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 $m = 1,...,$ 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/.

Monetary Trends

November 2006

The Quantity Theory of Money

The quantity theory of money (QTM) asserts that aggregate prices (P) and total money supply (M) are related according to the equation $P = VM/Y$, where Y is real output and V is velocity of money. With lower-case letters denoting percentage changes (growth rates), the QTM can be expressed as $p = v + m - y$, with p as the rate of inflation and y, v, and m as growth rates of output, velocity, and money stock, respectively. A central implication of the QTM is that a given change in the rate of money growth induces an equal change in the inflation rate, prompting Milton Friedman to claim that "inflation is always and everywhere a monetary phenomenon."[1]

A crucial assumption behind this claim is that the velocity of money or its growth rate is constant and money growth has no effect on real GDP growth—at least at a sufficiently long horizon. In fact, many empirical studies of the QTM treat the velocity of money or its growth rate as constant. However, postwar U.S. data suggest the velocity of money is far from constant.

Instead of assuming the velocity of money or its growth rate is a constant, we can use the QTM equation, $v = p + y - m$, to allow the changes in velocity to be dictated directly by three sources: inflation, output growth, and money growth. The dynamic interactions among these three variables can be captured by econometric analysis.[2] In this way, the dynamics of velocity are not restricted a priori. And such analysis shows that money growth and inflation are indeed highly correlated in the very long run. The chart shows the correlation between money growth and inflation across different horizons (or frequencies),[3] which reaches 0.85 in the long run (at frequency zero) and never exceeds 0.4 at horizons equal to or shorter than the business cycle (about 2 to 8 years). The chart also may suggest that Friedman is right: At least in the long run, changes in inflation and changes in money growth are closely related.

However, further analysis[4] shows that the close long-run relationship between inflation and money growth may not necessarily be driven by purely monetary forces, but rather by forces such as permanent movements in GDP and non-monetary shocks. For example, in analyses that assume money growth shocks do not affect velocity and output growth in the long run (à la Friedman), about 18 percent of the long-run movement of inflation at frequency zero is attributable to money growth shocks; the remaining 82 percent is due to shocks that can have permanent long-run effects on output and the velocity of money.

This result suggests that endogenous monetary policy may have allowed non-monetary shocks to have a stronger effect on inflation than autonomous movement in money supply. Therefore, while the close long-run link between money growth and inflation supports Friedman's proposition, the significance of this link for monetary policy requires further investigation of the underlying factors that drive inflation and money growth.

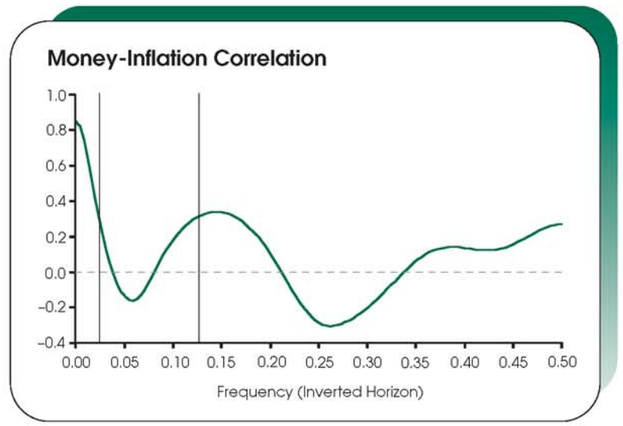
—Yi Wen

[1] Friedman, Milton. "The Counter-Revolution in Monetary Theory." Wincott Memorial Lecture, London, September 16, 1970.

[2] The analysis uses spectral methods; see Sargent, Thomas. *Macroeconomic Theory*. Academic Press, 1987.

[3] The x axis indicates the frequency or inverted horizon of changes in inflation and money growth. E.g., frequency 0.0 means the horizon for a change is infinite periods; frequency 0.5 means the horizon for a change is 2 periods. The data are quarterly, so one period is a quarter. The vertical bars represent a business-cycle horizon from 2 to 10 years. The y axis indicates the correlation between money and inflation at each possible horizon, from infinite quarters to 2 quarters. The shortest horizon is 2 periods.

[4] The analysis uses variance decomposition methods in the frequency domain; see Wen, Yi. "The Business Cycle Effects of Christmas." *Journal of Monetary Economics*, 2002, *49*, pp. 1289-314.



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: $[(x_t/x_{t-12})-1]\times 100$.

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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.

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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.

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. **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/. 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 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, π_{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

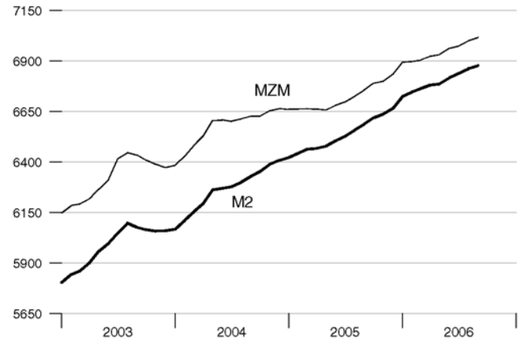
$$\Delta MB_t^* = \pi^* + (\text{10-year moving average growth of real GDP}) - (\text{4-year moving average of base velocity growth})$$

to five alternative target inflation rates, $\pi^* = 0, 1, 2, 3, 4$ percent, where ΔMB_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.

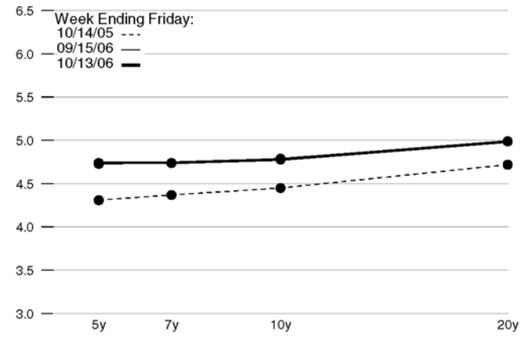
		M1	MZM	M2	M3*
Percent change at an annual rate					
	2001	3.33	15.79	8.70	11.49
	2002	4.91	12.76	7.37	7.98
	2003	6.46	7.41	6.99	6.40
	2004	5.57	4.01	4.67	5.09
	2005	1.98	2.24	4.34	5.97
2004	1	5.81	2.63	3.35	5.43
	2	6.01	9.32	8.60	9.74
	3	4.34	2.02	3.83	4.04
	4	4.92	2.07	5.14	3.42
2005	1	0.04	0.81	3.75	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	0.93	2.36	2.99	
	3	-4.71	3.28	3.77	
2004	Sep	4.98	2.49	5.56	4.83
	Oct	0.91	-0.04	4.53	0.96
	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
	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
	Oct	1.65	5.79	5.53	9.79
	Nov	0.72	1.80	3.49	5.57
	Dec	-5.75	5.77	4.80	8.99
2006	Jan	10.34	10.69	10.80	10.49
	Feb	-4.10	0.67	3.97	6.55
	Mar	7.88	1.30	2.96	
	Apr	1.78	3.25	3.22	
	May	5.57	1.49	1.04	
	Jun	-19.59	5.20	5.23	
	Jul	2.70	1.97	3.75	
	Aug	-2.92	4.40	4.16	
	Sep	-10.88	2.91	2.75	

*See table of contents for changes to the series.

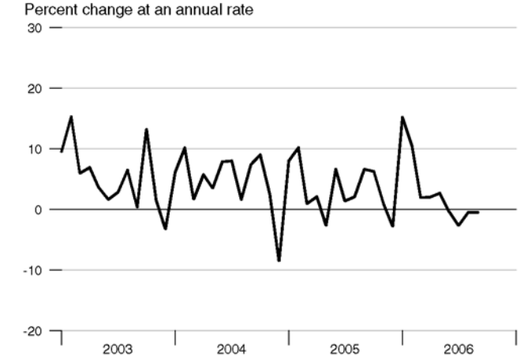
M2 and MZM



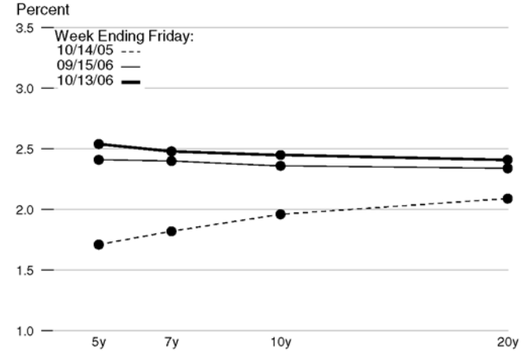
Treasury Yield Curve



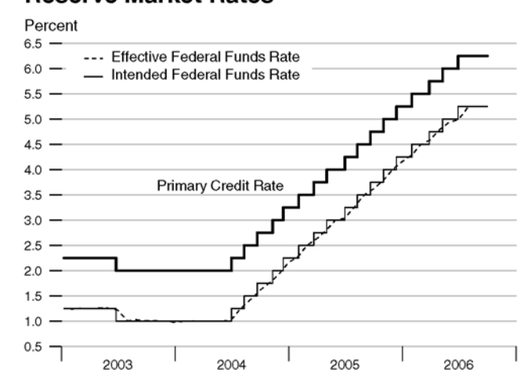
Adjusted Monetary Base



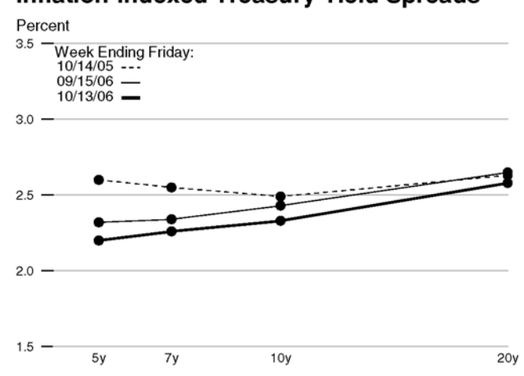
Real Treasury Yield Curve



Reserve Market Rates

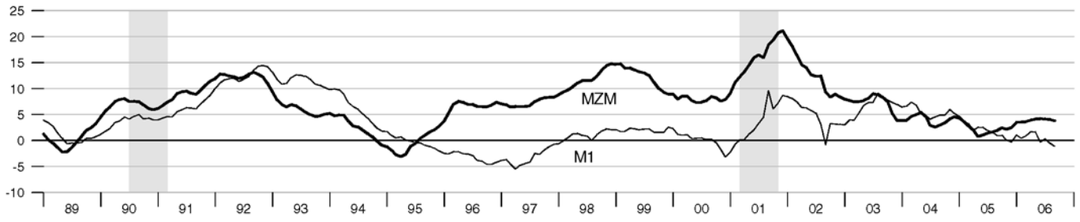


Inflation-Indexed Treasury Yield Spreads



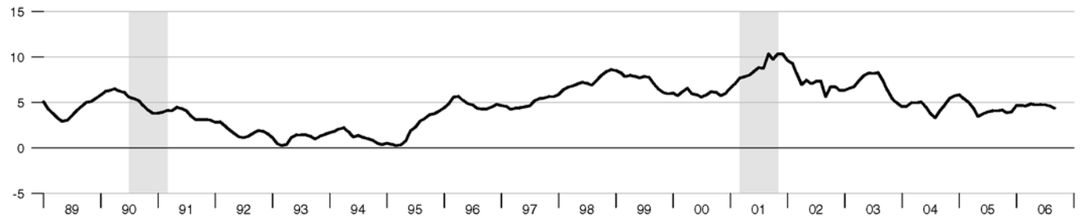
MZM and M1

Percent change from year ago



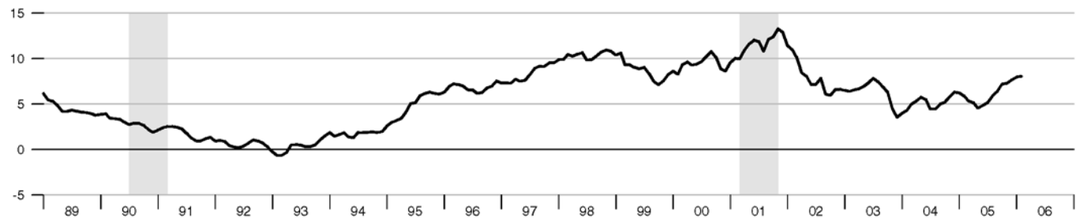
M2

Percent change from year ago



M3*

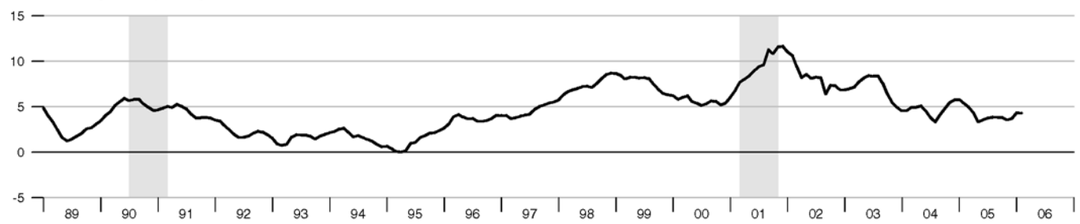
Percent change from year ago



*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 accomodate the discontinuation of M3.

updated through
10/16/06

		Federal Funds	Primary Credit Rate	Prime Rate	3-mo CDs	Treasury Yields 3-mo	Treasury Yields 3-yr	Treasury Yields 10-yr	Corporate Aaa Bonds	S & L Aaa Bonds	Conventional Mortgage
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	Sep	1.61	2.58	4.58	1.86	1.68	2.83	4.13	5.46	4.40	5.75
	Oct	1.76	2.75	4.75	2.04	1.79	2.85	4.10	5.47	4.38	5.72
	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

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

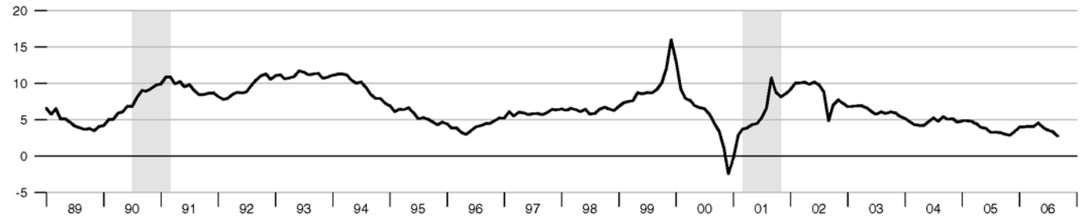
		Money Stock				Bank	Adjusted		
		M1	MZM	M2	M3*	Credit	Monetary Base	Reserves	MSI M2**
	2001	1140.196	5214.937	5206.345	7648.507	5344.167	641.167	86.172	271.477
	2002	1196.168	5880.308	5590.239	8259.055	5597.593	697.092	88.158	294.080
	2003	1273.407	6315.985	5980.907	8787.321	6122.995	740.929	93.313	315.192
	2004	1344.324	6569.473	6260.024	9234.718	6598.993	776.707	96.066	329.873
	2005	1370.962	6716.403	6531.713	9786.477	7240.081	806.301	96.231	343.539
2004	1	1318.047	6431.982	6111.332	9003.705	6428.108	761.428	95.033	322.050
	2	1337.860	6581.799	6242.697	9223.054	6557.134	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	6989.069	798.244	96.653	339.356
	2	1369.260	6667.414	6484.438	9670.405	7160.040	802.639	96.073	341.280
	3	1372.821	6727.253	6558.398	9859.294	7350.957	808.384	96.283	344.766
	4	1372.625	6808.390	6640.674	10088.16	7460.260	815.935	95.915	348.753
2006	1	1380.167	6899.505	6745.194		7638.974	830.493	96.444	
	2	1383.377	6940.252	6795.659		7886.148	836.374	95.060	
	3	1367.072	6997.247	6859.663		8015.518	834.634	94.844	
2004	Sep	1359.706	6628.191	6329.422	9351.849	6707.071	786.354	98.682	333.496
	Oct	1360.739	6627.997	6353.339	9359.369	6721.277	792.254	97.567	334.816
	Nov	1374.170	6654.387	6389.139	9395.128	6762.316	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	6993.490	800.277	97.807	339.355
	Mar	1372.574	6664.272	6463.748	9565.346	7080.783	800.908	97.045	340.347
	Apr	1363.316	6662.721	6468.138	9620.909	7106.074	802.316	97.426	340.663
	May	1370.305	6658.270	6479.217	9665.013	7158.746	800.589	94.583	340.941
	Jun	1374.159	6681.250	6505.958	9725.292	7215.299	805.012	96.209	342.235
	Jul	1369.263	6697.728	6527.722	9762.435	7281.115	805.957	95.522	343.275
	Aug	1376.812	6725.905	6558.827	9864.629	7361.649	807.369	95.628	344.739
	Sep	1372.387	6758.127	6588.645	9950.818	7410.108	811.826	97.699	346.285
	Oct	1374.270	6790.709	6618.997	10031.96	7429.258	816.092	97.341	347.590
	Nov	1375.095	6800.890	6638.223	10078.49	7449.928	816.780	96.867	348.603
	Dec	1368.511	6833.570	6664.801	10154.03	7501.593	814.934	93.538	350.067
2006	Jan	1380.299	6894.439	6724.806	10242.79	7558.439	825.246	96.870	353.032
	Feb	1375.585	6898.288	6747.069	10298.68	7645.404	832.436	96.891	353.943
	Mar	1384.616	6905.787	6763.706		7713.078	833.797	95.570	
	Apr	1386.665	6924.513	6781.870		7804.223	835.229	95.485	
	May	1393.106	6933.092	6787.774		7922.214	837.093	94.400	
	Jun	1370.361	6963.152	6817.334		7932.008	836.799	95.295	
	Jul	1373.439	6974.556	6838.639		7983.274	834.955	94.865	
	Aug	1370.097	7000.115	6862.319		8033.341	834.641	94.711	
	Sep	1357.679	7017.069	6878.032		8029.938	834.305	94.955	

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.

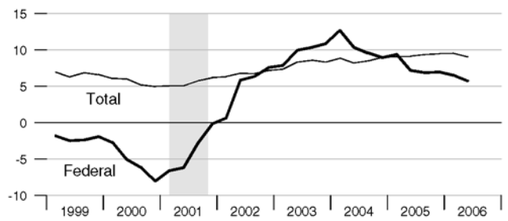
Adjusted Monetary Base

Percent change from year ago



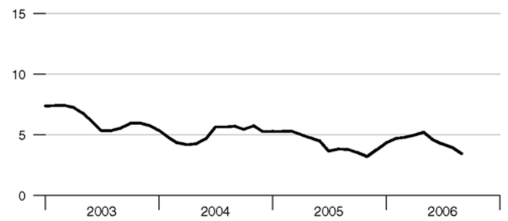
Domestic Nonfinancial Debt

Percent change from year ago



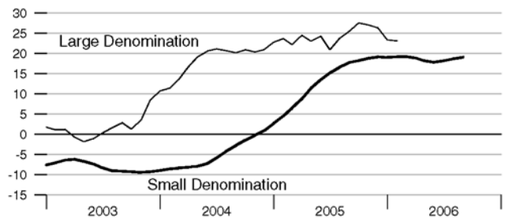
Currency Held by the Nonbank Public

Percent change from year ago



Time Deposits*

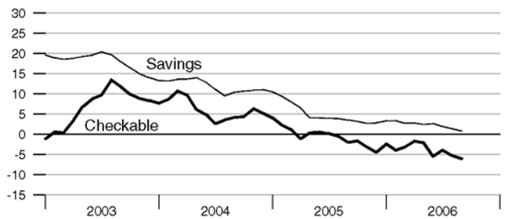
Percent change from year ago



*See table of contents for changes to the series.

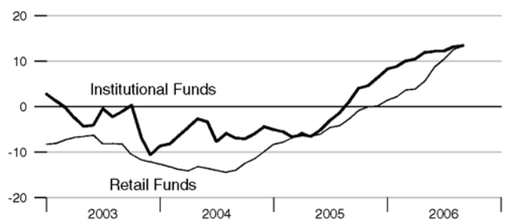
Checkable and Savings Deposits

Percent change from year ago

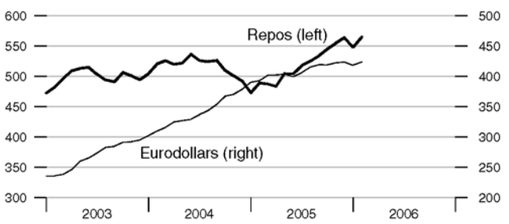


Money Market Mutual Fund Shares

Percent change from year ago



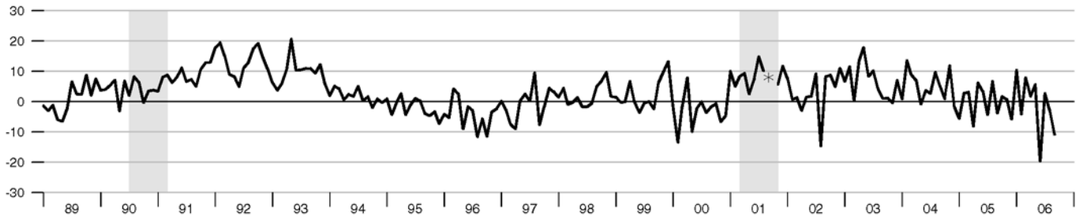
Repurchase Agreements and Eurodollars*



*See table of contents for changes to these series.

M1

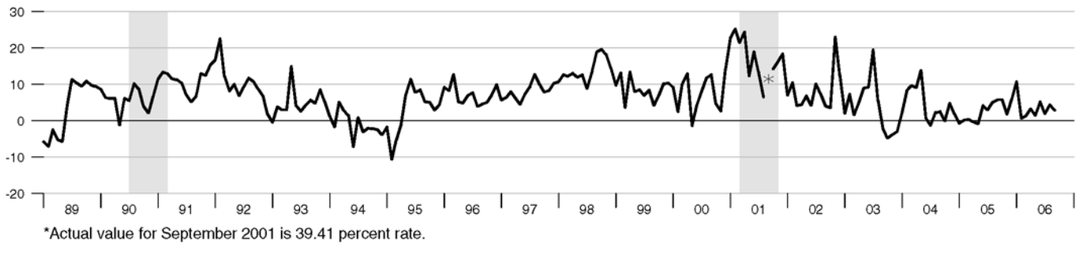
Percent change at an annual rate



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

MZM

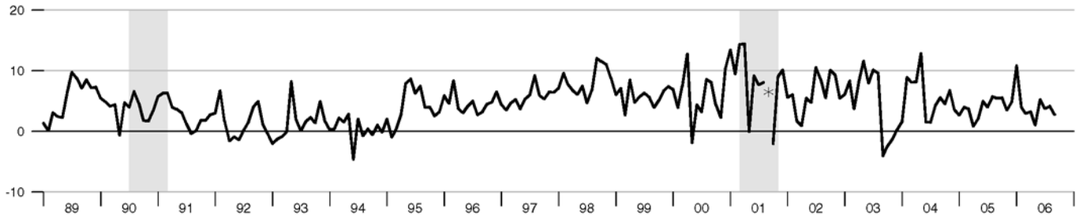
Percent change at an annual rate



*Actual value for September 2001 is 39.41 percent rate.

M2

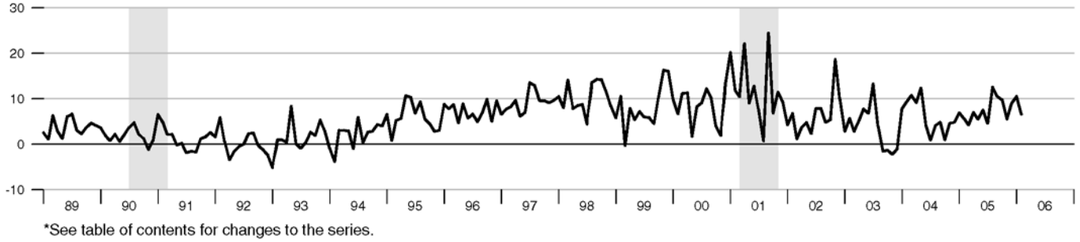
Percent change at an annual rate



*Actual value for September 2001 is 24.90 percent rate.

M3*

Percent change at an annual rate



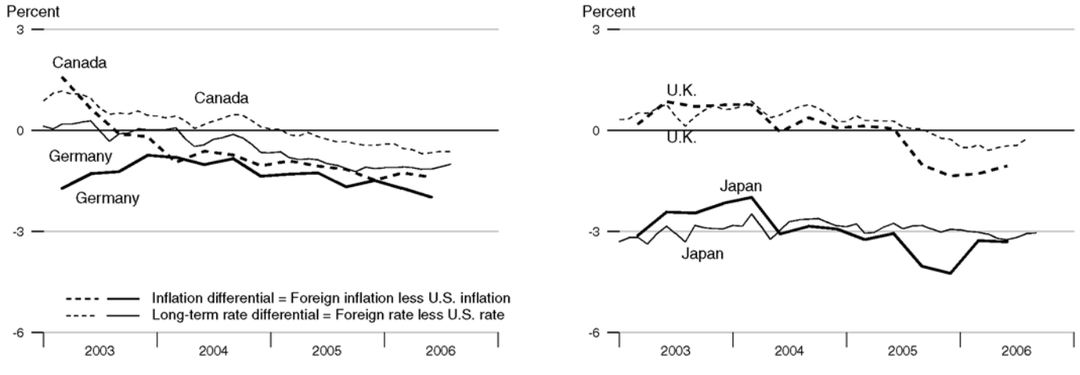
*See table of contents for changes to the series.

Standard & Poor's 500

Recent Inflation and Long-Term Interest Rates

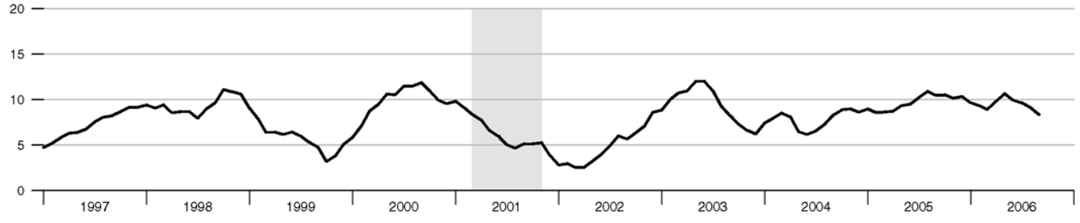
	Consumer Price Inflation Rates (Percent change from year ago)				Long-Term Government Bond Rates (Percent)			
	2005Q3	2005Q4	2006Q1	2006Q2	Jun06	Jul06	Aug06	Sep06
United States	3.80	3.73	3.68	3.99	5.11	5.09	4.88	4.72
Canada	2.64	2.26	2.41	2.60	4.45	4.47	4.25	.
France	1.90	1.65	1.79	1.92	4.01	4.03	.	.
Germany	2.13	2.25	1.96	2.01	3.96	4.01	3.88	.
Italy	2.03	2.15	2.14	2.23	4.29	4.31	4.17	.
Japan	-0.24	-0.51	0.41	0.68	1.87	1.91	1.82	1.68
United Kingdom	2.78	2.38	2.39	2.93	4.65	4.64	4.63	.

Inflation and Long-Term Interest Rate Differentials



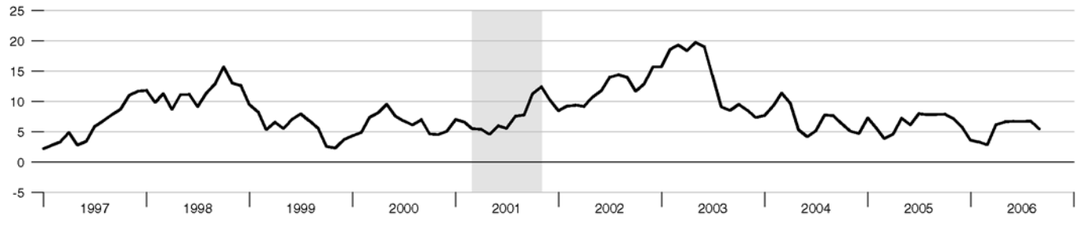
Bank Credit

Percent change from year ago



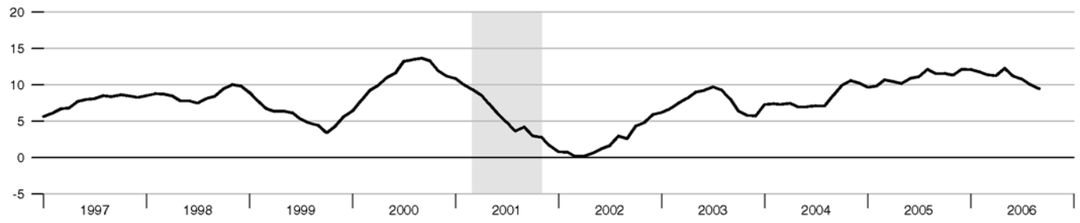
Investment Securities in Bank Credit at Commercial Banks

Percent change from year ago



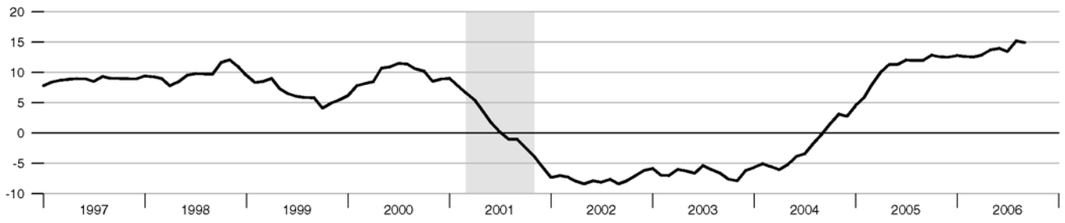
Total Loans and Leases in Bank Credit at Commercial Banks

Percent change from year ago



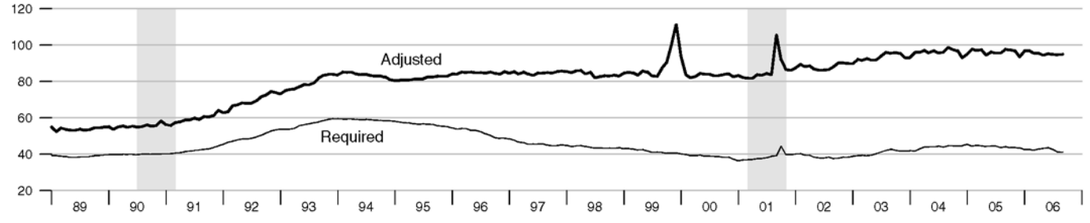
Commercial and Industrial Loans at Commercial Banks

Percent change from year ago



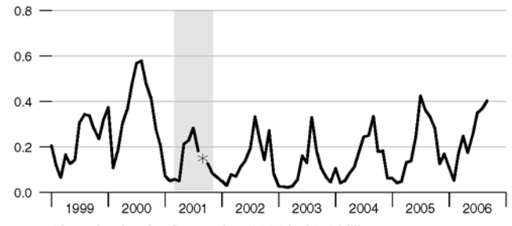
Adjusted and Required Reserves

Billions of dollars



Total Borrowings, nsa

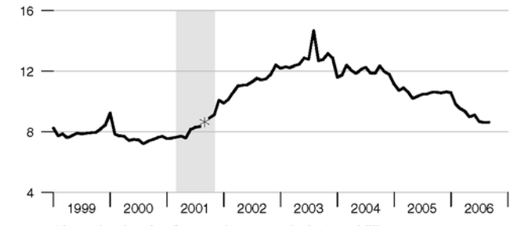
Billions of dollars



*Actual value for September 2001 is $3.4 billion.

Excess Reserves plus RCB Contracts

Billions of dollars



*Actual value for September 2001 is $26.43 billion.

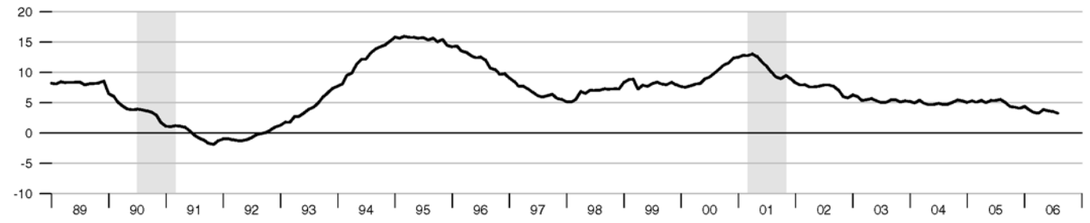
Nonfinancial Commercial Paper

Percent change from year ago

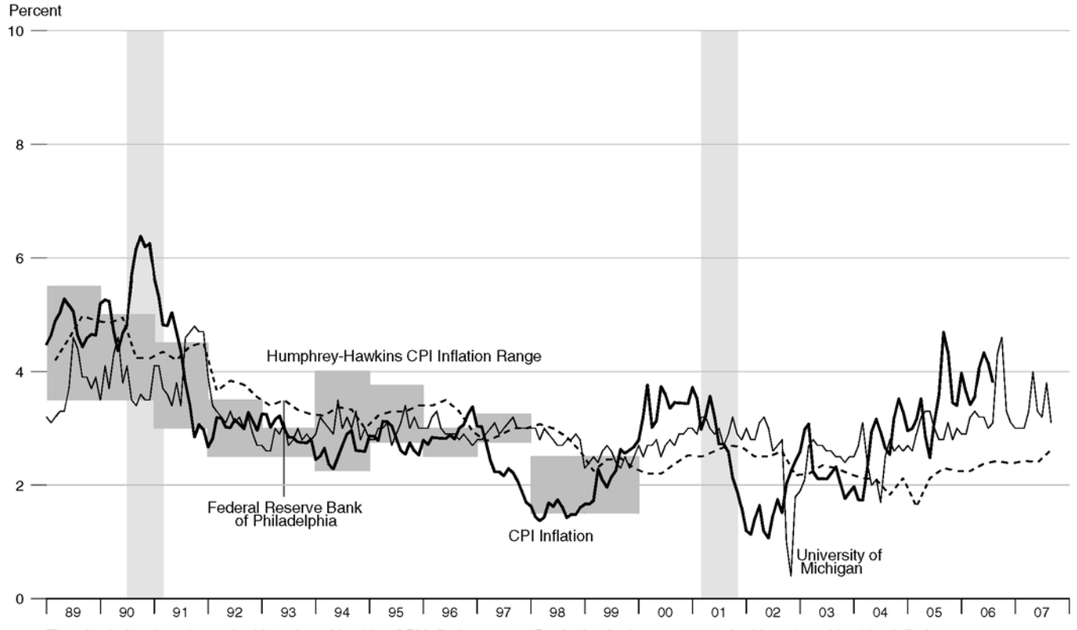
As of April 10, 2006, the Federal Reserve Board made major changes to its commercial paper calculations.
For more information, please refer to http://www.federalreserve.gov/releases/cp/about.htm.

Consumer Credit

Percent change from year ago



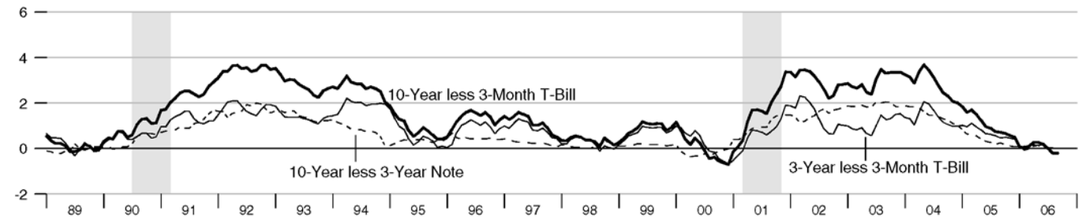
Inflation and 1-Year-Ahead Inflation Expectations



The shaded region shows the Humphrey-Hawkins CPI inflation range. Beginning in January 2000, the Humphrey-Hawkins inflation range was reported using the PCE price index and therefore is not shown on this graph. See notes on page 19.

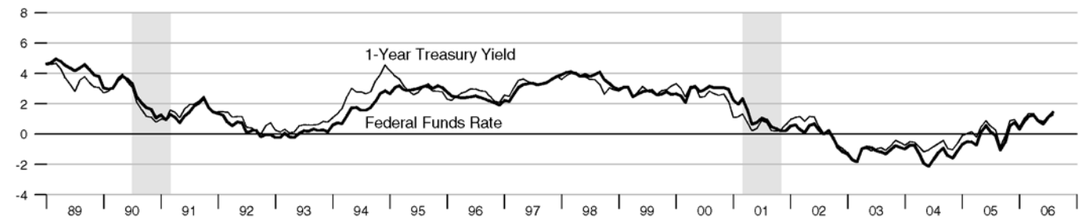
Treasury Security Yield Spreads

Yield to maturity



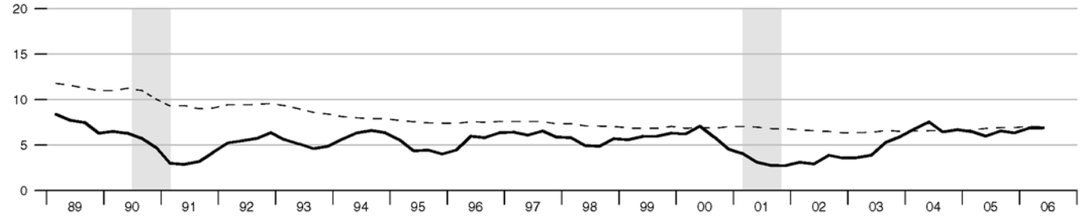
Real Interest Rates

Percent, Real rate = Nominal rate less CPI inflation



Gross Domestic Product

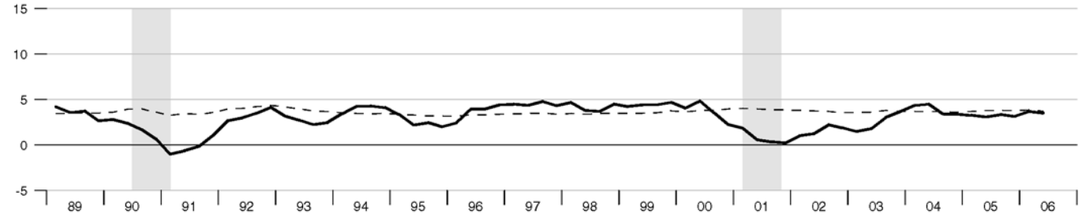
Percent change from year ago



Dashed lines indicate 10-year moving averages.

Real Gross Domestic Product

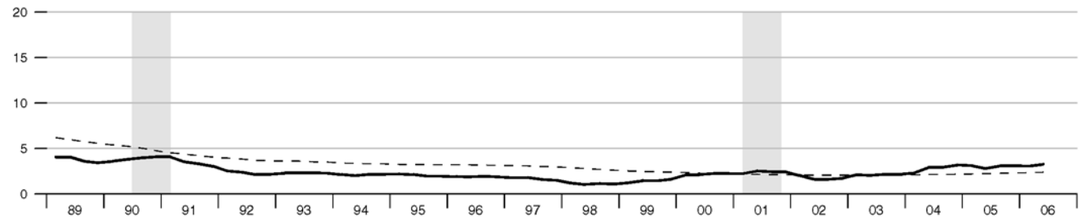
Percent change from year ago



Dashed lines indicate 10-year moving averages.

Gross Domestic Product Price Index

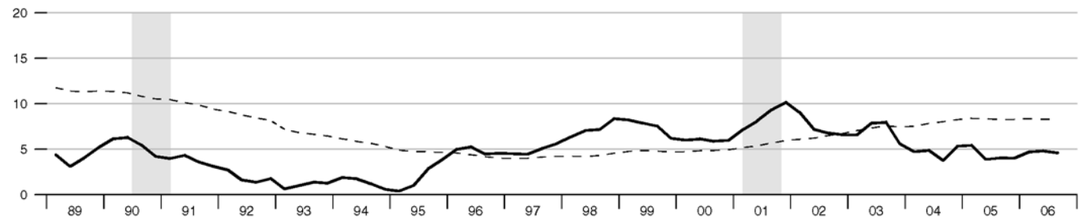
Percent change from year ago



Dashed lines indicate 10-year moving averages.

M2

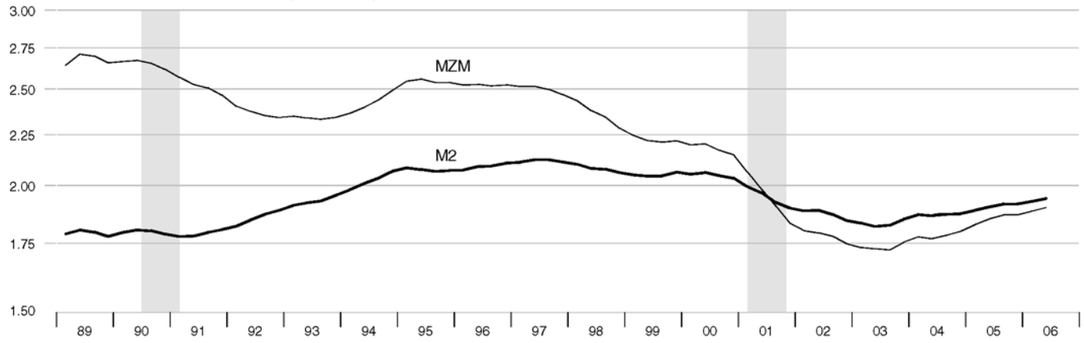
Percent change from year ago



Dashed lines indicate 10-year moving averages.

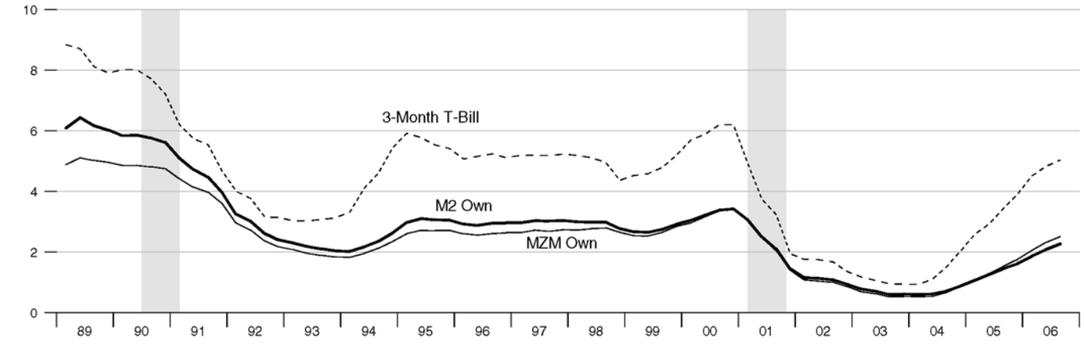
Velocity

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



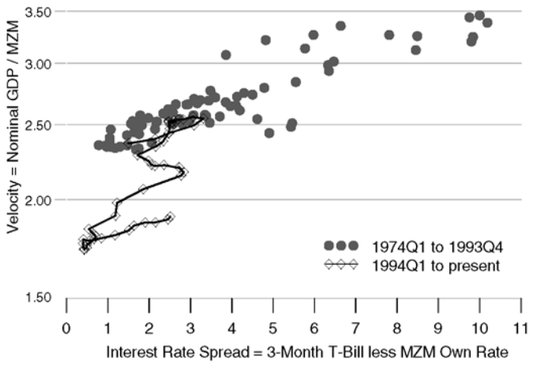
Interest Rates

Percent



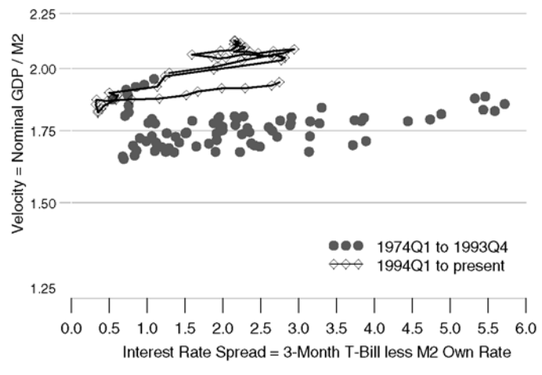
MZM Velocity and Interest Rate Spread

Ratio Scale



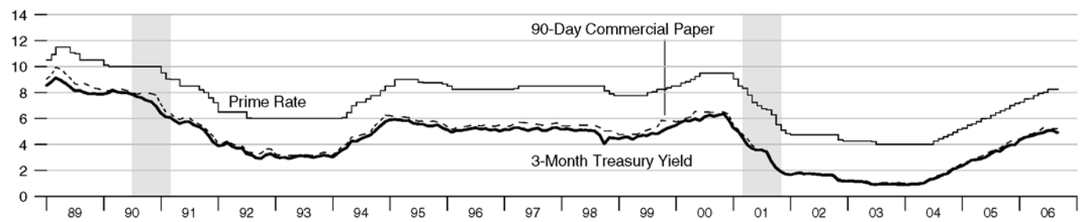
M2 Velocity and Interest Rate Spread

Ratio Scale



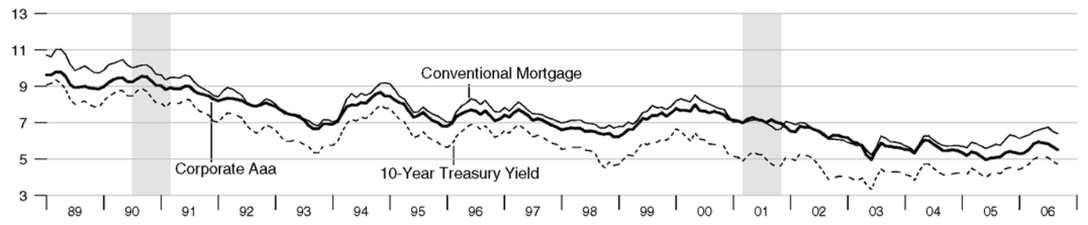
Short-Term Interest Rates

Percent



Long-Term Interest Rates

Percent

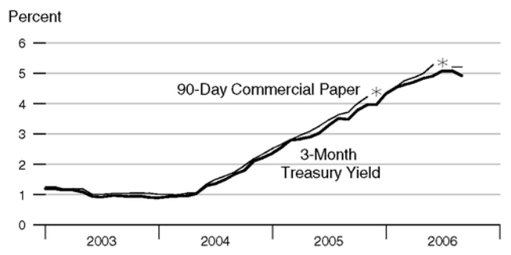


Long-Term Interest Rates

Percent

Short-Term Interest Rates

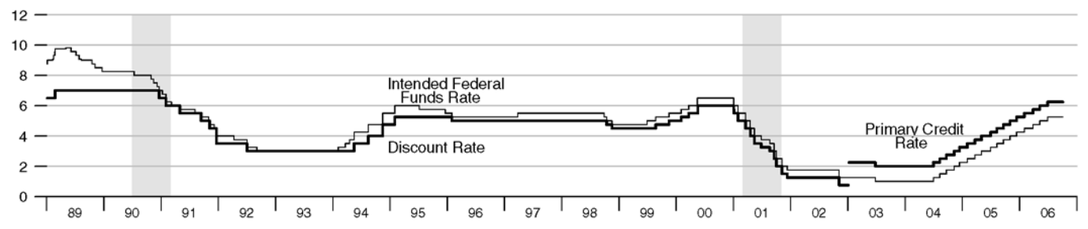
Percent



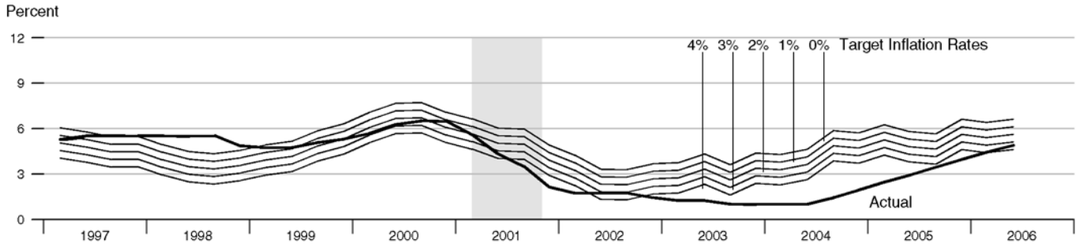
*90-Day Commercial Paper data are not available for December 2005, January 2006, and July 2006.

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

Percent



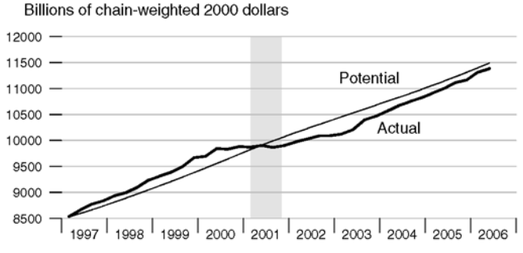
Federal Funds Rate and Inflation Targets



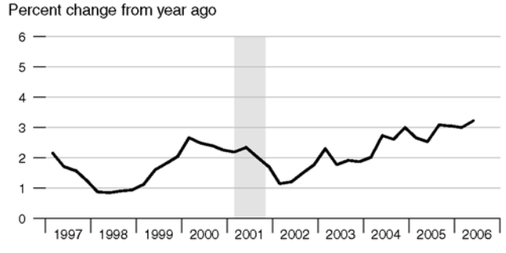
Calculated federal funds rate is based on Taylor's rule. See notes on page 19.

Components of Taylor's Rule

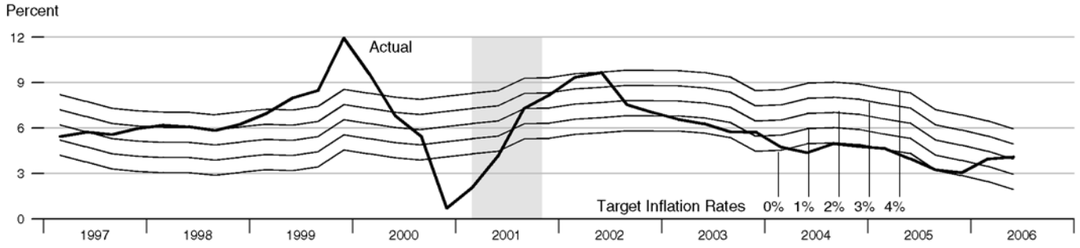
Actual and Potential Real GDP



PCE Inflation



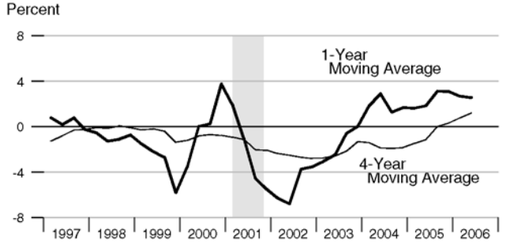
Monetary Base Growth* and Inflation Targets



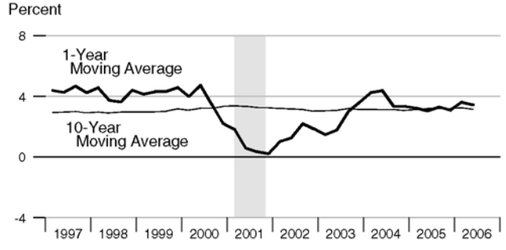
*Modified for the effects of sweeps programs on reserve demand.
Calculated base growth is based on McCallum's rule. Actual base growth is percent change from year ago. See notes on page 19.

Components of McCallum's Rule

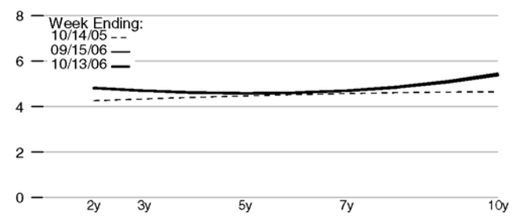
Monetary Base Velocity Growth



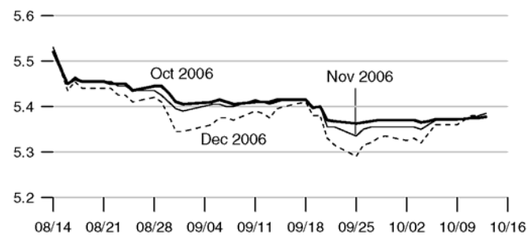
Real Output Growth



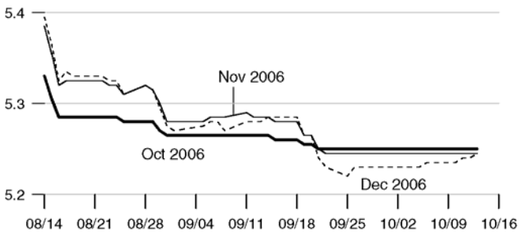
Implied One-Year Forward Rates



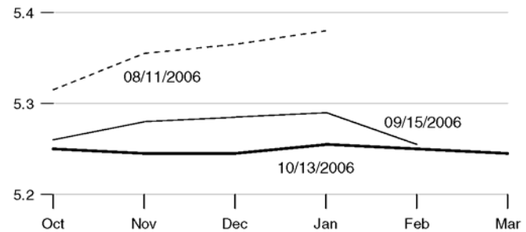
Rates on 3-Month Eurodollar Futures



Rates on Selected Federal Funds Futures Contracts



Rates on Federal Funds Futures on Selected Dates



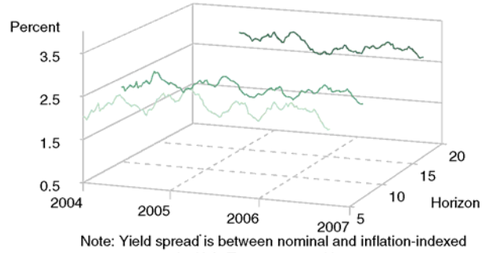
Inflation-Indexed Treasury Securities

Weekly data

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

Inflation-Indexed Treasury Yield Spreads

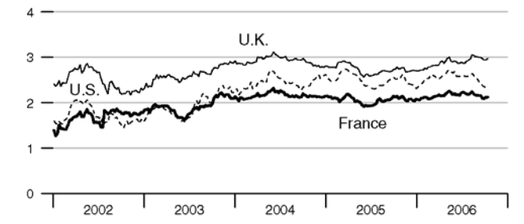
Weekly data



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

Inflation-Indexed 10-Year Government Notes

Percent, weekly data

Inflation-Indexed 10-Year Government Yield Spreads

Percent, weekly data