ECONOMIC REPERCUSSIONS OF THE STOCK MARKET BUBBLE

A JOINT ECONOMIC COMMITTEE STUDY

Vice Chairman Jim Saxton (R-NJ)
Joint Economic Committee
United States Congress

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Executive Summary

The expansion of the 1990s was fundamentally different from other post-World War II business cycle upturns. During the first half of the 1990s, an exceptional combination of major favorable developments fueled optimism in the stock market. As the decade continued, this optimism became extreme, inflating a stock market bubble. As stocks soared, entrepreneurs and firm managers became more optimistic about the profitability of new business investment. The rising stock market also facilitated the financing of business investment. Consequently, business investment climbed. After the stock market bubble burst in the first quarter of 2000, it became apparent that many firms, especially in the information technology and telecommunications industries, had invested in too many capital assets and the wrong types of capital assets.

The unusual excesses of this economic expansion resulted in an economic slowdown and recession that were just as atypical. Most postwar recessions were driven by consumers sharply reducing consumption spending, especially on housing and durable goods. Since 2000, however, consumption spending has actually increased. Instead, the recent slowdown and recession were driven by plunging business investment. In this respect, this slowdown and recession resemble the investment-driven recessions of the late 19th and early 20th centuries, rather than the consumption-driven recessions of the postwar era.

Weakness in business investment has been a major drag on economic growth since a recovery began in the fourth quarter of 2001. Excessive and bad business investments made during the stock market bubble have taken years to liquidate. In nine of the 10 quarters beginning with the fourth quarter of 2000, real business investment has actually declined. Fortunately, recent tax legislation signed into law in 2003 should promote business investment by increasing the after-tax returns from investing in capital assets and alleviating financing constraints among small- and medium-size firms.

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ECONOMIC REPERCUSSIONS FROM THE STOCK MARKET BUBBLE

The effects of the bursting of the stock market have proven to be far more long term and pervasive than expected.

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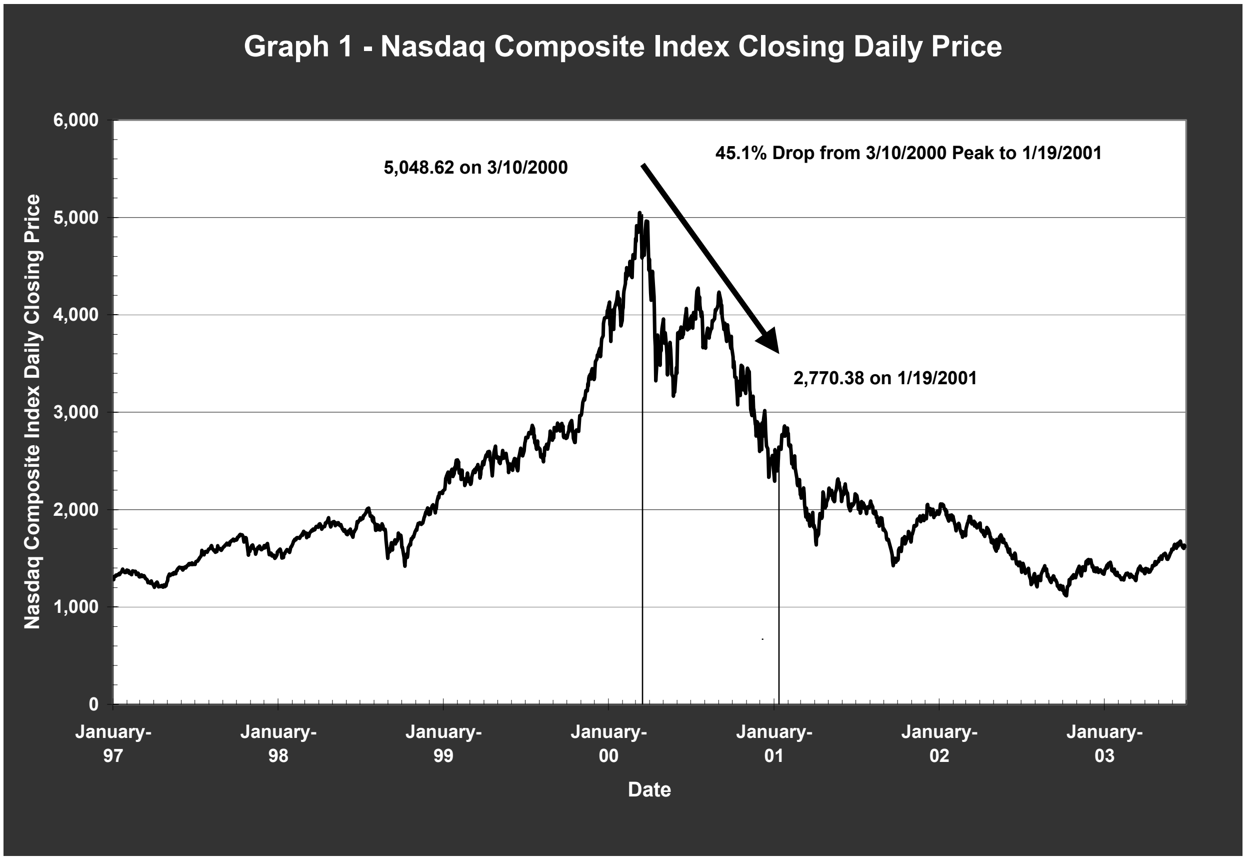
I. INTRODUCTION

The expansion of the 1990s was fundamentally different from other post-World War II business cycle upturns. During the first half of the 1990s, an exceptional combination of major favorable developments fueled optimism in the stock market. As the decade continued, this optimism became extreme, inflating a stock market bubble. As stocks soared, entrepreneurs and firm managers became more optimistic about the profitability of new business investment.[2] The rising stock market facilitated the financing of business investment. Consequently, business investment climbed. After the stock market bubble burst in the first quarter of 2000, it became apparent that many firms, especially in the information technology and telecommunications industries, had invested in too many capital assets and the wrong types of capital assets.[3]

The bursting of the stock market bubble early in 2000 led to an economic slowdown in the second half of 2000. As Joseph Stiglitz, Nobel Laureate and President Clinton's Chairman of the Council of Economic Advisers, observed, "The economy was slipping into recession even before Bush took office."[4]

The unusual excesses of this economic expansion resulted in an economic slowdown and recession that were just as atypical. Most postwar recessions were driven by consumers sharply reducing consumption spending, especially on housing and durable goods. Since 2000, however, consumption spending has actually increased. Instead, the recent slowdown and recession were driven by plunging business investment. In this respect, this slowdown and recession resemble the investment-driven recessions of the late 19th and early 20th centuries, rather than the consumption-driven recessions of the postwar era.

In a March 8, 2001 editorial entitled "What a Peculiar Cycle," the *Economist* predicted that excessive and bad business investments made during the stock market bubble of the 1990s would slow the pace of economic recovery.[5] Indeed, the weakness in business investment has been a major drag on economic growth since a recovery began in the fourth quarter of 2001. Excessive and bad business investments made during the stock market bubble have taken years to liquidate. In nine of the 10 quarters beginning with the fourth quarter of 2000, real business investment has declined. Fortunately, recent tax legislation signed into law in 2003 should promote business investment by increasing the after-tax returns from investing in capital assets and alleviating financing constraints among small- and medium-size firms.

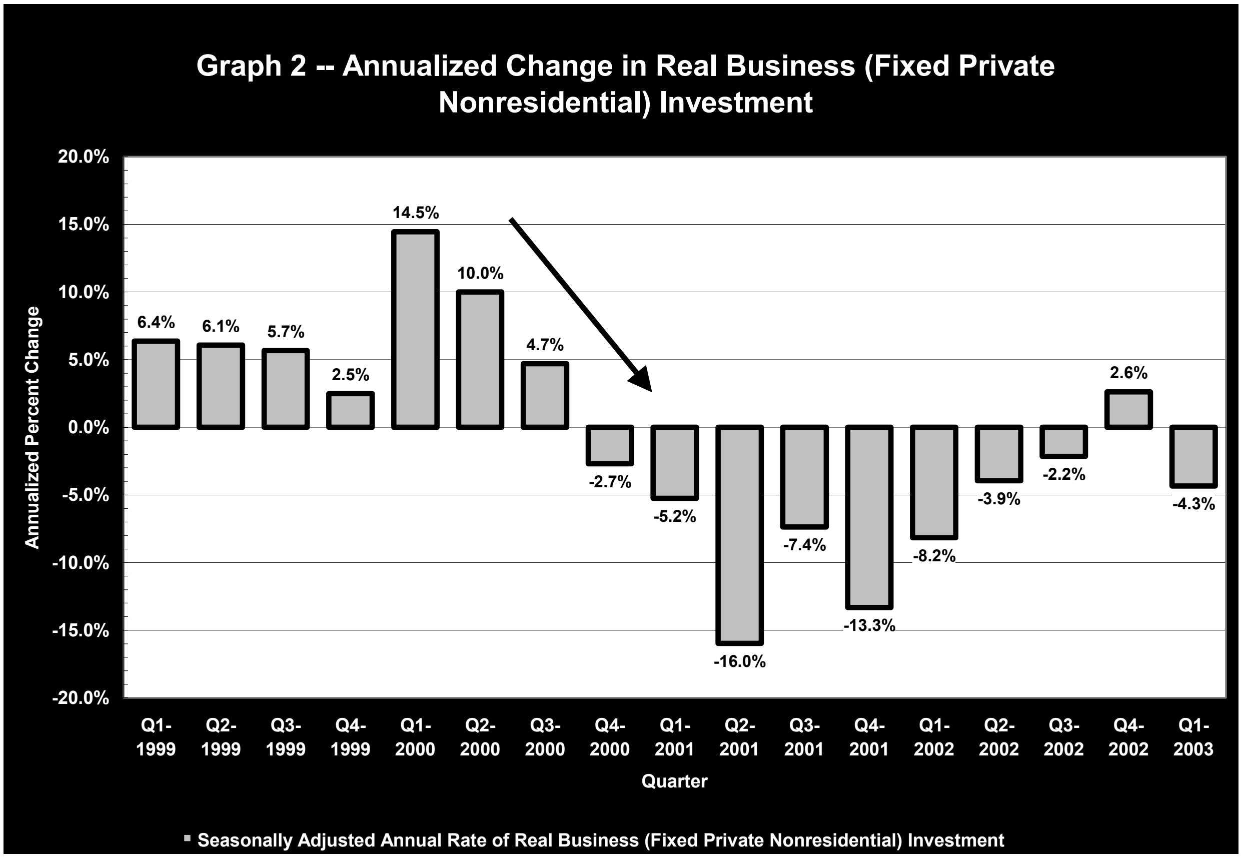


II. STOCK MARKET BUBBLE

Stock market bubbles begin when major favorable developments (such as a sudden victory in a long war, the surprise election of a pro-market party to government, or the commercialization of a new technology) occur suddenly and unexpectedly. These events prompt stock market participants to become more optimistic about the future returns from purchasing stocks. Additionally, a high and rising share price increases a firm's net worth and facilitates the issuance of new shares and other financing to fund the firm's investments in capital assets.

During the first half of the 1990s, four major favorable events sparked optimism about the future returns from purchasing U.S. stocks. First, the United States won the Cold War. As a result, declining defense outlays helped to swing the federal budget from deficit into surplus.[6] Second, U.S. productivity growth accelerated.[7] Third, the inventions of the World Wide Web in 1991 and the Internet browser in 1993 facilitated the rapid commercialization of the Internet. Stock market participants attributed great economic importance to the Internet and anticipated that Internet-related firms would reap huge profits in the future. Fourth, American voters elected a fiscally conservative Congress on November 8, 1994. In response, President Bill Clinton proclaimed in his 1996 State of the Union Address, "The era of big government is over."[8]

Higher stock prices mirrored rising corporate profits through the middle of the 1990s.[9] However, the initial public offering of Netscape on August 9, 1995 marked a significant turning point toward "irrational exuberance" in the U.S. stock market. Even though Netscape had lost $4.3 million on revenues of $16.6 million in the first six months of 1995, the demand for Netscape's stock pushed its market capitalization to $2.2 billion after its first trading day.[10]

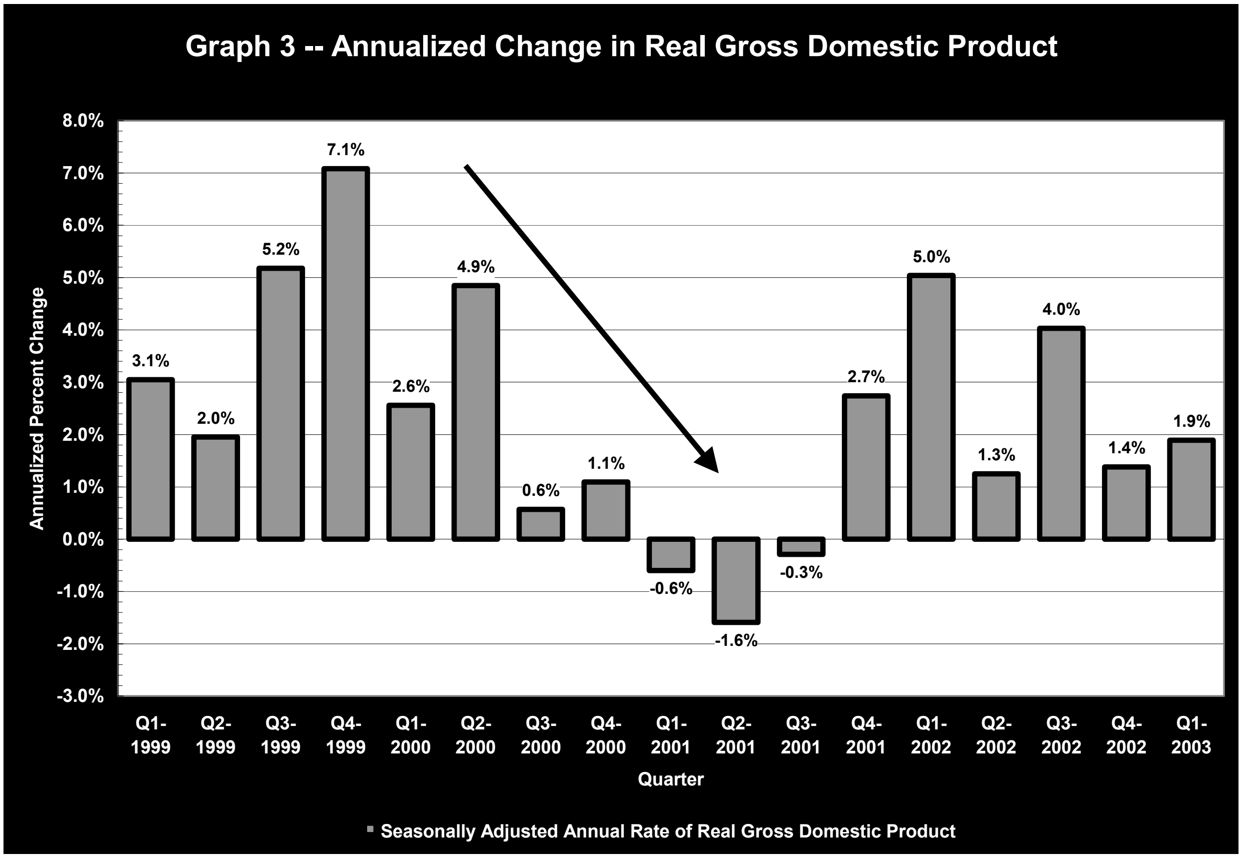


In a speech on December 5, 1996, Federal Reserve Chairman Alan Greenspan questioned whether "irrational exuberance" had developed in the U.S. stock market.[11] Stock market participants expected the rapid growth of corporate profits to continue through the remainder of the decade. Though many corporations were individually reporting record earnings growth, aggregate after-tax corporate profits peaked in 1997 and actually fell by an average 1.9 percent per year through 2000.[12] This dichotomy went largely unnoticed as stock prices soared.

The optimism of stock market participants prompted entrepreneurs and firm managers to invest in capital assets. Moreover, rising share prices made it easy for firms to borrow or issue new shares to finance expanded investment.

As growing business investment mirrored rising aggregate after-tax corporate profits from 1990 to 1997, this optimism appeared to be justified. However, business investment and aggregate after-tax corporate profits diverged from 1997 to 2000. Entrepreneurs and firm managers succumbed to the same "irrationality" regarding their decisions to invest in capital assets that stock market participants were suffering regarding their decisions to purchase equities.

As a result, **overinvestment** and **malinvestment** became widespread during the late 1990s. Overinvestment means that firms acquire **too many** capital assets to produce goods and services to meet demand; *e.g*., automakers build new assembly plants to increase manufacturing capacity to 20 million vehicles a year when consumers demand 15 million vehicles a year. Malinvestment means that firms acquire the **wrong** capital assets to produce goods and services to meet demand; *e.g*., record companies buy equipment to make cassette tapes even though consumers prefer CDs. Unlike overinvested capital assets, malinvested capital assets may have little economic value even if demand grows substantially. As shown in Graph 2, overinvestment and malinvestment in the second half of the 1990s depressed business investment in subsequent years.



As was the case during previous stock market bubbles, government officials proclaimed that a new economic era had begun to justify surging business investment and soaring stock prices. President Clinton promoted this "new economy" thinking. For example, the annual report of his Council of Economic Advisers (1998) stated:

> Indeed, economic performance in recent years has been so extraordinary that some have wondered whether it reflects fundamental structural change in the economy – change so great that a "new paradigm" is needed to describe an economy that is in a new era.[13]

In 1999, President Clinton proclaimed the arrival of the new economy:

> I do believe in the new economy. I think that technology is rifling through every sector of economic activity, in ways that have given us dramatic increases in productivity and potential for growth without inflation.[14]

As the 1990s drew to close, stock market participants ignored the actual profitability of U.S. corporations and purchased shares based solely on price momentum. As existing stock market participants profited, individuals who had not normally purchased stocks bought them. Together these factors created a speculative mania in the stock market. As the peak approached, expectations about the future profitability of purchasing stocks reached their zenith.

By 1999, the dot.com stocks were reaching their frothy peaks. In April 1999, the on-line book retailer, Amazon.com, had a market capitalization 10 times more than the combined market capitalization of two established bricks and mortar book retailers, Barnes & Noble and Borders, even though Amazon.com had yet to turn a profit.[15]

After the dot.coms peaked in 1999, the final move in the stock market bubble occurred in telecommunications and information technology equipment manufacturing stocks. Twelve of the top 20 U.S. corporations by market capitalization were technology-related firms, and six of the twelve had price-earnings ratios in excess of 100. Never before had any of the twenty largest U.S. corporations by market capitalization had a price-earnings ratio in excess of 100.[16]

Increasing business investment expenditures and soaring stock prices made the U.S. economy more vulnerable to uncertainty. A number of factors came together near the end of the 1990s suggesting that aggregate uncertainty was actually much larger than had been perceived. The Asian financial crisis of 1997 shattered perceptions that emerging market countries would enjoy uninterrupted rapid economic growth, while the Russian default of 1998 highlighted the difficulties that some former communist countries were having integrating into the global economy.

As 2000 began, increasing uncertainty dimmed the hopes embedded in high share prices. Prices of information technology and telecommunications stocks plunged, starting in the first quarter of 2000. Between March 10, 2000 and January 19, 2001, the Nasdaq composite index fell 2,278.24 points, or by 45.1 percent (see Graph 1).[17] The Dow Jones industrial average and Standard & Poor's composite index also peaked early in 2000. A tightening of monetary policy and higher oil prices may have contributed to the timing of the market decline.

The decline in the stock market severely depressed business investment. As a firm's share price falls, the firm's market value declines, reducing its ability to borrow or issue stock to finance investments. As a result, many firms found themselves under immense financial pressure, in some cases even including insolvency.

Beginning in the middle of 2000, economic growth fell sharply. As shown in Graph 3, real GDP growth decelerated sharply during the second half of 2000. Business investment and industrial production were in decline by the fourth quarter of 2000. In response to the bursting of the stock market bubble and the resulting economic slowdown, U.S. policymakers did not significantly alter fiscal, monetary, and regulatory policies for the remainder of 2000. Consequently, real GDP contracted during the first three quarters of 2001.[18]

III. ECONOMIC REPERCUSSIONS

A. Consumption-Driven Recessions

Postwar recessions were typically consumption-driven and followed this pattern:

- Increasing inflation prompted the Federal Reserve to tighten monetary policy.
- Increasing real interest rates slowed consumer purchases of housing and durable goods.
- Business inventories accumulated unexpectedly.
- Firms slashed the production of housing and durable goods, causing significant unemployment in these sectors. Firms also trimmed their investments in capital assets.
- Receding inflation prompted the Federal Reserve to loosen monetary policy.
- After firms eliminated excess inventories, firms increased production, put idle capital assets back to work, and rehired laid-off employees.

Postwar recessions were typically short, averaging nine months. Recoveries were usually strong. Because overinvestment and malinvestment were generally cyclical, small, and limited to certain industries or regions, the liquidation of excess or bad capital assets did not typically slow economic recoveries.

B. Investment-Driven Recessions

The economic slowdown in the middle of 2000 and the subsequent recession differ from this postwar consumption-driven pattern. Instead of consumption declines and subsequent inventory liquidation, the defining characteristics of this slowdown and recession were the liquidation of widespread overinvestment and malinvestment that had occurred during the stock market bubble. As Federal Reserve Governor Ben S. Bernanke observed:

> Typically, U.S. recessions have featured downturns in household spending, with housing and consumer durables being the most severely affected, and with business spending on capital goods playing a secondary and reactive role. In the recent episode, by contrast, **business fixed investment began to weaken well before the official peak of the business cycle, contracting in real terms from the fourth quarter of 2000 through the third quarter of last year**. (emphasis added) … Meanwhile, completing the role reversal, households maintained their spending remarkably well, particularly on new homes and automobiles.[19]

During the late 1990s, many firms acquired too many capital assets and the wrong capital assets. For example, take the telecommunications industry. Based on overly optimistic demand projections,[20] telecommunications firms borrowed heavily to build new domestic and international fiber-optic networks to carry the anticipated data traffic.[21] Even as telecommunications firms were increasing their investment, their returns were declining. The communications industry, which includes both broadcasting and telecommunications, went from an after-tax profit of $21.6 billion in 1996 to an after-tax loss of $27.9 billion in 2000.[22] The results of this investment splurge, reflecting overinvestment and malinvestment, was explained by one observer:

> The unavoidable by-product has been a mountainous glut: the utilization rate of telecom networks hovers today at a disastrously low 2.5 – 3 percent, that of undersea cable at just 13 percent. …The consequence was an amassing of sunk capital that could not but weigh on the rate of return for the foreseeable future, in the same way as did the railway stock built up during the booms of the 19th century.[23]

Thus, the recent recession was an investment-driven recession rather than a consumption-driven recession. In consumption-driven recessions, higher real interest rates and increasing unemployment cause consumers to curtail their purchases of housing and durable goods. During this recent slowdown and recession, however, consumer spending on housing and durable goods has grown.[24] Instead, business investment has declined during nine of the 10 quarters beginning with the fourth quarter of 2000. Real private non-residential fixed investment fell by 12.7 percent from the third quarter of 2000 to the first quarter of 2003.[25]

C. Results from Investment-Driven Recessions

The repercussions of an investment-driven recession tend to last far longer than those of a consumption-driven recession. Because of the stock market bubble, firms acquired too many capital assets and the wrong types of capital assets. Capital assets have fundamental characteristics such as long economic lives and specific uses. These characteristics make it far more costly and difficult to liquidate excess capital assets than to liquidate excess inventory.

Firms in industries in which widespread overinvestment and malinvestment have occurred may suffer financial stress for several years. Intense price competition may slash the cash flow from operations. Profit margins may remain thin. Firms may suffer from a considerable loss in the value of their capital assets. Financial stress from both the income statement and the balance sheet may impede firms in an affected industry from investing in new products or production technologies.

Again, consider telecommunications. During the second half of the 1990s, telecommunications firms laid so many miles of fiber-optic lines so that the industry-wide capacity to provide telecommunications services greatly exceeded expected near-term demand. Fiber-optic lines are highly specific to the telecommunications industry, and once laid, most of this investment is irreversible. When production capacity is both excessive and specific, there are few potential buyers for such capital assets. Consequently, the market value of these fiber-optic lines have dropped precipitously. To salvage some value from these investments, savage price competition has ensued:

> For example, between London and New York, a basic fiber-optic connection cost $22,000 annually at the start of 2001. The glut has forced the price to about $5,000 [in August 2002].[26]

Overcapacity from overinvestment and malinvestment may prevent telecommunications firms from servicing their excessive debts given the resulting low prices for telecommunications services and force such firms to file for corporate reorganization under U.S. bankruptcy laws. After a bankruptcy judge relieves such firms of a substantial portion of their debts, such firms may be in much stronger position to offer low prices than other telecommunications firms that have not filed for reorganization:

> For a carrier without any debt payments, … the price [of a basic fiber-optic connection between London and New York] may drop close to $2,000 [in the near future].[27]

As a result, a bankruptcy reorganization of a major firm in a capital-intensive industry that suffers from widespread overcapacity may trigger a chain reaction of bankruptcy reorganizations of other firms throughout the affected industry:

> Since December 2000, telecom[munications] companies with a combined net worth of $230 billion have gone bankrupt, and 60 percent of all corporate defaults have come from this sector.[28]

Overinvestment and malinvestment will slash new business investment among firms in an affected industry during the near term. Firms may abandon some malinvested capital assets although other firms may find productive uses for these assets in the future.[29] Moreover, overinvestment and malinvestment in one industry will have serious economic ramifications for all of its suppliers. Telecommunications overcapacity has harmed telecommunications equipment manufacturers as well as semiconductor and related equipment manufacturers.[30]

In fact, as a capital-intensive sector, manufacturing has been especially hard-hit by this investment-driven recession. One reflection of these difficulties in the manufacturing sector is the consecutive monthly declines in factory employment that began after July 2000. These factory job losses account for most of the employment decline of recent years.

Even after an investment-driven recession has ended, its reverberations will linger during the near term. Sober evaluations of new business investments may replace the irrationality that fed overinvestment and malinvestment during the late 1990s. As Federal Reserve Bank of Boston President Cathy E. Minehan observed:

> [F]irms have found that they can get by with much reduced rates of investment. … At the start of the recession, the conventional wisdom was that investment in computers and other technology products would quickly bounce back. It was thought that the rapid depreciation rates of these products would force firms who had been replacing computers and other products almost automatically every two or three years are now giving these expenditures scrutiny. They are spending – actually investment in computers and software edged up at single digit rates in the last three quarters of 2002. But they are also discovering that two-year old

> computers work just fine for many purposes. There has been a change in mindset. In the late 1990s, firms upgraded equipment on regular basis without asking questions; now they look long and hard. [31]

While the overhang of overinvested and malinvested capital assets has been a major factor undermining business investment and economic growth since 2000, terrorism, increased uncertainty, weakness in manufacturing, and the other factors have also affected the economic situation.

D. Policy Responses

Compared to recoveries from consumption-driven recessions, recoveries from investment-driven recessions are likely to be slow. In a March 8, 2001 editorial entitled "What a Peculiar Cycle," *The Economist* predicted that the recovery from the recession, which had just begun, would be slow:

> Larry Summers, who has just retired as America's Treasury Secretary, has recently argued that America's current cycle is fundamentally different from its post-war predecessors – though not because it is "new". He argues that it has more in common with economic cycles as they worked before the second world war … Fueled by credit and optimism about future profits, investment increases and asset prices soar … Eventually, overinvestment reduces the return on capital and firms decide to cut their spending on capital … Optimism gives way to pessimism, and demand falls sharply. In the 19th and early 20th centuries, in fact, this was the typical business-cycle pattern.[32]

Since 2001, U.S. policymakers have responded appropriately to the weakness in business investment and the economy. The Federal Reserve progressively eased monetary policy during 2001 and kept monetary policy accommodative during 2002. Lower interest rates have cushioned the economy by stimulating consumer expenditures for housing and durable goods while business investment has slumped.

Three tax relief acts—the *Economic Growth and Tax Relief Reconciliation Act of 2001* (EGTRRA), the *Job Creation and Worker Assistance Act of 2002* (JCWAA), and the *Jobs and Growth Tax Relief Reconciliation Act of 2003* (JGTRRA) – have been enacted. Many of the major provisions in these acts were designed to reduce the federal tax burden on investing and thereby stimulate business investment. These provisions include:

- **Reductions in marginal individual federal income tax rates**. EGTRRA provided a three-phase reduction of individual federal income tax rates to 10 percent, 15 percent, 25 percent, 31 percent, and 35 percent. JGTRRA accelerated the implementation of phases two and three of EGTRRA's rate reductions retroactively to January 1, 2003.[33]
- **Depreciation bonus**. JGTRRA increased the depreciation bonus for investments in equipment from 30 percent to 50 percent – allowing all businesses to expense one-half of the cost of equipment acquired after May 5, 2003 and before January 1, 2005.[34]
- **Small business expensing**. JGTRRA increased the amount of investment that small businesses can expense (rather than depreciate over time) from $25,000 a year to $100,000 a year.[35]
- **Reduction of the double taxation of dividends**. JGTRRA reduced the maximum individual federal income tax rate on dividends from 38.6 percent to 15 percent.[36]
- **Capital gains relief**. JGTRRA reduced the maximum individual federal income tax rate on capital gains from 20 percent to 15 percent.[37]

Previous Joint Economic Committee (JEC) studies of federal taxation and investment suggest that provisions such as these should boost business investment, provide a much-needed near-term stimulus to the U.S. economy, and help to sustain long-term economic growth. By reducing marginal individual federal income tax rates, creating and expanding a depreciation bonus for all businesses, expanding expensing for small businesses, and lowering tax rates on capital gains and dividends, these acts should reduce the excess burden of federal taxation and improve the incentives for individuals and firms to engage in economically productive behavior.[38]

Reductions in marginal individual federal income tax rates are especially effective in stimulating investment among small- and medium-size firms. Small- and medium-size businesses and farms are likely to be organized as sole proprietorships, partnerships, or S corporations whose income and expenses flow-through to their shareholders for federal income tax purposes. These "flow-through" businesses and farms are significant contributors to the U.S. economy.[39]

Empirical studies have demonstrated that marginal individual income tax rate reductions promote not only consumption and labor force participation but also business investment. Small and medium-size firms (which are generally "flow-through" firms) are more likely to be financing constrained than large firms.[40] For "flow-through" businesses and farms, reducing marginal individual income tax rates improves their cash flow from existing capital assets, which is a critical factor in determining their investment.

IV. CONCLUSION

The economic expansion of the 1990s, the economic slowdown in the second half of 2000, and the subsequent recession were unusual. The buoyant stock market of the 1990s encouraged and facilitated entrepreneurs and firm managers to invest in capital assets. During the second half of the 1990s, optimism became extreme, causing many firms in many firms to invest in too many capital assets and the wrong types of capital assets. After the stock market bubble burst in first quarter of 2000, it became apparent that much of this business investment was overinvestment and malinvestment. The bursting of the stock market bubble caused an economic slowdown in the second half of 2000, culminating with a recession in 2001.

Unlike other postwar recessions, falling business investment rather than declining consumer expenditures on housing and durable goods drove the recent slowdown and recession. Weakness in business investment has been a major drag on economic growth since a recovery began in the fourth quarter of 2001. Overinvestment and malinvestment during the stock market bubble have taken years to liquidate. Fortunately, recent tax legislation signed into law in 2003 should promote business investment by increasing the after-tax returns from investing in capital assets and alleviating financing constraints among small- and medium-size firms.

Robert P. O'Quinn
Senior Economist to the Vice Chairman

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[1] William J. McDonough "Remarks," (speech at the Annual Financial Services Forum of the New York State Bankers Association, New York, N.Y., March 20, 2003). On June 10, 2003, Mr. McDonough retired as President of the Federal Reserve Bank of New York and became Chairman of the Public Company Accounting Oversight Board (PCAOB) at the Securities and Exchange Commission. The PCAOB is a not-for-profit organization created by the Sarbanes-Oxley Act to protect investors in U.S. securities by ensuring that public company financial statements are audited according to the highest standards.

[2] Business investment refers to private non-residential fixed investment in structures and equipment.

[3] Capital or capital assets and investment have related but not identical definitions. Capital or capital assets are the long-term physical assets that firms use to produce goods and services during more than one period. Investment is

change in capital during one period. Thus, capital is a stock variable that is measured at a particular time. Investment is a flow variable that is measured as the change in stocks between two times.

[4] Joseph E. Stiglitz, "The Roaring Nineties," *Atlantic Monthly* (October 2002), found at http://www.theatlantic.com/issues/2002/10/stiglitz.htm.

[5] "What a Peculiar Cycle," *Economist* (March 8, 2001).

[6] National defense outlays fell from $298.3 billion or 4.8 percent of GDP in fiscal year 1992 to $294.5 billion or 3.0 percent of GDP in fiscal year 2000. The unified federal budget swung from a deficit of $290.4 or 4.7 percent of GDP in fiscal year 1992 and a surplus of $236.4 billion or 2.4 percent of GDP in fiscal year 2000.

[7] Average private non-farm business sector labor productivity grew at an annual rate of 2.60 percent from 1995 to 2001 compared to an annual rate of 1.39 percent from 1973 to 1995. Executive Office of the President, Council of Economic Advisers, *Economic Report of the President together with the Annual Report of the Council of Economic Advisers* (Washington, D.C.: U.S. Government Printing Office, February 2002): 58-61.

[8] Bill Clinton, "State of the Union Address," (Before a Joint Session of the Congress, Washington, D.C., January 23, 1996).

[9] Aggregate after-tax corporate profits grew by an average 11.6 percent annually from $260.9 billion or 4.50 percent of GDP in 1990 to a peak of $555.2 billion or 6.67 percent of GDP in 1997. Meanwhile, the combined market capitalization of stocks listed on the NYSE and the NASDAQ grew from 53.5 percent of GDP at the end of the fourth quarter of 1990 to 132.7 percent of GDP at the end of the fourth quarter of 1997. U.S. Department of Commerce, Bureau of Economic Analysis and Haver Analytics.

[10] To accommodate the clamor for its shares, Netscape increased the size of its offering from 3.5 million to 5.0 million shares and raised its share price from $11 to $28. Nevertheless, the demand for Netscape shares was so frantic that its share price more than doubled during its first day of trading to $58.25. Brett D. Fromson, "Netscape Hits Wall St. in Year's Hot Offering, Big Demand for Stock Set Stage for Price Surge," *Washington Post* (August 8, 1995): F-1; and Laurence Zuckerman, "With Internet Cache, Not Profit; A New Stock Is Wall St.'s Darling," *New York Times* (August 10, 1995): A-1.

[11] Alan Greenspan, "The Challenge of Central Banking in a Democratic Society," (speech at the Annual Dinner and Francis Boyer Lecture of The American Enterprise Institute for Public Policy Research, Washington, D.C., December 5, 1996).

[12] Aggregate after-tax corporate profits fell from $555.2 billion or 6.67 percent of GDP in 1997 to $523.0 billion or 5.32 percent of GDP in 2000. U.S. Department of Commerce, Bureau of Economic Analysis.

[13] Executive Office of the President, Council of Economic Advisers, *Economic Report of the President together with the Annual Report of the Council of Economic Advisers* (Washington, D.C.: U.S. Government Printing Office, February 1998), 62.

[14] Bill Clinton, interview with Rick Dunham, *Business Week* (June 29, 1999).

[15] Jeremy J. Siegel, *Stocks for the Long Run: The Definitive Guide to Financial Market Returns and Long-Term Investment Strategies* (1994; 3rd ed., New York: McGraw-Hill, 2002), 148-150.

[16] *Ibid*.

[17] Calculations based on monthly average.

[18] In November 2001, the Business Cycle Dating Committee of the National Bureau of Economic Research proclaimed that a recession had begun in March 2001.

[19] Ben S. Bernanke, "Will Business Investment Bounce Back?" (Speech before the Forecasters Club, New York, NY, April 24, 2003).

[20] "Between 1997 and 2001…it was accepted wisdom in the telecom[munications] industry that data traffic was doubling every three to four months. But in reality, [Scott] Cleland[, chief executive officer of the Precursor Group, a telecommunications investment research firm] said, data traffic has been growing about 100 percent to 200 percent

a year since 1997." Joelle Tessler, "Fiber Glut Rocks Telecoms; Billions in Fiber-Optic Lines Built to Carry Internet Traffic Go Unused after the Dot.Com Bust," *Akron Beacon Journal* (May 5, 2002): B-1.

[21] "Between 1996 and 2000, [telecommunications firms] took on $800 billion in bank debt and issued $450 billion in bonds. … In 2000, no fewer than six U.S. companies were building new, mutually competitive, nationwide fiber-optic networks. Hundreds more were laying down local lines and several were also competing on sub-oceanic links. All told, 39 million miles of fiber-optic line now crisscross the United States… Robert Brenner, "Towards the Precipice," *London Review of Books* (February 6, 2003).

[22] U.S. Department of Commerce, Bureau of Economic Analysis.

[23] Brenner.

[24] Real personal consumption expenditures on durable goods rose by 13.2 percent from an annualized $888.5 billion (1996 dollars) in the third quarter of 2000 to $1.006 trillion (1996 dollars) in first quarter of 2003. New single-family residence sales rose by 11.7 percent from an annualized 882,000 residences in third quarter of 2000 to an annualized 985,000 residences in the first quarter of 2003. U.S. Department of Commerce, Bureau of Economic Analysis.

[25] Real private nonresidential fixed investment fell from an annualized high of $1.341 trillion (1996 dollars) in the third quarter of 2000 to an annualized $1.171 trillion (1996 dollars) in the first quarter of 2003. U.S. Department of Commerce, Bureau of Economic Analysis.

[26] *Wall Street Journal* staff, "Bankruptcies May Prolong Telecom Glut," *Tulsa World* (August 16, 2002): E-8.

[27] *Ibid*.

[28] Brenner.

[29] Andrew Carnegie and William Vanderbilt began building the South Pennsylvania railway in 1884. Although about one-third of the construction had been completed, Carnegie and Vanderbilt abandoned this project in 1885. The abandoned grading and tunnels were used in building the Pennsylvania Turnpike from 1938 to 1940.

[30] While overall capacity utilization rate for all U.S. manufacturers slipped from 81.5 percent in 2000 to 73.8 percent in 2002, the capacity utilization rate for U.S. telecommunications equipment manufacturers plummeted from 86.1 percent in 2000 to 53.4 percent in 2002. Likewise, the capacity utilization rate for U.S. semiconductor and related equipment manufacturers dropped from 95.0 percent in 2000 to 64.6 percent in 2002. Board of Governors of the Federal Reserve System, *Statistical Release G.17: Industrial Production and Capacity Utilization*.

[31] Cathy E. Minehan, "Remarks," (speech before the Technology Outlook Conference of the Associated Industries of Massachusetts and the Associated General Contractors of Boston, Boston, Massachusetts, March 31, 2003).

[32] "What a Peculiar Cycle," *Economist* (March 8, 2001).

[33] EGTRRA lowered individual federal income tax rates from 15 percent, 28 percent, 31 percent, 36 percent and 39.6 percent in 2000 to 10 percent, 15 percent, 27 percent, 30 percent, 35 percent, and 38.6 percent effective January 1, 2001; to 10 percent, 15 percent, 26 percent, 34 percent, and 37.6 percent effective January 1, 2004; and to 10 percent, 15 percent, 25 percent, 33 percent, and 35 percent effective January 1, 2006. EGTRRA raised the threshold for the 15 percent bracket from $6,000 for single filers, $10,000 for head of household filers, and $12,000 for joint filers to $7,000, $10,000, and $14,000, respectively, effective January 1, 2008, and indexed the threshold thereafter. In addition to accelerating the second and third phases of the rate reduction, JGTRRA also implemented the increase in the threshold for the 15 percent bracket retroactively to January 1, 2003, but this increase in the threshold will sunset on December 31, 2004.

[34] JCWAA allowed all businesses to take a first-year depreciation bonus of 30 percent for investments in equipment placed in service after September 10, 2001 and before September 12, 2004. JGTRRA increased the depreciation bonus from 30 percent to 50 percent for equipment placed into service after May 5, 2003, and extended the bonus through December 31, 2004.

[35] JGTRRA increased the maximum amount of investment that small businesses may expense under section 179 from increased from $25,000 to $100,000 for property placed into service in taxable years 2003 through 2005 and indexed this amount for inflation.

[36] JGTRRA reduced individual federal income tax rate applied to dividends from a maximum of 38.6 percent to 15 percent (or 5 percent for taxpayers in the 10 or 15 percent brackets) for dividends received on or after January 1, 2003, and before January 1, 2008. For dividends received or after January 1, 2008 but before January 1, 2009, the tax rate applied to dividends will be 15 percent (or 0 percent for taxpayers in the 10 or 15 percent brackets).

[37] JGTRRA reduced individual federal income tax rate applied to capital gains from a maximum of 20 percent (or 10 percent for taxpayers in the 10 or 15 percent brackets) to 15 percent (or 5 percent for taxpayers in the 10 or 15 percent brackets) for sales and exchanges on or after May 6, 2003, and before January 1, 2008. For sales and exchanges on or after January 1, 2008 but before January 1, 2009, the tax rate applied to capital gains will be 15 percent (or 0 percent for taxpayers in the 10 or 15 percent brackets).

[38] See James D. Gwartney and Randall G. Holcombe, *Optimal Capital Gains Tax Policy: Lessons from the 1970s, 1980s, and 1990s,* prepared for the Joint Economic Committee, 106th Cong., 1st sess., June 1997; Robert P. O'Quinn, *Federal Individual Income Taxes and Investment: Examining the Empirical Evidence,* prepared for the Joint Economic Committee, 107th Cong., 2nd sess., June 2002; Robert P. O'Quinn, *Federal Tax Policy, Near-Term Stimulus, and Long-Term Economic Growth*, prepared for the Joint Economic Committee, 108th Cong., 1st sess., March 2003; and Richard K. Vedder and Lowell E. Gallaway, *Tax Reduction and Economic Welfare,* prepared for the Joint Economic Committee, 106th Cong., 1st sess., April 1999.

[39] In tax year 1998, there were 17.4 million sole proprietorships, 1.9 million partnerships, and 2.6 million subchapter S corporations compared to 2.2 million corporate tax filings. These "flow-through" firms accounted for 28.1 percent of reported business receipts and 41.9 percent of reported net income. Author's calculations from IRS *Statistics of Income Bulletin* data for tax year 1988.

[40] See Robert Carroll, Douglas Holtz-Eakin, Mark Rider, and Harvey S. Rosen, "Entrepreneurs, Income Taxes, and Investment," in *Does Atlas Shrug?* ed. Joel Slemrod (Cambridge, Massachusetts: Harvard University Press, 2000): 427-455; and Steven M. Fazzari, R. Glenn Hubbard, and Bruce C. Petersen, "Financing Constraints and Corporate Investment," in *Brooking Papers on Economic Activity 1,* ed. William C. Brainard and George L. Perry (Washington, D.C.: Brookings Institution, 1988): 141-204.

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