November 2001

MonetaryTrends

THE FEDERAL RESERVE BANK of ST. LOUIS

September 11, 2001

The September 11 terrorist attack on the World Trade Center and the Pentagon was not only a human tragedy but also an event with potentially serious ramifications for the economy. Although the airline and insurance industries face severe long-term problems as a result of the attack, the event posed an immediate threat to the entire economy by disrupting the payments and financial systems. Specifically, while the attack increased firms' and individuals' demand for liquidity, heightened uncertainty and the possibility of falling asset prices also threatened to reduce lending by banks and other intermediaries. Significant disruption to the payments system or lending has the potential to slow economic activity markedly.

In response to the attack, the Federal Reserve provided additional liquidity through several channels to help restore confidence and ensure the continued functioning of the financial and payments systems. First, the Fed's New York Trading Desk injected an unusual amount of liquidity through repurchase agreements (repos). The accompanying table shows that the Fed held $61 billion of securities acquired under repurchase agreements on September 12, versus an average of $27 billion on the previous ten Wednesdays (see table) and about $12 billion on September 13, 2000.

Second, the Federal Reserve lent money directly to banks through the discount window. The $45 *billion* in discount loans outstanding on September 12 dwarfed the $59 *million* average of the previous 10 Wednesdays.

Third, the Federal Reserve—along with the Comptroller of the Currency—urged banks to restructure loans for borrowers with temporary liquidity problems. To assist such restructuring, the Fed stood ready with additional funds.

Fourth, because transportation difficulties prevented checks from being cleared in a timely manner, the Federal Reserve extended almost $23 billion in check "float" on September 12, some 30 times the average float over each of the 10 previous Wednesdays.

Fifth, the Federal Reserve quickly established or extended "swap lines" with foreign central banks, such as the European Central Bank, the Bank of England, and the Bank of Canada. These accords enable central banks to temporarily exchange currencies to meet liquidity needs in foreign currencies. For example, the Fed and the European Central Bank might swap dollars for euros for a specified period of time, to enable the ECB to loan dollars to branches of European banks operating in the United States.

Finally, the FOMC reduced the federal funds rate target by 1/2 percentage point, to 3 percent, early on Monday, September 17, while retaining the balance of risks toward economic weakness in its public statement. This action was interpreted as a confidence-boosting measure for the reopening of the New York Stock Exchange later that morning.

Deposits at Federal Reserve Banks conveniently summarize the liquidity provided to the economy. On September 12, this measure stood at $102 billion, more than 5 times the average of the previous 10 Wednesdays. As in previous periods of financial stress (e.g., the crash of 1987, the Russian default of 1998, and the Y2K scare) the Federal Reserve's actions helped ensure the smooth functioning of the payments and financial systems, thereby minimizing the economic repercussions of the tragedy.

—Christopher J. Neely

Monetary Conditions

	Repos	Discount window lending	Float	Deposits at Federal Reserve Banks
Average of Wednesdays from July 4 to September 5, 2001	27298	59	720	19009
September 12, 2001	61005	45528	22929	102704
September 19, 2001	39600	2587	2345	13169

NOTE: Data were taken from the H.4.1 statistical release from the Board of Governors. Only weekly averages and Wednesday figures are available in that report. Figures are reported in millions of U.S. dollars. Deposits at Federal Reserve Banks is the sum of "service related balances and adjustments" and "reserve balances with FR Banks."

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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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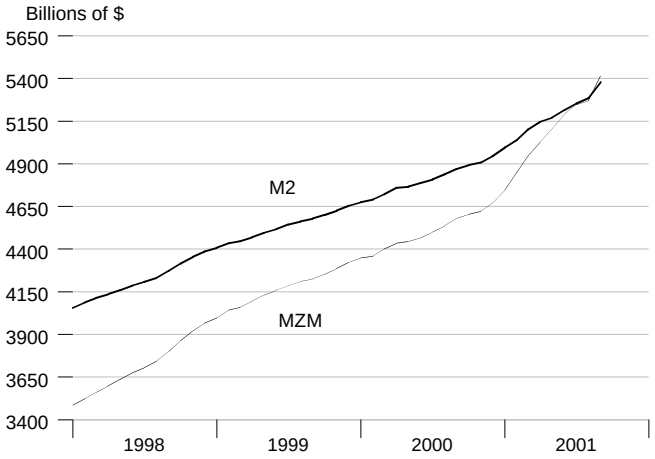
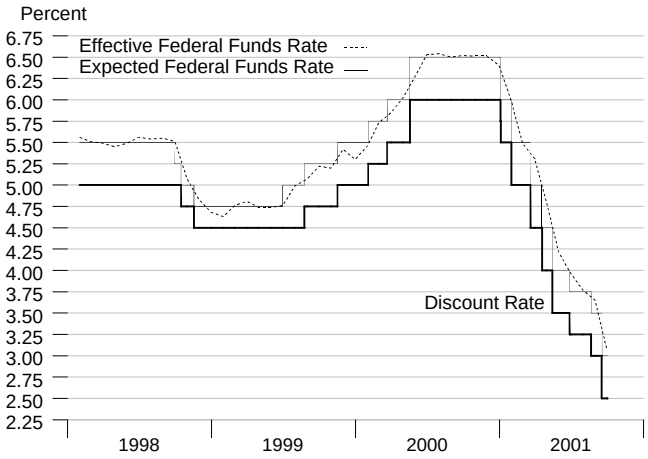
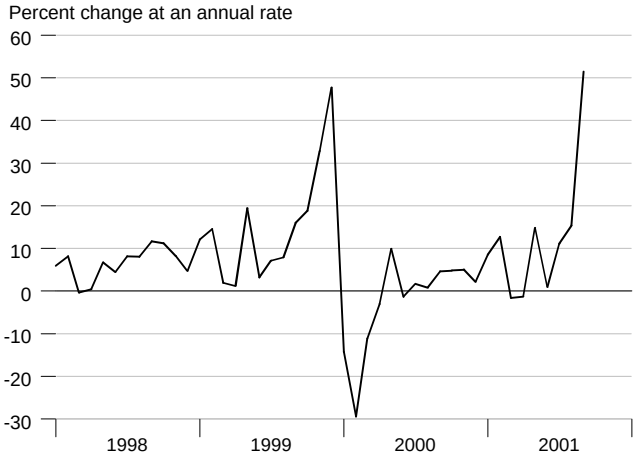
M2 and MZM



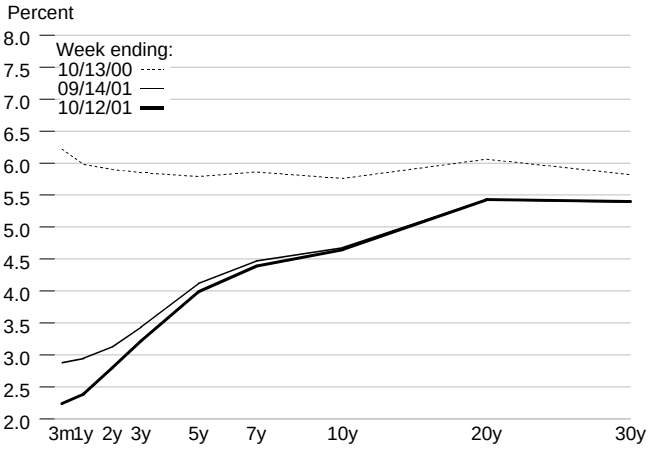
Reserve Market Rates



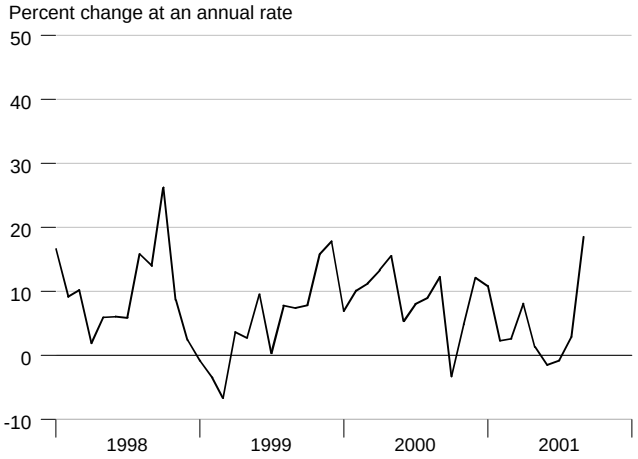
Adjusted Monetary Base



Treasury Yield Curve



Total Bank Credit

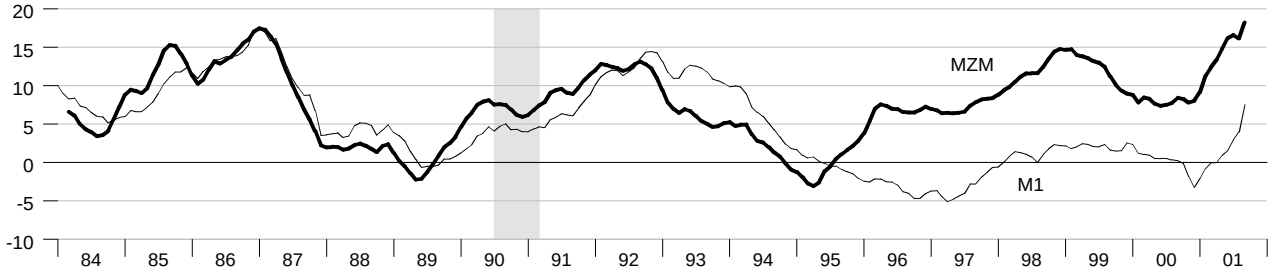


Interest Rates

	Jul 01	Aug 01	Sep 01
Federal Funds Rate	3.77	3.65	3.07
Discount Rate	3.25	3.16	2.77
Prime Rate	6.75	6.67	6.28
Conventional Mortgage Rate	7.13	6.95	6.82
Treasury Yields:			
3-month constant maturity	3.59	3.44	2.69
6-month constant maturity	3.56	3.39	2.71
1-year constant maturity	3.62	3.47	2.82
3-year constant maturity	4.31	4.04	3.45
5-year constant maturity	4.76	4.57	4.12
10-year constant maturity	5.24	4.97	4.73
30-year constant maturity	5.61	5.48	5.48

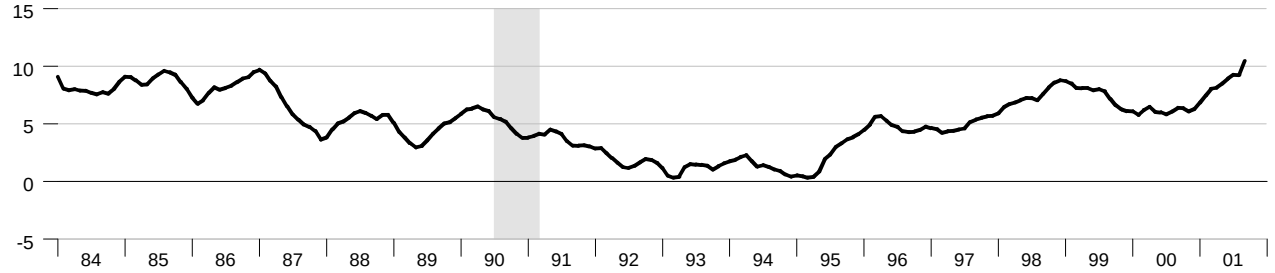
MZM and M1

Percent change from year ago



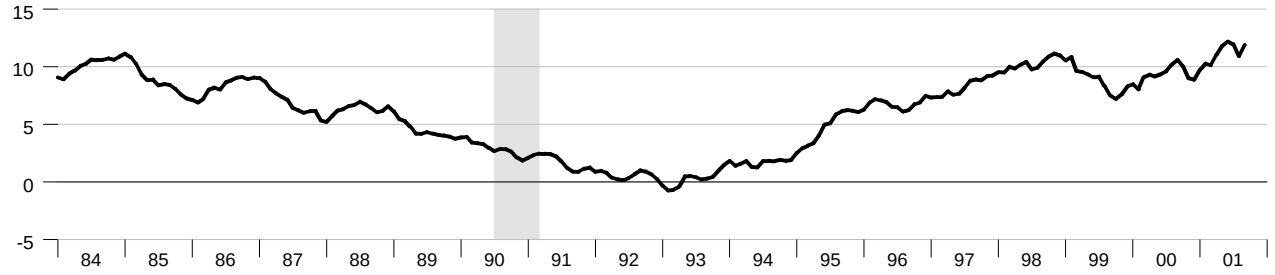
M2

Percent change from year ago



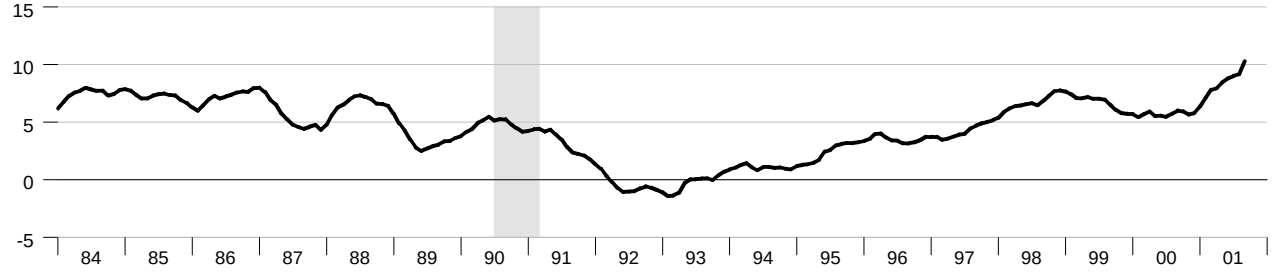
M3

Percent change from year ago

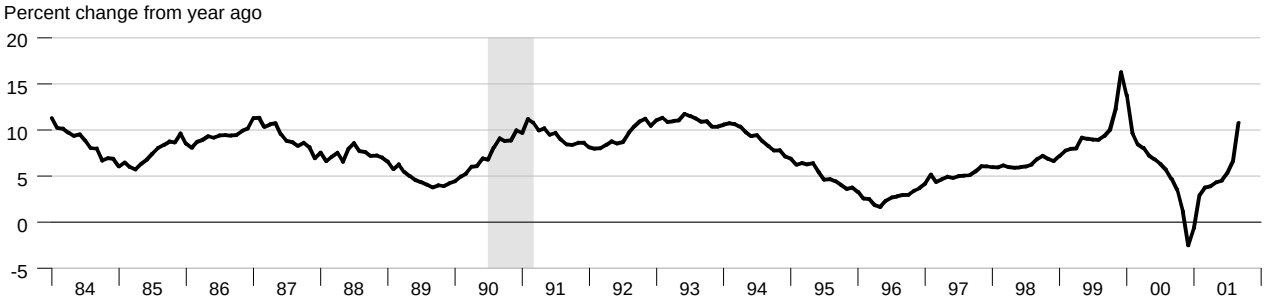


Monetary Services Index - M2

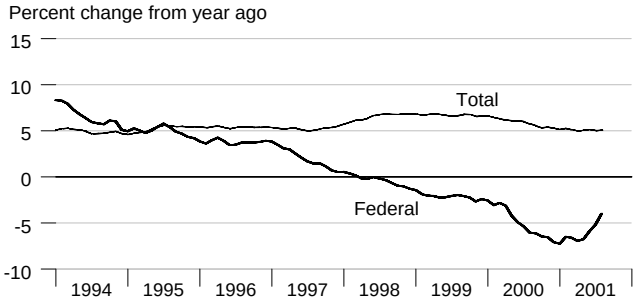
Percent change from year ago



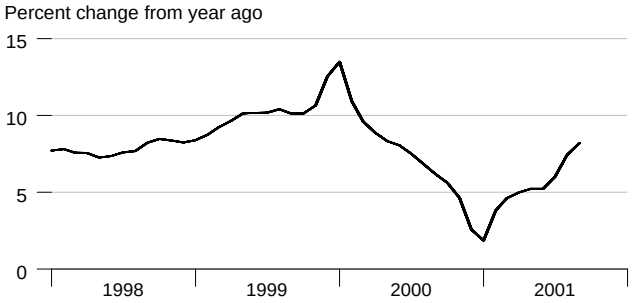
Adjusted Monetary Base



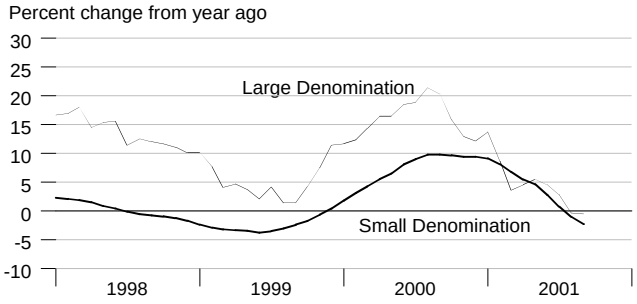
Domestic Nonfinancial Debt



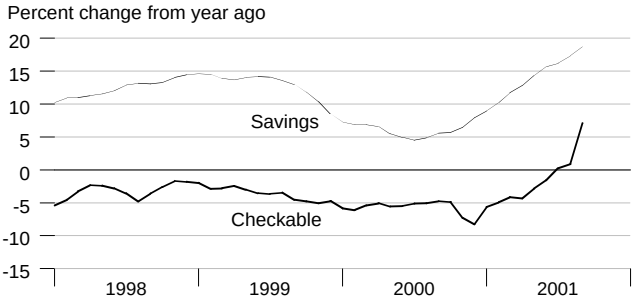
Currency Held by the Nonbank Public



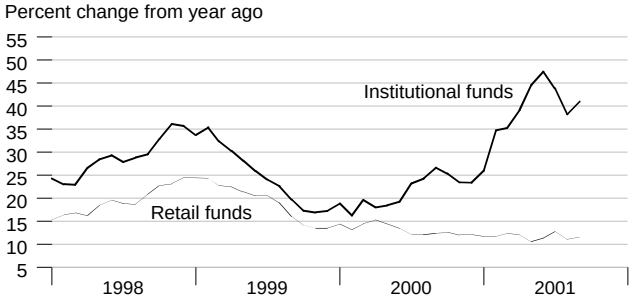
Time Deposits



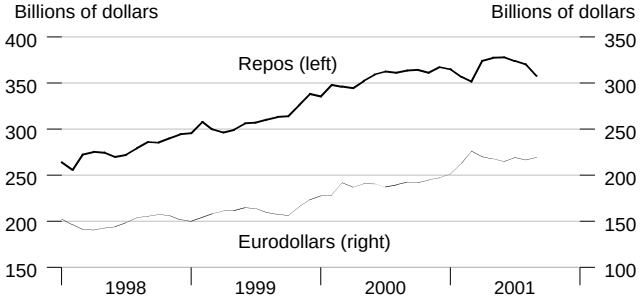
Checkable and Savings Deposits



Money Market Mutual Fund Shares

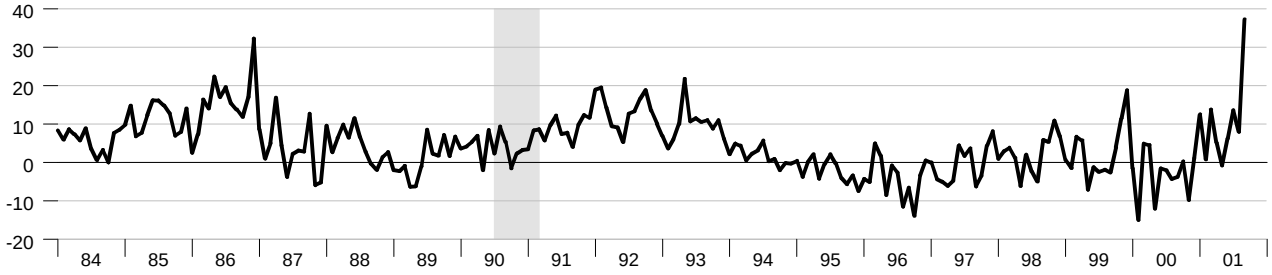


Repurchase Agreements and Eurodollars



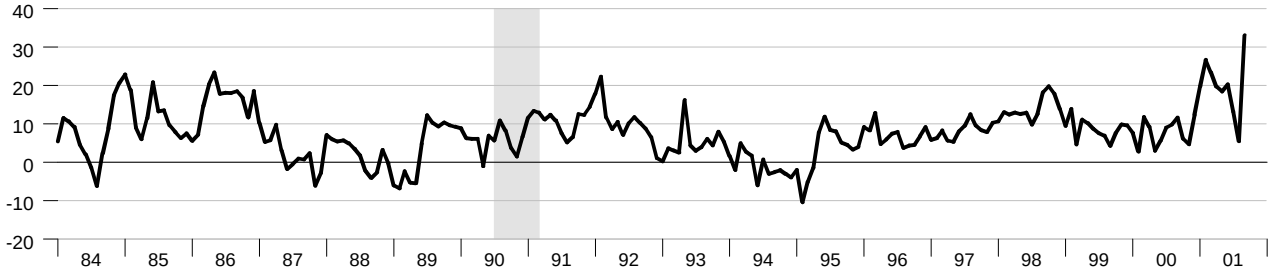
M1

Percent change at an annual rate



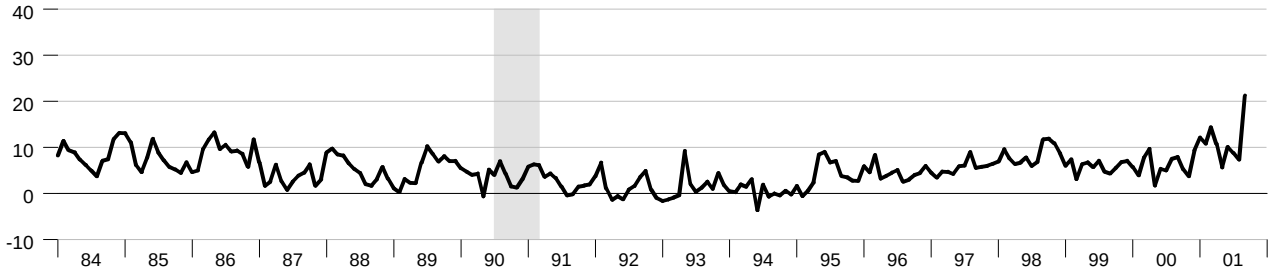
MZM

Percent change at an annual rate



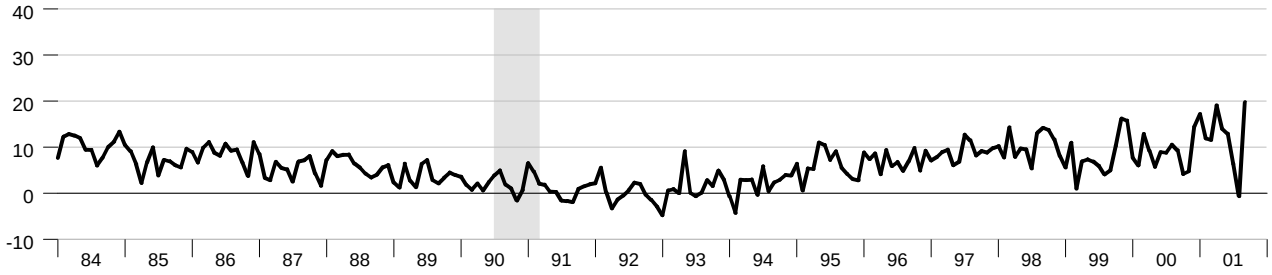
M2

Percent change at an annual rate

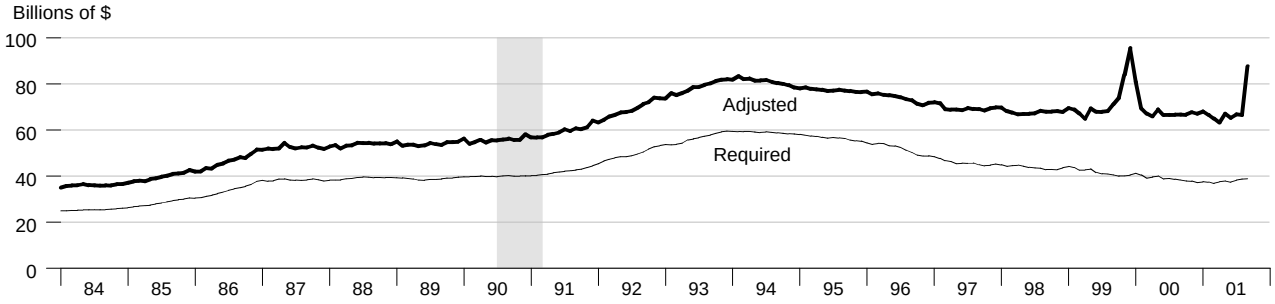


M3

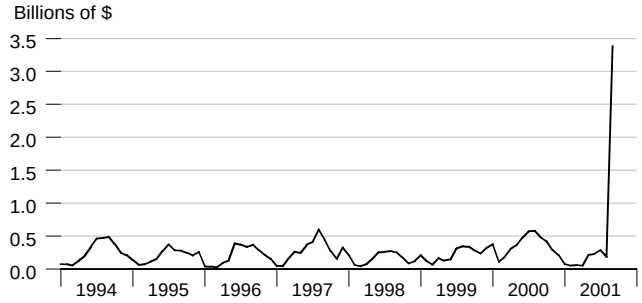
Percent change at an annual rate



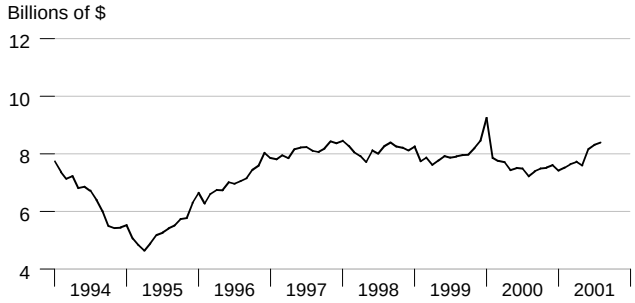
Adjusted and Required Reserves



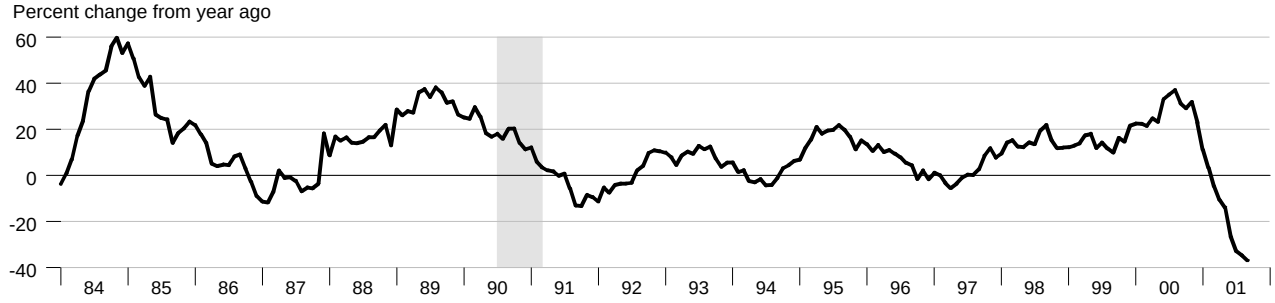
Total Borrowings, nsa



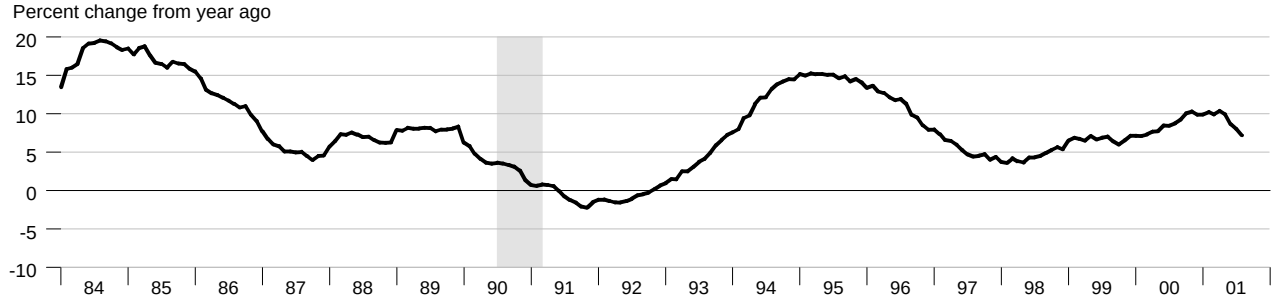
Excess Reserves plus RCB Contracts



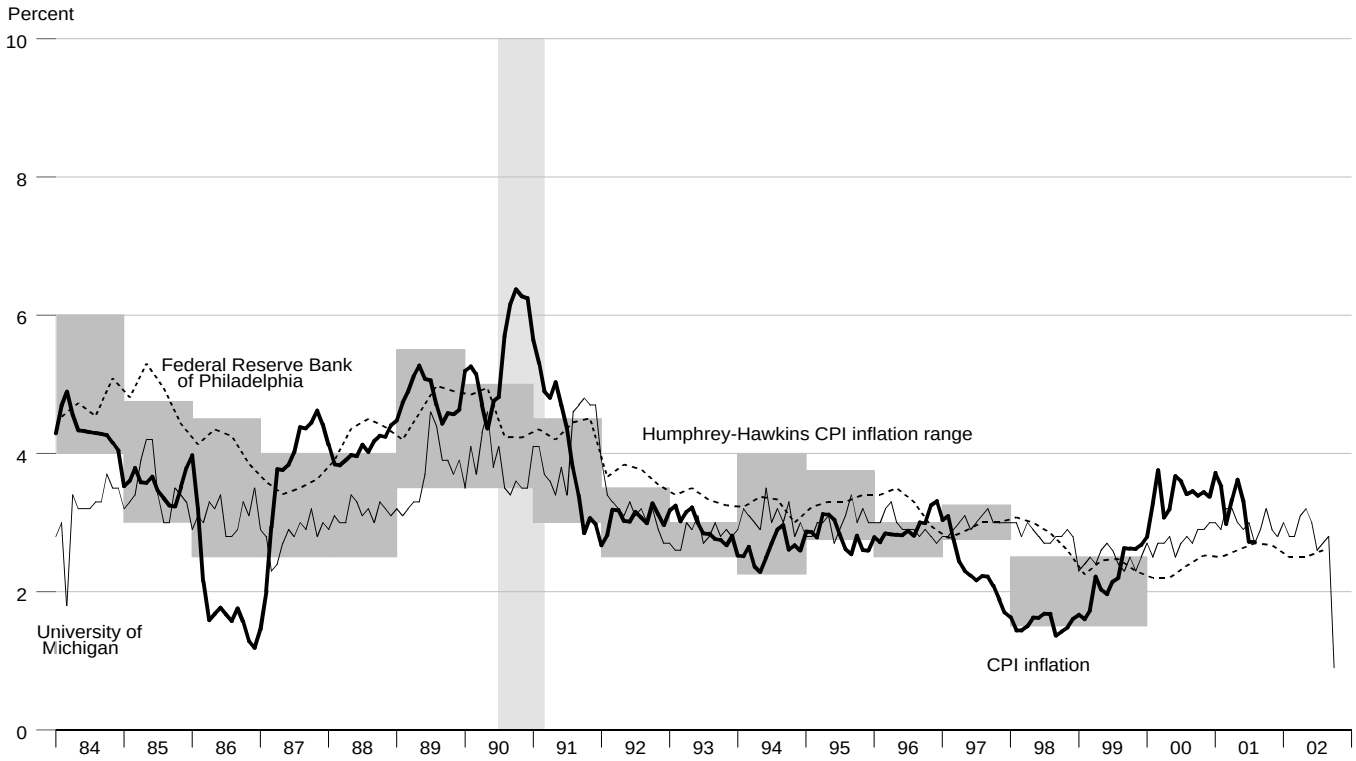
Nonfinancial Commercial Paper



Consumer Credit

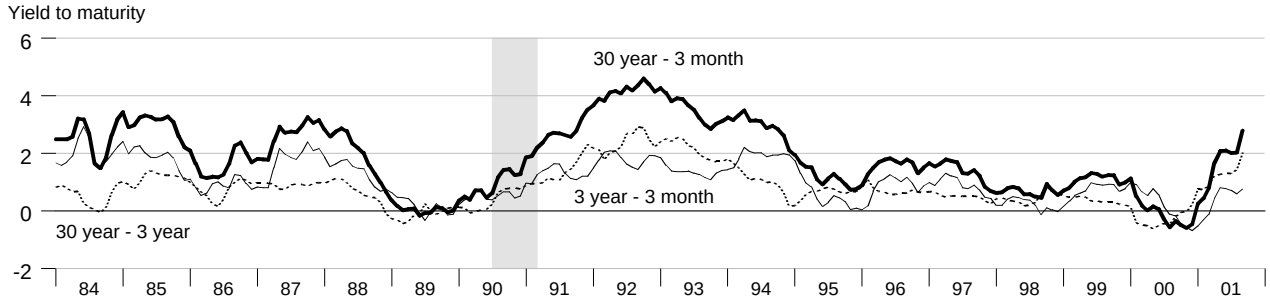


Inflation and Inflation Expectations

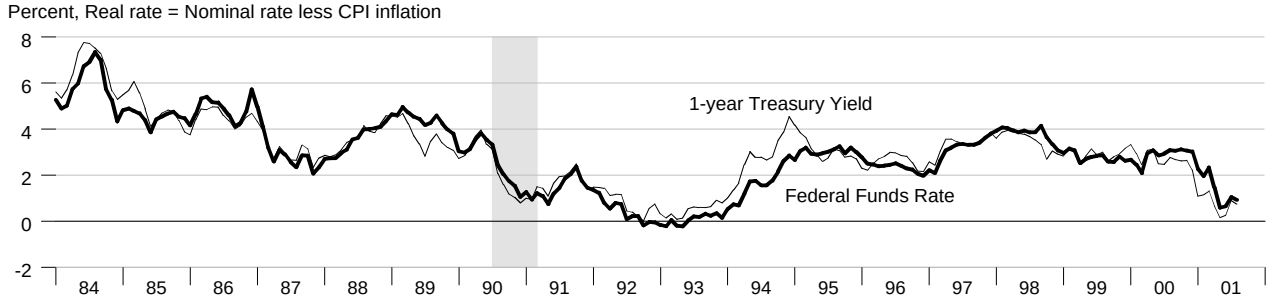


The shaded region shows the Humphrey-Hawkins CPI inflation range. Beginning in January 2000, the Humphrey-Hawkins inflation range was reported using the PCE price index and therefore is not shown on this graph. See page 19 for information.

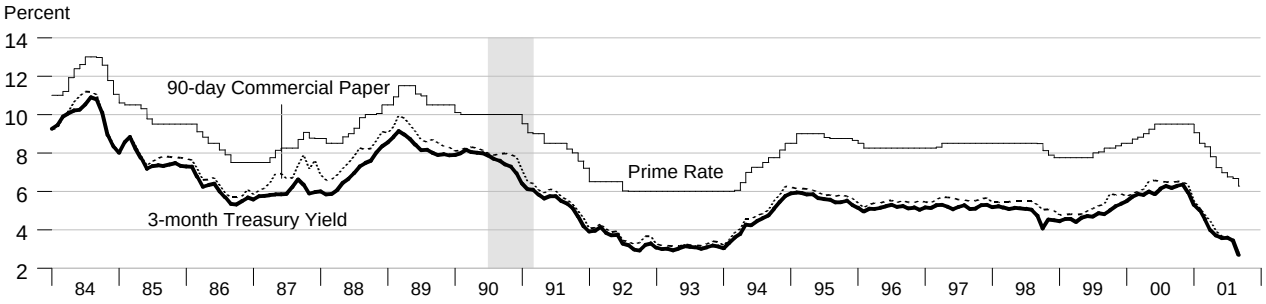
Treasury Security Yield Spreads



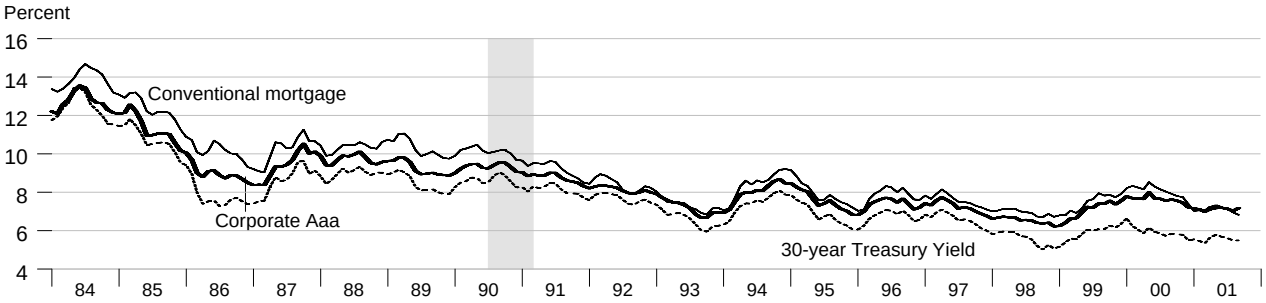
Real Interest Rates



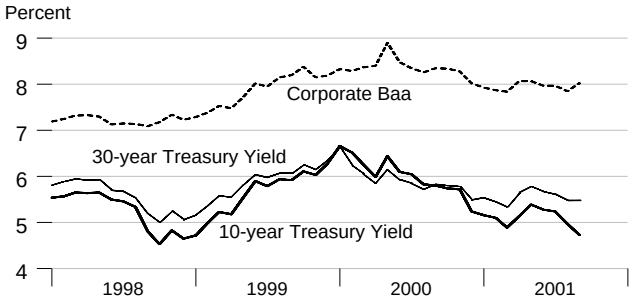
Short Term Interest Rates



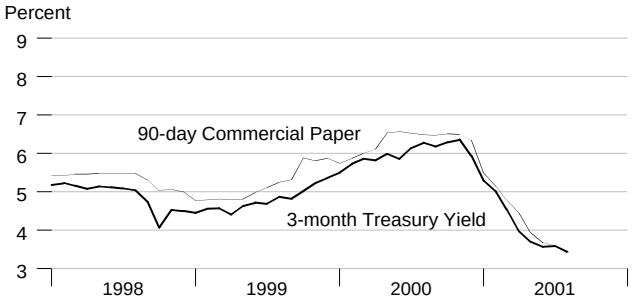
Long Term Interest Rates



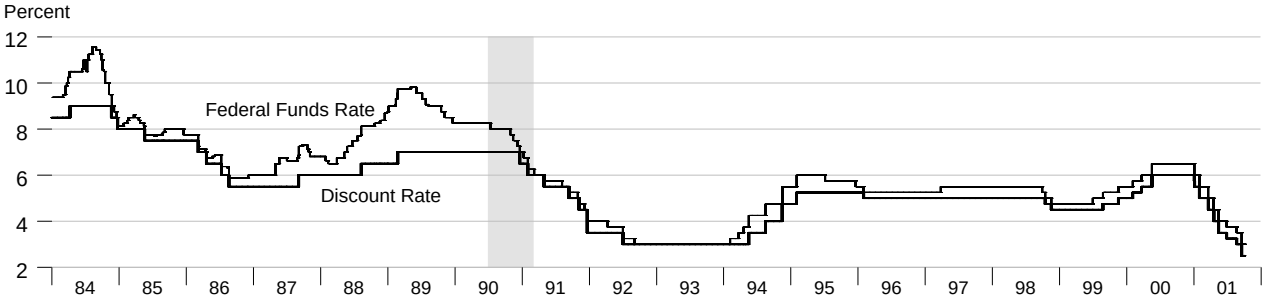
Long Term Interest Rates



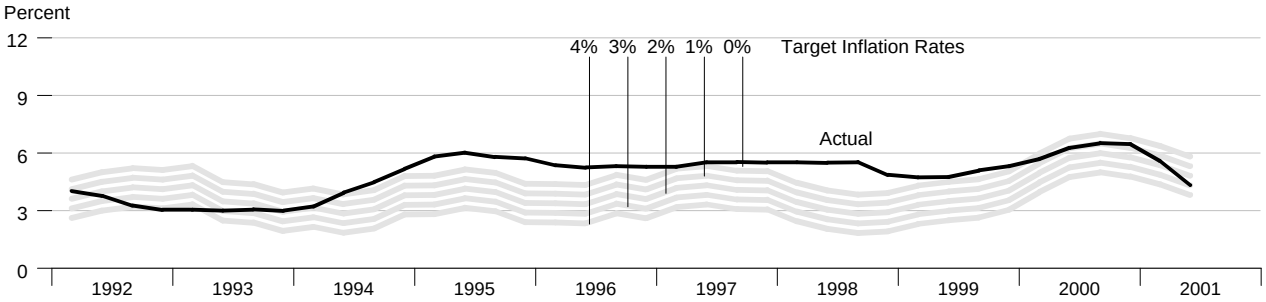
Short Term Interest Rates



FOMC Expected Federal Funds Rate and Discount Rate

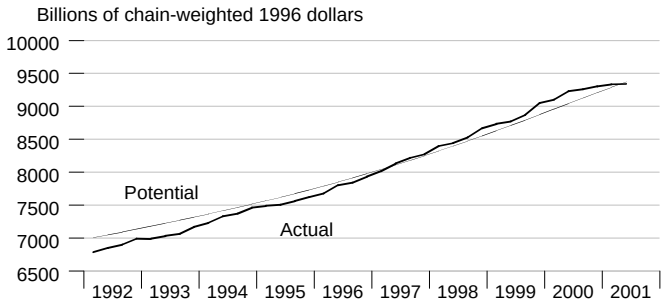


Federal Funds Rate and Inflation Targets

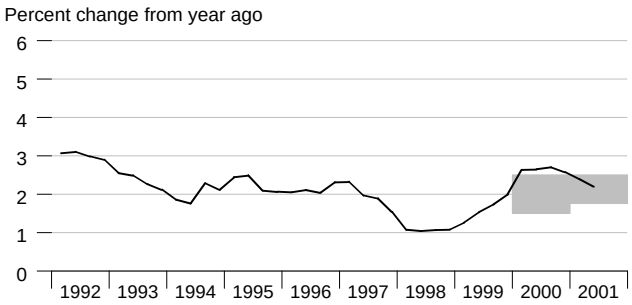


Calculated federal funds rate is based on Taylor's rule. See notes on page 19.

Actual and Potential Real GDP

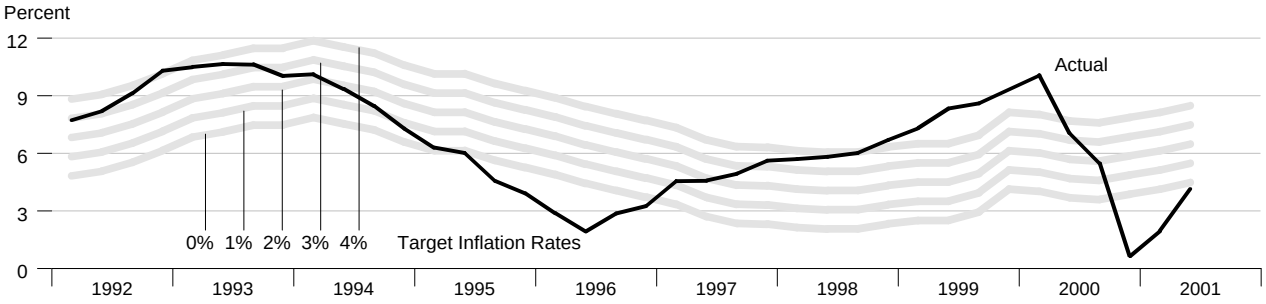


PCE Inflation and Projections



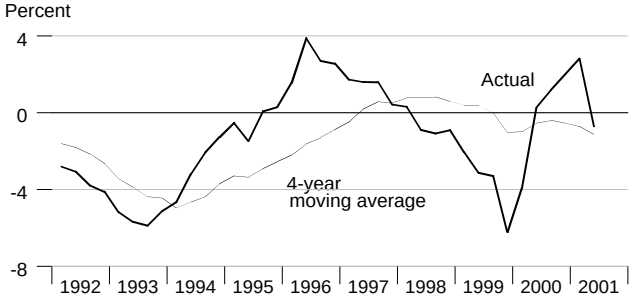
The shaded region shows the range of projections published in the Monetary Policy Report to Congress. See page 19 for information.

Monetary Base Growth* and Inflation Targets

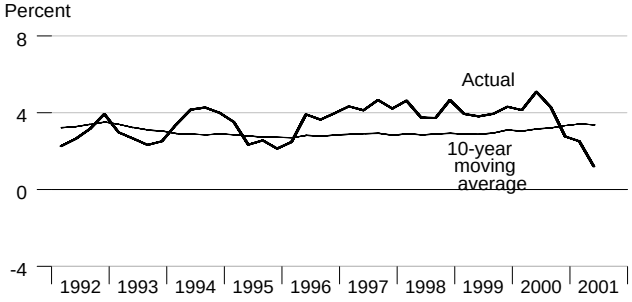


*Modified for the effects of sweeps programs on reserve demand.
Calculated base growth is based on McCallum's rule. Actual base growth is percent change from year ago. See notes on page 19.

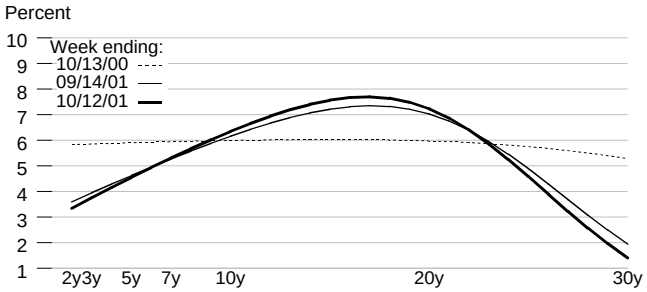
Monetary Base Velocity Growth



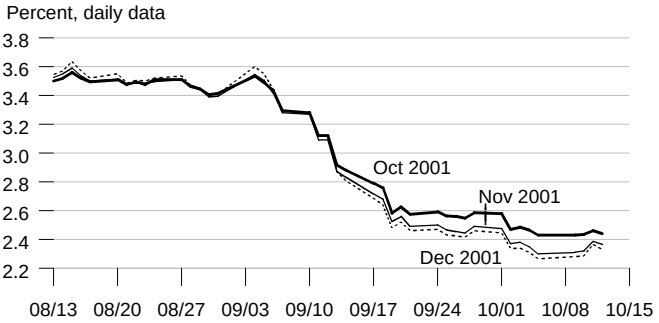
Real Output Growth



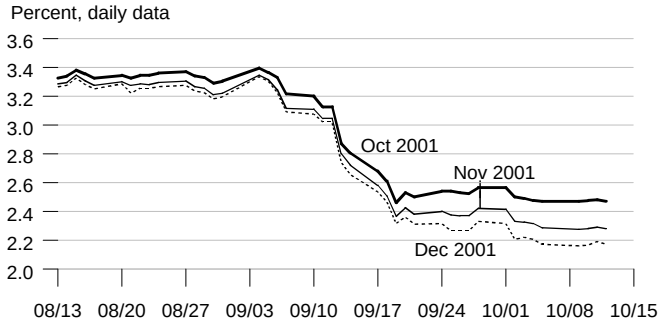
Implied One-Year Forward Rates



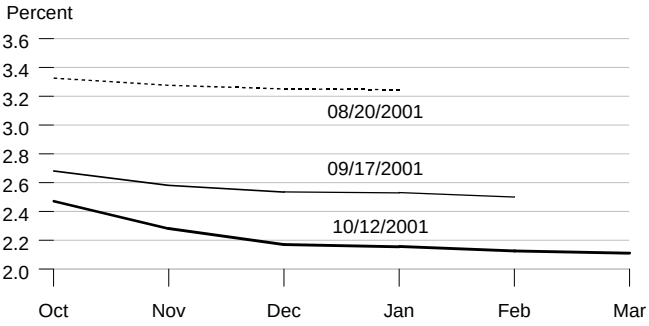
Rates on 3-Month Eurodollar Futures



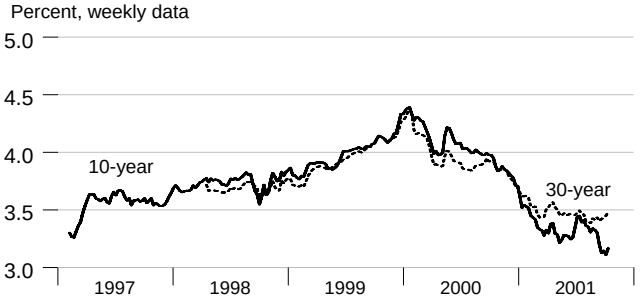
Rates on Selected Fed Funds Futures Contracts



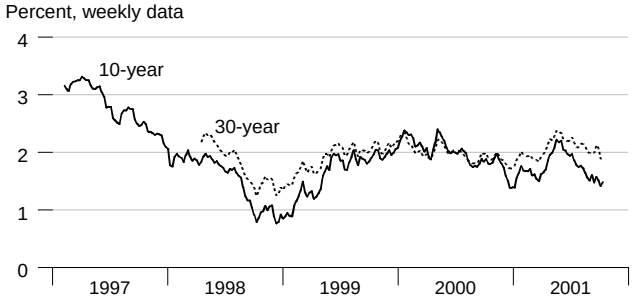
Implied Yields on Fed Funds Futures



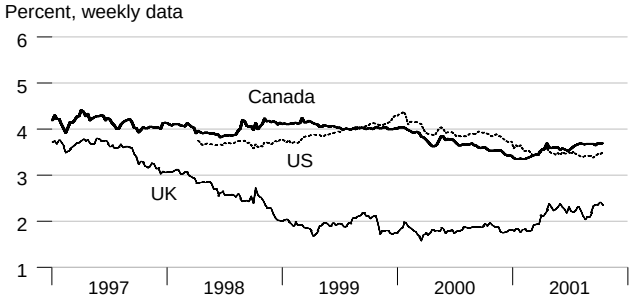
Inflation-Protected Treasury Yields



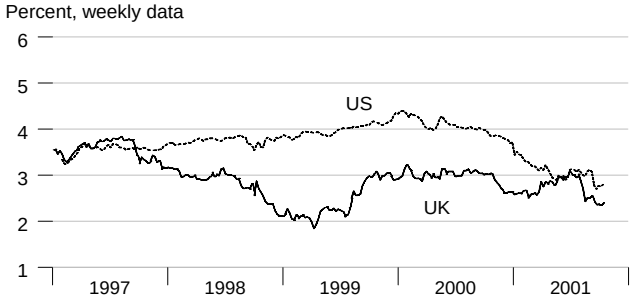
Inflation-Protected Treasury Yield Spreads



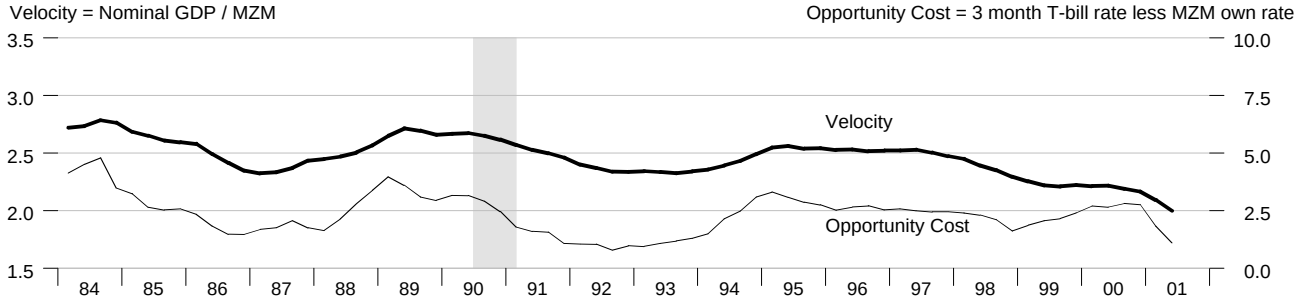
Inflation-Indexed 30-Year Bonds



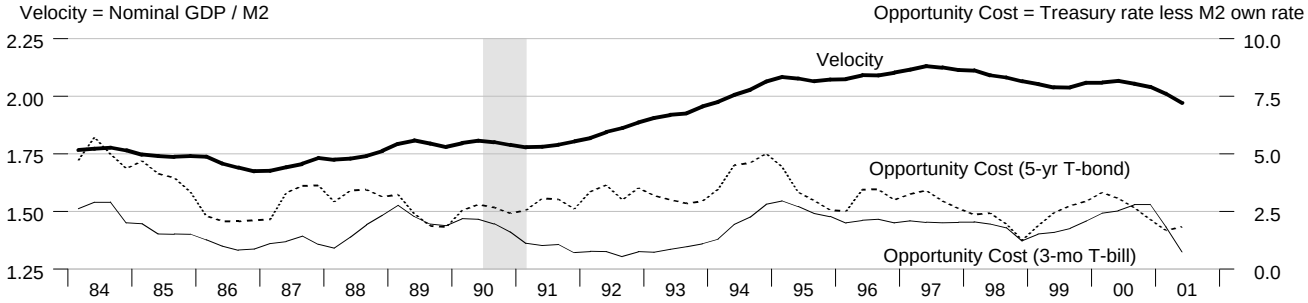
Inflation-Indexed 10-Year Bonds



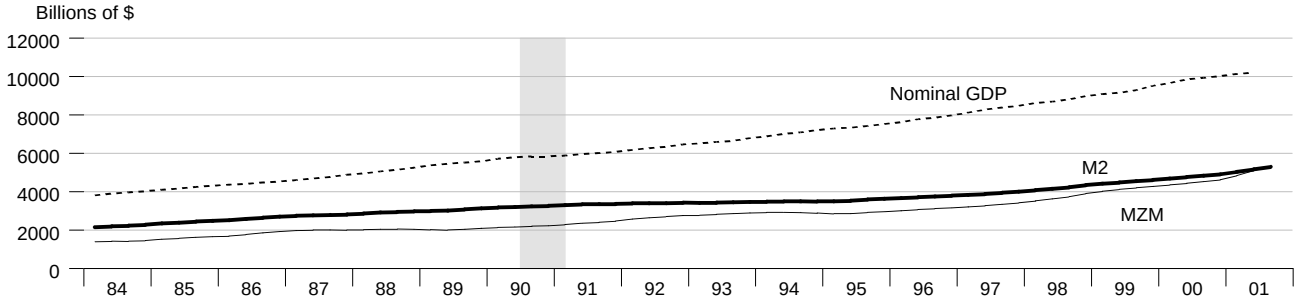
MZM Velocity and Opportunity Cost



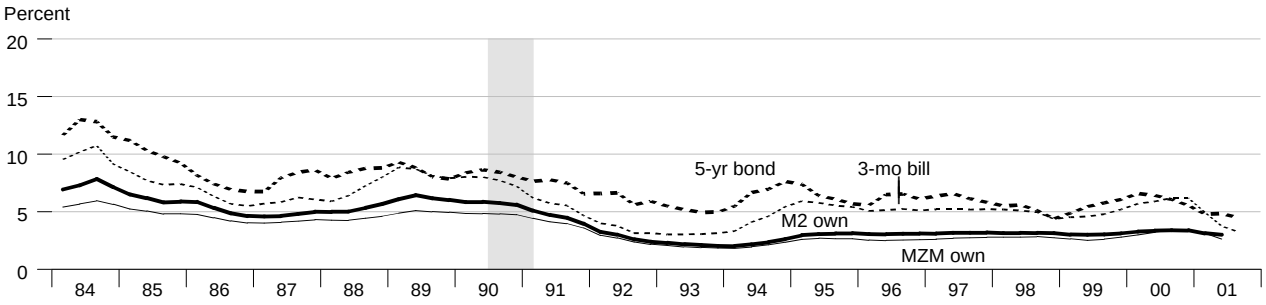
M2 Velocity and Opportunity Cost



M2, MZM and Nominal GDP

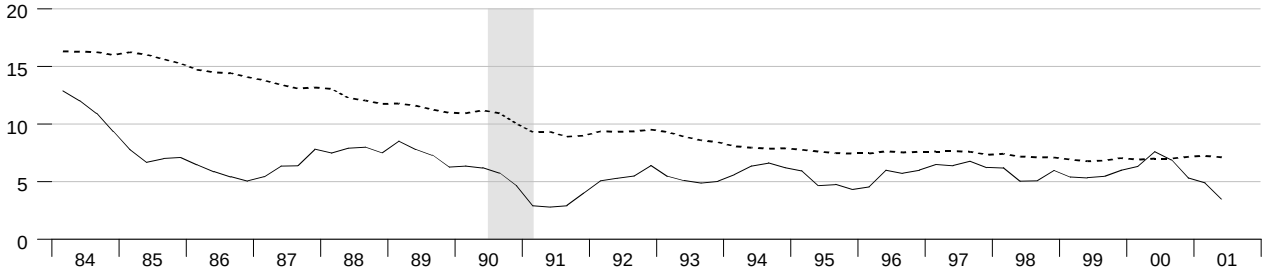


Interest Rates



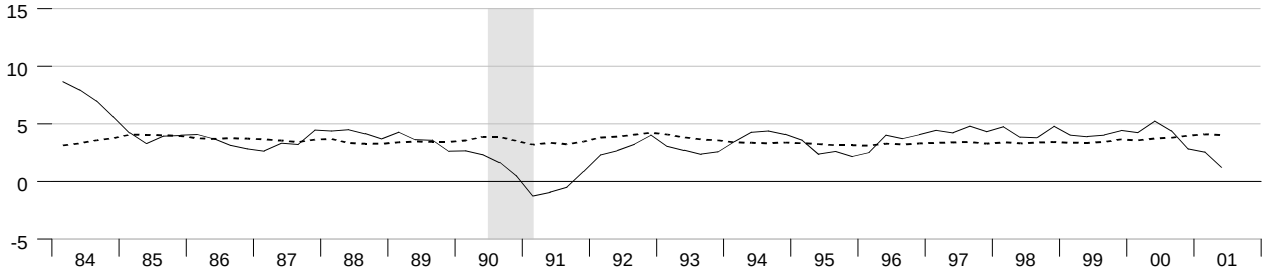
Gross Domestic Product

Percent change from year ago



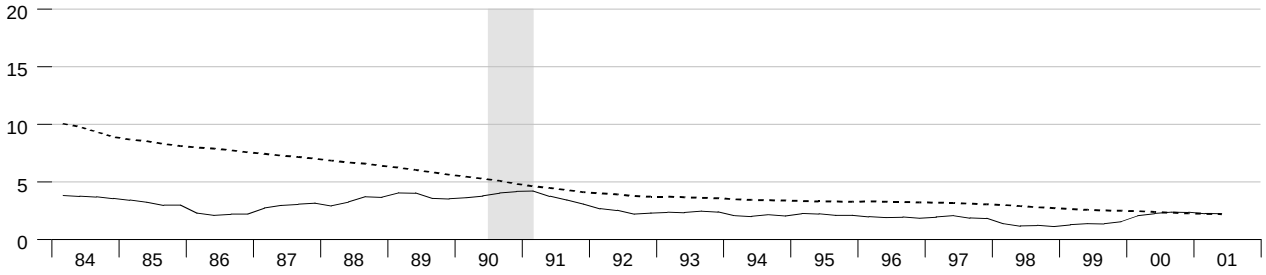
Real Gross Domestic Product

Percent change from year ago



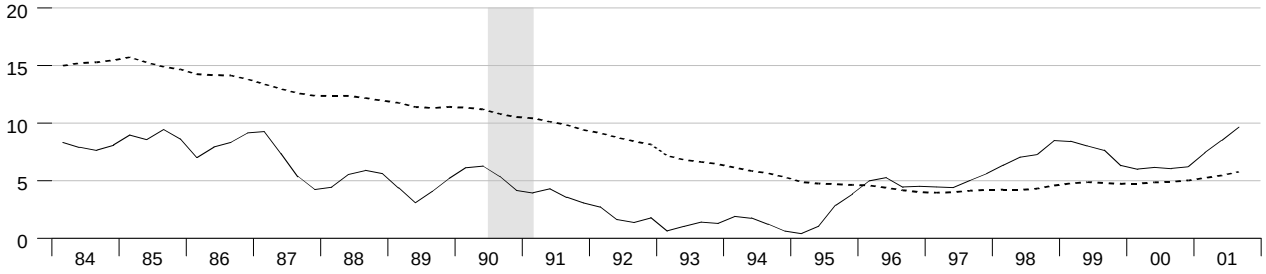
Gross Domestic Product Price Index

Percent change from year ago



M2

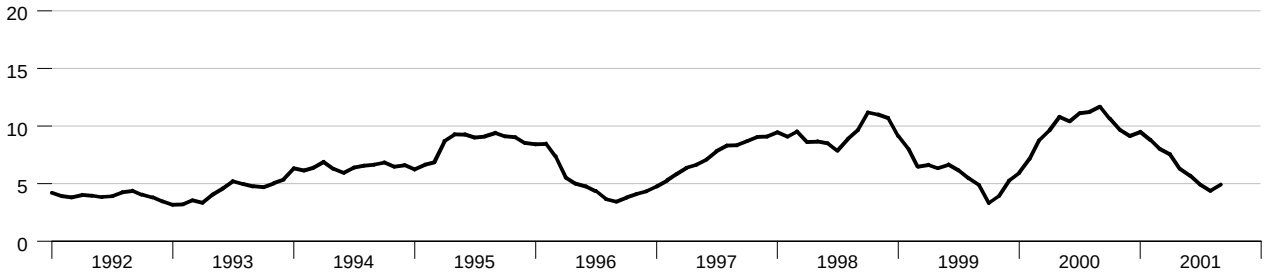
Percent change from year ago



Dashed lines indicate 10-year moving averages

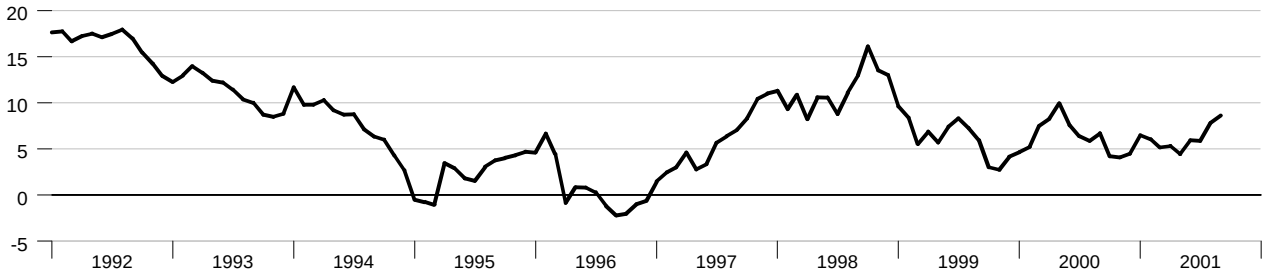
Bank Credit

Percent change from year ago



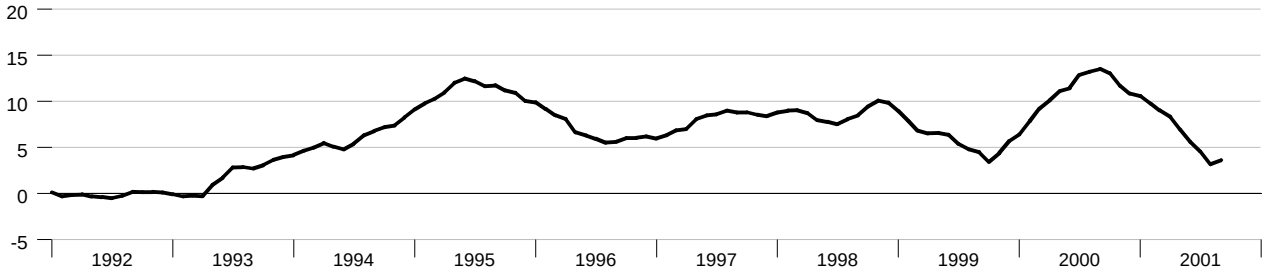
Investment Securities in Bank Credit at Commercial Banks

Percent change from year ago



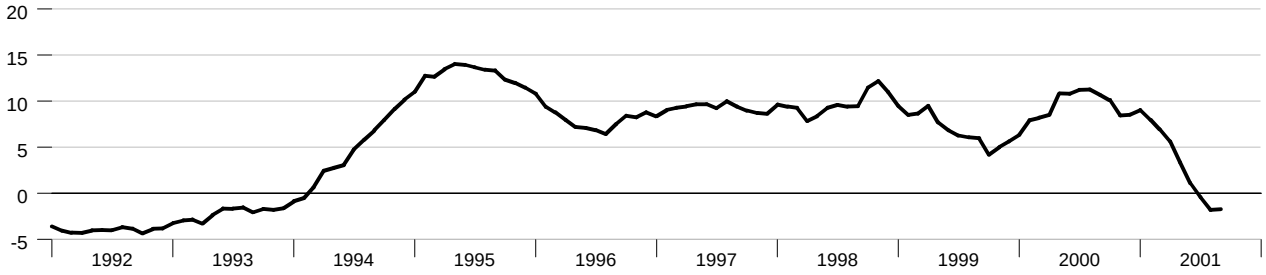
Total Loans and Leases in Bank Credit at Commercial Banks

Percent change from year ago

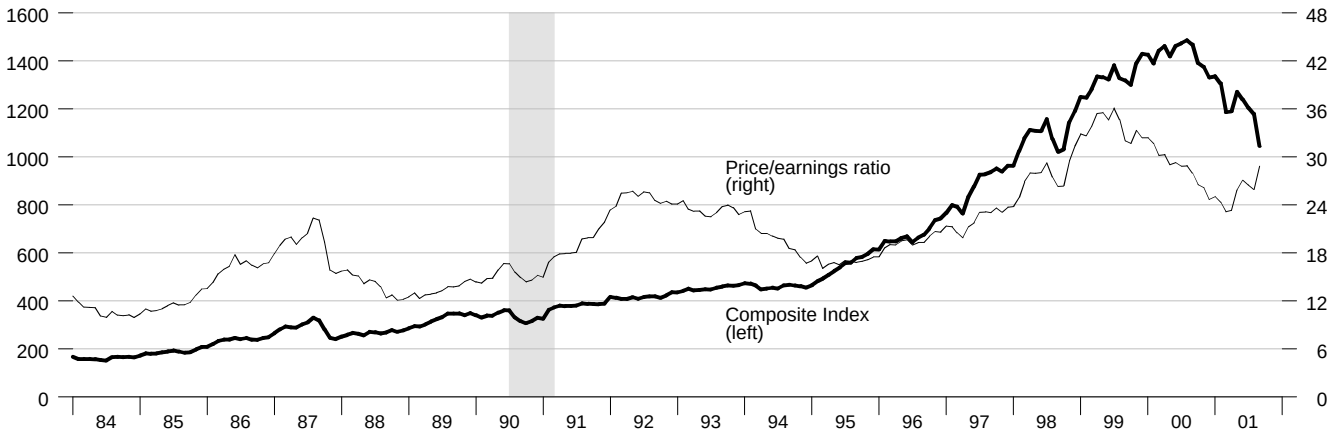


Commercial and Industrial Loans at Commercial Banks

Percent change from year ago



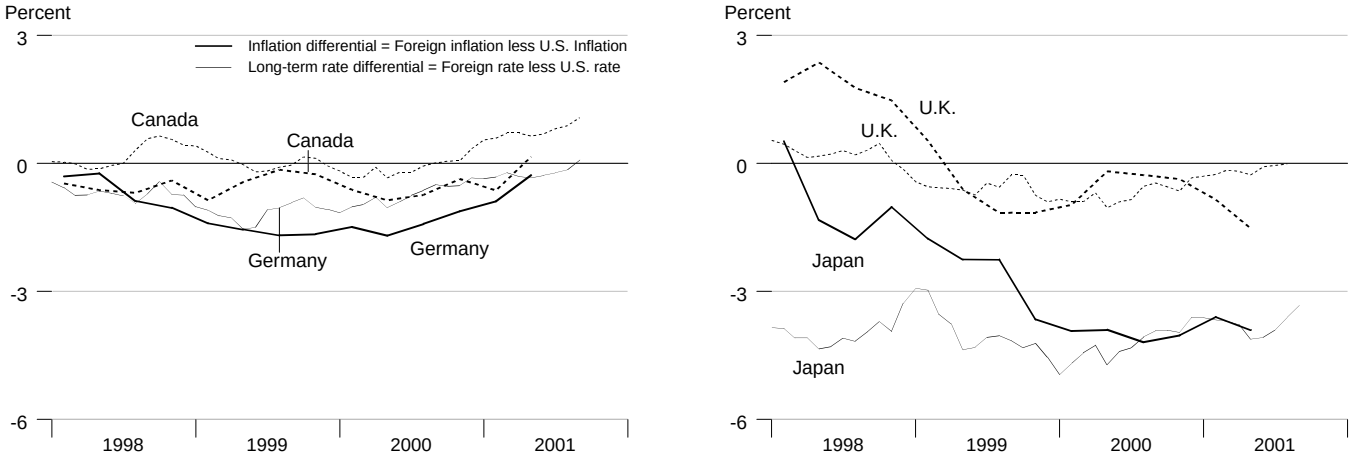
Standard and Poor's 500



Inflation and Long-Term Interest Rates

	Trend in Consumer Price Inflation Rates Percent change from year ago				Recent Long-Term Government Bond Rates Percent			
	2000Q3	2000Q4	2001Q1	2001Q2	Jun01	Jul01	Aug01	Sep01
United States	3.47	3.44	3.41	3.44	5.28	5.24	4.97	4.73
Canada	2.73	3.08	2.77	3.60	5.97	6.05	5.85	5.80
France	1.89	1.89	1.29	2.02	5.57	5.46	5.29	.
Germany	2.05	2.32	2.52	3.16	5.00	5.02	4.82	4.81
Italy	2.32	2.67	2.89	3.05	5.39	5.40	5.22	5.20
Japan	-0.72	-0.59	-0.20	-0.46	1.20	1.33	1.36	1.40
United Kingdom	3.20	3.07	2.55	1.91	5.20	5.19	4.96	.

Inflation and Long-Term Interest Rates Differentials



		Money Stock				Bank			
		M1	MZM	M2	M3	Credit	Monetary Base	Reserves	MSI M2
	1996	1105.818	3096.125	3739.297	4811.846	3685.243	455.572	73.952	217.463
	1997	1069.145	3318.867	3921.981	5206.953	3953.493	478.708	69.523	226.608
	1998	1079.795	3706.274	4208.613	5740.107	4326.599	508.942	67.808	241.647
	1999	1101.661	4163.696	4527.993	6251.212	4585.144	557.865	72.360	258.034
	2000	1103.866	4496.753	4805.105	6834.212	5029.014	590.821	68.319	272.755
1999	1	1098.625	4032.495	4429.975	6094.477	4517.050	536.334	68.521	252.787
	2	1102.740	4128.668	4494.332	6188.695	4528.386	545.912	67.392	256.223
	3	1095.559	4207.215	4561.360	6278.751	4586.091	557.969	69.050	259.750
	4	1109.718	4286.407	4626.303	6442.925	4709.048	591.246	84.477	263.377
2000	1	1115.416	4368.912	4695.981	6615.463	4845.618	593.102	72.390	266.963
	2	1109.967	4448.594	4771.350	6763.296	4993.643	586.045	67.097	270.750
	3	1099.561	4538.641	4838.632	6915.511	5106.142	589.054	66.636	274.657
	4	1090.519	4630.863	4914.457	7042.577	5170.653	595.084	67.150	278.650
2001	1	1104.185	4846.699	5045.396	7281.216	5269.948	604.850	66.513	285.920
	2	1119.066	5105.925	5177.059	7553.925	5318.028	610.943	65.171	293.497
	3	1152.217	5309.961	5305.332	7717.410	5347.763	633.685	73.636	300.727
1999	Sep	1093.388	4225.147	4578.436	6303.230	4614.814	564.135	71.113	260.750
	Oct	1096.970	4251.923	4599.722	6357.521	4645.008	572.990	73.928	261.920
	Nov	1107.434	4286.589	4625.905	6443.344	4706.170	588.675	84.023	263.320
	Dec	1124.750	4320.709	4653.281	6527.911	4775.967	612.073	95.479	264.890
2000	Jan	1123.267	4348.064	4675.512	6569.730	4803.561	604.796	80.824	266.040
	Feb	1109.242	4358.041	4690.942	6602.927	4843.990	589.984	69.258	266.710
	Mar	1113.739	4400.631	4721.490	6673.732	4889.303	584.525	67.089	268.140
	Apr	1117.934	4434.341	4759.663	6725.071	4943.559	583.053	65.913	270.090
	May	1106.712	4445.362	4766.589	6757.266	5007.542	587.863	68.889	270.450
	Jun	1105.255	4466.080	4787.799	6807.550	5029.827	587.220	66.490	271.710
	Jul	1103.351	4499.522	4807.879	6857.459	5063.438	588.032	66.555	272.930
	Aug	1099.380	4536.293	4838.017	6917.651	5101.463	588.435	66.664	274.640
	Sep	1095.953	4580.107	4870.001	6971.423	5153.525	590.694	66.689	276.400
	Oct	1096.147	4603.242	4891.430	6995.687	5139.456	593.064	66.687	277.470
	Nov	1087.217	4621.121	4906.816	7023.679	5160.209	595.549	67.685	278.240
	Dec	1088.194	4668.227	4945.124	7108.366	5212.293	596.639	67.079	280.240
2001	Jan	1099.502	4744.973	4995.163	7210.103	5259.468	600.887	67.999	282.980
	Feb	1100.229	4850.193	5040.334	7281.669	5269.467	607.236	66.558	285.720
	Mar	1112.823	4944.930	5100.692	7351.875	5280.910	606.426	64.981	289.060
	Apr	1117.625	5025.857	5146.302	7468.660	5316.413	605.803	63.241	291.580
	May	1116.884	5102.936	5170.662	7555.790	5322.173	613.264	67.022	293.300
	Jun	1122.690	5188.982	5214.212	7637.324	5315.498	613.761	65.249	295.610
	Jul	1135.361	5245.788	5252.578	7677.910	5311.909	619.434	66.748	297.540
	Aug	1142.899	5269.521	5284.883	7673.930	5324.639	627.364	66.488	299.820
	Sep	1178.391	5414.574	5378.535	7800.390	5406.741	654.256	87.672	304.820

*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
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
2001	1	5.59	5.11	8.62	5.26	4.95	4.64	5.44	7.08	5.03	7.01
	2	4.33	3.83	7.34	4.10	3.75	4.43	5.70	7.22	5.11	7.13
	3	3.50	3.06	6.57	3.34	3.24	3.93	5.52	7.11	4.87	6.97
1999	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	4.99	7.03
	Feb	5.49	5.00	8.50	5.26	5.01	4.71	5.45	7.10	5.09	7.05
	Mar	5.31	4.81	8.32	4.89	4.54	4.43	5.34	6.98	5.00	6.95
	Apr	4.80	4.28	7.80	4.53	3.97	4.42	5.65	7.20	5.14	7.08
	May	4.21	3.73	7.24	4.02	3.70	4.51	5.78	7.29	5.15	7.15
	Jun	3.97	3.47	6.98	3.74	3.57	4.35	5.67	7.18	5.03	7.16
	Jul	3.77	3.25	6.75	3.66	3.59	4.31	5.61	7.13	4.79	7.13
	Aug	3.65	3.16	6.67	3.48	3.44	4.04	5.48	7.02	4.89	6.95
	Sep	3.07	2.77	6.28	2.87	2.69	3.45	5.48	7.17	4.93	6.82

*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	4.80	6.75
	1997	-3.32	7.19	4.89	8.21
	1998	1.00	11.67	7.31	10.24
	1999	2.02	12.34	7.59	8.90
	2000	0.20	8.00	6.12	9.33
1999	1	0.83	2.97	1.80	1.89
	2	0.37	2.38	1.45	1.55
	3	-0.65	1.90	1.49	1.46
	4	1.29	1.88	1.42	2.61
2000	1	0.51	1.92	1.51	2.68
	2	-0.49	1.82	1.60	2.23
	3	-0.94	2.02	1.41	2.25
	4	-0.82	2.03	1.57	1.84
2001	1	1.25	4.66	2.66	3.39
	2	1.35	5.35	2.61	3.75
	3	2.96	4.00	2.48	2.16
1999	Sep	-0.22	0.35	0.36	0.41
	Oct	0.33	0.63	0.46	0.86
	Nov	0.95	0.82	0.57	1.35
	Dec	1.56	0.80	0.59	1.31
2000	Jan	-0.13	0.63	0.48	0.64
	Feb	-1.25	0.23	0.33	0.51
	Mar	0.41	0.98	0.65	1.07
	Apr	0.38	0.77	0.81	0.77
	May	-1.00	0.25	0.15	0.48
	Jun	-0.13	0.47	0.44	0.74
	Jul	-0.17	0.75	0.42	0.73
	Aug	-0.36	0.82	0.63	0.88
	Sep	-0.31	0.97	0.66	0.78
	Oct	0.02	0.51	0.44	0.35
	Nov	-0.81	0.39	0.31	0.40
	Dec	0.09	1.02	0.78	1.21
2001	Jan	1.04	1.64	1.01	1.43
	Feb	0.07	2.22	0.90	0.99
	Mar	1.14	1.95	1.20	0.96
	Apr	0.43	1.64	0.89	1.59
	May	-0.07	1.53	0.47	1.17
	Jun	0.52	1.69	0.84	1.08
	Jul	1.13	1.09	0.74	0.53
	Aug	0.66	0.45	0.62	-0.05
	Sep	3.11	2.75	1.77	1.65

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 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 www.stls.frb.org/research/newbase.html.

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 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 Anderson and Rasche (2001) and 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. 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, 10, 20, and 30 years to maturity. Daily data and descriptions are available at 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 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) measured on a year-over-year basis, 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 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 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),

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

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 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 Yields** are yields on the most recently issued inflation-protected securities of 10- and 30-year original maturity. **Inflation-Protected Treasury Yield Spreads** equal the differences between the Treasury constant maturity yields and yields on the most recently issued inflation-protected securities of similar original maturity. **Inflation-Indexed Bonds** are, for Canada, 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 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.

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 release. Nonfinancial commercial paper: Board of Governors web site. M2 own rate.

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