Monetary Trends

October 2003

THE FEDERAL RESERVE BANK of ST. LOUIS

Bond Market Mania

As the figure's top panel shows, U.S. 10-year Treasury note (bond) yields have been very volatile since May. Yields fell more than 75 basis points from May 1 to their nadir June 13, before soaring—more than 125 basis points—after the FOMC's June 25 statement. Many financial analysts blame the Fed's announcements for this disorder. For example, the FOMC announcement of May 6 was widely interpreted to herald sustained lower short-term rates and/or the purchase of long-term bonds by the Fed to effect "easier" monetary policy: "*...the probability of an unwelcome substantial fall in inflation, though minor, exceeds that of a pickup in inflation from its already low level.*" In contrast, the financial press interpreted a less-than-expected federal funds target cut and an almost identical press release following the June 25 FOMC meeting to mean that the Fed was reversing course by playing down the possibility of a fall in inflation.

How might the Fed's announcements have influenced bond yields? There are two major components to current U.S. Treasury yields: expected inflation and a real component. Higher expected inflation raises interest rates because lenders demand compensation for the expected loss of purchasing power. But the real rate depends on the expected productivity of physical capital. A robust economy and high productivity encourage businesses to borrow to finance future production, bidding up interest rates.

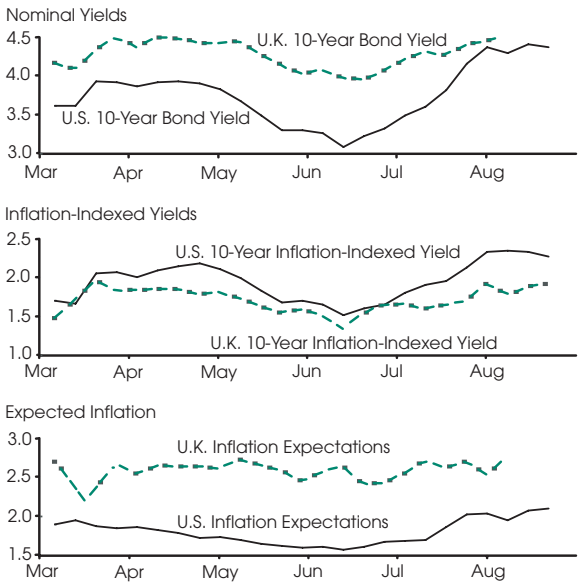
Did the Fed's statements influence bond yields by changing expectations of inflation, real activity, or both? Although we cannot directly observe the components of long-term interest rates, we can estimate real interest rates from the yields on Treasury inflation-indexed securities (TIIS). The principal and coupon payments on TIIS are indexed to the CPI to protect investors from inflation. Thus, the usual interpretation is that projected inflation is reflected in ordinary bond yields but has no effect on TIIS yields, and the market's forecast of inflation is approximately the difference between these yields. Complicating this calculation, however, is the fact that deflation does not reduce TIIS principal payments; a higher probability of deflation will reduce TIIS yields. The probability of cumulative deflation over a ten-year period must be low, so TIIS yields probably still mostly reflect real returns.

The first two panels of the figure show that from May through July, U.S. real interest rates (10-year TIIS yields) moved almost as much as 10-year nominal yields. Unless expectations of cumulative deflation changed dramatically, forecasts of real growth drove most of the fluctuations in Treasury yields. This conclusion challenges the interpretation that Fed statements caused the bond market volatility by changing inflation expectations.

The figure also shows that nominal and real yields in the United Kingdom followed much the same pattern as that in the United States, which bolsters the interpretation that changes in forecasts of real returns—rather than greater expectations of deflation—drove the fluctuations in U.S. bond yields. Trade and financial markets link economic activity and real interest rates in the U.S. and the U.K.

The bottom panel shows expected inflation as the difference between nominal yields and inflation-indexed yields for the U.S. and the U.K. As the first two panels imply, expected U.S. inflation fell much less than the U.S. real rate, slipping only about 20 basis points from April to mid-June, before rising again. Expected inflation in the U.K. showed no trend over this period, however, probably due to the Bank of England's explicit 2.5 percent inflation target.

—Christopher J. Neely



SOURCE: Data are from Bloomberg and the Board of Governors of the Federal Reserve System.

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

Contents

Conventions used in this publication:

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

We welcome your comments addressed to:

Editor, *Monetary Trends*
Research Division
Federal Reserve Bank of St. Louis
P.O. Box 442
St. Louis, MO 63166-0442

or to:

stlsFRED@stls.frb.org

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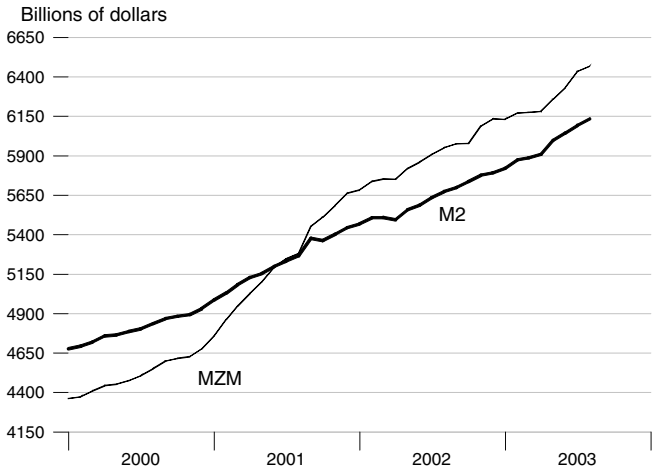
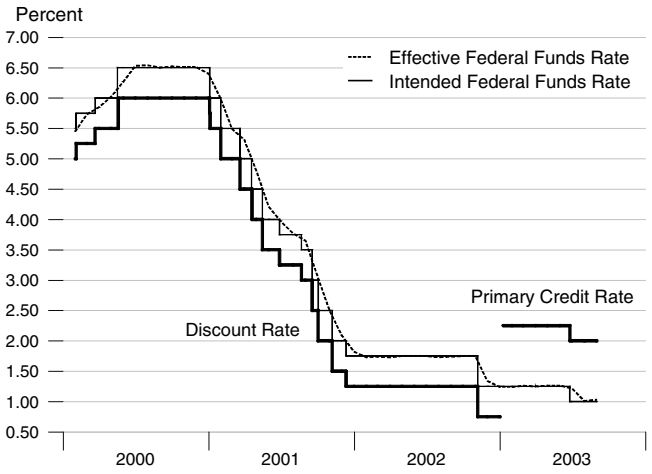
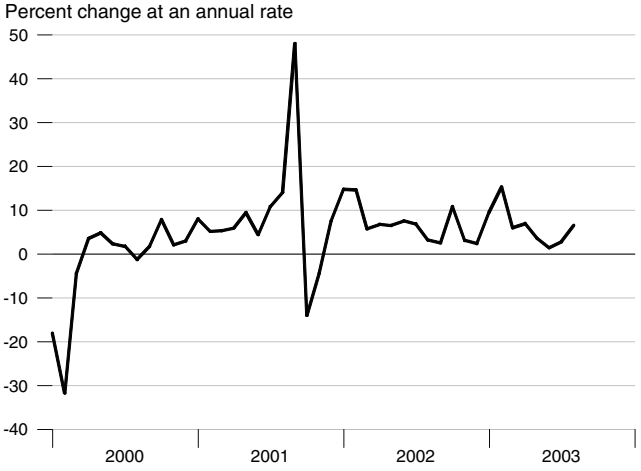
M2 and MZM



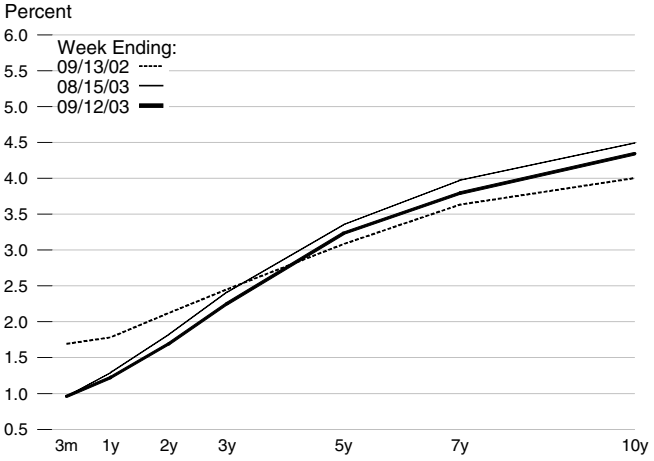
Reserve Market Rates



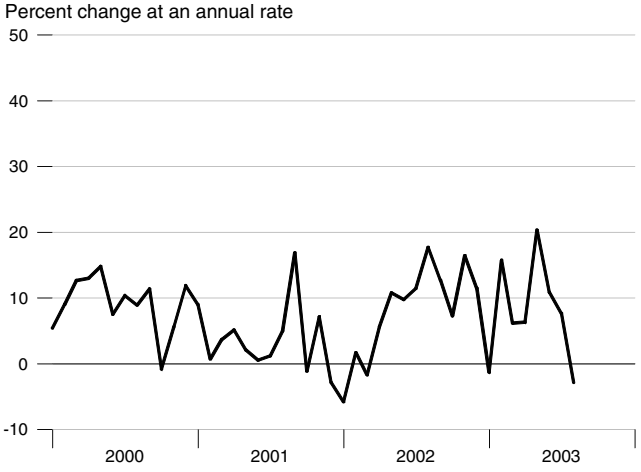
Adjusted Monetary Base



Treasury Yield Curve



Total Bank Credit



Interest Rates

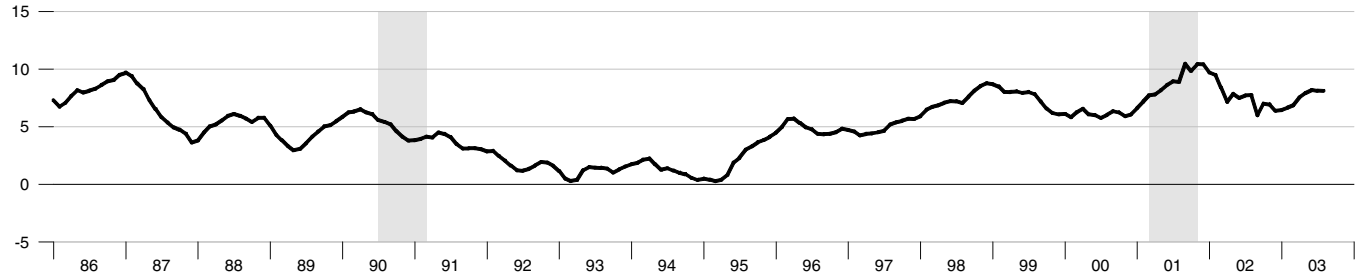
	Jun 03	Jul 03	Aug 03
Federal Funds Rate	1.22	1.01	1.03
Prime Rate	4.22	4.00	4.00
Primary Credit Rate	2.20	2.00	2.00
Conventional Mortgage Rate	5.23	5.63	6.26
Treasury Yields:			
3-Month Constant Maturity	0.94	0.92	0.97
6-Month Constant Maturity	0.94	0.97	1.05
1-Year Constant Maturity	1.01	1.12	1.31
3-Year Constant Maturity	1.51	1.93	2.44
5-Year Constant Maturity	2.27	2.87	3.37
10-Year Constant Maturity	3.33	3.98	4.45

MZM and M1

Percent change from year ago

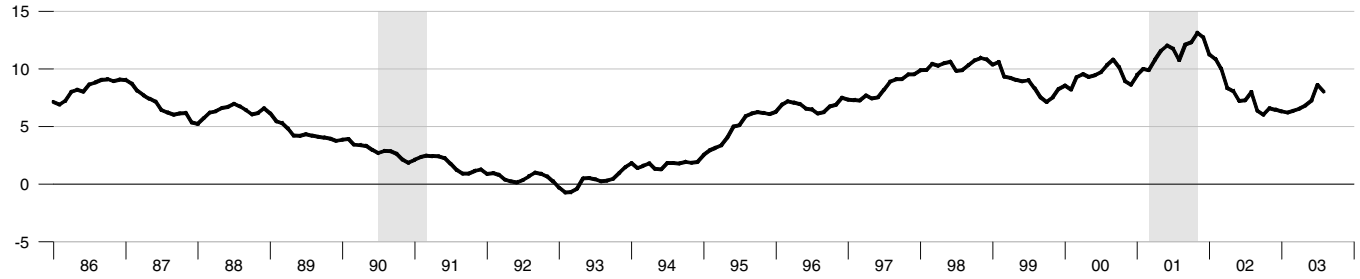
M2

Percent change from year ago



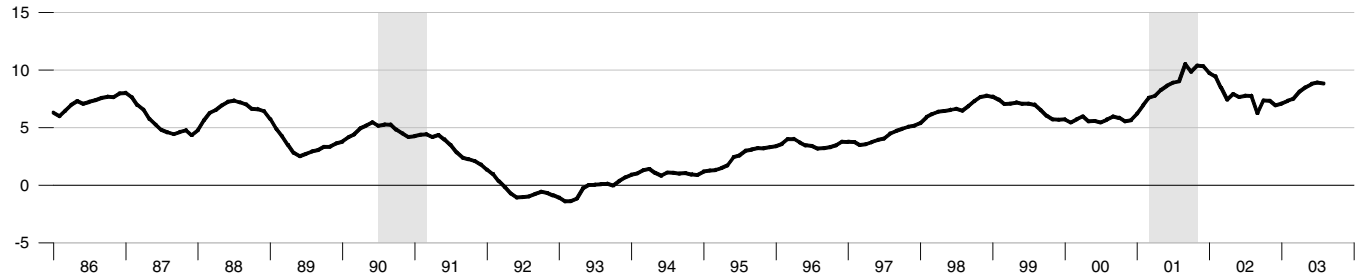
M3

Percent change from year ago



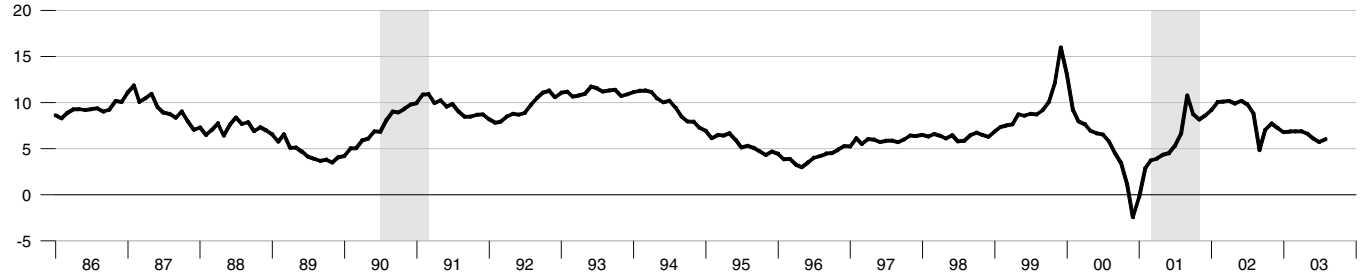
Monetary Services Index - M2

Percent change from year ago



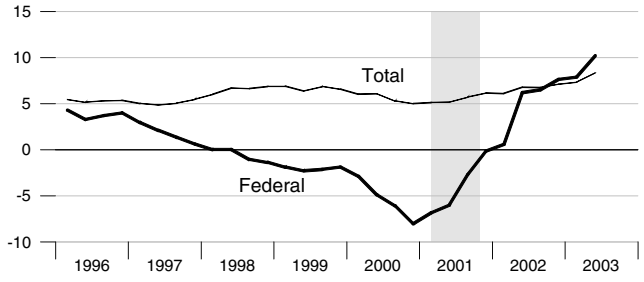
Adjusted Monetary Base

Percent change from year ago



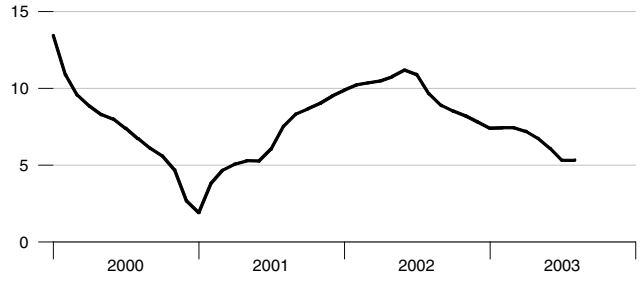
Domestic Nonfinancial Debt

Percent change from year ago



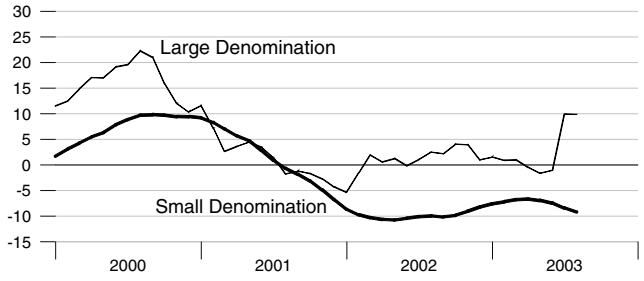
Currency Held by the Nonbank Public

Percent change from year ago



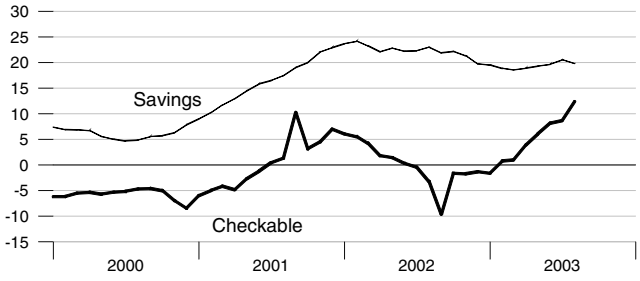
Time Deposits

Percent change from year ago



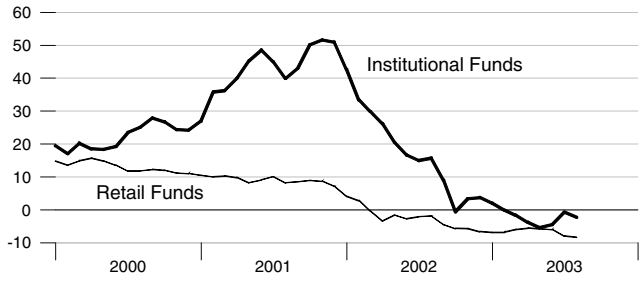
Checkable and Savings Deposits

Percent change from year ago



Money Market Mutual Fund Shares

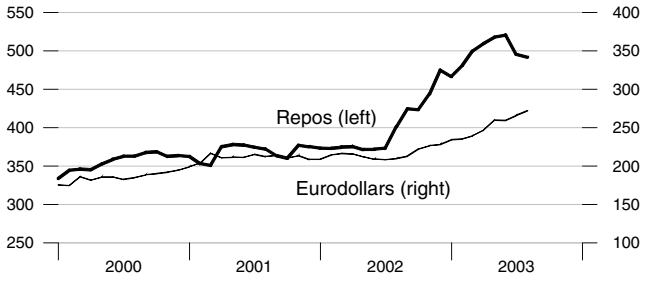
Percent change from year ago



Repurchase Agreements and Eurodollars

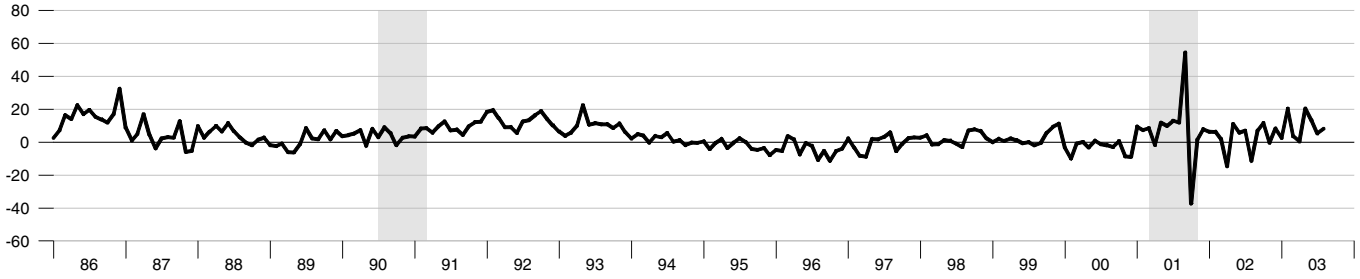
Billions of dollars

Billions of dollars



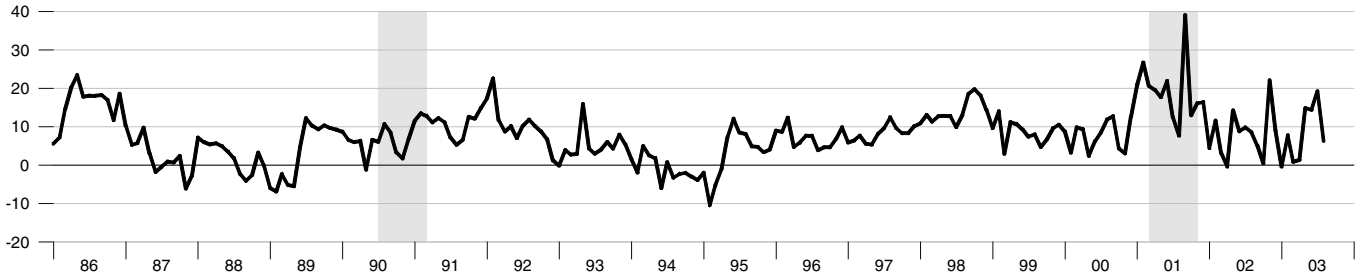
M1

Percent change at an annual rate



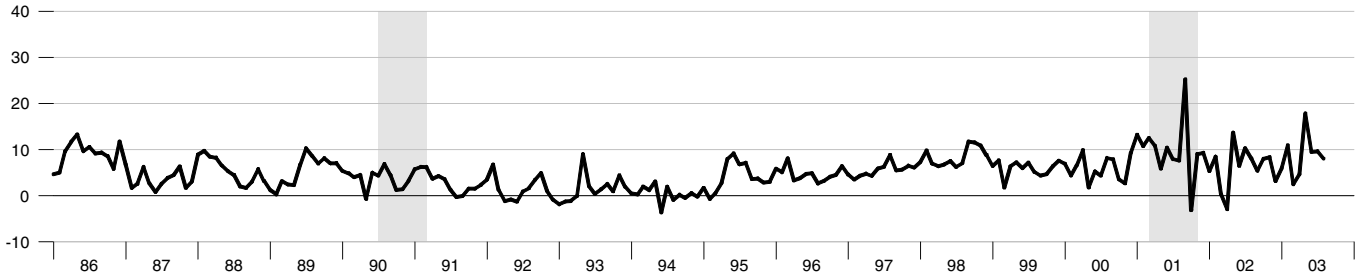
MZM

Percent change at an annual rate



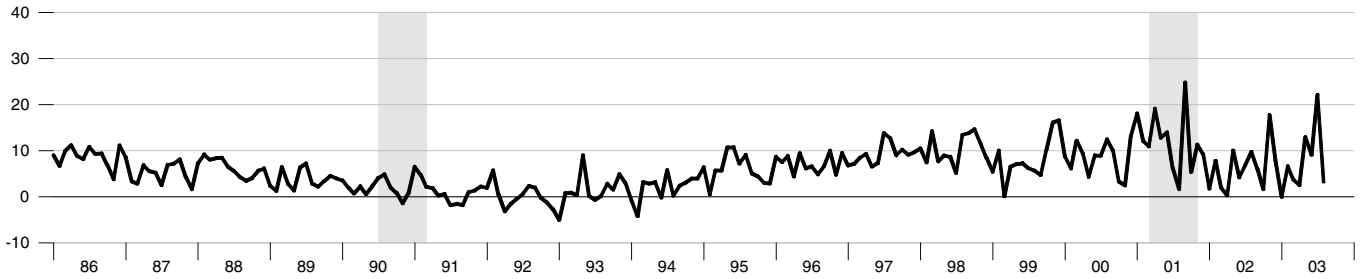
M2

Percent change at an annual rate



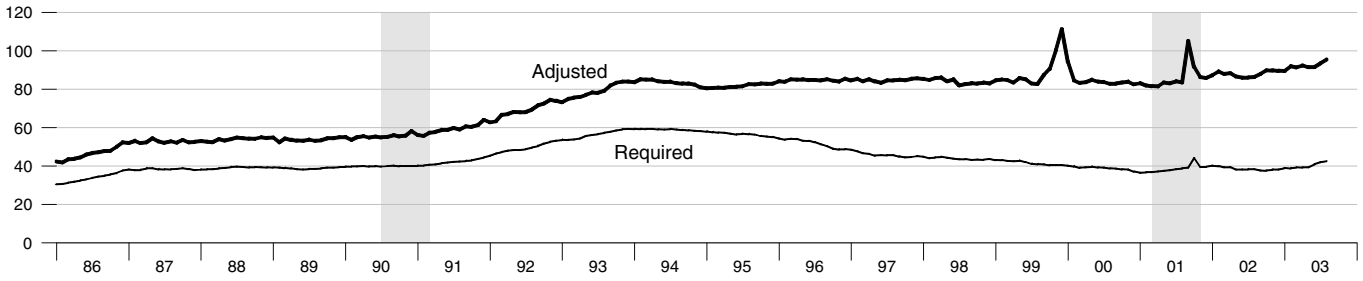
M3

Percent change at an annual rate



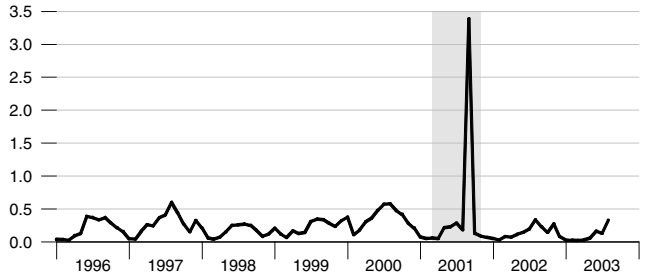
Adjusted and Required Reserves

Billions of dollars



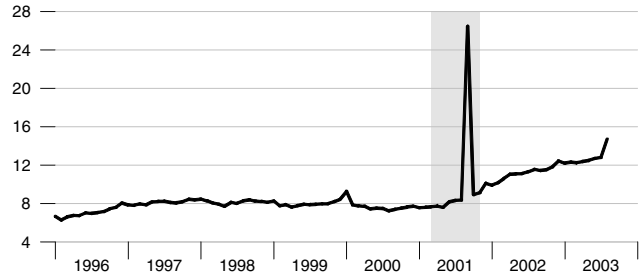
Total Borrowings, nsa

Billions of dollars



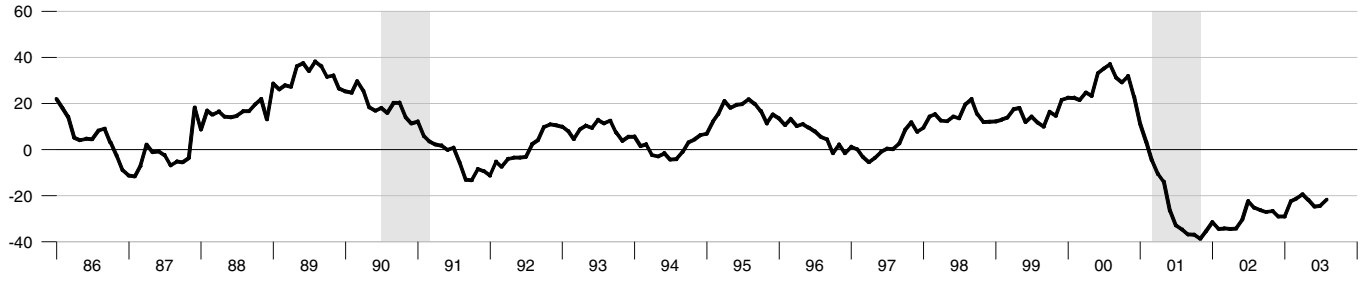
Excess Reserves plus RCB Contracts

Billions of dollars



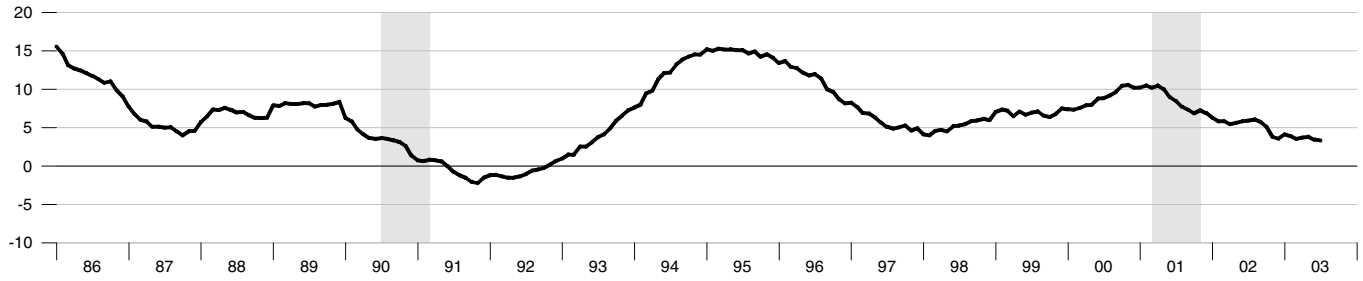
Nonfinancial Commercial Paper

Percent change from year ago

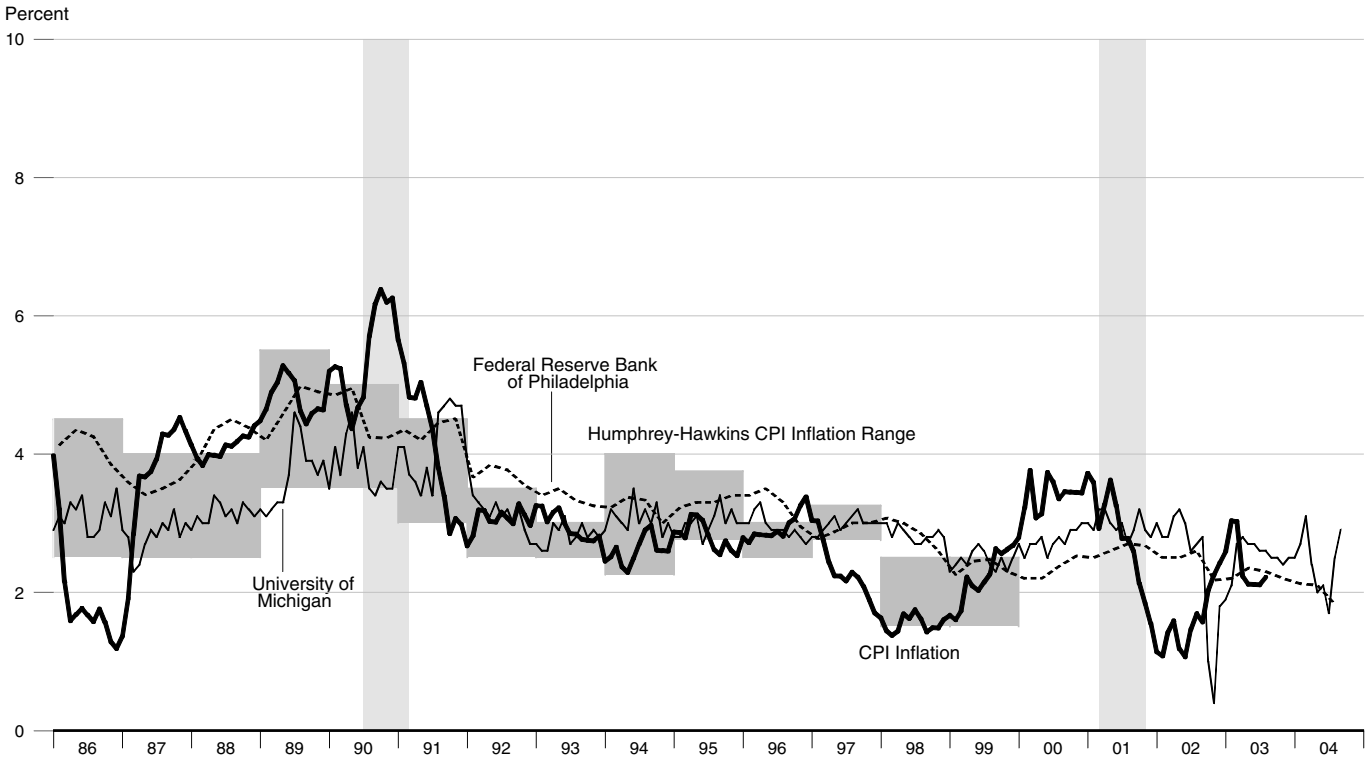


Consumer Credit

Percent change from year ago

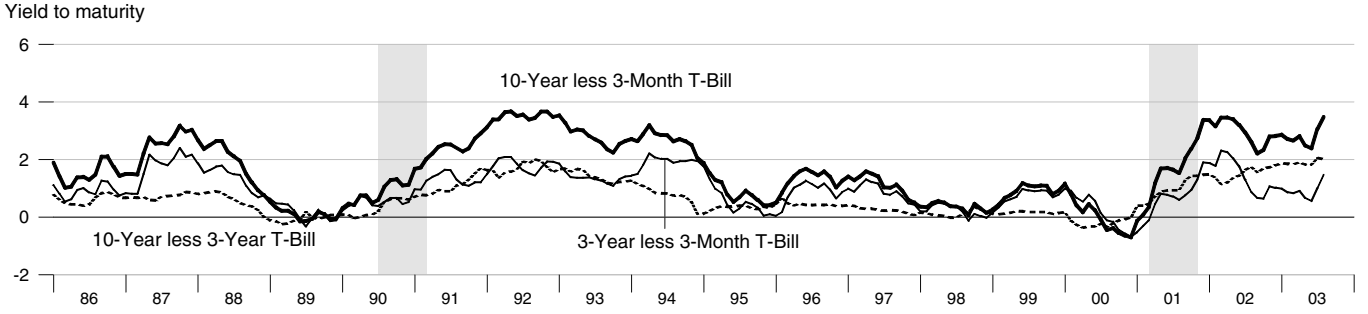


Inflation and Inflation Expectations

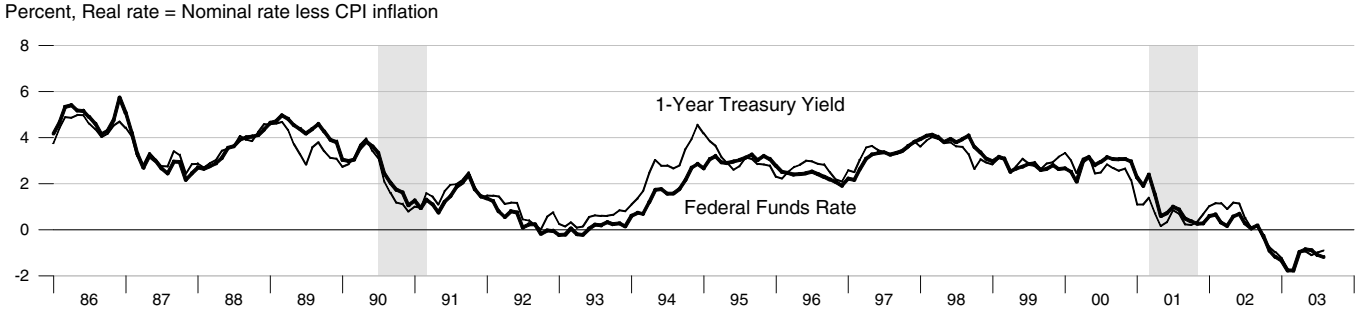


The shaded region shows the Humphrey-Hawkins CPI inflation range. Beginning in January 2000, the Humphrey-Hawkins inflation range was reported using the PCE price index and therefore is not shown on this graph. See notes on page 19.

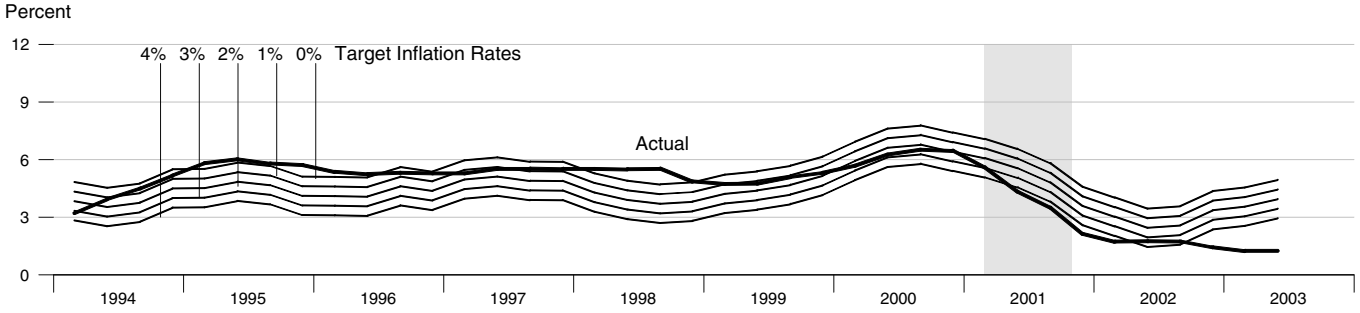
Treasury Security Yield Spreads



Real Interest Rates



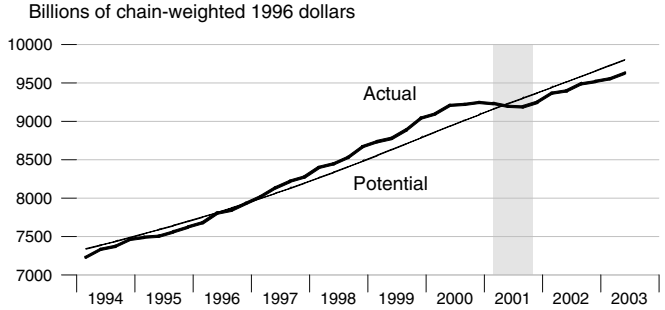
Federal Funds Rate and Inflation Targets



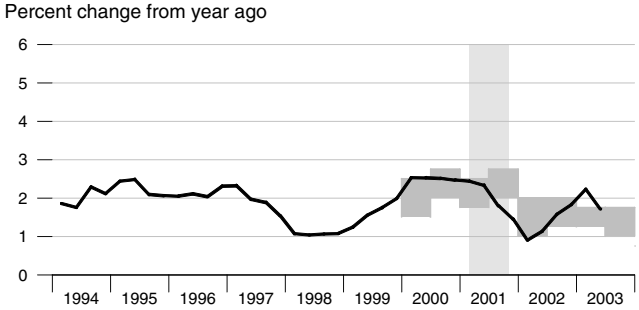
Calculated federal funds rate is based on Taylor's rule. See notes on page 19.

Components of Taylor's Rule

Actual and Potential Real GDP

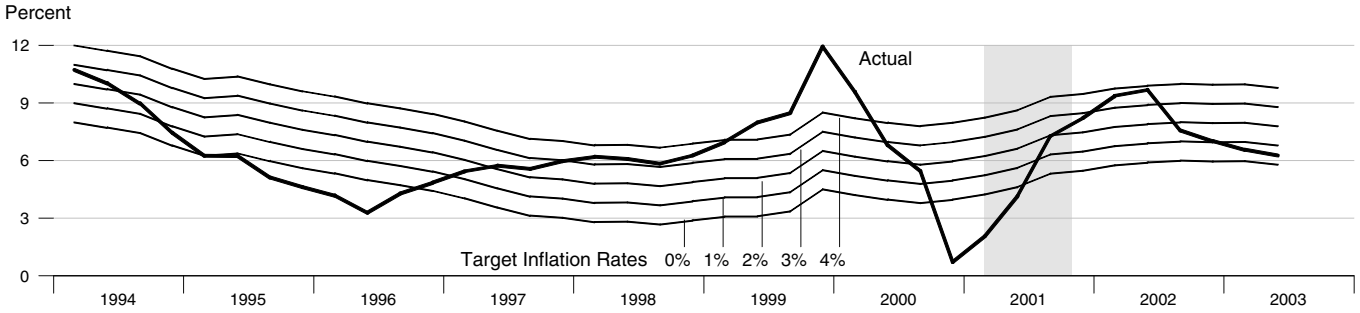


PCE Inflation and Projections



The shaded region shows the range of projections published in the Monetary Policy Report to the Congress.

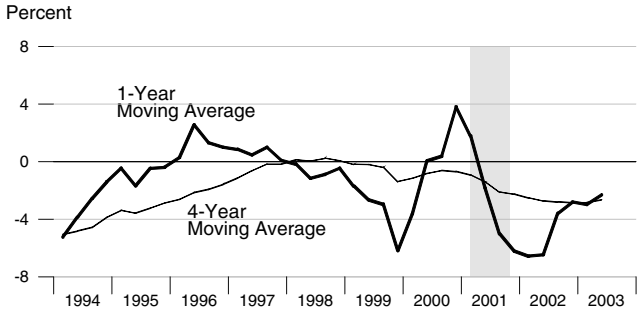
Monetary Base Growth* and Inflation Targets



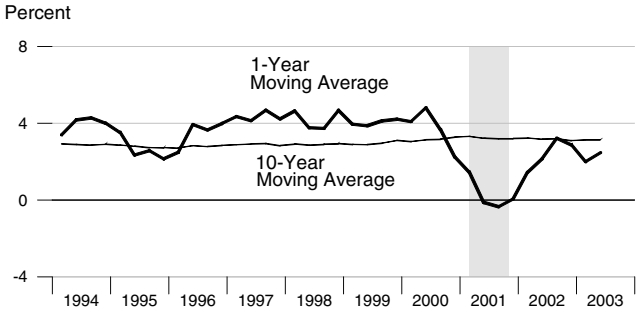
*Modified for the effects of sweeps programs on reserve demand.
Calculated base growth is based on McCallum's rule. Actual base growth is percent change from year ago. See notes on page 19.

Components of McCallum's Rule

Monetary Base Velocity Growth

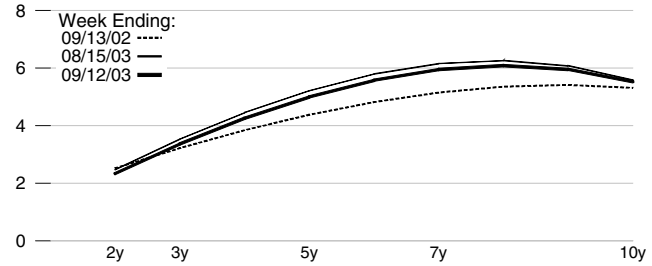


Real Output Growth



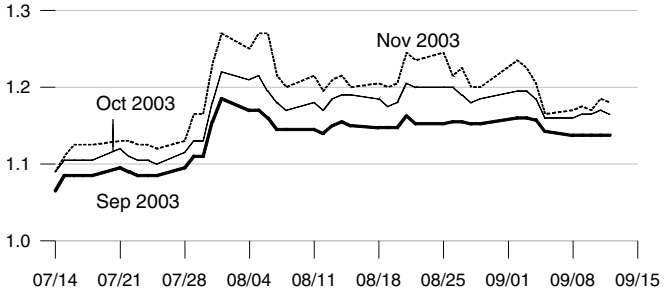
Implied One-Year Forward Rates

Percent



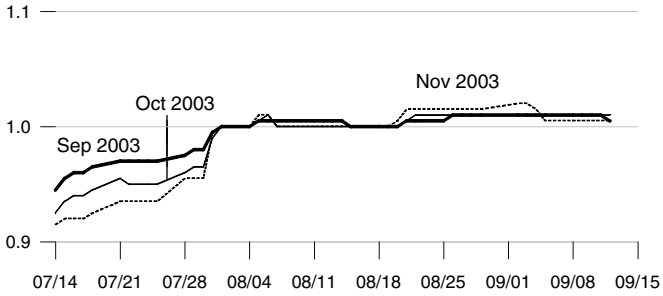
Rates on 3-Month Eurodollar Futures

Percent, daily data



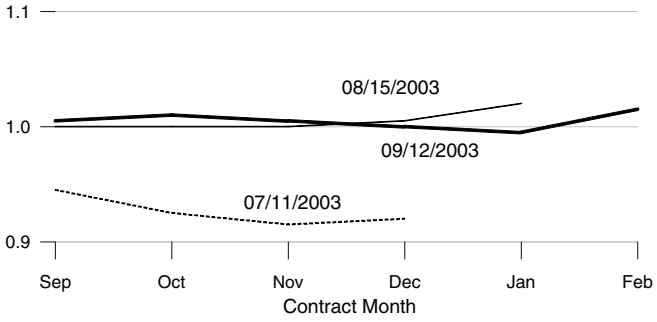
Rates on Selected Federal Funds Futures Contracts

Percent, daily data



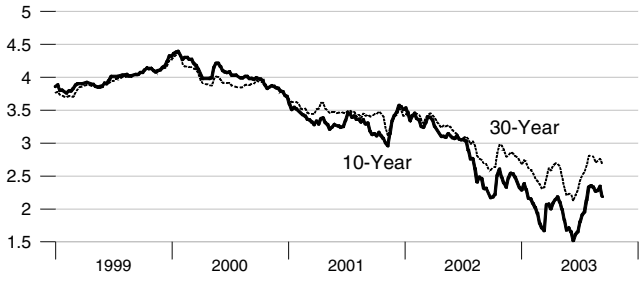
Rates on Federal Funds Futures on Selected Dates

Percent



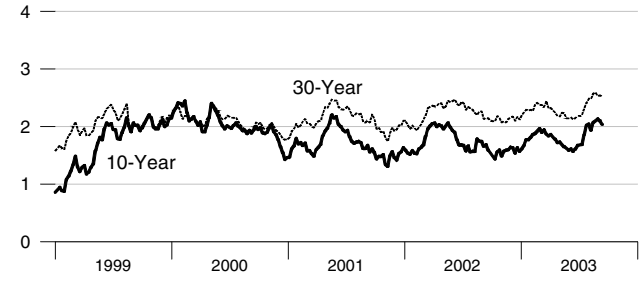
Inflation-Indexed Treasury Bonds

Percent, weekly data



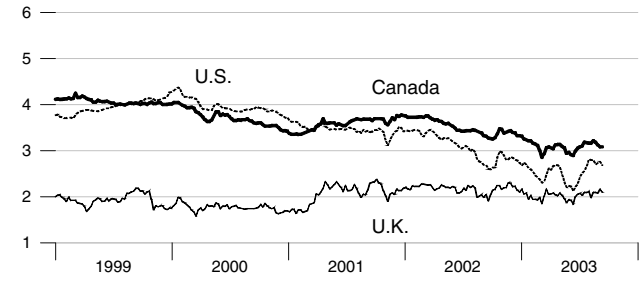
Inflation-Indexed Treasury Yield Spreads

Percent, weekly data



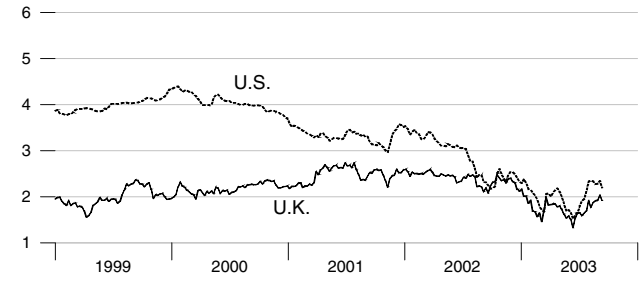
Inflation-Indexed 30-Year Government Bonds

Percent, weekly data



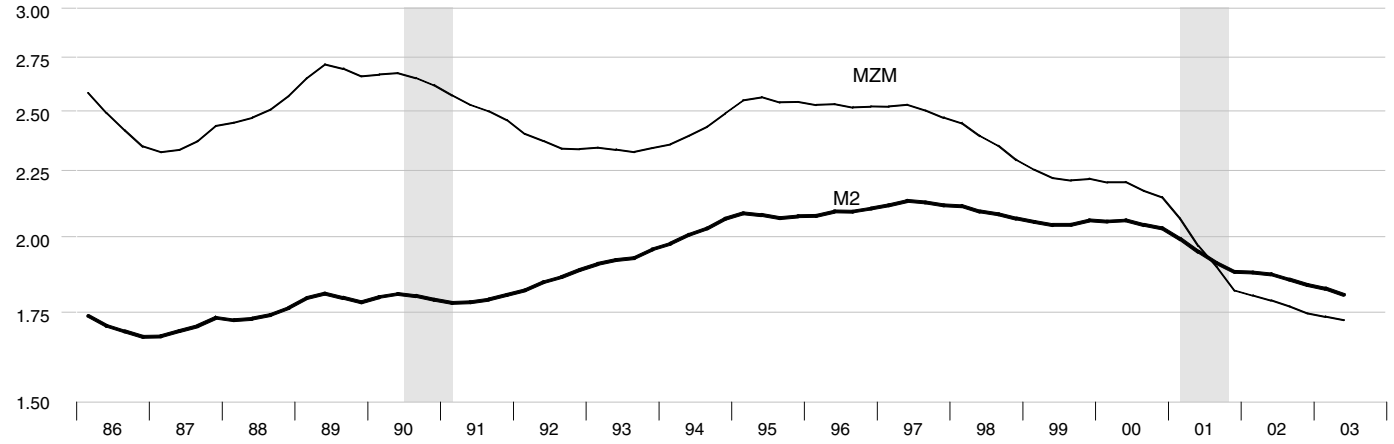
Inflation-Indexed 10-Year Government Bonds

Percent, weekly data



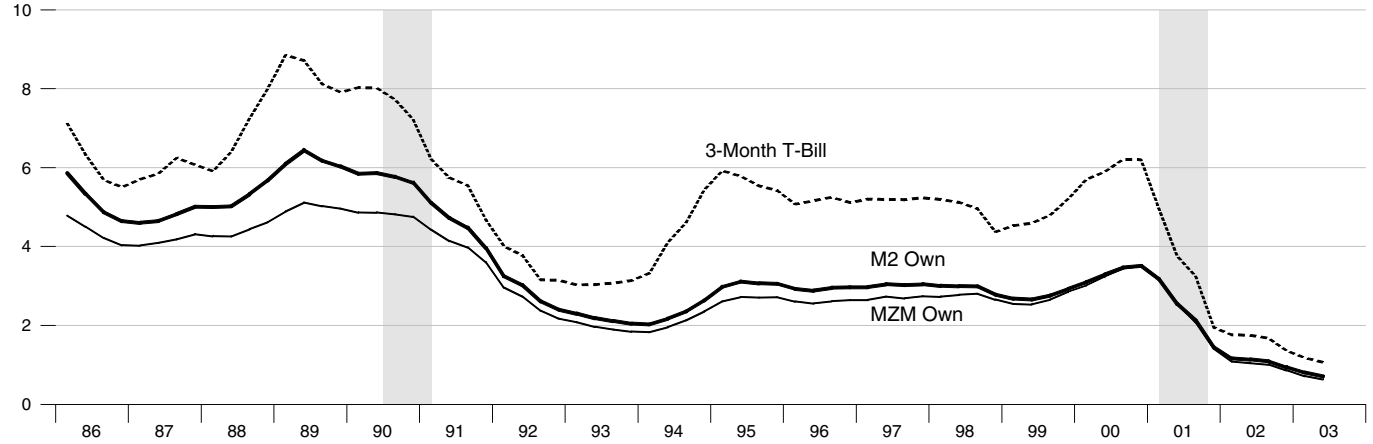
Velocity

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



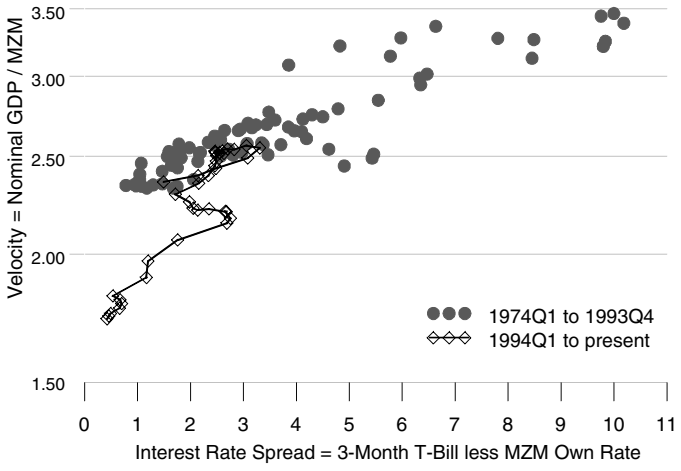
Interest Rates

Percent



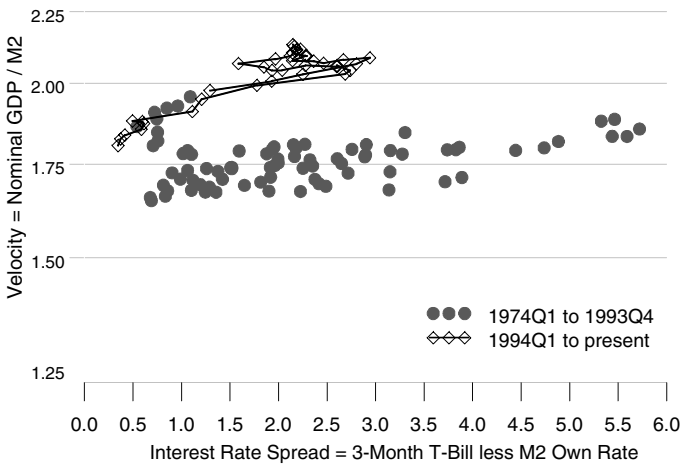
MZM Velocity and Interest Rate Spread

Ratio Scale



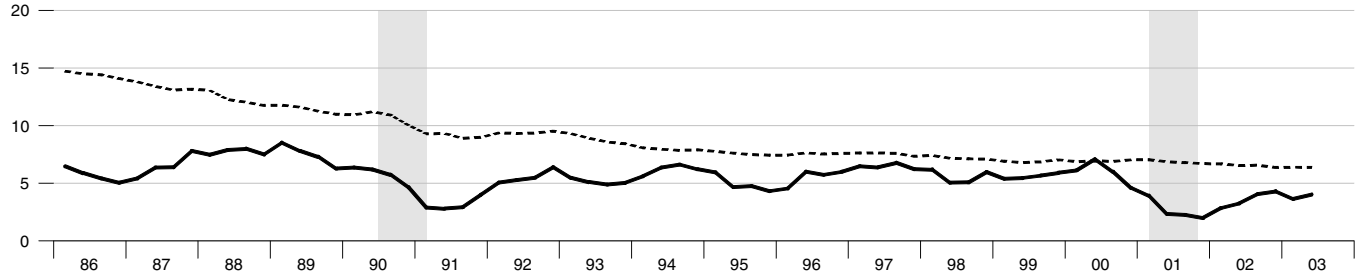
M2 Velocity and Interest Rate Spread

Ratio Scale



Gross Domestic Product

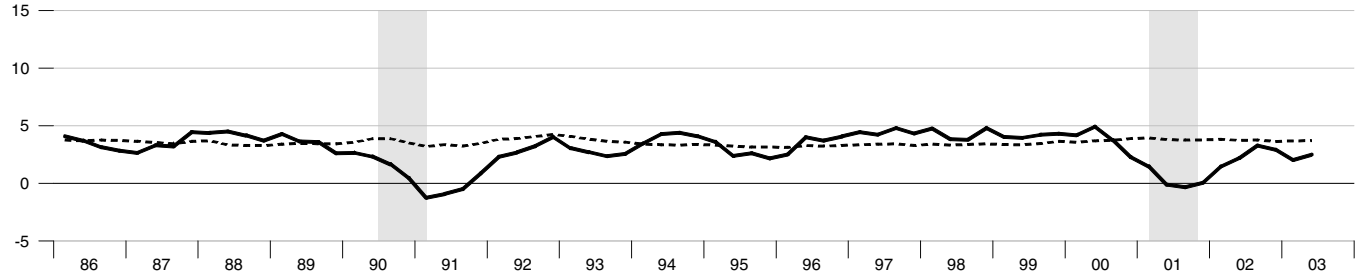
Percent change from year ago



Dashed lines indicate 10-year moving averages.

Real Gross Domestic Product

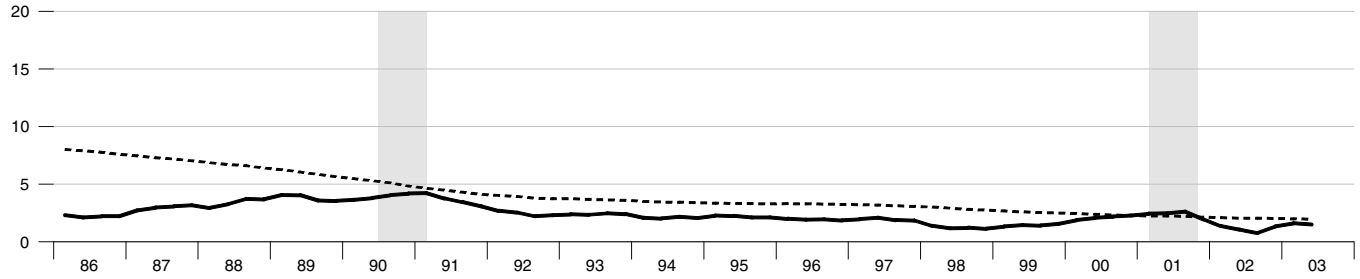
Percent change from year ago



Dashed lines indicate 10-year moving averages.

Gross Domestic Product Price Index

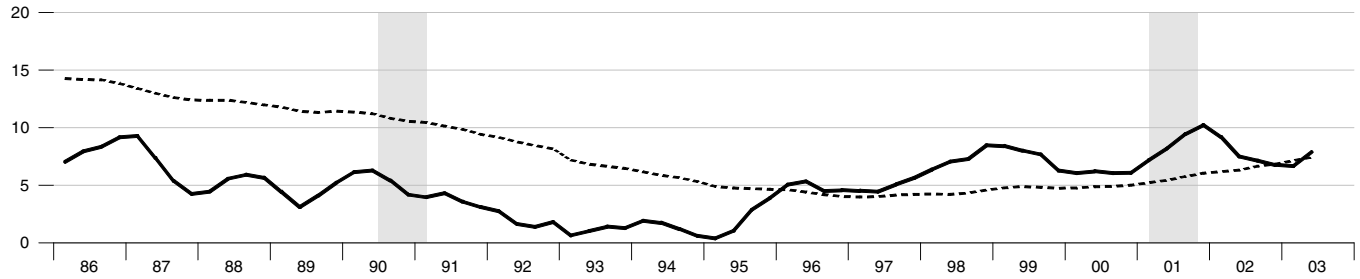
Percent change from year ago



Dashed lines indicate 10-year moving averages.

M2

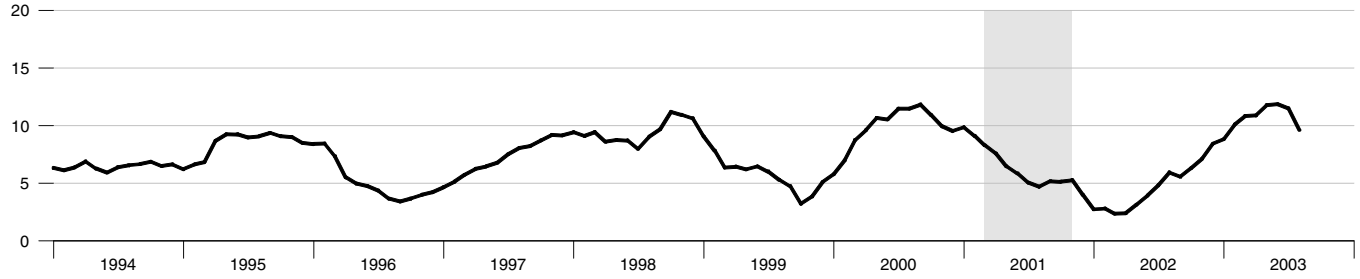
Percent change from year ago



Dashed lines indicate 10-year moving averages.

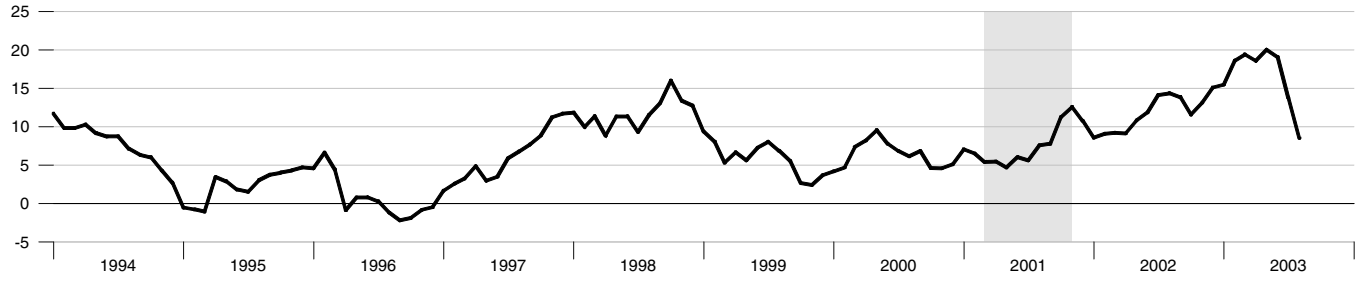
Bank Credit

Percent change from year ago



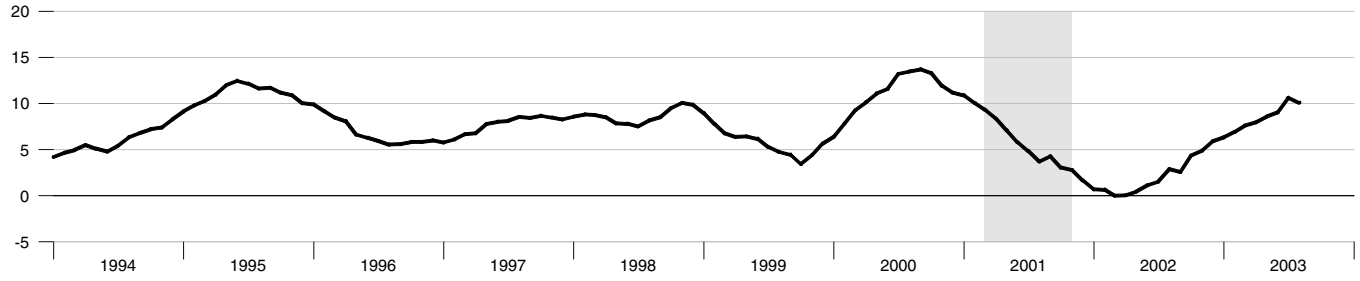
Investment Securities in Bank Credit at Commercial Banks

Percent change from year ago



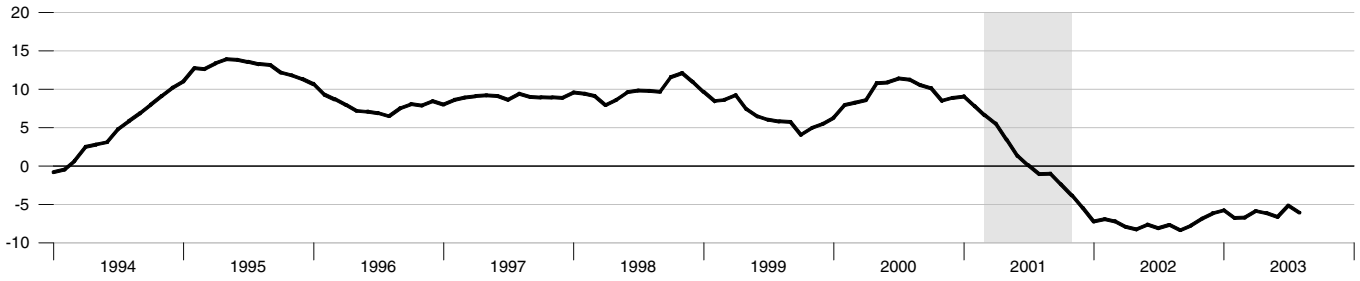
Total Loans and Leases in Bank Credit at Commercial Banks

Percent change from year ago



Commercial and Industrial Loans at Commercial Banks

Percent change from year ago



		Money Stock				Bank	Adjusted		
		M1	MZM	M2	M3	Credit	Monetary Base	Reserves	MSI M2
	1998	1079.870	3709.461	4207.774	5749.669	4324.694	525.184	84.060	241.553
	1999	1101.495	4170.041	4525.776	6252.403	4577.411	574.181	88.664	257.899
	2000	1103.401	4507.638	4801.216	6841.050	5026.103	607.106	84.511	272.523
	2001	1136.611	5219.148	5222.053	7621.164	5344.232	641.167	85.931	296.264
	2002	1190.219	5886.330	5619.615	8230.139	5592.917	697.071	87.924	319.383
2001	1	1100.135	4855.582	5032.979	7276.070	5271.028	619.676	82.207	285.337
	2	1116.115	5107.405	5160.250	7543.173	5312.327	629.484	82.722	292.824
	3	1162.814	5327.317	5291.714	7725.994	5362.026	651.930	90.906	300.515
	4	1167.377	5586.289	5403.270	7939.418	5431.545	663.578	87.887	306.379
2002	1	1183.762	5724.200	5494.692	8055.189	5410.012	680.264	88.157	311.592
	2	1181.589	5810.078	5546.486	8137.525	5480.296	692.937	86.979	315.246
	3	1190.469	5944.931	5668.995	8283.101	5653.968	702.753	86.820	322.274
	4	1205.056	6066.110	5768.288	8444.743	5827.392	712.330	89.741	328.421
2003	1	1227.804	6158.570	5859.892	8562.352	5946.462	726.820	90.930	334.332
	2	1255.954	6257.188	5982.779	8697.196	6110.753	738.230	91.801	341.898
2001	Aug	1149.222	5281.306	5265.913	7676.763	5344.364	645.817	83.517	299.270
	Sep	1201.220	5452.848	5376.486	7834.870	5419.427	671.628	105.077	305.239
	Oct	1163.909	5511.680	5362.390	7869.901	5414.450	663.798	91.551	304.243
	Nov	1165.335	5585.475	5402.792	7943.815	5446.605	661.381	86.229	306.405
	Dec	1172.887	5661.711	5444.629	8004.539	5433.581	665.556	85.880	308.489
2002	Jan	1179.038	5682.740	5468.738	8016.263	5407.469	673.713	87.296	310.009
	Feb	1185.171	5737.333	5507.159	8068.056	5415.038	681.914	89.238	312.222
	Mar	1187.077	5752.527	5508.180	8081.248	5407.529	685.165	87.936	312.545
	Apr	1172.605	5750.632	5494.803	8083.327	5432.876	689.008	88.352	312.465
	May	1183.278	5818.519	5557.289	8150.476	5481.645	692.736	86.588	315.719
	Jun	1188.883	5861.084	5587.366	8178.773	5526.368	697.068	85.998	317.553
	Jul	1195.728	5908.708	5635.199	8224.904	5579.124	701.032	86.100	320.051
	Aug	1184.451	5950.731	5673.074	8291.447	5661.397	702.878	86.382	322.459
	Sep	1191.228	5975.354	5698.711	8332.951	5721.383	704.350	87.978	324.312
	Oct	1202.609	5977.782	5736.585	8344.346	5756.176	710.664	89.827	326.553
	Nov	1202.180	6087.446	5776.528	8467.225	5835.008	712.472	89.818	328.851
	Dec	1210.378	6133.101	5791.750	8522.657	5890.992	713.853	89.579	329.860
2003	Jan	1212.993	6130.967	5820.536	8522.477	5884.820	719.528	89.511	331.942
	Feb	1233.425	6170.214	5873.458	8569.019	5961.927	728.657	91.909	335.088
	Mar	1236.995	6174.529	5885.683	8595.559	5992.638	732.276	91.371	335.966
	Apr	1237.376	6181.364	5908.531	8613.454	6024.277	736.488	92.367	337.797
	May	1258.308	6257.657	5996.198	8706.075	6126.317	738.668	91.472	342.478
	Jun	1272.179	6332.542	6043.608	8772.060	6181.665	739.535	91.564	345.420
	Jul	1277.792	6433.613	6092.085	8933.226	6221.115	741.240	93.492	348.520
	Aug	1286.406	6467.126	6133.003	8957.457	6206.468	745.238	95.414	350.894

*All values are given in billions of dollars.

		M1	MZM	M2	M3
Percent change at an annual rate					
	1998	0.99	11.67	7.29	10.36
	1999	2.00	12.42	7.56	8.74
	2000	0.17	8.10	6.09	9.41
	2001	3.01	15.78	8.77	11.40
	2002	4.72	12.78	7.61	7.99
2001	1	2.71	18.62	10.65	13.24
	2	5.81	20.75	10.11	14.68
	3	16.74	17.22	10.19	9.69
	4	1.57	19.44	8.43	11.05
2002	1	5.61	9.87	6.77	5.83
	2	-0.73	6.00	3.77	4.09
	3	3.01	9.28	8.84	7.16
	4	4.90	8.15	7.01	7.81
2003	1	7.55	6.10	6.35	5.57
	2	9.17	6.41	8.39	6.30
2001	Aug	11.83	7.66	7.61	1.63
	Sep	54.30	38.98	25.20	24.71
	Oct	-37.27	12.95	-3.15	5.37
	Nov	1.47	16.07	9.04	11.27
	Dec	7.78	16.38	9.29	9.17
2002	Jan	6.29	4.46	5.31	1.76
	Feb	6.24	11.53	8.43	7.75
	Mar	1.93	3.18	0.22	1.96
	Apr	-14.63	-0.40	-2.91	0.31
	May	10.92	14.17	13.65	9.97
	Jun	5.68	8.78	6.49	4.17
	Jul	6.91	9.75	10.27	6.77
	Aug	-11.32	8.53	8.07	9.71
	Sep	6.87	4.97	5.42	6.01
	Oct	11.46	0.49	7.98	1.64
	Nov	-0.43	22.01	8.36	17.67
	Dec	8.18	9.00	3.16	7.86
2003	Jan	2.59	-0.42	5.96	-0.03
	Feb	20.21	7.68	10.91	6.55
	Mar	3.47	0.84	2.50	3.72
	Apr	0.37	1.33	4.66	2.50
	May	20.30	14.81	17.80	12.90
	Jun	13.23	14.36	9.49	9.10
	Jul	5.29	19.15	9.63	22.05
	Aug	8.09	6.25	8.06	3.25

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: M2 minus small-denomination time deposits, plus institutional money market mutual funds. The label MZM was coined by William Poole (1991) for this aggregate, proposed earlier by Motley (1988).

M2: M1 plus savings deposits (including money market deposit accounts) and small-denomination (less than $100,000) time deposits issued by financial institutions; and shares in retail money market mutual funds (funds with initial investments of less than $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, 1996b, 2001).

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 series, a 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).

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; additional data are available 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 *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: **MZM**, or "Money, Zero Maturity," includes the zero maturity, or immediately available, components of M3. MZM equals M2 minus small-denomination time deposits, plus institutional money market mutual funds (that is, the money market mutual funds included in M3 but excluded from M2). 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** shows constant maturity yields calculated by the U.S. Treasury Department for securities with 3 months and 1, 2, 3, 5, 7, and 10 years to maturity. Daily data and descriptions are available at research.stlouisfed.org/ fred/data/wkly.html. See also *Federal Reserve Bulletin*, table 1.35. The 30-year constant maturity series was discontinued by the Treasury Department 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 *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 Humphrey-Hawkins Act testimony each year. Beginning February 2000, the FOMC began using the personal consumption expenditures (PCE) price index to report its inflation range and therefore is not 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 $((y_t - y_{t-40})/40) \times 4 \times 100$, where y_t is the log of real GDP. The four-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 available at research.stlouisfed.org/aggreg/swdata.html.

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 Bonds** are yields on the most recently issued inflation-indexed securities of 10- and 30-year original maturities. **Inflation-Indexed Treasury Yield Spreads** equal, for 10- and 30-year maturities, the difference between the yields on the most recently issued inflation-indexed securities and the unadjusted bond yields of similar maturity. **Inflation-Indexed 30-Year Government Bonds** shows the yield of an inflation-indexed bond that is scheduled to mature in approximately (but not greater than) 30 years. The current bond for Canada has a maturity date of 12/01/2031, the current U.K. bond has a maturity date of 7/22/2030, and the current U.S. bond has a maturity date of 4/15/2032. **Inflation-Indexed 10-Year Government Bonds** shows the yield of an inflation-indexed bond that is scheduled to mature in approximately (but not greater than) 10 years. The current U.K. bond has a maturity date of 8/16/2013 and the current U.S. bond has a maturity date of 7/15/2013.

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 1996 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 1996 dollars.

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

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

Bank of Canada
Canadian inflation-linked bond yields.

Bank of England
U.K. inflation-linked bond 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. inflation-indexed 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: Articles from this Bank's *Review* are available on the Internet at research.stlouisfed.org/publications/review/.