The easiest route to greatness comes from matching a good person with a major crisis. In politics, wartime British Prime Minister Winston Churchill comes to mind. Likewise, U.S. President Franklin D. Roosevelt not only led, along with Winston Churchill, the allies to victory in World War II, but also successfully dealt with perhaps the ultimate economic crisis, the Great Depression.

Among contemporary U.S. central bankers, Paul Volcker may come closest to being the perfect man for the big crisis. The experienced Volcker, who possessed excellent policy instincts, faced a major economic crisis in the form of ingrained, double-digit inflation. Volcker initially went to Washington in 1962 as Director of Financial Analysis in the Treasury Department. He was promoted to Treasury Deputy Undersecretary for Monetary Affairs in 1963. After some time in the private sector as a commercial banker, Volcker returned to the Treasury Department in the much more senior position of Treasury Undersecretary for Monetary Affairs from 1969 to 1974. He rounded out his training prior to becoming Fed Chairman as President of the Federal Reserve Bank of New York from 1975 to 1979.

It is indisputable that Volcker was a domineering personality both literally (he was an imposing 6 feet, 7 inches tall) and figuratively. Volcker, who did not suffer fools easily, showed excellent adaptability, as he abruptly switched to the approach of targeting monetary aggregates in order to allow market forces to move interest rates as high as required to curtail aggregate demand and slow real GDP growth in the effort to cool off the inflation-prone economy. In this connection, Volcker seemed to partially convert to what might be called "practical monetarism." He seemed to be more confident in the relationship between money and inflation than in how high nominal rates had to go to curtail aggregate demand and slow output growth to a less inflationary pace. In a recent conversation, Greenspan stated

that Volcker's uncompromising stand against inflation, beginning with the "Saturday Night Massacre" in October 1979, was the most courageous act of any central banker in the twentieth century.

Specifically in a surprise move on Saturday, October 6, 1979, after returning from a trip to Europe that he deliberately cut short, Volcker dramatically introduced a major change in Fed operating procedures. In this change in procedures, monetary authorities sought to discipline monetary aggregate growth from the supply side by directly controlling nonborrowed reserves. In addition, Volcker increased the discount rate to a record 12% from 11% and imposed new reserve requirements aimed at limiting the growth of bank credit.

Looking back on this experience, Volcker has admitted that interest rates ultimately moved much higher than he ever imagined in the process of successfully extinguishing the U.S. inflationary firestorm. Astoundingly, the prime rate soared to 21.5% in late 1980; some two decades later, by the end of 2001, in contrast, the prime rate had plummeted to 4.75%. These hard-nosed efforts resulted in back-to-back recessions in 1980 and 1981–1982, and pushed the unemployment rate up to the highest level (10.8%) since the Great Depression. But, the point is that Volcker was successful in breaking the back of inflation and the expectation of inflation, as evidenced by the fact that the rate of increase in consumer prices trended lower over most of the 1980s and 1990s.

VOLCKER VERSUS THE REAGAN ADMINISTRATION

In political matters, however, Volcker was not as astute as either Greenspan or Martin. Within Fed policy circles, Volcker's leadership was challenged by Reagan appointees Preston Martin, Wayne Angel, Manuel Johnson, and Martha Seger. In particular, in February 1986, they outvoted Vol-

cker in favoring an immediate discount rate cut. Volcker, who wanted to delay the discount rate cut, threatened to resign, following a luncheon meeting with James Baker and the Mexican Finance Minister later on the same day as the vote. Ultimately, Volcker prevailed and the discount rate cut was delayed so that it could be coordinated with similar moves by Japan and Germany in March 1986 in order to minimize the negative effect on the U.S. dollar. Also on the political front, Democrat Volcker's real nemesis was Republican James Baker, President Reagan's right-hand man.

In a recent conversation, Paul Volcker told me that Bob Woodward's mention of Volcker in the prologue to his new highly complimentary book on Greenspan, *Maestro* "got it half right." Two incidents in which Volcker was involved were cited by Woodward. (Volcker says this material concerning his Fed Chairmanship was originally collected by Woodward for an unwritten book critical of James Baker, former Secretary of State, Secretary of Treasury, and key aide to President Reagan.) The first incident, which Woodward described incorrectly, according to Volcker, involved the circumstances surrounding Reagan administration's appointment of Greenspan to replace Volcker as Fed Chairman in 1987. According to Volcker, Woodward incorrectly stated that Volcker actually sought a third term as Fed Chairman. (When Volcker was replaced by Greenspan, James Baker was quoted as saying to a friend "we got the son-of-a-bitch.") In fact, Volcker had indicated as early as his 1983 confirmation hearings for a second four-year term as Fed Chairman that he might, in fact, not serve out a full second term.

As matters turned out, Volcker had, in fact, decided during his second term not to seek a third term as Fed Chairman. He said, "my wife would kill me if I sought a third term as Fed Chairman." Volcker's wife, who has since passed away, was extremely ill with diabetes and a host of other ailments at that time. Also, Volcker cited personal financial strains as another reason for leaving. He said in

particular that "when the maintenance bill for my New York apartment threatened to exceed my Fed Chairman's salary I knew it was time to go."

Near the end of his second term, Volcker was called to the White House for a meeting concerning his reappointment by Howard Baker, then Chief of Staff to President Reagan, and James Baker, Volcker's nemesis. At this meeting, the two Bakers said, according to Volcker, that he should consider whether he wanted reappointment for a third term as Fed Chairman. The two Bakers added that the White House did not want to unsettle the domestic and foreign financial markets by failing to reappoint Volcker for a third term as Fed Chairman, if he wanted the job for another term. (Actually, James Baker wanted more than anything to replace Volcker, who was, in Baker's opinion, showing too much independence and unpredictability; yet Baker recognized that markets would become extremely unsettled if it were perceived by investors that Volcker was dismissed, against his own wishes, for political reasons). Volcker answered that he was not seeking reappointment. Howard Baker said, "think on it over the coming weekend." Subsequently, Volcker, who said he had in fact thought it over sufficiently, submitted his letter of resignation. The two Bakers asked Volcker whom he recommended for his replacement as Fed Chairman. Volcker responded that he could think of only two people who might be worthy successors: Alan Greenspan, the top choice of Wall Street; and John Whitehead, formerly Co-Chairman of Goldman Sachs, who was at that time Deputy Secretary of State. (Volcker added that he was not sure that Whitehead would take the job, if offered.)

A second incident that, according to Volcker, Woodward got right, involved a hush-hush, unpublicized meeting at the White House just prior to Reagan's reelection in 1984. Volcker was ordered to come to this highly confidential meeting at the White House by James Baker. Only three people attended this secret meeting: Volcker, James Baker and Presi-

dent Ronald Reagan. At this meeting, according to Volcker's account, Baker and the President "ordered" Volcker not to tighten Fed policy "under any conditions" prior to Reagan's reelection. This unprecedented action by Baker and Reagan was, of course, totally inappropriate. It fundamentally violated the Fed's independence within the government. If revealed, it would have severely damaged Fed credibility and greatly unsettled the global financial markets.

Interestingly, Volcker said, with a wry smile, what Baker and the President did not know was that Volcker was, in fact, at that very time seeking to talk his fellow policymakers into easing rather than tightening. Specifically, Volcker was worried that the Continental Illinois Bank failure at that time had caused an unintended tightening in bank reserve pressures, thereby inducing a spike in the Federal funds rate, the Fed's main operating target. The Federal funds rate is the rate on bank reserves held on account at the Fed that are loaned and borrowed among banks, usually overnight. Volcker was seeking to convince his fellow policymakers to ease. Volcker held that a Fed-induced increase in reserve availability was necessary in order to counter this unexpected strain on the funds market.

In any case, Volcker remains to this day shocked by being called to this secret 1984 meeting at the White House and being ordered directly by the President and his trusted aide not to tighten under any conditions prior to Reagan's reelection. Not since the days prior to the 1951 Treasury-Federal Reserve Accord had there been such an explicit White House threat to Fed independence.

ALTERNATIVE ROUTES TO THE TOP

The road to the top for William McChesney Martin and Alan Greenspan was not as direct as Volcker's route because, although both were experienced candidates for Fed leadership with considerable talent, neither of them faced a

major, all-consuming crisis that could define their greatness. Rather each faced a series of less imposing but not insignificant challenges. Specifically, in doggedly fighting inflation in the 1950s, Martin enhanced Fed anti-inflation credibility. In an unusually easy-to-understand comment, Martin summed up the function of the Federal Reserve as taking away the punch bowl just as the party is getting good. He pioneered the countercyclical monetary policy technique of "leaning against the wind." This countercyclical technique was further refined by Greenspan, as he crafted a flexible, open monetary policy approach.

This "leaning against the wind" approach involves Fed efforts to counter excessive and potentially inflationary economic growth by promptly tightening its policy stance. Conversely, when economic growth is undesirably weak, the Fed will forcefully counter with moves to ease its policy stance. In his own flexible, transparent policy approach, Greenspan sought to promote the "soft-landing" theory. Specifically, as in 1994–1995, Greenspan sought to preemptively tighten so as to counter upside inflationary threats in order to eliminate the lows on the downside. The idea was for the Fed to smooth the economic cycles and lengthen expansions while shortening contractions, although it was recognized that, human nature being what it is, the business cycle could never be completely eliminated. The Greenspan Fed's already noted aim is to achieve maximum sustainable growth.

On the political front, both Greenspan and Martin were more politically savvy than Volcker. For instance, as seen in Chapter 4, Republican Greenspan was extremely successful in coordinating monetary policy with Democrat Clinton's surprisingly disciplined fiscal policy approach.

The first meeting between Greenspan and then President-elect Clinton took place in Little Rock, Arkansas in December 1992. In terms of personalities, the two men stood in stark contrast: Greenspan was introverted and self-conscious almost to the point of being shy. He was a cultured

New Yorker who loved classical music and favored conservative attire, especially dark business suits. Clinton, in contrast, was an extroverted, people-loving, feel-your-pain, back-slapping former Governor of a small southern state. He loved Elvis Presley music and was often seen in informal attire such as jogging suits, jeans, or golf outfits.

Yet, the two men hit it off remarkably well from the beginning; the scheduled one-hour first meeting in Little Rock between the two most powerful figures in our government turned into a two-and-a-half-hour meeting, including an unscheduled lunch. In the course of their relationship, Greenspan considered Clinton the smartest president on economic issues of any he had known. In essence, the bond between these two men of sharply contrasting personalities was sealed by the fact that both were intellectually bright and willing to talk on a higher level about abstract ideas; but they were also down-to-earth, detail-focused policy pragmatists.

The working relationship between another President and Chairman is also revealing. In 1965, Fed Chairman Martin stood his ground, despite extreme political pressure from the Johnson Administration. In response to President Lyndon Johnson's potentially inflationary "guns and butter" fiscal stimulus, the Martin Fed hiked the discount rate in 1965. In response to sharply increasing Federal spending on both the Vietnam War as well as on domestic Great Society programs following the declaration of the War on Poverty.

As the story goes, the tall and imposing Johnson invited the diminutive Fed Chairman down to the President's ranch in Texas in order to try to get Martin to back down on the discount rate increase. The Texan in the White House believed in the populist notion that small debtors deserved low interest rates, regardless of any related threat of inflation. In order to try to intimidate Martin, Johnson reportedly drove him around the ranch on dirt roads in a big Lincoln convertible at high speeds. But, despite the dust and danger, Fed Chairman Martin stood his ground on the Fed's 1965 discount rate hike.

FEDERAL RESERVE–U.S. TREASURY ACCORD

There were two principal players in the highly significant Federal Reserve-Treasury Accord of 1951, as best chronicled by Martin Mayer in *The Fed*. On the Treasury side of this key event assuring post–World War II Fed independence, there was William McChesney Martin, Assistant Secretary, who would subsequently become Fed Chairman. Martin had significantly advanced negotiations leading up to the Accord. Previously, the Fed had been forced to peg interest rates at low levels to help finance World War II. Martin's boss, Treasury Secretary John Snyder, a small-town Missouri banker, had at the behest of his poker-playing buddy, President Truman, demanded that the Fed continue after World War II to peg interest rates in order to "stabilize" the Treasury securities market.

The other major player in the Accord was Marriner Eccles, who had been appointed Fed Chairman by President Roosevelt in 1934. Subsequently, in April 1948, President Truman, in a move that shocked virtually everyone, announced that Eccles would not be reappointed as Fed Chairman. However, Truman asked Eccles to continue to stay on and serve out his 14-year term as Fed Governor. Truman appointed Thomas McCabe to succeed Eccles as Fed Chairman.

In an unprecedented move aimed at twisting their arms, President Truman invited Fed Chairman McCabe and the other members of the FOMC, including Fed Governor Marriner Eccles, to the White House on January 31, 1951. In this highly unusual meeting at the White House, Truman sought to force the Fed to continue to peg interest rates on Treasury securities at low and unchanged levels. He reiterated that both the Treasury and the Fed should do everything possible to maintain confidence in the Government securities market. According to an internal memo by Fed Governor Rudolph Evans, who attended the White House meeting, Fed officials stood their ground arguing that the pegging of interest rates should be ended so that the Fed could be freed to more effectively fight emerging inflation pressures.

The day after the FOMC's unprecedented meeting at the White House, the White House issued a press statement completely misrepresenting the outcome of the meeting. The press release stated that "[t]he Federal Reserve Board had pledged its support to President Truman to maintain the stability of Government securities." The misleading White House press release was followed by a Treasury Department press release which incorrectly stated that "the White House announcement means that the market for Government securities will be established at present levels and that these levels will be maintained during the present emergency."

President Truman followed this utter misrepresentation of what went on at his January 31 meeting with the FOMC, with a supposedly private "Dear Tom" letter to Fed Chairman McCabe, thanking the Fed Chairman for his "assurance that the market for Government securities will be stabilized and maintained at present levels." The President's letter, which was made public by the White House, went on to state that "I wish you would convey to all the members of your group my warm appreciation of their cooperative attitude." In response, the furious Fed policymakers voted to have Fed Chairman McCabe seek a meeting with President Truman to set the record straight.

Fed Governor Eccles was so angered by the White House's attempt to misrepresent the FOMC's January 31 meeting that he took it upon himself, without telling anyone but his secretary, to release to the press Fed Governor Evan's memo, which contradicted the White House's account of the now notorious meeting. Eccles' unauthorized release of the Evans memo so infuriated Fed Chairman McCabe that he was no longer on speaking terms with the former Fed Chairman; moreover, neither McCabe nor Eccles were reportedly on speaking terms with Treasury Secretary Snyder, who was viewed as the main culprit in the shameless effort to misrepresent what went on at the January 31 meeting.

On February 7, the FOMC sent an indignant letter to President Truman stating that

> [y]ou as President of the United States and we as members of the Federal Open Market Committee have unintentionally been drawn into a false position before the American public—you as if you were committing us to a policy which we believe to be contrary to what we all truly desire and we as if we were questioning you and defying your wishes as the chief executive of the country in this critical period.

Subsequently, Treasury Secretary Snyder was hospitalized and he asked that the FOMC commit to no change in the Fed's pegging procedure while he was in the hospital. But the FOMC was unable to commit to continuing this interest rate pegging procedure in the face of mounting inflationary pressures. The FOMC was concerned that the Government securities market demanded heavy purchases by the Federal Reserve, that would make the Fed an "engine of inflation," contrary to the monetary actions that the economic situation required. The FOMC asked Treasury Secretary Snyder to name someone at the Treasury with whom the FOMC could talk while the Treasury Secretary was in the hospital. The Treasury Secretary named Assistant Secretary William McChesney Martin and the talks suddenly showed promise.

Martin, the consummate professional, headed a Treasury staff that came promptly to an agreement with the FOMC. In early March, the "Accord" was completed. Its preamble refers to an agreement between the Treasury and the Fed on "purpose—to reduce to a minimum the creation of bank reserves through monetization of the public debt while assuring the financing of the Government's needs." At last, the Fed had asserted its independence and it was now able to use its discretion in shaping an effective anti-inflation monetary policy posture. Martin was named Fed Chairman in April 1951.

EXHIBIT 7.1 Rating Contemporary Fed Chairmen

	Greenspan	Volcker	Martin	Burns	Miller
Policy Instincts	2	1	2	4	5
Experience	2	1	1	3	4
Political Savvy	1	3	2	4	5
Leadership Skills	2	3	2	4	5
Adaptability	2	1	3	4	5
Average	1.8	1.8	2.0	3.8	4.8

1 - Excellent; 2 - Very Good; 3 - Good; 4 - Poor; 5 - Failure
Source: Aubrey G. Lanston & Co. Inc.

RATING THE FED CHAIRMEN

It is useful to score the performance of contemporary Fed Chairmen according to five basic criteria: Policy Instincts, Experience, Political Savvy, Leadership Skills, and Adaptability. Interestingly, the top two contemporary Fed Chairmen (Greenspan and Volcker) score equally in terms of overall grade average, but vary, as might be expected, within performance categories (see Exhibit 7.1). Martin came in a close third. While Volcker achieved more 1's than the other top contemporary Fed Chairman, he did slip in both political savvy and leadership skills. Lacking political savvy, Volcker was always having run-ins with not only Reagan appointees on the Fed Board, but also James Baker, the key aid to President Reagan. When well-respected Fed Governor "Mike" Kelley, a boyhood friend of James Baker's from Houston, Texas, joined the Fed board in 1987, Volcker barely spoke to him owing to Volcker's mistrust of Baker, who was instrumental in getting Kelley appointed to the Fed Board. Kelley had to ask for a meeting with Volcker to convince the skeptical Fed Chairman of Kelley's loyalty and dedication to the Fed; Kelley told Volcker that he had no political ax to grind.

Volcker also fell short in leadership skills, being viewed by fellow policymakers as authoritarian, if not dictatorial. In contrast, Volcker showed remarkable adaptability in making

at least a partial conversion to monetarism. He established monetary aggregate targets so that he could launch a more determined attack on inflation involving extremely sharp increases in politically-sensitive interest rates and a soaring unemployment rate (see Exhibit 7.2).

Current Fed Chairman Greenspan has excelled in the important category of political savvy while presiding over a record-long peacetime expansion. Soon after becoming Fed Chairman in August 1987, Greenspan told me that an effective monetary policy required the Fed leader to be, first and foremost, politically skilled in the ways of Washington, as well as skilled in the technical aspects of monetary policy. Greenspan benefited from being acquainted with the then head of the Senate Banking Committee, Donald Reigle (Democrat-Michigan) and Senator Paul Sarbanes (Democrat-Maryland) as far back as the Ford administration when Greenspan was Chairman of the President's Council of Economic Advisors.

As noted in Chapter 4, Greenspan teamed with President Clinton's conservative economic advisors to push for fiscal discipline, against the wishes of Clinton's more liberal economic advisors. The promise of greater long-term fiscal discipline caused real long-term interest rates to decline, thus extending the economic expansion, as Greenspan predicted.

During the 1996–2000 period, Fed Chairman Greenspan also demonstrated very good policy instincts. For example, Greenspan seemed to be willing to entertain a proposed new strategy reconciling the policy objectives of stable prices and sustainable economic growth, especially under conditions where underlying price pressures had already moderated considerably. The conceptual basis for such a strategy can be found in the idea of "opportunistic disinflation," considered to be the brainchild of former Fed Vice Chairman Alan Blinder. Fed Governor Laurence Meyer also advocated this concept. According to this concept, when inflation is low and steady, but not yet at the Fed's unofficial long-run goal, the "opportunistic" strategy attempts to keep the economy producing at its potential. In effect, the "opportunistic" strategy

waits for an unintended but unavoidable recession to make further progress in reducing inflation. Specifically, under the "opportunistic" strategy, once recession occurs, Fed policymakers would try through easing actions to correct for the shortfall in demand, pushing the economy back to—but not beyond—its potential, thereby accepting the lost output but also cementing in the lower rate of inflation that had occurred.

In contrast, the Fed's pursuit of an alternative "deliberate" strategy would seek to make steady progress toward the goal of lower inflation by keeping continuous slack in the economy so as to put downward pressure on inflation. Hence, the Fed's pursuit of a "deliberate" strategy would have been characterized by a persistent tendency for the unemployment rate to exceed its estimated NAIRU, so long as the economy was not at price stability.

Earlier, Fed Chairman William McChesney Martin had demonstrated excellent policy instincts in coming up with the already noted "leaning against the wind" policy tactic. Moreover, Martin's experience before becoming Fed Chairman was impressive, having been the youthful head of the New York Stock Exchange and then a senior U.S. Treasury official in the Truman Administration. With this valuable capital market and government experience, Martin was in a good position to become the first truly professional head monetary policymaker.

To sum up, we have been well served by the top three contemporary Fed Chairmen who were particularly well suited for the times in which they operated. The upshot was the post–World War II tendency towards longer expansions and shorter contractions, reflecting the combined effects of increasingly effective Fed countercyclical policy actions and the built-in automatic stabilizers on the fiscal policy side. To be sure, it must be recognized that, human nature being what it is, neither the business cycle nor asset price bubbles can be completely eliminated. Nevertheless, it is also true that informed and timely monetary policy actions can have a damping impact on the former while lessening the economic fallout from the latter.

EXHIBIT 7.2 Civilian Unemployment Rate Percent (1980–2002)

CHAPTER 8

Terrorist Turmoil

The day September 11, 2001, will be forever burned into the American psyche. This day, unquestionably one of the darkest in our great nation's history, saw extremist Islamic terrorists hijack four U.S. commercial aircraft gorged with fuel and passengers, crashing two of them into the twin 110-story World Trade Center towers, toppling each of these symbols of American economic and financial power. Another hijacked aircraft was crashed into the Pentagon in Washington, D.C., causing major damage. A fourth hijacked aircraft crashed in rural Pennsylvania, after a group of heroic passengers overwhelmed the hijackers who were apparently on a course toward Washington, D.C. to crash into either the Capitol Building or perhaps the White House. In total, these shocking terrorist attacks killed more than 3,000 people. This was a national tragedy of unfathomable proportions.

In response, the U.S. government, in effect, declared war on all terrorist organizations with a global reach, their support networks, and states that continue to harbor them. In its campaign against terrorism, the Bush administration sought to build a global coalition of all civilized countries to fight the barbaric terrorists. From the beginning, the Bush administration conceived of the campaign against terrorists as being carried out on a variety of fronts—military; local

and federal law enforcement; diplomatic; and financial—and lasting possibly several years.

Although the Bush administration's campaign against terrorism is unquestionably justified, it has added a new layer of diplomatic and military risk to the routine economic risk already faced by stock market investors. Adding to investor unease was the new threat of bioterrorism—including the anthrax scare—and other potential forms of terrorist retaliation, factors that were unimaginable before the September 11 terrorist attacks.

TIMING COULD NOT HAVE BEEN WORSE

The September 11 terrorist attacks could not have come at a worse time. The post-bubble U.S. economy was already teetering on the brink of recession. Heightened uncertainty related to the devastating terrorist attacks battered a stock market that had already been testing March lows just prior to these attacks. Greater perceived risks caused businesses, which had led the pre-terrorist attack downturn in the economy, to cut back further on investment spending, at least temporarily.

In the consumer sector, the "cocoon effect" took hold as people sought safety for themselves and their families; they were staying and spending closer to home, benefiting such industries as home repairs, furniture, toys, electronic games, DVD players, laptop computers, and home videos. Consumer sentiment plunged to 81.8 for the entire month of September from 91.5 in August. This deterioration in consumer optimism was accompanied by a substantially larger-than-expected 2.4% decline (later revised to a 2.2% decline) in September retail sales, following a revised 0.2% increase in August. Moreover, air passenger traffic plunged 32% in September.

In October, the two major indexes of consumer psychology showed conflicting readings. Somewhat surprisingly, the October consumer sentiment index edged up to 82.7 from

81.8 in September, perhaps reflecting greater patriotic sentiment rather than heightened spending intentions. In contrast, the October consumer confidence index plummeted to 85.5 from 97.0 in September, reflecting terrorist attack fears and a deteriorating job market.

Although precedent is obviously lacking, perhaps the best historical comparison with the September 11 terrorist attacks would be the Gulf War in 1991. In terms of similarities, the economy had been weakened in both cases by the bursting of asset price bubbles. For example, prior to the Gulf War, an asset price bubble—consisting of wildly escalating real estate prices and inflated stock prices associated primarily with speculative corporate takeover activities—had burst in 1989 and set the stage for the 1990–1991 recession. Similarly, the bursting of the high-tech stock price bubble helped set the stage for the 2001 recession. Also helping to depress the economy in 1990–1991 were the heightened uncertainties associated with the Gulf War, just as the heightened uncertainties arising from the terrorist attacks contributed a decade later to the 2001 downturn. In the Gulf War crisis, as well as most other major crises, the initial financial and economic impacts have been sharply negative, but invariably these downturns give way to recoveries, which, in some cases, can be equally pronounced on the upside. The same pattern of a sharp initial negative impact followed by a subsequent rebound appears to have occurred in the wake of the terrorist attacks, though recovery appears likely to be more gradual than that following past crises.

In contrast, there are striking differences between at least the initial impact of the September 11 terrorist attacks and those of other crises, including the Gulf War. For example, the U.S. dollar initially showed weakening tendencies in terms of the euro immediately following the September 11 terrorist attacks (see Exhibit 8.1). This contrasts with dollar strengthening tendencies not only in the Gulf War of 1991 but also the global financial crisis of 1998. While dollar-weakening tendencies may help boost U.S. exports, the more

significant negative impact is to divert foreign investors away from U.S. equities and other dollar denominated assets and potentially to increase inflation. Subsequently, the dollar has strengthened, particularly in terms of the Japanese yen.

Another difference is that in the weeks immediately following the initiation of Gulf War hostilities oil prices spiked. In contrast, in the weeks immediately following the September 11 terrorist attacks, oil prices plunged. The post-terrorist attack decline in oil prices mainly reflected slumping demand associated with weakening global growth. Finally, in 1990–1991, there was a severe credit crunch, in which banks cut off the supply of credit to a wide range of borrowers, including individuals, homebuyers, and businesses. This earlier credit crunch reflected mainly increasingly strict restrictions imposed by government regulators on a financially strapped banking system. This broadly based credit crunch helped push the economy over the edge into recession.

In contrast, in the 2000–2001 downturn, credit problems were largely confined to the business sector. In early 2002, in particular, the fallout from the December 2001 Enron bankruptcy caused credit difficulties mainly for companies with questionable accounting methods, unusual off-balance sheet transactions, or suspect earnings sources. The business sector's credit squeeze was manifested in widening credit spreads in the corporate bond market and tightening bank lending terms on business loans. In the battered telecommunications sector, some companies also had difficulty rolling over their commercial paper, forcing them to activate backup bank credit lines.

Most importantly, however, banks were in much stronger financial shape going into the 2001 recession than they were going into the 1990–1991 recession period. This is because during the latest record-long expansion from March 1991 to March 2001, banks were sufficiently profitable to strengthen their capital positions and buttress other measures of financial strength.

EXHIBIT 8.1 U.S. Dollar versus the Euro
Daily level in dollars (1999–2002)

In the final analysis, it is important to recognize, however, that the September 11 terrorist attacks, which destroyed a major portion of the New York financial district, interrupted communications, impeded commercial transactions, and delayed securities settlements, created an unprecedented situation. For example, the terrorist attacks severed electronic ties between some banks that acted as middlemen in the market for commercial paper, which represents unsecured corporate IOU's used for short-term funding purposes. As a result, a number of companies faced defaults on their commercial paper because they could not "roll it over," or reissue it. These companies were forced to fall back on bank credit lines for loans, exerting sudden pressure on the banking system. In addition, the Government securities market threatened to seize up as the Bank of New York, a major securities processor, with offices near the World Trade Center, was unable to complete trades. This heightened uncertainty triggered heretofore-unseen "cash hoarding" by individuals who were lining up at ATMs for cash, and by corporations who were trying to draw down their credit lines at banks.

CENTRAL BANK RESPONSE

The Fed acquitted itself well in response to the September 11 terrorist attacks. In particular, Fed officials sought to shore up the payments system by moving promptly to inject unusually large amounts of liquidity through both System RPs and discount window borrowings. Fed System RPs represent temporary reserves supplied through its purchases of government securities from dealers, which are reversed within a few days. Discount window borrowings, in turn, represent collateralized bank borrowings at the Fed's discount window for temporary reserve adjustment purposes. Specifically, the Fed moved on September 12, the day after the terrorist attacks, to inject an unusually large amount of liquidity through $38 billion in System RPs. (A normal-sized Fed System RP might be

roughly $5 billion.) At the same time, banks sharply increased their discount window borrowings to a record $45 billion for the week ending September 12, up from only $200 million in the preceding week that ended September 5.

Adding to payment system difficulties was the interruption in check clearing caused by the government-ordered grounding of all commercial aircraft, including all private courier aircraft transporting checks in the process of collection, immediately following the terrorist attacks. The terrorist attacks also destroyed or damaged an estimated 25–30 million square feet of office space in lower Manhattan, directly affecting nearly 500 businesses and roughly 100,000–150,000 workers. On September 13 the Fed injected liquidity through an even larger $70 billion in System RPs. In addition, the Fed announced a $50 billion swap line with the ECB, the first such arrangement with this new central bank. This swap arrangement made more dollars available to European banks to meet their dollar obligations.

On September 14, the Fed injected a massive amount of liquidity through $81 billion in weekend System RPs. Also, the Fed announced $10 billion in new swap lines with the Bank of Canada and an additional $50 billion in swap lines with the Bank of England.

At 8:30 a.m. (EST) on Monday, September 17, the day the stock market reopened following the terrorist attacks, Fed officials announced 50 basis point rate cuts to 3.0% from 3.5% in their Federal funds rate target and to 2.5% from 3.0% in the discount rate. In connection with these rate cuts, Fed policymakers stated that "[e]ven before the tragic events of last week, employment, production and business spending remained weak, and last week's events have the potential to damp spending further." Fed authorities also announced that they "will continue to supply unusually large volumes of liquidity to the financial markets as needed until normal market functioning is restored." In addition, Fed officials continued to hold that "the risks are weighted mainly toward conditions that may generate eco-

nomic weakness." Clearly Fed policymakers were leaving room for still more easing actions. As matters turned out, the Fed cut rates again by 50 basis points at both the October 2 and November 6 FOMC meetings, and the capital markets approved as reflected in a pronounced rebound in stock prices. The Fed subsequently cut rates by a normal-sized 25 basis points at its December 11 FOMC meeting.

Most significantly, the ECB, in a coordinated move with the Fed, moved to cut its benchmark rate by 50 basis points to 3.75% from 4.25%. Other central banks followed with rate cuts as well, including the Bank of England which acted to cut its base-lending rate on September 17 by 25 basis points to 4.75% from 5.0%. Moreover, the Bank of England followed up promptly on October 4 with another 25 basis point cut in its base-lending rate to 4.50% from 4.75%. In sum, the central banks of the major G–7 industrial countries all acted in a coordinated manner to cut interest rates with the aim of stabilizing global capital markets unsettled by the terrorist attacks on the United States, and countering the threat of a global downturn.

STOCK MARKET NOSEDIVE

In the first week of trading after the terrorist attacks, the Dow-Jones industrial stock average fell 14.1% or by 1,379 points to 8,235 by the close on Friday, September 21. From its peak of 11,722 on January 2001, this represented a 30% decline in the Dow. In the same week, the tech-heavy NASDAQ composite stock index fell 16.0% or 282 points to 1,423. Overall, the pronounced decline in stock prices in the first week of trading after the terrorist attacks erased approximately $1.38 trillion in market value. Remarkably, from its peak of 5,048 in March 2000, the NASDAQ fell 72% through the first week of trading following the terrorist attacks.

However, providing the first hint of the economy's resiliency, the stock market staged an impressive three-week rally,

after its initial post-terrorist attack nosedive, bringing stock prices back to the vicinity of pre-terrorist attack levels. Specifically, as of October 12, 2001, the Dow-Jones industrial stock average was only 2.7% below its closing level on September 10, 2001; the broader Standard & Poor's 500 stock average was a scant 0.1% below its closing pre-terrorist attack level; and the NASDAQ was actually 0.5% above its closing level on September 10, 2001. Most significantly, this unexpected three-week stock market rally restored virtually all of the $1.38 trillion in market value lost immediately following the terrorist attacks.

To be sure, perceived risks remained high, and the stock market remained vulnerable to setbacks in the campaign against terrorism, not to mention the slumping economy. In addition, there were jitters over anthrax scares and other forms of possible terrorist retaliation. Nevertheless, it was at least arguable that stock prices had mostly discounted these negative threats in the first week of trading after the terrorist attacks. In November, the stock market rebounded further on greater-than-expected progress in the campaign against terrorism and signs that the economy may be stabilizing after a sharp downturn.

PERSONALITIES AND PERFORMANCE

The effectiveness of monetary policy hinges most importantly on the performance of key Fed leaders under fire. The September 11 terrorist attacks provided such a challenge. The October 1, 2001, issue of the *Financial Times* provided a fascinating, behind-the-scenes account of how Fed leaders and other global financial leaders performed on September 11 and the days immediately following the devastating terrorist attacks.[1]

[1] I have personally confirmed the *Financial Times* account from my own sources.—D.M.J.

On the fateful day of the terrorist attacks, Fed Chairman Greenspan was in midflight on a commercial aircraft, returning to the U.S. from his regularly scheduled meeting with major foreign central bankers at the Bank for International Settlements (BIS) in Basel, Switzerland. A flight attendant on Greenspan's flight came back to him and told the Fed Chairman that the captain was about to announce that U.S. airspace had been closed, and that Greenspan's aircraft was returning to Zurich, Switzerland. Needless to say, the Fed Chairman was shocked by the news that U.S. airspace had been closed, something that had never happened before. On the flight back to Zurich, Greenspan tried to use his cell phone to find out what was going on, but it was not operating properly owing to damage done to cell phone transmission facilities in New York and heavy cell phone usage in the wake of the terrorist attacks. Once he arrived back in Zurich, the Fed Chairman immediately telephoned his wife Andrea Mitchell, chief foreign affairs correspondent for NBC, to find out what was going on. She answered that she had no time to talk to her devoted husband because she was seconds away from going on air to do an interview with Tom Brokaw, the venerable NBC news anchor. But Greenspan's wife said she would leave the phone open in the hands of a producer so the Fed Chairman could hear the news of the stunning terrorist attacks in her live interview with Brokaw.

The next day, September 12, Fed Chairman Greenspan returned to the United States on a military aircraft. It was a KC-10 refueling tanker. The Fed Chairman, who was as usual formally attired in his dark business suit and tie, was strapped tightly into a spartan jump seat. He observed that the crew of the military aircraft "seemed so young, they were just kids," but "they certainly knew what they were doing." The highlight of the Fed Chairman's trip back to the United States on the military refueling aircraft came when the crew allowed the Fed Chairman to manipulate the refueling boom.

Meanwhile, the unsung hero back home was Fed Board of Governors Vice Chairman Roger Ferguson. With the Fed Chairman out of the country and no other Fed Governors present in Washington, D.C. on September 11, Vice Chairman Ferguson had no choice but to take control of the situation. To complicate matters, the Treasury Department and most other official buildings in Washington, D.C. had been evacuated. But Vice Chairman Ferguson and a skeleton staff remained at their posts in the Fed Board of Governors offices on Constitution Avenue. This greatly enhanced his ability to communicate with others, both within the Federal Reserve System and outside. The Fed Vice Chairman declared in an official statement that "[t]he Federal Reserve System is open and operating. The discount window is available to meet liquidity needs."

The Fed Vice Chairman's immediate aim was to shore up the payments system. Not only had severe damage been done to communications and securities settlement systems in the New York financial district, but as already noted all private courier aircraft carrying checks in the process of collection had been grounded, along with all commercial aircraft, immediately following the terrorist attacks.

By all accounts, Fed Vice Chairman Ferguson was calm, cool, decisive, and effective in dealing with the payments system problems. Most importantly, he stayed at his post at the Fed Board offices in Washington, D.C., despite the fact that our nation's capital was under attack. This greatly aided Ferguson's effectiveness in immediately shoring up the payments system and helping to maintain confidence in the overall financial system. It should be noted that senior officials at the New York Fed also did an outstanding job in patching up the damaged payments system and overcoming security settlement problems. These officials remained at their posts around the clock immediately following the terrorist attacks.

POST-TERRORIST ATTACK FISCAL STIMULUS PACKAGE

In an effort to rebuild confidence in the wake of the terrorist attacks and establish the conditions for eventual recovery, the White House proposed a $75 billion fiscal stimulus package consisting mainly of additional tax cuts. This fiscal stimulus package passed the House of Representatives in several forms, but was temporarily blocked in the Democrat-controlled Senate. This post-terrorist attack stimulus package, which was intended to complement Fed easing actions, came on top of $40 billion in emergency appropriations and $15 billion is disaster relief for the airlines. Included in the ill-fated fiscal stimulus measures were corporate and individual tax cuts, an extension of unemployment benefits, and additional health care coverage.

The post-terrorist attack stimulus package was temporarily blocked in the Senate in part owing to political infighting and in part because of some evidence that the recessionary economy might be stabilizing and that recovery was likely in 2002. Moreover, some took heart from the fact that the Fed's 11 easing steps in 2001 were supplemented by the earlier Bush tax cut signed into law in June 2001, which provided $70 billion in fiscal stimulus in 2002. This earlier Bush tax cut provided just under $40 billion in fiscal stimulus in 2001.

Finally, on March 8, 2002, after recovery was already well underway, a scaled-down version of the post-terrorist attack stimulus plan was passed by Congress. This fiscal stimulus package, which provides just under $50 billion in additional stimulus, consisted mainly of an extension of unemployment benefits and accelerated depreciation for business investment in new capital equipment.

U.S. ECONOMIC RESILIENCY

In the final analysis, the U.S. economy demonstrated great resiliency in response to the shock of the unimaginable Sep-

tember 11, 2001, terrorist attacks. To be sure, economic activity was severely depressed by heightened post-terrorist attack uncertainty in September and October. Nevertheless, there were already signs that the economy was stabilizing as early as November and December; consumers and businesses were beginning to return to the "new normality" in a world that was forever changed.

Evidencing the economy's remarkable resiliency, fourth-quarter 2001 real GDP growth unexpectedly rose by an upward revised 1.4% rather than declining as most analysts were predicting. The earlier advance report showed a 0.2% fourth quarter increase in real GDP. In the third quarter real GDP had in fact declined by 1.3%, after a 0.3% increase in the second quarter.

Fourth-quarter consumer spending increased by an unexpectedly strong 6.0%, after registering increases of 1.0% in the third quarter and 2.5% in the second quarter of 2001. The pronounced fourth-quarter gain in consumer spending was paced by a whopping 39.2% increase in outlays for durable goods, mainly motor vehicles. The sales of motor vehicles were spurred by zero rate financing incentives made possible by low interest rates, which, in turn, reflected aggressive Fed rate cuts.

Fourth-quarter real GDP growth was also boosted by fiscal stimulus. This much-needed fiscal stimulus included not only the hefty 10.1% increase in government spending, but also the lift given consumer spending by tax rebates arriving in the mail in the fourth quarter.

In contrast with the surprising strength of consumer spending, both business fixed-investment and residential housing activity recorded fourth quarter declines. In the weak business sector, which had led the economy into recession in 2001, business fixed-investment plunged by 13.1% in the fourth quarter, marking the fourth consecutive quarterly decline. Specifically, business fixed-investment had fallen by 8.5% in the third quarter, 14.6% in the second quarter, and 0.2% in the first quarter of 2001.

Within the business fixed-investment total, business spending on capital equipment and software declined by 4.8%, representing some moderation in the pace of decline in this key component of business fixed-investment. In the third quarter, business spending on capital equipment and software fell by 8.8%, following a hefty 15.4% decline in the second quarter and a 4.1% drop in the first quarter of 2001. It should be noted that the other major component of business fixed-investment, business spending on plant facilities and other structures, declined sharply by 32.6% in the fourth quarter, following declines of 7.5% in the third quarter and 12.2% in the second quarter. In contrast, business spending on structures had increased by 12.3% in the first quarter of 2001.

Residential fixed-investment declined by 5.0% in the fourth quarter, after this generally strong sector had recorded increases of 2.4% in the third quarter, 5.9% in the second quarter, and 8.5% in the first quarter of 2001. Most importantly, low interest rates have provided a distinct stimulus to housing activity. As noted by Fed Chairman Greenspan in his remarks to the Senate Budget Committee on January 24, 2002, "attractive mortgage rates have bolstered both sales of existing homes and the realized capital gains that these sales engender." He went on to observe that low mortgage rates "have also spurred refinancing of existing homes and the associated liquification of increases in house values." Citing the importance of property appreciation in the operation of the wealth effect, Greenspan concluded that "these gains have been important to the ongoing extraction of home equity for consumption and home modernization."

The massive business inventory liquidation of 2001 continued with a vengeance in the fourth quarter. Specifically, there was a huge $120.0 billion decline in business inventories in the fourth quarter, nearly double the already substantial $61.9 billion decline in the third quarter. In the second quarter, the change in business inventories had fallen by $38.3 billion, following a $27.1 billion decline in the first

quarter of 2001. In all likelihood, the pace of business inventory liquidation will slow in early 2002, and eventually businesses will need to begin rebuilding their depleted inventory stocks of goods and supplies, thus boosting manufacturing output and employment.

However, the impetus to recovery from the positive effects of the swing from inventory liquidation to accumulation will depend critically on whether sustained growth of final demand kicks in. As Fed Chairman Greenspan pointed out in his January 24, 2002, testimony before the Senate Budget Committee, most recoveries in the post–World War II period received a boost from a rebound in demand for consumer durables and housing from recession-depressed levels, in addition to the abatement of the liquidation of inventories. However, with consumer spending on durable goods and housing activity holding up remarkably well through the slowdown of 2001, the potential for a significant acceleration in these components of aggregate demand in 2002 was considered to be more limited.

In his semi-annual congressional testimony to the U.S. Senate on March 7, 2002, Fed Chairman Greenspan declared most optimistically that he had "seen encouraging signs in recent days that the underlying trends in final demand are strengthening." In this same March 7 testimony, Greenspan also observed that "[t]he recent evidence increasingly suggests that an economic expansion is already well under way."

BEAR MARKET CAPITULATION

Paradoxically, despite growing evidence that the surprisingly resilient economy was bottoming and setting the stage for recovery in 2002, the stock market faltered in late January and early February, gripped by the "Enron effect." Specifically, the "Enron effect" took the form of heightened fears on the part of investors that accounting irregularities might involve an ever widening circle of companies that had engaged in com-

plex off-balance sheet transactions, questionable accounting methods, or numerous acquisitions that essentially raised questions with regard to where operating profits could be expected to originate.

In these circumstances, Wall Street's lucrative mergers and acquisitions activities slowed to a crawl. The greater incentive was to break up companies into business units that reverted to basics, operating in an easy-to-understand manner that can be credibly and accurately expressed in independently audited financial statements. Investors were placing premium valuations on the stock of these back-to-basics companies; in contrast, the stock of companies that were engaged in complex off-balance sheet transactions or perceived as playing fast and loose with accounting rules were suddenly selling at a discount to the market.

In sum, the "Enron effect" acted as a sort of catalyst for a bear market capitulation. The "Enron effect" quickly trimmed market capitalization by a hefty $0.75 trillion, as waves of selling pressure hit the stock of complex companies like Tyco and even the venerable IBM and General Electric. Thus, in the 2000–2002 period, the extremes of market psychology have been seen in bold relief. At one extreme are the fear and pessimism of the recent bear market sharply contrasting with the earlier bull market optimism and euphoria at the other extreme.

Among the companies that faced questions about their accounting methods was the bankrupt Global Crossing, the fiber optic network operator. It was the largest telecommunications company to declare bankruptcy. Global Crossing came under investigation by the SEC for allegedly inflating revenue improperly and most unusually by the FBI for possible wrongdoing in its accounting procedures, including fraudulent conduct.

The financial press engaged in a "feeding frenzy" on the Enron debacle not unlike that seen a decade earlier in connection with the S & L scandal, when accountants and regulators

had previously come under scrutiny. The Enron bankruptcy triggered a myriad of investigations by no less than ten congressional committees, the SEC, and U.S. Justice Department, among others. A similar flurry of investigations followed the S&L scandal a decade earlier, when Charles Keating, head of Lincoln Savings & Loan, was the villain. The Enron debacle was a business scandal that nevertheless provided high political drama. Unfortunately, there was more than a whiff of hypocrisy as most of the members of Congress who were piously berating the senior management of Enron had, in fact, taken campaign contributions from Enron.

When all was said and done, no one was quite sure whether senior Enron officials, including Chairman Kenneth Lay, had done much of anything illegal. To be sure, Enron officials clearly pressed accounting rules and business ethics to the limit. Nevertheless, in the heady boom of the 1990s, as companies sought to satisfy investors' craving for ever higher quarterly earnings, these measures to do everything possible to put a company in the best possible financial light were viewed as clever, even resourceful. Moreover, even if illegal or fraudulent conduct were to be uncovered, the question was whether the Chairman of Enron or lower level officers were responsible. For each senior officer it came down to the age-old but difficult-to-prove questions of: What did they know? When did they know it? And: Who did what? Furthermore, the broader question was: Why didn't regulators, accountants, security analysts, or even credit rating agencies signal this impending corporate collapse earlier? In that case, people might have been able to avoid massive losses in their 401k retirement plans. In any event, the real danger is that congress might overreact with excessive reregulation, and do more harm than good. By early March, the Enron scare was receding and the stock market rallied briefly as it began to focus on improving economic data that signalled recovery, before resuming a downtrend reflecting lingering Enron-related problems, terrorist threats, and escalating regional hostilities on the global front.

CHAPTER 9

Conclusions

The veil previously cloaking the secretive and mysterious world of central banking is today being lifted. Presently, the watchword is transparency; Fed Chairman Greenspan seeks to publicly discuss policy objectives and tactics. Most appropriately, he is prompt to reveal changes in Fed intentions well ahead of actual monetary policy shifts, thereby shortening the "outside" policy time lag.

The Fed Chairman also understands the critical importance of two-way communications with the capital markets, which have become the major source of funds for individual and business borrowers. The importance of this two-communication between the Fed and the capital markets was highlighted most recently when the Fed Chairman sought to correct the markets' excessively negative interpretation of his January 11, 2002, remarks on the economic outlook.

More recently, Fed Chairman Greenspan has been quick to emphasize the importance of incoming economic data, particularly at a time of greater-than-normal uncertainty regarding the economic outlook. For example, in his March 7, 2002, semi-annual testimony to the U.S. Senate, the Fed Chairman declared that "[t]he recent evidence increasingly suggests that an economic expansion is already well under way." The Fed Chairman was obviously impressed by a flood of positive economic data becoming available in the brief interval since his

February 27, 2002, semi-annual testimony to the House of Representatives. Among the deluge of data making the Fed Chairman more upbeat in his March 7 testimony than in his February 27 testimony were sharp increases in both the ISM (NAPM) indexes of manufacturing and nonmanufacturing (service sector) activity; upward revised fourth-quarter real GDP growth; solid increases in personal income and consumption as well as in construction spending, motor vehicle sales, factory orders, and chain store sales; and a surprisingly large jump in fourth-quarter productivity.

Hopefully, this book has provided useful information on monetary policy objectives, operating techniques, and the Fed's favorite financial and economic indicators. This in-depth look at monetary policy, including its challenges and concerns, should help finance professionals as well as conscientious individual investors forecast Fed policy shifts and related movements in interest rates and the stock market.

Most importantly, Fed watchers should put themselves in the place of the Fed Chairman and his fellow policymakers. You should watch the financial and economic indicators that they watch and respond to. Make an effort to determine how they see the balance of risks to good economic performance. In addition, you should try to ascertain not only the Fed's central tendency forecast of future economy activity, but also the possible deviations from this central tendency forecast, especially in the absence of further Fed policy actions.

A case in point was the Fed's central tendency forecast of a mild and relatively short-lived downturn in 2001. The important point was that Fed policymakers feared that the most likely deviation from this central tendency forecast would be a deeper and longer recession, especially in the absence of aggressive Fed easing actions. As a Fed watcher, you could be virtually certain that in view of the cost of such a feared deviation from the Fed's central tendency forecast, Fed officials would err on the side of too much easing rather than too little.

PRAISE VERSUS BLAME

After presiding over a record 10-year economic expansion and a spectacular 1995–early 2000 stock market rally for which he may have been given excessive praise, Fed Chairman Greenspan suddenly faced, after the bubble burst in March 2000, a stock market plunge and a slumping economy later in 2000 and 2001 for which he was soon to be given excessive blame. Amazingly, the economic downturn threatened to transform a highly popular Fed Chairman from hero to villain almost overnight in a tale of Shakespearean overtones. In a glaring example of starkly gratuitous criticism, Gerard Baker, writing in the *Financial Times* (March 2, 2002), exclaims:

> Blamed for not bursting the bubble soon enough, pilloried for provoking a recession, derided as an accomplice to fiscal pillage, disdained by disillusioned political ex-friends, and sidelined by a traumatic shift in national priorities, Greenspan cuts a slighter figure in American and global public life than he did a year ago.

But this blatant, over-the-top criticism misses the point. The point is that under Greenspan's leadership, aggressive Fed easing actions in 2001, together with well-timed fiscal stimulus, have worked to shore up final demand and output. Specifically, the combined monetary and fiscal stimulus have been successful in moderating the economic downturn and launching the current recovery.

Although the NBER has not yet officially declared precisely when we reached the recession trough, a good guess is that it occurred in December 2001. With the NBER having already designated the date of March 2001 as the cyclical peak, this would mean that the relatively mild recession lasted for 10 months, less than the average 11-month duration of post–World War II recessions.

The bottom line is that, despite the breathtaking pace of globalization, securitization, and financial innovation, not to mention the September 11 terrorist attacks, Fed Chairman Greenspan's flexible, open policy approach has worked. The Greenspan Fed's pragmatic approach, in which its target for the Federal funds rate is promptly and often aggressively adjusted in response to changes in current and projected economic circumstances, is for the most part a resounding success.

To be sure, with the aid of hindsight, it is possible to criticize the Fed for tightening too aggressively in 1999–2000 and not easing soon enough. As regards what the Fed should have done about the stock price bubble, it must be recalled that the Fed is, by law, responsible for maintaining stable prices of goods and services, not with controlling stock prices. Only to the extent that stock prices, operating through the wealth effect, influence economic conditions would it be appropriate for the Fed to react. This is precisely what the Fed did in the 1999–2001 period, both on the tightening and subsequent easing sides.

In any case, in the wake of the completely unforeseen and devastating September 11, 2001, terrorist attacks, most market participants, as well as the public in general, were thankful that an experienced and respected Fed Chairman was at the helm. The unavoidable conclusion is that personalities make a difference in the Chairman-centered Fed culture. Three post-Accord leaders—Martin, Volcker, and Greenspan—have turned in outstanding performances. Most importantly, they have been, for the most part, successful in their countercyclical policy actions aimed at smoothing economic cycles, while at the same time lengthening expansions and shortening contractions. In addition, Greenspan in particular has been, for the most part, successful in dealing with unforeseen crises including the 1987 stock market crash, the 1998 global financial contagion, and the 2001 terrorist attacks.

This is not to say that all Fed actions are perfect. By mid-2001, for example, Fed policymakers had mistakenly judged

that they were nearing the end of their easing moves. The Fed had cut rates five times through May, with each rate cut amounting to 50 basis points, twice the normal size. In June and again in August the Fed cut rates in normal-sized 25 basis point increments, respectively, on the assumption that it was nearing an end in its series of easing steps. The June FOMC minutes stated that "[b]y a number of measures—including the level of the real Federal funds rate, the robust growth of the monetary aggregates, and the ready availability of finance to most borrowers—policy had become stimulative." The reasoning was that "[s]uch a policy stance was appropriate for a time to counter the various forces holding back economic expansion." The June minutes continued "[b]ut much of the lagged effects of the Committee's earlier easing actions had not yet been felt in the economy, and they would be supplemented in coming quarters by the implementation of the recently legislated tax cut stimulus."

But, to the surprise of Fed policymakers, the economy continued to weaken in July and August and then plummeted following the September 11 terrorist attacks. In response, the Fed was forced to cut rates again in larger 50 basis point increments in September, October, and November, respectively. In December the Fed cut rates by a normal sized 25 basis points, bringing its Federal funds rate target down to 1.75%, the lowest in four decades.

DEPRESSING IMPACT OF TERRORIST ATTACKS

The minutes of the October 2, 2001, FOMC meeting revealed that Fed policymakers determined, in a major reassessment, that the economy had tipped into recession in the wake of the September 11 terrorist attacks, though the Fed did not use the term "recession" in its official statements. According to the October minutes, Fed officials noted that dislocations arising from the terrorist attacks seemed to have induced a "downturn in economic activity." In response, Fed authorities agreed

that more easing might be needed, especially in view of the fact that "the decline in stock market prices and the widening of risk spreads had damped the stimulative financial effect of the Committee's earlier easing actions."

In contrast, at the subsequent November 6 FOMC meeting, a split developed between policymakers as to how much easing was too much. In fact, 3 out of 10 FOMC members favored a 25 basis point Fed rate cut at the November meeting, rather than the 50 basis point cut that actually occurred. Those Fed officials in favor of the 50 basis point rate cut, "stressed the absence of evidence that the economy was beginning to stabilize and some commented that the indication of economic weakness had in fact intensified." Alternatively, those favoring a smaller 25 basis point Fed rate cut at the November meeting argued that perhaps the Fed was close to having done enough on the easing side. They asserted that "policy had eased substantially further in September and October, and the effects of those actions and any added easing at this [November] meeting would be felt mostly during the year ahead when fiscal stimulus and the inherent resilience of the economy should already be boosting growth substantially."

On December 11, the Fed cut rates by 25 basis points, the eleventh and final rate cut in 2001. As revealed in the December 11 FOMC minutes, Fed policymakers felt that "the consequences of inactivity at this meeting could turn out to be considerable." Several FOMC members viewed an easing action "as a measure of insurance against the potential for greater or more prolonged weakness than they currently anticipated." Regarding when the Fed's December easing move might be reversed, the FOMC minutes held that "[i]f a modest easing action taken today turned out to be unneeded, the Committee would have ample opportunity to reverse its action without any real risk of allowing inflationary pressures to gather momentum."

REASONS FOR ECONOMIC DOWNTURN

In the economic downturn of 2000–2001, a major destabilizing force, prior to the terrorist attacks, was the high-tech stock price bubble that burst in March 2000 and brought the high-flying, high-tech business sector down with it. Declining high-tech stock prices pulled down the broader stock indexes and set in motion a negative equity wealth effect on consumption accompanied by a cascade of negative market psychology and rapidly eroding consumer and business confidence. Adding to these economic woes was a virtually unprecedented business investment boom-bust cycle. Moreover, the September 11 terrorist attacks heightened uncertainty and led to a further curtailment of consumer and business spending, at least temporarily.

Another major negative force had been an unforeseen increase in energy prices during 1999 and 2000, which, contrary to expectations, mainly had a negative effect on aggregate demand with much less overall impact on inflation. Fed policymakers were surprised by the surge in energy prices, and they mistakenly assumed that the main effect would be to boost inflation and inflation expectations, rather than to curtail aggregate demand, as turned out to be the case. Fortunately, energy prices peaked in late 2000 and began to move lower in 2001, eliminating at least one major drag on aggregate demand.

Largely reflecting the collapse in stock prices, there were back-to-back declines in household net worth in 2000 and most likely in 2001. The pronounced decline in stock prices, operating through a diminution of the wealth effect, resulted in a sudden slowing in spending by debt-heavy consumers in late 2000. Also operating to depress aggregate demand were, of course, the Fed's tightening moves in 1999–2000. In addition, severe winter weather in late 2000 and the already noted increase in energy prices also depressed spending.

BUSINESS-LED CONTRACTION

This set in motion a major business inventory correction in 2001. At the same time, with profit margins shrinking, excess capacity increasing, and sales growth slowing, businesses had cut back sharply on investment spending, particularly on high-tech equipment. In addition, the September 11 terrorist attacks prompted people to stay and spend closer to home, resulting in a sharp contraction in travel and tourism, and caused businesses to further trim investment spending, at least temporarily. Stock prices declined again in 2001, marking the first back-to-back annual decline in stock prices in more than two decades.

Importantly, the IT revolution has facilitated more rapid, "just-in-time" business decision-making in a compressed time frame. This has tended to make resulting declines in output and employment more rapid and pronounced. Appropriately, the Greenspan Fed has been more aggressive in adjusting its policy posture to match this "just-in-time" business decision-making.

Thus, in a break with the past, the 2000–2001 downturn was led by the business sector where a boom-bust investment cycle was super-imposed on a major inventory correction. Usually, declines in consumer spending and housing activity lead the economy into recession, but, for the most part, these sectors held up remarkably well during the downturn. Following the September 11 terrorist attacks, the downturn deepened into recession as uncertainties mounted. Psychology has always played an important role in economic cycles and the post-terrorist attack period was no exception; but psychology is difficult, if not impossible to capture in economic models.

COMBINED MONETARY AND FISCAL STIMULUS REQUIRED

In these circumstances, all the Fed could do was to try to avoid falling behind the curve in a series of easing moves aimed initially at limiting the downside economic damage and

eventually establishing a base for recovery. Inextricably, the economy slumped after the terrorist attacks with economic activity in September and October being particularly hard-hit. But, amazingly, the remarkably resilient economy seemed to stabilize in November before hitting the presumed recession trough in December.

Demand-boosting government tax cuts are also appropriate as a countercyclical weapon in these circumstances, assuming that previous fiscal discipline has made room for them. The Bush administration and Congress initially agreed on a $1.35 trillion tax cut over 11 years, which was signed into law in June 2001. Then, following the September 11 terrorist attacks, the White House proposed an additional fiscal stimulus package, consisting mainly of more tax cuts for businesses and individuals, along with an extension of unemployment benefits and expanded health care coverage. This proposed post-terrorist attack fiscal stimulus package came on top of $40 billion in emergency appropriations and $15 billion in disaster relief for the airlines. The post-terrorist attack fiscal stimulus package was passed in the House of Representatives in several forms, but was temporarily blocked in the Senate, in part the victim of partisan political wrangling, and in part the victim of some signs that the economy might be on the verge of recovering without this additional dose of fiscal stimulus. Finally, on March 8, 2002, a scaled-down version of the post-terrorist attack fiscal stimulus package was passed by congress.

LOWERED EXPECTATIONS

The bottom line is that although effective countercyclical monetary or fiscal policies might lessen the damage, we have been destined to suffer a period of painful financial and economic adjustment. This was especially true, in light of surprising sequential declines in corporate profits, through the four quarters ended in the third quarter of 2001 (a "profits reces-

sion"). As demand weakened, businesses sought to protect shrinking profit margins by cutting costs through more worker layoffs. This weaker job market outlook helped make a major economic slowdown inevitable.

The reality was that fundamental adjustments had to be forthcoming, especially in the high-tech business sector where there has been extensive over-investment based on unrealistic ally high rate of return expectations. Specifically, excessively optimistic corporate earnings estimates had to be lowered in light of weakening demand. Moreover, the high valuations placed on growth company stocks, particularly in the high-tech sector, had to be lowered to more realistic levels. In addition, businesses as well as consumers were forced to repair debt-burdened balance sheets, just as they did after the bursting of the last asset price bubble at the end of the 1980s.

Looking ahead, individual investors must drastically lower their expected near-term returns on equities. After a spectacular average 20% per year return on equities during the 1995–1999 period, the average annual return on equities could slump to 5% or less per year during the 2000–2005 period. In general, we are almost certainly destined to regress to the mean, following the bursting of the stock market bubble.

Over the past century, the average annual return on equities has been about 10%. The simple reality is that five years of unusually high 20% returns during the 1995–1999 period, had to be followed by much lower average annual returns as we inevitably regress to the mean. Over the long haul, the double-digit 10% average annual return on stocks is still relatively attractive compared with 6%–7% for bonds and 3%–4% for money market funds.

LESSONS FOR CENTRAL BANKERS

The main lesson of contemporary central banking experience is that countercyclical monetary policy actions can be helpful in smoothing the business cycle and perhaps extending the

duration of economic expansions, while shortening the duration of contractions. But the monetary authorities will never be able to completely eliminate the business cycle, human nature being as volatile as ever. Needless to say, Fed officials will never be able to anticipate major crises such as the stunning September 11 terrorist attacks on the U.S.

Moreover, central bankers cannot eliminate asset price bubbles which threaten to destabilize the economy by triggering wide swings in investor, consumer, and business psychology. Since policymakers cannot anticipate these bubble-induced speculative excesses, monetary policy must by nature be reactive, with the danger that the Fed falls behind the curve, both on the upside as asset prices are rising and on the downside after the asset price bubbles burst.

It is true, however, that informed and timely fiscal and monetary policy responses can still limit the damage from the bursting of asset price bubbles. But declining stock prices, operating mainly through a negative wealth effect, along with deteriorating consumer and business confidence can still do considerable damage to the economy. This is especially true, if, as in 1999 and 2000, energy prices are rising, thereby sapping consumer and business purchasing power. Fortunately, energy prices reversed course in 2001 and began to decline, thereby eliminating at least one major drag on aggregate demand growth.

Looking back, the most striking thing about the U.S. economy has been its resiliency. The impact of the September 11 terrorist attacks was initially severe. But the economy was showing signs of stabilizing before the end of 2001. Sparked by zero-rate financing incentives made possible by aggressive Fed easing, consumer spending, particularly on motor vehicles, was surprisingly strong in the closing months of 2001. Moreover, housing activity was buoyed by low mortgage rates.

On the positive side, we have experienced one of the most potent doses of countercyclical monetary ease in modern history. This has been combined with a fortuitously timed dose of fiscal stimulus. This combination of monetary and fiscal

stimulus has successfully triggered a recovery but, in all likelihood, it will be more moderate and uneven than usual.

FUTURE TRENDS

Even as recovery resumes, however, the differences between the current decade and the blissful and prosperous decade of the 1990s will likely be striking. To start with, there will be a sharp acceleration in government spending for military, public health, and public safety purposes, triggered by the terrorist attacks and the anthrax scare.

In the past, President Reagan was fond of saying that government was part of the problem; today, in contrast, government is clearly part of the solution in a world that seems changed forever by the terrorist attacks and the threat of bioterrorism. Clearly, government plays a key role in a world clamoring for safety and security. In particular, there is the need for sharply increased Federal and local government outlays for home defense, including more aid to local firefighters, law enforcement officials, and public health experts, not to mention increased defense outlays needed to support soldiers fighting abroad in Afghanistan and elsewhere. At least for the near-term, including the current fiscal year 2002, this means a Federal budget slumping back into deficit after a brief but glorious experience with surpluses. Moreover, there will be greater perceived risk associated with the campaign against terrorists and possible terrorist retaliation. At the same time, we will likely see a higher cost of doing business, given the stepped up requirements for safety and security.

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