

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),

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

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  $D(m) = (1 - e^{-R(m) \cdot m})/R(m)$ . 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 1/15/2018. **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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\_\_\_\_ and \_\_\_\_ (2001). "Retail Sweep Programs and Bank Reserves, 1994-1999," *Federal Reserve Bank of St. Louis Review*, January/February, 83(1), pp. 51-72.\*

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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/).

# Monetary Policy's Third Interest Rate

The federal funds rate and the discount rate are familiar monetary policy terms. Textbooks typically describe Federal Reserve monetary policy in terms of setting a policy target for the federal funds rate, often guided by a Taylor rule-style equation. Texts also discuss the discount rate, the rate of interest charged to banks and other depository institutions on loans they receive at the Fed's discount window. Today, the Fed offers three discount programs: primary credit, secondary credit, and seasonal credit, each with its own interest, or discount, rate.

The implementation of monetary policy in developed economies, in addition to a policy target rate and one or more discount rates, features a third, less-discussed interest rate—the "remuneration rate," which is the rate of interest the central bank pays on the deposits that banks hold at the central bank.<sup>1</sup> This interest rate, through its interaction with the policy target rate and the primary credit, or discount, rate charged on borrowings from the central bank, is important in the implementation of monetary policy. The interaction among the three interest rates results from an unusual aspect of central banking: Central banks can simultaneously affect (and sometimes closely control) the supply of and demand for deposits at the central bank. The monetary role of deposits held at the central bank is to settle interbank claims arising from the exchange of goods, services, and real and financial assets. The overnight interest rate on such deposits is an important element of monetary policy.

In the past, central banks imposed statutory reserve requirements to increase the stability and predictability of demand for deposits at the central bank. Today, many central banks do not impose such requirements; when they are imposed, the rates are modest. The European Central Bank, for example, imposes a 2 percent requirement. The Federal Reserve imposes a graduated set of requirements, depending on a bank's deposits. In the United States, however, retail deposit sweep programs have allowed many banks to reorganize their balance sheet so they are unaffected by statutory requirements.<sup>2</sup> The demise of statutory reserve requirements was brought about largely by two factors. First, statutory requirements place affected banks at a competitive disadvantage. This was a minor issue when regulation limited the scope of competition among financial institutions, as the requirements' cost tended to be offset by the economic rent created by regulation. Second, statutory reserve requirement systems tend to be expensive to administer; they require collection of large amounts of data and careful monitoring of the eligible assets that banks hold.

The remuneration rate provides an alternative tool for a central bank to manage the demand for deposits held by banks at the central bank. The experience of non-U.S. central banks suggests two things: (i) a relatively high elasticity of demand for such deposits with respect to the gap between the remuneration rate and the target policy rate; and (ii) the potential for a small (or zero) gap to increase the smooth operation of a nation's payment system. Deposits doubled at the Reserve Bank of New Zealand when it reduced the gap to near zero. As a benefit, its payment system operated more smoothly: The larger quantities of deposits at the Reserve Bank eased timing mismatches of payments among banks. In addition, day-to-day variation in overnight interest rates decreased. For many central banks, minimizing daily variation in overnight rates increases the predictability of the cost of payment-settlement funds and is an important ingredient in a smoothly functioning payment system.

The Federal Reserve currently is prohibited by law from paying explicit interest on deposits held at the Federal Reserve, a prohibition that will end in 2011. *The Wall Street Journal* reported on May 7, 2008, that the Board of Governors recently initiated discussions with Congress to end the prohibition sooner, perhaps by year-end. Today, approximately 60 percent of these deposits are not remunerated, and 40 percent are remunerated at a rate somewhat less than the federal funds rate. These latter deposits are ones that banks have voluntarily agreed to maintain at the Federal Reserve, in excess of any necessary to meet statutory reserve requirements, to facilitate payments. Remuneration is paid in "earnings credits," which may be used to defray the cost of financial services purchased from the Federal Reserve. These credits expire one year after issue and may not be converted into cash. A more flexible remuneration environment likely would provide the Federal Reserve a new, more flexible policy-implementation tool similar to those of many other central banks.

—Richard G. Anderson

<sup>1</sup> Two excellent papers surveying these aspects of monetary policy are by Claudio Borio: "A Hundred Ways to Skin a Cat: Comparing Monetary Policy Operating Procedures in the United States, Japan and the euro area," BIS Papers 9, December 2001; and "The Implementation of Monetary Policy in Industrial Countries: A Survey," BIS Economic Papers No. 47, August 1997.

<sup>2</sup> Richard G. Anderson and Robert H. Rasche, "Retail Sweep Programs and Bank Reserves, 1994-1999," *Federal Reserve Bank of St. Louis Review*, January/February 2001, 83(1), pp. 51-72.

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3	Monetary and Financial Indicators at a Glance
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8	Measures of Expected Inflation
9	Interest Rates
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11	Implied Forward Rates, Futures Contracts, and Inflation-Indexed Securities
12	Velocity, Gross Domestic Product, and M2
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15	Stock Market Index and Foreign Inflation and Interest Rates
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## Conventions used in this publication:

- Unless otherwise indicated, data are monthly.
- Shaded areas indicate recessions, as determined by the National Bureau of Economic Research.
- 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.
- 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

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

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  $((y_t - y_{t-40})/40) \cdot 400$ , 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	MZM	M2	M3*
<b>Percent change at an annual rate</b>					
2003		6.46	7.41	6.99	6.40
2004		5.57	3.97	4.72	5.09
2005		2.03	2.23	4.45	5.97
2006		0.19	4.07	4.79	4.95
2007		-0.37	9.18	5.90	

2006	1	1.98	4.69	5.45
	2	-0.55	2.60	3.22
	3	-3.68	3.69	4.11
	4	0.36	7.71	6.57
2007	1	0.31	9.26	7.14
	2	0.86	10.81	6.13
	3	-1.35	11.99	4.72
	4	-0.23	14.96	4.79
2008	1	0.78	18.98	9.46

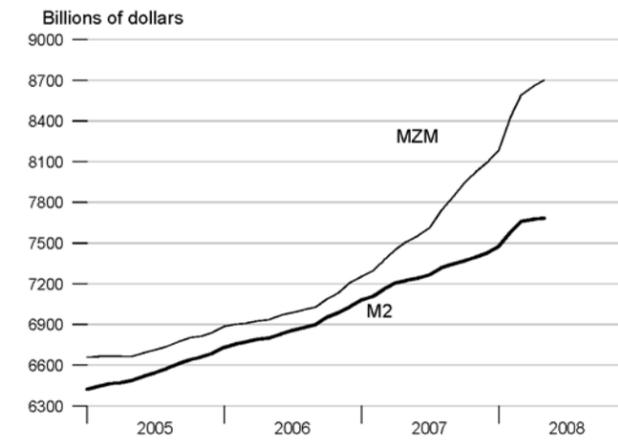
2006	May	3.41	1.91	1.85
	Jun	-7.64	5.43	5.12
	Jul	-4.12	3.19	4.48
	Aug	-0.49	3.73	3.63
	Sep	-8.01	3.28	4.08
2007	Jan	6.13	10.21	9.13
	Feb	2.70	7.76	6.19
	Mar	-3.91	12.47	7.22
	Apr	6.89	12.57	7.94
	May	-2.10	9.49	3.37

2007	Jun	-8.17	7.52	2.76
	Jul	2.24	8.80	3.96
	Aug	1.30	20.15	8.53
	Sep	-2.96	15.52	4.49
	Oct	2.71	15.50	3.78
2008	Nov	-3.01	12.62	4.61
	Dec	0.48	10.27	4.87

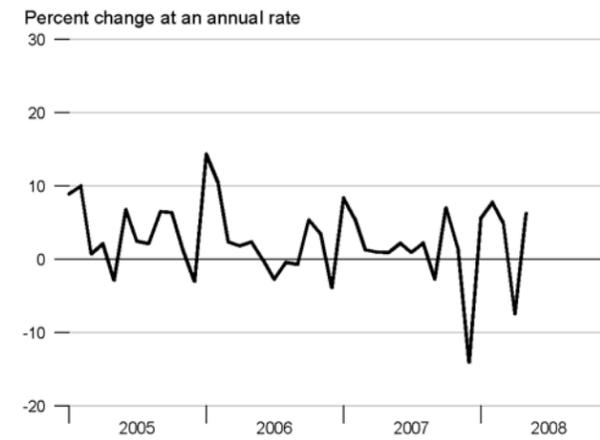
2008	Jan	0.65	13.36	7.98
	Feb	2.84	35.62	16.76
	Mar	1.48	23.49	12.62
	Apr	-3.74	8.71	2.37
	May	-3.55	6.52	1.14

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

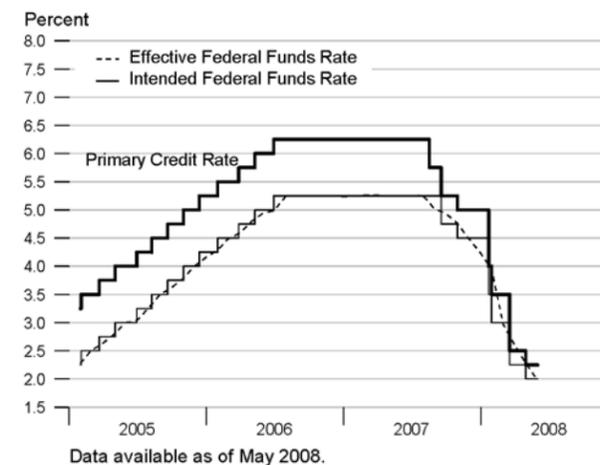
M2 and MZM



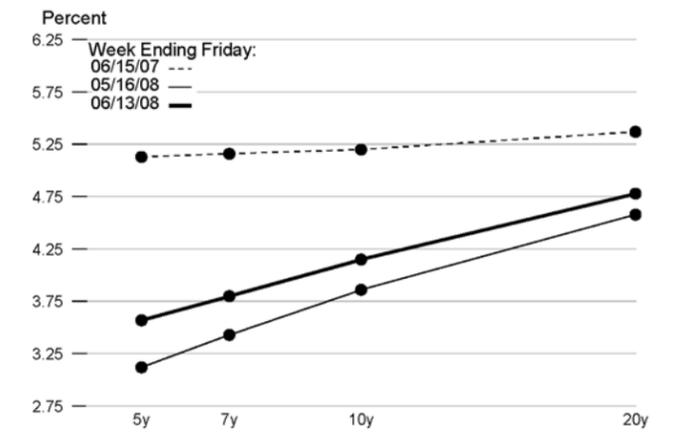
Adjusted Monetary Base



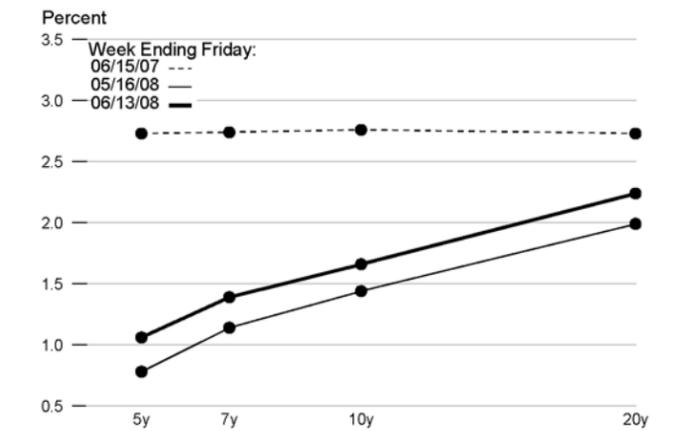
Reserve Market Rates



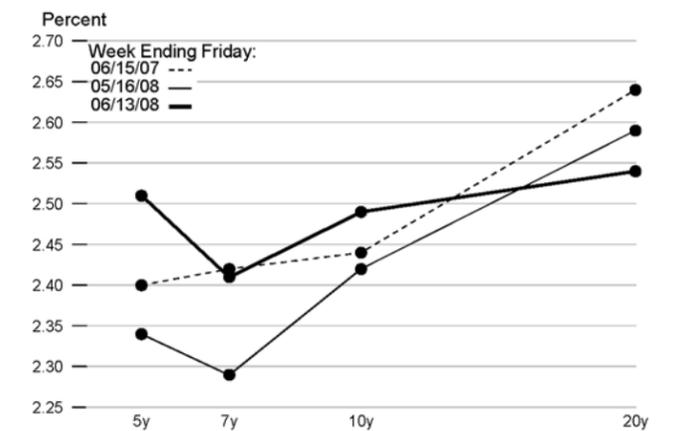
Treasury Yield Curve



Real Treasury Yield Curve

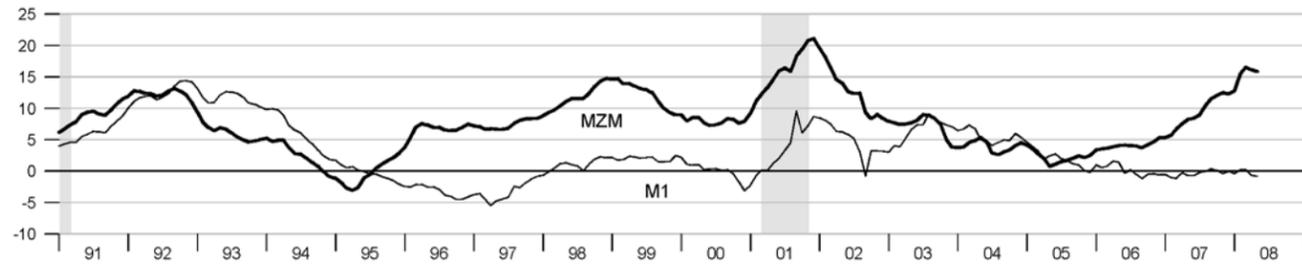


Inflation-Indexed Treasury Yield Spreads



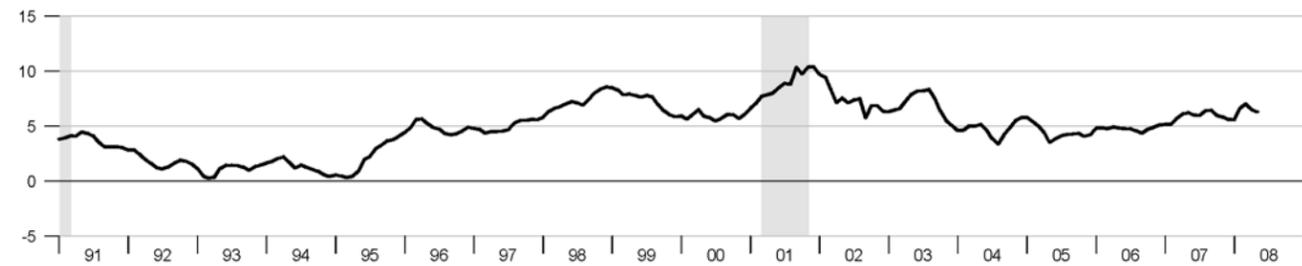
**MZM and M1**

Percent change from year ago



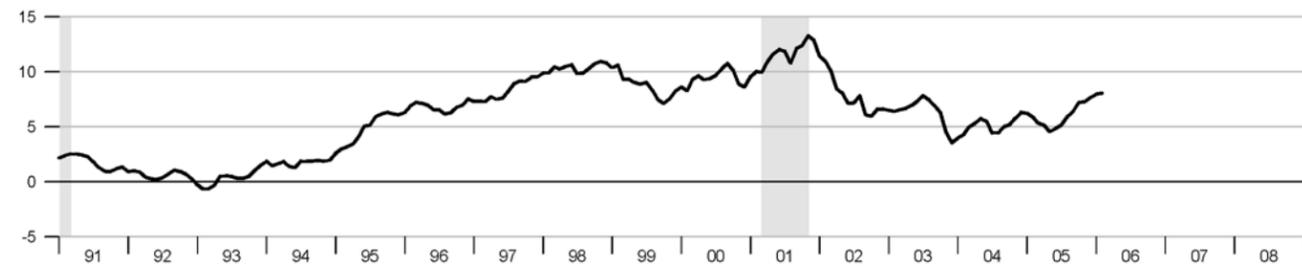
**M2**

Percent change from year ago



**M3\***

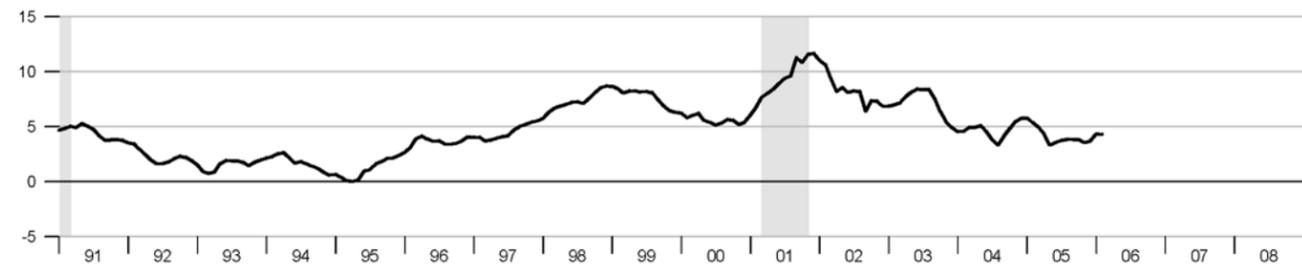
Percent change from year ago



\*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	Municipal Aaa Bonds	Conventional Mortgage
						3-mo	3-yr	10-yr			
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
2006		4.96	5.96	7.96	5.15	4.85	4.77	4.79	5.59	4.15	6.41
2007		5.02	5.86	8.05	5.27	4.47	4.34	4.63	5.56	4.13	6.34
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
	4	5.25	6.25	8.25	5.32	5.03	4.65	4.63	5.39	3.82	6.24
2007	1	5.26	6.25	8.25	5.31	5.12	4.68	4.68	5.36	3.91	6.22
	2	5.25	6.25	8.25	5.32	4.87	4.76	4.85	5.58	4.13	6.37
	3	5.07	5.93	8.18	5.42	4.42	4.41	4.73	5.75	4.27	6.55
	4	4.50	5.02	7.52	5.02	3.47	3.50	4.26	5.53	4.24	6.23
2008	1	3.18	3.67	6.21	3.23	2.09	2.17	3.66	5.46	4.39	5.88
2006	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
	Dec	5.24	6.25	8.25	5.32	4.97	4.58	4.56	5.32	3.76	6.14
2007	Jan	5.25	6.25	8.25	5.32	5.11	4.79	4.76	5.40	3.89	6.22
	Feb	5.26	6.25	8.25	5.31	5.16	4.75	4.72	5.39	3.95	6.29
	Mar	5.26	6.25	8.25	5.30	5.08	4.51	4.56	5.30	3.88	6.16
	Apr	5.25	6.25	8.25	5.31	5.01	4.60	4.69	5.47	3.99	6.18
	May	5.25	6.25	8.25	5.31	4.87	4.69	4.75	5.47	4.04	6.26
	Jun	5.25	6.25	8.25	5.33	4.74	5.00	5.10	5.79	4.36	6.66
	Jul	5.26	6.25	8.25	5.32	4.96	4.82	5.00	5.73	4.24	6.70
	Aug	5.02	6.01	8.25	5.49	4.32	4.34	4.67	5.79	4.30	6.57
	Sep	4.94	5.53	8.03	5.46	3.99	4.06	4.52	5.74	4.26	6.38
	Oct	4.76	5.24	7.74	5.08	4.00	4.01	4.53	5.66	4.20	6.38
	Nov	4.49	5.00	7.50	4.97	3.35	3.35	4.15	5.44	4.26	6.21
	Dec	4.24	4.83	7.33	5.02	3.07	3.13	4.10	5.49	4.25	6.10
2008	Jan	3.94	4.48	6.98	3.84	2.82	2.51	3.74	5.33	4.13	5.76
	Feb	2.98	3.50	6.00	3.06	2.17	2.19	3.74	5.53	4.42	5.92
	Mar	2.61	3.04	5.66	2.79	1.28	1.80	3.51	5.51	4.63	5.97
	Apr	2.28	2.49	5.24	2.85	1.31	2.23	3.68	5.55	4.45	5.92
	May	1.98	2.25	5.00	2.66	1.76	2.69	3.88	5.57		6.04

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

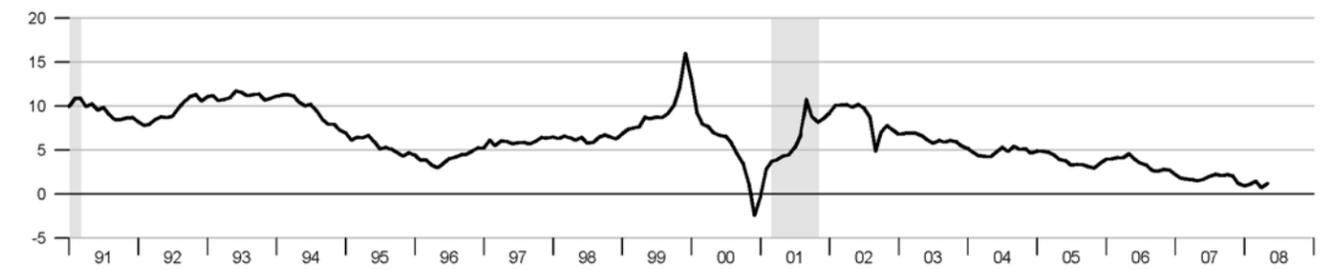
	Money Stock				Bank Credit	Adjusted		MSI M2**
	M1	MZM	M2	M3*		Monetary Base	Reserves	
2003	1273.483	6327.287	5983.784	8787.321	6120.350	740.938	93.325	315.192
2004	1344.422	6578.703	6266.365	9234.718	6603.320	776.768	96.129	329.873
2005	1371.780	6725.613	6545.085	9786.477	7248.608	806.628	96.560	343.539
2006	1374.386	6999.334	6858.660	10270.74	7961.126	835.058	94.932	
2007	1369.237	7642.089	7263.039		8749.291	850.592	94.212	
2006								
1	1381.849	6899.983	6754.643		7632.343	830.534	96.495	
2	1379.956	6944.762	6809.058		7884.707	836.387	95.082	
3	1367.253	7008.767	6879.015		8036.457	834.638	94.857	
4	1368.486	7143.822	6991.922		8290.998	838.672	93.292	
2007								
1	1369.533	7309.163	7116.741		8441.434	846.373	94.188	
2	1372.487	7506.636	7225.787		8571.276	849.903	93.541	
3	1367.855	7731.689	7311.061		8831.216	852.257	95.417	
4	1367.071	8020.869	7398.568		9153.238	853.832	93.701	
2008								
1	1369.751	8401.543	7573.611		9377.271	856.329	96.261	
2006								
May	1384.201	6937.962	6802.872		7918.045	836.962	94.275	
Jun	1375.391	6969.370	6831.913		7927.137	836.882	95.384	
Jul	1370.673	6987.919	6857.402		7984.693	834.988	94.899	
Aug	1370.114	7009.620	6878.140		8052.558	834.699	94.779	
Sep	1360.973	7028.763	6901.504		8072.119	834.226	94.892	
Oct	1367.925	7088.562	6954.006		8228.821	837.942	94.014	
Nov	1371.000	7134.390	6989.866		8281.167	840.386	94.767	
Dec	1366.533	7208.513	7031.894		8363.007	837.689	91.096	
2007								
Jan	1372.152	7255.101	7081.835		8405.493	843.516	94.207	
Feb	1367.098	7297.940	7108.978		8469.189	847.354	94.522	
Mar	1369.349	7374.448	7159.410		8449.621	848.250	93.834	
Apr	1377.216	7451.674	7206.758		8515.256	848.944	93.585	
May	1374.805	7510.575	7227.001		8573.479	849.599	92.756	
Jun	1365.441	7557.659	7243.601		8625.092	851.166	94.283	
Jul	1367.993	7613.110	7267.487		8703.450	851.847	94.592	
Aug	1369.473	7740.934	7319.168		8837.374	853.428	96.636	
Sep	1366.099	7841.024	7346.527		8952.824	851.497	95.022	
Oct	1369.182	7942.288	7369.677		9055.636	856.452	93.515	
Nov	1365.743	8025.808	7398.005		9186.184	857.550	95.788	
Dec	1366.289	8094.511	7428.022		9217.895	847.495	91.799	
2008								
Jan	1367.033	8184.607	7477.423		9280.844	851.454	95.127	
Feb	1370.263	8427.521	7581.852		9350.203	856.965	96.293	
Mar	1371.958	8592.502	7661.558		9500.766	860.567	97.363	
Apr	1367.682	8654.903	7676.720		9422.494	855.240	94.512	
May	1363.635	8701.933	7684.030		9396.046	859.681	95.109	

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.

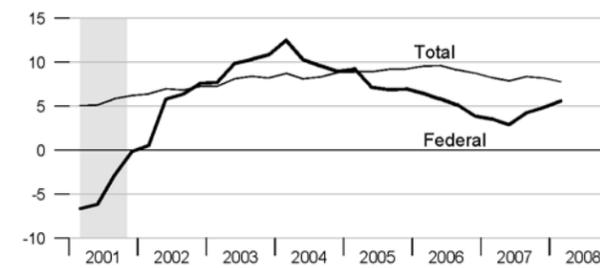
Adjusted Monetary Base

Percent change from year ago



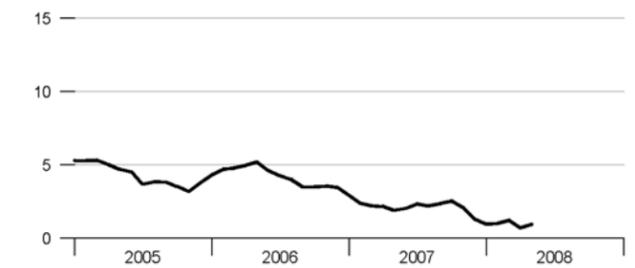
Domestic Nonfinancial Debt

Percent change from year ago



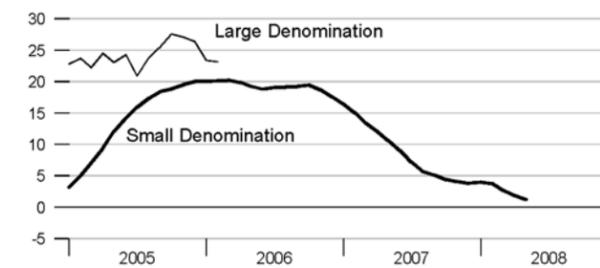
Currency Held by the Nonbank Public

Percent change from year ago



Time Deposits\*

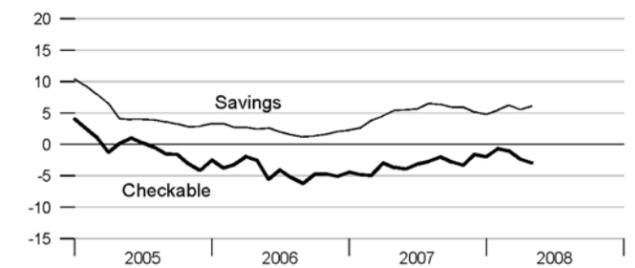
Percent change from year ago



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

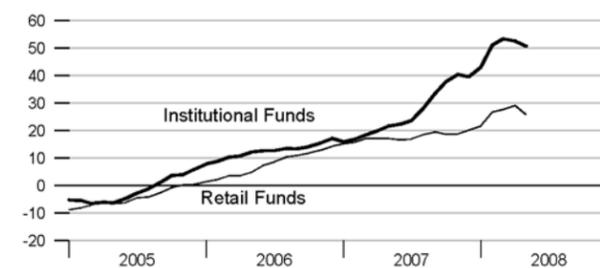
Checkable and Savings Deposits

Percent change from year ago



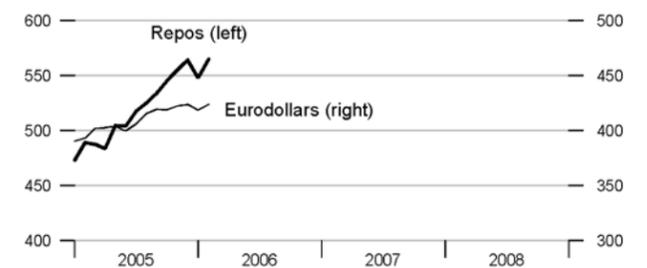
Money Market Mutual Fund Shares

Percent change from year ago



Repurchase Agreements and Eurodollars\*

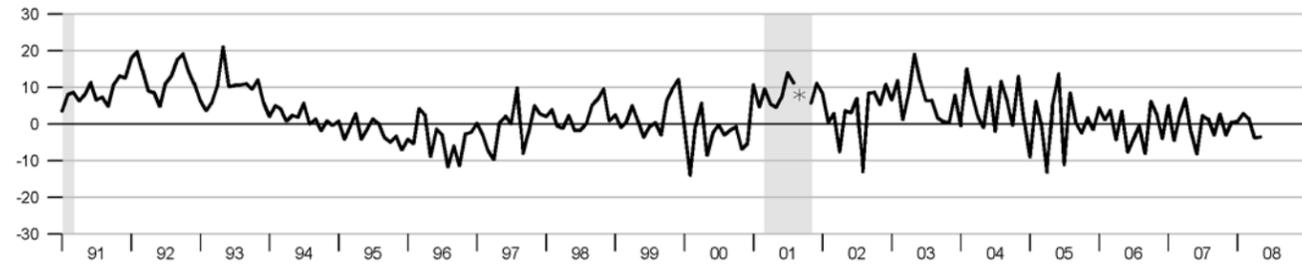
Billions of dollars



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

**M1**

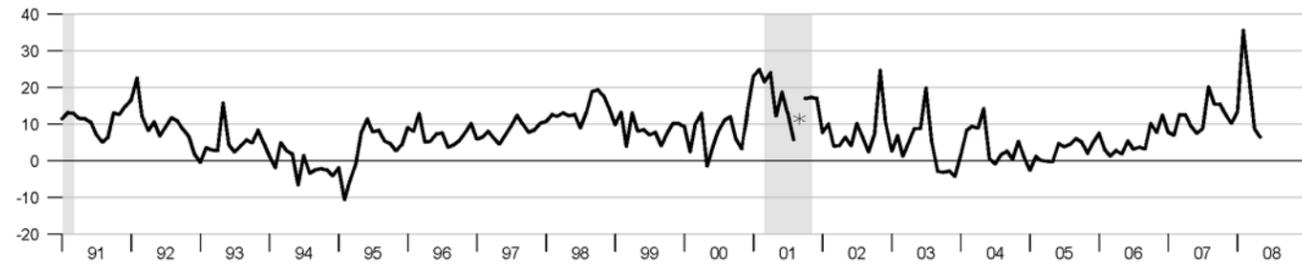
Percent change at an annual rate



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

**MZM**

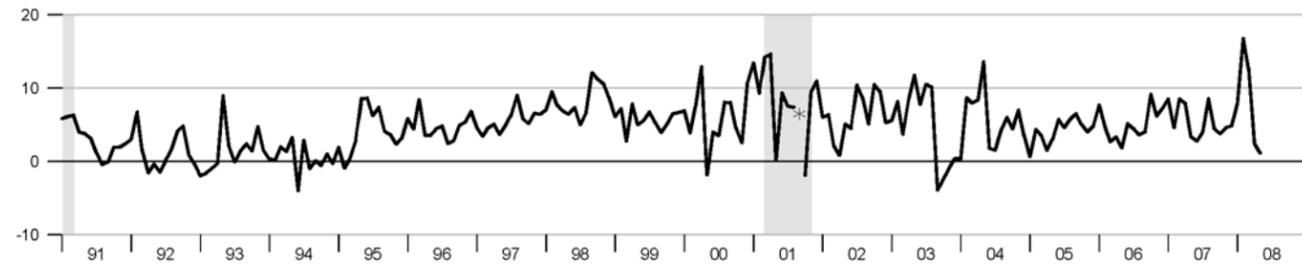
Percent change at an annual rate



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

**M2**

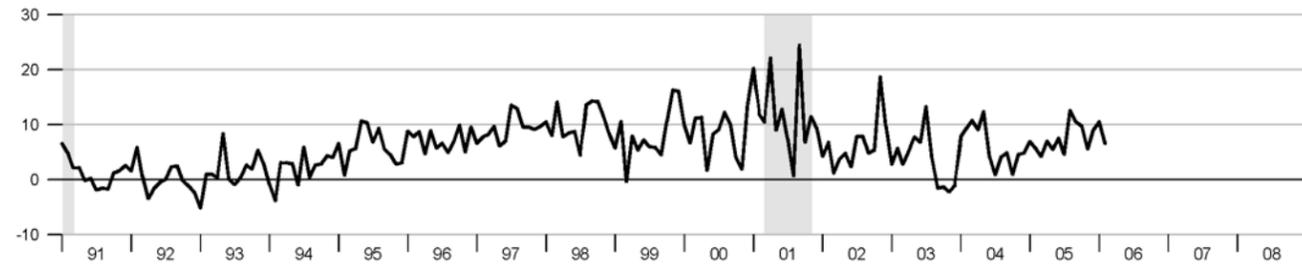
Percent change at an annual rate



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

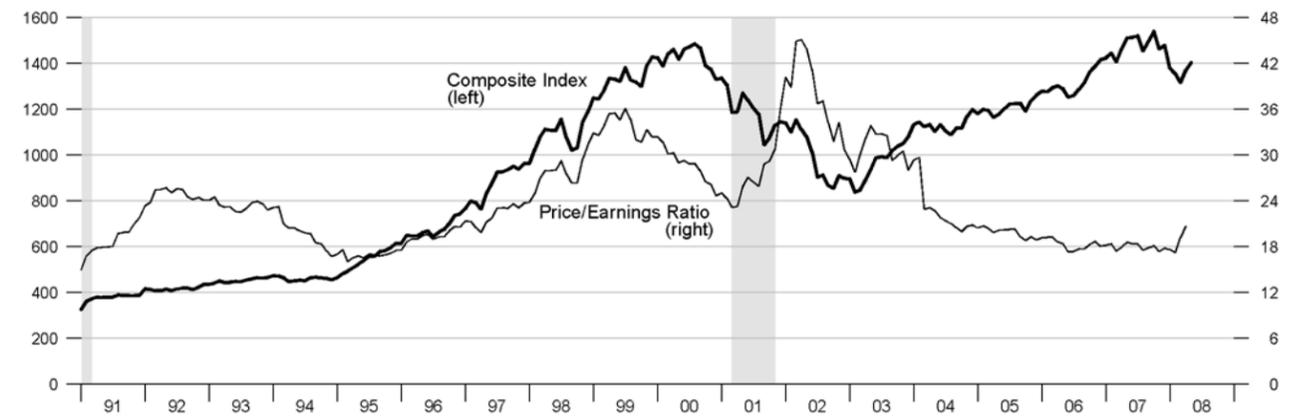
**M3\***

Percent change at an annual rate



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

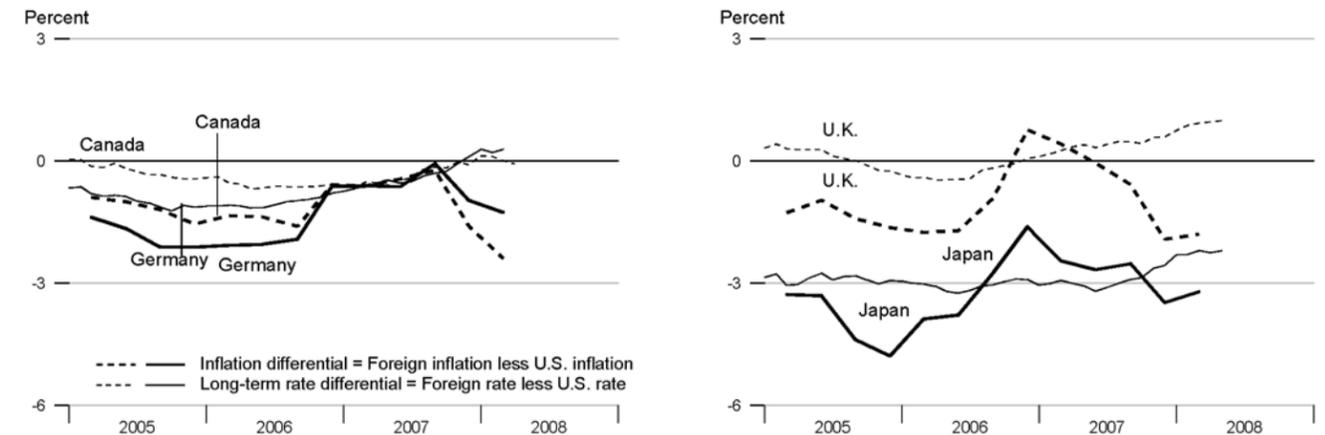
**Standard & Poor's 500**



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

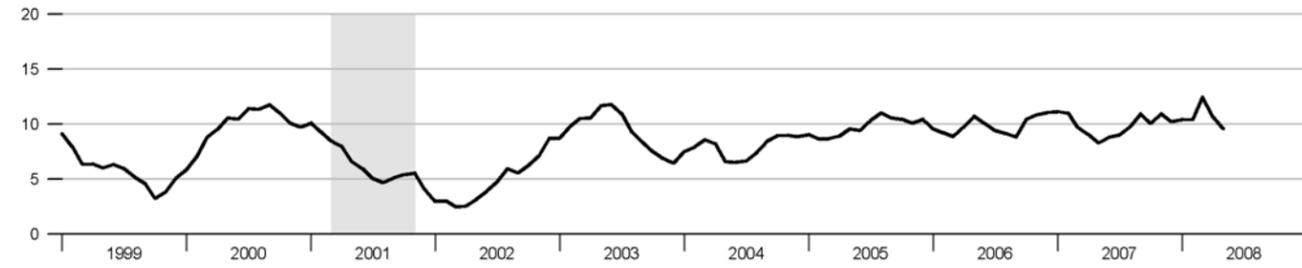
	Consumer Price Inflation Rates				Long-Term Government Bond Rates			
	Percent change from year ago				Percent			
	2007Q2	2007Q3	2007Q4	2008Q1	Feb08	Mar08	Apr08	May08
United States	2.63	2.36	4.01	4.17	3.74	3.51	3.68	3.88
Canada	2.19	2.13	2.41	1.78	3.85	3.52	3.61	.
France	1.18	1.27	2.34	2.95	4.08	4.02	.	.
Germany	2.00	2.30	3.04	2.92	3.95	3.80	.	.
Italy	1.59	1.64	2.36	3.06	4.35	4.38	4.53	.
Japan	-0.03	-0.16	0.53	0.96	1.45	1.31	1.43	1.68
United Kingdom	2.58	1.78	2.09	2.38	4.62	4.44	4.64	4.87

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



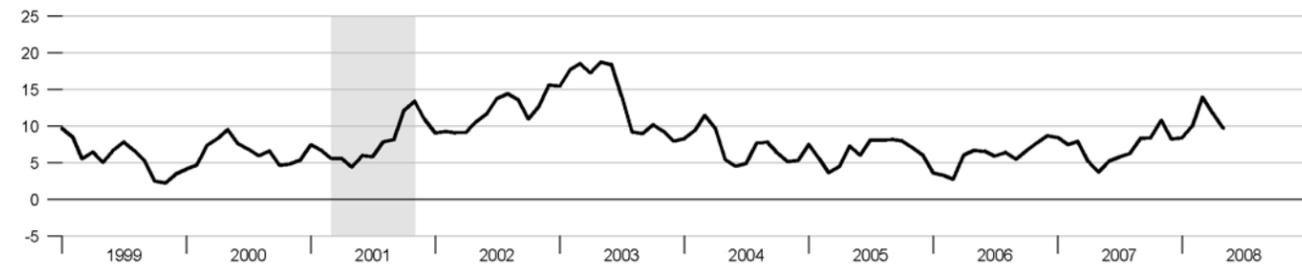
**Bank Credit**

Percent change from year ago



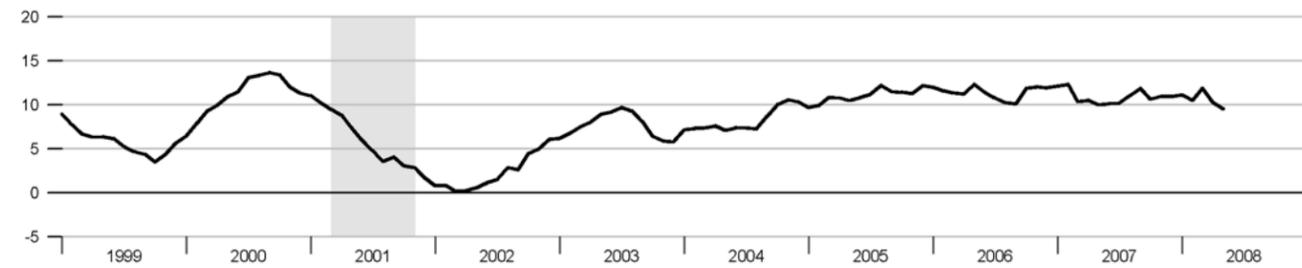
**Investment Securities in Bank Credit at Commercial Banks**

Percent change from year ago



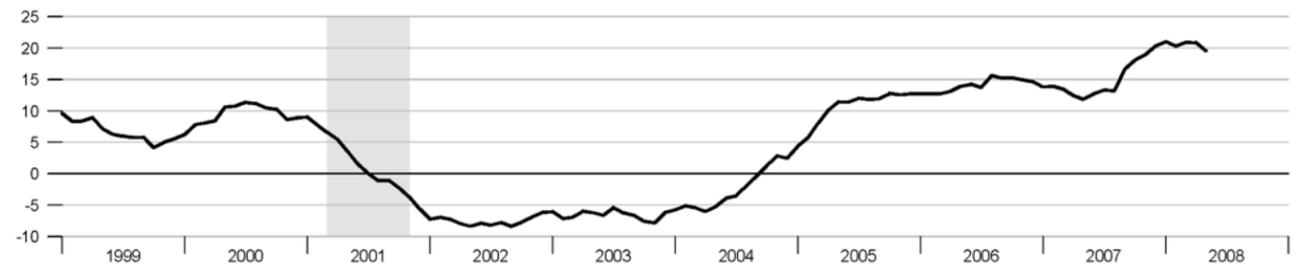
**Total Loans and Leases in Bank Credit at Commercial Banks**

Percent change from year ago



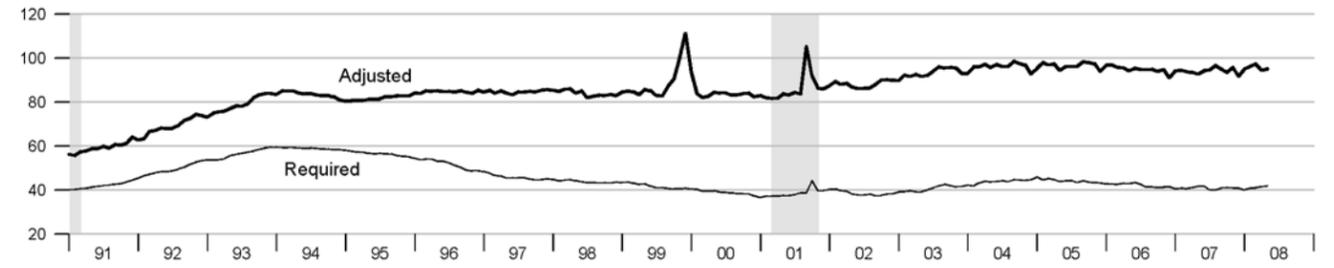
**Commercial and Industrial Loans at Commercial Banks**

Percent change from year ago



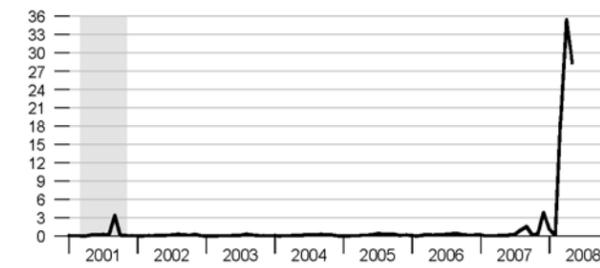
**Adjusted and Required Reserves**

Billions of dollars



**Total Borrowings, nsa**

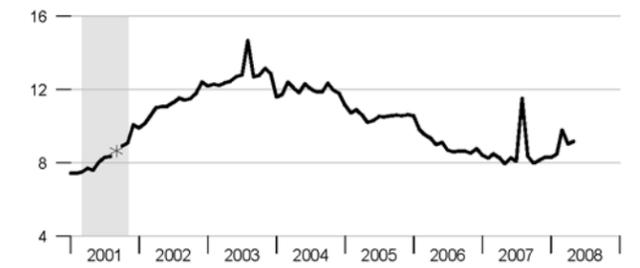
Billions of dollars



\* Total borrowings include loans to depository institutions for primary, secondary, seasonal credit, primary dealer credit facility, and other credit extensions, but exclude term auction credit.

**Excess Reserves plus RCB Contracts**

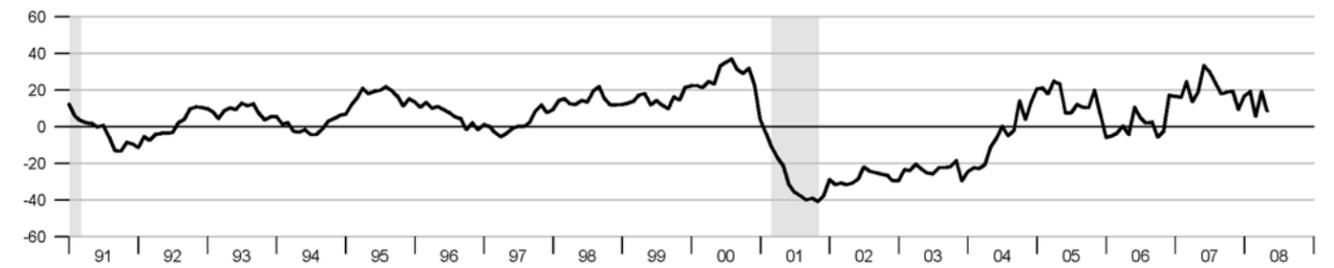
Billions of dollars



\*Actual value for September 2001 is \$26.43 billion.

**Nonfinancial Commercial Paper**

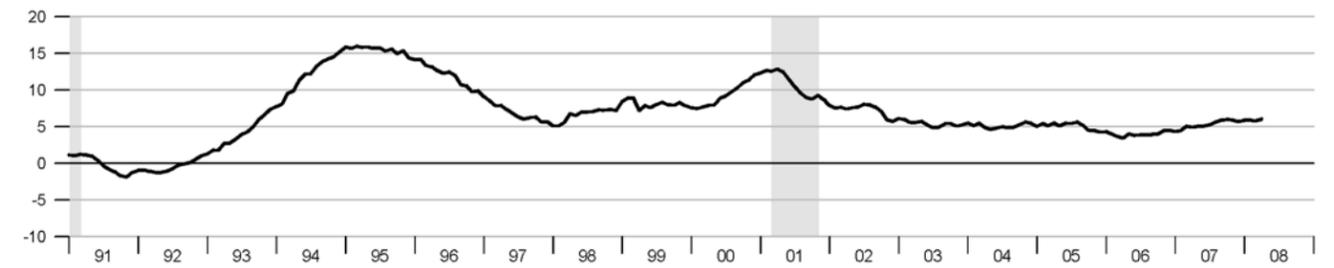
Percent change from year ago



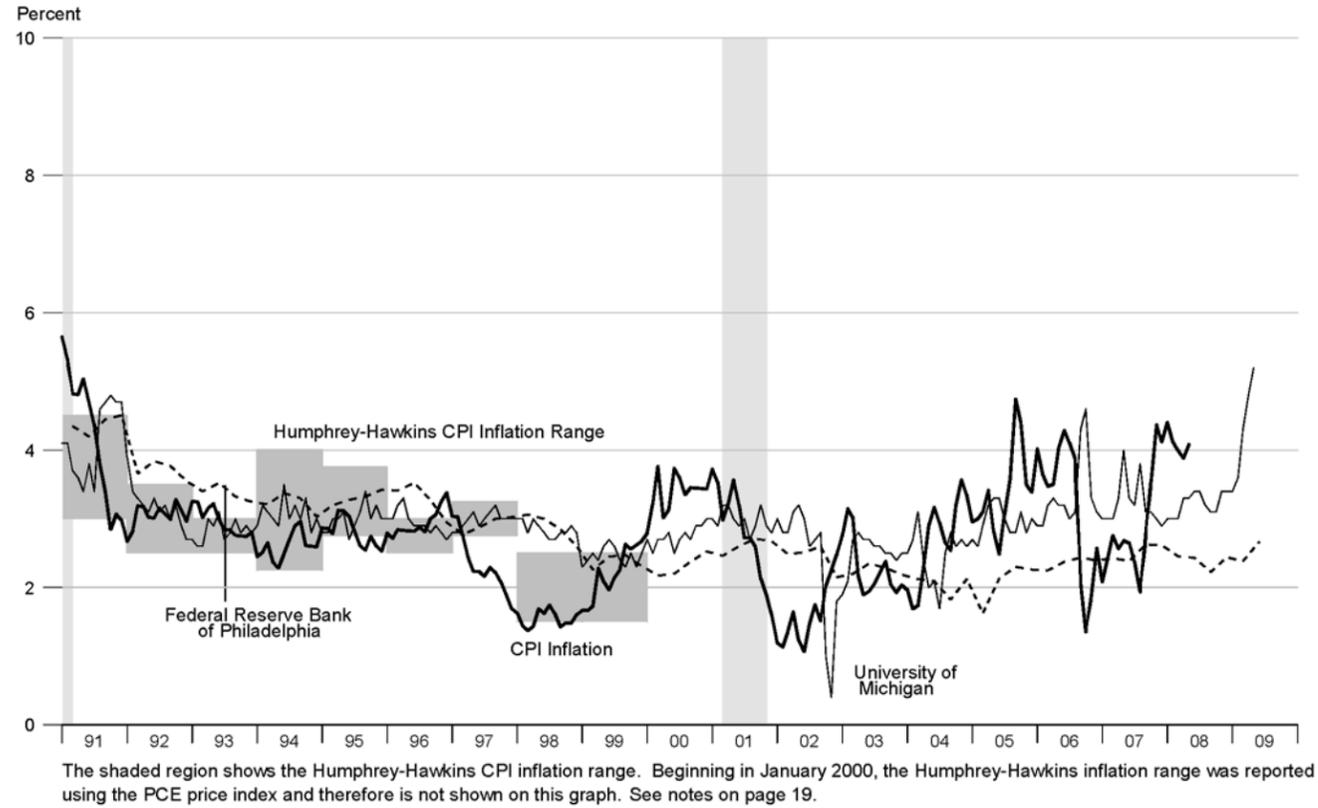
As of April 10, 2006, the Federal Reserve Board made major changes to its commercial paper calculations. For more information, please refer to <http://www.federalreserve.gov/releases/cp/about.htm>.

**Consumer Credit**

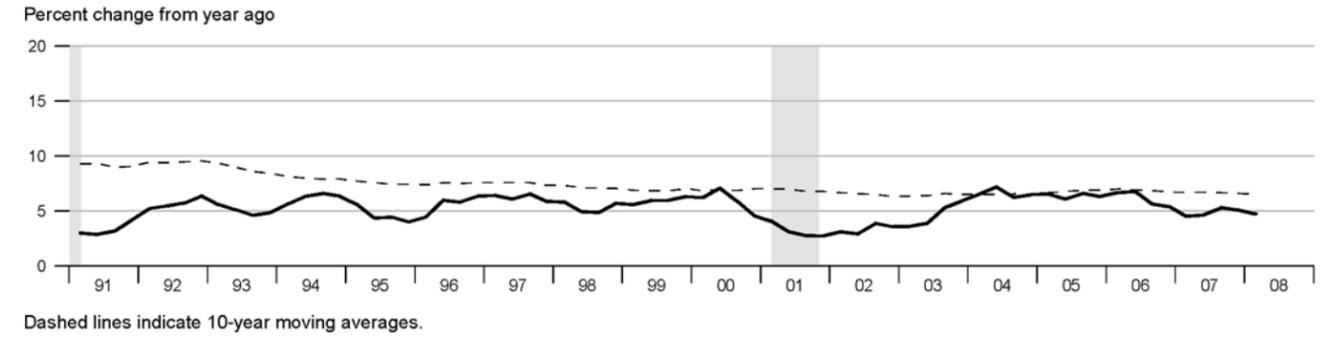
Percent change from year ago



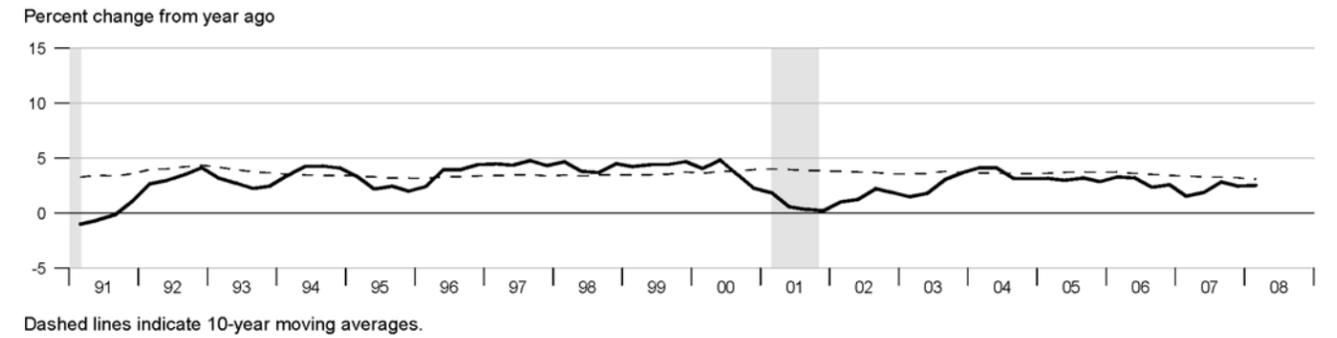
**Inflation and 1-Year-Ahead Inflation Expectations**



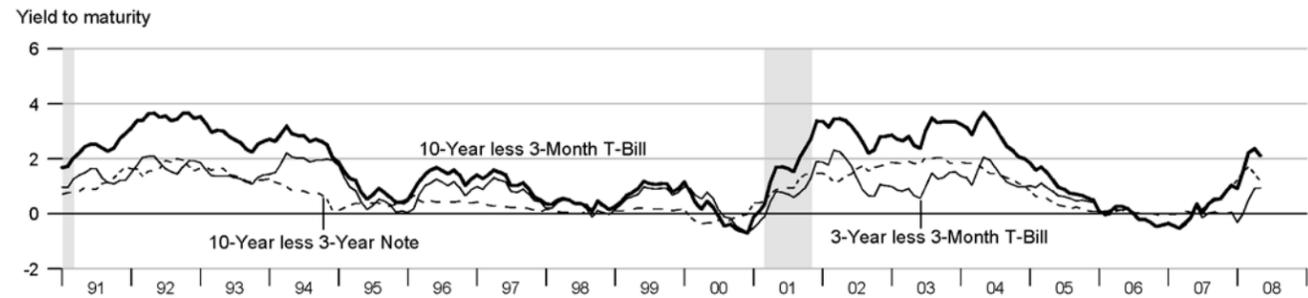
**Gross Domestic Product**



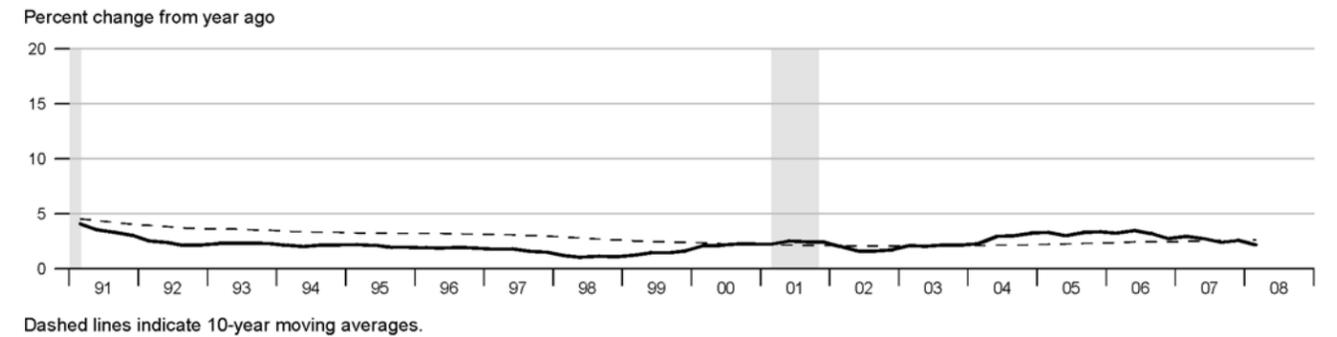
**Real Gross Domestic Product**



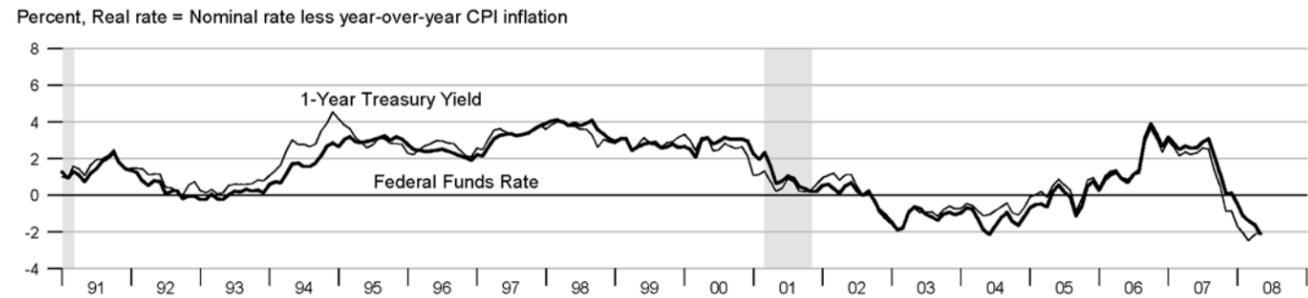
**Treasury Security Yield Spreads**



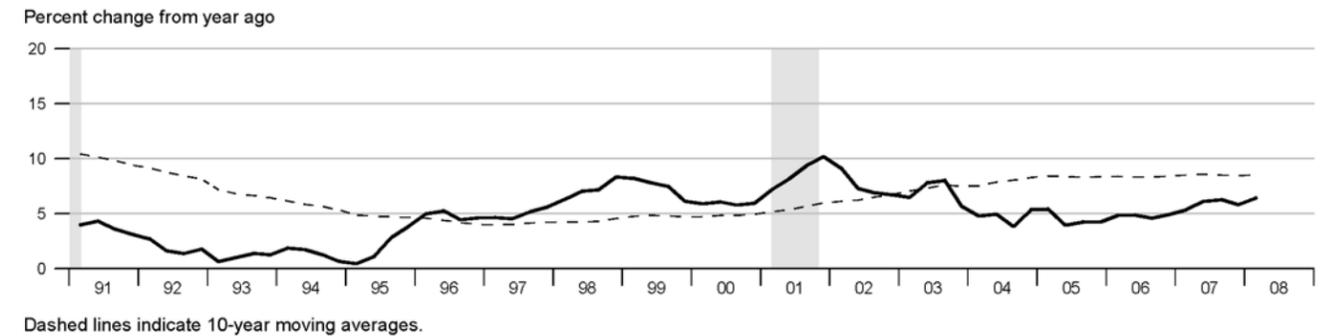
**Gross Domestic Product Price Index**



**Real Interest Rates**

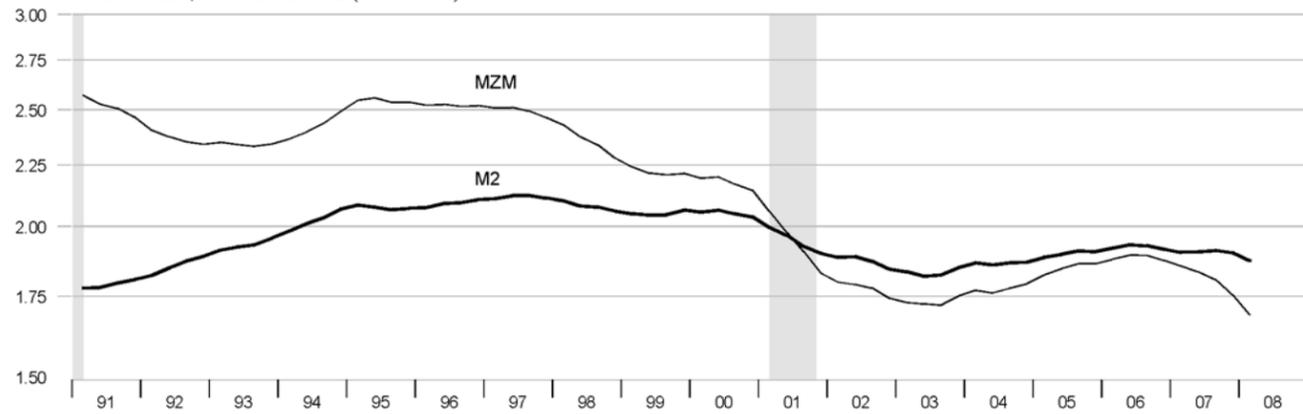


**M2**



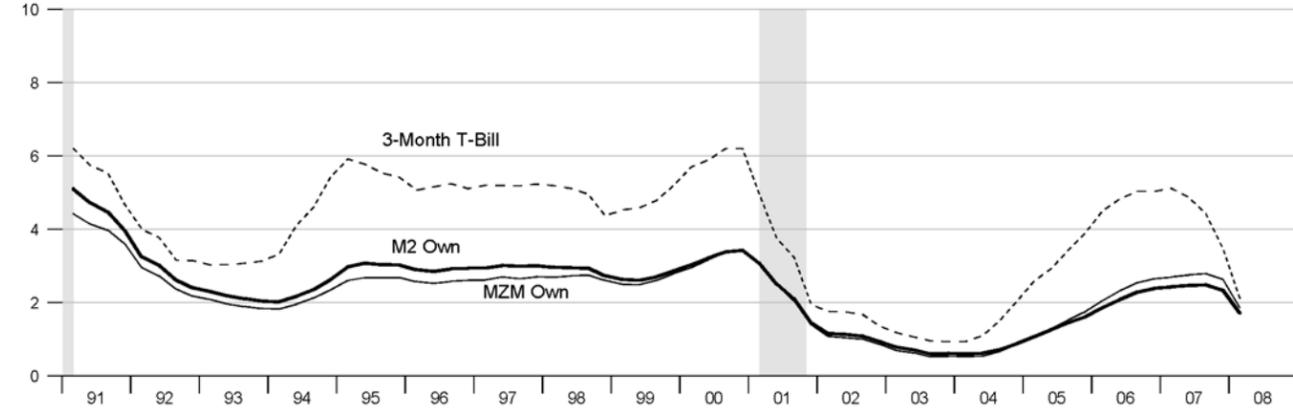
Velocity

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



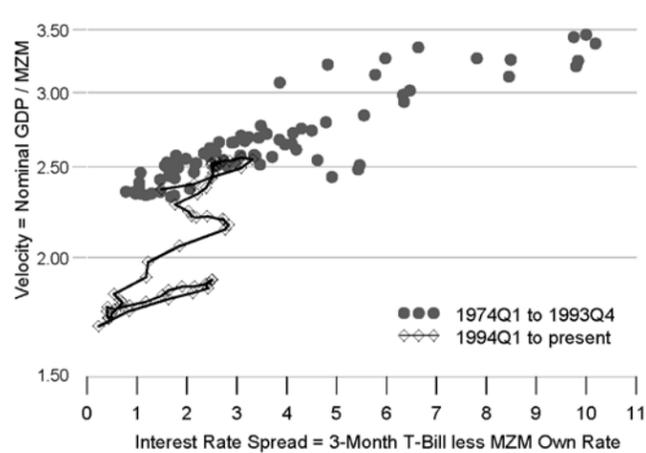
Interest Rates

Percent



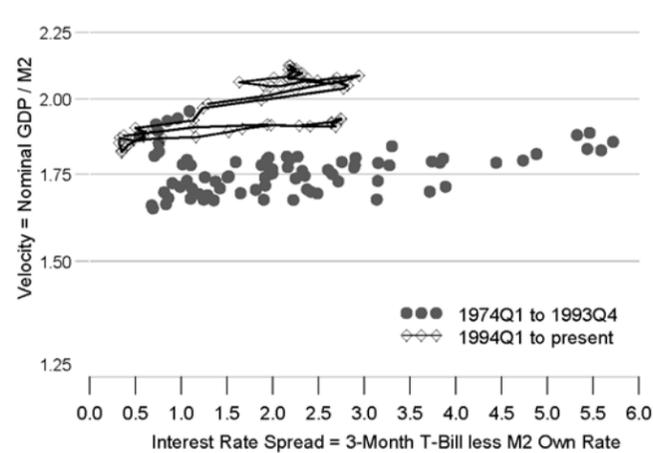
MZM Velocity and Interest Rate Spread

Ratio Scale



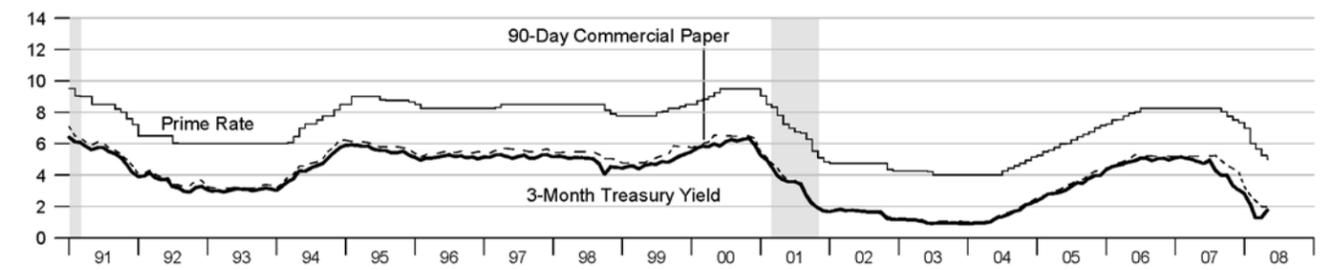
M2 Velocity and Interest Rate Spread

Ratio Scale



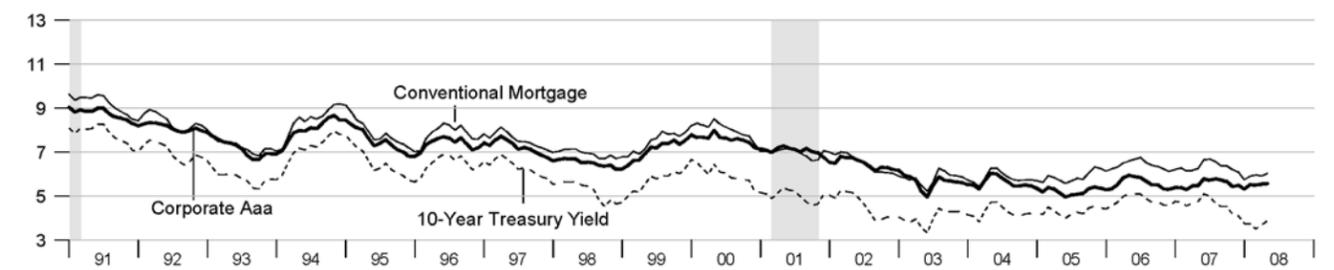
Short-Term Interest Rates

Percent



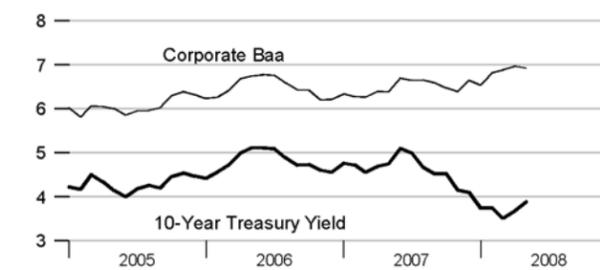
Long-Term Interest Rates

Percent



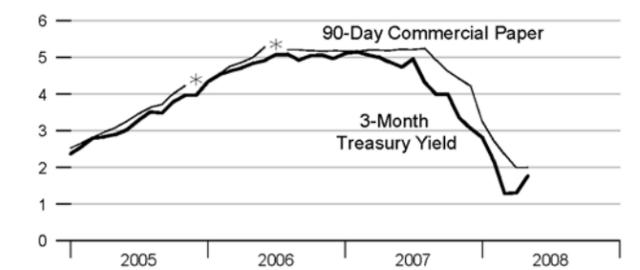
Long-Term Interest Rates

Percent



Short-Term Interest Rates

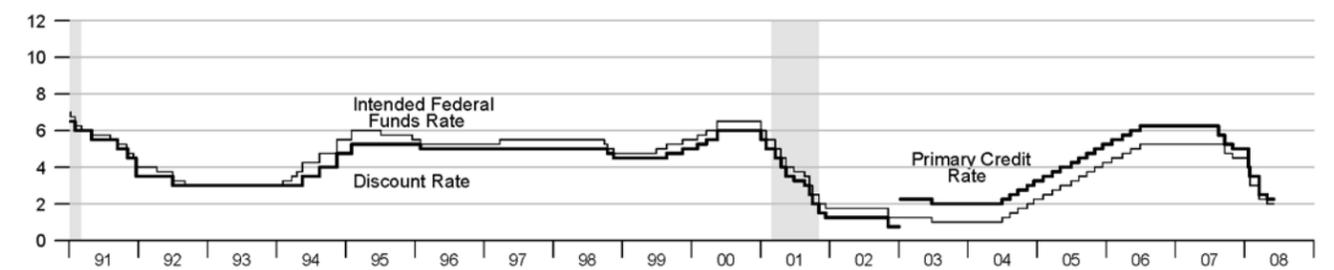
Percent



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

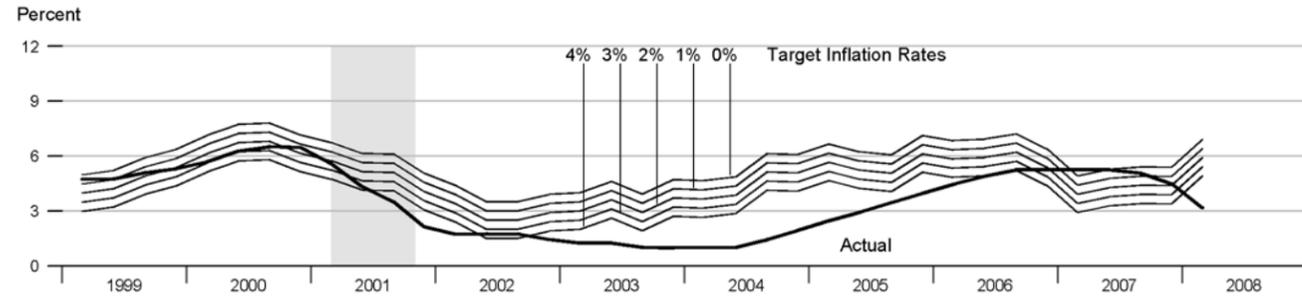
FOMC Intended Federal Funds Rate, Discount Rate, and Primary Credit Rate

Percent



Data available as of May 2008.

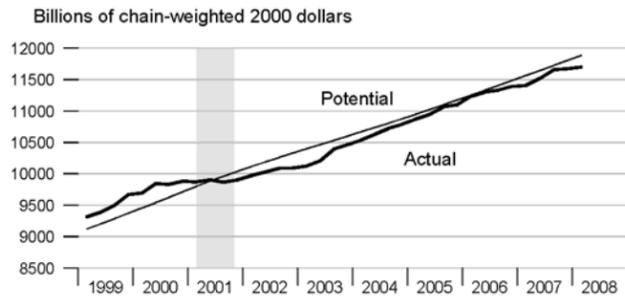
Federal Funds Rate and Inflation Targets



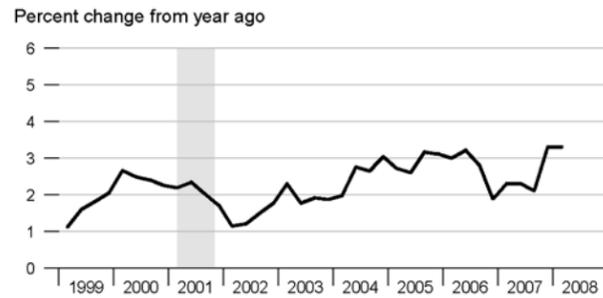
Calculated federal funds rate is based on Taylor's rule. See notes on page 19.

Components of Taylor's Rule

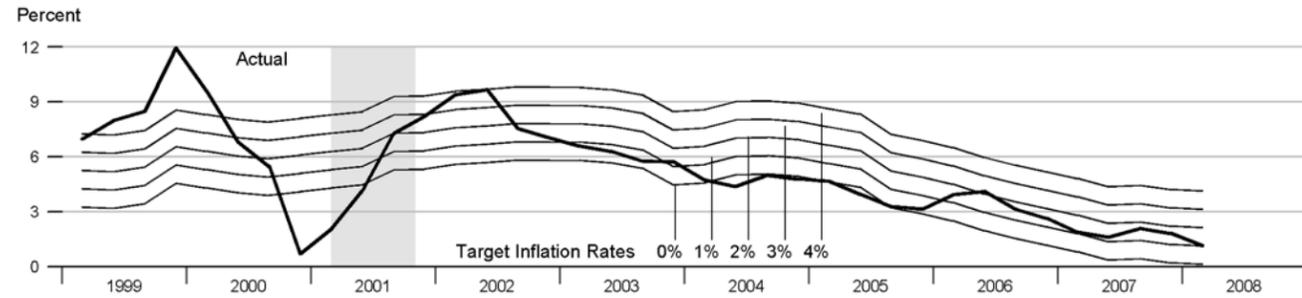
Actual and Potential Real GDP



PCE Inflation



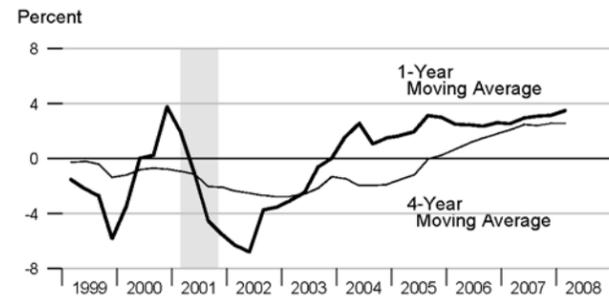
Monetary Base Growth\* and Inflation Targets



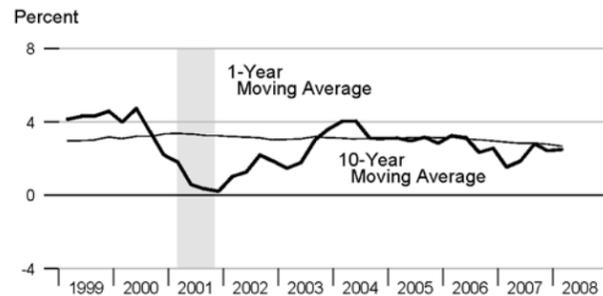
\*Modified for the effects of sweeps programs on reserve demand. Calculated base growth is based on McCallum's rule. Actual base growth is percent change from year ago. See notes on page 19.

Components of McCallum's Rule

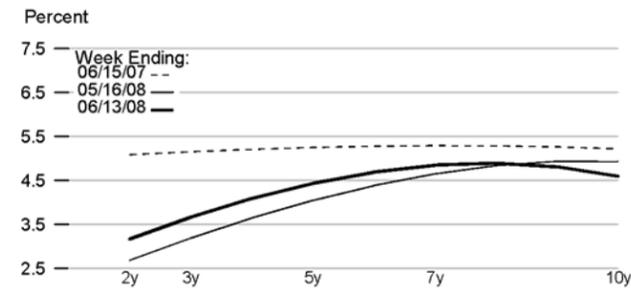
Monetary Base Velocity Growth



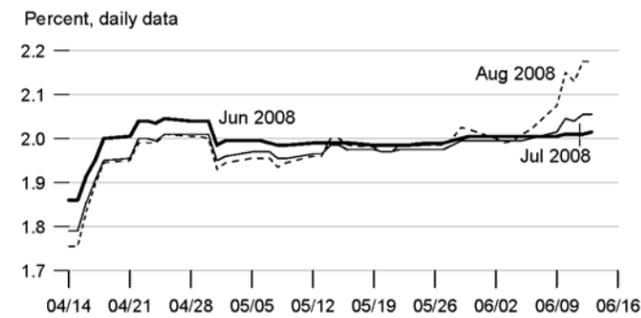
Real Output Growth



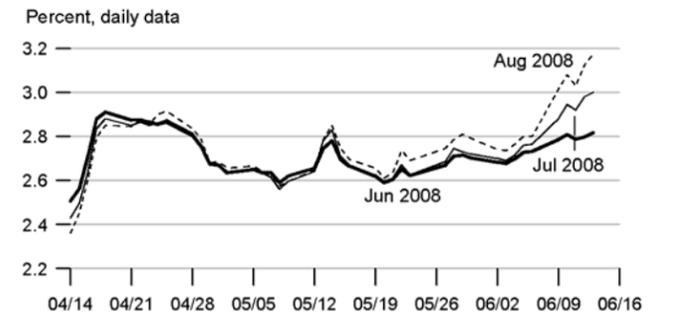
Implied One-Year Forward Rates



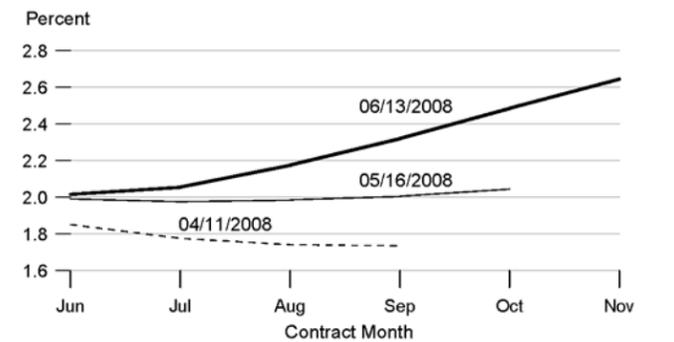
Rates on Selected Federal Funds Futures Contracts



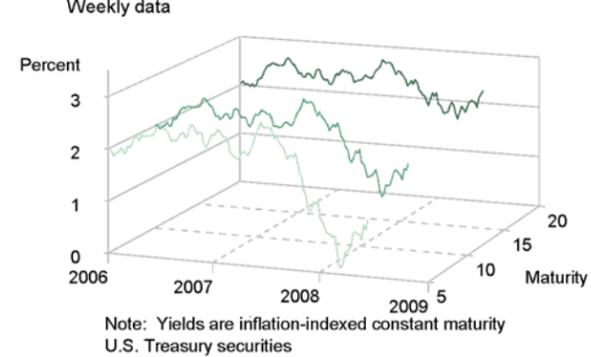
Rates on 3-Month Eurodollar Futures



Rates on Federal Funds Futures on Selected Dates

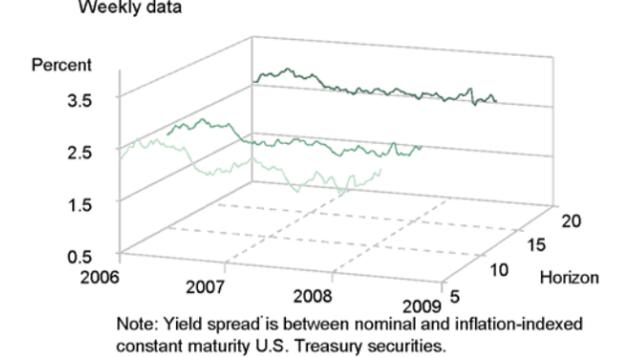


Inflation-Indexed Treasury Securities



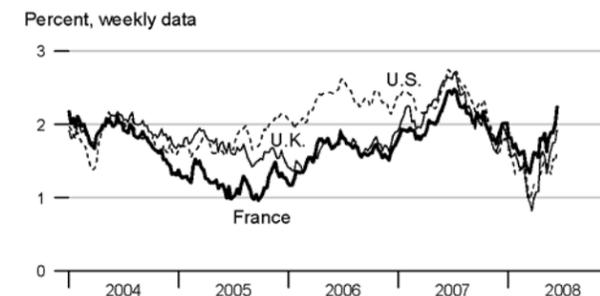
Note: Yields are inflation-indexed constant maturity U.S. Treasury securities

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 Notes



Inflation-Indexed 10-Year Government Yield Spreads

