

Page 11: **Implied One-Year Forward Rates** are calculated by this Bank from Treasury constant maturity yields. Yields to maturity,  $R(m)$ , for securities with  $m = 1, \dots, 10$  years to maturity are obtained by linear interpolation between reported yields. These yields are smoothed by fitting the regression suggested by Nelson and Siegel (1987),

$$R(m) = a_0 + (a_1 + a_2)(1 - e^{-m/50})/(m/50) - a_2 \times e^{-m/50},$$

and forward rates are calculated from these smoothed yields using equation (a) in table 13.1 of Shiller (1990),

$$f(m) = [D(m)R(m) - D(m-1)] / [D(m) - D(m-1)],$$

where duration is approximated as  $D(m) = (1 - e^{-R(m) \times m})/R(m)$ . These rates are linear approximations to the true instantaneous forward rates; see Shiller (1990). For a discussion of the use of forward rates as indicators of inflation expectations, see Sharpe (1997). **Rates on 3-Month Eurodollar Futures and Rates on Selected Federal Funds Futures Contracts** trace through time the yield on three specific contracts. **Rates on Federal Funds Futures on Selected Dates** displays a single day's snapshot of yields for contracts expiring in the months shown on the horizontal axis. **Inflation-Indexed Treasury Securities and Yield Spreads** are those plotted on page 3. **Inflation-Indexed 10-Year Government Notes** shows the yield of an inflation-indexed note that is scheduled to mature in approximately (but not greater than) 10 years. The current French note has a maturity date of 7/25/2015, the current U.K. note has a maturity date of 8/16/2013, and the current U.S. note has a maturity date of 7/15/2016. **Inflation-Indexed Treasury Yield Spreads and Inflation-Indexed 10-Year Government Yield Spreads** equal the difference between the yields on the most recently issued inflation-indexed securities and the unadjusted security yields of similar maturity.

Page 12: **Velocity** (for MZM and M2) equals the ratio of GDP, measured in current dollars, to the level of the monetary aggregate. **MZM and M2 Own Rates** are weighted averages of the rates received by households and firms on the assets included in the aggregates. Prior to 1982, the 3-month T-bill rates are secondary market yields. From 1982 forward, rates are 3-month constant maturity yields.

Page 13: **Real Gross Domestic Product** is GDP as measured in chained 2000 dollars. The **Gross Domestic Product Price Index** is the implicit price deflator for GDP, which is defined by the Bureau of Economic Analysis, U.S. Department of Commerce, as the ratio of GDP measured in current dollars to GDP measured in chained 2000 dollars.

Page 14: **Investment Securities** are all securities held by commercial banks in both investment and trading accounts.

Page 15: **Inflation Rate Differentials** are the differences between the foreign consumer price inflation rates and year-over-year changes in the U.S. all-items Consumer Price Index.

Page 17: **Treasury Yields** are Treasury constant maturities as reported in the Board of Governors of the Federal Reserve System's H.15 release.

## Sources

Agence France Trésor: French note yields.

Bank of Canada: Canadian note yields.

Bank of England: U.K. note yields.

Board of Governors of the Federal Reserve System:

Monetary aggregates and components: H.6 release. Bank credit and components: H.8 release. Consumer credit: G.19 release. Required reserves, excess reserves, clearing balance contracts, and discount window borrowing: H.4.1 and H.3 releases. Interest rates: H.15 release. Nonfinancial commercial paper: Board of Governors website. Nonfinancial debt: Z.1 release. M2 own rate.

Bureau of Economic Analysis: GDP.

Bureau of Labor Statistics: CPI.

Chicago Board of Trade: Federal funds futures contract.

Chicago Mercantile Exchange: Eurodollar futures.

Congressional Budget Office: Potential real GDP.

Federal Reserve Bank of Philadelphia: Survey of Professional Forecasters inflation expectations.

Federal Reserve Bank of St. Louis: Adjusted monetary base and adjusted reserves, monetary services index, MZM own rate, one-year forward rates.

Organization for Economic Cooperation and Development: International interest and inflation rates.

Standard & Poor's: Stock price-earnings ratio, stock price composite index.

University of Michigan Survey Research Center: Median expected price change.

U.S. Department of the Treasury: U.S. security yields.

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Taylor, John B. (1993). "Discretion versus Policy Rules in Practice." *Carnegie-Rochester Conference Series on Public Policy*, vol. 39, pp. 195-214.

**Note:** \*Available on the Internet at [research.stlouisfed.org/publications/review/](http://research.stlouisfed.org/publications/review/).

# Milton Friedman on Inflation

The death of Milton Friedman on November 16, 2006, led Federal Reserve Chairman Ben Bernanke to remark that the "direct and indirect influences of his thinking on contemporary monetary economics would be difficult to overstate" and President Bush to note that "his writings laid the groundwork that transformed many of the world's central banks." Undoubtedly a major factor underpinning these assessments is the overwhelming influence that Friedman's work has had on the way that economists and policymakers look at inflation.

As Friedman emphasized, "Inflation is an old, old disease. We've had thousands of years of experience of it. There is nothing simpler than stopping an inflation—from the technical point of view."<sup>1</sup>

That remedy took a specific form: "The only cure for inflation is to reduce the rate at which total spending is growing." This cure involved a temporary side effect, as Friedman noted: "There is no way of slowing down inflation that will not involve a transitory increase in unemployment, and a transitory reduction in the rate of growth of output. But these costs will be far less than the costs that will be incurred by permitting the disease of inflation to rage unchecked."

On the issue of how economic policy should manage total spending, Friedman led the profession away from the weight it gave to fiscal policy. His work was important in forming the consensus that monetary actions have more sizable and reliable effects on aggregate spending than fiscal actions. In fact, Friedman offered the judgment, "I don't think monetary policy has to be backed up by fiscal policy at all. I think monetary policy can curb inflation." His reasoning behind this was straightforward: "A budget deficit is inflationary if, and only if, it is financed in considerable part by printing money"—that is, only if fiscal actions are accommodated by the monetary authorities. In light of the importance of monetary policy for aggregate spending behavior, and of total spending for inflation, Friedman stated the policy implication: "[M]onetary policy is an appropriate and proper tool [when] directed at achieving price stability or a desired rate of price change." This principle underlies the monetary policy framework of major economies today.

Friedman was particularly scathing about "cost-push" theories, prevalent in the 1960s and 1970s, that attributed high inflation to autonomous increases in costs rather than to excess demand. As he observed, "To each businessman separately it looks as if he has to raise prices because costs have gone up. But then, we must ask, 'Why did his costs go up? Why is it that [for example] from 1960 to 1964 he didn't find that he had to pay so much more for labor he had to raise prices, but that suddenly from 1964 to 1969 he did?' The answer is, because, in the second period, total demand all over was increasing." Friedman's monetary view of the inflation process led him to dismiss "incomes policy"—i.e., direct controls on wages and prices—as an alternative or supplement to monetary policy in fighting inflation. Asked in 1974, "Do you think an incomes policy is an essential adjunct of a strict monetary policy?" Friedman replied simply, "Not at all." Consistent with this judgment, many countries that once assigned an important role to incomes policy now rely on monetary policy to control inflation.

Policymakers in the 1970s saw that inflation was costly, but failed to grasp that to get inflation under control, they needed to use monetary policy, and *only* needed to use monetary policy. The fact that today's policymakers do understand this reflects the profound impact of Milton Friedman on monetary economics.

—Edward Nelson

<sup>1</sup> A list of sources for the quotations from Friedman used here is available at <http://research.stlouisfed.org/econ/nelson/index.html>.

Views expressed do not necessarily reflect official positions of the Federal Reserve System.

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## Conventions used in this publication:

1. Unless otherwise indicated, data are monthly.
2. Shaded areas indicate recessions, as determined by the National Bureau of Economic Research.
3. *Percent change at an annual rate* is the simple, not compounded, monthly percent change multiplied by 12. For example, using consecutive months, the percent change at an annual rate in  $x$  between month  $t-1$  and the current month  $t$  is:  $[(x_t/x_{t-1})-1] \times 1200$ . Note that this differs from *National Economic Trends*. In that publication, monthly percent changes are compounded and expressed as annual growth rates.
4. The *percent change from year ago* refers to the percent change from the same period in the previous year. For example, the percent change from year ago in  $x$  between month  $t-12$  and the current month  $t$  is:  $[(x_t/x_{t-12})-1] \times 100$ .

We welcome your comments addressed to:

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On March 23, 2006, the Board of Governors of the Federal Reserve System ceased the publication of the M3 monetary aggregate. It also ceased publishing the following components: large-denomination time deposits, RPs, and eurodollars.

or to:

stlsFRED@stls.frb.org

## Definitions

**M1:** The sum of currency held outside the vaults of depository institutions, Federal Reserve Banks, and the U.S. Treasury; travelers checks; and demand and other checkable deposits issued by financial institutions (except demand deposits due to the Treasury and depository institutions), minus cash items in process of collection and Federal Reserve float.

**MZM (money, zero maturity):** M2 minus small-denomination time deposits, plus institutional money market mutual funds (that is, those included in M3 but excluded from M2). The label MZM was coined by William Poole (1991); the aggregate itself was proposed earlier by Motley (1988).

**M2:** M1 plus savings deposits (including money market deposit accounts) and small-denomination (under \$100,000) time deposits issued by financial institutions; and shares in retail money market mutual funds (funds with initial investments under \$50,000), net of retirement accounts.

**M3:** M2 plus large-denomination (\$100,000 or more) time deposits; repurchase agreements issued by depository institutions; Eurodollar deposits, specifically, dollar-denominated deposits due to nonbank U.S. addresses held at foreign offices of U.S. banks worldwide and all banking offices in Canada and the United Kingdom; and institutional money market mutual funds (funds with initial investments of \$50,000 or more).

**Bank Credit:** All loans, leases, and securities held by commercial banks.

**Domestic Nonfinancial Debt:** Total credit market liabilities of the U.S. Treasury, federally sponsored agencies, state and local governments, households, and nonfinancial firms. End-of-period basis.

**Adjusted Monetary Base:** The sum of currency in circulation outside Federal Reserve Banks and the U.S. Treasury, deposits of depository financial institutions at Federal Reserve Banks, and an adjustment for the effects of changes in statutory reserve requirements on the quantity of base money held by depositories. This series is a spliced chain index; see Anderson and Rasche (1996a,b, 2001, 2003).

**Adjusted Reserves:** The sum of vault cash and Federal Reserve Bank deposits held by depository institutions and an adjustment for the effects of changes in statutory reserve requirements on the quantity of base money held by depositories. This spliced chain index is numerically larger than the Board of Governors' measure, which excludes vault cash not used to satisfy statutory reserve requirements and Federal Reserve Bank deposits used to satisfy required clearing balance contracts; see Anderson and Rasche (1996a, 2001, 2003).

**Monetary Services Index:** An index that measures the flow of monetary services received by households and firms from their holdings of liquid assets; see Anderson, Jones, and Nesmith (1997). Indexes are shown for the assets included in M2, with additional data at [research.stlouisfed.org/msi/index.html](http://research.stlouisfed.org/msi/index.html).

**Note:** M1, M2, M3, Bank Credit, and Domestic Nonfinancial Debt are constructed and published by the Board of Governors of the Federal Reserve System. For details, see *Statistical Supplement to the Federal Reserve Bulletin*, tables 1.21 and 1.26. MZM, Adjusted Monetary Base, Adjusted Reserves, and Monetary Services Index are constructed and published by the Research Division of the Federal Reserve Bank of St. Louis.

## Notes

**Page 3:** Readers are cautioned that, since early 1994, the level and growth of M1 have been depressed by retail sweep programs that reclassify transactions deposits (demand deposits and other checkable deposits) as savings deposits overnight, thereby reducing banks' required reserves; see Anderson and Rasche (2001) and [research.stlouisfed.org/aggreg/swdata.html](http://research.stlouisfed.org/aggreg/swdata.html). **Primary Credit Rate, Discount Rate, and Intended Federal Funds Rate** shown in the chart **Reserve Market Rates** are plotted as of the date of the change, while the **Effective Federal Funds Rate** is plotted as of the end of the month. Interest rates in the table are monthly averages from the Board of Governors H.15 Statistical Release. The **Treasury Yield Curve** and **Real Treasury Yield Curve** show constant maturity yields calculated by the U.S. Treasury for securities 5, 7, 10, and 20 years to maturity. **Inflation-Indexed Treasury Yield Spreads** are a

measure of inflation compensation at those horizons, and it is simply the nominal constant maturity yield less the real constant maturity yield. Daily data and descriptions are available at [research.stlouisfed.org/fred2/](http://research.stlouisfed.org/fred2/). See also *Statistical Supplement to the Federal Reserve Bulletin*, table 1.35. The 30-year constant maturity series was discontinued by the Treasury as of February 18, 2002.

**Page 5:** **Checkable Deposits** is the sum of demand and other checkable deposits. **Savings Deposits** is the sum of money market deposit accounts and passbook and statement savings. **Time Deposits** have a minimum initial maturity of 7 days. **Large Time Deposits** are deposits of \$100,000 or more. **Retail and Institutional Money Market Mutual Funds** are as included in M2 and the non-M2 component of M3, respectively.

**Page 7:** **Excess Reserves plus RCB (Required Clearing Balance) Contracts** equals the amount of deposits at Federal Reserve Banks held by depository institutions but not applied to satisfy statutory reserve requirements. (This measure excludes the vault cash held by depository institutions that is not applied to satisfy statutory reserve requirements.) **Consumer Credit** includes most short- and intermediate-term credit extended to individuals. See *Statistical Supplement to the Federal Reserve Bulletin*, table 1.55.

**Page 8:** **Inflation Expectations** measures include the quarterly Federal Reserve Bank of Philadelphia *Survey of Professional Forecasters*, the monthly University of Michigan Survey Research Center's *Surveys of Consumers*, and the annual Federal Open Market Committee (FOMC) range as reported to the Congress in the February testimony that accompanies the Monetary Policy Report to the Congress. Beginning February 2000, the FOMC began using the personal consumption expenditures (PCE) price index to report its inflation range; the FOMC then switched to the PCE chain-type price index excluding food and energy prices ("core") beginning July 2004. Accordingly, neither are shown on this graph. **CPI Inflation** is the percentage change from a year ago in the consumer price index for all urban consumers. **Real Interest Rates** are ex post measures, equal to nominal rates minus year-over-year CPI inflation.

**Page 9:** **FOMC Intended Federal Funds Rate** is the level (or midpoint of the range, if applicable) of the federal funds rate that the staff of the FOMC expected to be consistent with the desired degree of pressure on bank reserve positions. In recent years, the FOMC has set an explicit target for the federal funds rate.

**Page 10:** **Federal Funds Rate and Inflation Targets** shows the observed federal funds rate, quarterly, and the level of the funds rate implied by applying Taylor's (1993) equation

$$f_t^* = 2.5 + \pi_{t-1} + (\pi_{t-1} - \pi^*)/2 + 100 \times (y_{t-1} - y_{t-1}^P)/2$$

to five alternative target inflation rates,  $\pi^* = 0, 1, 2, 3, 4$  percent, where  $f_t^*$  is the implied federal funds rate,  $\pi_{t-1}$  is the previous period's inflation rate (PCE) measured on a year-over-year basis,  $y_{t-1}$  is the log of the previous period's level of real gross domestic product (GDP), and  $y_{t-1}^P$  is the log of an estimate of the previous period's level of potential output. **Potential Real GDP** is as estimated by the Congressional Budget Office.

**Monetary Base Growth and Inflation Targets** shows the quarterly growth of the adjusted monetary base (modified to include an estimate of the effect of sweep programs) implied by applying McCallum's (1988, 1993) equation

$$\Delta MB_t^* = \pi^* + (10\text{-year moving average growth of real GDP}) - (4\text{-year moving average of base velocity growth})$$

to five alternative target inflation rates,  $\pi^* = 0, 1, 2, 3, 4$  percent, where  $\Delta MB_t^*$  is the implied growth rate of the adjusted monetary base. The 10-year moving average growth of real GDP for a quarter  $t$  is calculated as the average quarterly growth during the previous 40 quarters, at an annual rate, by the formula  $((y_t - y_{t-40})/40) \times 400$ , where  $y_t$  is the log of real GDP. The 4-year moving average of base velocity growth is calculated similarly. To adjust the monetary base for the effect of retail-deposit sweep programs, we add to the monetary base an amount equal to 10 percent of the total amount swept, as estimated by the Federal Reserve Board staff. These estimates are imprecise, at best. Sweep program data are found at [research.stlouisfed.org/aggreg/swdata.html](http://research.stlouisfed.org/aggreg/swdata.html).

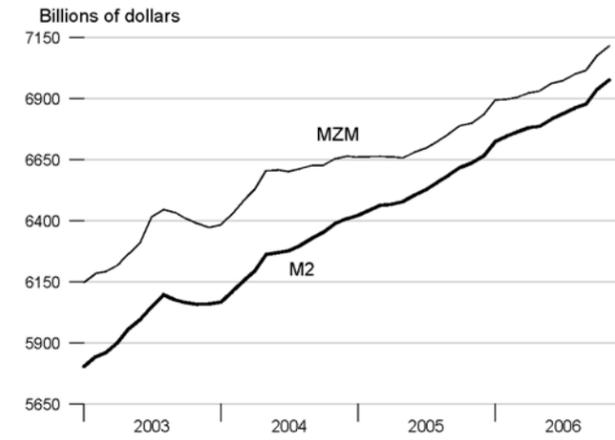
|                                  |  | M1   | M2M   | M2   | M3*   |
|----------------------------------|--|------|-------|------|-------|
| Percent change at an annual rate |  |      |       |      |       |
| 2001                             |  | 3.33 | 15.79 | 8.70 | 11.49 |
| 2002                             |  | 4.91 | 12.76 | 7.37 | 7.98  |
| 2003                             |  | 6.46 | 7.41  | 6.99 | 6.40  |
| 2004                             |  | 5.57 | 4.01  | 4.67 | 5.09  |
| 2005                             |  | 1.98 | 2.24  | 4.34 | 5.97  |

|      |   |       |      |      |      |
|------|---|-------|------|------|------|
| 2004 | 1 | 5.81  | 2.63 | 3.35 | 5.43 |
|      | 2 | 6.01  | 9.32 | 8.60 | 9.74 |
|      | 3 | 4.34  | 2.02 | 3.83 | 4.04 |
|      | 4 | 4.92  | 2.07 | 5.14 | 3.42 |
| 2005 | 1 | 0.04  | 0.81 | 3.75 | 5.63 |
|      | 2 | 0.03  | 0.29 | 2.55 | 5.98 |
|      | 3 | 1.04  | 3.59 | 4.56 | 7.81 |
|      | 4 | -0.06 | 4.82 | 5.02 | 9.29 |
| 2006 | 1 | 2.20  | 5.35 | 6.30 |      |
|      | 2 | 0.92  | 2.36 | 3.00 |      |
|      | 3 | -4.71 | 3.29 | 3.78 |      |

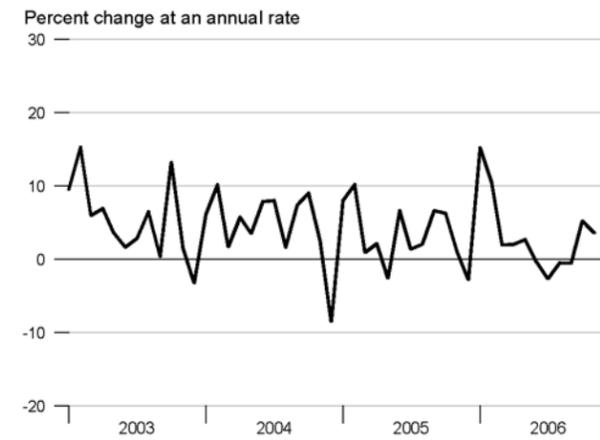
|      |     |        |       |       |       |
|------|-----|--------|-------|-------|-------|
| 2004 | Nov | 11.84  | 4.78  | 6.76  | 4.58  |
|      | Dec | -1.77  | 1.92  | 3.56  | 4.84  |
| 2005 | Jan | -5.55  | -0.69 | 2.68  | 6.90  |
|      | Feb | 2.86   | 0.17  | 4.01  | 5.61  |
|      | Mar | 3.09   | 0.38  | 3.70  | 4.25  |
|      | Apr | -8.09  | -0.28 | 0.82  | 6.97  |
|      | May | 6.15   | -0.80 | 2.06  | 5.50  |
|      | Jun | 3.38   | 4.14  | 4.95  | 7.48  |
| 2006 | Jul | -4.28  | 2.96  | 4.01  | 4.58  |
|      | Aug | 6.62   | 5.05  | 5.72  | 12.56 |
|      | Sep | -3.86  | 5.75  | 5.46  | 10.48 |
| 2006 | Oct | 1.65   | 5.79  | 5.53  | 9.79  |
|      | Nov | 0.72   | 1.80  | 3.49  | 5.57  |
| 2006 | Dec | -5.75  | 5.77  | 4.80  | 8.99  |
|      | Jan | 10.34  | 10.69 | 10.80 | 10.49 |
| 2006 | Feb | -4.10  | 0.67  | 3.97  | 6.55  |
|      | Mar | 7.88   | 1.31  | 2.97  |       |
| 2006 | Apr | 1.77   | 3.26  | 3.24  |       |
|      | May | 5.56   | 1.48  | 1.04  |       |
| 2006 | Jun | -19.60 | 5.20  | 5.22  |       |
|      | Jul | 2.69   | 1.96  | 3.74  |       |
| 2006 | Aug | -2.81  | 4.40  | 4.15  |       |
|      | Sep | -10.99 | 2.95  | 2.89  |       |
| 2006 | Oct | 10.19  | 10.45 | 10.50 |       |
|      | Nov | -1.00  | 6.40  | 6.54  |       |

\*See table of contents for changes to the series.

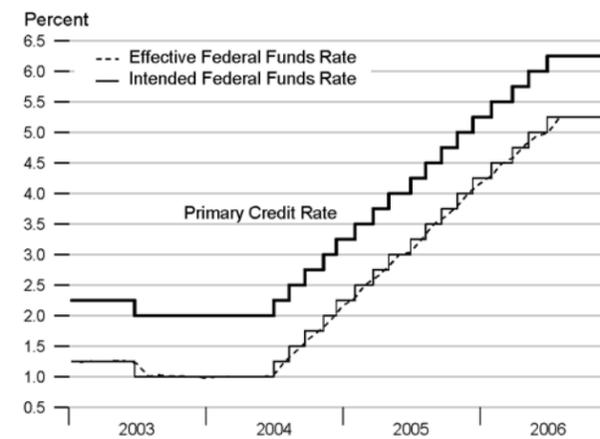
M2 and M2M



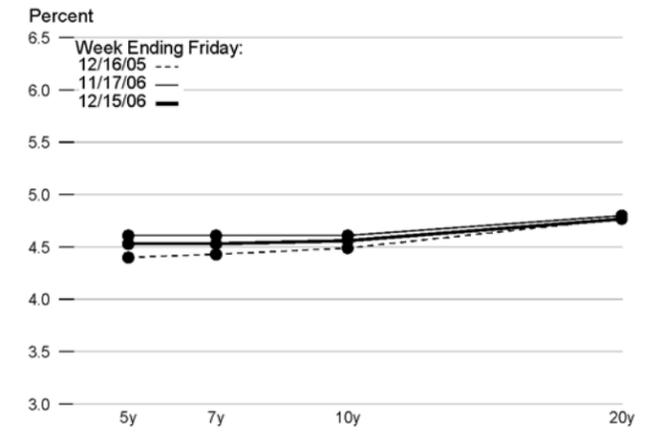
Adjusted Monetary Base



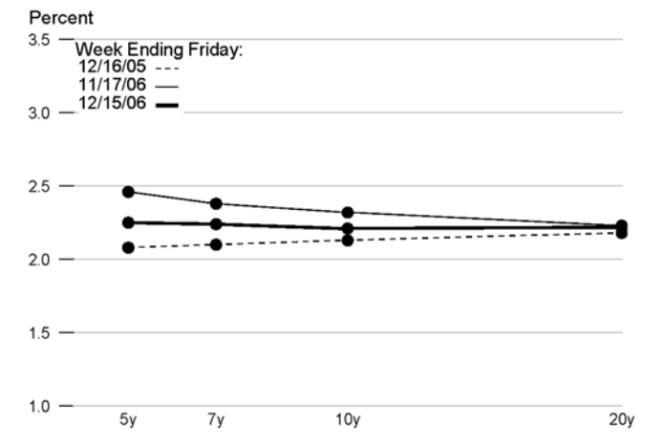
Reserve Market Rates



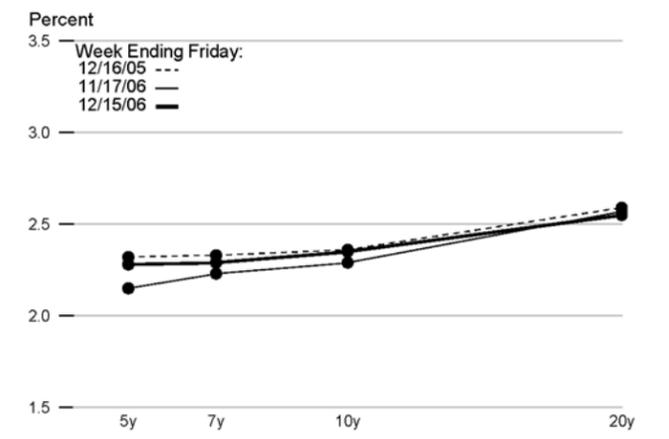
Treasury Yield Curve



Real Treasury Yield Curve

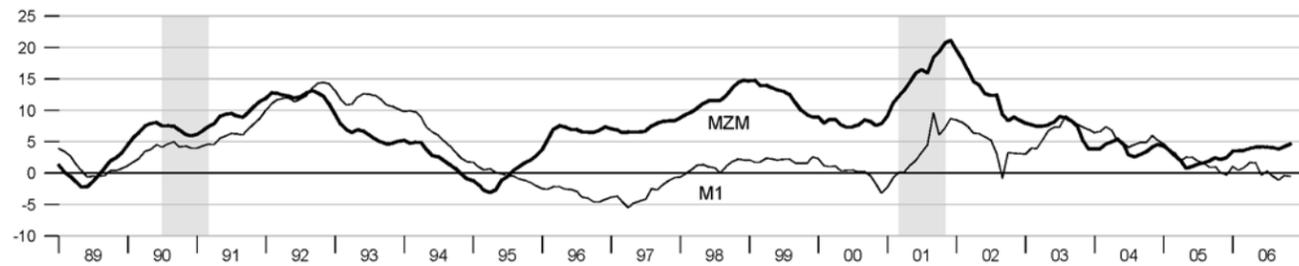


Inflation-Indexed Treasury Yield Spreads



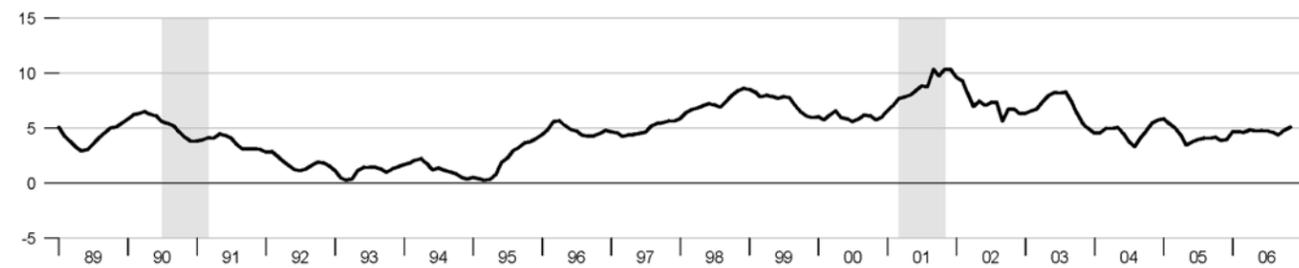
**MZM and M1**

Percent change from year ago



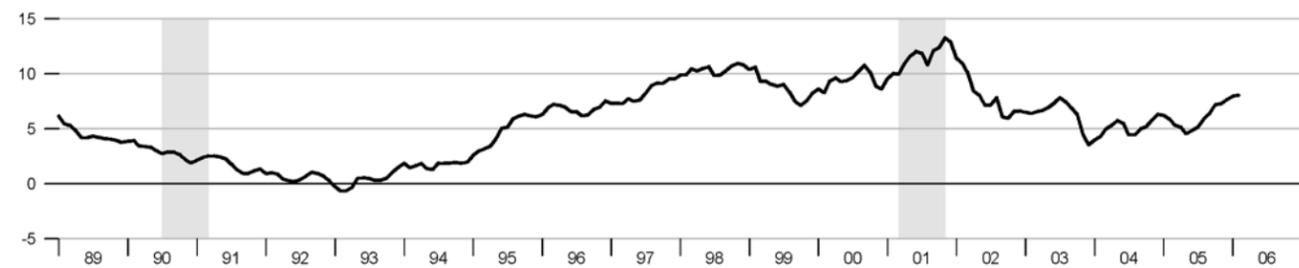
**M2**

Percent change from year ago



**M3\***

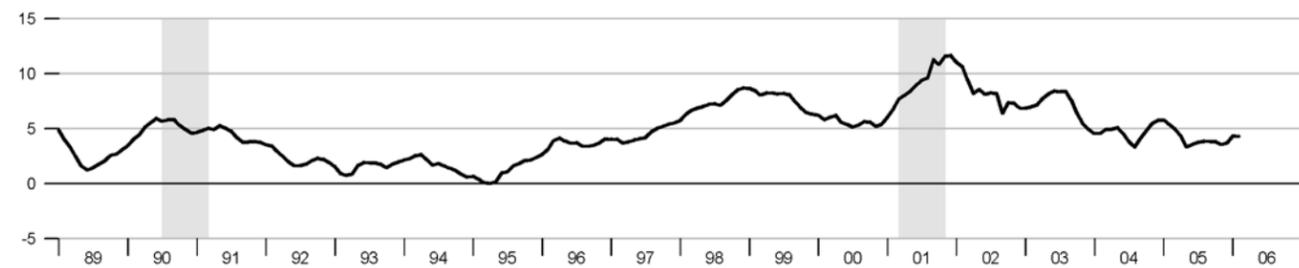
Percent change from year ago



\*See table of contents for changes to the series.

**Monetary Services Index - M2\*\***

Percent change from year ago



\*\*We will not update the MSI series until we revise the code to accommodate the discontinuation of M3.

|      |     | Federal Funds | Primary Credit Rate | Prime Rate | 3-mo CDs | Treasury Yields |      |       | Corporate Aaa Bonds | S & L Aaa Bonds | Conventional Mortgage |
|------|-----|---------------|---------------------|------------|----------|-----------------|------|-------|---------------------|-----------------|-----------------------|
|      |     |               |                     |            |          | 3-mo            | 3-yr | 10-yr |                     |                 |                       |
| 2001 |     | 3.89          |                     | 6.92       | 3.69     | 3.47            | 4.08 | 5.02  | 7.08                | 5.01            | 6.97                  |
| 2002 |     | 1.67          |                     | 4.68       | 1.73     | 1.63            | 3.10 | 4.61  | 6.49                | 4.87            | 6.54                  |
| 2003 |     | 1.13          | 2.11                | 4.12       | 1.15     | 1.03            | 2.11 | 4.02  | 5.67                | 4.52            | 5.82                  |
| 2004 |     | 1.35          | 2.34                | 4.34       | 1.56     | 1.40            | 2.78 | 4.27  | 5.63                | 4.50            | 5.84                  |
| 2005 |     | 3.21          | 4.19                | 6.19       | 3.51     | 3.21            | 3.93 | 4.29  | 5.23                | 4.28            | 5.86                  |
| 2004 | 1   | 1.00          | 2.00                | 4.00       | 1.05     | 0.93            | 2.17 | 4.02  | 5.45                | 4.26            | 5.61                  |
|      | 2   | 1.01          | 2.00                | 4.00       | 1.25     | 1.10            | 2.98 | 4.60  | 5.93                | 4.82            | 6.13                  |
|      | 3   | 1.43          | 2.42                | 4.42       | 1.70     | 1.51            | 2.92 | 4.30  | 5.64                | 4.54            | 5.89                  |
|      | 4   | 1.95          | 2.94                | 4.94       | 2.25     | 2.04            | 3.05 | 4.17  | 5.48                | 4.39            | 5.73                  |
| 2005 | 1   | 2.47          | 3.44                | 5.44       | 2.78     | 2.58            | 3.61 | 4.30  | 5.32                | 4.23            | 5.76                  |
|      | 2   | 2.94          | 3.91                | 5.91       | 3.23     | 2.93            | 3.73 | 4.16  | 5.15                | 4.15            | 5.72                  |
|      | 3   | 3.46          | 4.43                | 6.43       | 3.74     | 3.43            | 3.98 | 4.21  | 5.09                | 4.28            | 5.76                  |
|      | 4   | 3.98          | 4.97                | 6.97       | 4.30     | 3.91            | 4.37 | 4.49  | 5.38                | 4.45            | 6.22                  |
| 2006 | 1   | 4.46          | 5.43                | 7.43       | 4.72     | 4.50            | 4.58 | 4.57  | 5.39                | 4.29            | 6.24                  |
|      | 2   | 4.91          | 5.90                | 7.90       | 5.18     | 4.83            | 4.98 | 5.07  | 5.89                | 4.36            | 6.60                  |
|      | 3   | 5.25          | 6.25                | 8.25       | 5.39     | 5.03            | 4.87 | 4.90  | 5.68                | 4.13            | 6.56                  |
| 2004 | Nov | 1.93          | 2.93                | 4.93       | 2.26     | 2.11            | 3.09 | 4.19  | 5.52                | 4.45            | 5.73                  |
|      | Dec | 2.16          | 3.15                | 5.15       | 2.45     | 2.22            | 3.21 | 4.23  | 5.47                | 4.35            | 5.75                  |
| 2005 | Jan | 2.28          | 3.25                | 5.25       | 2.61     | 2.37            | 3.39 | 4.22  | 5.36                | 4.24            | 5.71                  |
|      | Feb | 2.50          | 3.49                | 5.49       | 2.77     | 2.58            | 3.54 | 4.17  | 5.20                | 4.16            | 5.63                  |
|      | Mar | 2.63          | 3.58                | 5.58       | 2.97     | 2.80            | 3.91 | 4.50  | 5.40                | 4.29            | 5.93                  |
|      | Apr | 2.79          | 3.75                | 5.75       | 3.09     | 2.84            | 3.79 | 4.34  | 5.33                | 4.18            | 5.86                  |
|      | May | 3.00          | 3.98                | 5.98       | 3.22     | 2.90            | 3.72 | 4.14  | 5.15                | 4.20            | 5.72                  |
|      | Jun | 3.04          | 4.01                | 6.01       | 3.38     | 3.04            | 3.69 | 4.00  | 4.96                | 4.08            | 5.58                  |
|      | Jul | 3.26          | 4.25                | 6.25       | 3.57     | 3.29            | 3.91 | 4.18  | 5.06                | 4.18            | 5.70                  |
|      | Aug | 3.50          | 4.44                | 6.44       | 3.77     | 3.52            | 4.08 | 4.26  | 5.09                | 4.33            | 5.82                  |
|      | Sep | 3.62          | 4.59                | 6.59       | 3.87     | 3.49            | 3.96 | 4.20  | 5.13                | 4.34            | 5.77                  |
|      | Oct | 3.78          | 4.75                | 6.75       | 4.13     | 3.79            | 4.29 | 4.46  | 5.35                | 4.49            | 6.07                  |
|      | Nov | 4.00          | 5.00                | 7.00       | 4.31     | 3.97            | 4.43 | 4.54  | 5.42                | 4.42            | 6.33                  |
|      | Dec | 4.16          | 5.15                | 7.15       | 4.45     | 3.97            | 4.39 | 4.47  | 5.37                | 4.46            | 6.27                  |
| 2006 | Jan | 4.29          | 5.26                | 7.26       | 4.56     | 4.34            | 4.35 | 4.42  | 5.29                | 4.27            | 6.15                  |
|      | Feb | 4.49          | 5.50                | 7.50       | 4.72     | 4.54            | 4.64 | 4.57  | 5.35                | 4.33            | 6.25                  |
|      | Mar | 4.59          | 5.53                | 7.53       | 4.88     | 4.63            | 4.74 | 4.72  | 5.53                | 4.29            | 6.32                  |
|      | Apr | 4.79          | 5.75                | 7.75       | 5.03     | 4.72            | 4.89 | 4.99  | 5.84                | 4.36            | 6.51                  |
|      | May | 4.94          | 5.93                | 7.93       | 5.15     | 4.84            | 4.97 | 5.11  | 5.95                | 4.38            | 6.60                  |
|      | Jun | 4.99          | 6.02                | 8.02       | 5.35     | 4.92            | 5.09 | 5.11  | 5.89                | 4.35            | 6.68                  |
|      | Jul | 5.24          | 6.25                | 8.25       | 5.46     | 5.08            | 5.07 | 5.09  | 5.85                | 4.41            | 6.76                  |
|      | Aug | 5.25          | 6.25                | 8.25       | 5.38     | 5.09            | 4.85 | 4.88  | 5.68                | 4.10            | 6.52                  |
|      | Sep | 5.25          | 6.25                | 8.25       | 5.34     | 4.93            | 4.69 | 4.72  | 5.51                | 3.87            | 6.40                  |
|      | Oct | 5.25          | 6.25                | 8.25       | 5.33     | 5.05            | 4.72 | 4.73  | 5.51                | 3.91            | 6.36                  |
|      | Nov | 5.25          | 6.25                | 8.25       | 5.32     | 5.07            | 4.64 | 4.60  | 5.33                | 3.81            | 6.24                  |

Note: All values are given as a percent at an annual rate.

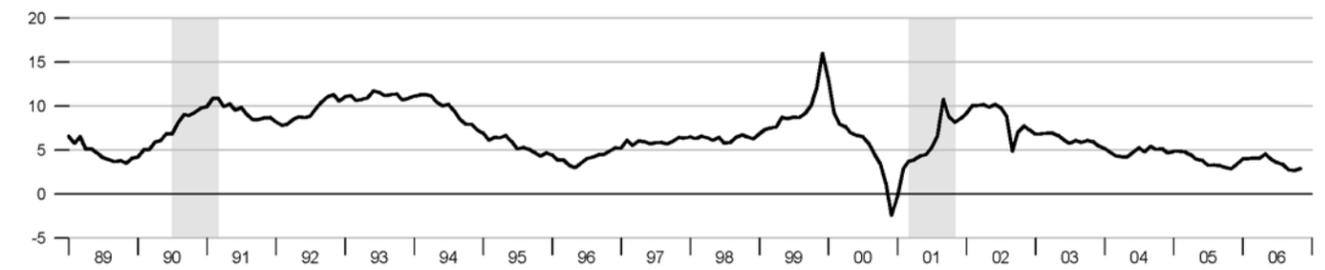
|      |     | Money Stock |          |          |          | Bank Credit | Adjusted Monetary Base |        | MSI M2** |
|------|-----|-------------|----------|----------|----------|-------------|------------------------|--------|----------|
|      |     | M1          | MZM      | M2       | M3*      |             | Reserves               |        |          |
| 2001 |     | 1140.196    | 5214.937 | 5206.345 | 7648.507 | 5344.167    | 641.167                | 86.172 | 271.477  |
| 2002 |     | 1196.168    | 5880.308 | 5590.239 | 8259.055 | 5597.592    | 697.092                | 88.158 | 294.080  |
| 2003 |     | 1273.407    | 6315.985 | 5980.907 | 8787.321 | 6122.995    | 740.929                | 93.313 | 315.192  |
| 2004 |     | 1344.324    | 6569.473 | 6260.024 | 9234.718 | 6598.992    | 776.707                | 96.066 | 329.873  |
| 2005 |     | 1370.962    | 6716.403 | 6531.713 | 9786.477 | 7240.081    | 806.303                | 96.234 | 343.539  |
| 2004 | 1   | 1318.047    | 6431.982 | 6111.332 | 9003.705 | 6428.107    | 761.428                | 95.033 | 322.050  |
|      | 2   | 1337.860    | 6581.799 | 6242.697 | 9223.054 | 6557.133    | 771.146                | 96.603 | 328.960  |
|      | 3   | 1352.373    | 6614.968 | 6302.546 | 9316.285 | 6650.063    | 782.783                | 96.802 | 332.111  |
|      | 4   | 1369.017    | 6649.142 | 6383.522 | 9395.830 | 6760.666    | 791.470                | 95.826 | 336.371  |
| 2005 | 1   | 1369.140    | 6662.556 | 6443.343 | 9528.052 | 6989.068    | 798.242                | 96.651 | 339.356  |
|      | 2   | 1369.260    | 6667.414 | 6484.438 | 9670.405 | 7160.038    | 802.642                | 96.076 | 341.280  |
|      | 3   | 1372.821    | 6727.253 | 6558.398 | 9859.294 | 7350.958    | 808.390                | 96.289 | 344.766  |
|      | 4   | 1372.625    | 6808.390 | 6640.674 | 10088.16 | 7460.260    | 815.939                | 95.919 | 348.753  |
| 2006 | 1   | 1380.166    | 6899.516 | 6745.212 |          | 7639.290    | 830.493                | 96.444 |          |
|      | 2   | 1383.351    | 6940.272 | 6795.740 |          | 7884.957    | 836.373                | 95.060 |          |
|      | 3   | 1367.063    | 6997.335 | 6859.904 |          | 8005.376    | 834.596                | 94.839 |          |
| 2004 | Nov | 1374.170    | 6654.387 | 6389.139 | 9395.128 | 6762.317    | 793.883                | 96.833 | 336.675  |
|      | Dec | 1372.141    | 6665.041 | 6408.088 | 9432.994 | 6798.406    | 788.274                | 93.077 | 337.622  |
| 2005 | Jan | 1365.795    | 6661.230 | 6422.413 | 9487.218 | 6892.934    | 793.547                | 95.107 | 338.366  |
|      | Feb | 1369.052    | 6662.166 | 6443.867 | 9531.592 | 6993.489    | 800.278                | 97.809 | 339.355  |
|      | Mar | 1372.574    | 6664.272 | 6463.748 | 9565.346 | 7080.781    | 800.901                | 97.038 | 340.347  |
|      | Apr | 1363.316    | 6662.721 | 6468.138 | 9620.909 | 7106.071    | 802.311                | 97.421 | 340.663  |
|      | May | 1370.305    | 6658.270 | 6479.217 | 9665.013 | 7158.744    | 800.595                | 94.589 | 340.941  |
|      | Jun | 1374.159    | 6681.250 | 6505.958 | 9725.292 | 7215.298    | 805.020                | 96.217 | 342.235  |
|      | Jul | 1369.263    | 6697.728 | 6527.722 | 9762.435 | 7281.115    | 805.962                | 95.527 | 343.275  |
|      | Aug | 1376.812    | 6725.905 | 6558.827 | 9864.629 | 7361.649    | 807.375                | 95.634 | 344.739  |
|      | Sep | 1372.387    | 6758.127 | 6588.645 | 9950.818 | 7410.109    | 811.833                | 97.706 | 346.285  |
|      | Oct | 1374.270    | 6790.709 | 6618.997 | 10031.96 | 7429.258    | 816.097                | 97.346 | 347.590  |
|      | Nov | 1375.095    | 6800.890 | 6638.223 | 10078.49 | 7449.929    | 816.783                | 96.870 | 348.603  |
|      | Dec | 1368.511    | 6833.570 | 6664.801 | 10154.03 | 7501.593    | 814.936                | 93.541 | 350.067  |
| 2006 | Jan | 1380.299    | 6894.439 | 6724.806 | 10242.79 | 7558.523    | 825.247                | 96.871 | 353.032  |
|      | Feb | 1375.585    | 6898.288 | 6747.069 | 10298.68 | 7645.837    | 832.436                | 96.891 | 353.943  |
|      | Mar | 1384.614    | 6905.820 | 6763.762 |          | 7713.510    | 833.797                | 95.571 |          |
|      | Apr | 1386.652    | 6924.575 | 6781.996 |          | 7804.654    | 835.228                | 95.487 |          |
|      | May | 1393.079    | 6933.112 | 6787.855 |          | 7922.450    | 837.093                | 94.400 |          |
|      | Jun | 1370.321    | 6963.130 | 6817.370 |          | 7927.767    | 836.797                | 95.292 |          |
|      | Jul | 1373.391    | 6974.526 | 6838.632 |          | 7970.863    | 834.952                | 94.861 |          |
|      | Aug | 1370.173    | 7000.128 | 6862.285 |          | 8021.208    | 834.601                | 94.705 |          |
|      | Sep | 1357.624    | 7017.351 | 6878.794 |          | 8024.058    | 834.236                | 94.952 |          |
|      | Oct | 1369.147    | 7078.435 | 6938.993 |          | 8149.037    | 837.866                | 93.952 |          |
|      | Nov | 1368.008    | 7116.192 | 6976.797 |          | 8193.549    | 840.397                | 94.682 |          |

Note: All values are given in billions of dollars. \*See table of contents for changes to the series.

\*\*We will not update the MSI series until we revise the code to accommodate the discontinuation of M3.

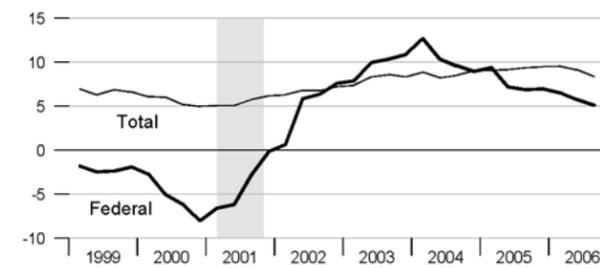
Adjusted Monetary Base

Percent change from year ago



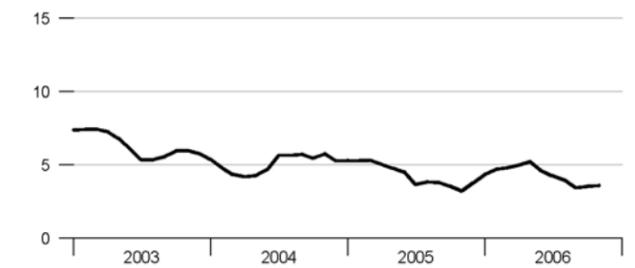
Domestic Nonfinancial Debt

Percent change from year ago



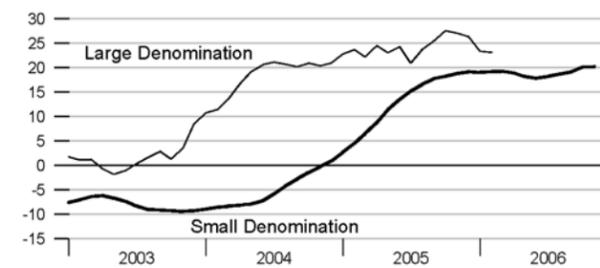
Currency Held by the Nonbank Public

Percent change from year ago



Time Deposits\*

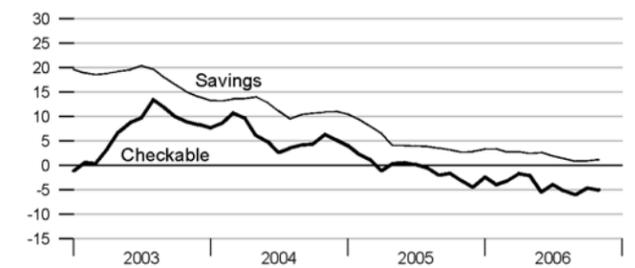
Percent change from year ago



\*See table of contents for changes to the series.

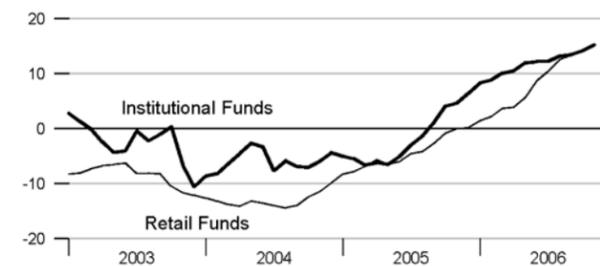
Checkable and Savings Deposits

Percent change from year ago



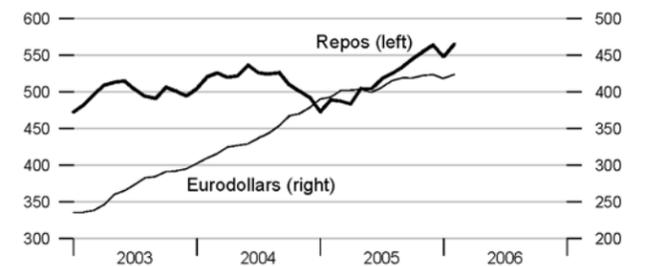
Money Market Mutual Fund Shares

Percent change from year ago



Repurchase Agreements and Eurodollars\*

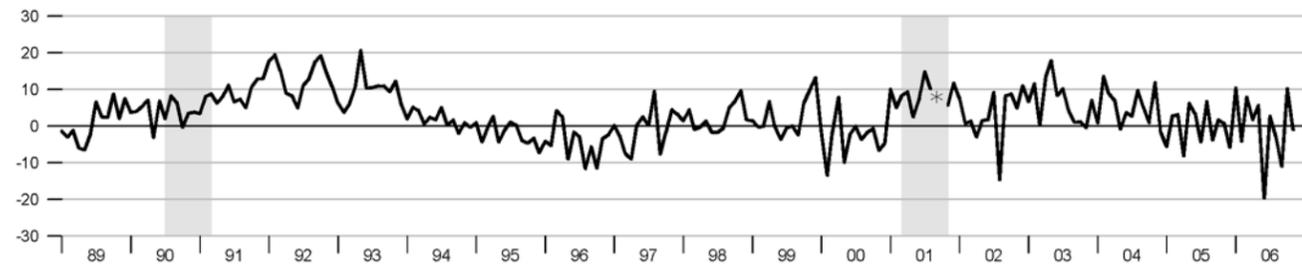
Billions of dollars



\*See table of contents for changes to these series.

**M1**

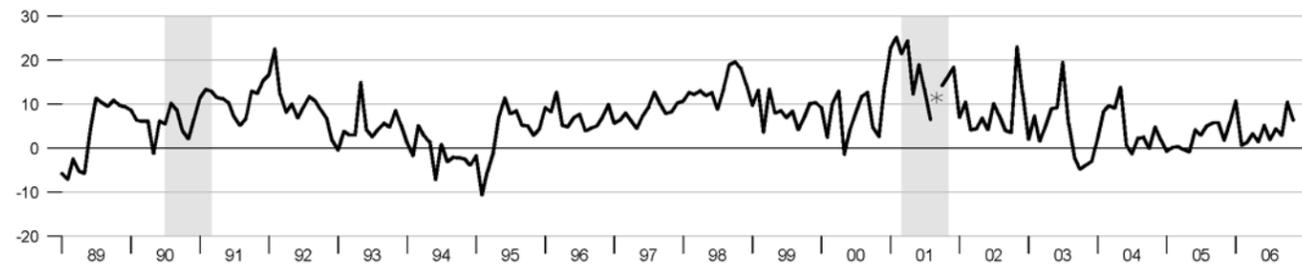
Percent change at an annual rate



\*Actual values for September and October 2001 are 55.87 and -38.35 percent rate, respectively.

**MZM**

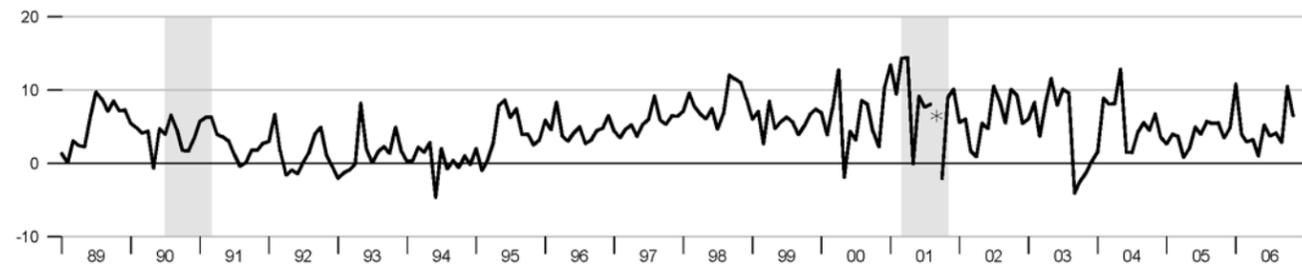
Percent change at an annual rate



\*Actual value for September 2001 is 39.41 percent rate.

**M2**

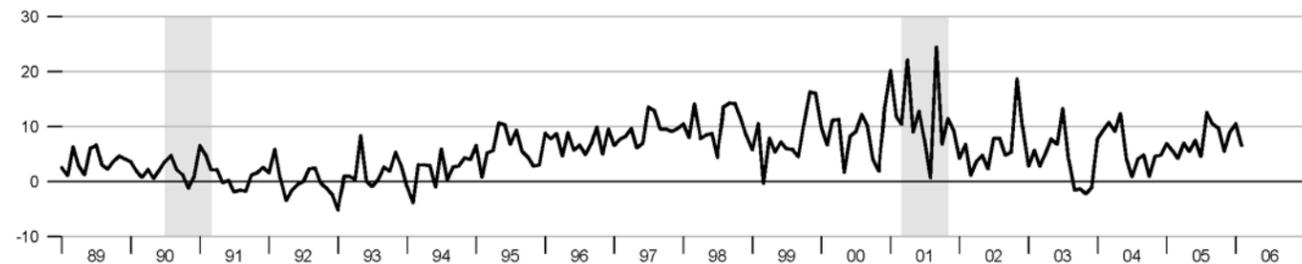
Percent change at an annual rate



\*Actual value for September 2001 is 24.90 percent rate.

**M3\***

Percent change at an annual rate



\*See table of contents for changes to the series.

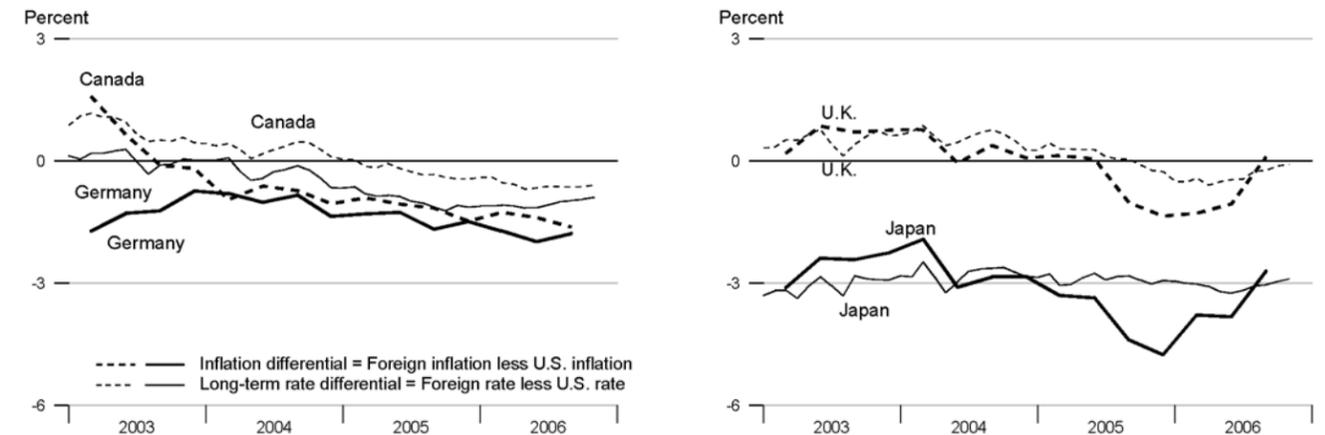
**Standard & Poor's 500**



**Recent Inflation and Long-Term Interest Rates**

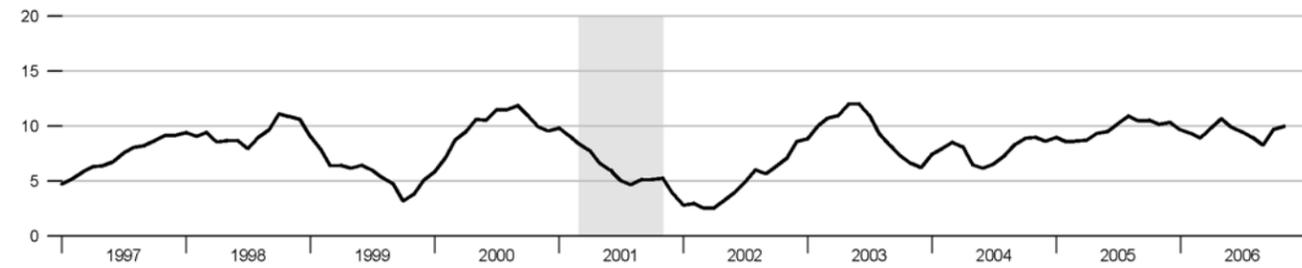
|                | Consumer Price Inflation Rates |        |        |        | Long-Term Government Bond Rates |       |       |       |
|----------------|--------------------------------|--------|--------|--------|---------------------------------|-------|-------|-------|
|                | Percent change from year ago   |        |        |        | Percent                         |       |       |       |
|                | 2005Q4                         | 2006Q1 | 2006Q2 | 2006Q3 | Aug06                           | Sep06 | Oct06 | Nov06 |
| United States  | 3.73                           | 3.68   | 3.99   | 3.34   | 4.88                            | 4.72  | 4.73  | 4.60  |
| Canada         | 2.26                           | 2.41   | 2.60   | 1.72   | 4.25                            | 4.08  | 4.10  | 4.01  |
| France         | 1.65                           | 1.79   | 1.92   | 1.68   | 3.90                            | 3.77  | 3.81  | .     |
| Germany        | 2.25                           | 1.96   | 2.01   | 1.56   | 3.88                            | 3.75  | 3.79  | 3.71  |
| Italy          | 2.15                           | 2.14   | 2.23   | 2.17   | 4.17                            | 4.04  | 4.07  | 3.97  |
| Japan          | -1.02                          | -0.10  | 0.17   | 0.63   | 1.82                            | 1.68  | 1.77  | 1.71  |
| United Kingdom | 2.38                           | 2.39   | 2.93   | 3.44   | 4.63                            | 4.49  | 4.61  | 4.52  |

**Inflation and Long-Term Interest Rate Differentials**



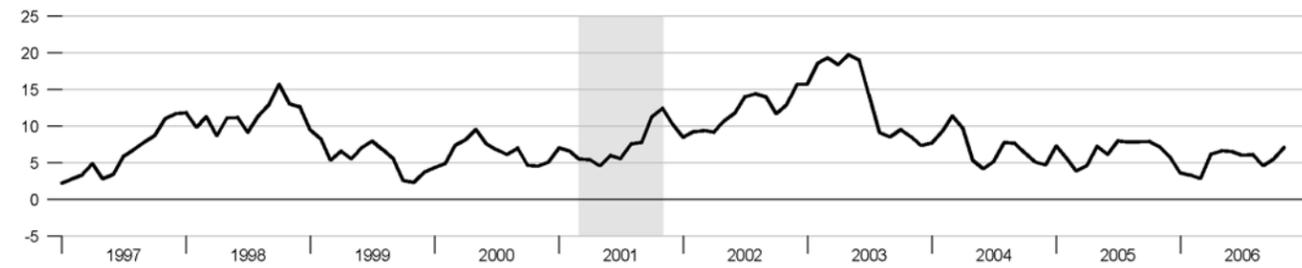
**Bank Credit**

Percent change from year ago



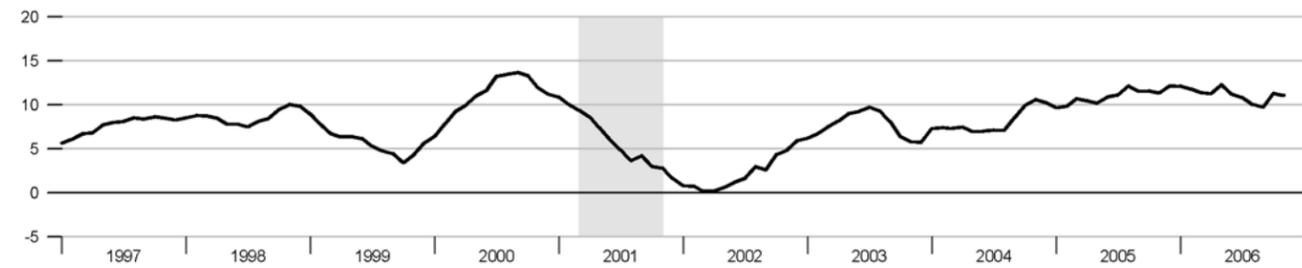
**Investment Securities in Bank Credit at Commercial Banks**

Percent change from year ago



**Total Loans and Leases in Bank Credit at Commercial Banks**

Percent change from year ago



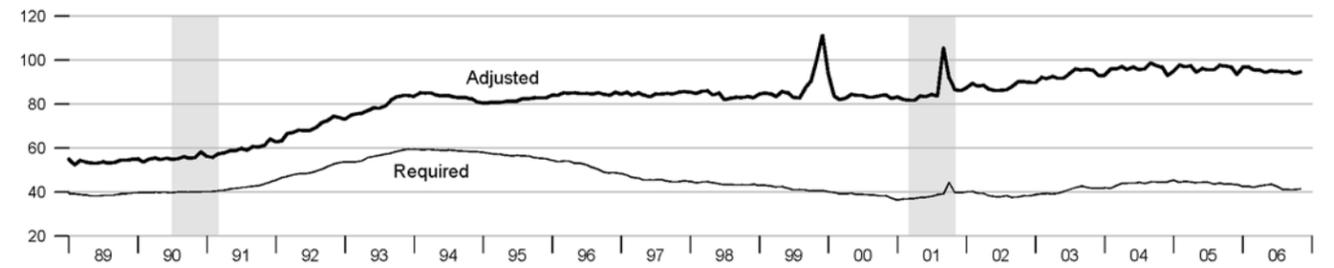
**Commercial and Industrial Loans at Commercial Banks**

Percent change from year ago



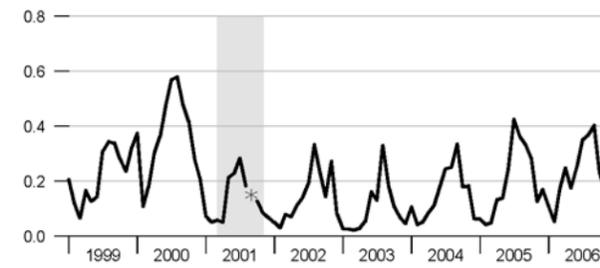
**Adjusted and Required Reserves**

Billions of dollars



**Total Borrowings, nsa**

Billions of dollars



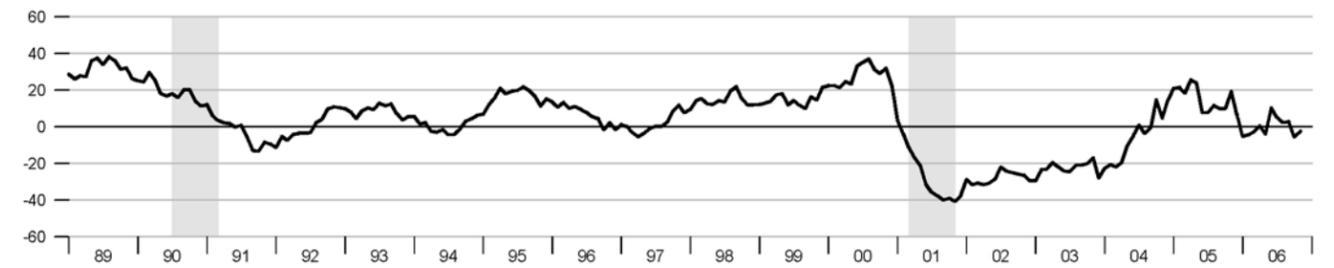
**Excess Reserves plus RCB Contracts**

Billions of dollars



**Nonfinancial Commercial Paper**

Percent change from year ago



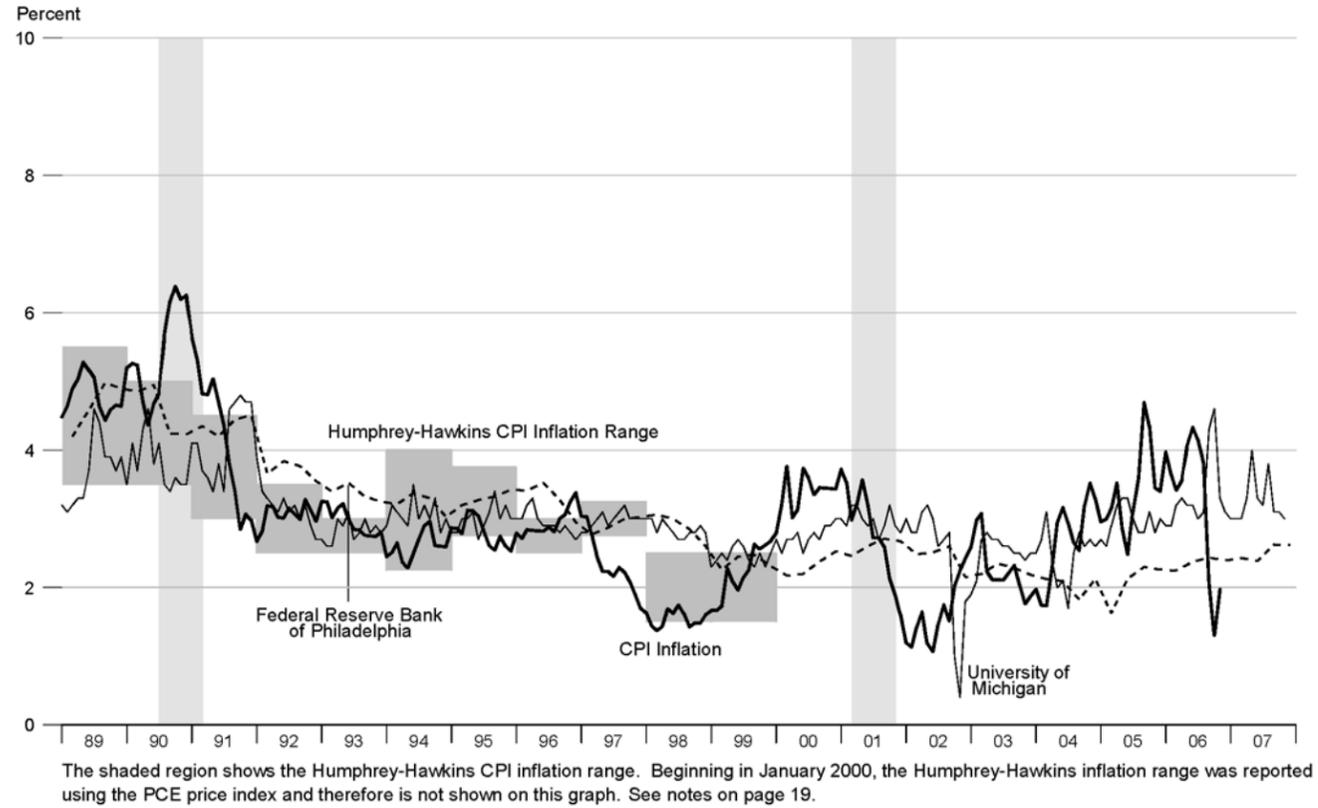
As of April 10, 2006, the Federal Reserve Board made major changes to its commercial paper calculations. For more information, please refer to <http://www.federalreserve.gov/releases/cp/about.htm>.

**Consumer Credit**

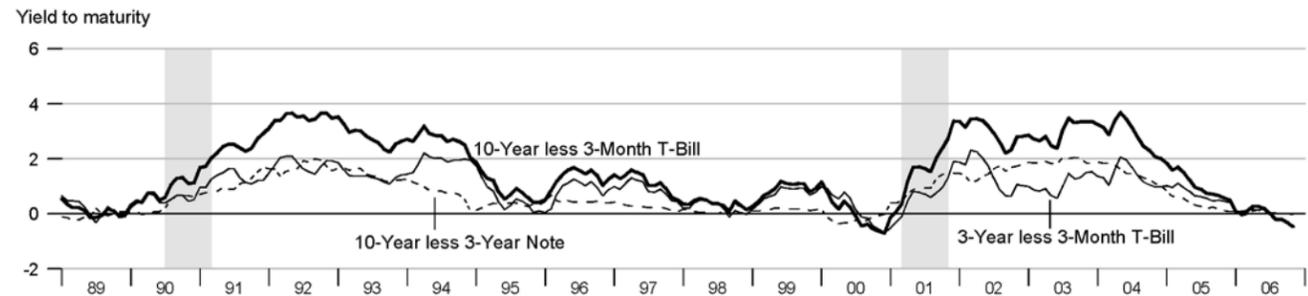
Percent change from year ago



**Inflation and 1-Year-Ahead Inflation Expectations**



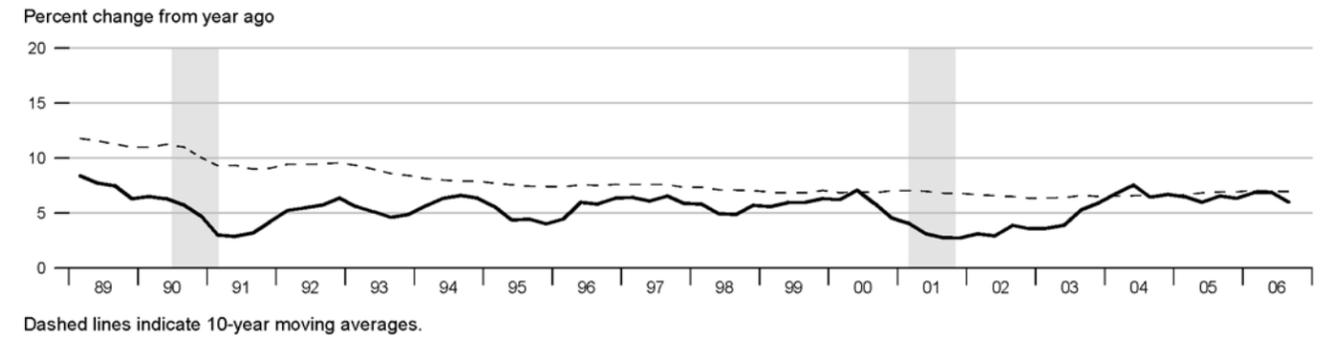
**Treasury Security Yield Spreads**



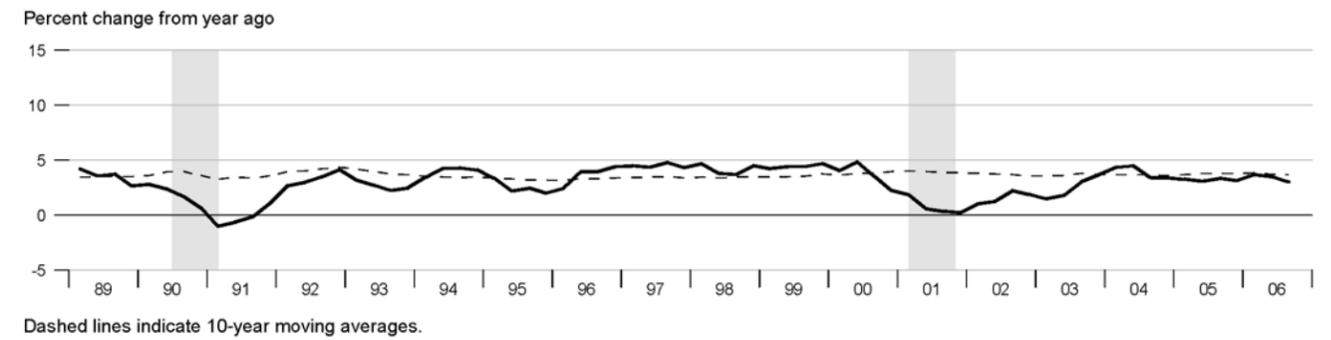
**Real Interest Rates**



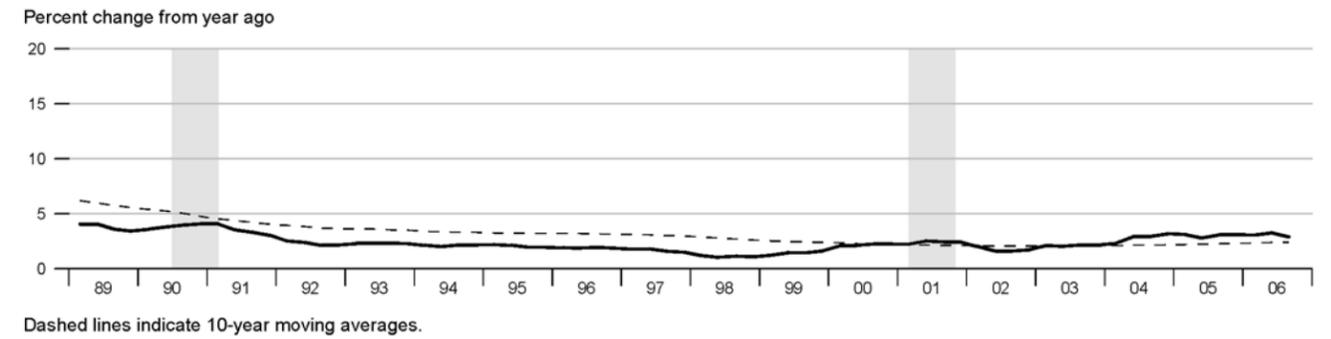
**Gross Domestic Product**



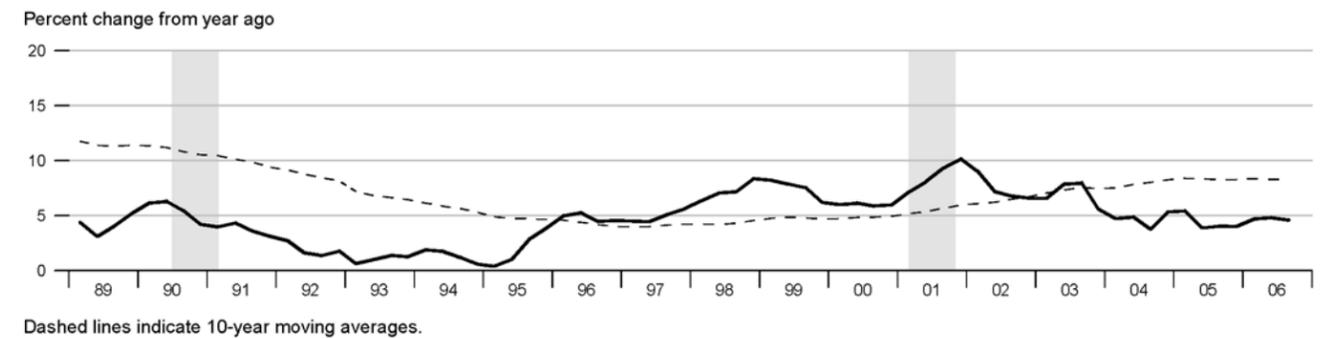
**Real Gross Domestic Product**



**Gross Domestic Product Price Index**

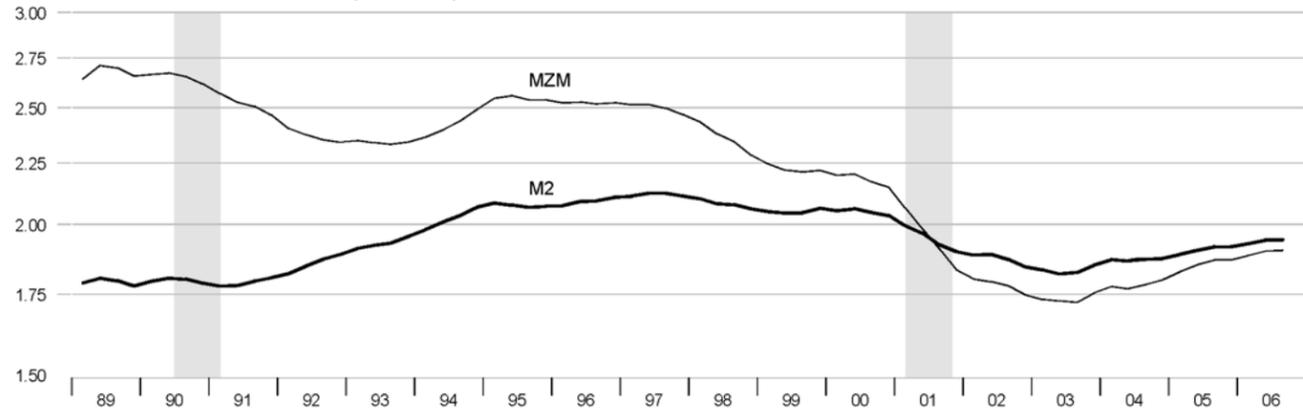


**M2**



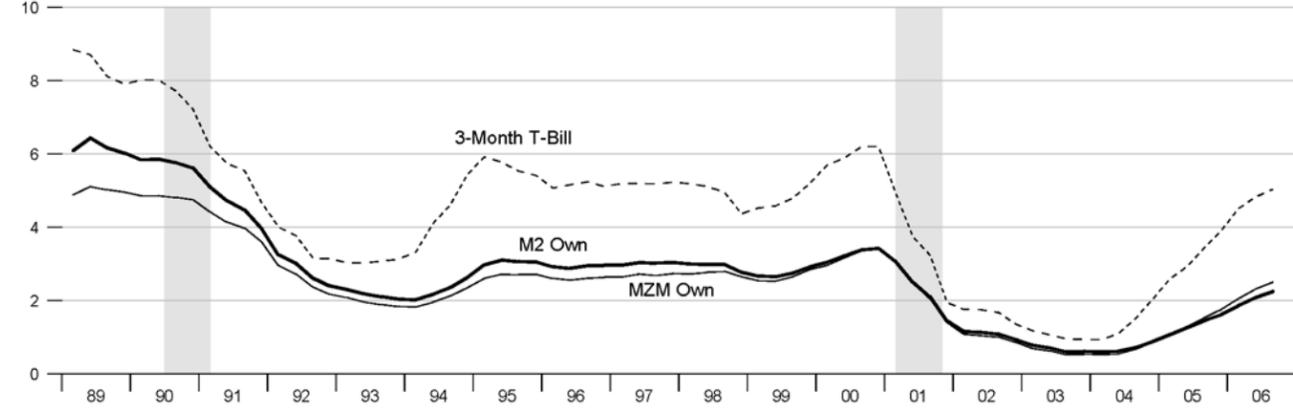
Velocity

Nominal GDP/MZM, Nominal GDP/M2 (Ratio Scale)



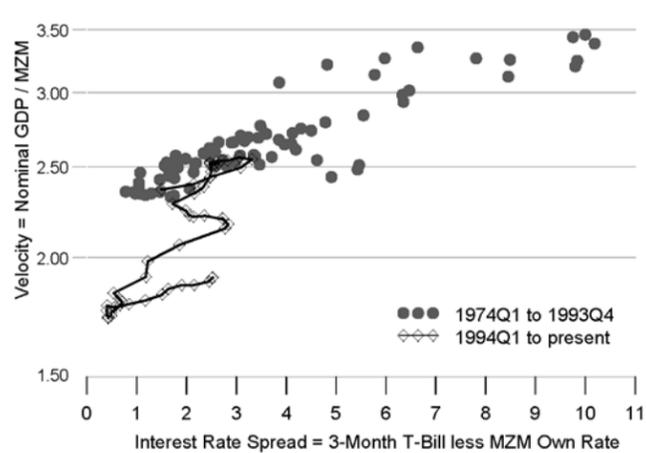
Interest Rates

Percent



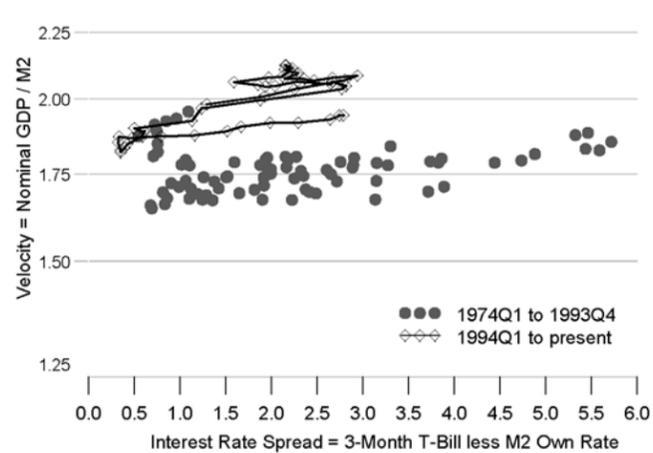
MZM Velocity and Interest Rate Spread

Ratio Scale



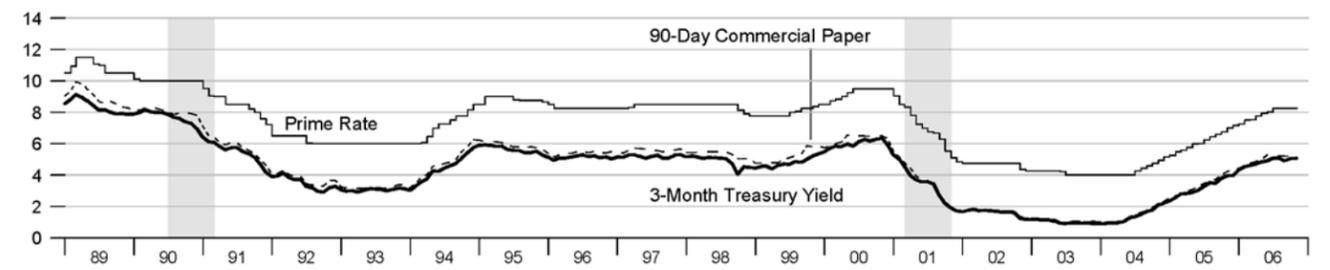
M2 Velocity and Interest Rate Spread

Ratio Scale



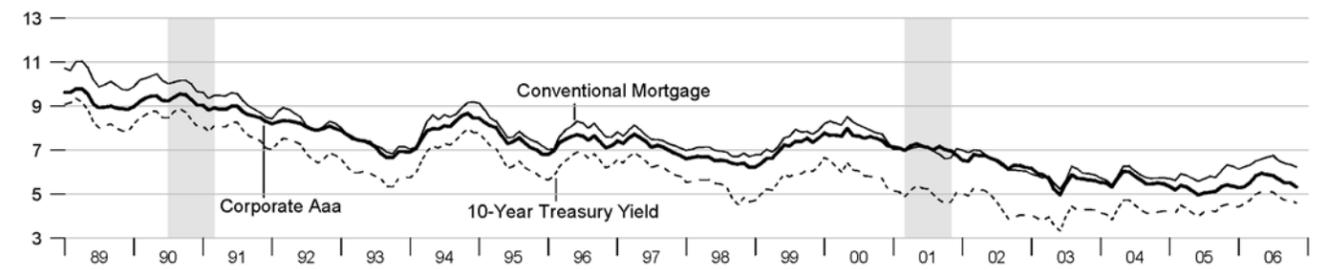
Short-Term Interest Rates

Percent



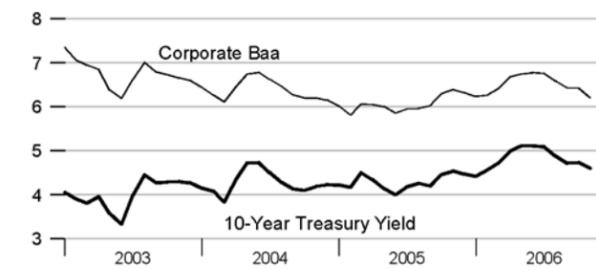
Long-Term Interest Rates

Percent



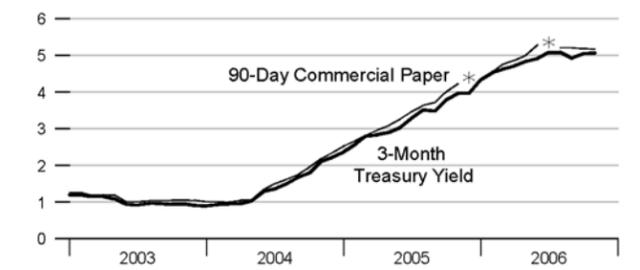
Long-Term Interest Rates

Percent



Short-Term Interest Rates

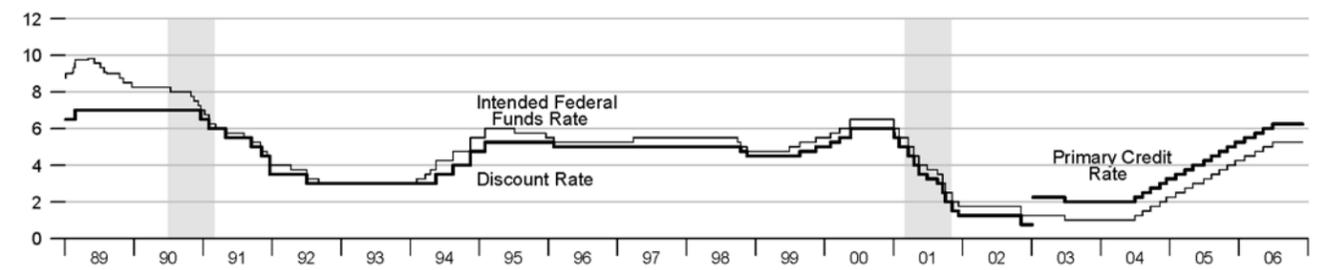
Percent



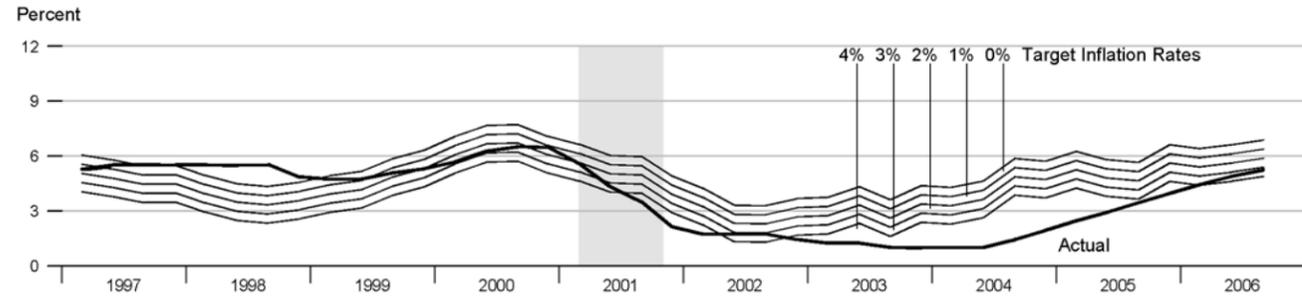
\*90-Day Commercial Paper data are not available for December 2005, January 2006, and July 2006.

FOMC Intended Federal Funds Rate, Discount Rate, and Primary Credit Rate

Percent



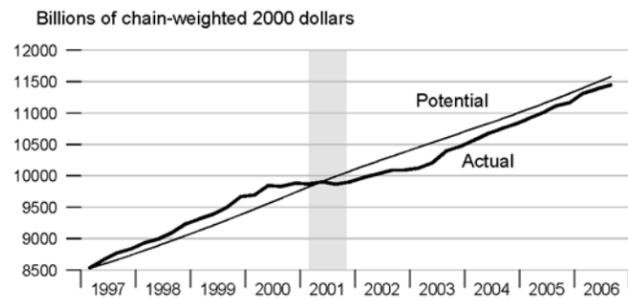
Federal Funds Rate and Inflation Targets



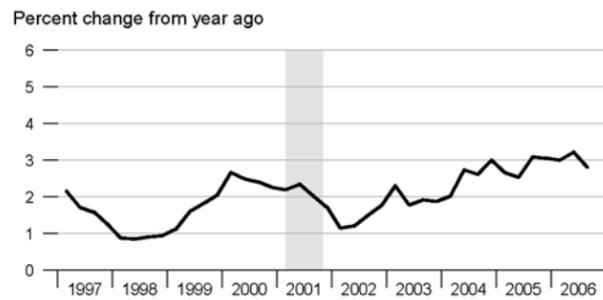
Calculated federal funds rate is based on Taylor's rule. See notes on page 19.

Components of Taylor's Rule

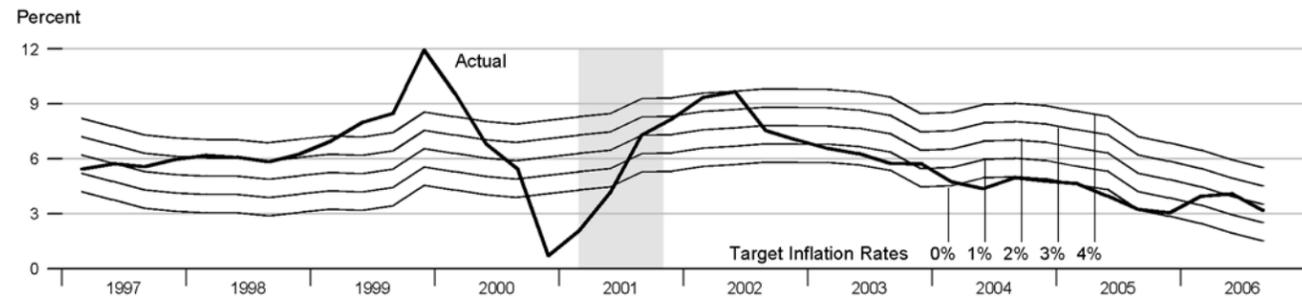
Actual and Potential Real GDP



PCE Inflation



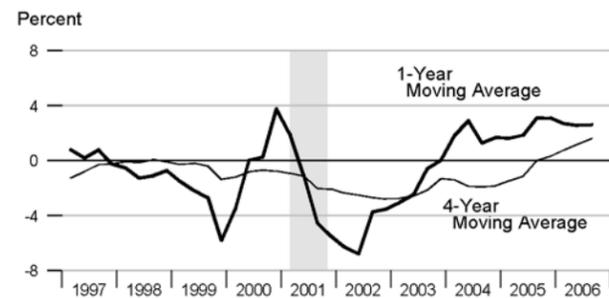
Monetary Base Growth\* and Inflation Targets



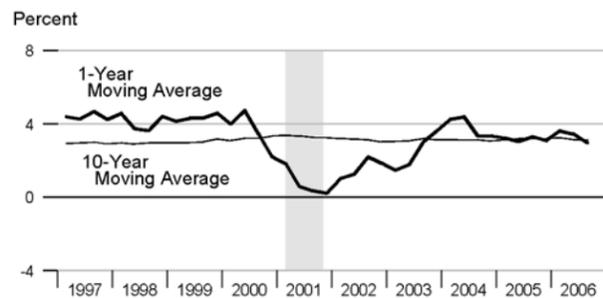
\*Modified for the effects of sweeps programs on reserve demand. Calculated base growth is based on McCallum's rule. Actual base growth is percent change from year ago. See notes on page 19.

Components of McCallum's Rule

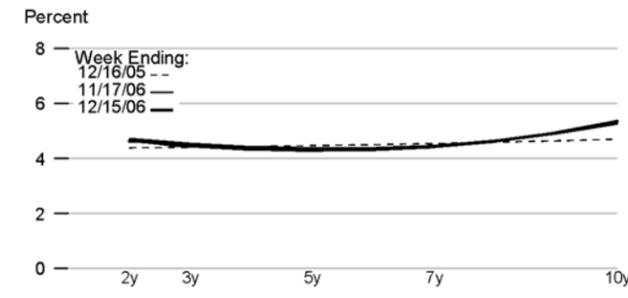
Monetary Base Velocity Growth



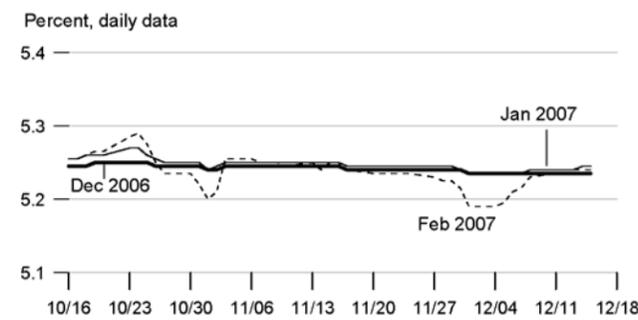
Real Output Growth



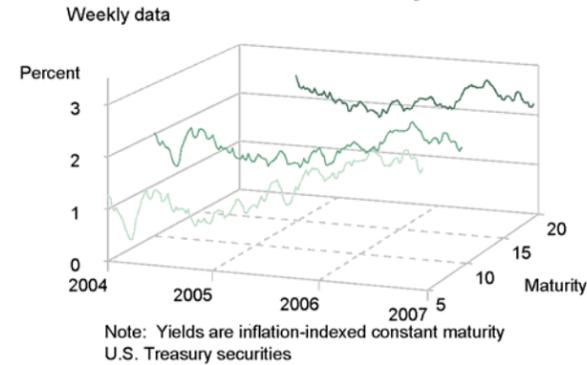
Implied One-Year Forward Rates



Rates on Selected Federal Funds Futures Contracts



Inflation-Indexed Treasury Securities

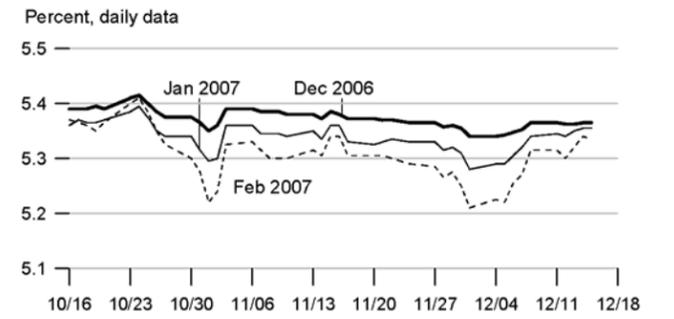


Note: Yields are inflation-indexed constant maturity U.S. Treasury securities

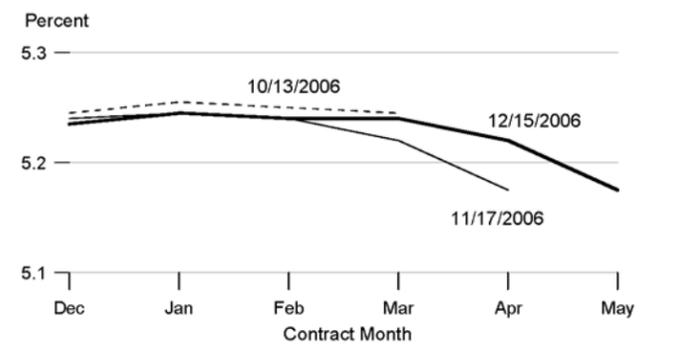
Inflation-Indexed 10-Year Government Notes



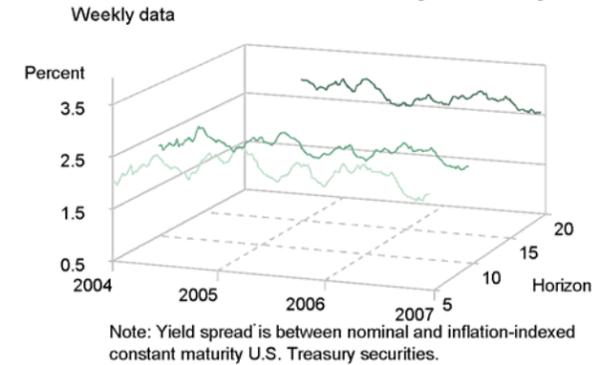
Rates on 3-Month Eurodollar Futures



Rates on Federal Funds Futures on Selected Dates



Inflation-Indexed Treasury Yield Spreads



Note: Yield spread is between nominal and inflation-indexed constant maturity U.S. Treasury securities.

Inflation-Indexed 10-Year Government Yield Spreads

