August 1999

MonetaryTrends

THE FEDERAL RESERVE BANK of ST. LOUIS

Has the Quality of Bank Loans Deteriorated?

In recent years, bank supervisors have expressed concern about a deterioration in the standards of banks for underwriting loans. Examining recent trends in nonperforming loans at commercial banks through the first quarter of 1999 can help determine whether this concern is justified.

Nonperforming loans are identified as those past due 90 days or more or in nonaccrual status. Banks classify loans as nonaccrual when they cease to count interest due on the loans as current income. Banks report the amount of their loans that were nonperforming as of the end of each quarter.

Supervisors' comments about bank underwriting practices have tended to focus more on commercial and industrial (C&I) loans than some of the other categories of bank loans. The first table indicates that there was a rise in the nonperforming rate on C&I loans in the first quarter among banks in each size group. Among the banks with total assets above $1 billion, the nonperforming rate in the first quarter was higher than in any quarter in the prior two years.

There are reasons to doubt whether the first-quarter data are the beginning of a new trend. For one thing, there appears to be a seasonal pattern in the nonperforming rates for banks with total assets below $20 billion. For these banks, the nonperforming rates rose during the first quarters of 1997 and 1998. This seasonal pattern reflects a tendency of smaller banks to charge off more of their nonperforming loans as losses in the fourth quarter of the year.

In addition, the first-quarter nonperforming rate for all bank loans, shown in the second table, has not deteriorated relative to the last two years. For the banks in each size group, the percentage of total loans that were nonperforming in the first quarter of this year was within the range of quarterly observations in the last two years.

In any event, nonperforming rates on C&I loans and total loans remain far below the levels of the late 1980s and early 1990s, when the rates were several percentage points higher. By the standard of this earlier period, when banks had serious loan quality problems, loan quality appears to be very good.

—Alton Gilbert

Percentage of Commercial and Industrial Loans That Are Nonperforming
Total assets of banks (millions of dollars)

Quarter	Up to $300	$300 to $1,000	$1,000 to $10,000	$10,000 to $20,000	Over $20,000
1996 IV	2.0308	1.1173	0.9017	0.7189	0.8612
1997 I	2.2490	1.2051	0.9594	0.7806	0.7691
II	2.2065	1.1466	0.9709	0.7382	0.7696
III	2.1566	1.1404	0.9136	0.7405	0.7444
IV	1.9189	0.9811	0.8322	0.6076	0.7233
1998 I	2.1490	1.0000	0.9015	0.7146	0.8494
II	2.1595	1.0377	0.9113	0.7395	0.8100
III	2.1826	1.0372	0.9651	0.8232	0.8098
IV	2.0483	0.9547	0.9030	0.8281	0.8919
1999 I	2.2310	1.0828	1.0141	0.9719	1.0021

Percentage of Total Loans That Are Nonperforming
Total assets of banks (millions of dollars)

Quarter	Up to $300	$300 to $1,000	$1,000 to $10,000	$10,000 to $20,000	Over $20,000
1996 IV	0.9986	0.9612	1.1366	1.0007	1.0051
1997 I	1.0389	0.9595	1.1159	1.0170	1.0305
II	1.0044	0.9156	1.1167	1.0817	0.9302
III	0.9886	0.8878	1.1241	1.1330	0.9098
IV	0.9178	0.8424	1.0693	1.1165	0.9124
1998 I	0.9796	0.8509	1.0674	1.1484	0.9256
II	0.9710	0.8346	1.0317	1.0840	0.8857
III	0.9766	0.8351	1.0505	1.1402	0.8686
IV	0.9430	0.7918	1.0239	1.0958	0.9437
1999 I	0.9760	0.8210	0.9873	1.1897	0.9780

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Conventions used in this publication:

1. Data presented in the charts and tables are through June 1999. 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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Please Note: For clarity, a change has been made in the presentation of quarterly data appearing on pages 10, 12 and 13. Rather than plotting observations on the first day of the quarter, observations will now be plotted as of the first day of the last month of the quarter.

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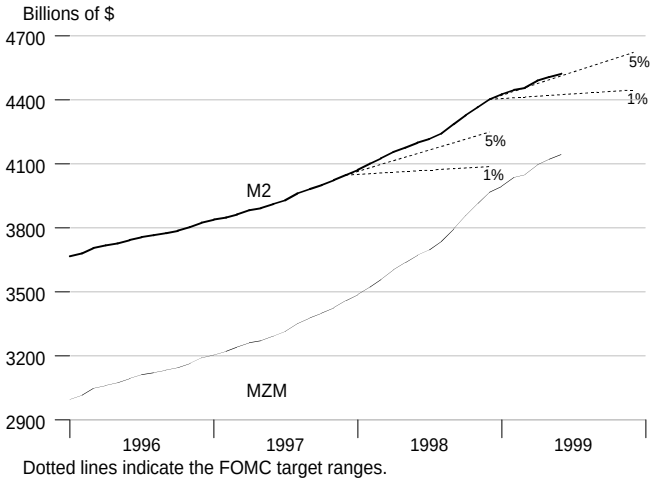
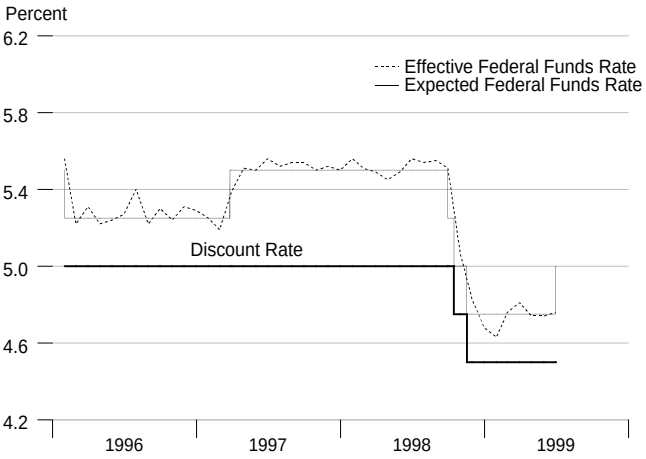
M2 and MZM

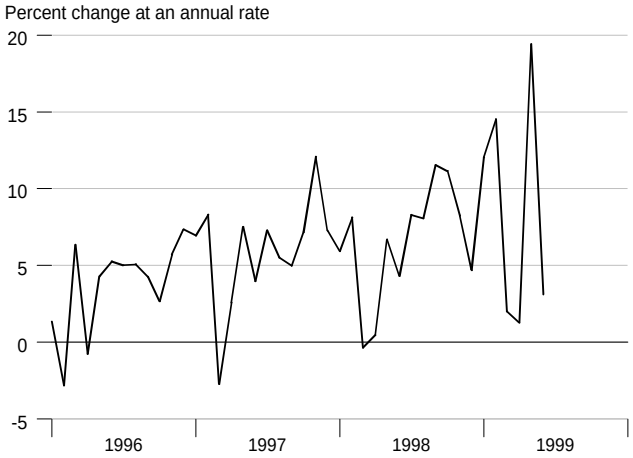


Dotted lines indicate the FOMC target ranges.

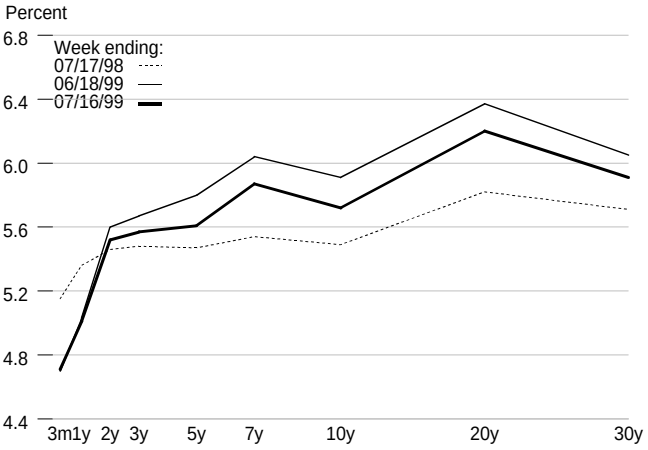
Reserve Market Rates



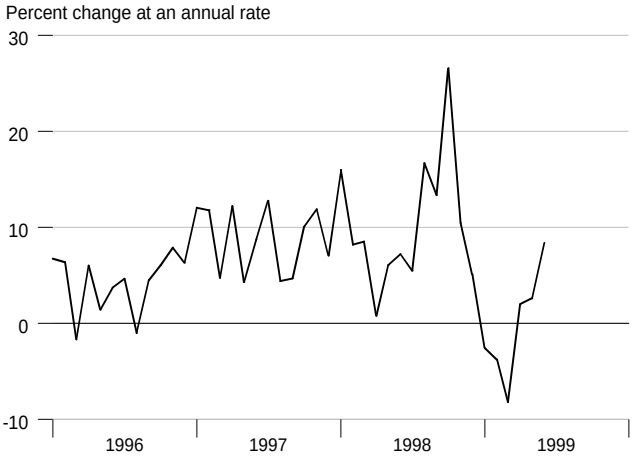
Adjusted Monetary Base



Treasury Yield Curve



Total Bank Credit

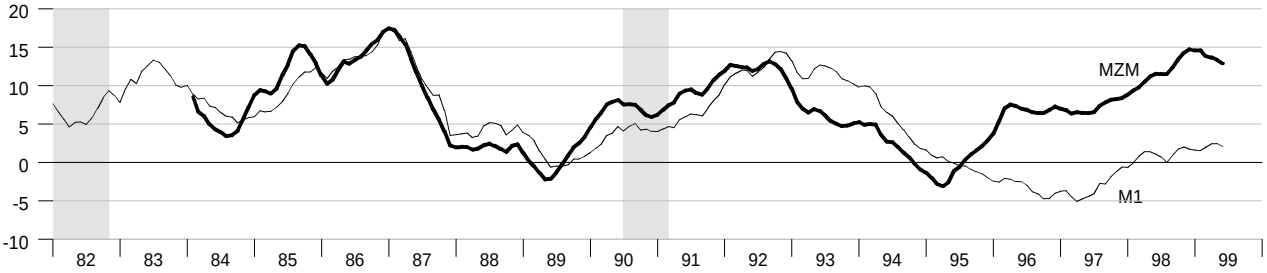


Interest Rates

	Apr 99	May 99	Jun 99
Federal Funds Rate	4.74	4.74	4.76
Discount Rate	4.50	4.50	4.50
Prime Rate	7.75	7.75	7.75
Conventional Mortgage Rate	6.92	7.15	7.55
Treasury Yields:			
3-month constant maturity	4.41	4.63	4.72
6-month constant maturity	4.54	4.75	5.03
1-year constant maturity	4.69	4.85	5.10
3-year constant maturity	5.03	5.33	5.70
5-year constant maturity	5.08	5.44	5.81
10-year constant maturity	5.18	5.54	5.90
30-year constant maturity	5.55	5.81	6.04

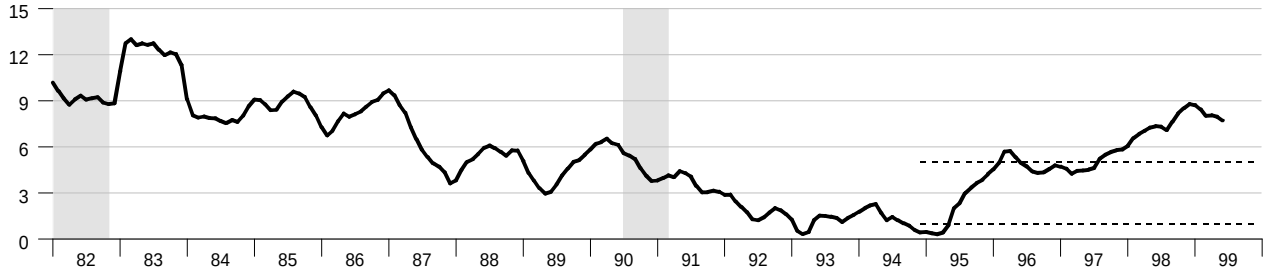
MZM and M1

Percent change from year ago



M2

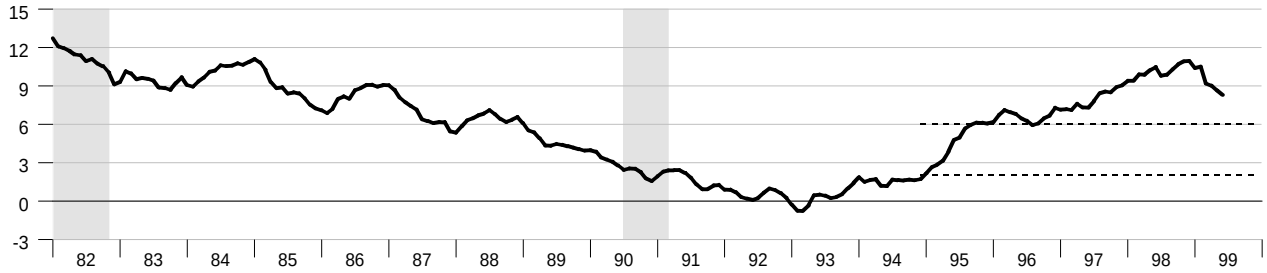
Percent change from year ago



Dotted lines indicate the FOMC target ranges.

M3

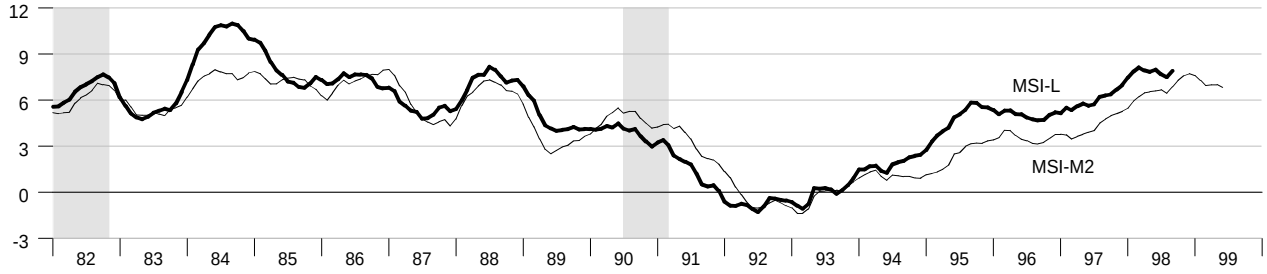
Percent change from year ago



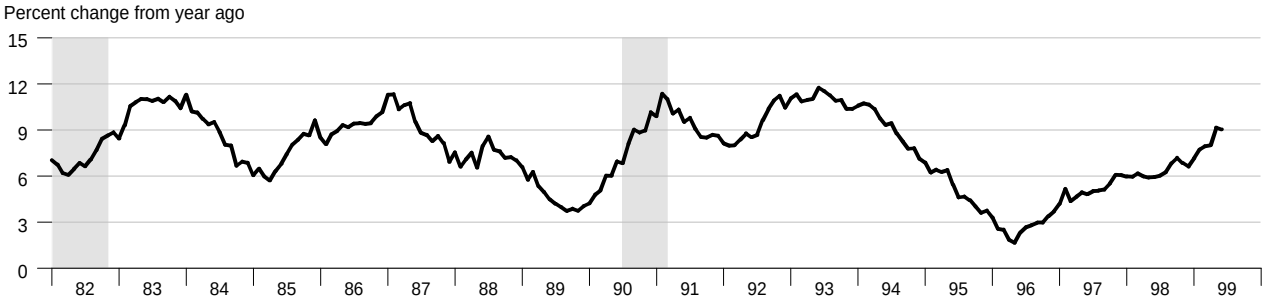
Dotted lines indicate the FOMC target ranges.

Monetary Services Indexes - M2 and L

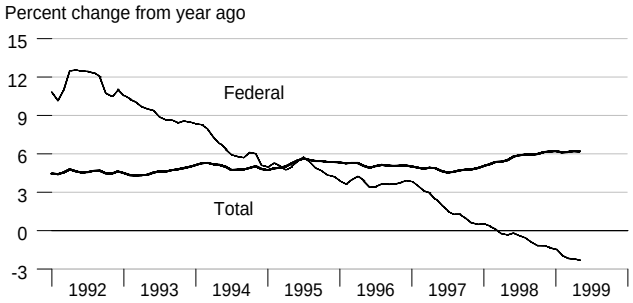
Percent change from year ago



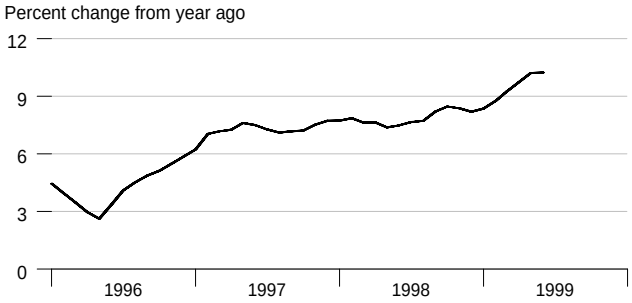
Adjusted Monetary Base



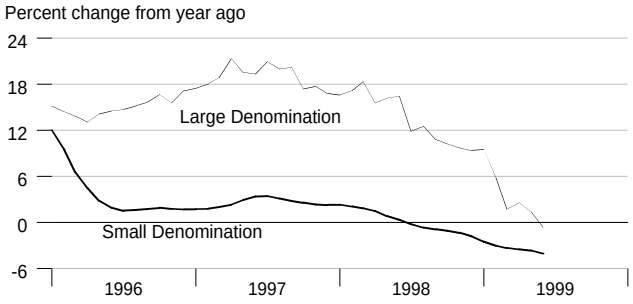
Domestic Nonfinancial Debt



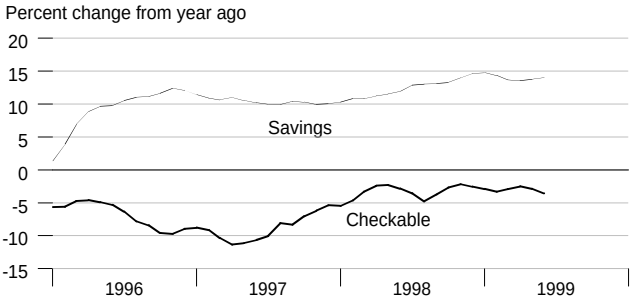
Currency Held by the Nonbank Public



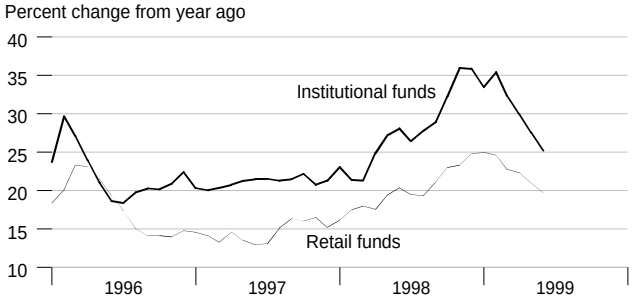
Time Deposits



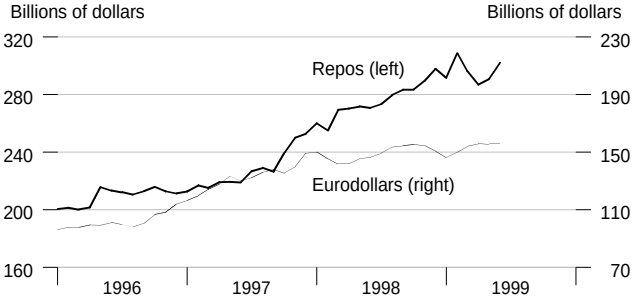
Checkable and Savings Deposits



Money Market Mutual Fund Shares

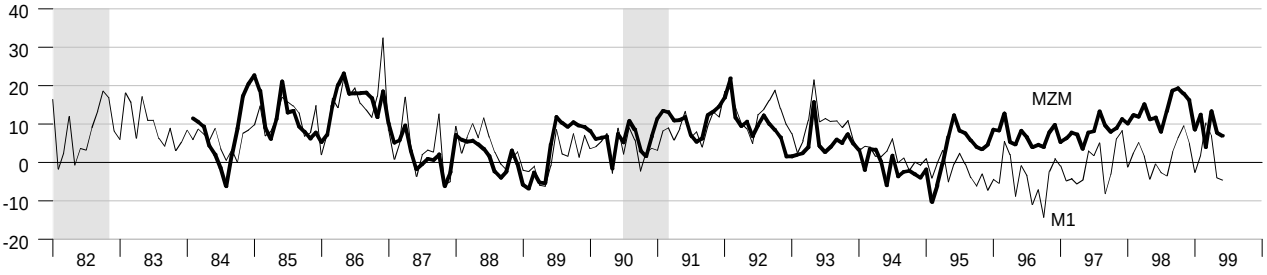


Repurchase Agreements and Eurodollars



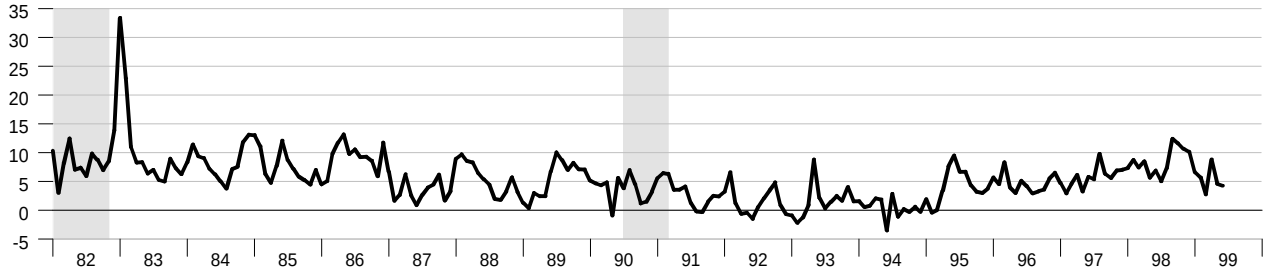
MZM and M1

Percent change at an annual rate



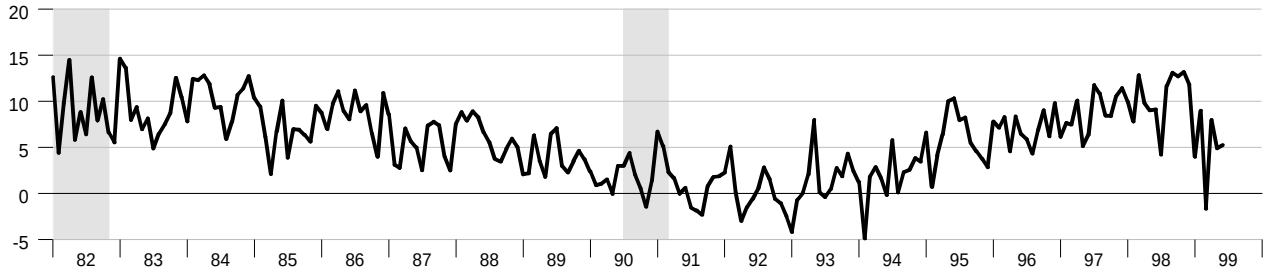
M2

Percent change at an annual rate



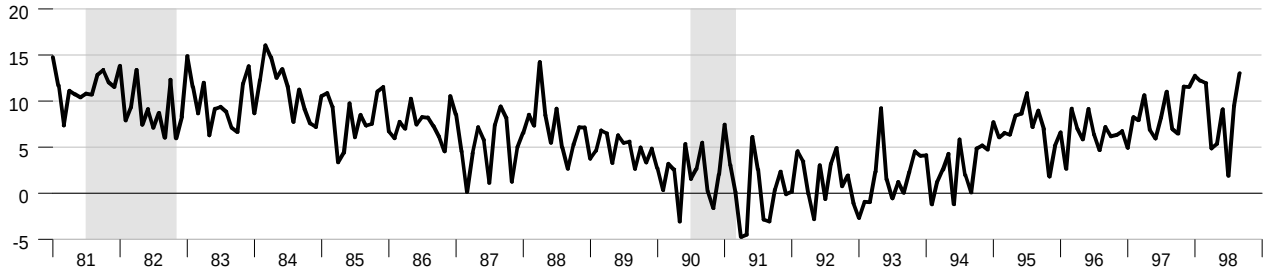
M3

Percent change at an annual rate

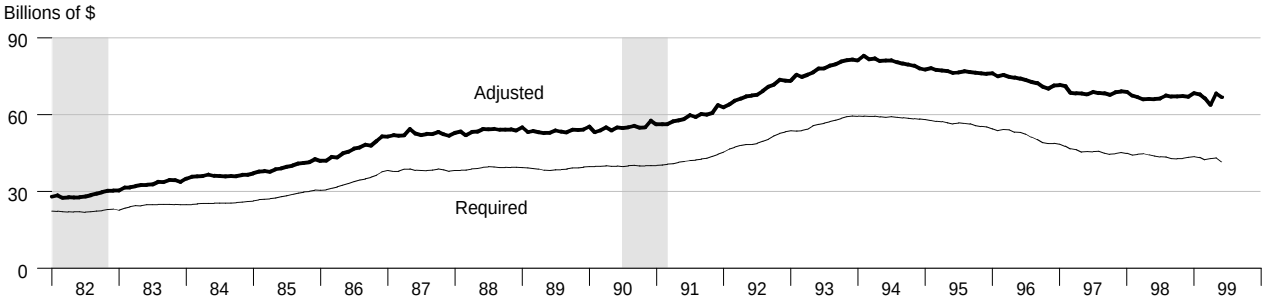


L

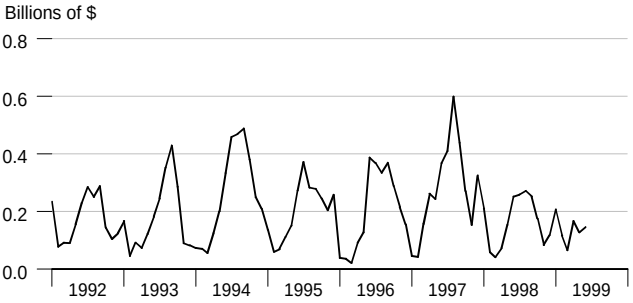
Percent change at an annual rate



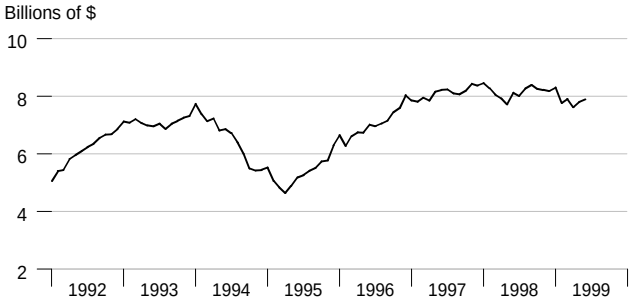
Adjusted and Required Reserves



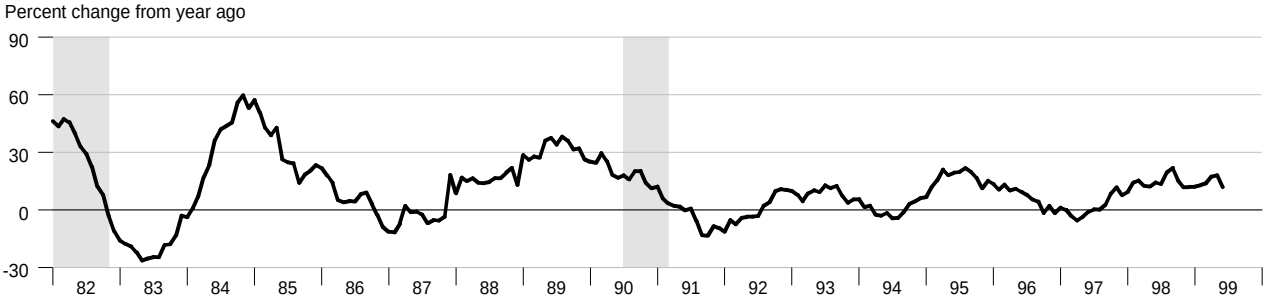
Total Borrowings, nsa



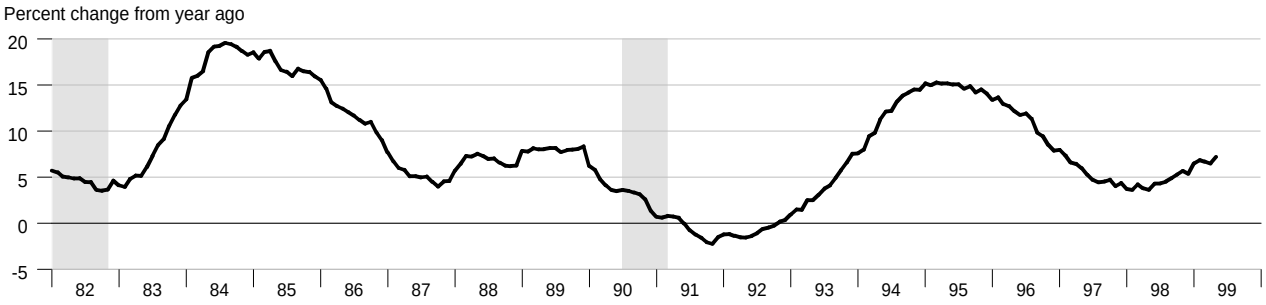
Excess Reserves plus RCB Contracts



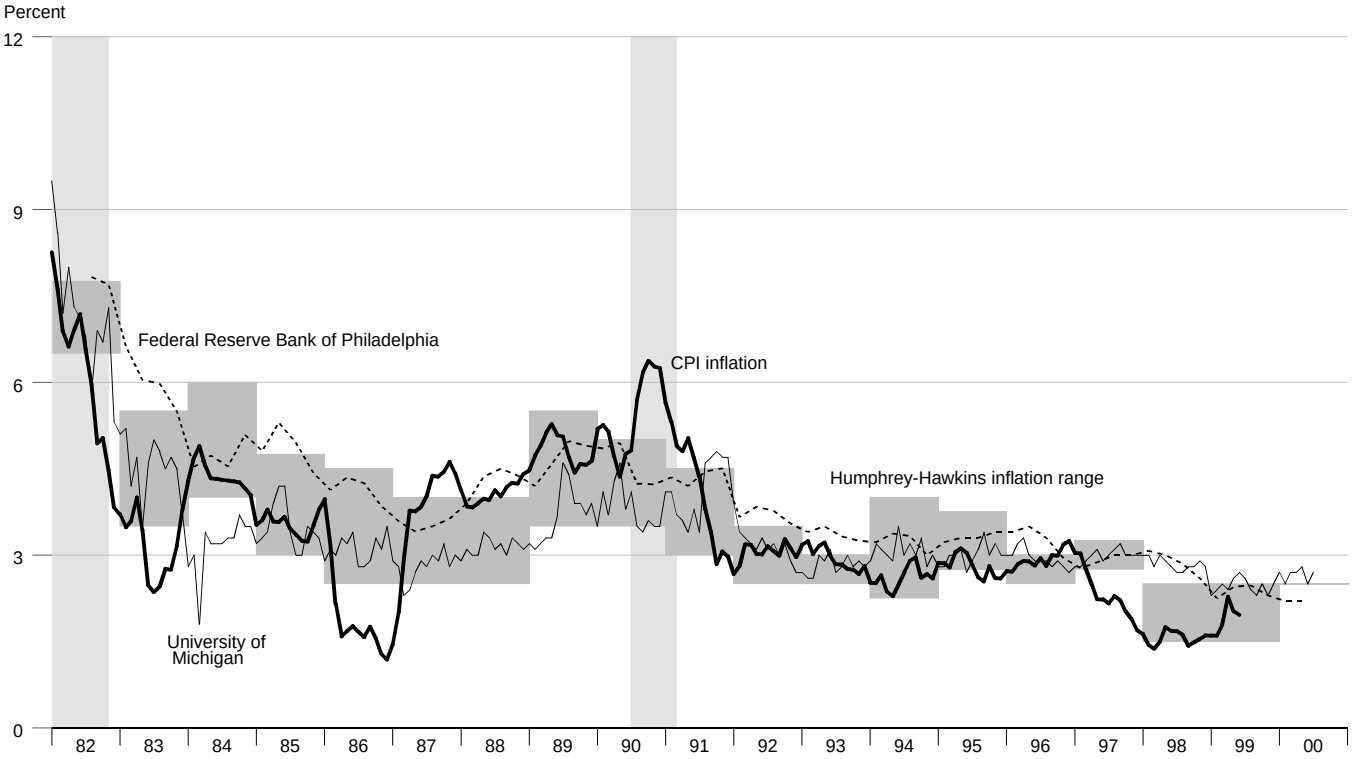
Nonfinancial Commercial Paper



Consumer Credit

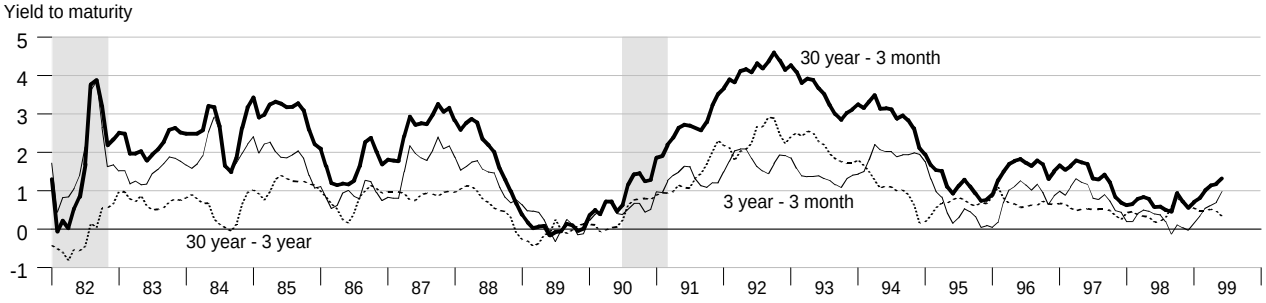


Inflation and Inflation Expectations

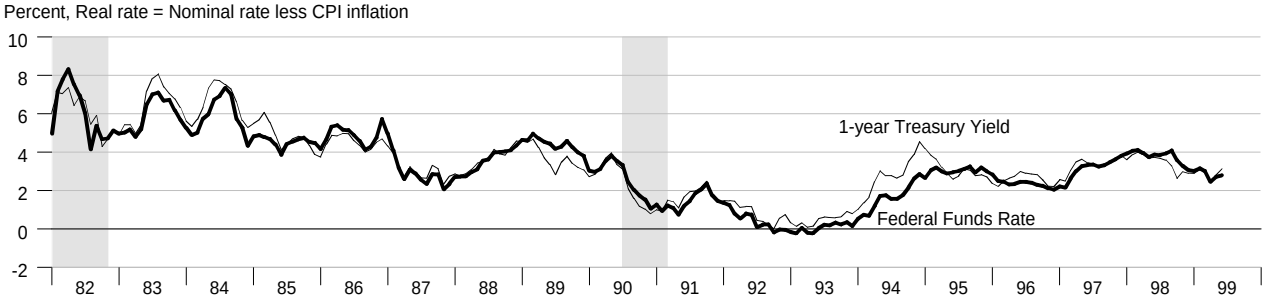


The shaded region shows the Humphrey-Hawkins CPI inflation range. See page 19 for information.

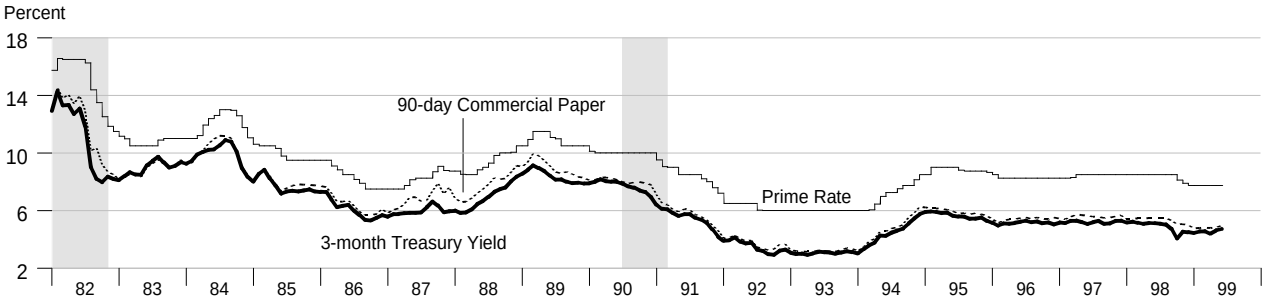
Treasury Security Yield Spreads



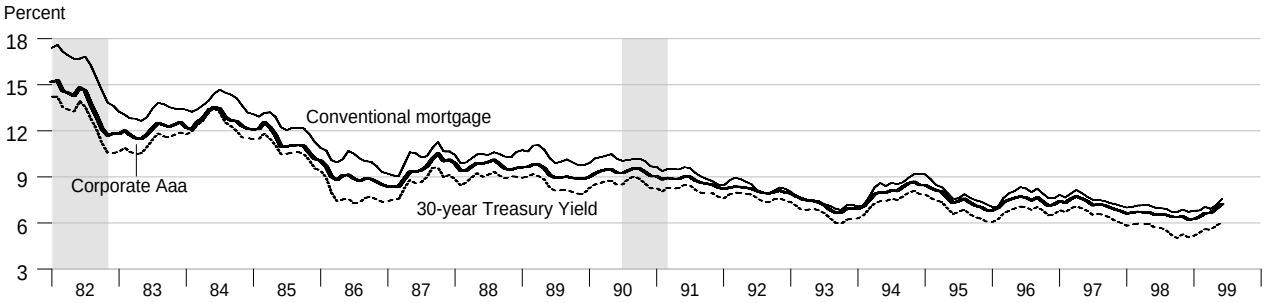
Real Interest Rates



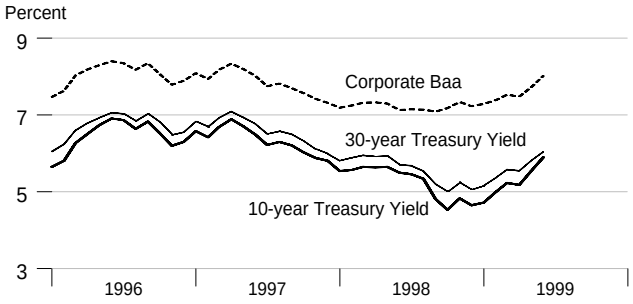
Short Term Interest Rates



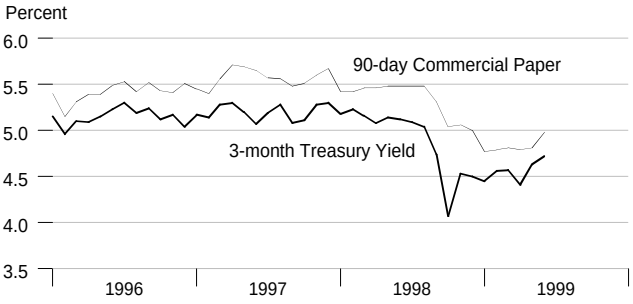
Long Term Interest Rates



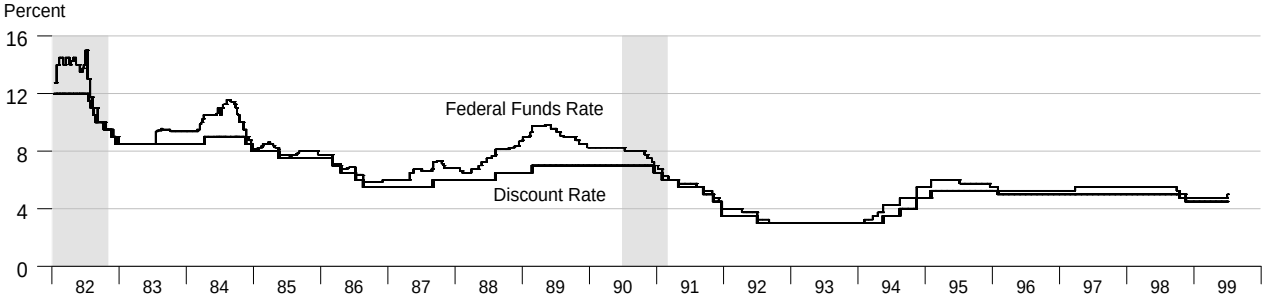
Long Term Interest Rates



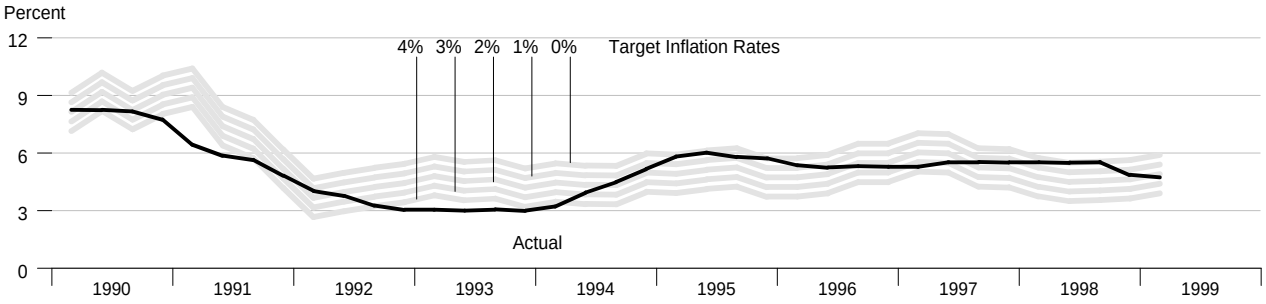
Short Term Interest Rates



FOMC Expected Federal Funds Rate and Discount Rate

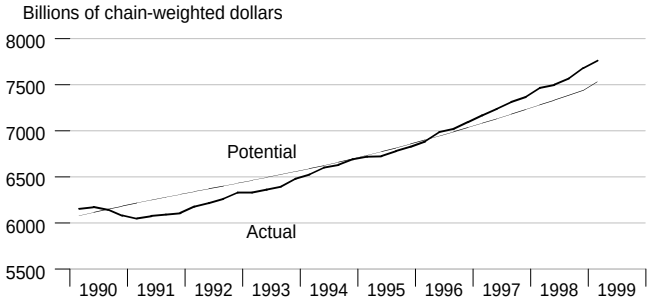


Federal Funds Rate and Inflation Targets

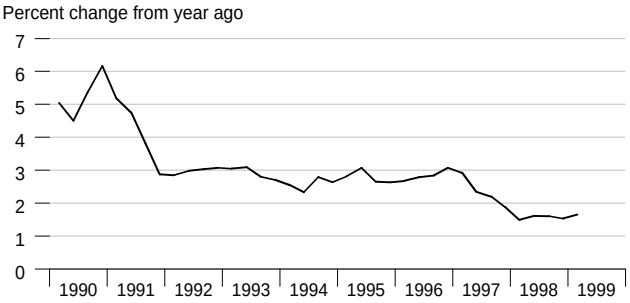


Calculated federal funds rate is based on Taylor's rule. See notes on page 19.

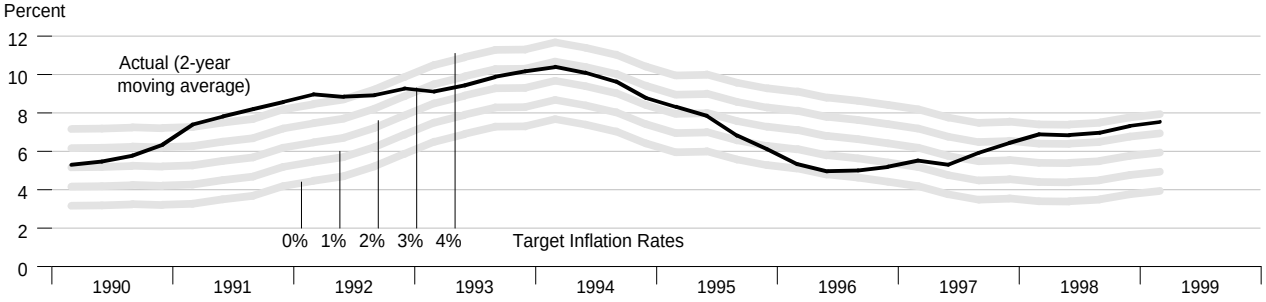
Actual and Potential Real GDP



Actual CPI Inflation

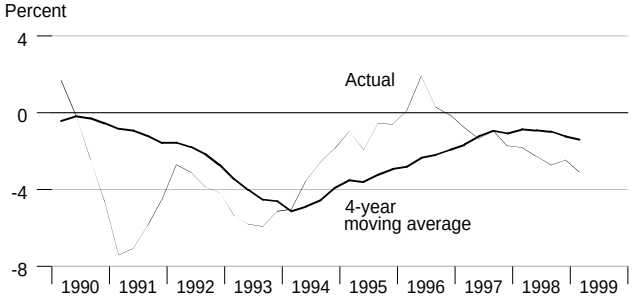


Monetary Base Growth* and Inflation Targets

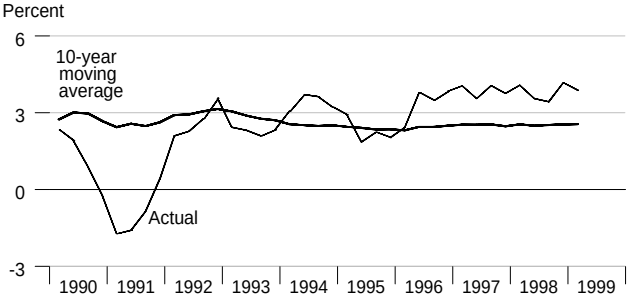


*Modified for the effects of sweeps programs on reserve demand.
Calculated base growth is based on McCallum's rule. See notes on page 19.

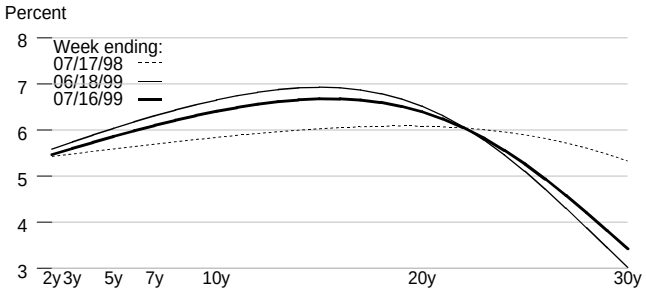
Monetary Base Velocity Growth



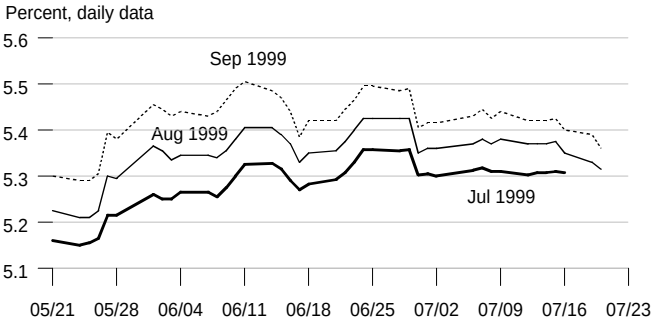
Real Output Growth



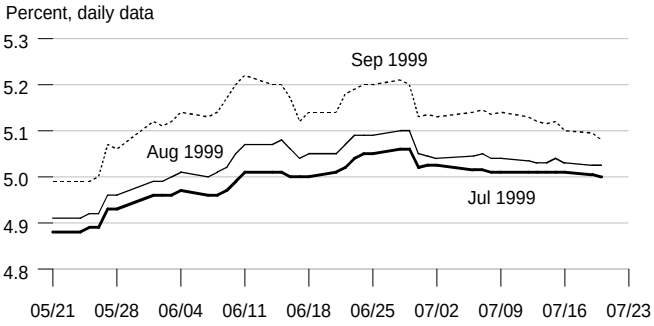
Implied One-Year Forward Rates



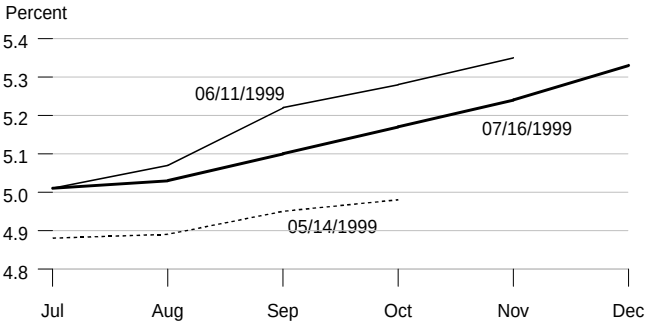
Rates on 3-Month Eurodollar Futures



Rates on Selected Fed Funds Futures Contracts



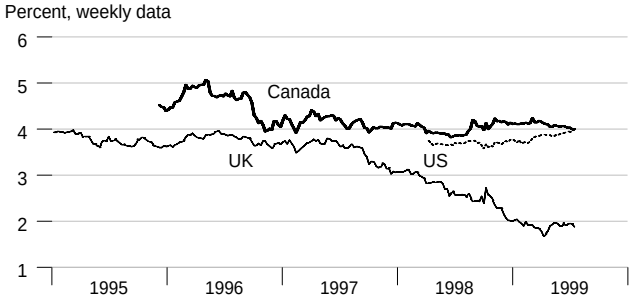
Implied Yields on Fed Funds Futures



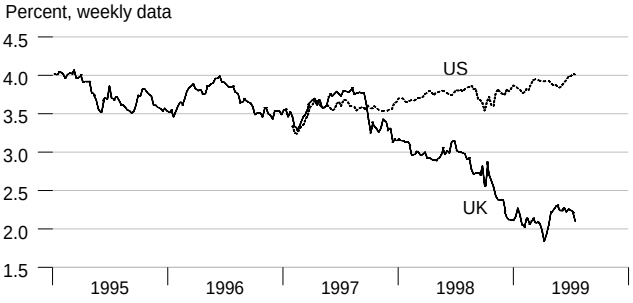
Inflation-Protected Treasury Yields

Inflation-Protected Treasury Yield Spreads

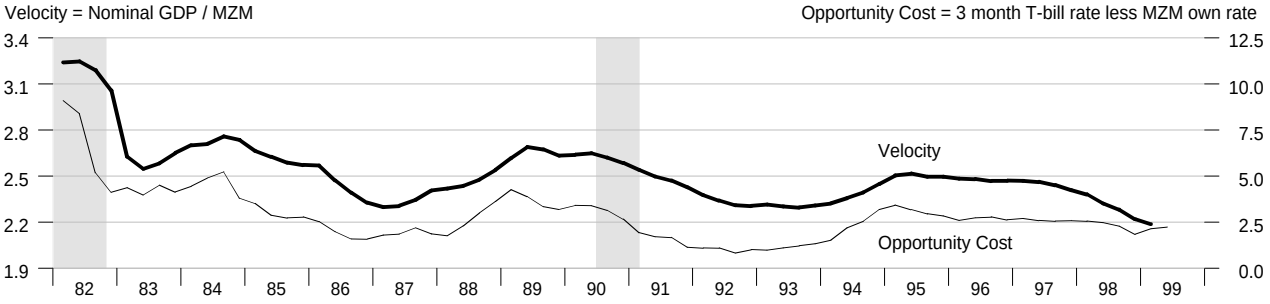
Inflation-Indexed 30-Year Bonds



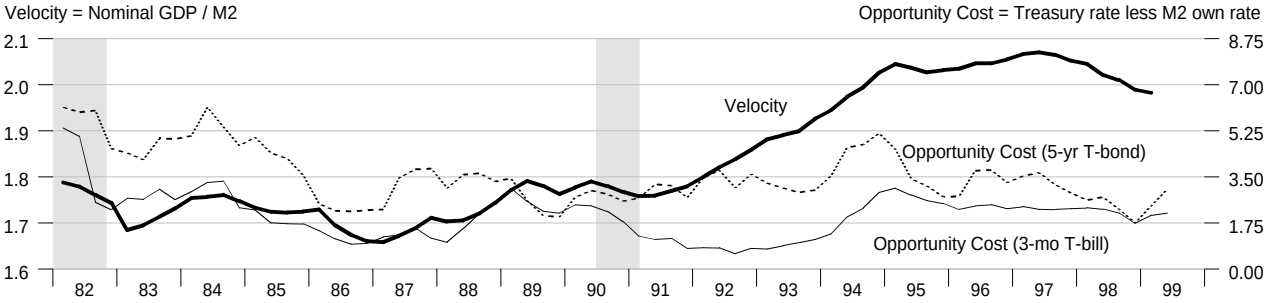
Inflation-Indexed 10-Year Bonds



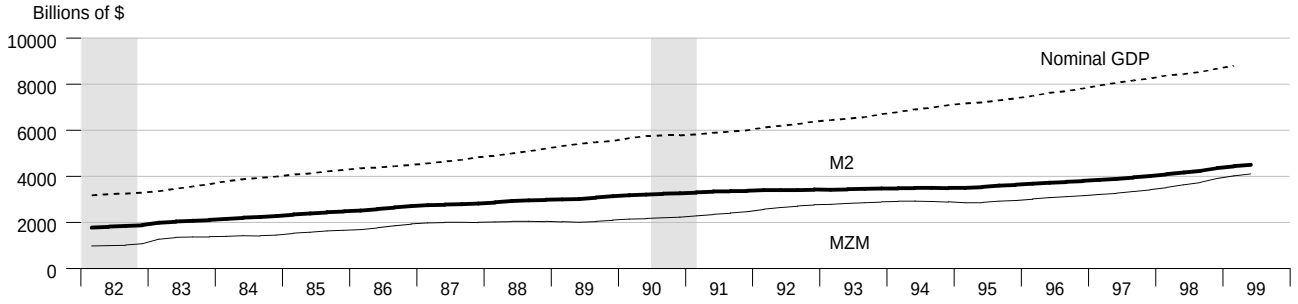
MZM Velocity and Opportunity Cost



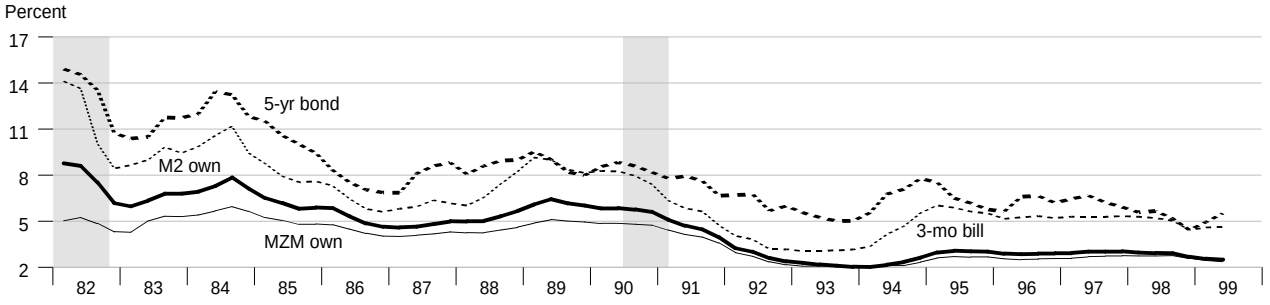
M2 Velocity and Opportunity Cost



M2, MZM and Nominal GDP

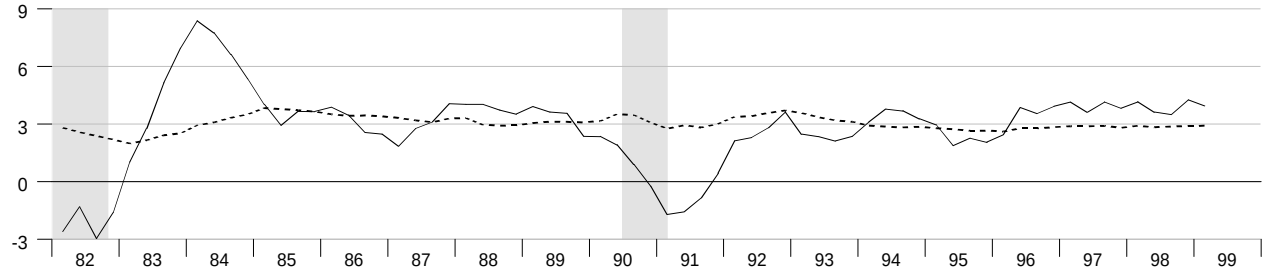


Interest Rates



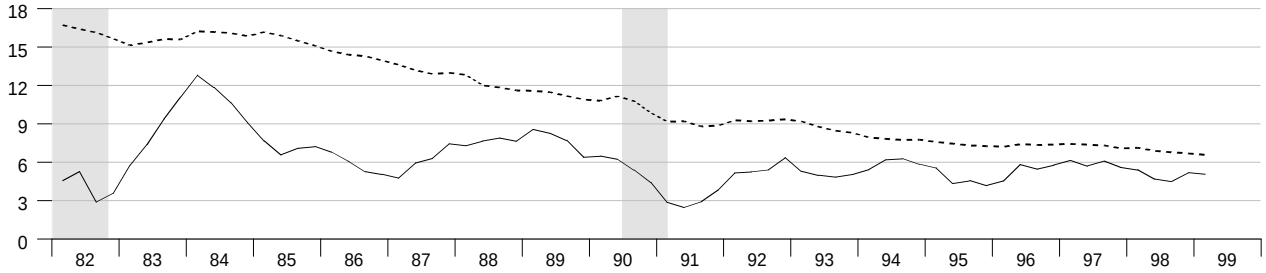
Real Gross Domestic Product

Percent change from year ago



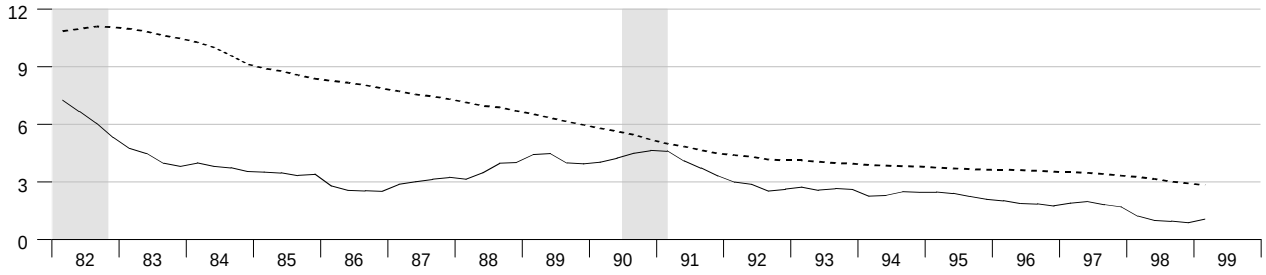
Gross Domestic Product

Percent change from year ago



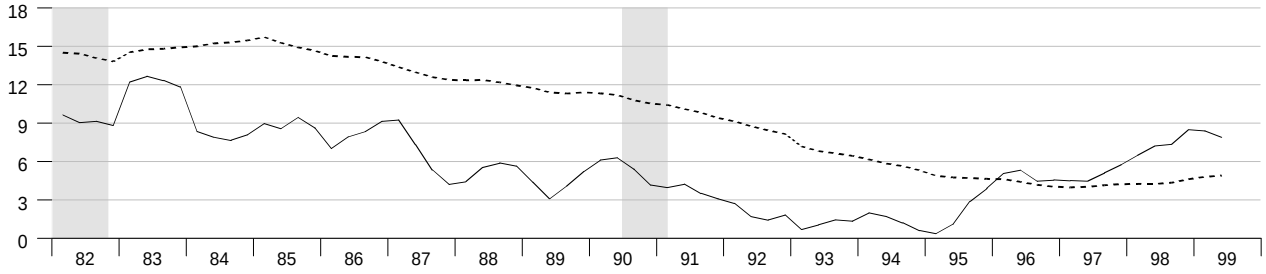
Gross Domestic Product Price Index

Percent change from year ago



M2

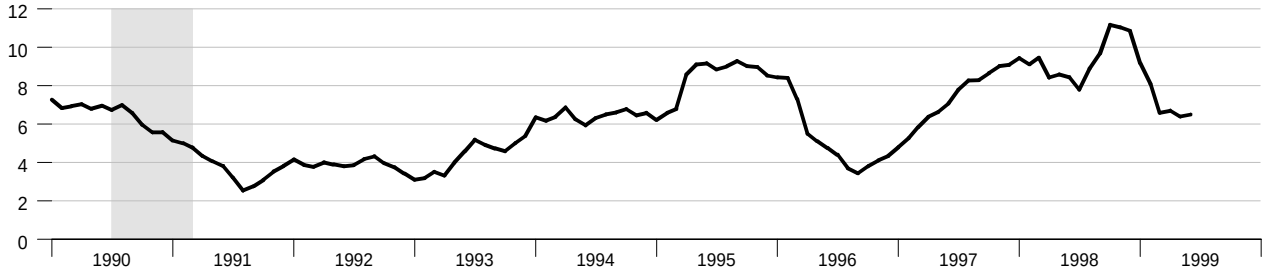
Percent change from year ago



Dashed lines indicate 10-year moving averages

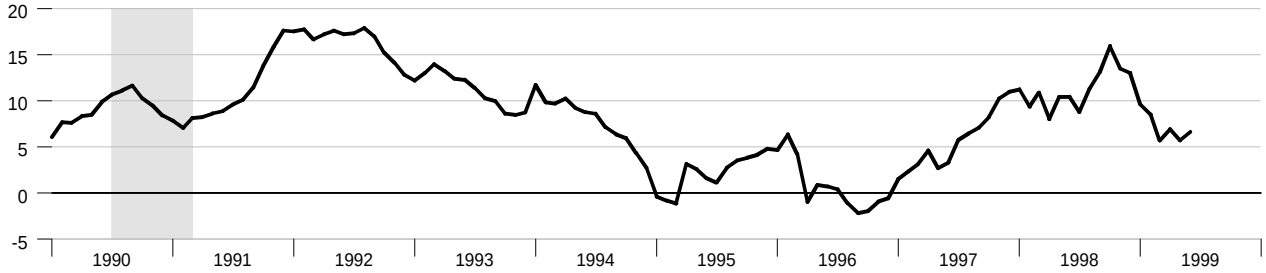
Bank Credit

Percent change from year ago



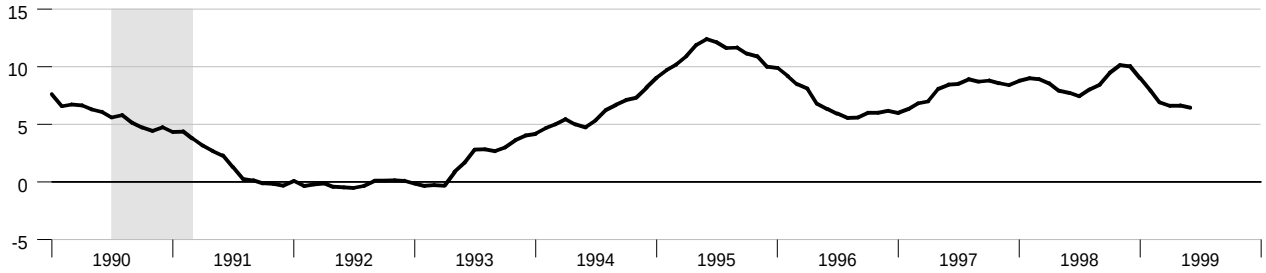
Investment Securities in Bank Credit at Commercial Banks

Percent change from year ago



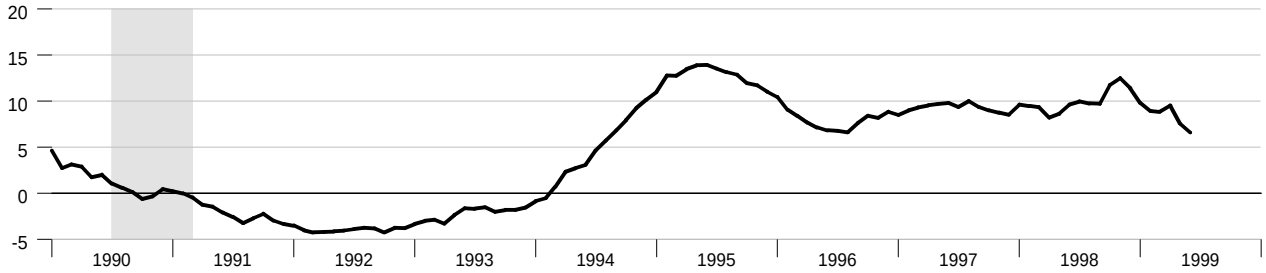
Total Loans and Leases in Bank Credit at Commercial Banks

Percent change from year ago

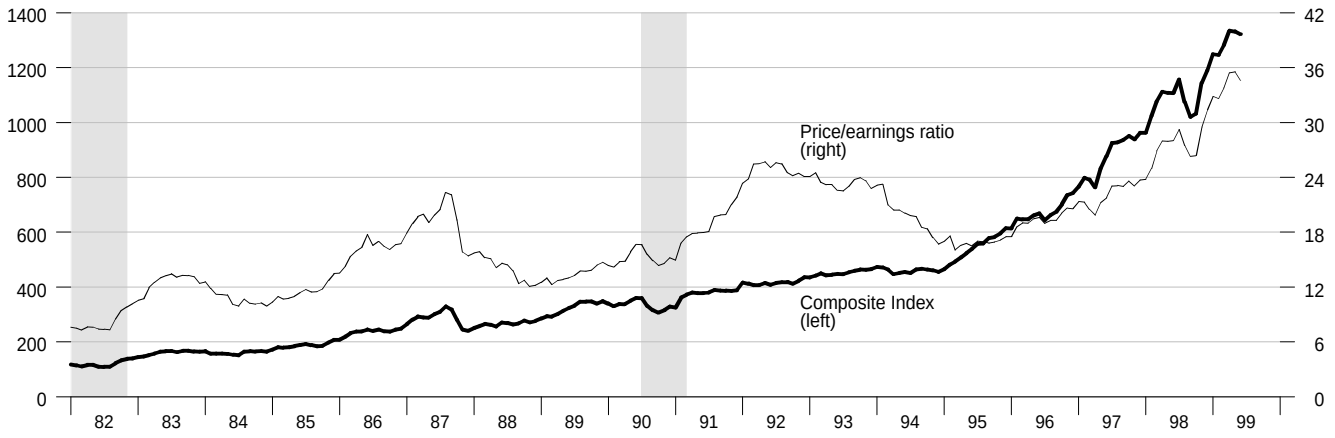


Commercial and Industrial Loans at Commercial Banks

Percent change from year ago



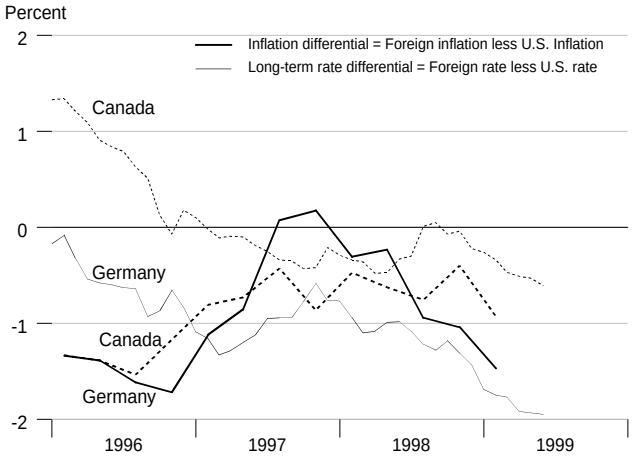
Standard and Poor's 500

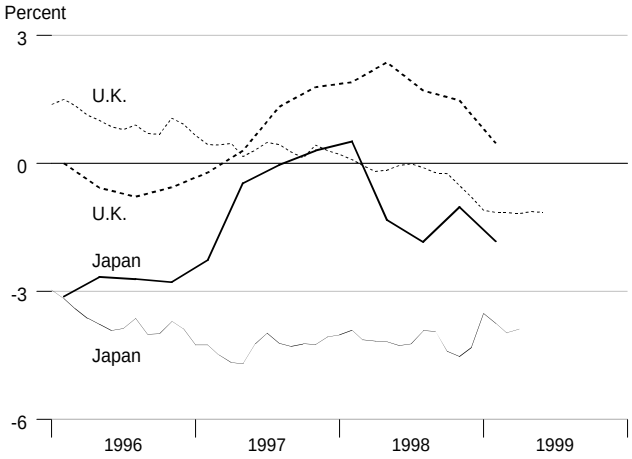


Inflation and Long-Term Interest Rates

	Trend in Consumer Price Inflation Rates Percent change from year ago				Recent Long-Term Government Bond Rates Percent			
	1998Q3	1998Q4	1999Q1	1999Q2	Mar99	Apr99	May99	Jun99
United States	1.62	1.48	1.73	2.09	5.81	5.77	6.04	6.31
Canada	0.86	1.08	0.80	.	5.34	5.26	5.51	5.70
France	0.73	0.37	0.26	.	4.39	4.25	4.45	4.94
Germany	0.67	0.44	0.26	.	4.04	3.85	4.01	4.36
Italy	2.06	1.75	1.38	.	4.27	4.11	4.28	4.62
Japan	-0.22	0.46	-0.10	.	1.84	1.89	.	.
United Kingdom	3.32	2.96	2.20	.	4.66	4.59	4.91	5.16

Inflation and Long-Term Interest Rates Differentials





		Money Stock				Bank			
		M1	M2	M3	L	Credit	Monetary Base	Reserves	MSI M2
	1994	1145.340	3500.100	4303.777	5256.565	3230.428	421.574	80.684	205.514
	1995	1142.820	3572.376	4499.721	5554.661	3500.169	443.511	76.849	210.302
	1996	1106.126	3745.602	4796.153	5928.839	3683.166	455.586	73.415	217.734
	1997	1069.573	3931.523	5176.818	6372.579	3950.766	478.753	68.918	226.998
	1998	1079.456	4222.036	5703.267		4322.786	508.978	66.952	242.118
1997	1	1076.381	3849.912	5012.702	6175.039	3829.298	470.027	70.409	222.783
	2	1065.603	3895.604	5110.126	6305.810	3909.831	473.896	68.177	225.083
	3	1068.155	3957.266	5229.446	6433.531	3990.154	480.945	68.565	228.293
	4	1068.155	4023.310	5354.997	6575.936	4073.781	490.144	68.519	231.833
1998	1	1076.826	4099.473	5492.880	6777.666	4186.566	498.387	67.711	235.870
	2	1079.349	4176.201	5631.574	6911.217	4241.306	502.060	66.084	239.810
	3	1074.077	4247.760	5752.077	7029.499	4340.719	511.592	66.951	243.503
	4	1087.571	4364.709	5936.537		4522.554	523.871	67.063	249.287
1999	1	1095.210	4443.380	6044.292		4518.851	536.301	67.557	253.040
	2	1104.453	4506.416	6119.617		4518.007	545.916	66.297	256.477
1997	Jun	1065.992	3911.589	5135.525	6338.648	3933.444	475.927	67.939	225.950
	Jul	1067.570	3929.064	5185.878	6382.060	3975.261	478.813	68.897	226.850
	Aug	1072.076	3961.052	5232.781	6440.613	3989.809	481.011	68.465	228.460
	Sep	1064.818	3981.681	5269.679	6477.919	4005.391	483.012	68.333	229.570
	Oct	1062.064	4000.166	5306.691	6512.924	4039.115	485.892	67.709	230.580
	Nov	1067.528	4023.132	5353.640	6575.751	4079.097	490.783	68.772	231.760
	Dec	1074.873	4046.631	5404.660	6639.133	4103.131	493.756	69.076	233.160
1998	Jan	1073.810	4071.363	5449.626	6709.653	4157.734	496.198	68.918	234.440
	Feb	1076.021	4100.889	5485.171	6777.903	4186.122	499.555	67.414	235.910
	Mar	1080.646	4126.168	5543.843	6845.443	4215.843	499.408	66.801	237.260
	Apr	1082.094	4155.243	5589.265	6873.223	4218.639	499.601	66.000	238.890
	May	1078.171	4174.757	5631.330	6904.038	4239.917	502.385	66.134	239.670
	Jun	1077.782	4198.602	5674.127	6956.389	4265.361	504.193	66.117	240.870
	Jul	1075.365	4216.111	5694.153	6967.451	4284.887	507.677	66.366	241.990
	Aug	1072.214	4241.705	5749.664	7022.416	4344.459	511.093	67.434	243.200
	Sep	1074.653	4285.464	5812.415	7098.631	4392.810	516.006	67.052	245.320
	Oct	1080.404	4326.863	5874.034		4490.052	520.803	67.055	247.370
	Nov	1088.956	4365.223	5938.546		4529.196	524.379	67.183	249.340
	Dec	1093.354	4402.041	5997.030		4548.413	526.432	66.952	251.150
1999	Jan	1091.000	4426.084	6017.034		4538.673	531.713	68.375	252.270
	Feb	1092.647	4446.959	6062.066		4524.401	538.145	67.918	253.100
	Mar	1101.984	4457.097	6053.777		4493.480	539.045	66.379	253.750
	Apr	1108.323	4489.697	6094.011		4500.980	539.623	63.827	255.600
	May	1104.605	4506.789	6119.001		4510.787	548.349	68.239	256.480
	Jun	1100.432	4522.762	6145.839		4542.254	549.775	66.825	257.350

*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
	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
1997	Jun	5.56	5.00	8.50	5.66	5.07	6.24	6.77	7.41	5.33	7.69
	Jul	5.52	5.00	8.50	5.60	5.19	6.00	6.51	7.14	5.24	7.50
	Aug	5.54	5.00	8.50	5.60	5.28	6.06	6.58	7.22	5.25	7.48
	Sep	5.54	5.00	8.50	5.60	5.08	5.98	6.50	7.15	5.19	7.43
	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

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

		M1	M2	MZM	M3	L
Percent change from previous period						
	1994	6.17	1.38	2.61	1.60	2.37
	1995	-0.22	2.06	-0.47	4.55	5.67
	1996	-3.21	4.85	6.54	6.59	6.74
	1997	-3.30	4.96	7.18	7.94	7.48
	1998	0.92	7.39	11.61	10.17	
1997	1	-0.47	1.19	1.77	1.88	1.65
	2	-1.00	1.19	1.63	1.94	2.12
	3	0.24	1.58	2.23	2.33	2.03
	4	0.00	1.67	2.39	2.40	2.21
1998	1	0.81	1.89	2.76	2.57	3.07
	2	0.23	1.87	3.25	2.52	1.97
	3	-0.49	1.71	2.91	2.14	1.71
	4	1.26	2.75	4.53	3.21	
1999	1	0.70	1.80	2.94	1.82	
	2	0.84	1.42	2.31	1.25	
1997	Jun	0.25	0.48	0.65	0.53	0.50
	Jul	0.15	0.45	0.68	0.98	0.68
	Aug	0.42	0.81	1.11	0.90	0.92
	Sep	-0.68	0.52	0.80	0.71	0.58
	Oct	-0.26	0.46	0.66	0.70	0.54
	Nov	0.51	0.57	0.74	0.88	0.96
	Dec	0.69	0.58	0.94	0.95	0.96
1998	Jan	-0.10	0.61	0.84	0.83	1.06
	Feb	0.21	0.73	1.02	0.65	1.02
	Mar	0.43	0.62	0.99	1.07	1.00
	Apr	0.13	0.70	1.26	0.82	0.41
	May	-0.36	0.47	0.93	0.75	0.45
	Jun	-0.04	0.57	0.97	0.76	0.76
	Jul	-0.22	0.42	0.67	0.35	0.16
	Aug	-0.29	0.61	1.11	0.97	0.79
	Sep	0.23	1.03	1.56	1.09	1.09
	Oct	0.54	0.97	1.61	1.06	
	Nov	0.79	0.89	1.50	1.10	
	Dec	0.40	0.84	1.35	0.98	
1999	Jan	-0.22	0.55	0.71	0.33	
	Feb	0.15	0.47	1.04	0.75	
	Mar	0.85	0.23	0.33	-0.14	
	Apr	0.58	0.73	1.11	0.66	
	May	-0.34	0.38	0.64	0.41	
	Jun	-0.38	0.35	0.58	0.44	

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.

M2: M1 plus: savings 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).

L: M3 plus: U.S. savings bonds, short-term Treasury securities, commercial paper, and bankers acceptances held by households and by firms other than depository institutions and money market mutual funds.

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.

Note: The above 6 series are constructed and published by the Board of Governors of the Federal Reserve System, Washington, D.C. For details, see *Federal Reserve Bulletin*, tables 1.21 and 1.26.

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). On pages 4 and 6, MZM prior to January 1984 is not shown due to distortions caused by regulatory changes, including the introduction of liquid deposit accounts not subject to binding interest rate ceilings.

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 and L; additional data are available at http://www.stls.frb.org/research/msi/index.html.

Note: The above 4 series are constructed and published by the Research Division of the Federal Reserve Bank of St. Louis, St. Louis MO.

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 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

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

to five alternative target inflation rates $\pi^* = 0, 1, 2, 3, 4$ percent, where ΔMB_t^* is the implied growth rate of the adjusted monetary base. The 10-year moving average growth of real GDP for a quarter "t" is calculated as the average quarterly growth during the previous 40 quarters, at an annual rate, by the formula $((y_t - y_{t-40})/40) \times 4 \times 100$, where y_t is the

log of real GDP. The four-year moving average of base velocity growth is calculated similarly. To adjust the monetary base for the effect of retail-deposit sweep programs, we add to the monetary base an amount equal to 10 percent of the total amount swept, as estimated by the Federal Reserve Board staff. These estimates are imprecise, at best. Sweep program data are available at

http://www.stls.frb.org/research/swdata.html.

Page 11: **Implied One–Year Forward Rates** are calculated by this Bank from Treasury constant maturity yields. Yields to maturity, *R(m)*, for securities with $m = 1,...,$ 30 years to maturity are obtained by linear interpolation between reported yields. These yields are smoothed by fitting the regression suggested by Nelson and Siegel (1987)

$$R(m) = a_0 + (a_1 + a_2)(1 - e^{-m/50})/(m/50) - a_2 \times e^{-m/50},$$

and forward rates are calculated from these smoothed yields using equation (a) in Table 13.1 of Shiller (1990)

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

where duration is approximated as $D(m) = (1 - e^{-R(m) \times m}) / R(m)$. These rates are linear approximations to the true instantaneous forward rates; see Shiller. For a discussion of the use of forward rates as indicators of inflation expectations, see Sharpe (1997). **Rates on 3-Month Eurodollar Futures** and **Rates on Selected Fed Funds Futures Contracts** each trace through time the yield on three specific contracts. **Implied Yields on Fed Funds Futures** displays a single day's snapshot of yields for contracts expiring in the months shown on the horizontal axis. **Inflation-Protected Treasury Yield Spreads** equal, for 5, 10, and 30 year maturities, the difference between the Treasury constant maturity yield and the yield on the most recently issued inflation-protected security. **Inflation-Indexed Bonds** for Canada are the 31-year bond with a maturity date of 12/01/2026; for the U.K., the 37.5-year bond with a maturity date of 07/17/2024 and the 12.1-year bond with a maturity date of 10/21/2004; and, for the U.S., the 30-year bond with a maturity date of 04/15/2028 and the 10-year bond with a maturity date of 01/15/2007.

Page 12: **Velocity** (for MZM and M2) equals the ratio of GDP, measured in current dollars, to the level of the monetary aggregate. **MZM** and **M2 Own Rates** are weighted averages of the rates received by households and firms on the assets included in the aggregates. Two alternative opportunity costs are shown, one relative to the 3-month Treasury constant-maturity yield, the other to the 5-year constant-maturity yield.

Page 13: **Real Gross Domestic Product** is GDP as measured in chained 1992 dollars. The **Gross Domestic Product Price Index** is the implicit price deflator for GDP, which is defined by the Bureau of Economic Analysis, U.S. Department of Commerce, as the ratio of GDP measured in current dollars to GDP measured in chained 1992 dollars.

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

Sources

Bank of Canada
Canadian inflation-linked bond yields.

Bank of England
U.K. inflation-linked bond yields.

Board of Governors of the Federal Reserve System
Monetary aggregates and components, nonfinancial debt: H.6 release; bank credit and components: H.8 release; consumer credit: G.19 release; required reserves, excess reserves, clearing balance contracts and discount window borrowing: H.4.1 and H.3 releases; interest rates: H.15 and G.13 releases; nonfinancial commercial paper: Board of Governors web site; M2 and MZM own rates.

Bureau of Economic Analysis
Gross domestic product.

Bureau of Labor Statistics
Consumer price index.

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

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

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

University of Michigan Survey Research Center
Median expected price change.

Congressional Budget Office
Potential real GDP.

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

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

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

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