July 2002

MonetaryTrends

THE FEDERAL RESERVE BANK of ST. LOUIS

The Condition of Banks: What Are Examiners Finding?

Bank supervisory agencies use on-site examinations to measure the condition of banks. Federal law requires these agencies to examine each bank at least once every 18 months. Most of these examinations assess six aspects of a bank's operations: capital protection (C), asset quality (A), management competence (M), earnings strength (E), liquidity risk (L), and sensitivity to market risk (S). According to this CAMELS system, a bank receives a rating of 1 (best) through 5 (worst) on each of these six aspects as well as a composite rating. Composite CAMELS ratings of 1 or 2 indicate that supervisors consider a bank to be in sound condition. Supervisors use a CAMELS 3 rating for banks that exhibit some degree of concern in one or more areas; a rating of 4 or 5 indicates more serious problems.

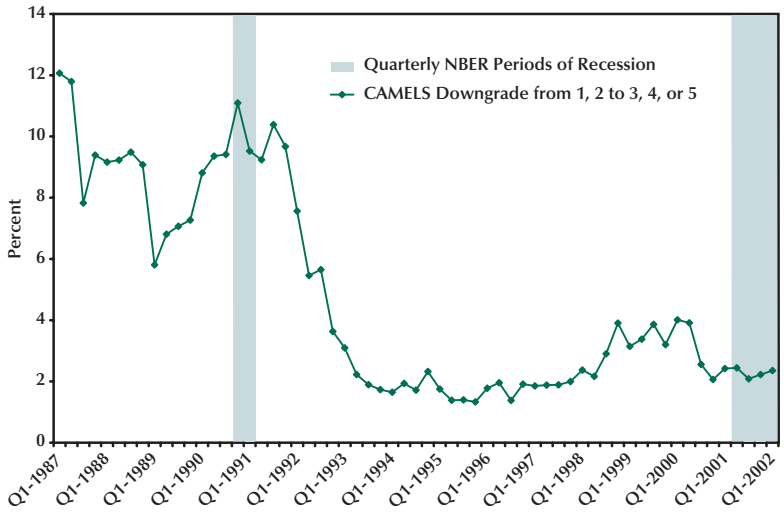
While the CAMELS ratings assigned to individual banks are confidential, comparison of CAMELS ratings across all banks over time may provide useful information about the condition of U.S. banks as a whole. The percentage of banks rated below CAMELS 1 or 2 was substantially higher during 1991 (a recession year) than during recent recessionary quarters. In the first quarter of 1991, 17.8 percent of banks had CAMELS ratings of 3 and 10.1 percent had ratings of 4 or 5. In the first quarter of 2002, in contrast, 6.2 percent of banks had CAMELS ratings of 3 and 1.5 percent had ratings of 4 or 5.

The CAMELS rating of a bank at a given point in time reflects the results of an examination conducted sometime during the prior 18 months. The figure indicates the extent to which examiners identified problems during exams conducted in each quarter since 1987. For each quarter, the denominator of the ratio plotted in the figure is the number of banks that entered the quarter with a CAMELS 1 or 2 rating and were subject to examinations begun during that quarter. The numerator is the number of these banks that received CAMELS ratings of 3, 4, or 5 on those examinations begun during that quarter. The shaded areas are recession periods.

CAMELS ratings downgrades from 1 or 2 to a 3, 4, or 5 have been much less frequent since March 2001, the peak of the last expansion, than during the late 1980s and early 1990s. The percentage of banks downgraded in a quarter rose to just over 10 percent during the recession of the early 1990s, peaking at about 11 percent in the fourth quarter of 1990. In contrast, the downgrade percentage was just above 2 percent during 2001 and the first quarter of 2002. By this indicator, most banks continue to be in sound condition. The conclusion is unchanged if we weight the banks examined in each quarter according to their assets. Thus, the percentage of banks currently rated below CAMELS 2 is low by standards of recent years—and especially low by standards of the prior recession period.

—R. Alton Gilbert and Sarosh R. Khan

CAMELS Downgrades



SOURCE: Federal Reserve System.

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

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Conventions used in this publication:

1. Unless otherwise indicated, data are monthly.

2. Shaded areas indicate recessions, as 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: $[(x_t / x_{t-12}) - 1] \times 100$.

We welcome your comments addressed to:

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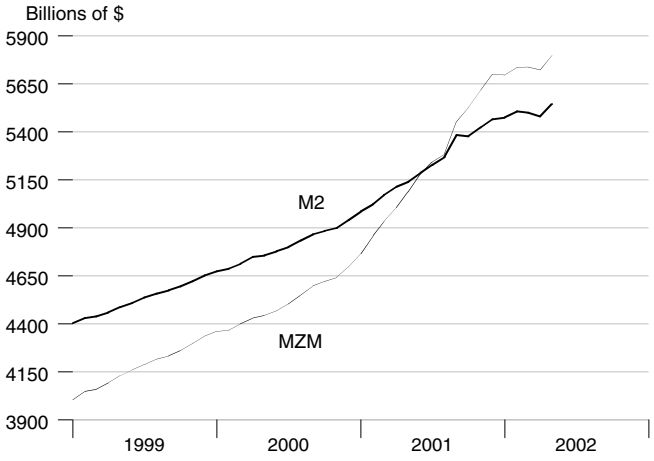
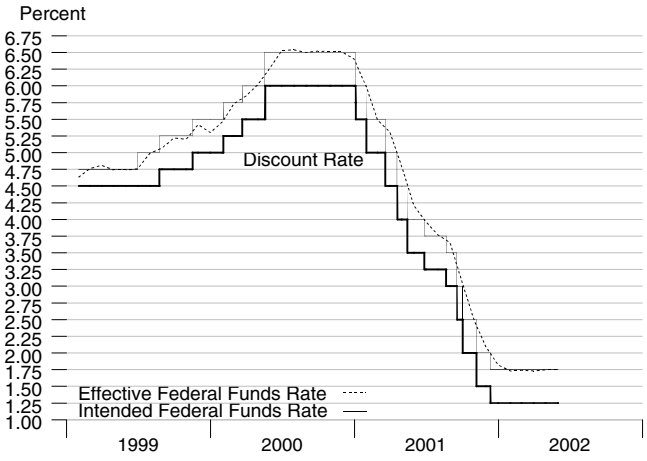
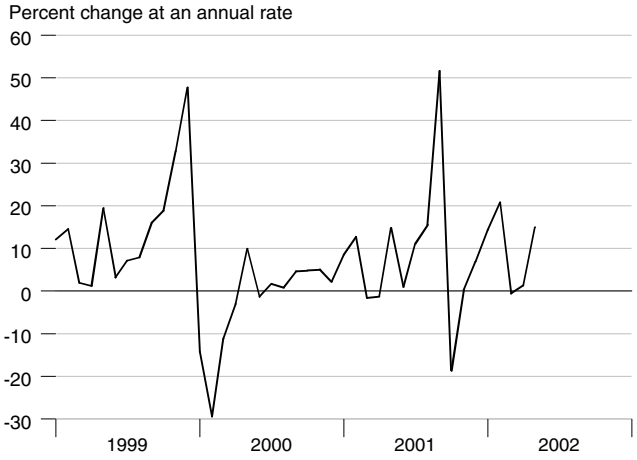
M2 and MZM



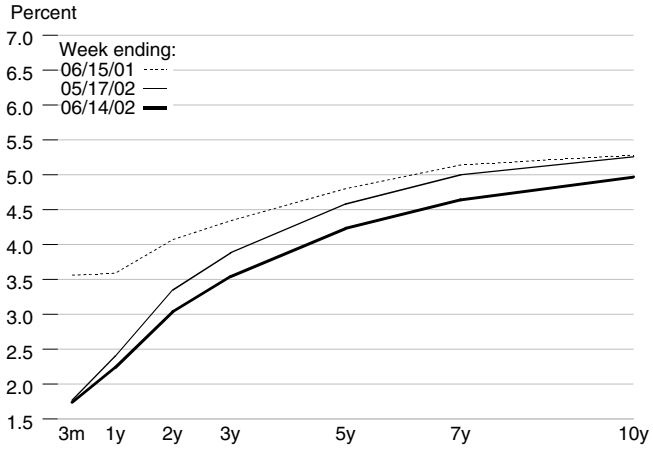
Reserve Market Rates



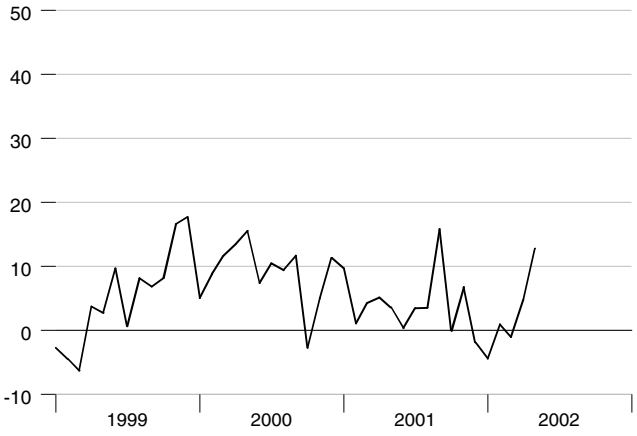
Adjusted Monetary Base



Treasury Yield Curve



Total Bank Credit



Interest Rates

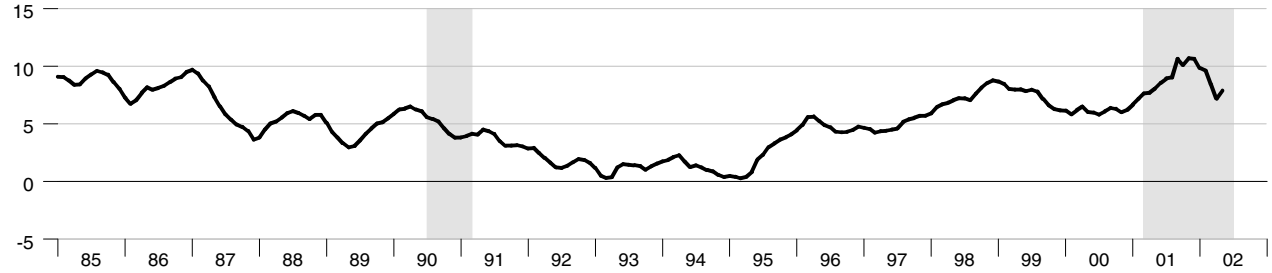
	Mar 02	Apr 02	May 02
Federal Funds Rate	1.73	1.75	1.75
Discount Rate	1.25	1.25	1.25
Prime Rate	4.75	4.75	4.75
Conventional Mortgage Rate	7.01	6.99	6.81
Treasury Yields:			
3-month constant maturity	1.83	1.75	1.76
6-month constant maturity	2.06	1.98	1.91
1-year constant maturity	2.57	2.48	2.35
3-year constant maturity	4.14	4.01	3.80
5-year constant maturity	4.74	4.65	4.49
10-year constant maturity	5.28	5.21	5.16

MZM and M1

Percent change from year ago

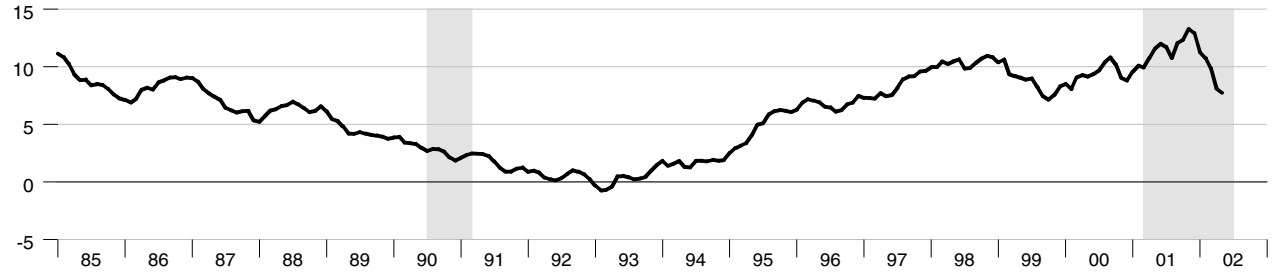
M2

Percent change from year ago



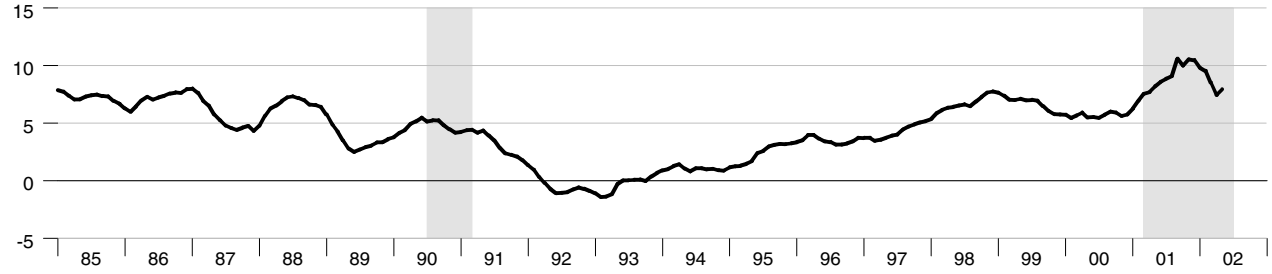
M3

Percent change from year ago

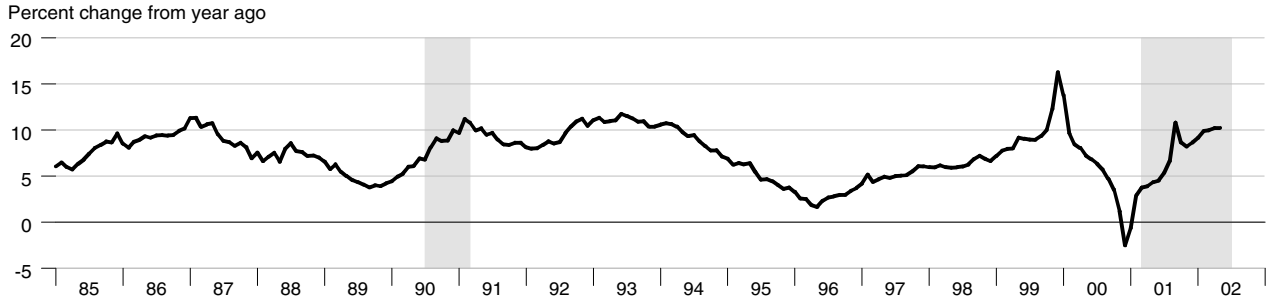


Monetary Services Index - M2

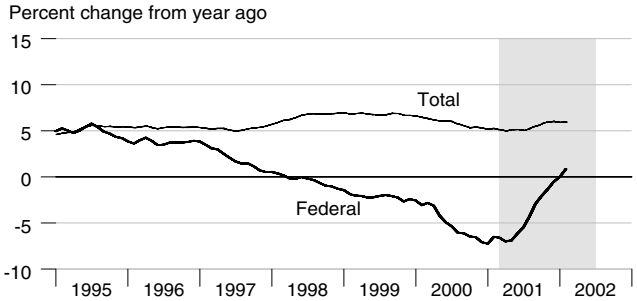
Percent change from year ago



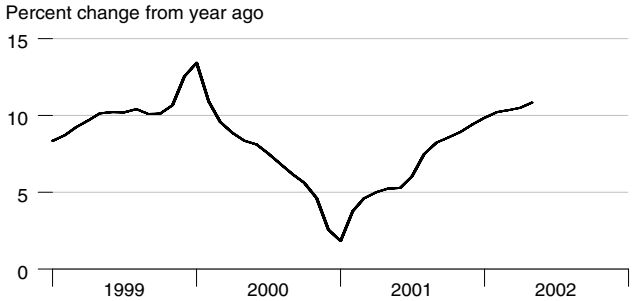
Adjusted Monetary Base



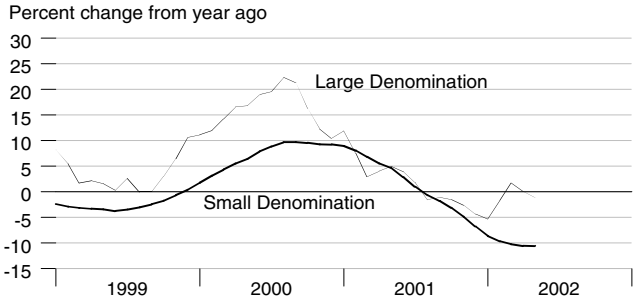
Domestic Nonfinancial Debt



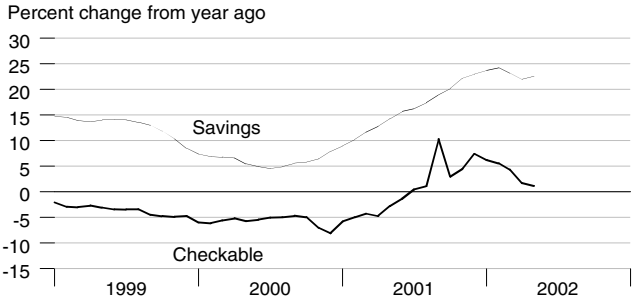
Currency Held by the Nonbank Public



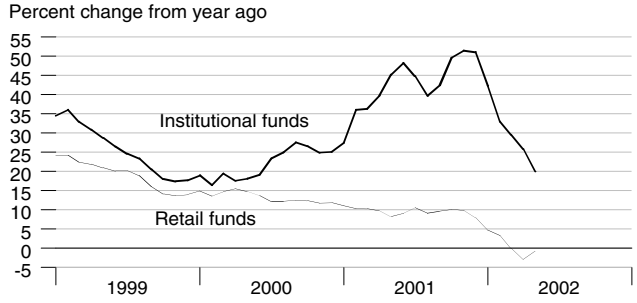
Time Deposits



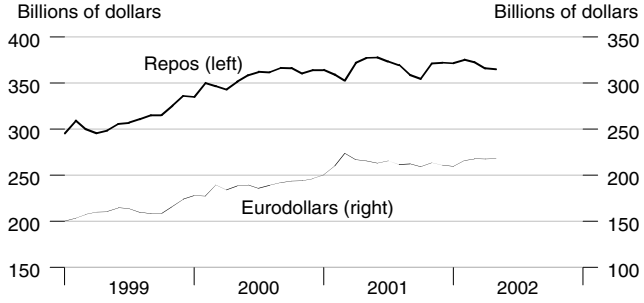
Checkable and Savings Deposits



Money Market Mutual Fund Shares

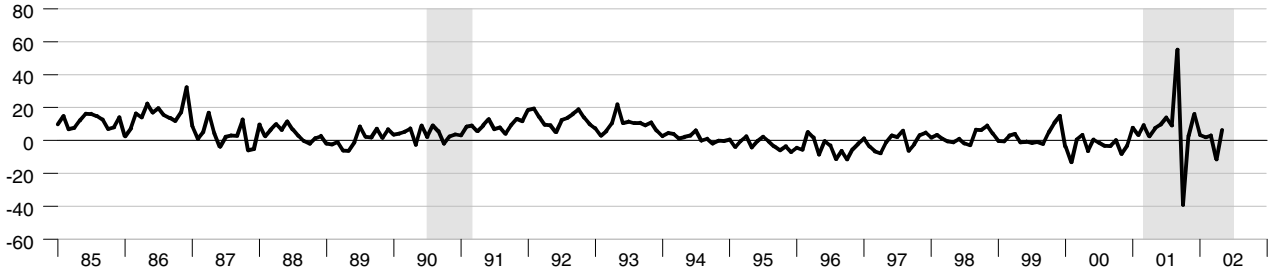


Repurchase Agreements and Eurodollars



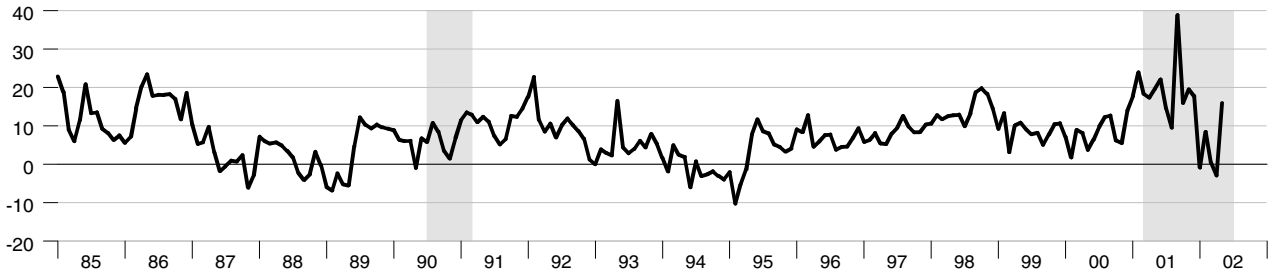
M1

Percent change at an annual rate



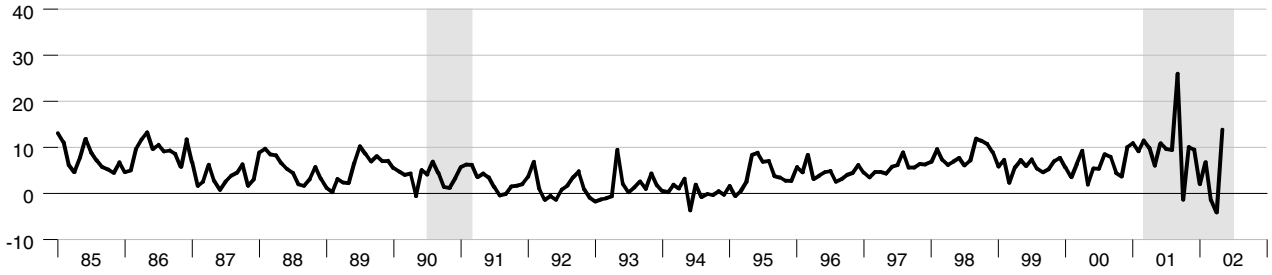
MZM

Percent change at an annual rate



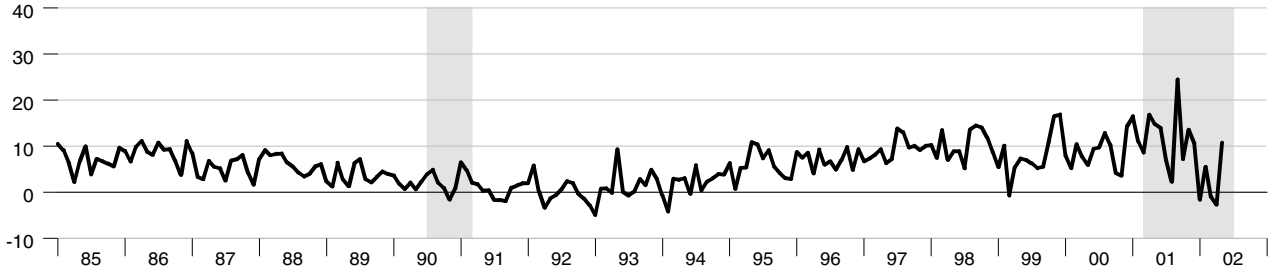
M2

Percent change at an annual rate

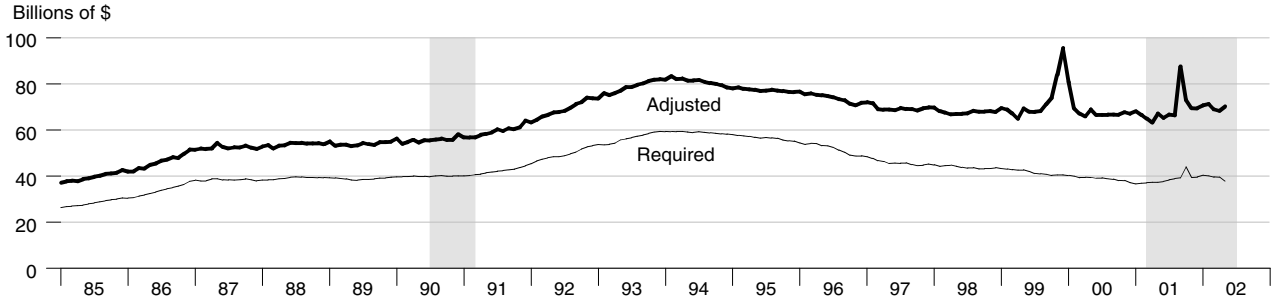


M3

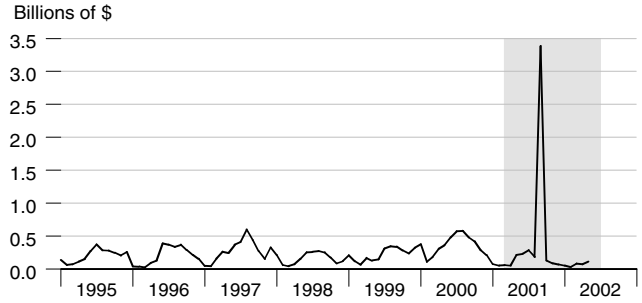
Percent change at an annual rate



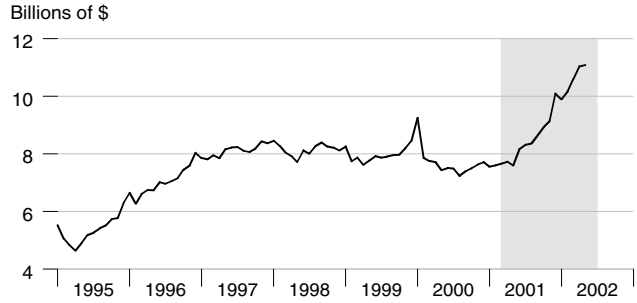
Adjusted and Required Reserves



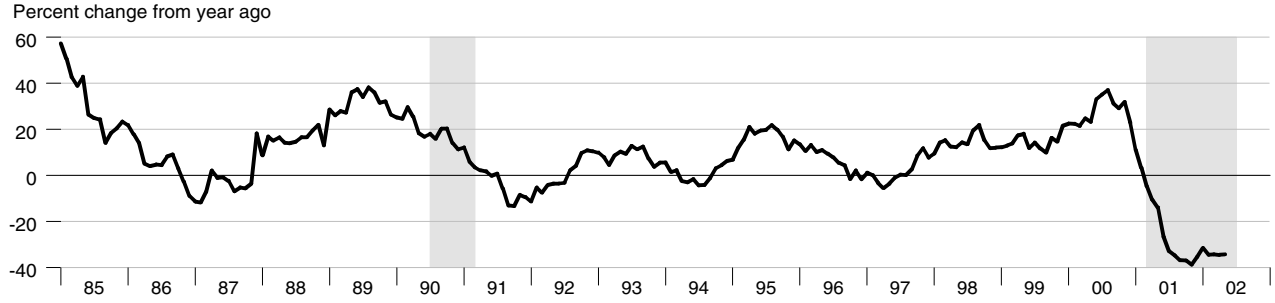
Total Borrowings, nsa



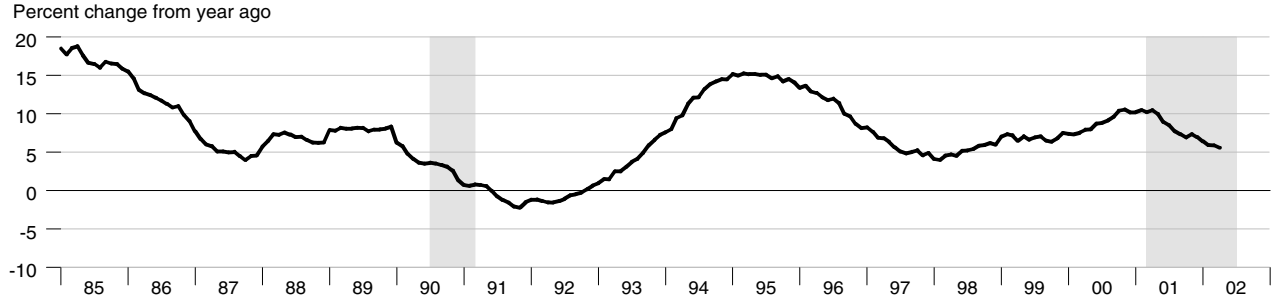
Excess Reserves plus RCB Contracts



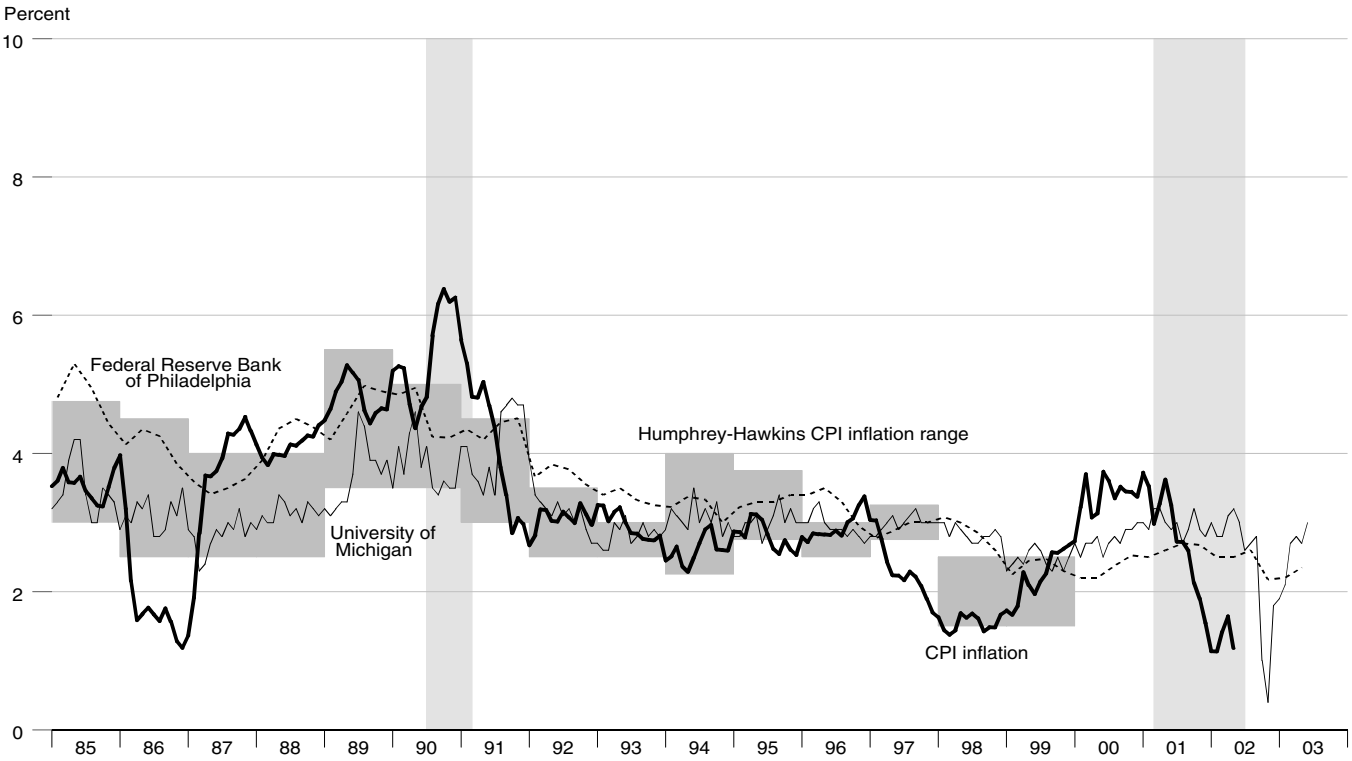
Nonfinancial Commercial Paper



Consumer Credit

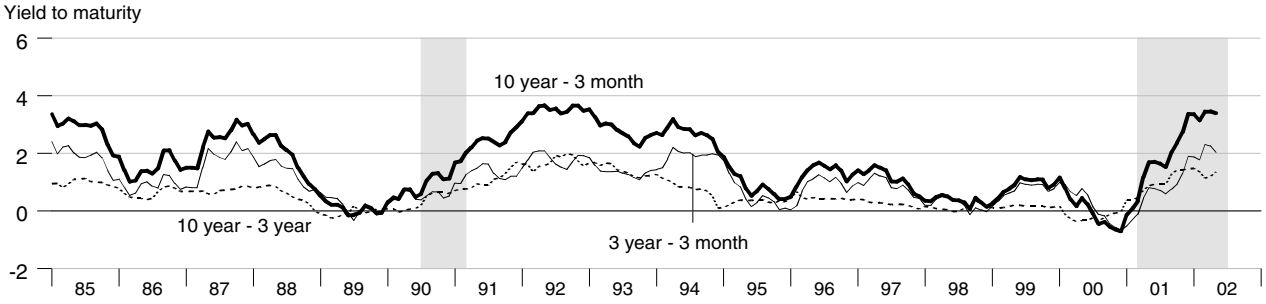


Inflation and Inflation Expectations



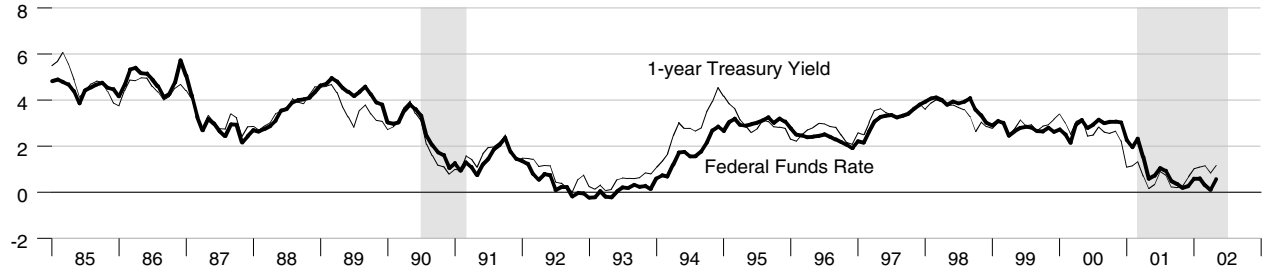
The shaded region shows the Humphrey-Hawkins CPI inflation range. Beginning in January 2000, the Humphrey-Hawkins inflation range was reported using the PCE price index and therefore is not shown on this graph. See page 19 for information.

Treasury Security Yield Spreads

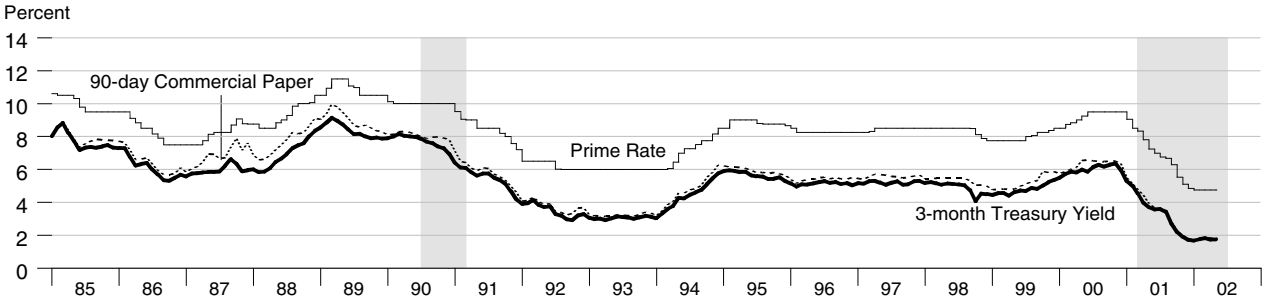


Real Interest Rates

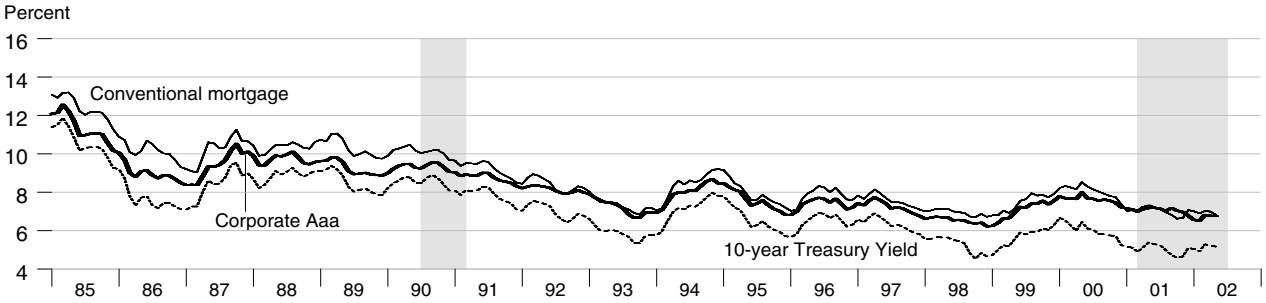
Percent, Real rate = Nominal rate less CPI inflation



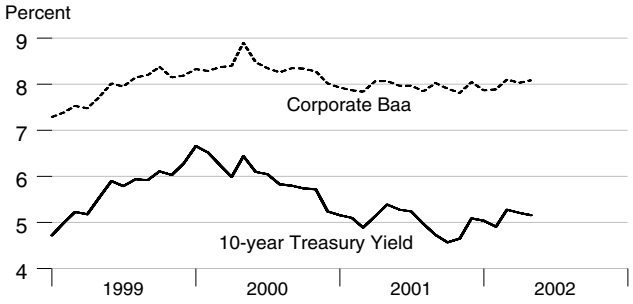
Short Term Interest Rates



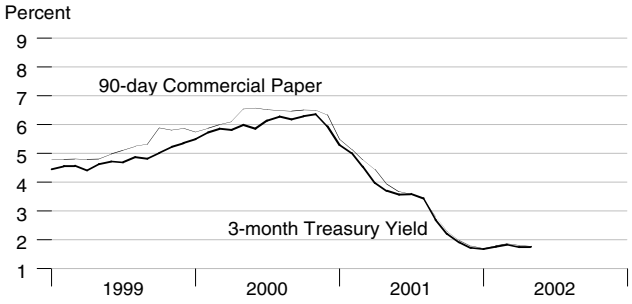
Long Term Interest Rates



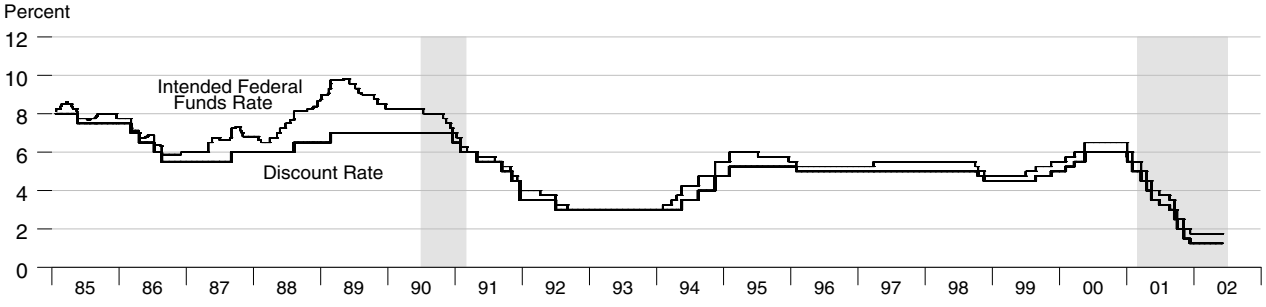
Long Term Interest Rates



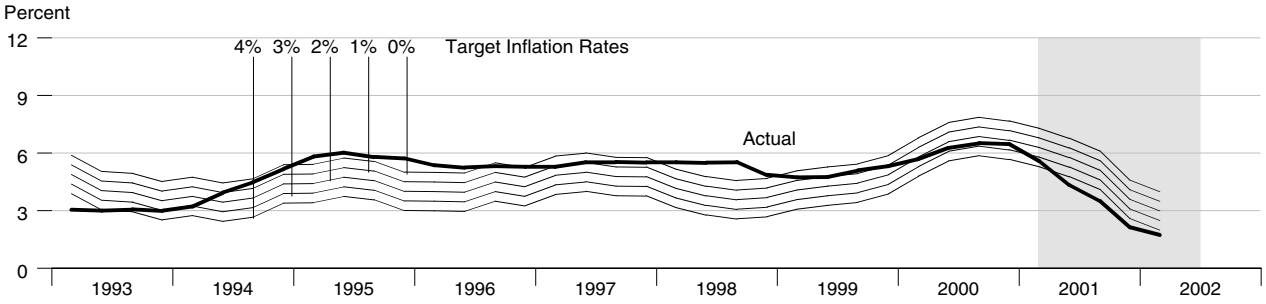
Short Term Interest Rates



FOMC Intended Federal Funds Rate and Discount Rate



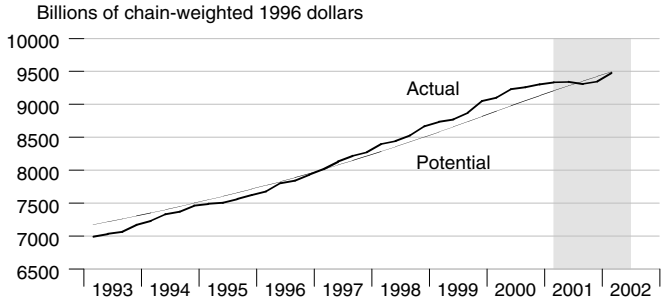
Federal Funds Rate and Inflation Targets



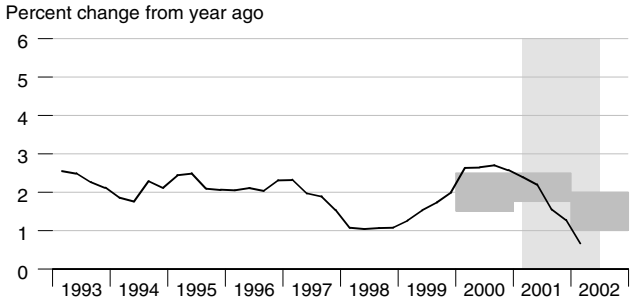
Calculated federal funds rate is based on Taylor's rule. See notes on page 19.

Components of Taylor's Rule

Actual and Potential Real GDP

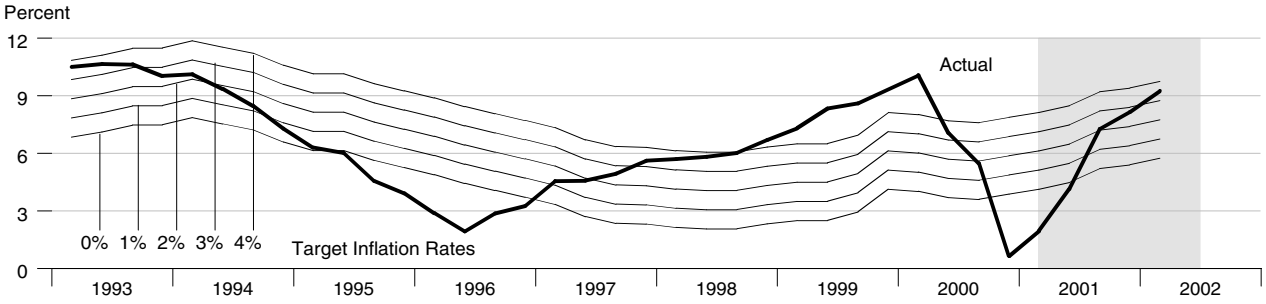


PCE Inflation and Projections



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

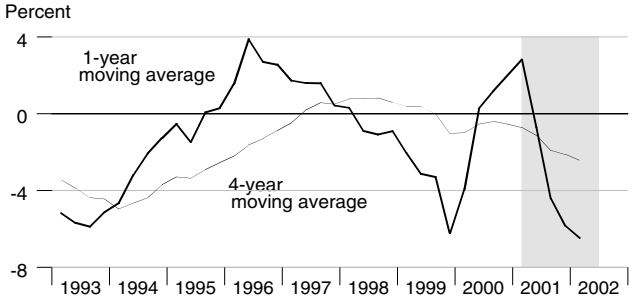
Monetary Base Growth* and Inflation Targets



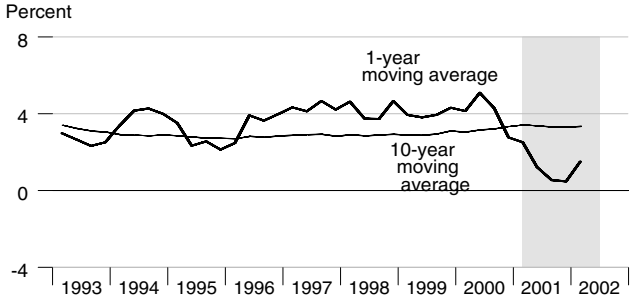
*Modified for the effects of sweeps programs on reserve demand.
Calculated base growth is based on McCallum's rule. Actual base growth is percent change from year ago. See notes on page 19.

Components of McCallum's Rule

Monetary Base Velocity Growth

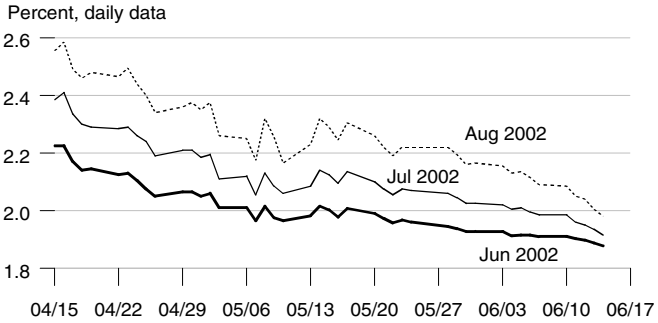


Real Output Growth

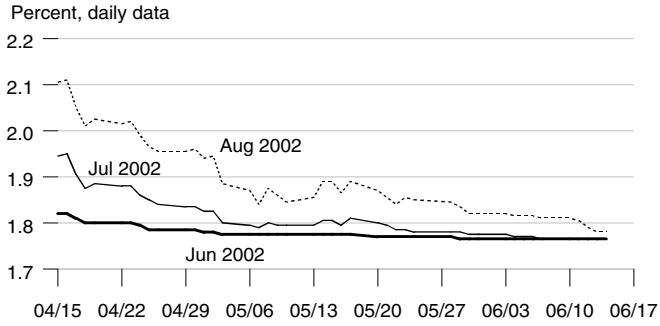


Implied One-Year Forward Rates

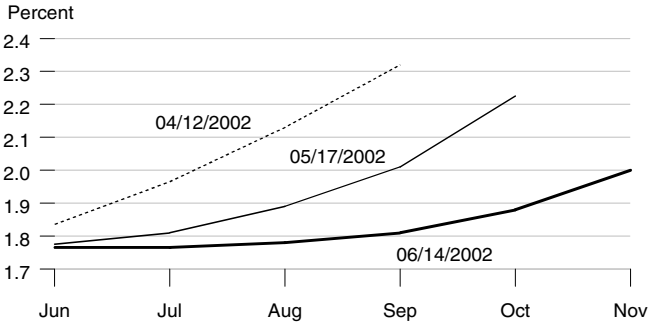
Rates on 3-Month Eurodollar Futures



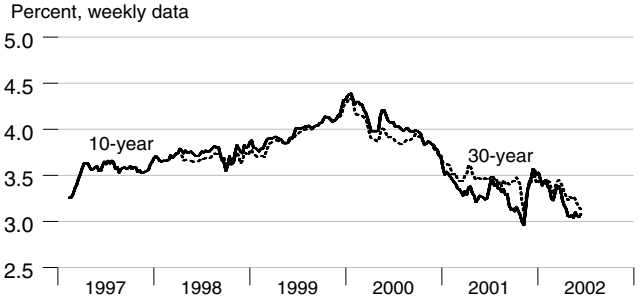
Rates on Selected Fed Funds Futures Contracts



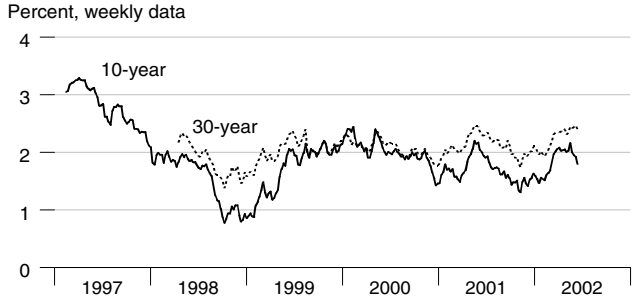
Implied Yields on Fed Funds Futures



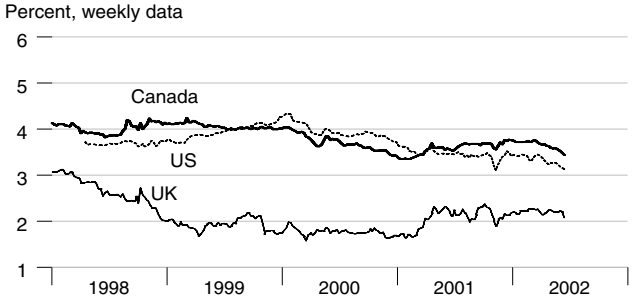
Inflation-Protected Treasury Yields



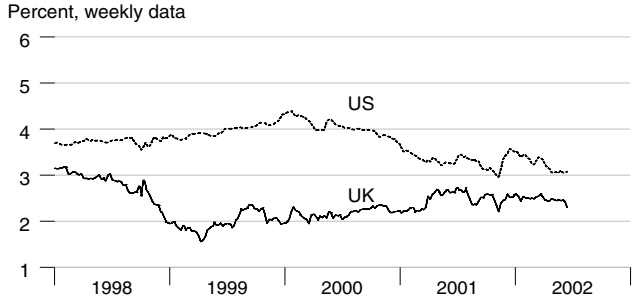
Inflation-Protected Treasury Yield Spreads



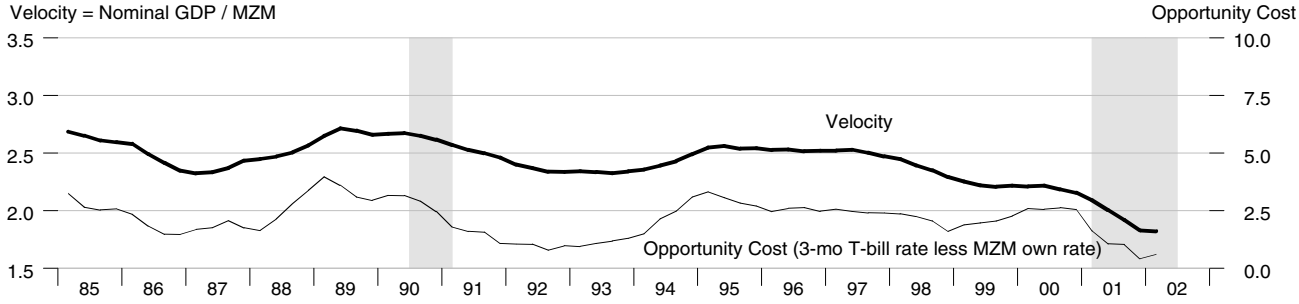
Inflation-Indexed 30-Year Bonds



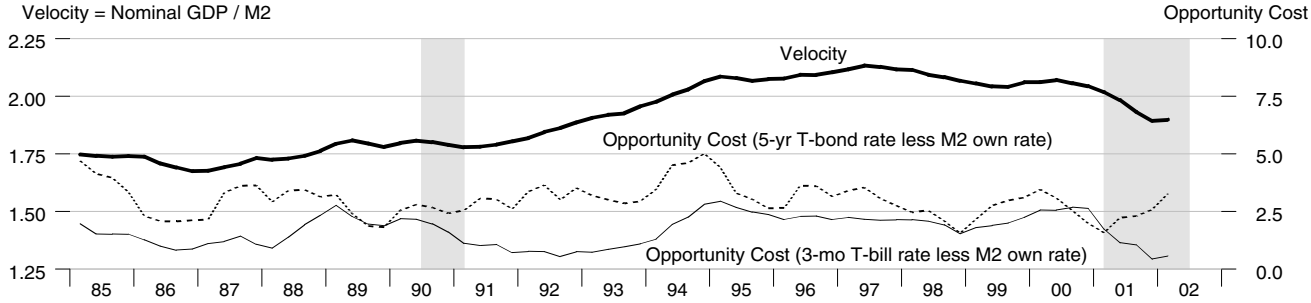
Inflation-Indexed 10-Year Bonds



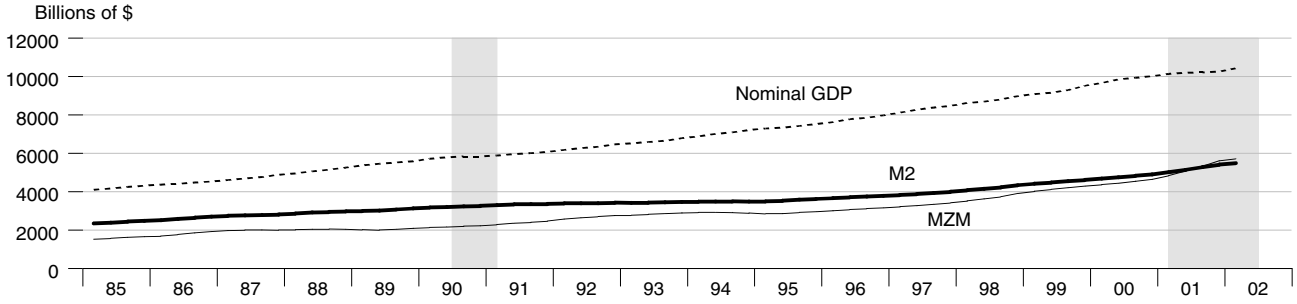
MZM Velocity and Opportunity Cost



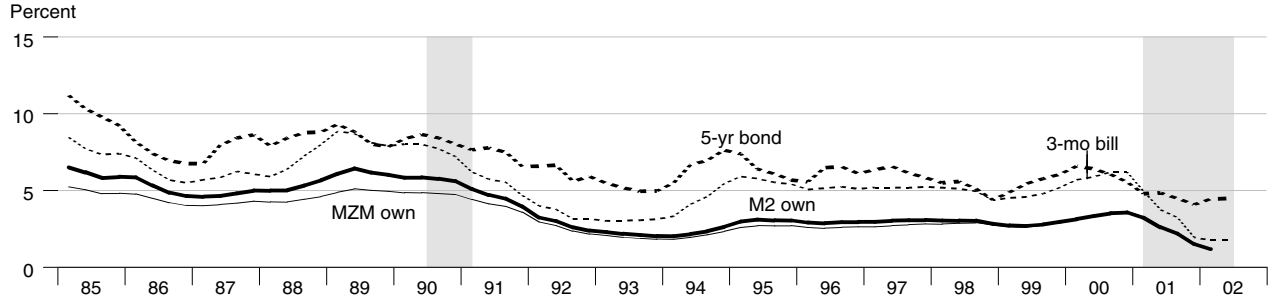
M2 Velocity and Opportunity Cost



M2, MZM and Nominal GDP

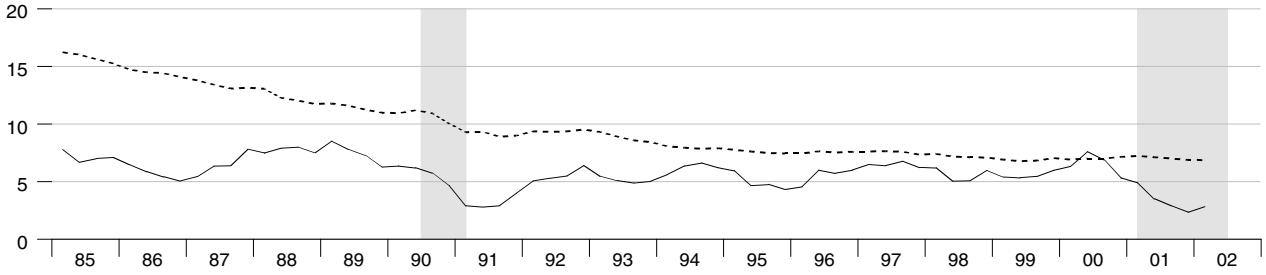


Interest Rates



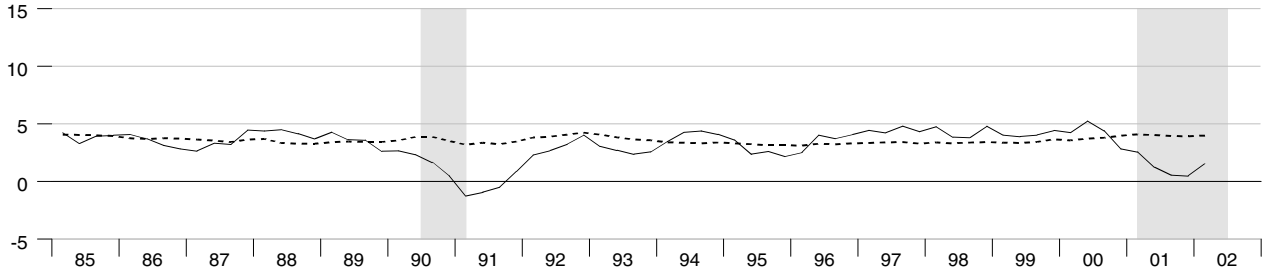
Gross Domestic Product

Percent change from year ago



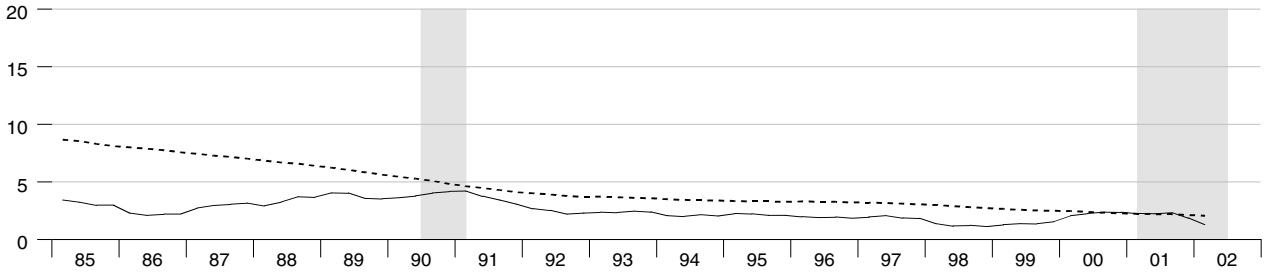
Real Gross Domestic Product

Percent change from year ago



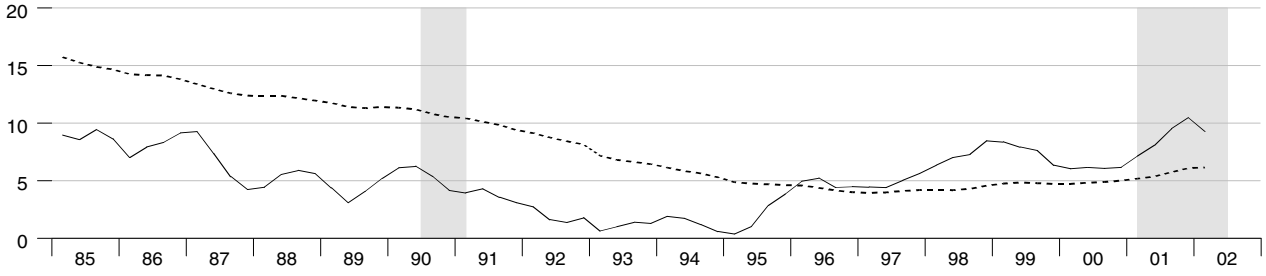
Gross Domestic Product Price Index

Percent change from year ago



M2

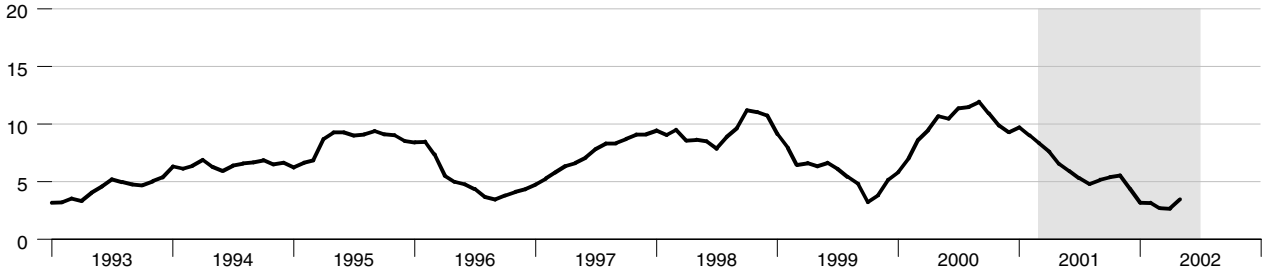
Percent change from year ago



Dashed lines indicate 10-year moving averages

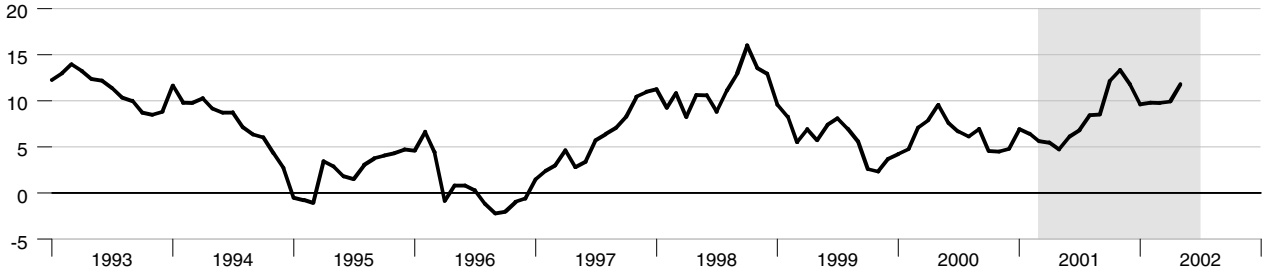
Bank Credit

Percent change from year ago



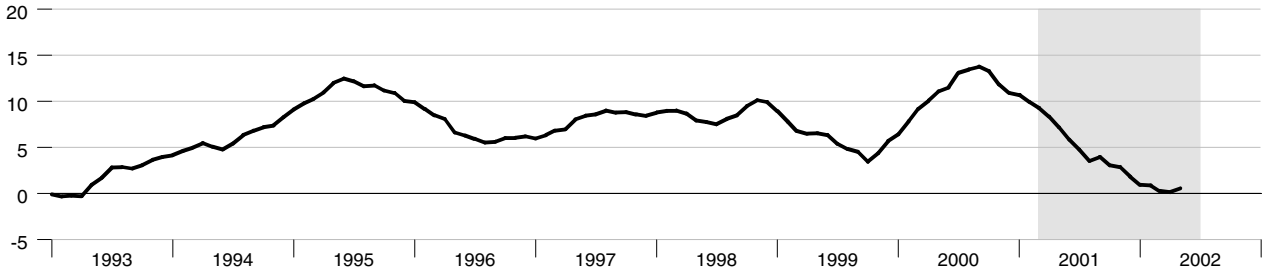
Investment Securities in Bank Credit at Commercial Banks

Percent change from year ago



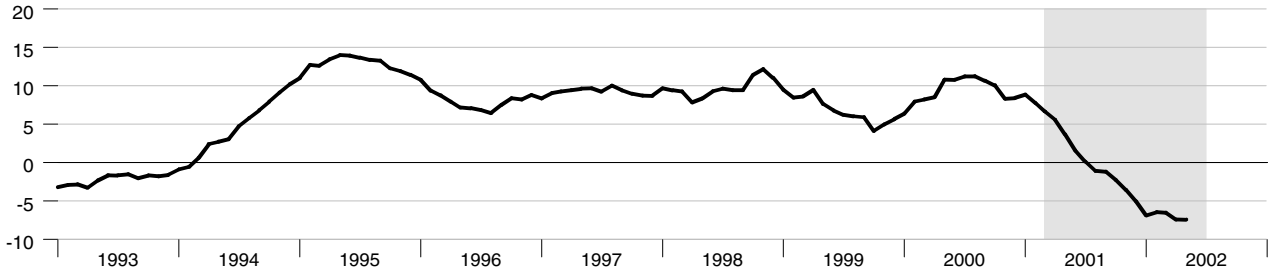
Total Loans and Leases in Bank Credit at Commercial Banks

Percent change from year ago

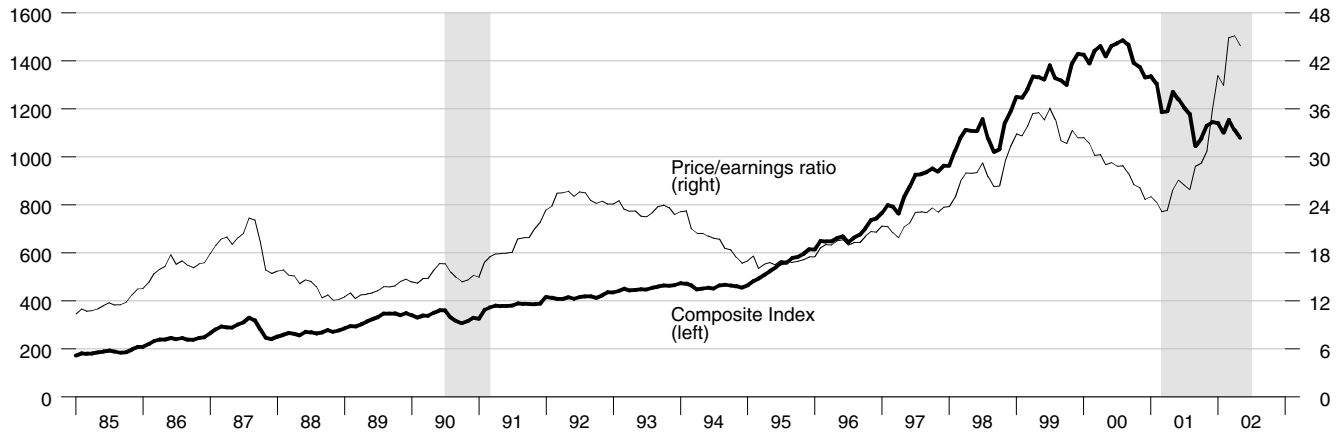


Commercial and Industrial Loans at Commercial Banks

Percent change from year ago



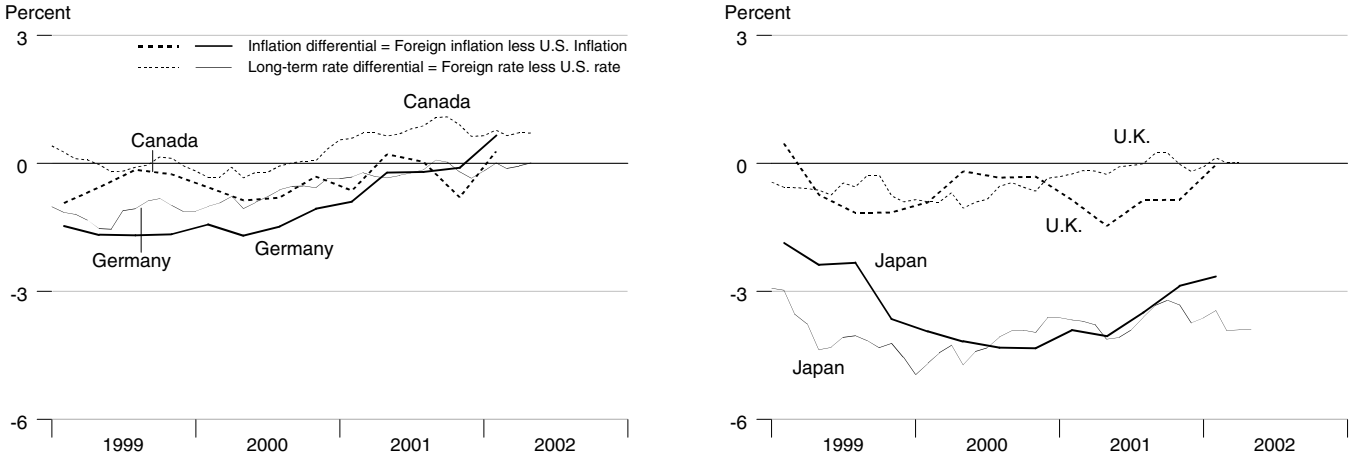
Standard and Poor's 500



Inflation and Long-Term Interest Rates

	Trend in Consumer Price Inflation Rates Percent change from year ago				Recent Long-Term Government Bond Rates Percent			
	2001Q2	2001Q3	2001Q4	2002Q1	Feb02	Mar02	Apr02	May02
United States	3.38	2.66	1.89	1.25	4.91	5.28	5.21	5.16
Canada	3.60	2.69	1.10	1.53	5.69	5.93	5.93	5.87
France	2.02	1.79	1.43	2.13	5.42	5.57	5.56	.
Germany	3.16	2.46	1.79	1.90	4.92	5.16	5.15	5.17
Italy	3.05	2.80	2.40	2.50	5.20	5.41	5.40	.
Japan	-0.67	-0.84	-0.98	-1.40	1.46	1.36	1.31	1.27
United Kingdom	1.91	1.80	1.04	1.21	5.04	5.29	5.23	.

Inflation and Long-Term Interest Rates Differentials



		Money Stock				Bank	Adjusted		
		M1	MZM	M2	M3	Credit	Monetary Base	Reserves	MSI M2
	1997	1069.292	3320.253	3918.362	5210.812	3955.528	478.708	69.523	226.451
	1998	1079.990	3708.246	4204.274	5751.356	4328.593	508.942	67.808	241.456
	1999	1101.865	4168.040	4521.750	6254.198	4584.838	557.865	72.360	257.773
	2000	1104.049	4506.083	4798.093	6840.286	5032.147	590.821	68.319	272.446
	2001	1136.964	5221.138	5221.865	7623.505	5355.480	623.788	68.974	296.302
2000	1	1112.681	4375.729	4690.895	6624.435	4838.373	593.102	72.390	266.693
	2	1108.119	4446.378	4760.994	6755.101	4989.105	586.045	67.097	270.260
	3	1102.127	4549.671	4832.888	6925.459	5117.931	589.054	66.636	274.420
	4	1093.270	4652.554	4907.596	7056.150	5183.181	595.084	67.151	278.410
2001	1	1100.703	4852.542	5026.494	7278.685	5274.424	604.848	66.543	285.153
	2	1117.306	5090.446	5146.171	7528.691	5322.162	610.939	65.201	292.313
	3	1161.910	5327.061	5293.201	7723.752	5377.915	633.771	73.522	300.547
	4	1167.935	5614.502	5421.593	7962.891	5447.416	645.594	70.629	307.193
2002	1	1184.707	5722.457	5493.275	8051.577	5433.024	663.328	70.291	311.620
2000	May	1105.975	4443.076	4756.385	6748.518	5000.111	587.863	68.889	269.940
	Jun	1106.417	4466.705	4777.948	6801.500	5030.994	587.220	66.490	271.260
	Jul	1105.149	4503.006	4799.449	6856.730	5074.837	588.032	66.555	272.620
	Aug	1102.140	4549.033	4833.537	6930.100	5114.633	588.436	66.664	274.430
	Sep	1099.091	4596.973	4865.679	6989.546	5164.322	590.694	66.689	276.210
	Oct	1099.233	4620.534	4883.832	7013.812	5152.606	593.064	66.688	277.190
	Nov	1091.722	4641.682	4898.952	7035.089	5174.048	595.549	67.686	277.970
	Dec	1088.856	4695.446	4940.003	7119.550	5222.888	596.639	67.078	280.070
2001	Jan	1095.844	4764.632	4984.989	7217.245	5265.030	600.886	68.095	282.570
	Feb	1098.905	4859.418	5023.166	7283.197	5269.772	607.234	66.556	285.020
	Mar	1107.361	4933.576	5071.326	7335.612	5288.471	606.425	64.979	287.870
	Apr	1109.741	5004.832	5113.367	7438.437	5311.085	605.800	63.239	290.320
	May	1116.621	5086.573	5139.246	7530.032	5326.893	613.259	67.119	292.050
	Jun	1125.556	5179.933	5185.901	7617.605	5328.508	613.759	65.246	294.570
	Jul	1138.564	5242.455	5227.691	7661.850	5343.869	619.440	66.654	296.780
	Aug	1147.243	5283.966	5268.931	7676.517	5359.634	627.455	66.378	299.370
	Sep	1199.924	5454.763	5382.980	7832.890	5430.243	654.419	87.534	305.490
	Oct	1160.802	5527.190	5377.091	7879.920	5429.953	644.249	72.955	304.900
	Nov	1163.743	5616.753	5422.277	7968.958	5460.488	644.415	69.476	307.260
	Dec	1179.259	5699.563	5465.411	8039.795	5451.808	648.118	69.457	309.420
2002	Jan	1182.454	5695.312	5474.785	8029.149	5431.810	655.871	70.667	310.260
	Feb	1184.364	5735.106	5505.757	8066.002	5435.963	667.213	71.242	312.230
	Mar	1187.303	5736.953	5499.283	8059.581	5431.299	666.900	68.963	312.370
	Apr	1175.965	5722.879	5480.571	8041.645	5452.872	667.647	68.337	311.950
	May	1182.140	5798.666	5543.958	8113.736	5510.910	675.961	70.242	315.240

*All values are given in billions of dollars

		Federal Funds	Discount Rate	Prime Rate	3-mo CDs	Treasury Yields 3 mo	3 yr	10 yr	Corporate Aaa Bonds	S & L Aaa Bonds	Conventional Mortgage
	1997	5.46	5.00	8.44	5.62	5.20	6.10	6.35	7.26	5.32	7.60
	1998	5.35	4.92	8.35	5.47	4.91	5.14	5.26	6.53	4.93	6.94
	1999	4.97	4.62	7.99	5.33	4.78	5.49	5.64	7.04	5.28	7.43
	2000	6.24	5.73	9.23	6.46	6.00	6.22	6.03	7.62	5.58	8.06
	2001	3.89	3.41	6.92	3.69	3.47	4.08	5.02	7.08	4.99	6.97
2000	1	5.68	5.19	8.69	6.03	5.70	6.56	6.48	7.71	5.82	8.26
	2	6.27	5.74	9.25	6.57	5.89	6.52	6.18	7.77	5.72	8.32
	3	6.52	6.00	9.50	6.63	6.20	6.16	5.89	7.61	5.45	8.03
	4	6.47	6.00	9.50	6.59	6.20	5.63	5.57	7.40	5.32	7.64
2001	1	5.59	5.11	8.62	5.26	4.95	4.64	5.05	7.08	5.03	7.01
	2	4.33	3.83	7.34	4.10	3.75	4.43	5.27	7.22	5.11	7.13
	3	3.50	3.06	6.57	3.34	3.24	3.93	4.98	7.11	4.87	6.97
	4	2.13	1.64	5.16	2.06	1.94	3.33	4.77	6.92	4.97	6.78
2002	1	1.73	1.25	4.75	1.82	1.76	3.75	5.08	6.62	5.02	6.97
2000	May	6.27	5.71	9.24	6.71	5.99	6.77	6.44	7.99	5.87	8.52
	Jun	6.53	6.00	9.50	6.73	5.86	6.43	6.10	7.67	5.69	8.29
	Jul	6.54	6.00	9.50	6.67	6.14	6.28	6.05	7.65	5.53	8.15
	Aug	6.50	6.00	9.50	6.61	6.28	6.17	5.83	7.55	5.43	8.03
	Sep	6.52	6.00	9.50	6.60	6.18	6.02	5.80	7.62	5.40	7.91
	Oct	6.51	6.00	9.50	6.67	6.29	5.85	5.74	7.55	5.46	7.80
	Nov	6.51	6.00	9.50	6.65	6.36	5.79	5.72	7.45	5.38	7.75
	Dec	6.40	6.00	9.50	6.45	5.94	5.26	5.24	7.21	5.11	7.38
2001	Jan	5.98	5.52	9.05	5.62	5.29	4.77	5.16	7.15	4.99	7.03
	Feb	5.49	5.00	8.50	5.26	5.01	4.71	5.10	7.10	5.09	7.05
	Mar	5.31	4.81	8.32	4.89	4.54	4.43	4.89	6.98	5.00	6.95
	Apr	4.80	4.28	7.80	4.53	3.97	4.42	5.14	7.20	5.14	7.08
	May	4.21	3.73	7.24	4.02	3.70	4.51	5.39	7.29	5.15	7.15
	Jun	3.97	3.47	6.98	3.74	3.57	4.35	5.28	7.18	5.03	7.16
	Jul	3.77	3.25	6.75	3.66	3.59	4.31	5.24	7.13	4.79	7.13
	Aug	3.65	3.16	6.67	3.48	3.44	4.04	4.97	7.02	4.89	6.95
	Sep	3.07	2.77	6.28	2.87	2.69	3.45	4.73	7.17	4.93	6.82
	Oct	2.49	2.02	5.53	2.31	2.20	3.14	4.57	7.03	4.89	6.62
	Nov	2.09	1.58	5.10	2.03	1.91	3.22	4.65	6.97	4.85	6.66
	Dec	1.82	1.33	4.84	1.83	1.72	3.62	5.09	6.77	5.18	7.07
2002	Jan	1.73	1.25	4.75	1.74	1.68	3.56	5.04	6.55	5.05	7.00
	Feb	1.74	1.25	4.75	1.82	1.76	3.55	4.91	6.51	4.93	6.89
	Mar	1.73	1.25	4.75	1.91	1.83	4.14	5.28	6.81	5.09	7.01
	Apr	1.75	1.25	4.75	1.87	1.75	4.01	5.21	6.76	5.09	6.99
	May	1.75	1.25	4.75	1.82	1.76	3.80	5.16	6.75	5.03	6.81

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

		M1	MZM	M2	M3
Percent change from previous period					
	1997	-3.31	7.23	4.90	8.29
	1998	1.00	11.69	7.30	10.37
	1999	2.03	12.40	7.55	8.74
	2000	0.20	8.11	6.11	9.37
	2001	2.98	15.87	8.83	11.45
2000	1	0.07	1.82	1.48	2.65
	2	-0.41	1.61	1.49	1.97
	3	-0.54	2.32	1.51	2.52
	4	-0.80	2.26	1.55	1.89
2001	1	0.68	4.30	2.42	3.15
	2	1.51	4.90	2.38	3.43
	3	3.99	4.65	2.86	2.59
	4	0.52	5.40	2.43	3.10
2002	1	1.44	1.92	1.32	1.11
2000	May	-0.54	0.31	0.16	0.49
	Jun	0.04	0.53	0.45	0.79
	Jul	-0.11	0.81	0.45	0.81
	Aug	-0.27	1.02	0.71	1.07
	Sep	-0.28	1.05	0.66	0.86
	Oct	0.01	0.51	0.37	0.35
	Nov	-0.68	0.46	0.31	0.30
	Dec	-0.26	1.16	0.84	1.20
2001	Jan	0.64	1.47	0.91	1.37
	Feb	0.28	1.99	0.77	0.91
	Mar	0.77	1.53	0.96	0.72
	Apr	0.21	1.44	0.83	1.40
	May	0.62	1.63	0.51	1.23
	Jun	0.80	1.84	0.91	1.16
	Jul	1.16	1.21	0.81	0.58
	Aug	0.76	0.79	0.79	0.19
	Sep	4.59	3.23	2.16	2.04
	Oct	-3.26	1.33	-0.11	0.60
	Nov	0.25	1.62	0.84	1.13
	Dec	1.33	1.47	0.80	0.89
2002	Jan	0.27	-0.07	0.17	-0.13
	Feb	0.16	0.70	0.57	0.46
	Mar	0.25	0.03	-0.12	-0.08
	Apr	-0.95	-0.25	-0.34	-0.22
	May	0.53	1.32	1.16	0.90

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 **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. **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 www.stls.frb.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: **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 (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 CPI 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 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 $m = 1,...,$ 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)

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

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 (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, for 10- and 30-year maturities, the difference between the yields on the most recently issued inflation-protected securities and the unadjusted bond yields of similar maturity. **Inflation-Indexed 30-Year 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 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 8/23/2011 and the current U.S. bond has a maturity date of 1/15/2011.

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.

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