March 2001

MonetaryTrends

THE FEDERAL RESERVE BANK of ST. LOUIS

The Codification of an FOMC Procedure

In February 1994, the Fed began the practice of announcing changes in its target for the federal funds rate immediately upon making them. Since then, 19 of the subsequent 22 changes in the Fed's target for the federal funds rate have been made at regularly scheduled Federal Open Market Committee (FOMC) meetings. Prior to this, changes in the target were often made between regularly scheduled meetings. For example, of the 55 changes in the Fed's federal funds rate target between 1987 and 1994, 7 occurred at regularly scheduled meetings of the FOMC, and 48 were made during intermeeting periods.[1]

At about this same time, the FOMC made another procedural change that has been somewhat less obvious. Prior to 1994, the Chairman frequently exercised his discretion to adjust the funds rate target during intermeeting periods without formally consulting with the other members of the FOMC. Indeed, all 48 intermeeting target changes were made at the Chairman's discretion. In none of these instances was there a formal teleconference meeting of the FOMC.

The practice is considerably different now. All three of the target changes since 1994 that did not occur at regularly scheduled meetings followed a teleconference. In 2000, the FOMC codified the new procedure for making intermeeting adjustments to the intended federal funds rate. At its meeting held on February 1-2, 2000, the FOMC formally adopted the following authorization:

> In the execution of the Committee's decision regarding policy during any intermeeting period, the Committee authorizes and directs the Federal Reserve Bank of New York, upon instruction of the Chairman of the Committee, to adjust somewhat in exceptional circumstances the degree of pressure on reserve positions and hence the intended federal funds rate ... Consistent with Committee practice, the Chairman, if feasible, will consult with the Committee before making any adjustment.[2]

Given modern communications, it is likely that the Chairman would be able to consult with the Committee in advance of changing the target. Hence, the authorization appears to limit the discretion of the Chairman to make intermeeting adjustments in the stance of monetary policy.

To correctly forecast Fed actions, the markets must forecast both the magnitude and timing of changes in the funds rate target. Since late 1989, the Fed has changed the funds rate target by multiples of 25 basis points. Of the 43 changes in the intended funds rate since October 1989, all but one (the 75 basis-point increase on November 15, 1994) have been either 25 or 50 basis points.

The procedural changes noted above should improve the markets' ability to forecast target changes. The current authorization limits the chairman's discretion to change the target during the intermeeting period. Consequently, most target changes should continue to occur at regularly scheduled FOMC meetings. The continuation of this practice should enable the market to better predict the timing of changes.

In addition, the current procedures may make it easier to predict intermeeting changes. For example, after its December meeting, the FOMC announced that it changed its *balance of risk statement* from "the risks are weighted mainly toward conditions that may generate heightened inflation," to "the risks are weighted mainly toward conditions that may generate economic weakness." This prompted some analysts to speculate about an intermeeting decrease in the funds rate target.

—Daniel L. Thornton

[1] There are alternative series of funds rate target changes. The one used here and an alternative series can be found in "A History of the Asymmetric Policy Directive," Federal Reserve Bank of St. Louis *Review* (September/October 2000), pp. 1-16, Table B1 and Table B2.

[2] *Federal Reserve Bulletin* (May 2000), p. 330.

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Conventions used in this publication:

1. Unless otherwise indicated, data are monthly.

2. Shaded areas indicate recessions, as dated by the National Bureau of Economic Research.

3. The *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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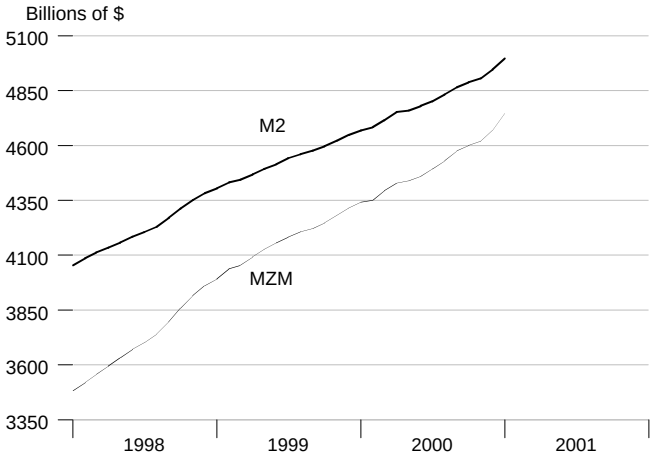
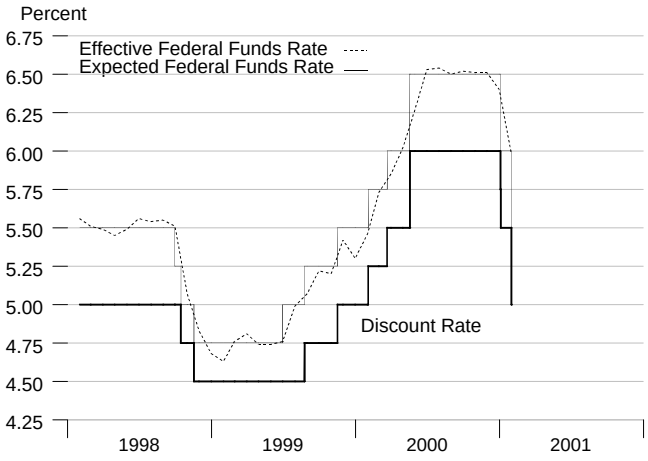
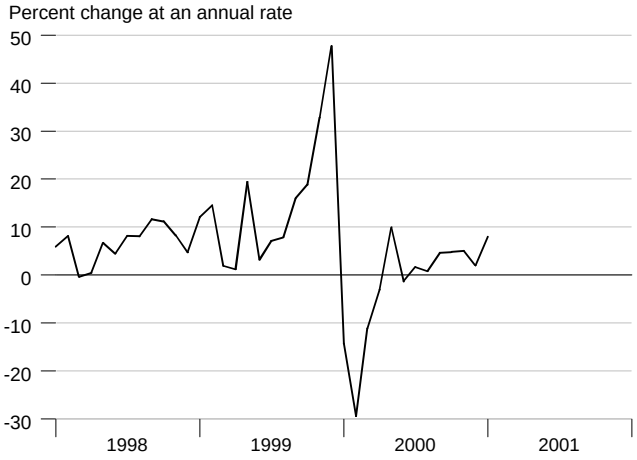
M2 and MZM



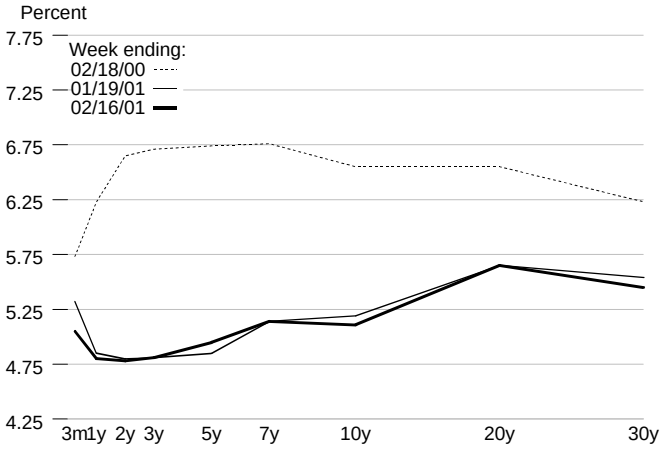
Reserve Market Rates



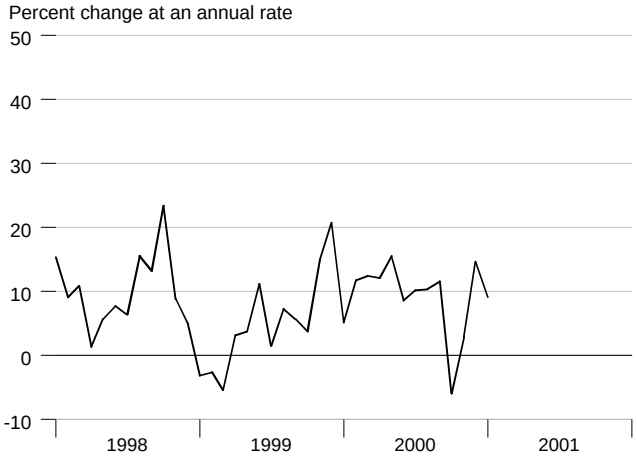
Adjusted Monetary Base



Treasury Yield Curve



Total Bank Credit

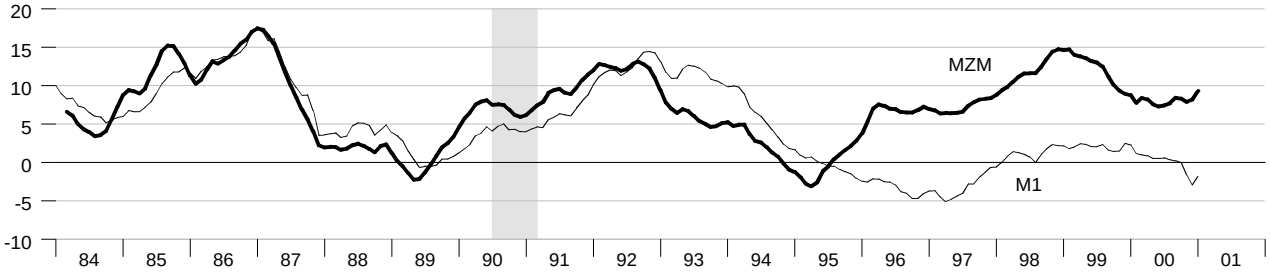


Interest Rates

	Nov 00	Dec 00	Jan 01
Federal Funds Rate	6.51	6.40	5.98
Discount Rate	6.00	6.00	5.52
Prime Rate	9.50	9.50	9.05
Conventional Mortgage Rate	7.75	7.38	7.03
Treasury Yields:			
3-month constant maturity	6.36	5.94	5.29
6-month constant maturity	6.34	5.92	5.15
1-year constant maturity	6.09	5.60	4.81
3-year constant maturity	5.79	5.26	4.77
5-year constant maturity	5.70	5.17	4.86
10-year constant maturity	5.72	5.24	5.16
30-year constant maturity	5.78	5.49	5.54

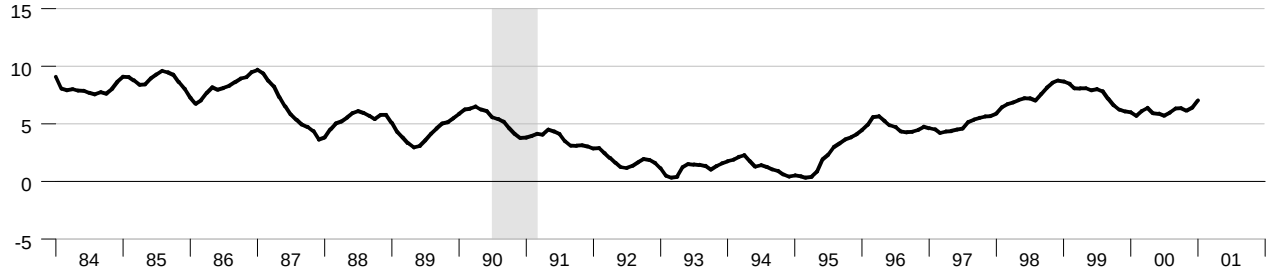
MZM and M1

Percent change from year ago



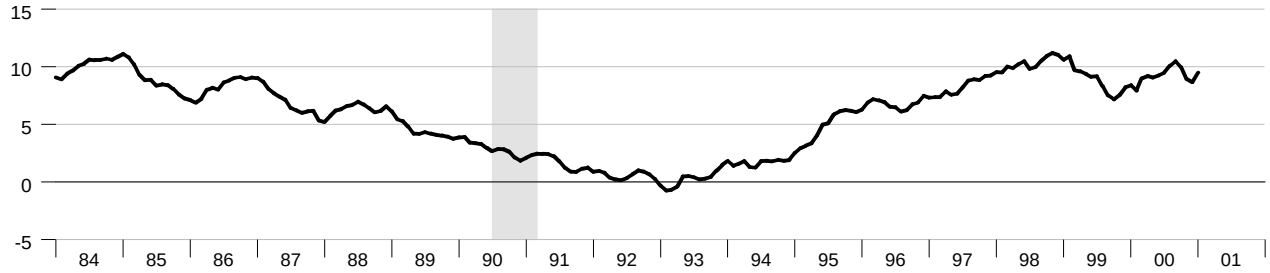
M2

Percent change from year ago



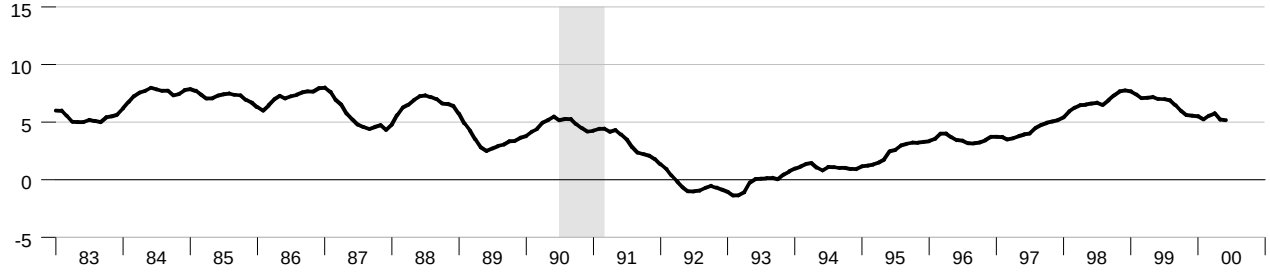
M3

Percent change from year ago

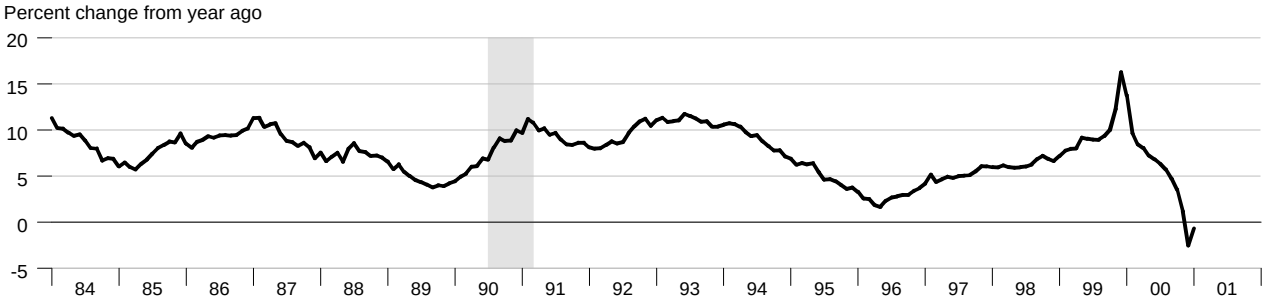


Monetary Services Index - M2

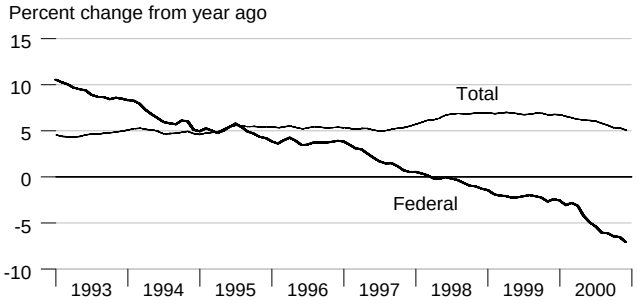
Percent change from year ago



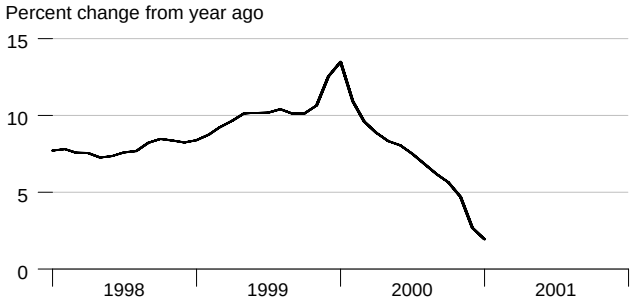
Adjusted Monetary Base



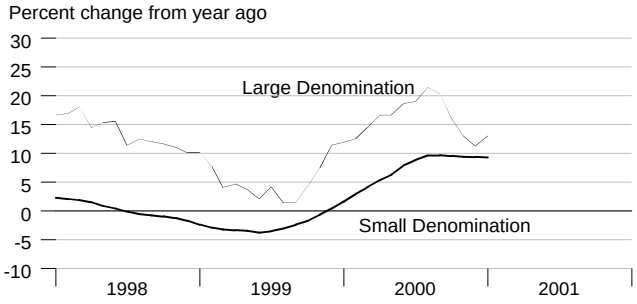
Domestic Nonfinancial Debt



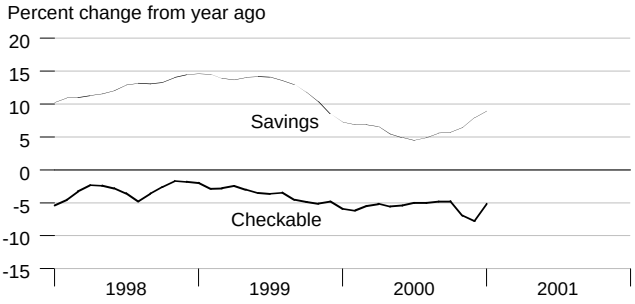
Currency Held by the Nonbank Public



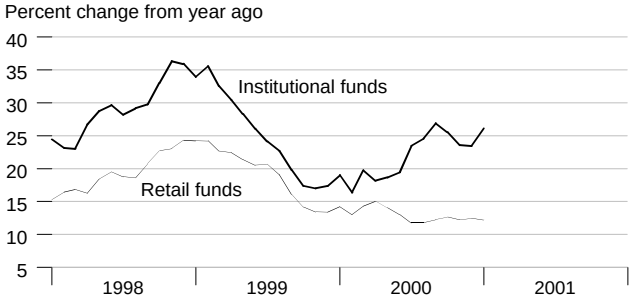
Time Deposits



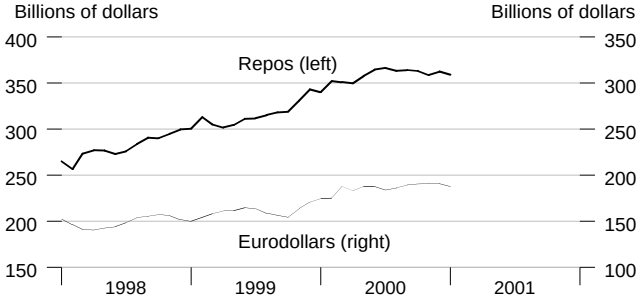
Checkable and Savings Deposits



Money Market Mutual Fund Shares

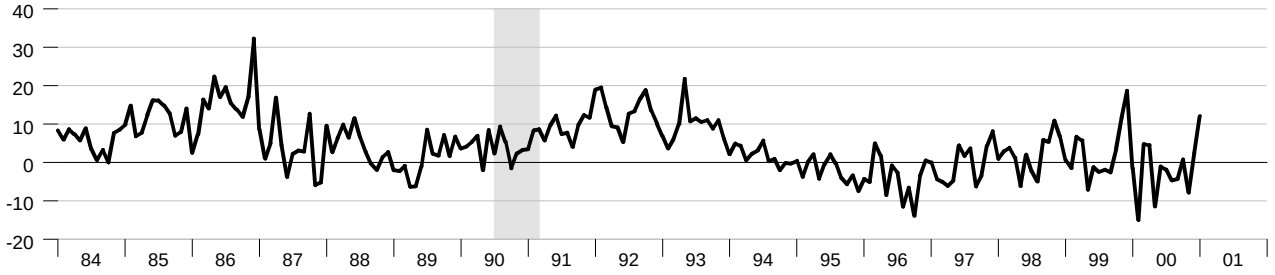


Repurchase Agreements and Eurodollars



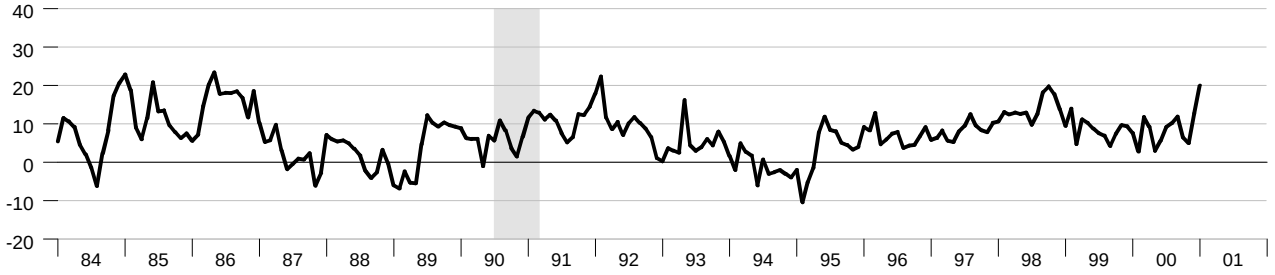
M1

Percent change at an annual rate



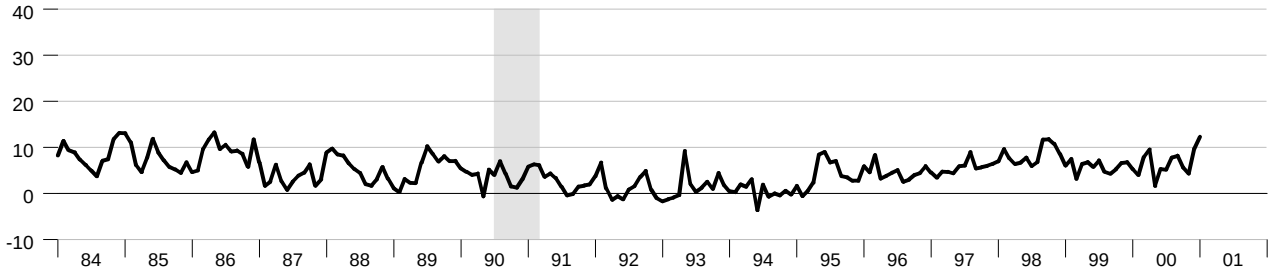
MZM

Percent change at an annual rate



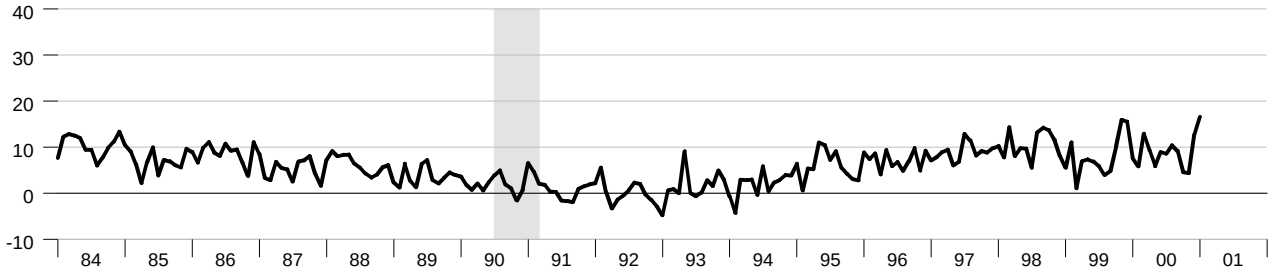
M2

Percent change at an annual rate

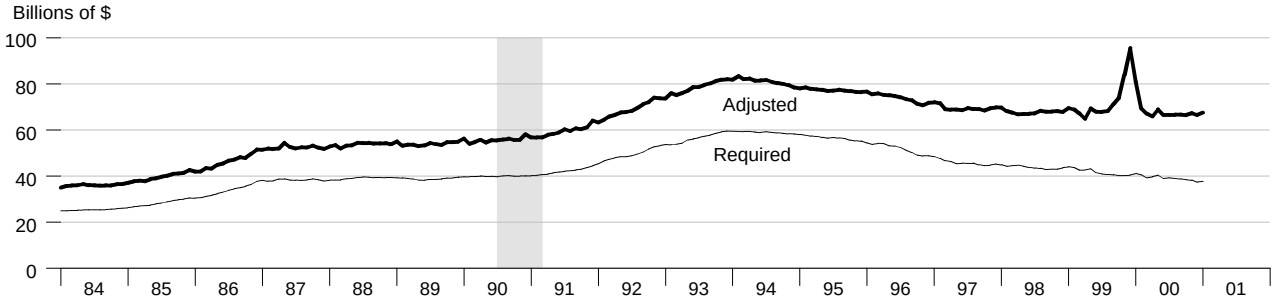


M3

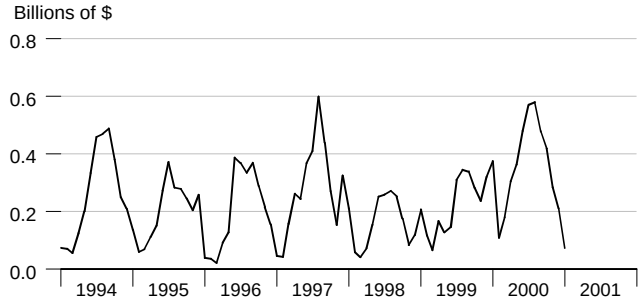
Percent change at an annual rate



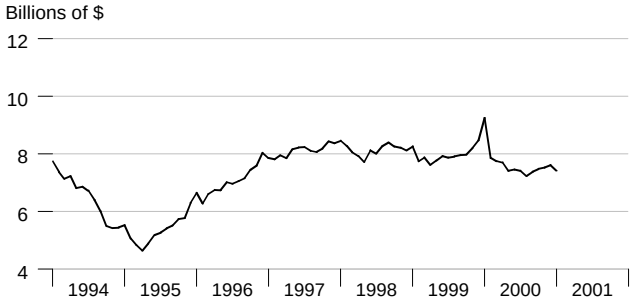
Adjusted and Required Reserves



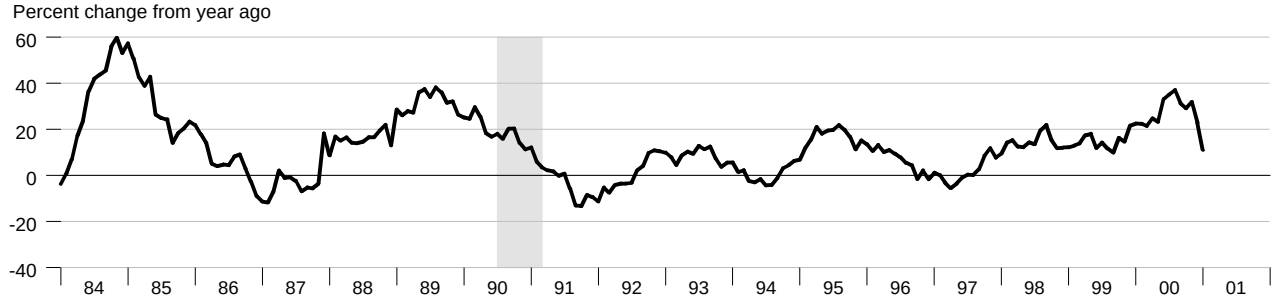
Total Borrowings, nsa



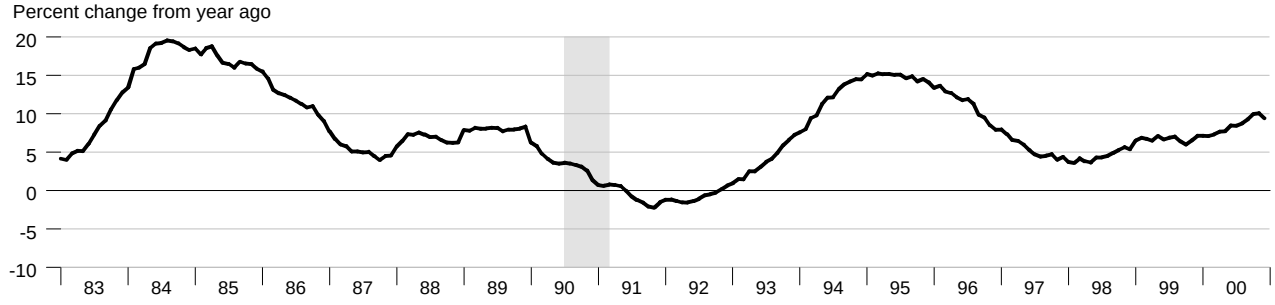
Excess Reserves plus RCB Contracts



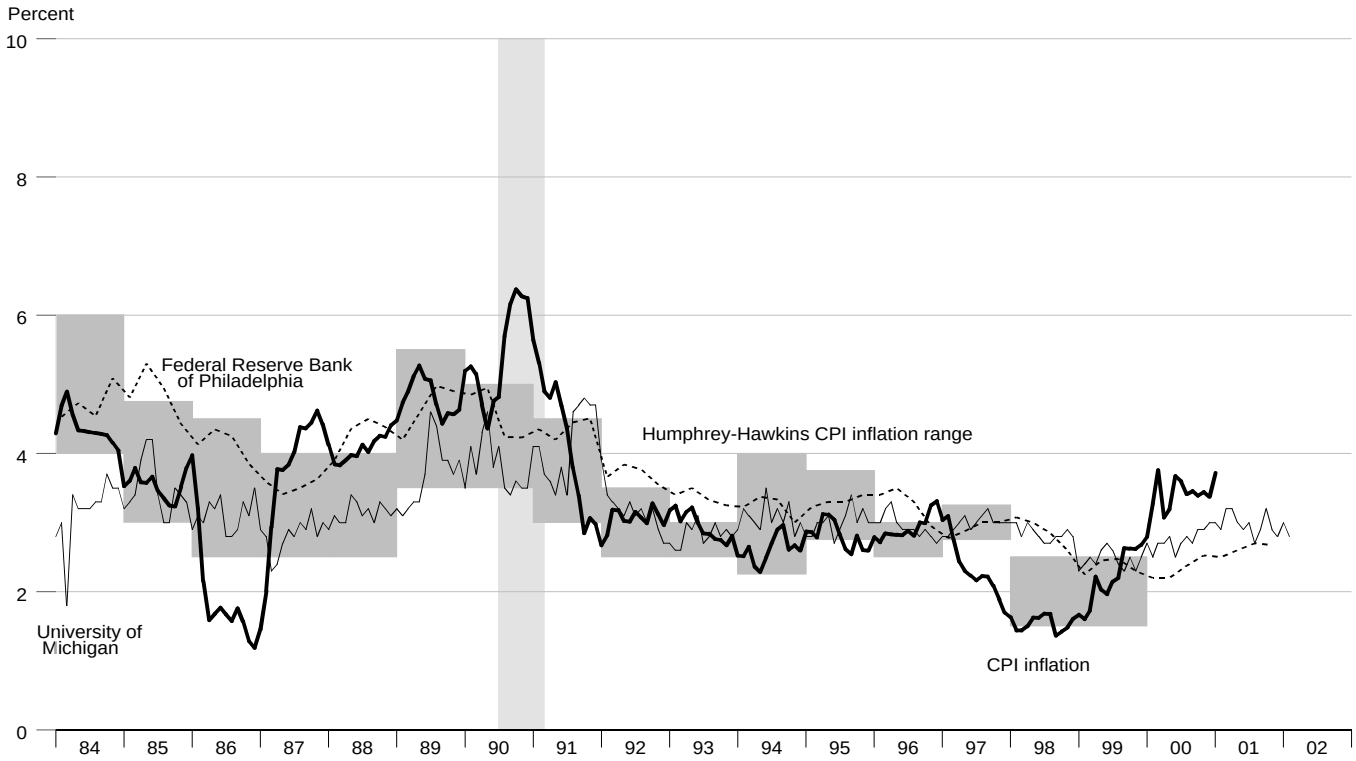
Nonfinancial Commercial Paper



Consumer Credit

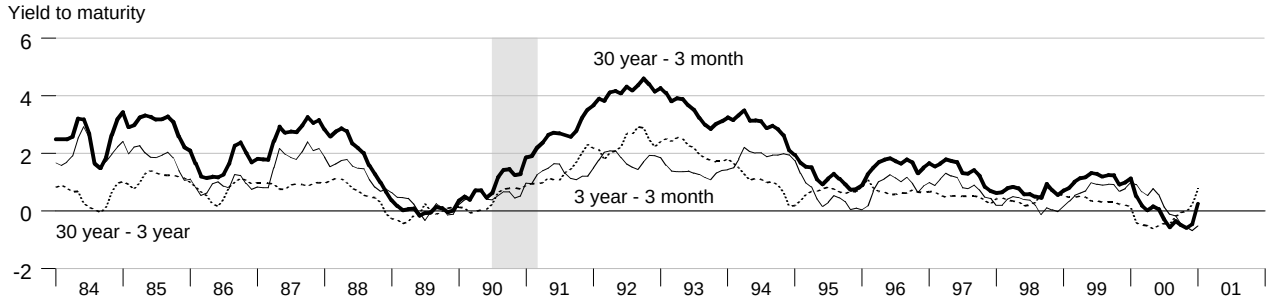


Inflation and Inflation Expectations

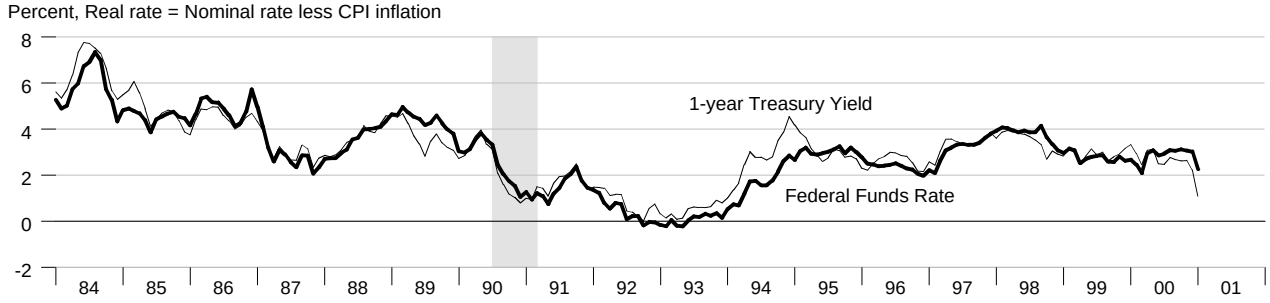


The shaded region shows the Humphrey-Hawkins CPI inflation range. Beginning in January 2000, the Humphrey-Hawkins inflation range was reported using the PCE price index and therefore is not shown on this graph . See page 19 for information.

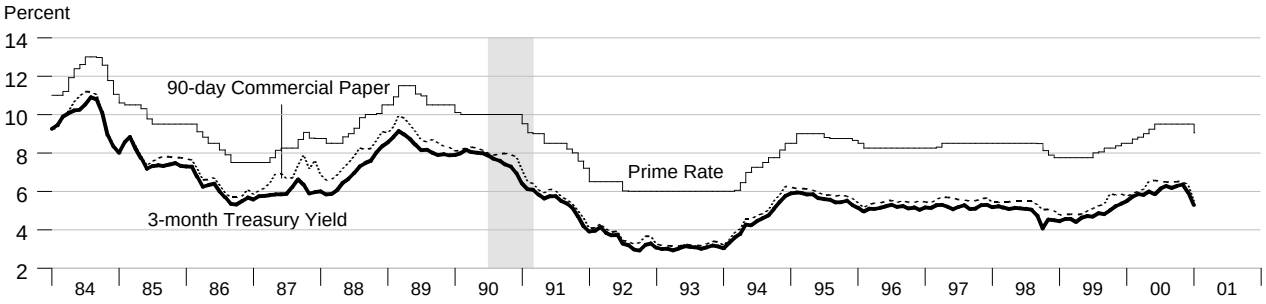
Treasury Security Yield Spreads



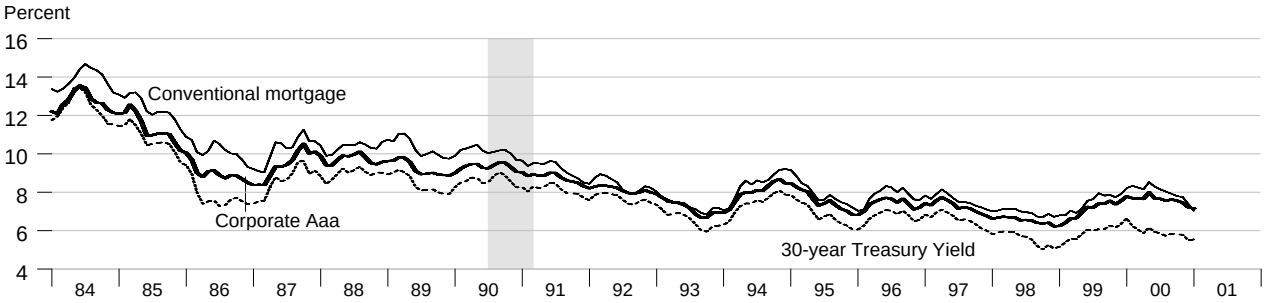
Real Interest Rates



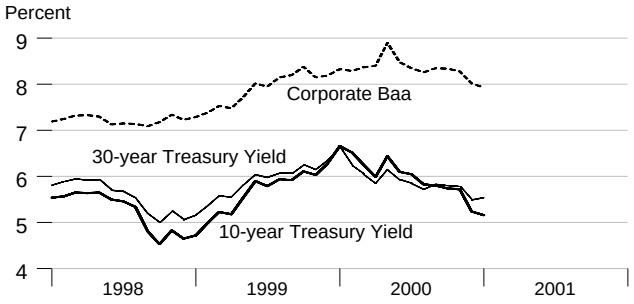
Short Term Interest Rates



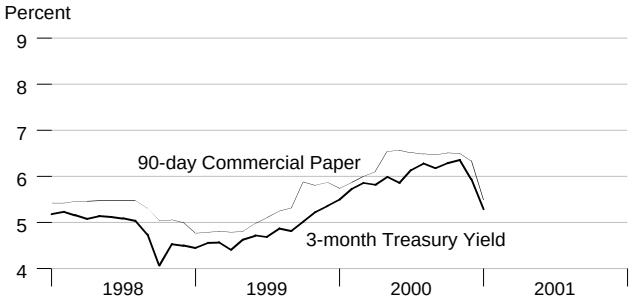
Long Term Interest Rates



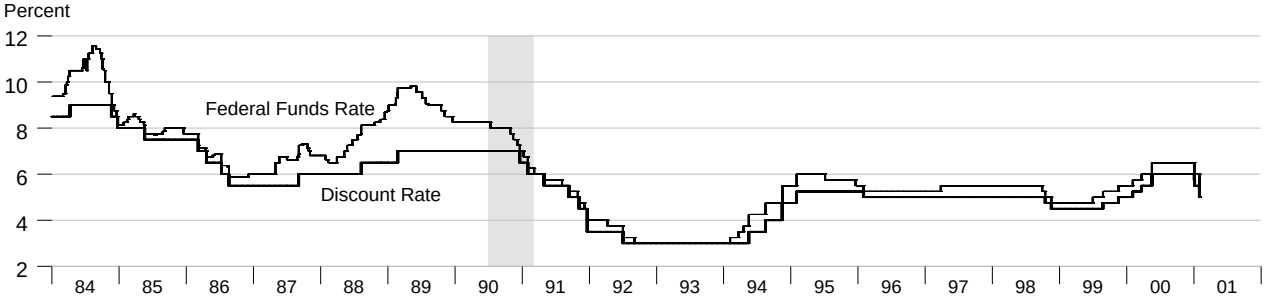
Long Term Interest Rates



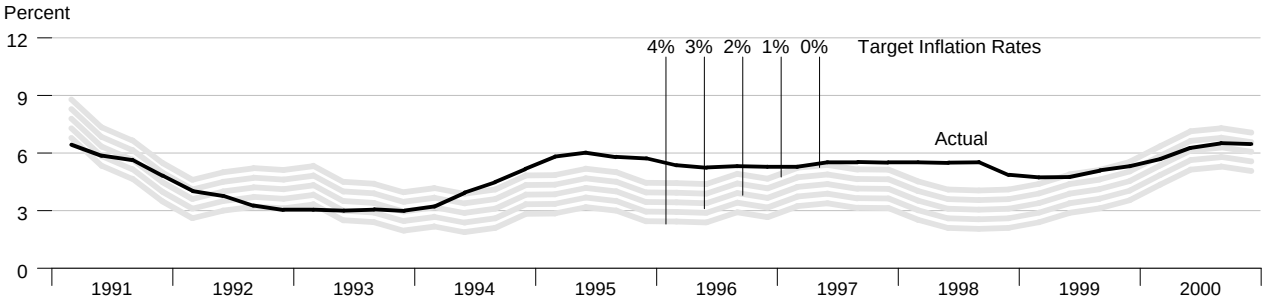
Short Term Interest Rates



FOMC Expected Federal Funds Rate and Discount Rate

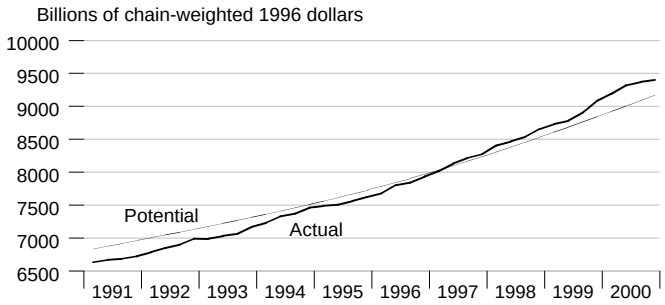


Federal Funds Rate and Inflation Targets

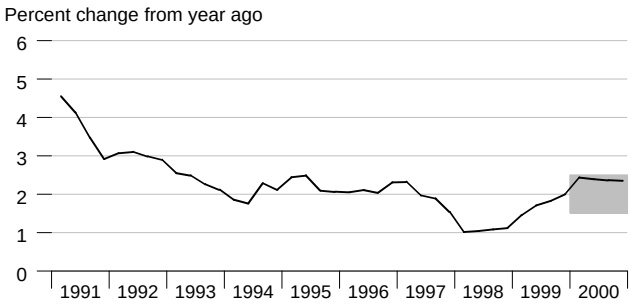


Calculated federal funds rate is based on Taylor's rule. See notes on page 19.

Actual and Potential Real GDP

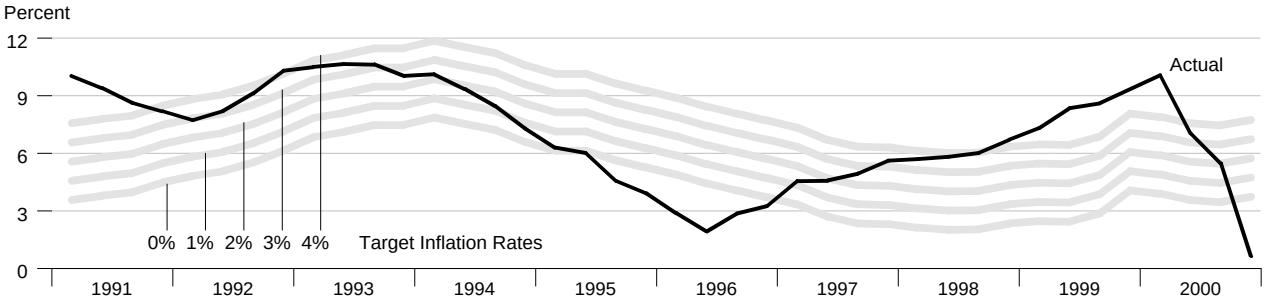


PCE Inflation and Projections



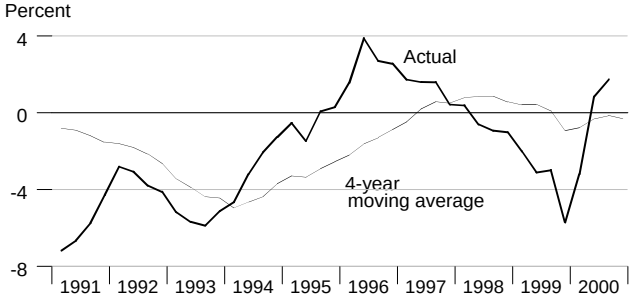
The shaded region shows the range of projections published in the Monetary Policy Report to Congress. See page 19 for information.

Monetary Base Growth* and Inflation Targets

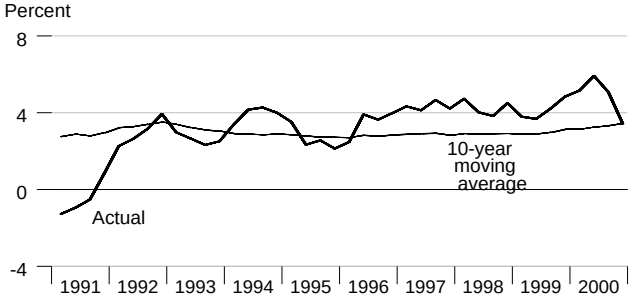


*Modified for the effects of sweeps programs on reserve demand.
Calculated base growth is based on McCallum's rule. Actual base growth is percent change from year ago. See notes on page 19.

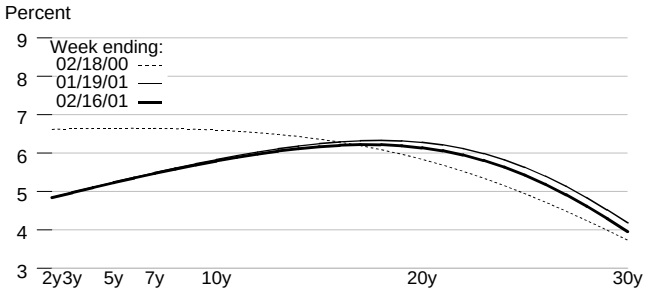
Monetary Base Velocity Growth



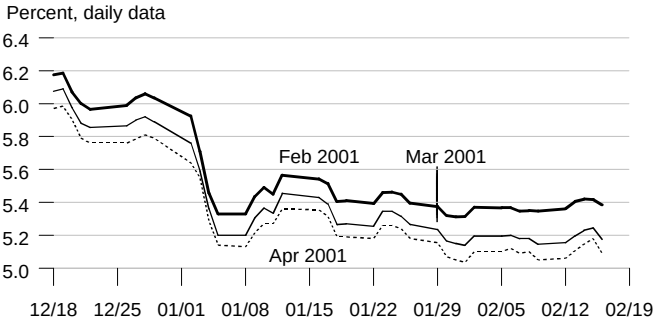
Real Output Growth



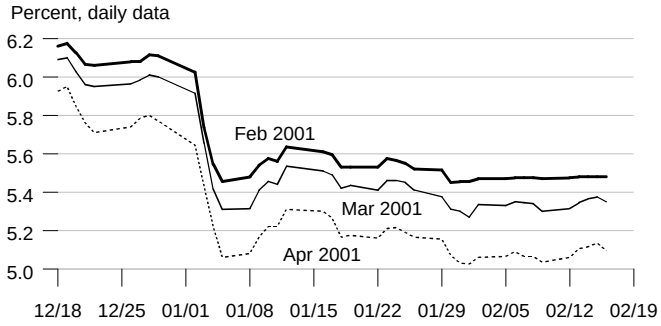
Implied One-Year Forward Rates



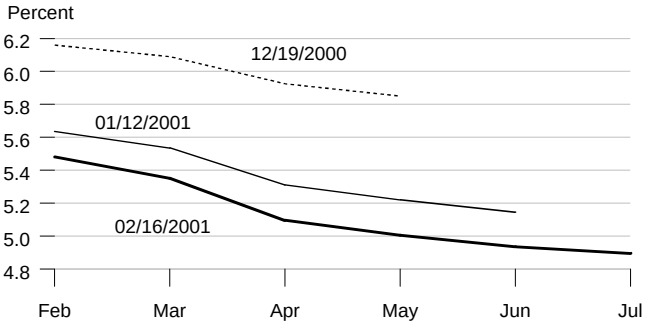
Rates on 3-Month Eurodollar Futures



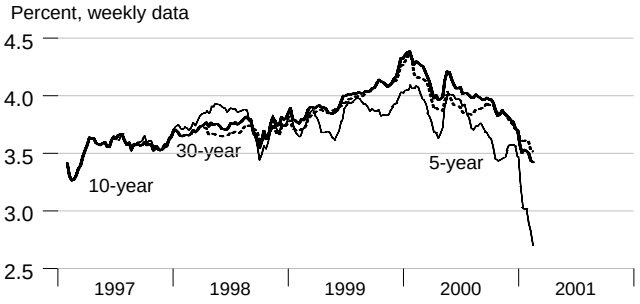
Rates on Selected Fed Funds Futures Contracts



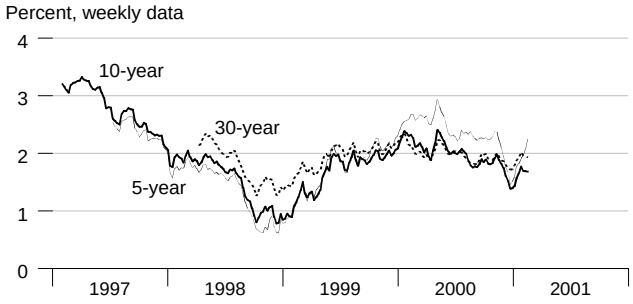
Implied Yields on Fed Funds Futures



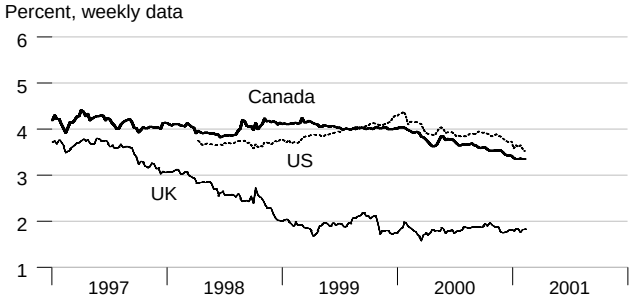
Inflation-Protected Treasury Yields



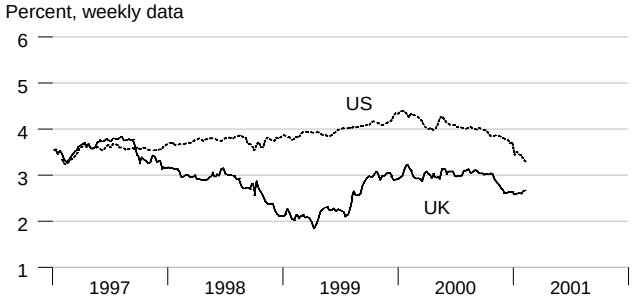
Inflation-Protected Treasury Yield Spreads



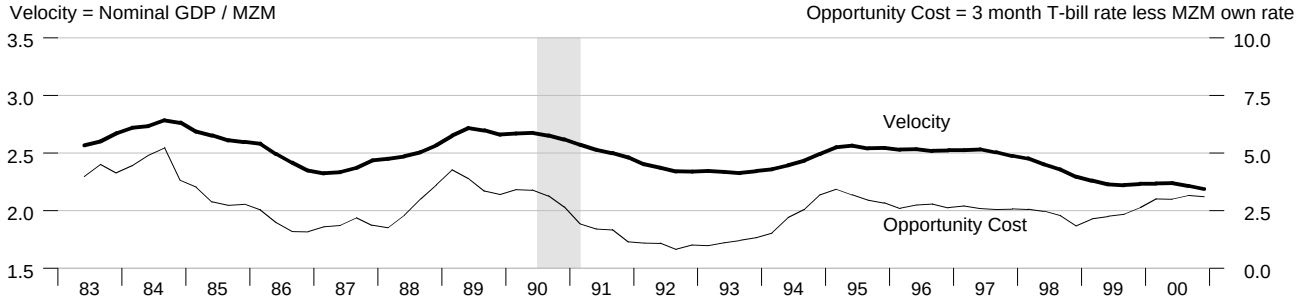
Inflation-Indexed 30-Year Bonds



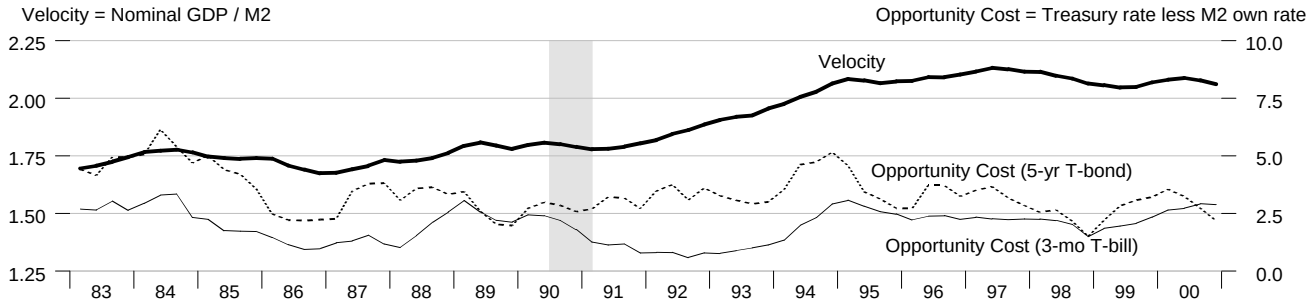
Inflation-Indexed 10-Year Bonds



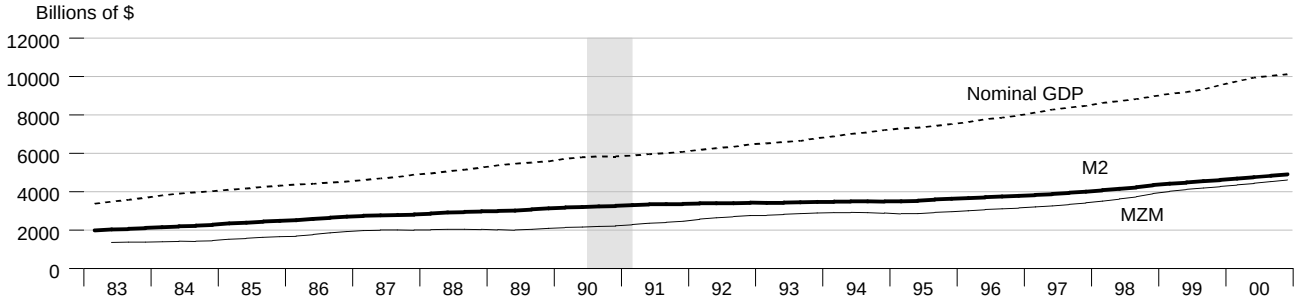
MZM Velocity and Opportunity Cost



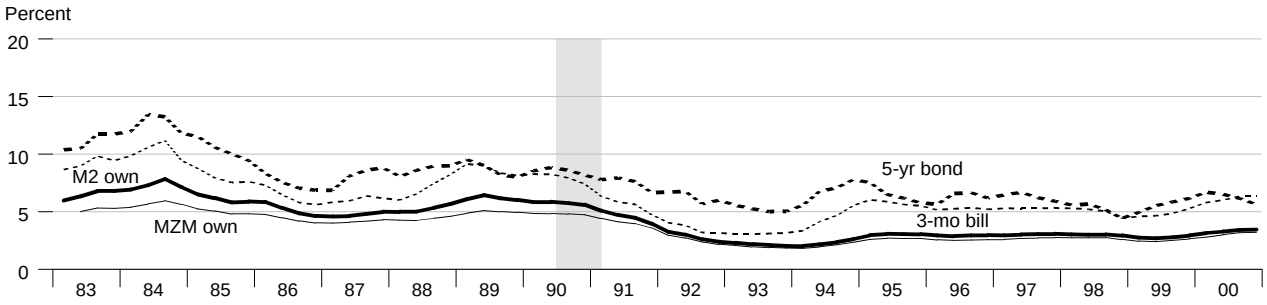
M2 Velocity and Opportunity Cost



M2, MZM and Nominal GDP

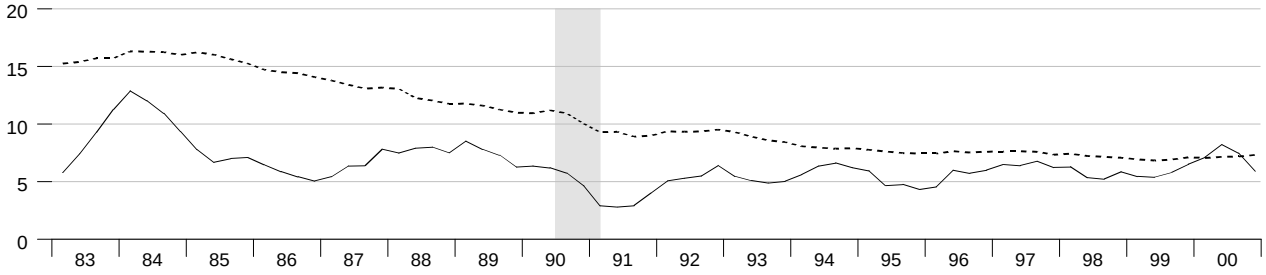


Interest Rates



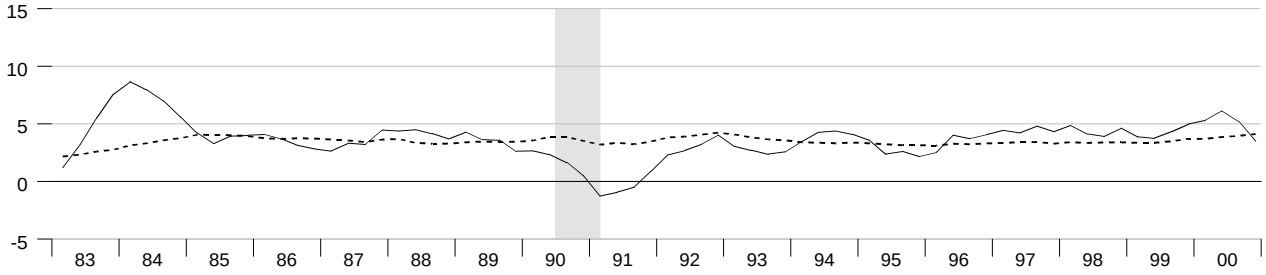
Gross Domestic Product

Percent change from year ago



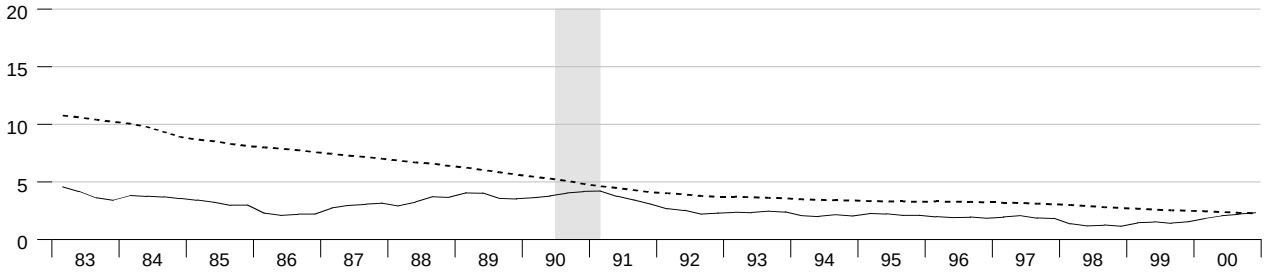
Real Gross Domestic Product

Percent change from year ago



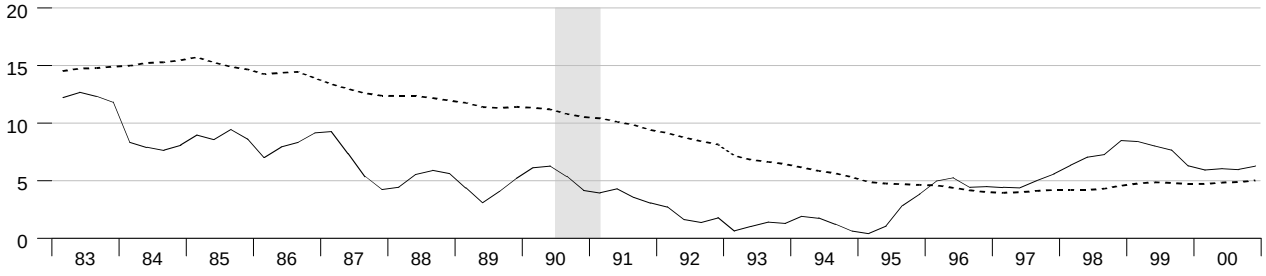
Gross Domestic Product Price Index

Percent change from year ago



M2

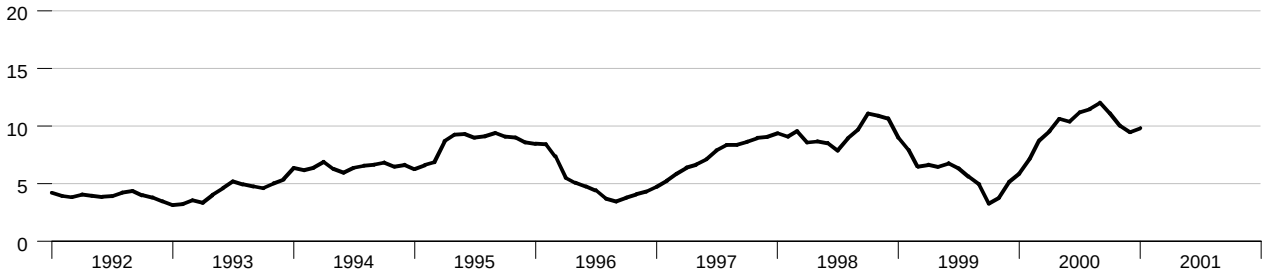
Percent change from year ago



Dashed lines indicate 10-year moving averages

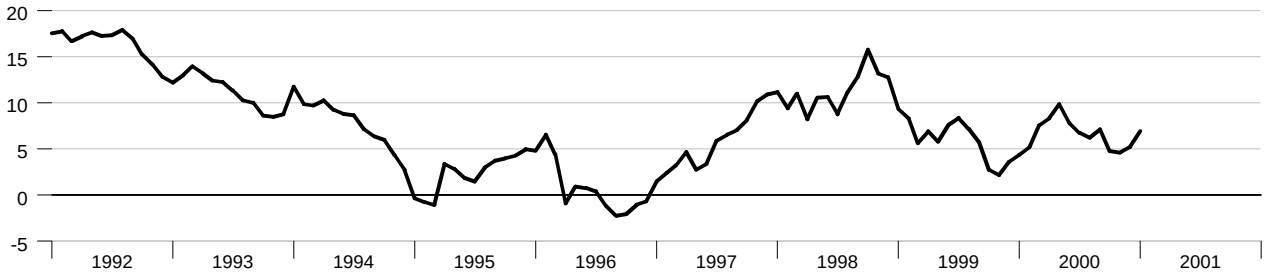
Bank Credit

Percent change from year ago



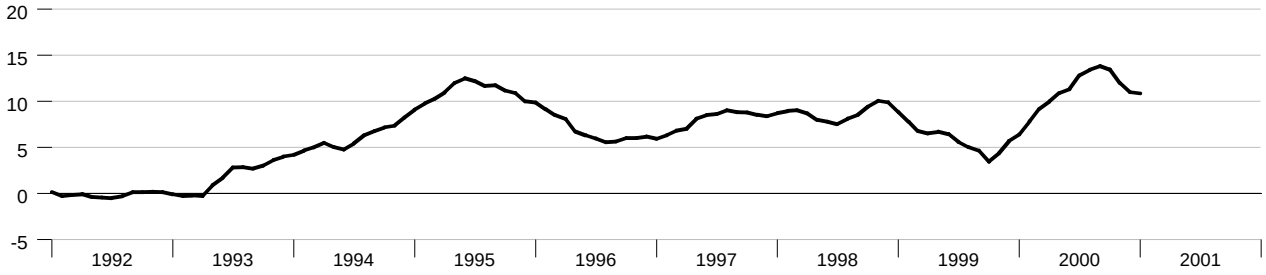
Investment Securities in Bank Credit at Commercial Banks

Percent change from year ago



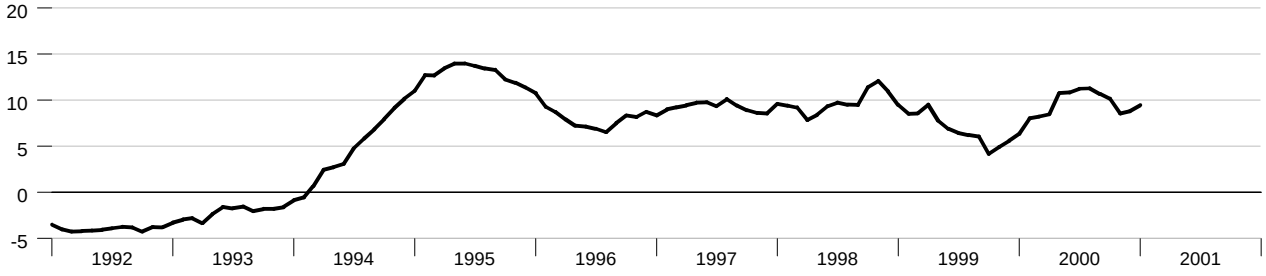
Total Loans and Leases in Bank Credit at Commercial Banks

Percent change from year ago

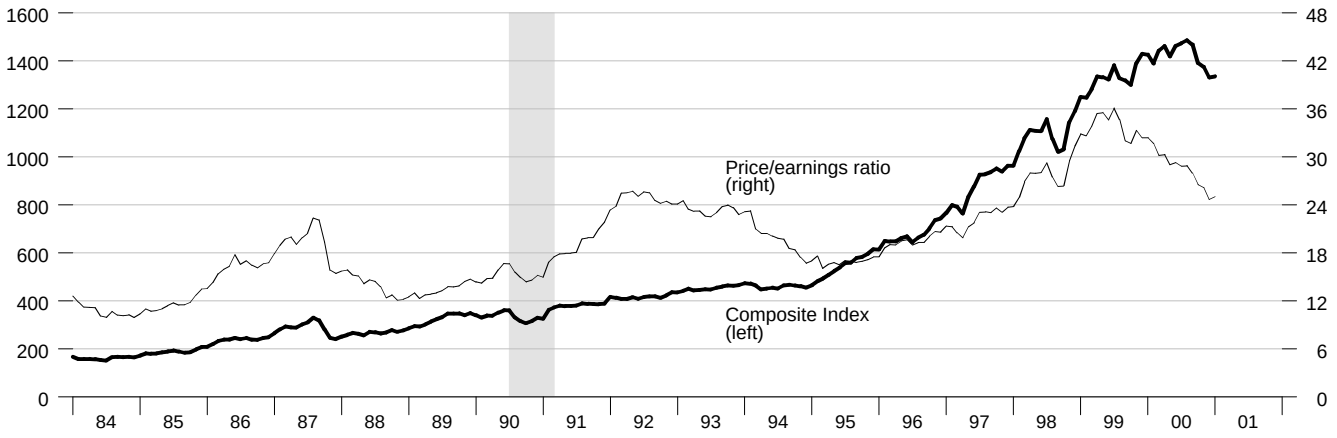


Commercial and Industrial Loans at Commercial Banks

Percent change from year ago



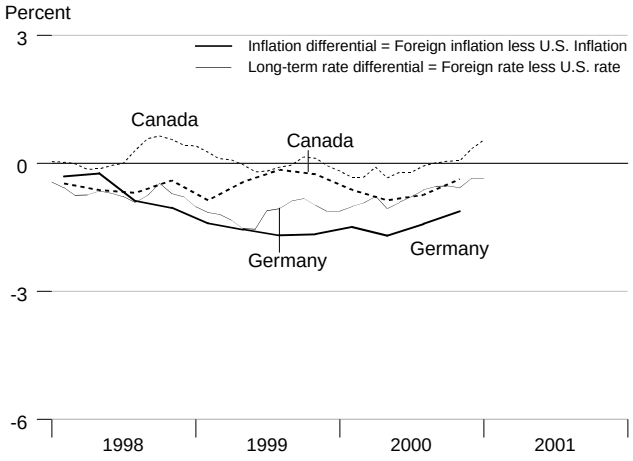
Standard and Poor's 500

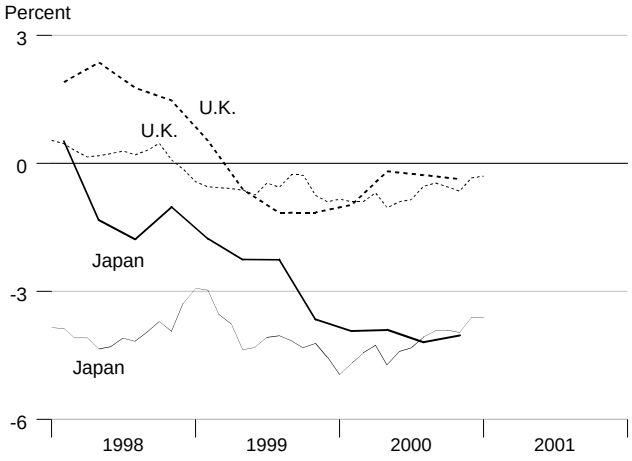


Inflation and Long-Term Interest Rates

	Trend in Consumer Price Inflation Rates Percent change from year ago				Recent Long-Term Government Bond Rates Percent			
	2000Q1	2000Q2	2000Q3	2000Q4	Oct00	Nov00	Dec00	Jan01
United States	3.27	3.31	3.47	3.44	5.74	5.72	5.24	5.16
Canada	2.65	2.45	2.73	3.08	5.79	5.78	5.58	5.71
France	1.50	1.49	1.89	1.89	5.92	5.78	5.55	.
Germany	1.78	1.62	2.05	2.32	5.21	5.15	4.89	4.80
Italy	2.36	2.50	2.63	2.67	5.60	5.55	5.30	5.19
Japan	-0.65	-0.59	-0.72	-0.59	1.83	1.76	1.62	1.54
United Kingdom	2.30	3.13	3.20	3.07	5.19	5.07	4.90	4.86

Inflation and Long-Term Interest Rates Differentials





		Money Stock				Bank			
		M1	MZM	M2	M3	Credit	Monetary Base	Reserves	MSI M2
	1996	1105.818	3092.976	3738.268	4808.879	3685.471	455.572	73.952	217.848
	1997	1069.145	3315.290	3920.531	5204.178	3953.856	478.708	69.523	227.067
	1998	1079.795	3702.214	4206.529	5739.497	4326.100	508.942	67.808	242.237
	1999	1101.548	4158.950	4525.189	6251.225	4584.929	557.864	72.359	258.556
	2000	1104.200	4491.382	4799.912	6827.473	5034.487	590.823	68.222	
1998	1	1077.122	3519.393	4083.841	5520.299	4187.553	498.320	68.478	235.943
	2	1078.248	3632.553	4158.606	5659.173	4250.371	502.020	66.943	239.950
	3	1074.220	3745.459	4234.901	5796.402	4351.043	511.546	67.809	243.733
	4	1089.591	3911.451	4348.769	5982.113	4515.433	523.882	68.002	249.320
1999	1	1098.625	4027.661	4427.064	6095.161	4513.531	536.334	68.521	253.370
	2	1102.744	4124.420	4492.089	6190.066	4531.658	545.912	67.392	257.003
	3	1095.561	4203.142	4559.405	6279.355	4595.576	557.969	69.050	260.280
	4	1109.260	4280.578	4622.199	6440.318	4698.951	591.242	84.473	263.570
2000	1	1114.904	4362.130	4689.432	6610.198	4840.479	593.096	72.385	267.157
	2	1109.874	4441.605	4764.072	6758.485	4993.232	586.041	67.093	270.860
	3	1099.740	4533.014	4832.876	6908.906	5126.680	589.062	66.644	
	4	1092.284	4628.779	4913.269	7032.304	5177.558	595.094	66.766	
1999	Jan	1097.485	3991.528	4404.786	6056.213	4526.972	531.760	69.479	252.260
	Feb	1096.148	4037.836	4432.292	6111.822	4517.014	538.190	68.890	253.460
	Mar	1102.242	4053.619	4444.113	6117.448	4496.606	539.053	67.195	254.390
	Apr	1107.502	4091.160	4467.905	6153.036	4508.308	539.608	64.898	255.900
	May	1100.945	4126.007	4493.322	6190.756	4522.322	548.331	69.334	257.070
	Jun	1099.785	4156.094	4515.041	6226.406	4564.343	549.796	67.944	258.040
	Jul	1097.527	4182.217	4542.043	6257.042	4569.975	553.060	67.879	259.220
	Aug	1095.763	4206.214	4559.895	6277.789	4597.593	556.711	68.158	260.240
	Sep	1093.394	4220.994	4576.278	6303.234	4619.160	564.135	71.113	261.380
	Oct	1096.446	4246.811	4596.506	6356.253	4633.598	572.989	73.928	262.320
	Nov	1107.078	4280.853	4621.910	6440.649	4691.181	588.669	84.017	263.420
	Dec	1124.256	4314.071	4648.180	6524.052	4772.075	612.068	95.475	264.970
2000	Jan	1122.785	4341.315	4668.681	6565.197	4792.563	604.790	80.818	266.190
	Feb	1108.758	4351.294	4684.396	6597.245	4839.389	589.978	69.252	266.760
	Mar	1113.168	4393.781	4715.218	6668.152	4889.484	584.520	67.084	268.520
	Apr	1117.322	4427.482	4752.641	6719.764	4938.798	583.046	65.907	270.670
	May	1106.649	4438.355	4759.228	6752.735	5002.570	587.857	68.883	270.510
	Jun	1105.650	4458.977	4780.348	6802.955	5038.327	587.219	66.490	271.400
	Jul	1103.926	4492.837	4801.068	6851.716	5081.004	588.034	66.557	
	Aug	1099.623	4530.742	4832.275	6911.084	5124.866	588.446	66.674	
	Sep	1095.671	4575.464	4865.286	6963.919	5174.171	590.705	66.700	
	Oct	1096.339	4599.840	4888.179	6990.465	5148.480	593.067	66.487	
	Nov	1089.168	4618.868	4905.887	7015.984	5160.666	595.554	67.291	
	Dec	1091.345	4667.628	4945.740	7090.462	5223.529	596.661	66.520	
2001	Jan	1102.314	4745.165	4996.455	7188.401	5263.217	600.785	67.515	

*All values are given in billions of dollars

		Federal Funds	Discount Rate	Prime Rate	3-mo CDs	Treasury Yields 3 mo	3 yr	30 yr	Corporate Aaa Bonds	S & L Aaa Bonds	Conventional Mortgage
	1996	5.30	5.02	8.27	5.39	5.15	5.99	6.70	7.37	5.52	7.80
	1997	5.46	5.00	8.44	5.62	5.20	6.10	6.61	7.26	5.32	7.60
	1998	5.35	4.92	8.35	5.47	4.91	5.14	5.58	6.53	4.93	6.94
	1999	4.97	4.62	7.99	5.33	4.78	5.49	5.87	7.04	5.28	7.43
	2000	6.24	5.73	9.23	6.46	6.00	6.22	5.94	7.62	5.58	8.06
1998	1	5.52	5.00	8.50	5.55	5.19	5.46	5.88	6.67	4.94	7.05
	2	5.50	5.00	8.50	5.59	5.11	5.57	5.85	6.64	5.00	7.09
	3	5.53	5.00	8.50	5.53	4.96	5.11	5.47	6.49	4.95	6.87
	4	4.86	4.66	7.92	5.20	4.37	4.41	5.11	6.33	4.82	6.76
1999	1	4.73	4.50	7.75	4.90	4.53	4.87	5.37	6.42	4.87	6.88
	2	4.75	4.50	7.75	4.98	4.59	5.35	5.80	6.93	5.05	7.20
	3	5.09	4.60	8.10	5.38	4.79	5.71	6.04	7.33	5.42	7.80
	4	5.31	4.87	8.37	6.06	5.20	6.00	6.25	7.49	5.79	7.83
2000	1	5.68	5.19	8.69	6.03	5.70	6.56	6.30	7.71	5.82	8.26
	2	6.27	5.74	9.25	6.57	5.89	6.52	5.98	7.77	5.72	8.32
	3	6.52	6.00	9.50	6.63	6.20	6.16	5.80	7.61	5.45	8.03
	4	6.47	6.00	9.50	6.59	6.20	5.63	5.69	7.40	5.32	7.64
1999	Jan	4.63	4.50	7.75	4.89	4.45	4.61	5.16	6.24	4.85	6.79
	Feb	4.76	4.50	7.75	4.90	4.56	4.90	5.37	6.40	4.80	6.81
	Mar	4.81	4.50	7.75	4.91	4.57	5.11	5.58	6.62	4.96	7.04
	Apr	4.74	4.50	7.75	4.88	4.41	5.03	5.55	6.64	4.89	6.92
	May	4.74	4.50	7.75	4.92	4.63	5.33	5.81	6.93	5.05	7.15
	Jun	4.76	4.50	7.75	5.13	4.72	5.70	6.04	7.23	5.22	7.55
	Jul	4.99	4.50	8.00	5.24	4.69	5.62	5.98	7.19	5.24	7.63
	Aug	5.07	4.56	8.06	5.41	4.87	5.77	6.07	7.40	5.47	7.94
	Sep	5.22	4.75	8.25	5.50	4.82	5.75	6.07	7.39	5.56	7.82
	Oct	5.20	4.75	8.25	6.13	5.02	5.94	6.26	7.55	5.78	7.85
	Nov	5.42	4.86	8.37	6.00	5.23	5.92	6.15	7.36	5.77	7.74
	Dec	5.30	5.00	8.50	6.05	5.36	6.14	6.35	7.55	5.82	7.91
2000	Jan	5.46	5.00	8.50	5.95	5.50	6.49	6.63	7.78	5.91	8.21
	Feb	5.73	5.24	8.73	6.01	5.73	6.65	6.23	7.68	5.88	8.33
	Mar	5.85	5.34	8.83	6.14	5.86	6.53	6.05	7.68	5.68	8.24
	Apr	6.02	5.50	9.00	6.28	5.82	6.36	5.85	7.64	5.60	8.15
	May	6.27	5.71	9.24	6.71	5.99	6.77	6.15	7.99	5.87	8.52
	Jun	6.53	6.00	9.50	6.73	5.86	6.43	5.93	7.67	5.69	8.29
	Jul	6.54	6.00	9.50	6.67	6.14	6.28	5.85	7.65	5.53	8.15
	Aug	6.50	6.00	9.50	6.61	6.28	6.17	5.72	7.55	5.43	8.03
	Sep	6.52	6.00	9.50	6.60	6.18	6.02	5.83	7.62	5.40	7.91
	Oct	6.51	6.00	9.50	6.67	6.29	5.85	5.80	7.55	5.46	7.80
	Nov	6.51	6.00	9.50	6.65	6.36	5.79	5.78	7.45	5.38	7.75
	Dec	6.40	6.00	9.50	6.45	5.94	5.26	5.49	7.21	5.11	7.38
2001	Jan	5.98	5.52	9.05	5.62	5.29	4.77	5.54	7.15		7.03

*All values are given as a percent at an annual rate

		M1	MZM	M2	M3
Percent change from previous period					
	1996	-3.21	6.56	4.79	6.75
	1997	-3.32	7.19	4.88	8.22
	1998	1.00	11.67	7.29	10.29
	1999	2.01	12.34	7.58	8.92
	2000	0.24	7.99	6.07	9.22
1998	1	0.92	2.77	1.87	2.50
	2	0.10	3.22	1.83	2.52
	3	-0.37	3.11	1.83	2.42
	4	1.43	4.43	2.69	3.20
1999	1	0.83	2.97	1.80	1.89
	2	0.37	2.40	1.47	1.56
	3	-0.65	1.91	1.50	1.44
	4	1.25	1.84	1.38	2.56
2000	1	0.51	1.91	1.45	2.64
	2	-0.45	1.82	1.59	2.24
	3	-0.91	2.06	1.44	2.23
	4	-0.68	2.11	1.66	1.79
1999	Jan	0.05	0.79	0.51	0.46
	Feb	-0.12	1.16	0.62	0.92
	Mar	0.56	0.39	0.27	0.09
	Apr	0.48	0.93	0.54	0.58
	May	-0.59	0.85	0.57	0.61
	Jun	-0.11	0.73	0.48	0.58
	Jul	-0.21	0.63	0.60	0.49
	Aug	-0.16	0.57	0.39	0.33
	Sep	-0.22	0.35	0.36	0.41
	Oct	0.28	0.61	0.44	0.84
	Nov	0.97	0.80	0.55	1.33
	Dec	1.55	0.78	0.57	1.29
2000	Jan	-0.13	0.63	0.44	0.63
	Feb	-1.25	0.23	0.34	0.49
	Mar	0.40	0.98	0.66	1.07
	Apr	0.37	0.77	0.79	0.77
	May	-0.96	0.25	0.14	0.49
	Jun	-0.09	0.46	0.44	0.74
	Jul	-0.16	0.76	0.43	0.72
	Aug	-0.39	0.84	0.65	0.87
	Sep	-0.36	0.99	0.68	0.76
	Oct	0.06	0.53	0.47	0.38
	Nov	-0.65	0.41	0.36	0.37
	Dec	0.20	1.06	0.81	1.06
2001	Jan	1.01	1.66	1.03	1.38

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). Due to distortions caused by regulatory changes, the largest of which the introduction of money market accounts, data for MZM begin March 1983 in this publication.

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 firms except depository institutions and money market mutual funds.

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).

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) and http://www.stls.frb.org/research/newbase.html.

Monetary Services Index: an index which 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 http://www.stls.frb.org/research/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 http://www.stls.frb.org/research/swdata.html. For analytical purposes, MZM largely replaces M1. The **Discount Rate** and **Expected 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. **Treasury Yield Curve** shows constant maturity yields calculated by the U.S. Treasury Department for securities with 3 months and 1, 2, 3, 5, 7,10, 20 and 30 years to maturity. Daily data and a description are available at http://www.stls.frb.org/fred/data/wkly.html. See also *Federal Reserve Bulletin*, table 1.35.

Page 5: **Total Checkable Deposits** is the sum of demand and other checkable deposits. **Total Savings Deposits** is the sum of money market deposit accounts (MMDA), 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 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 CPI for all urban consumers. **Real Interest Rates** are ex post measures, equal to nominal rates minus CPI inflation.

Page 9: **FOMC Expected Federal Funds Rate** is the level (or midpoint of the range, if applicable) of the federal funds rate that the staff of the Federal Open Market Committee expected to be consistent with the desired degree of pressure on bank reserve positions.

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), y_{t-1} is the log of the previous period's level of real GDP, and y_{t-1}^P is the log of an estimate of the previous period's level of potential output. **Potential real output** 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

http://www.stls.frb.org/research/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 $m = 1,...,$ 30 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)

$$f(m) = [D(m)R(m) - D(m\text{-}1)] / [D(m) - D(m\text{-}1)]$$

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. 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 Fed Funds Futures Contracts** each trace through time the yield on three specific contracts. **Implied Yields on Fed Funds Futures** displays a single day's snapshot of yields for contracts expiring in the months shown on the horizontal axis. **Inflation-Protected Treasury Yield Spreads** equal, for 5, 10, and 30 year maturities, the difference between the Treasury constant maturity yield and the yield on the most recently issued inflation-protected security. **Inflation-Indexed Bonds** for Canada are the 31-year bond with a maturity date of 12/01/2026; for the U.K., the 37.5-year bond with a maturity date of 07/17/2024 and the 12.1-year bond with a maturity date of 10/21/2004; and, for the U.S., the 30-year bond with a maturity date of 04/15/2028 and the 10-year bond with a maturity date of 01/15/2007.

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. Two alternative opportunity costs are shown, one relative to the 3-month Treasury constant-maturity yield, the other to the 5-year constant-maturity yield.

Page 13: **Real Gross Domestic Product** is GDP as measured in chained 1992 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 1992 dollars.

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

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, nonfinancial debt: 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 and G.13 releases; nonfinancial commercial paper: Board of Governors web site; M2 and MZM own rates.

Bureau of Economic Analysis
Gross domestic product.

Bureau of Labor Statistics
Consumer price index.

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

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

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

University of Michigan Survey Research Center
Median expected price change.

Congressional Budget Office
Potential real GDP.

Dow Jones and Co. (Wall Street Journal)
Federal funds futures contracts, Eurodollar futures.

Standard and Poors Inc.
Stock price-earnings ratio, stock price composite index.

U.S. Department of the Treasury
U.S. inflation-protected security yields.

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Note: Articles from this Bank's *Review* are available on the Internet at www.stls.frb.org/research/reviewdat.html.