

Monetary Trends

THE
FEDERAL
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The Market's View of FOMC Announcements

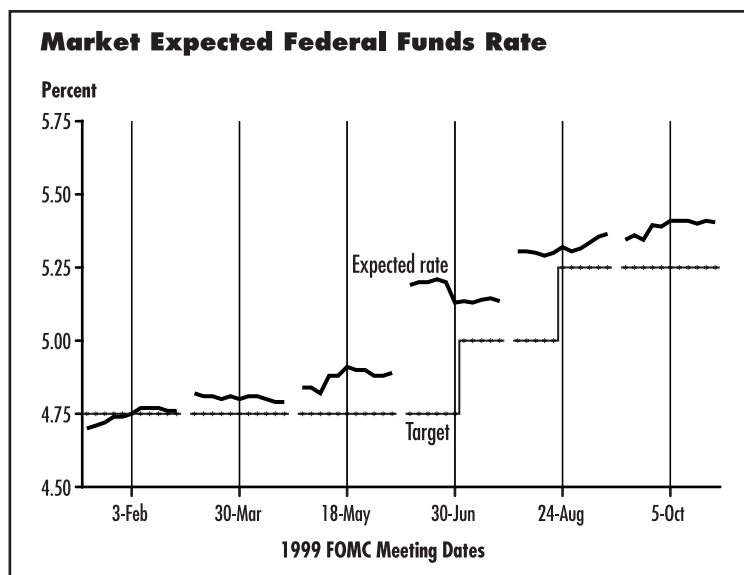
Since 1994, the Federal Open Market Committee has announced changes in its target for the federal funds rate immediately upon making them. After every meeting since May 18, 1999, the FOMC has also announced any bias, or asymmetry, in its expectations for the direction of future policy moves. The precise meaning of an asymmetric directive and the horizon over which it applies have, however, been subject to differing interpretations. Some observers have interpreted an asymmetric directive as indicating a likely policy move in the direction of the bias at the next scheduled FOMC meeting, while others have interpreted asymmetry as signaling a possible move, perhaps at the chairman's discretion, before the next scheduled meeting. To help clarify its decisions, the FOMC has recently established a subcommittee to review both the wording of its policy directive and the Committee's announcement following its meetings.

An indication of the market's response to FOMC announcements can be gleaned from trading in the federal funds futures market. For each of the first six meetings of 1999, the chart plots implied expected yields on federal funds during the month following the next scheduled FOMC meeting date, as reflected in trading on each FOMC meeting date and five days before and five days after those dates. Thus, for the Feb. 3 meeting, the plotted yields are derived from trading in April futures contracts on Feb. 3—as well as the five days on each side of that date. Also plotted is the FOMC's current funds rate target on each date. Vertical lines on June 30 and Aug. 24 indicate the 25 basis point target increases by the FOMC on those dates. The chart thus provides an indication of whether FOMC announcements affected market expectations for policy changes at the next scheduled FOMC meeting (though not about market expectations of policy changes before the next FOMC meeting).

The FOMC press releases issued after the May 18 and Oct. 5 meetings indicated that the Committee had adopted directives that were tilted toward the possibility of a future firming of policy. Press releases issued following the meetings of June 30 and Aug. 24, in contrast, indicated that the FOMC had adopted directives that contained no bias regarding the direction of future actions.

The chart illustrates that since March, market participants have expected the federal funds rate to rise above the FOMC's current target. The chart also reveals that expectations for future changes in the funds rate did not change markedly on most FOMC meeting dates, even on May 18 and Oct. 5 when the FOMC announced that it had adopted directives that were biased toward future tightening. On June 30, however, the implied expected federal funds rate yield for September fell from 5.20 percent to 5.13 percent, suggesting that despite raising its funds rate target from 4.75 percent to 5 percent, the FOMC's adoption of a symmetric directive regarding the outlook for near-term policy action caused market participants to downgrade their expectations for future tightening.

—David C. Wheelock



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

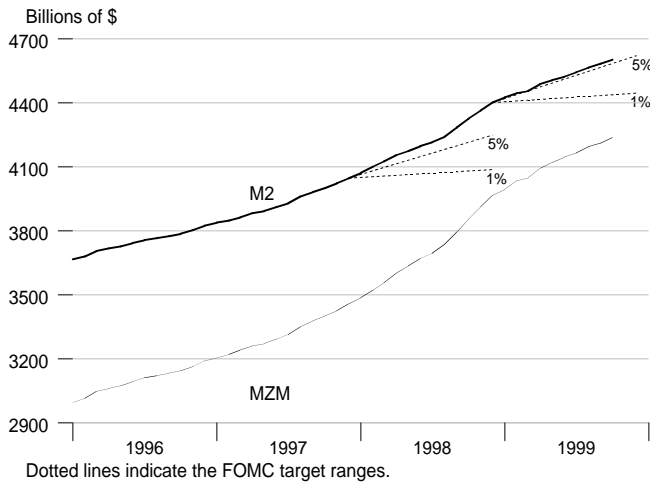
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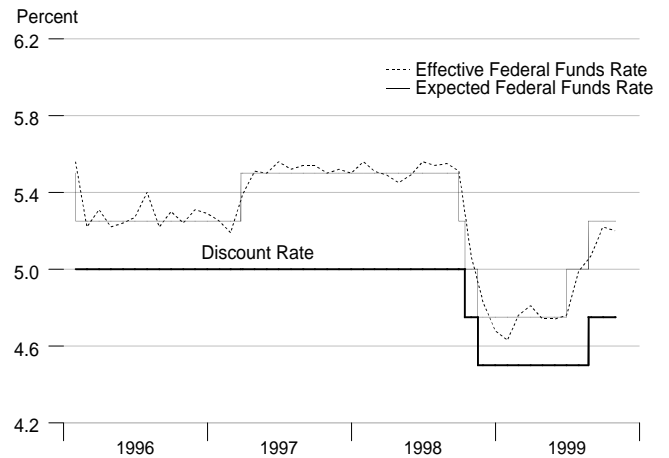
or to:

webmaster@stls.frb.org

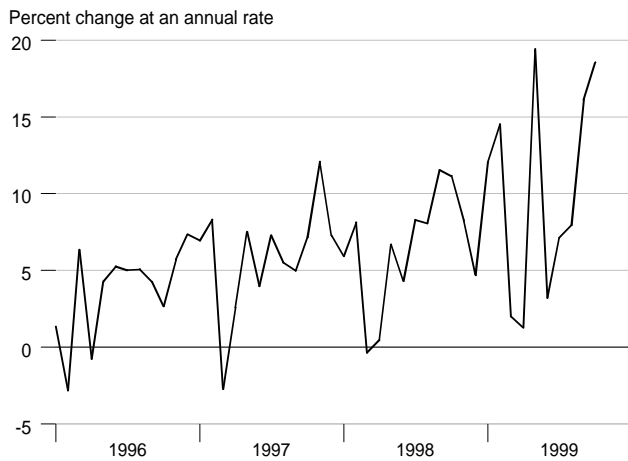
M2 and MZM



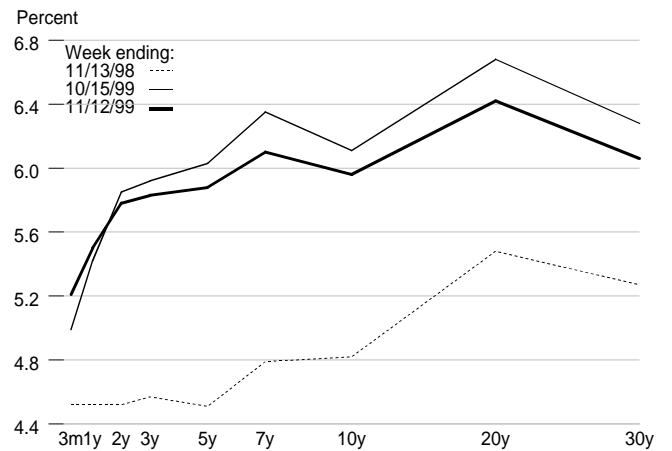
Reserve Market Rates



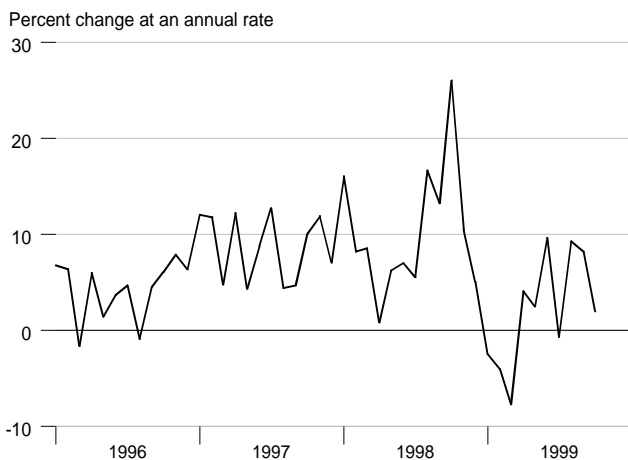
Adjusted Monetary Base



Treasury Yield Curve



Total Bank Credit

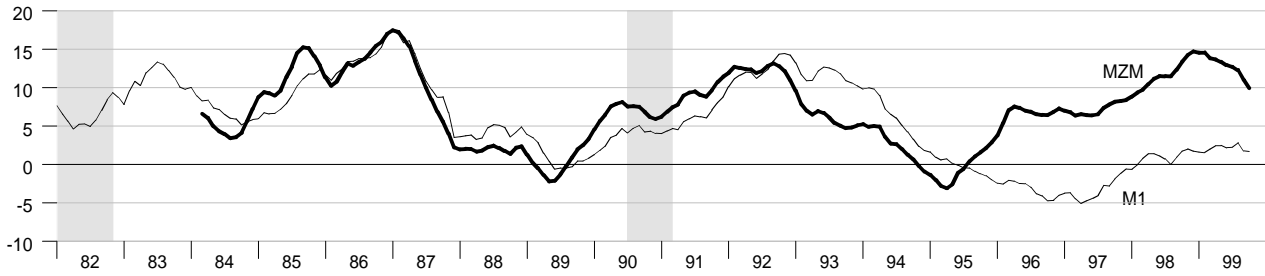


Interest Rates

	Aug 99	Sep 99	Oct 99
Federal Funds Rate	5.07	5.22	5.20
Discount Rate	4.56	4.75	4.75
Prime Rate	8.06	8.25	8.25
Conventional Mortgage Rate	7.94	7.82	7.85
Treasury Yields:			
3-month constant maturity	4.87	4.82	5.02
6-month constant maturity	5.09	5.08	5.20
1-year constant maturity	5.20	5.25	5.43
3-year constant maturity	5.77	5.75	5.94
5-year constant maturity	5.84	5.80	6.03
10-year constant maturity	5.94	5.92	6.11
30-year constant maturity	6.07	6.07	6.26

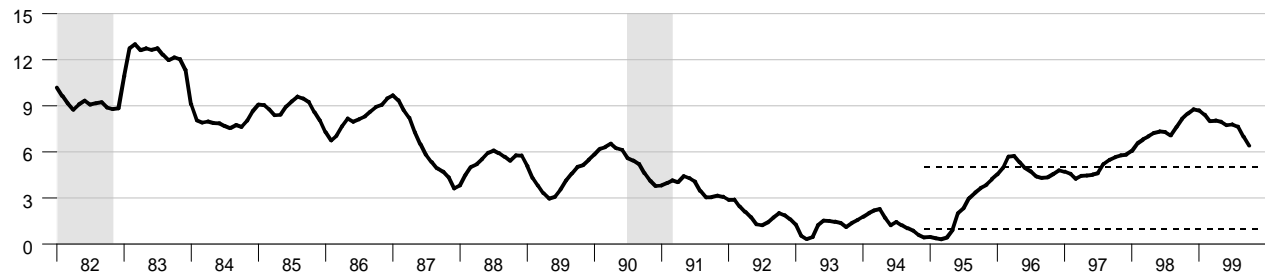
MZM and M1

Percent change from year ago



M2

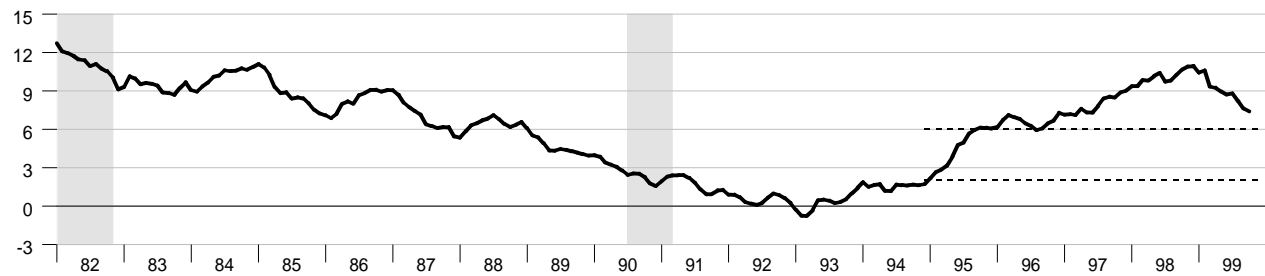
Percent change from year ago



Dotted lines indicate the FOMC target ranges.

M3

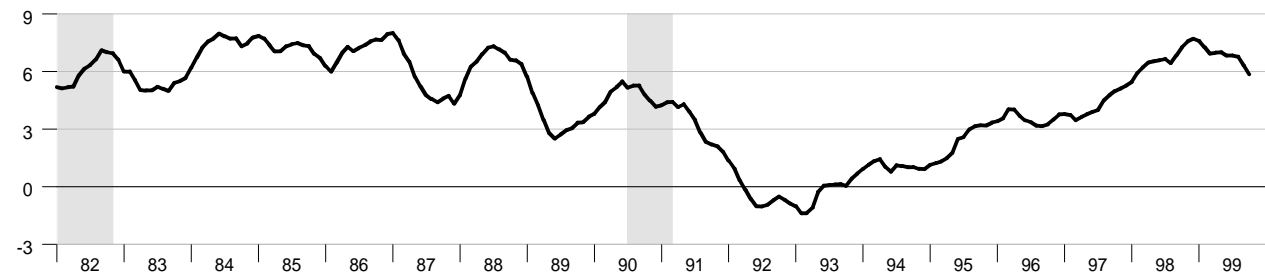
Percent change from year ago



Dotted lines indicate the FOMC target ranges.

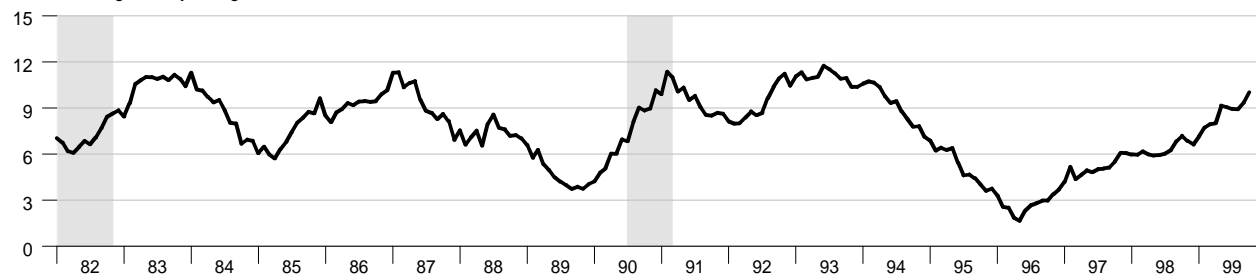
Monetary Services Index - M2

Percent change from year ago



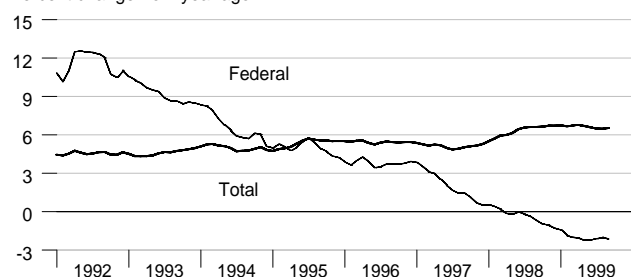
Adjusted Monetary Base

Percent change from year ago



Domestic Nonfinancial Debt

Percent change from year ago



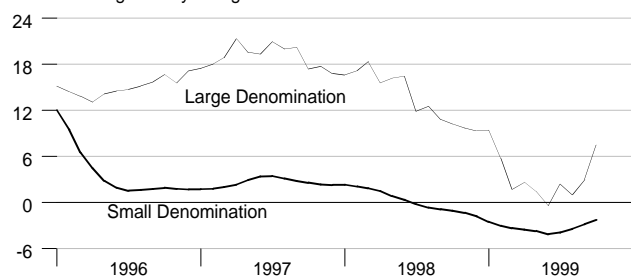
Currency Held by the Nonbank Public

Percent change from year ago



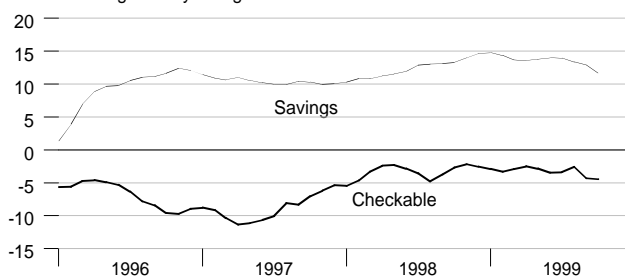
Time Deposits

Percent change from year ago



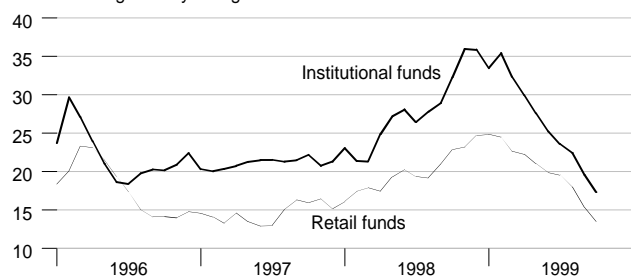
Checkable and Savings Deposits

Percent change from year ago



Money Market Mutual Fund Shares

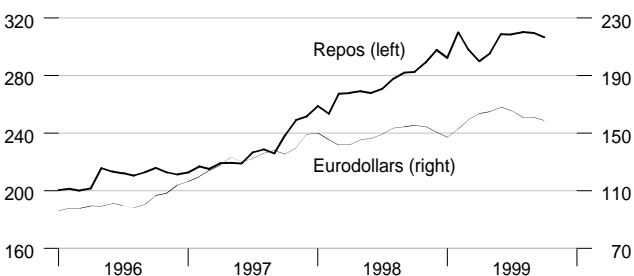
Percent change from year ago



Repurchase Agreements and Eurodollars

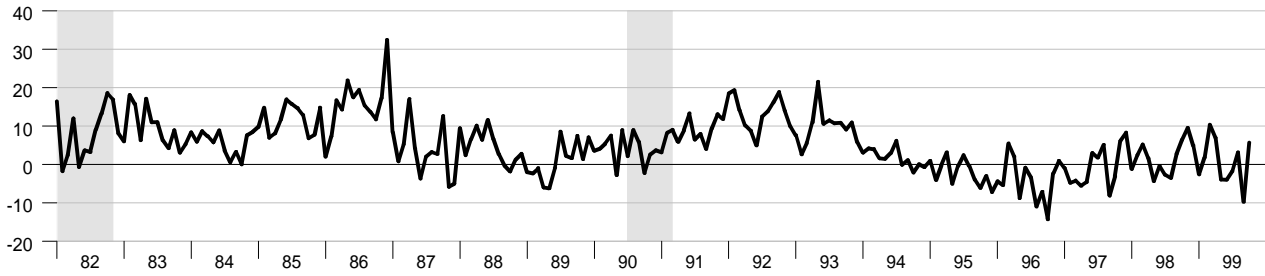
Billions of dollars

Billions of dollars



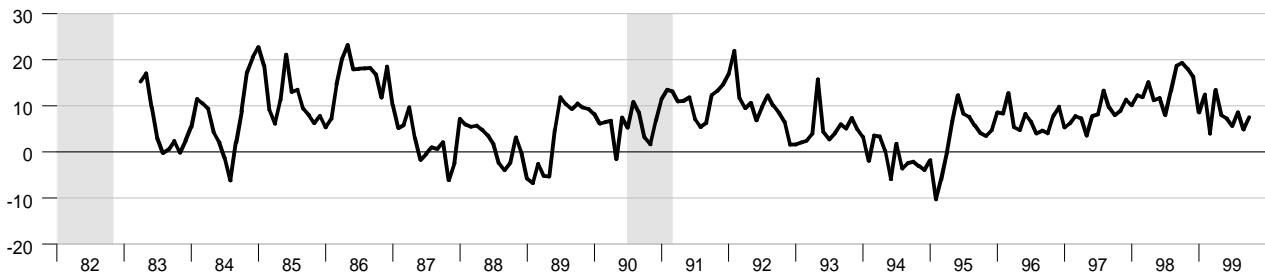
M1

Percent change at an annual rate



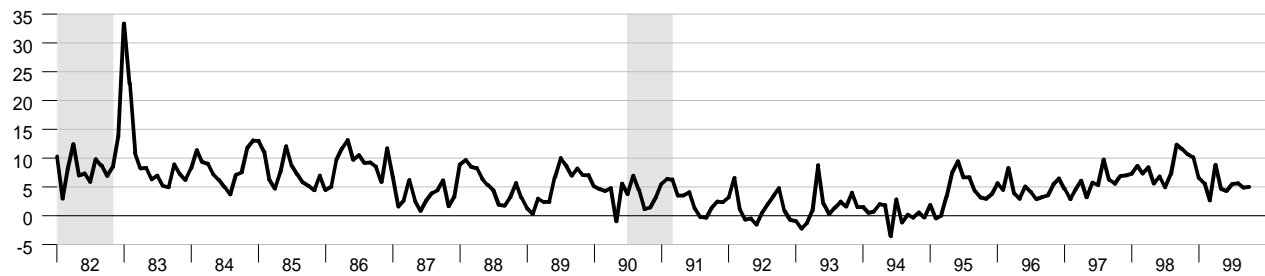
M2

Percent change at an annual rate



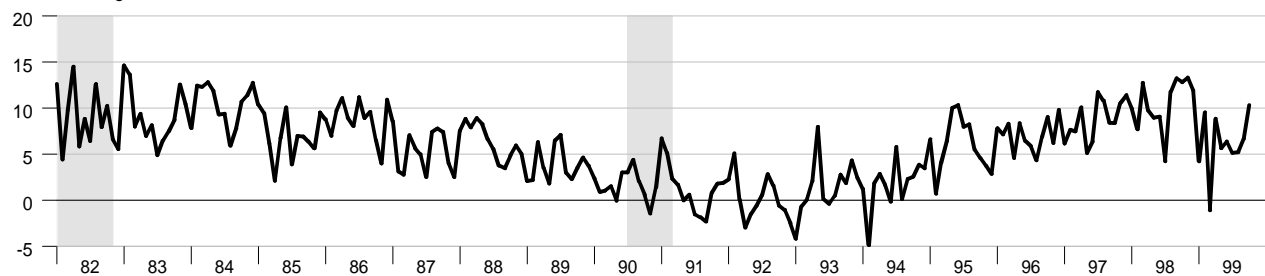
M2

Percent change at an annual rate

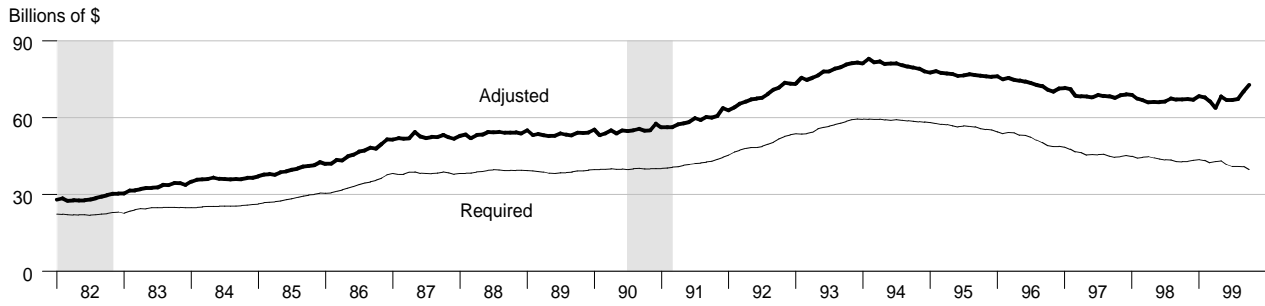


M3

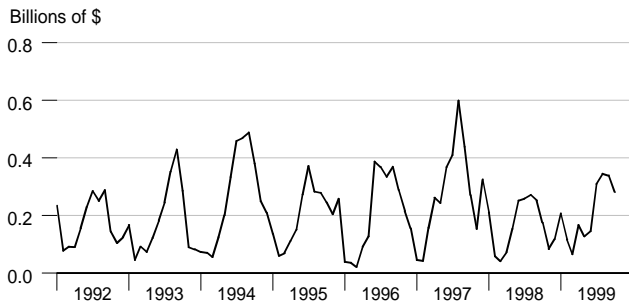
Percent change at an annual rate



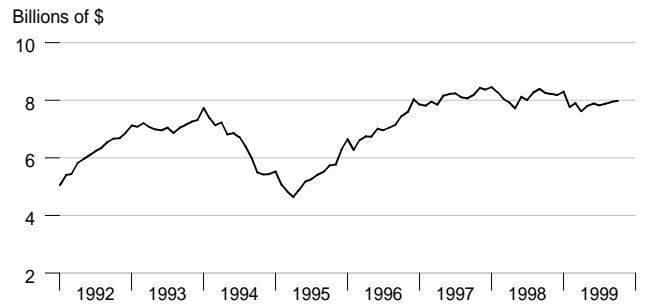
Adjusted and Required Reserves



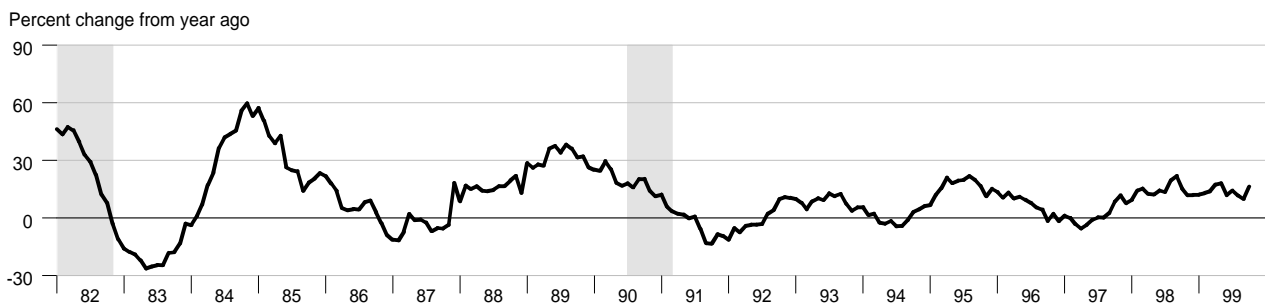
Total Borrowings, nsa



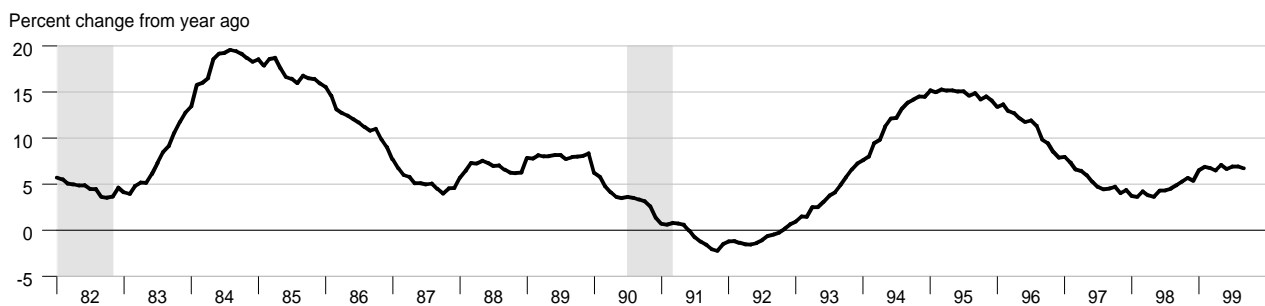
Excess Reserves plus RCB Contracts



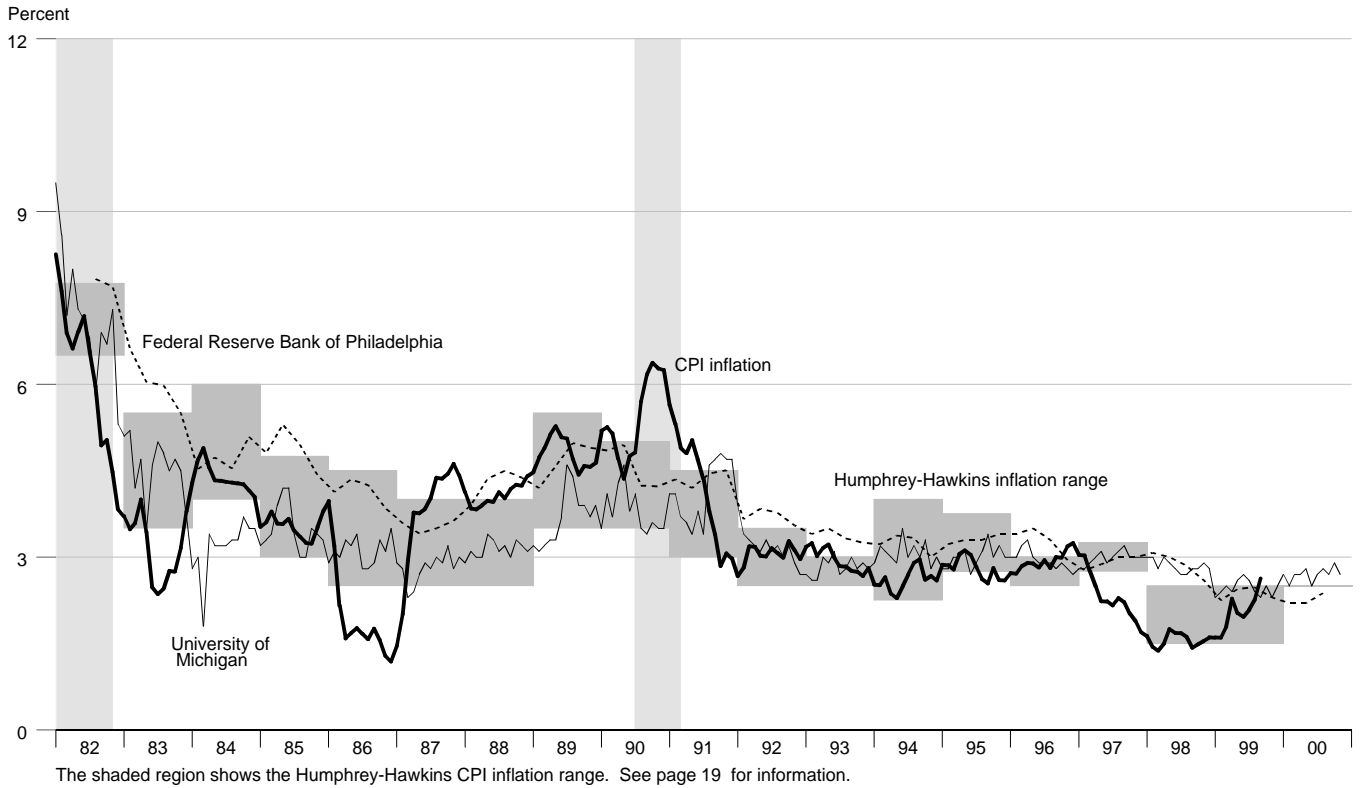
Nonfinancial Commercial Paper



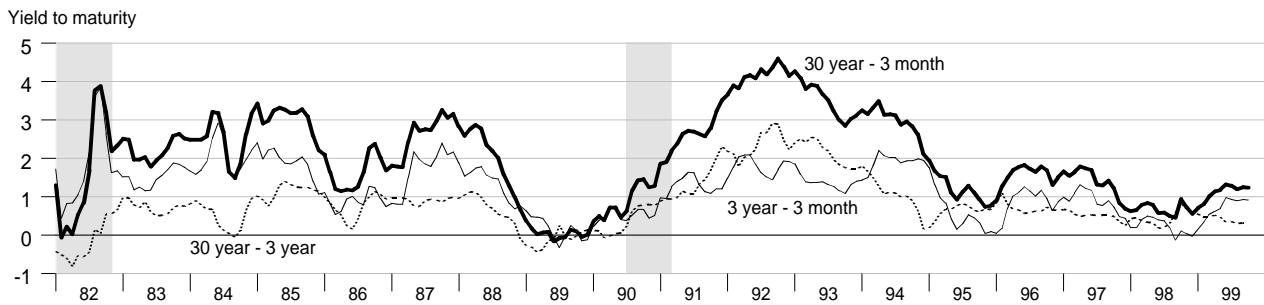
Consumer Credit



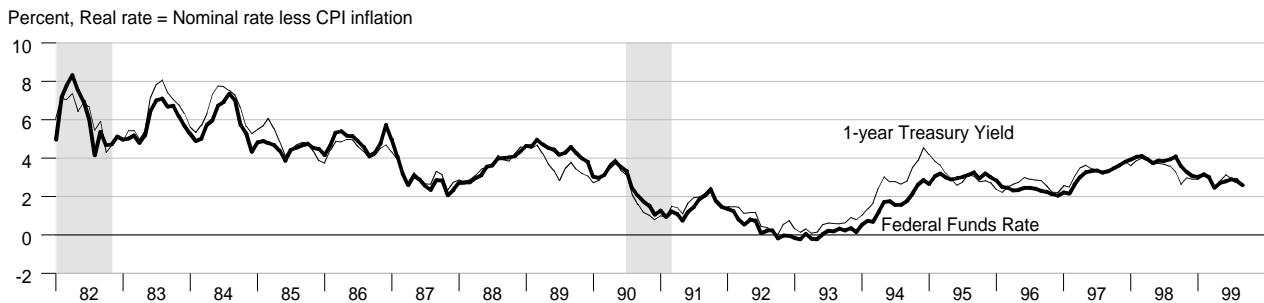
Inflation and Inflation Expectations



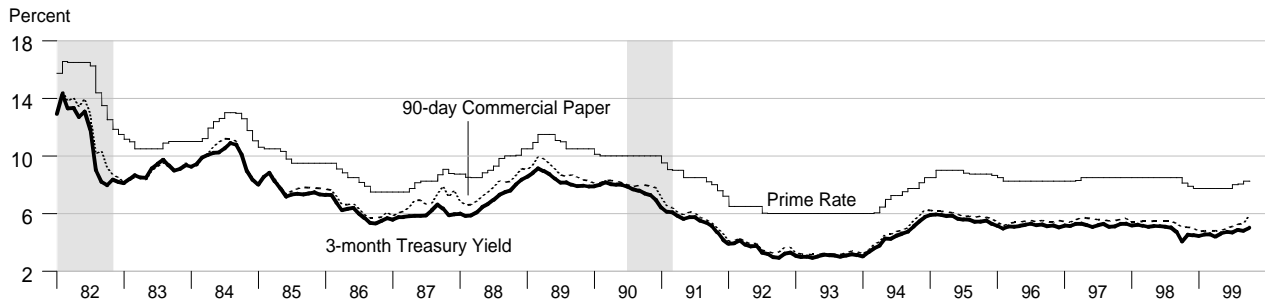
Treasury Security Yield Spreads



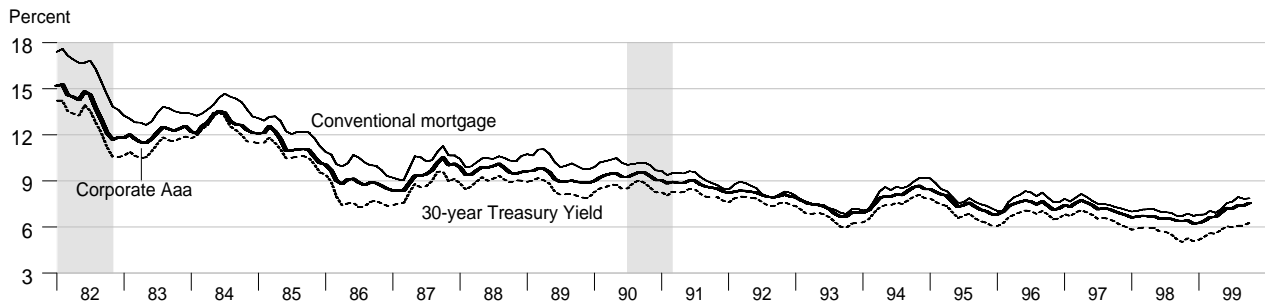
Real Interest Rates



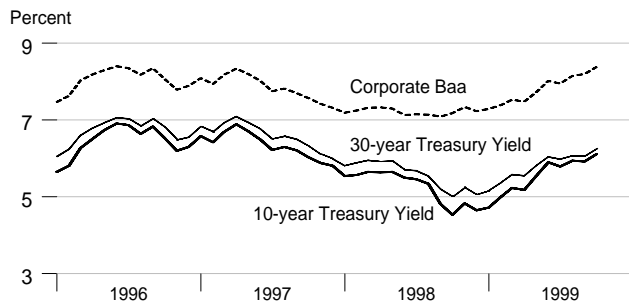
Short Term Interest Rates



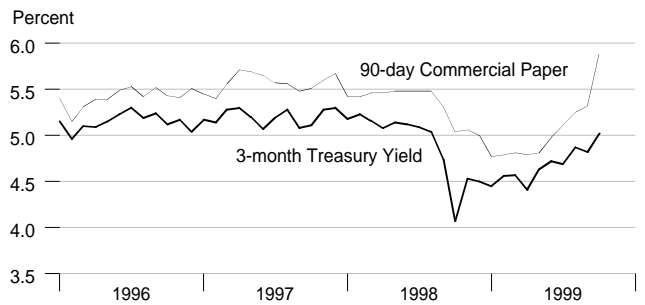
Long Term Interest Rates



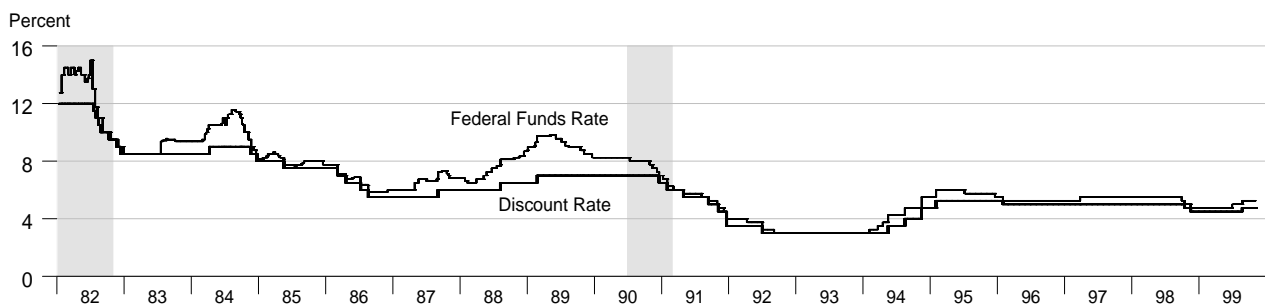
Long Term Interest Rates



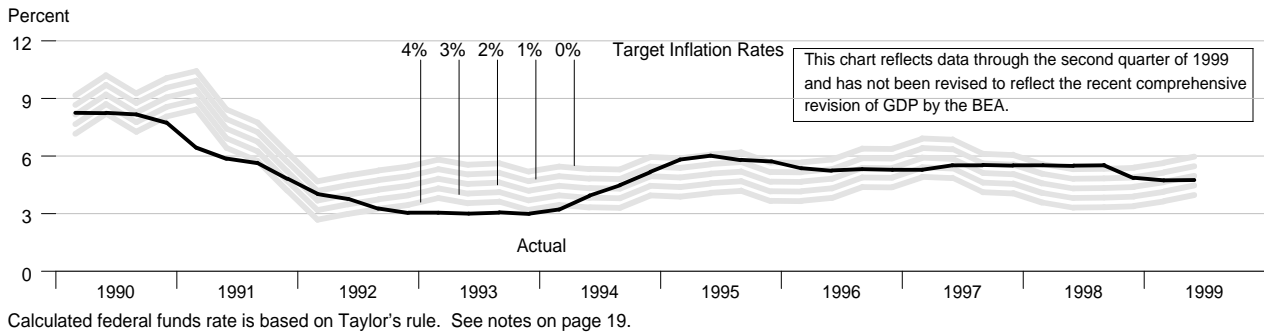
Short Term Interest Rates



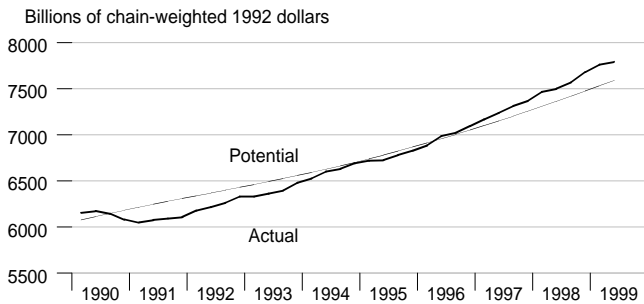
FOMC Expected Federal Funds Rate and Discount Rate



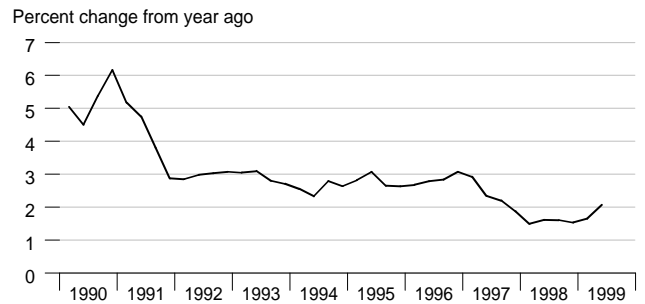
Federal Funds Rate and Inflation Targets



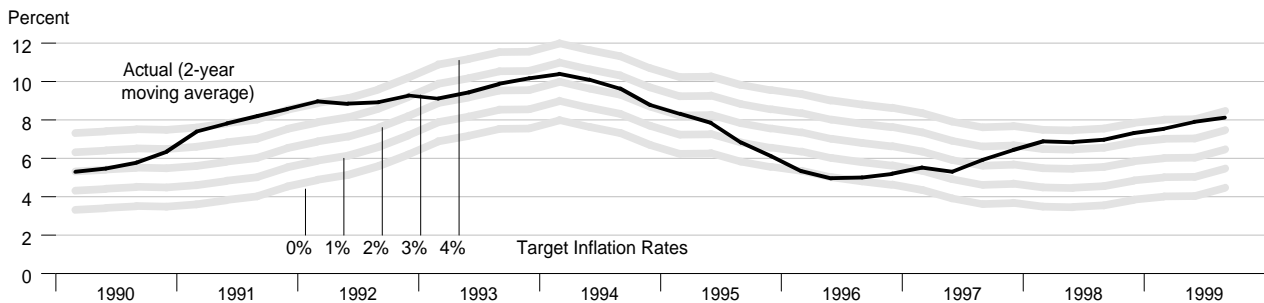
Actual and Potential Real GDP



Actual CPI Inflation

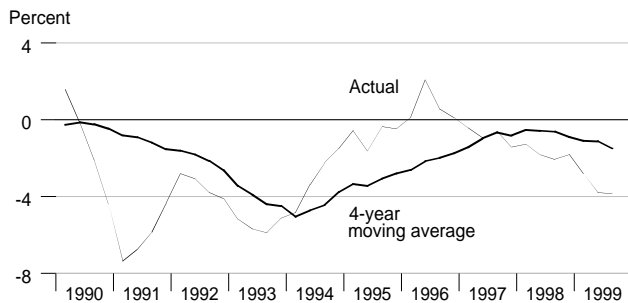


Monetary Base Growth* and Inflation Targets

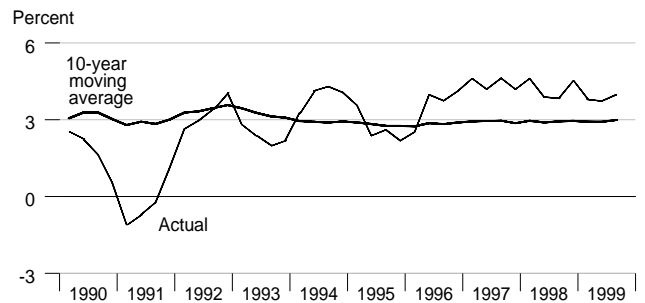


*Modified for the effects of sweeps programs on reserve demand.
Calculated base growth is based on McCallum's rule. See notes on page 19.

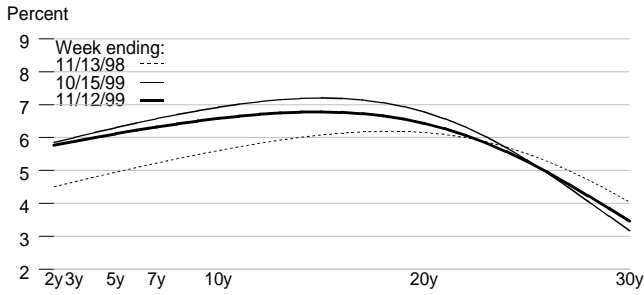
Monetary Base Velocity Growth



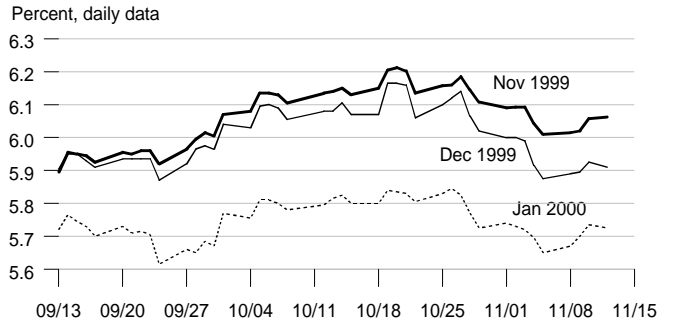
Real Output Growth



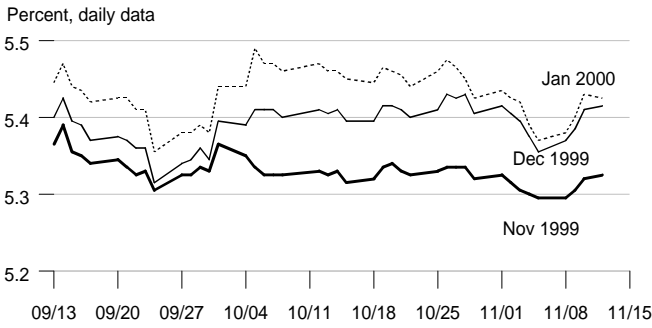
Implied One-Year Forward Rates



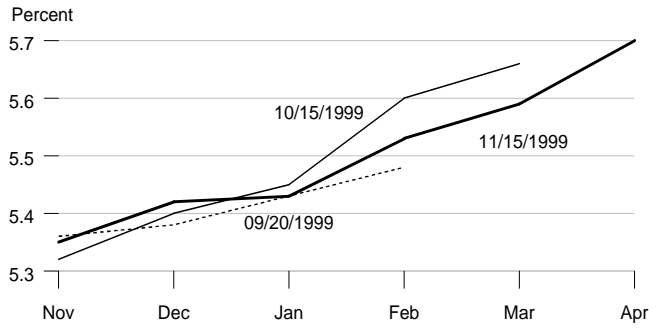
Rates on 3-Month Eurodollar Futures



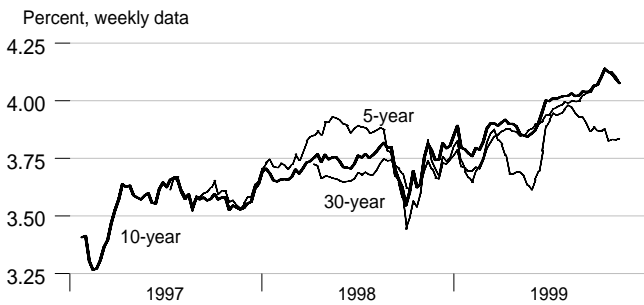
Rates on Selected Fed Funds Futures Contracts



Implied Yields on Fed Funds Futures



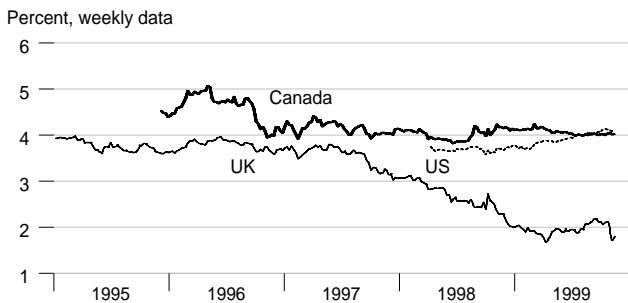
Inflation-Protected Treasury Yields



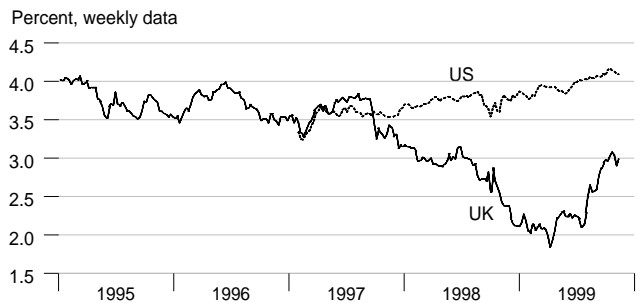
Inflation-Protected Treasury Yield Spreads



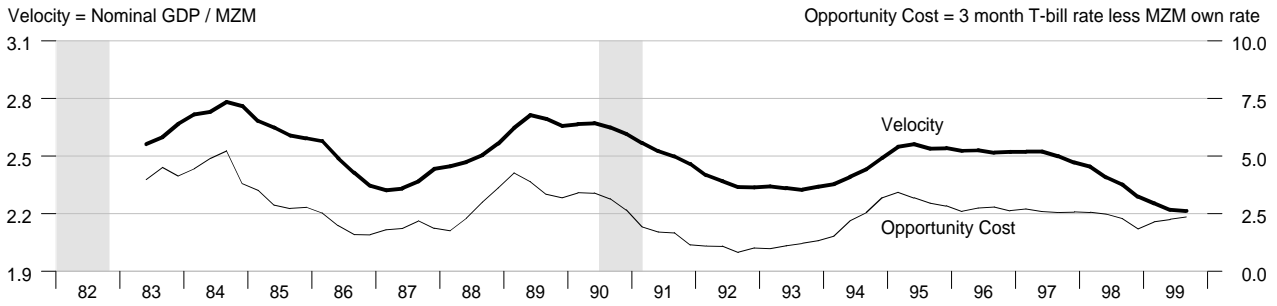
Inflation-Indexed 30-Year Bonds



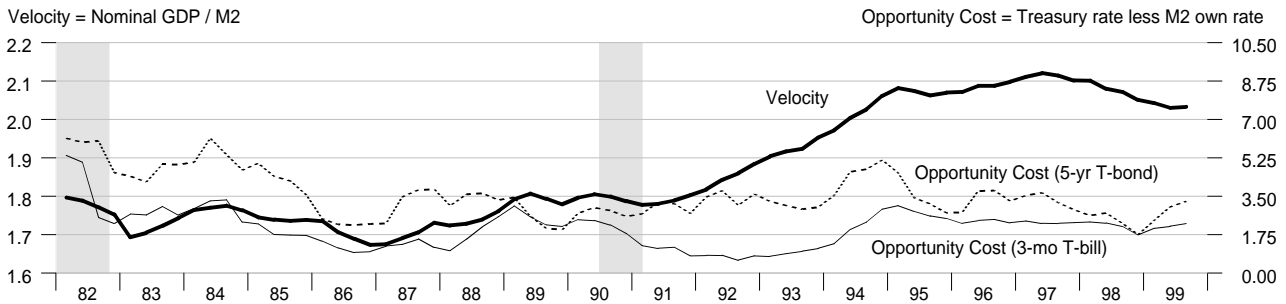
Inflation-Indexed 10-Year Bonds



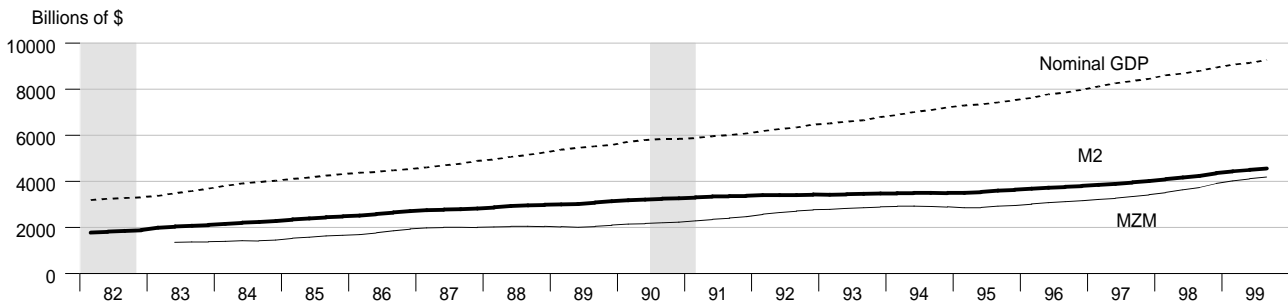
MZM Velocity and Opportunity Cost



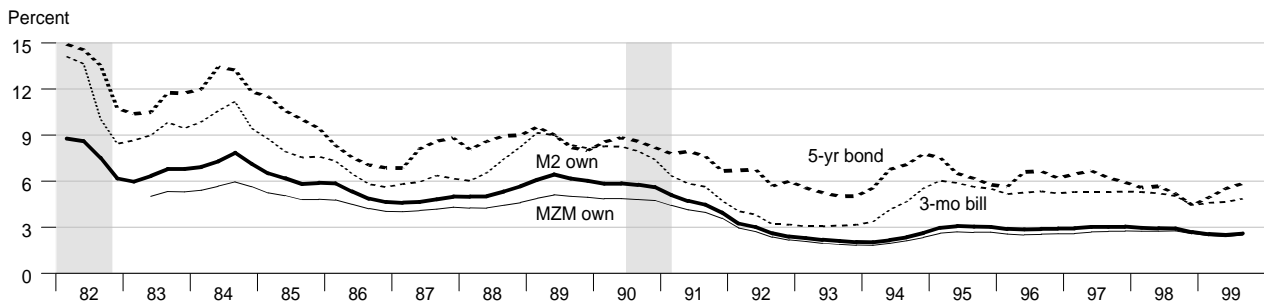
M2 Velocity and Opportunity Cost



M2, MZM and Nominal GDP

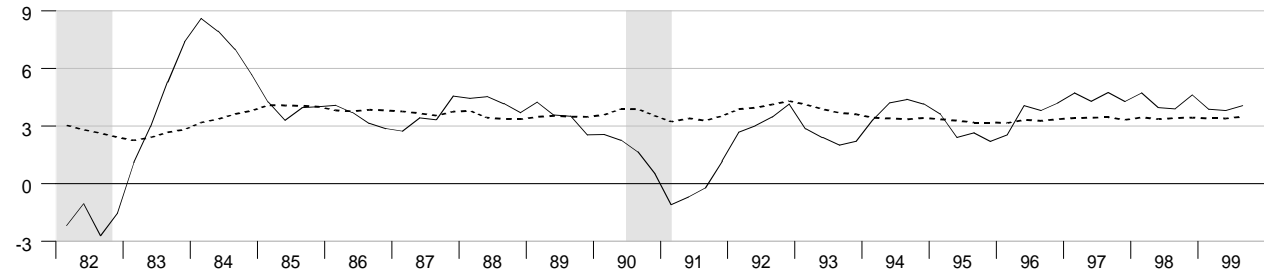


Interest Rates



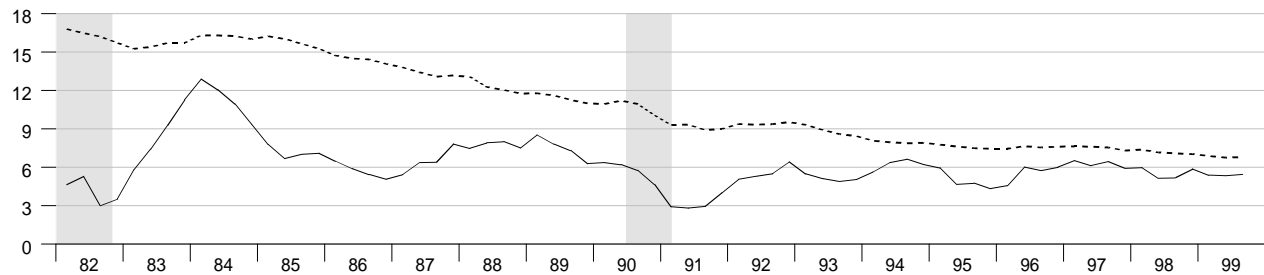
Real Gross Domestic Product

Percent change from year ago



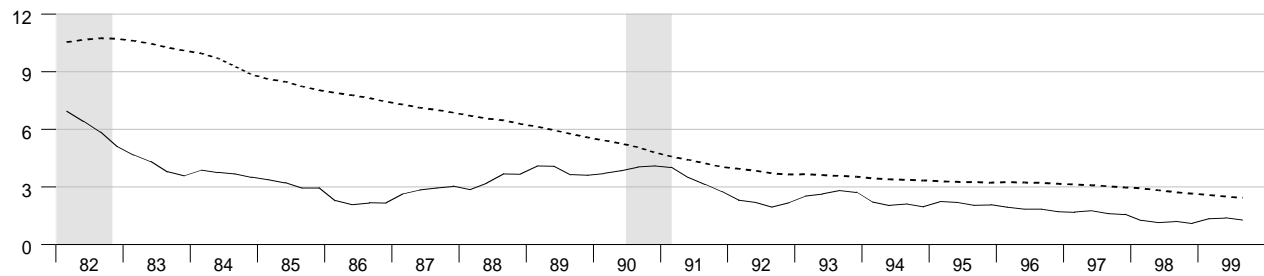
Gross Domestic Product

Percent change from year ago



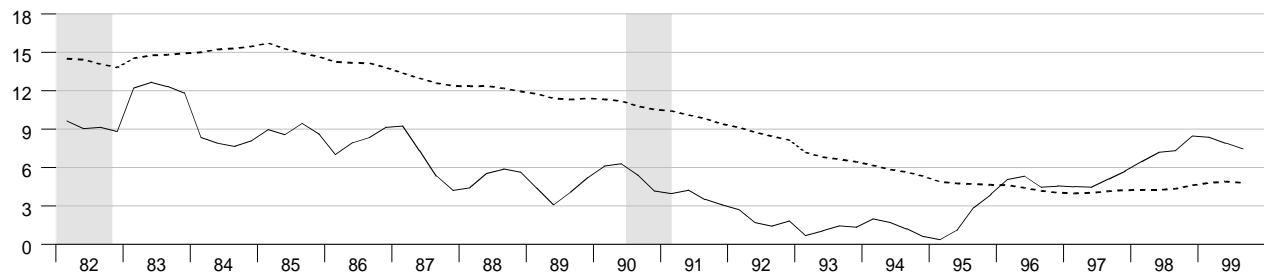
Gross Domestic Product Price Index

Percent change from year ago



M2

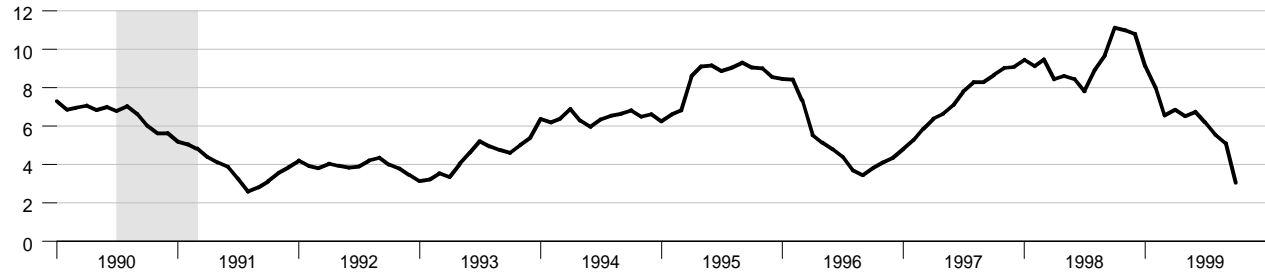
Percent change from year ago



Dashed lines indicate 10-year moving averages

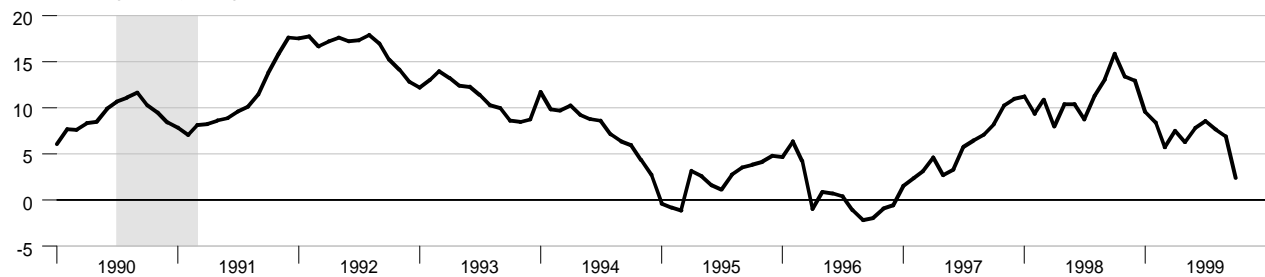
Bank Credit

Percent change from year ago



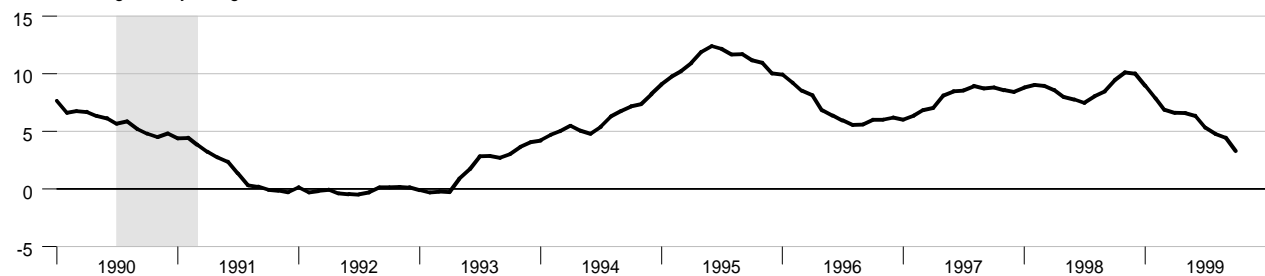
Investment Securities in Bank Credit at Commercial Banks

Percent change from year ago



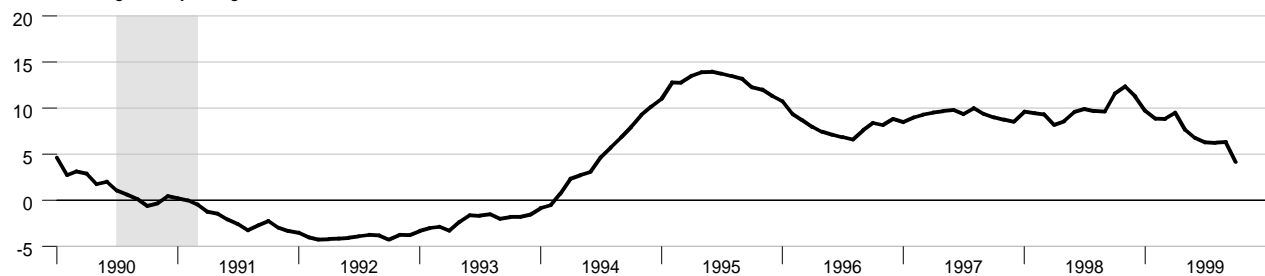
Total Loans and Leases in Bank Credit at Commercial Banks

Percent change from year ago

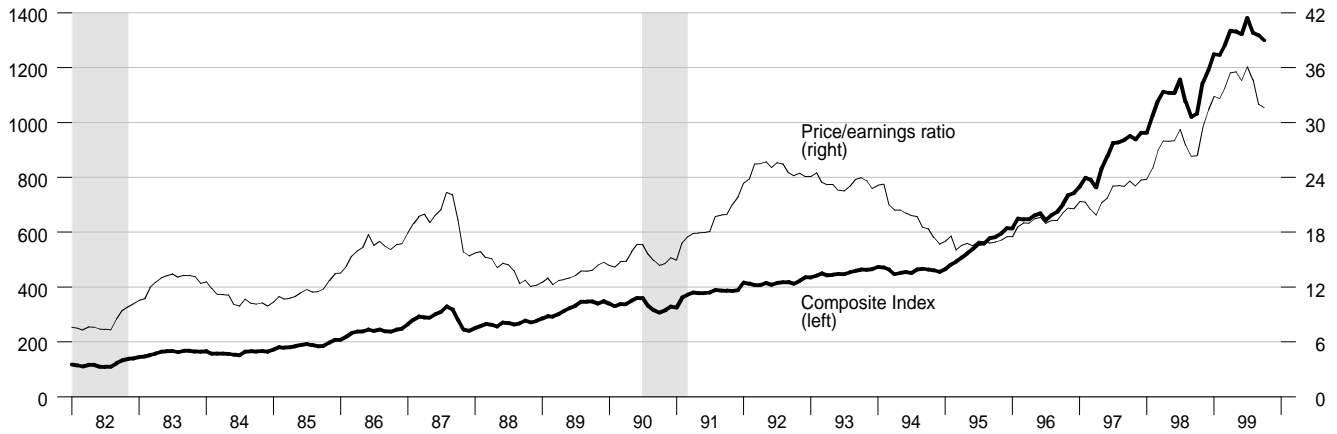


Commercial and Industrial Loans at Commercial Banks

Percent change from year ago



Standard and Poor's 500



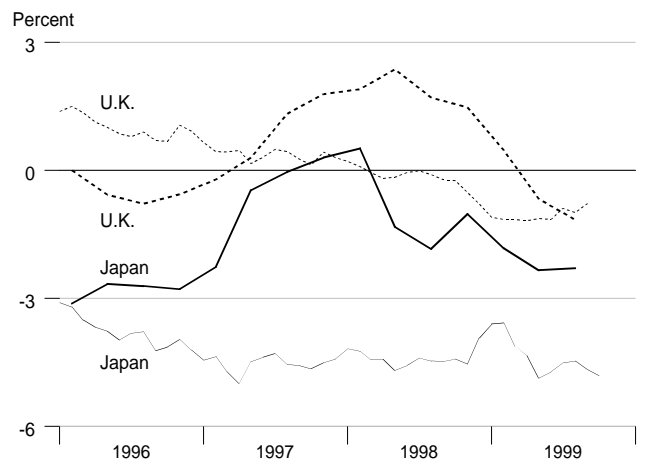
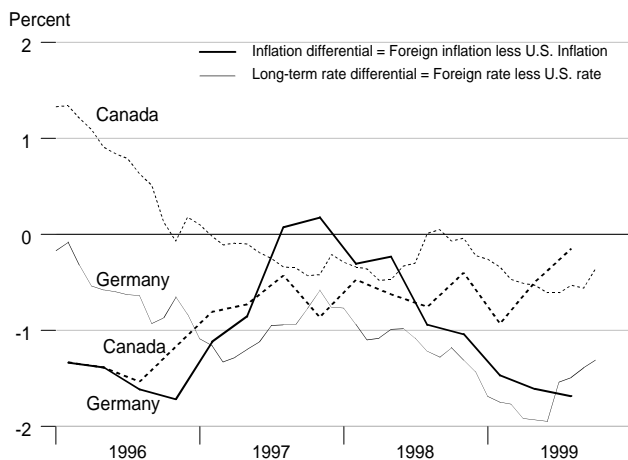
Inflation and Long-Term Interest Rates

Trend in Consumer Price Inflation Rates
Percent change from year ago

Recent Long-Term Government Bond Rates
Percent

	1998Q4	1999Q1	1999Q2	1999Q3	Jul99	Aug99	Sep99	Oct99
United States	1.48	1.73	2.09	2.32	6.22	6.37	6.43	6.60
Canada	1.08	0.80	1.59	2.18	5.61	5.84	5.87	6.24
France	0.37	0.26	0.36	0.53	5.08	5.17	5.35	.
Germany	0.44	0.26	0.48	0.64	4.68	4.88	5.04	5.29
Italy	1.74	1.39	1.44	1.72	4.95	5.16	5.32	5.56
Japan	0.46	-0.10	-0.25	0.03	1.71	1.90	1.76	1.79
United Kingdom	2.96	2.20	1.42	1.17	5.33	5.38	5.65	.

Inflation and Long-Term Interest Rates Differentials



		Money Stock				Bank			
		M1	MZM	M2	M3	Credit	Monetary Base	Reserves	MSI M2
1994		1145.340	2919.235	3500.100	4303.777	3230.013	421.574	80.684	205.514
1995		1142.820	2905.387	3572.376	4499.721	3500.404	443.511	76.849	210.302
1996		1106.126	3095.474	3745.602	4796.153	3684.033	455.586	73.415	217.734
1997		1069.573	3317.480	3931.295	5176.320	3952.216	478.753	68.918	226.990
1998		1079.456	3702.138	4221.138	5700.668	4324.270	508.978	66.952	242.089
1997	1	1076.381	3221.703	3849.846	5012.635	3830.573	470.027	70.409	222.780
	2	1065.603	3274.106	3895.394	5109.916	3911.280	473.896	68.177	225.080
	3	1068.155	3347.031	3956.934	5228.843	3991.653	480.945	68.565	228.280
	4	1068.155	3427.080	4023.005	5353.886	4075.358	490.144	68.519	231.820
1998	1	1076.826	3521.466	4099.036	5490.882	4188.465	498.387	67.711	235.857
	2	1079.349	3635.433	4175.386	5628.141	4243.587	502.060	66.084	239.787
	3	1074.077	3741.066	4246.608	5748.823	4342.740	511.592	66.951	243.463
	4	1087.571	3910.588	4363.523	5934.823	4522.286	523.871	67.063	249.250
1999	1	1095.220	4025.421	4442.022	6046.987	4518.692	536.301	67.557	252.993
	2	1104.750	4119.481	4505.467	6133.942	4527.762	545.930	66.311	256.440
	3	1098.426	4189.719	4563.534	6221.103	4586.334	558.018	68.128	259.637
1997	Oct	1062.064	3399.477	3999.803	5305.712	4040.648	485.892	67.709	230.560
	Nov	1067.528	3424.764	4022.827	5352.539	4080.693	490.783	68.772	231.750
	Dec	1074.873	3457.000	4046.385	5403.407	4104.732	493.756	69.076	233.150
1998	Jan	1073.810	3486.131	4071.076	5448.172	4159.574	496.198	68.918	234.430
	Feb	1076.021	3521.706	4100.450	5483.148	4187.995	499.555	67.414	235.900
	Mar	1080.646	3556.561	4125.581	5541.327	4217.827	499.408	66.801	237.240
	Apr	1082.094	3601.279	4154.526	5586.189	4220.744	499.601	66.000	238.870
	May	1078.171	3634.842	4173.935	5627.871	4242.645	502.385	66.134	239.650
	Jun	1077.782	3670.178	4197.696	5670.364	4267.371	504.193	66.117	240.840
	Jul	1075.365	3694.535	4215.098	5690.425	4287.096	507.677	66.366	241.950
	Aug	1072.214	3735.309	4240.558	5746.351	4346.583	511.093	67.434	243.160
	Sep	1074.653	3793.355	4284.168	5809.694	4394.541	516.006	67.052	245.280
	Oct	1080.404	3854.353	4325.546	5871.776	4489.826	520.803	67.055	247.330
	Nov	1088.956	3912.146	4364.036	5936.876	4528.970	524.379	67.183	249.300
	Dec	1093.354	3965.264	4400.986	5995.818	4548.063	526.432	66.952	251.120
1999	Jan	1091.000	3993.505	4424.960	6016.954	4538.600	531.713	68.375	252.230
	Feb	1092.648	4034.733	4445.571	6064.727	4523.238	538.145	67.918	253.050
	Mar	1102.013	4048.025	4455.534	6059.281	4494.239	539.045	66.379	253.700
	Apr	1108.398	4093.213	4488.319	6103.929	4509.467	539.623	63.827	255.560
	May	1104.751	4120.289	4505.870	6132.664	4518.816	548.349	68.239	256.450
	Jun	1101.102	4144.940	4522.213	6165.232	4555.003	549.818	66.868	257.310
	Jul	1099.506	4164.320	4543.075	6191.628	4552.422	553.082	66.902	258.500
	Aug	1102.353	4193.943	4564.459	6218.564	4587.573	556.746	67.283	259.640
	Sep	1093.420	4210.893	4583.067	6253.117	4619.007	564.226	70.198	260.770
	Oct	1098.573	4237.099	4602.275	6306.904	4626.616	572.948	72.766	261.820

*All values are given in billions of dollars

		Federal	Discount	Prime	3-mo	Treasury Yields			Corporate	S & L	Conventional
		Funds	Rate	Rate		CDs	3 mo	3 yr	30 yr	Aaa Bonds	
1994		4.20	3.60	7.14	4.63	4.37	6.26	7.37	7.96	5.77	8.35
1995		5.84	5.21	8.83	5.92	5.66	6.26	6.88	7.59	5.80	7.95
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
1997	1	5.28	5.00	8.27	5.44	5.20	6.19	6.82	7.43	5.44	7.79
	2	5.52	5.00	8.50	5.69	5.19	6.42	6.93	7.57	5.49	7.93
	3	5.53	5.00	8.50	5.60	5.18	6.01	6.53	7.17	5.23	7.47
	4	5.51	5.00	8.50	5.73	5.23	5.78	6.14	6.88	5.14	7.20
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
1997	Oct	5.50	5.00	8.50	5.65	5.11	5.84	6.33	7.00	5.19	7.29
	Nov	5.52	5.00	8.50	5.74	5.28	5.76	6.11	6.87	5.19	7.21
	Dec	5.50	5.00	8.50	5.80	5.30	5.74	5.99	6.76	5.03	7.10
1998	Jan	5.56	5.00	8.50	5.54	5.18	5.38	5.81	6.61	4.88	6.99
	Feb	5.51	5.00	8.50	5.54	5.23	5.43	5.89	6.67	4.92	7.04
	Mar	5.49	5.00	8.50	5.58	5.16	5.57	5.95	6.72	5.03	7.13
	Apr	5.45	5.00	8.50	5.58	5.08	5.58	5.92	6.69	5.00	7.14
	May	5.49	5.00	8.50	5.59	5.14	5.61	5.93	6.69	5.04	7.14
	Jun	5.56	5.00	8.50	5.60	5.12	5.52	5.70	6.53	4.97	7.00
	Jul	5.54	5.00	8.50	5.59	5.09	5.47	5.68	6.55	5.01	6.95
	Aug	5.55	5.00	8.50	5.58	5.04	5.24	5.54	6.52	5.01	6.92
	Sep	5.51	5.00	8.49	5.41	4.74	4.62	5.20	6.40	4.84	6.72
	Oct	5.07	4.86	8.12	5.21	4.07	4.18	5.01	6.37	4.76	6.71
	Nov	4.83	4.63	7.89	5.24	4.53	4.57	5.25	6.41	4.87	6.87
	Dec	4.68	4.50	7.75	5.14	4.50	4.48	5.06	6.22	4.83	6.72
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

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

		M1	MZM	M2	M3
Percent change from previous period					
<hr/>					
1994		6.17	2.61	1.38	1.60
1995		-0.22	-0.47	2.06	4.55
1996		-3.21	6.54	4.85	6.59
1997		-3.30	7.17	4.96	7.93
1998		0.92	11.59	7.37	10.13
<hr/>					
1997	1	-0.47	1.77	1.19	1.87
	2	-1.00	1.63	1.18	1.94
	3	0.24	2.23	1.58	2.33
	4	0.00	2.39	1.67	2.39
1998	1	0.81	2.75	1.89	2.56
	2	0.23	3.24	1.86	2.50
	3	-0.49	2.91	1.71	2.14
	4	1.26	4.53	2.75	3.24
1999	1	0.70	2.94	1.80	1.89
	2	0.87	2.34	1.43	1.44
	3	-0.57	1.71	1.29	1.42
<hr/>					
1997	Oct	-0.26	0.66	0.46	0.70
	Nov	0.51	0.74	0.58	0.88
	Dec	0.69	0.94	0.59	0.95
<hr/>					
1998	Jan	-0.10	0.84	0.61	0.83
	Feb	0.21	1.02	0.72	0.64
	Mar	0.43	0.99	0.61	1.06
<hr/>					
	Apr	0.13	1.26	0.70	0.81
	May	-0.36	0.93	0.47	0.75
	Jun	-0.04	0.97	0.57	0.76
<hr/>					
	Jul	-0.22	0.66	0.41	0.35
	Aug	-0.29	1.10	0.60	0.98
	Sep	0.23	1.55	1.03	1.10
<hr/>					
	Oct	0.54	1.61	0.97	1.07
	Nov	0.79	1.50	0.89	1.11
	Dec	0.40	1.36	0.85	0.99
<hr/>					
1999	Jan	-0.22	0.71	0.54	0.35
	Feb	0.15	1.03	0.47	0.79
	Mar	0.86	0.33	0.22	-0.09
<hr/>					
	Apr	0.58	1.12	0.74	0.74
	May	-0.33	0.66	0.39	0.47
	Jun	-0.33	0.60	0.36	0.53
<hr/>					
	Jul	-0.14	0.47	0.46	0.43
	Aug	0.26	0.71	0.47	0.44
	Sep	-0.81	0.40	0.41	0.56
<hr/>					
	Oct	0.47	0.62	0.42	0.86

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. **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

$$f_t^* = 2.0 + \pi_{t-1} + (\pi_{t-1} - \pi^*)/2 + 100 \times (y_{t-1} - y_{t-1}^P)/2$$

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 (CPI), 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

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

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 $m = 1, \dots, 30$ 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. For a discussion of the use of forward rates as indicators of inflation expectations, see Sharpe (1997). **Rates on 3-Month Euro-dollar 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 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 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.