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Why No Business Loan Growth?

Although the most recent U.S. recession officially ended two-and-a-half years ago, in November 2001, the volume of commercial and industrial (C&I) loans made by U.S. commercial banks has continued to fall. This protracted decline is similar to the pattern that followed the recession of 1990-91, when analysts concluded that borrowers faced a “credit crunch” and Fed officials commented that “financial headwinds” were restraining U.S. economic growth.

The chart plots the year-over-year growth rate of C&I loans during the 36 months before and 36 months after the ends of the 1990-91 and 2001 recessions (data for the 2001 recession are through February 2004). C&I loan volume fell for nearly three years following the end of the 1990-91 recession. Similarly, since November 2001, C&I loan volume has declined at an average annual rate of more than 6 percent.

Are the reasons for the declines in C&I loans following each recession the same? As a whole, U.S. commercial banks came out of the 1990-91 recession in weak condition, characterized by low capital-to-asset ratios, low profit rates, and high ratios of nonperforming loans to total loans. Consequently, banks had relatively little ability to increase loan volume.

U.S. banks were in much better shape at the end of the 2001 recession. Banks averaged a return on assets of 1.13 percent in 2001, as opposed to 0.52 percent in 1991. Average bank capital ratios were also higher at the end of 2001 than at the end of 1991—9.06 versus 6.74 percent—and the average nonperforming loan ratio of U.S. banks was lower at 1.41 percent versus 3.71 percent in 1991. The strength of U.S. banks coming out of the 2001 recession suggests that falling commercial loan volume has not been the result of banks’ inability to lend.

In contrast to the previous post-recession experience, when the volumes of all types of bank loans declined, consumer and real estate loans have increased since the end of the 2001 recession. Real estate loan growth was especially rapid in the second half of 2002 and first half

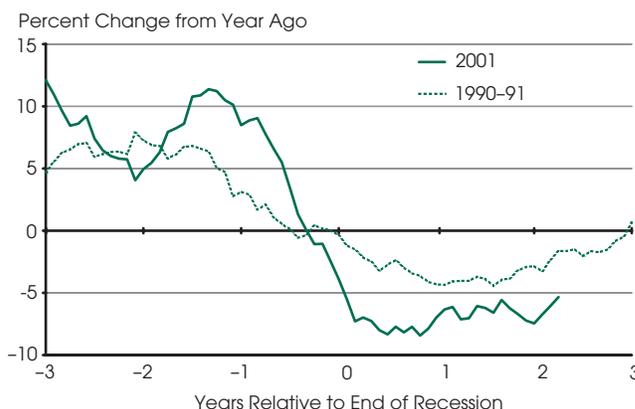
of 2003, when long-term interest rates, including mortgage rates, were falling.

Although declining long-term interest rates increased the demand for mortgage loans, they probably contributed to lower demand for business loans. Falling rates encouraged corporations to replace short-term bank loans with long-term debt issued in capital markets. Some evidence for this interpretation is reflected in the difference in C&I loan growth rates for small and large banks. Between November 2001 and February 2004, C&I loans from domestic U.S. banks fell at an average annual rate of 6.2 percent. C&I loan volume of large banks fell at a 11.0 percent rate, however, while small banks—which lend disproportionately to small firms that lack access to capital markets—experienced an average 6.5 percent *increase* in C&I loan volume. Thus, the evidence suggests that a lack of demand, rather than an inability of banks to lend, explains much of the decline in C&I loan volume since 2001. A quarterly survey of senior bank loan officers conducted by the Federal Reserve found that domestic U.S. banks saw an increase in C&I loan demand during the fourth quarter of 2003, the first such increase registered by the survey since early 2000.¹ The absence of constraints on the ability of banks to lend suggests that C&I loan volume will increase if loan demand continues to pick up.

—David C. Wheelock

¹ Board of Governors of the Federal Reserve System. January 2004 *Senior Loan Officer Opinion Survey on Bank Lending Practices*. <http://www.federalreserve.gov/boarddocs/SnLoanSurvey/>.

C & I Loans at Commercial Banks



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 determined by the National Bureau of Economic Research.
3. *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: $[(x_t/x_{t-12})-1] \times 100$.

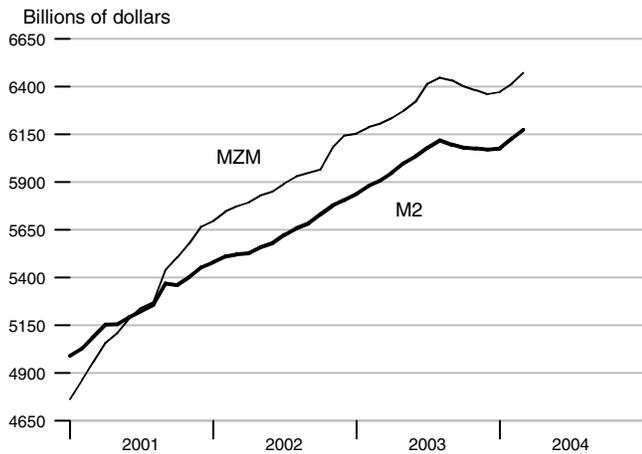
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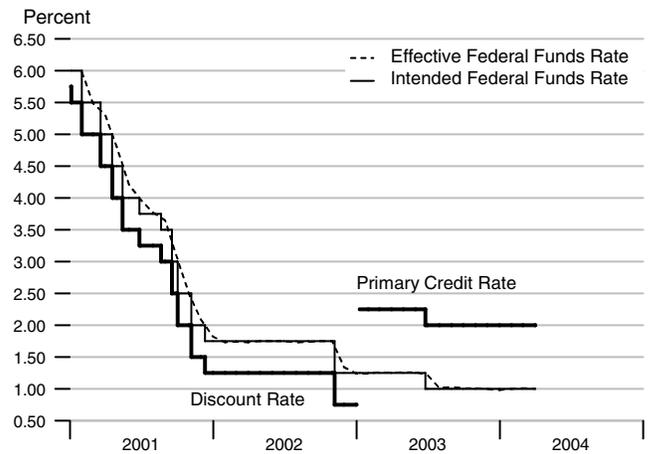
or to:

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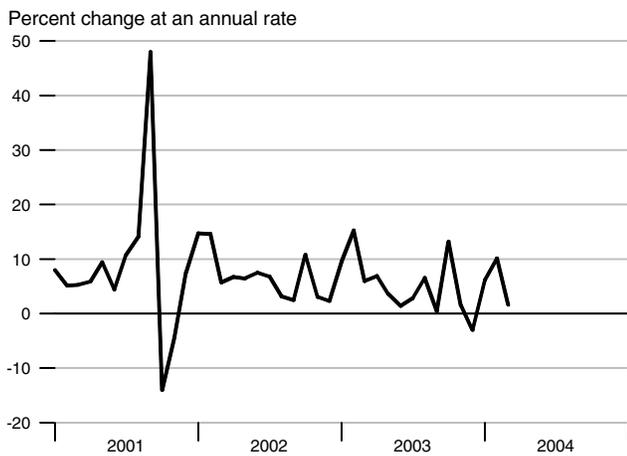
M2 and MZM



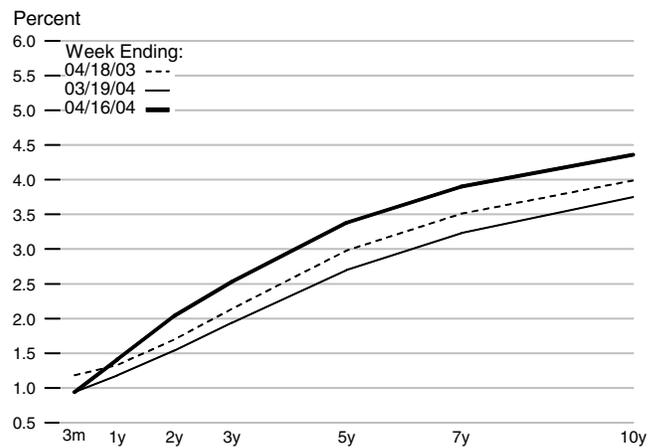
Reserve Market Rates



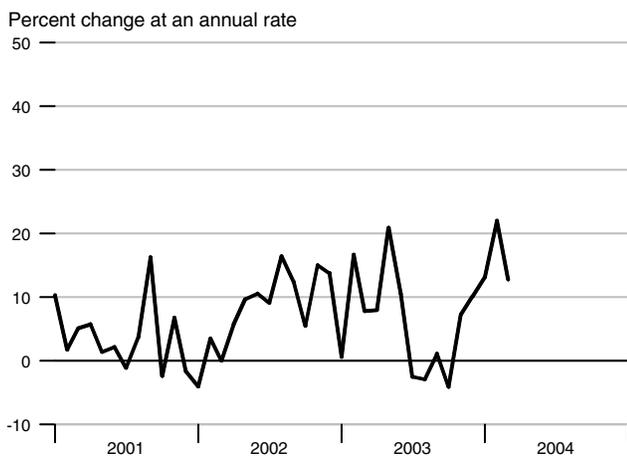
Adjusted Monetary Base



Treasury Yield Curve



Total Bank Credit

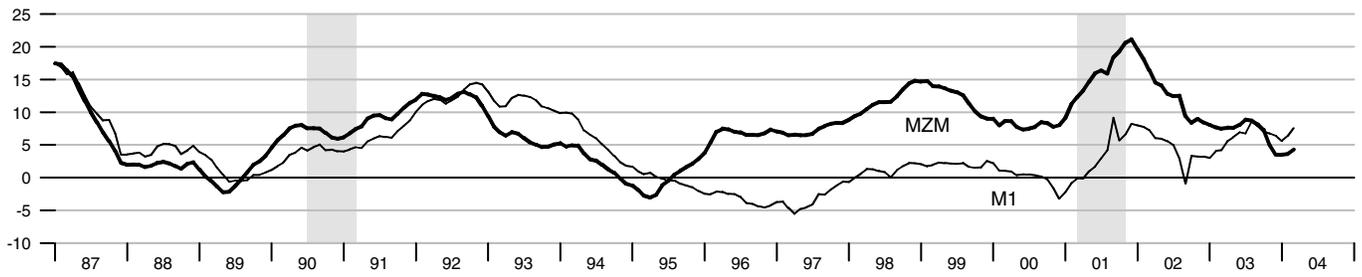


Interest Rates

	Jan 04	Feb 04	Mar 04
Federal Funds Rate	1.00	1.01	1.00
Prime Rate	4.00	4.00	4.00
Primary Credit Rate	2.00	2.00	2.00
Conventional Mortgage Rate	5.74	5.64	5.45
Treasury Yields:			
3-Month Constant Maturity	0.90	0.94	0.95
6-Month Constant Maturity	0.99	1.01	1.01
1-Year Constant Maturity	1.24	1.24	1.19
3-Year Constant Maturity	2.27	2.25	2.00
5-Year Constant Maturity	3.12	3.07	2.79
10-Year Constant Maturity	4.15	4.08	3.83

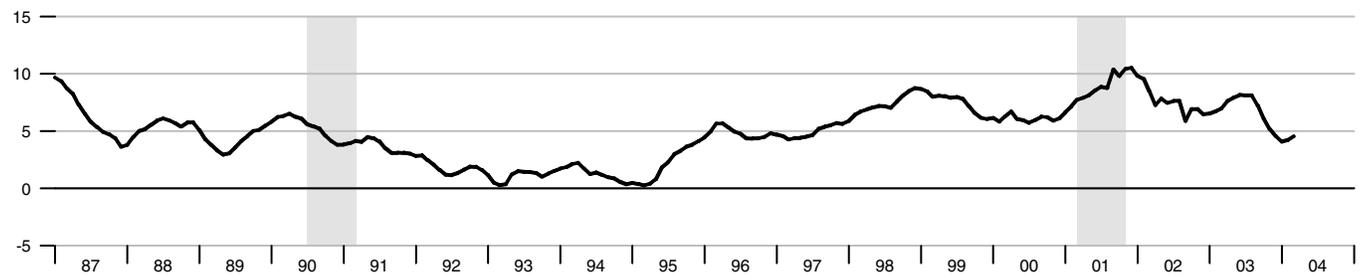
MZM and M1

Percent change from year ago



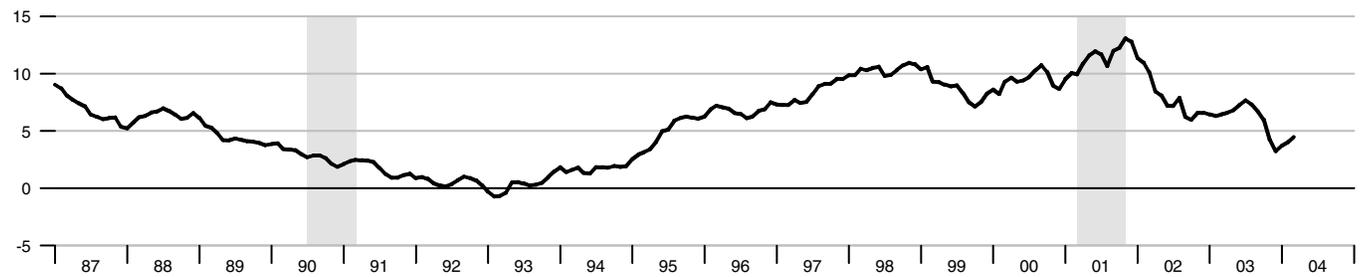
M2

Percent change from year ago



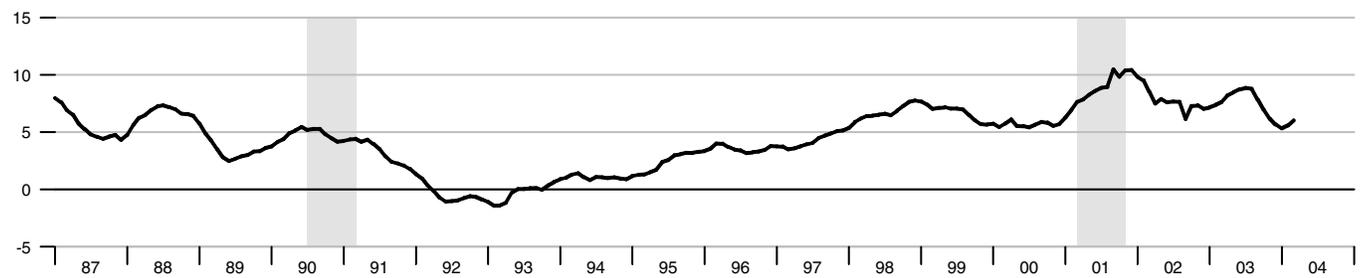
M3

Percent change from year ago



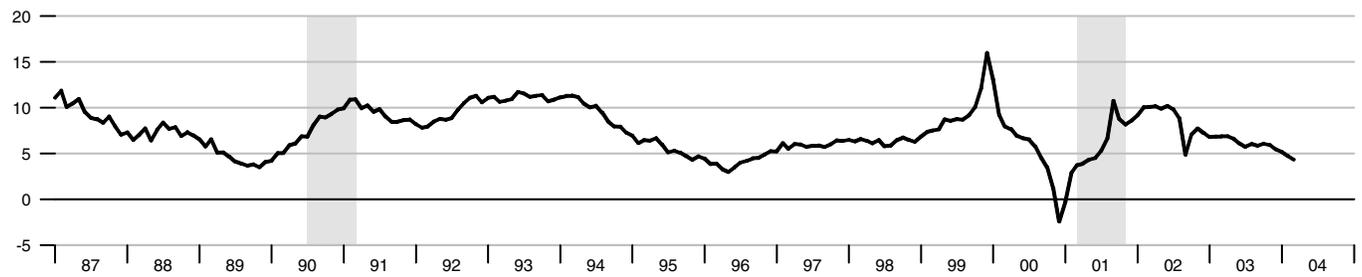
Monetary Services Index - M2

Percent change from year ago



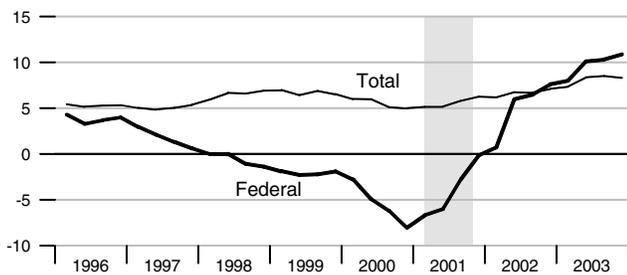
Adjusted Monetary Base

Percent change from year ago



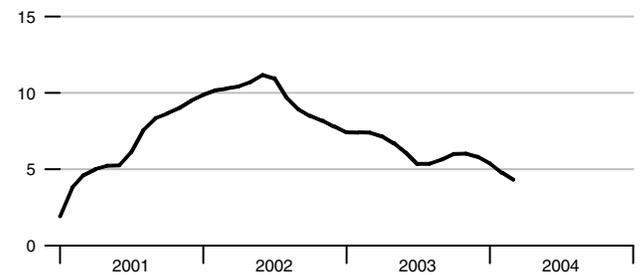
Domestic Nonfinancial Debt

Percent change from year ago



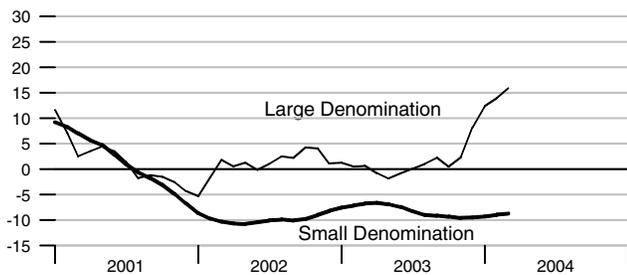
Currency Held by the Nonbank Public

Percent change from year ago



Time Deposits

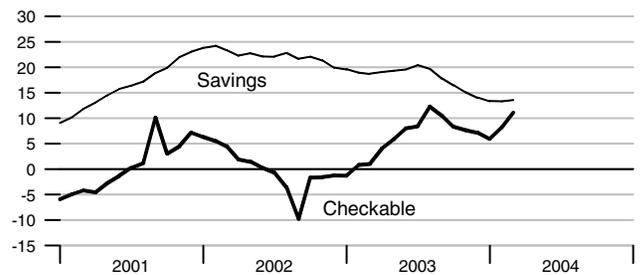
Percent change from year ago



Note: For information regarding recent money stock revisions, please refer to the March 4, 2004, H.6 release at federalreserve.gov/releases/h6/.

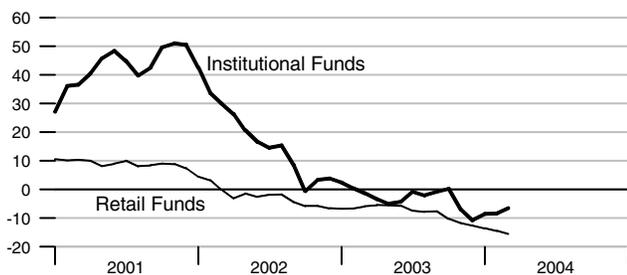
Checkable and Savings Deposits

Percent change from year ago



Money Market Mutual Fund Shares

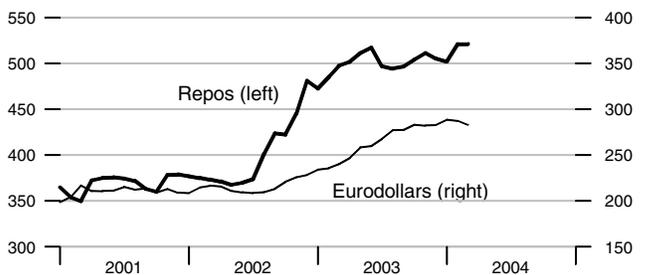
Percent change from year ago



Repurchase Agreements and Eurodollars

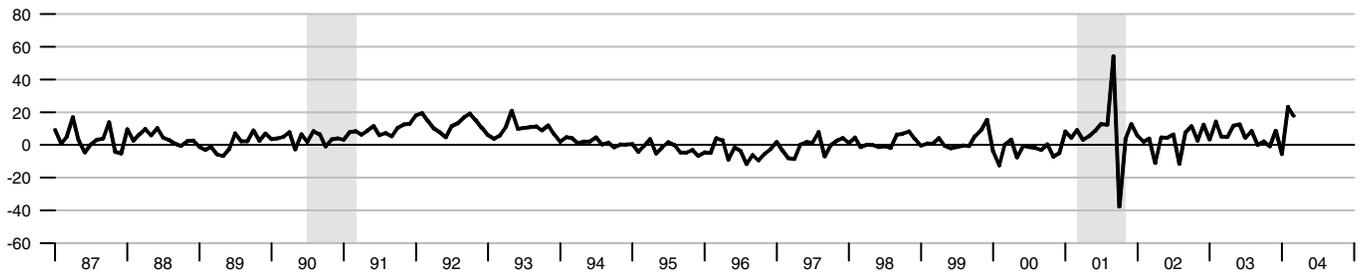
Billions of dollars

Billions of dollars



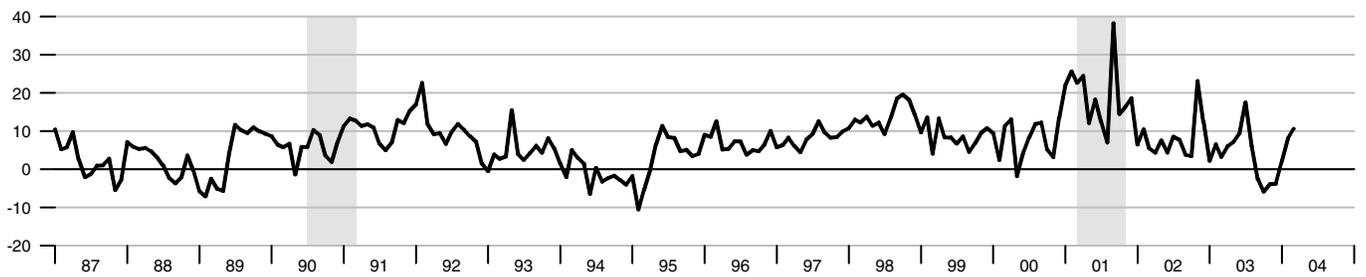
M1

Percent change at an annual rate



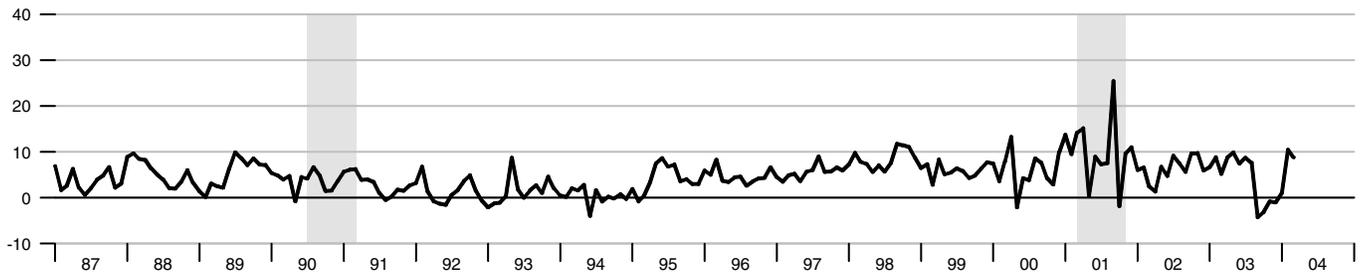
M2M

Percent change at an annual rate



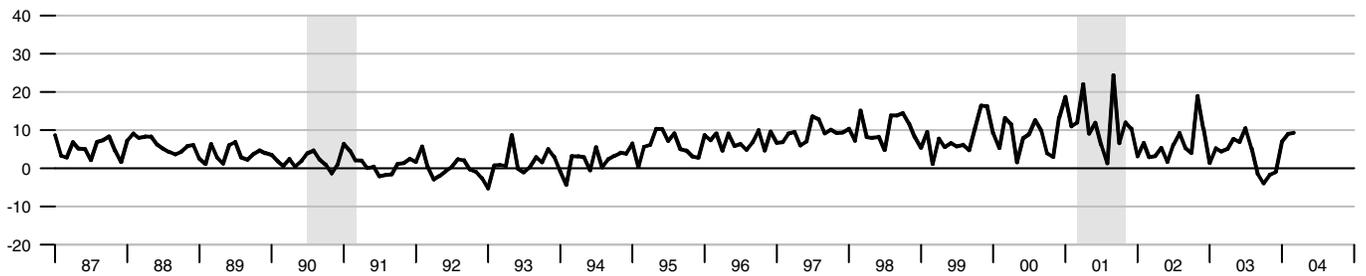
M2

Percent change at an annual rate



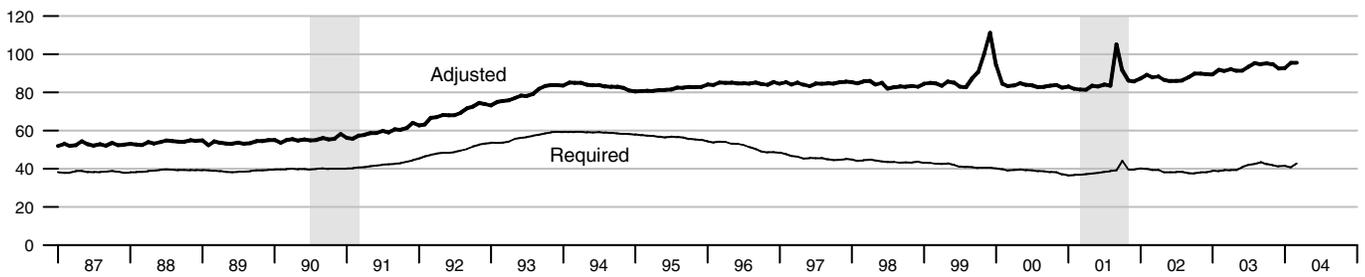
M3

Percent change at an annual rate



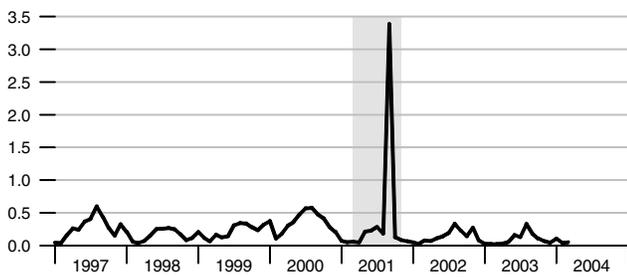
Adjusted and Required Reserves

Billions of dollars



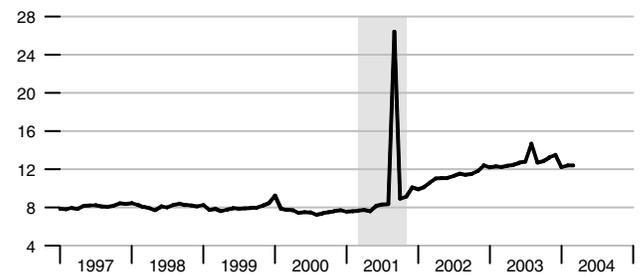
Total Borrowings, nsa

Billions of dollars



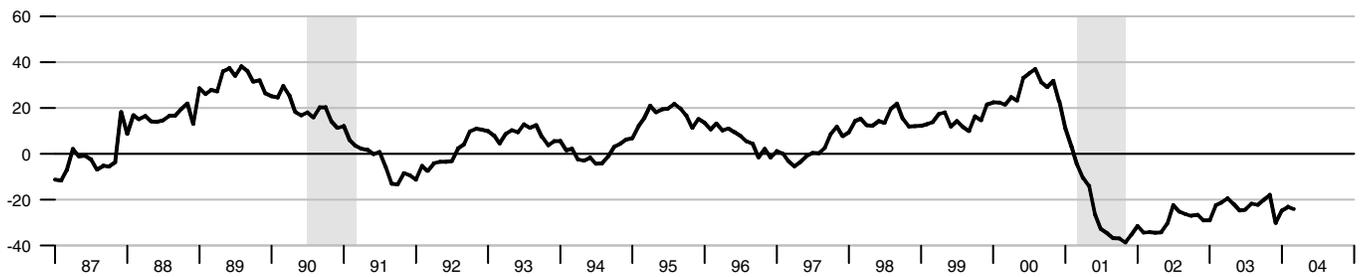
Excess Reserves plus RCB Contracts

Billions of dollars



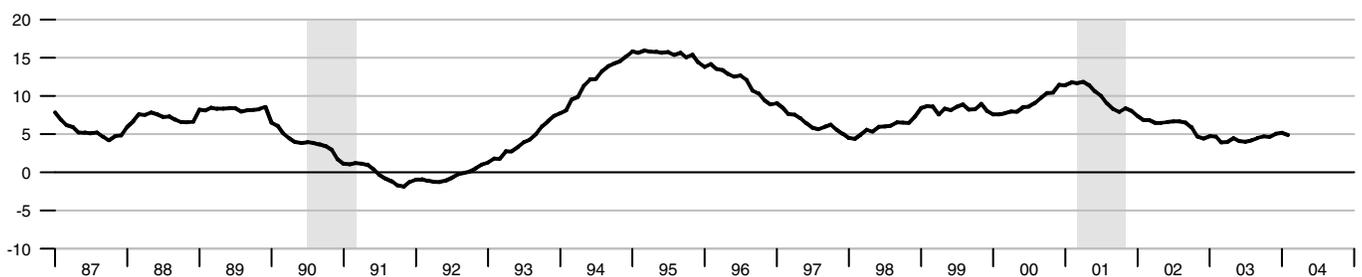
Nonfinancial Commercial Paper

Percent change from year ago

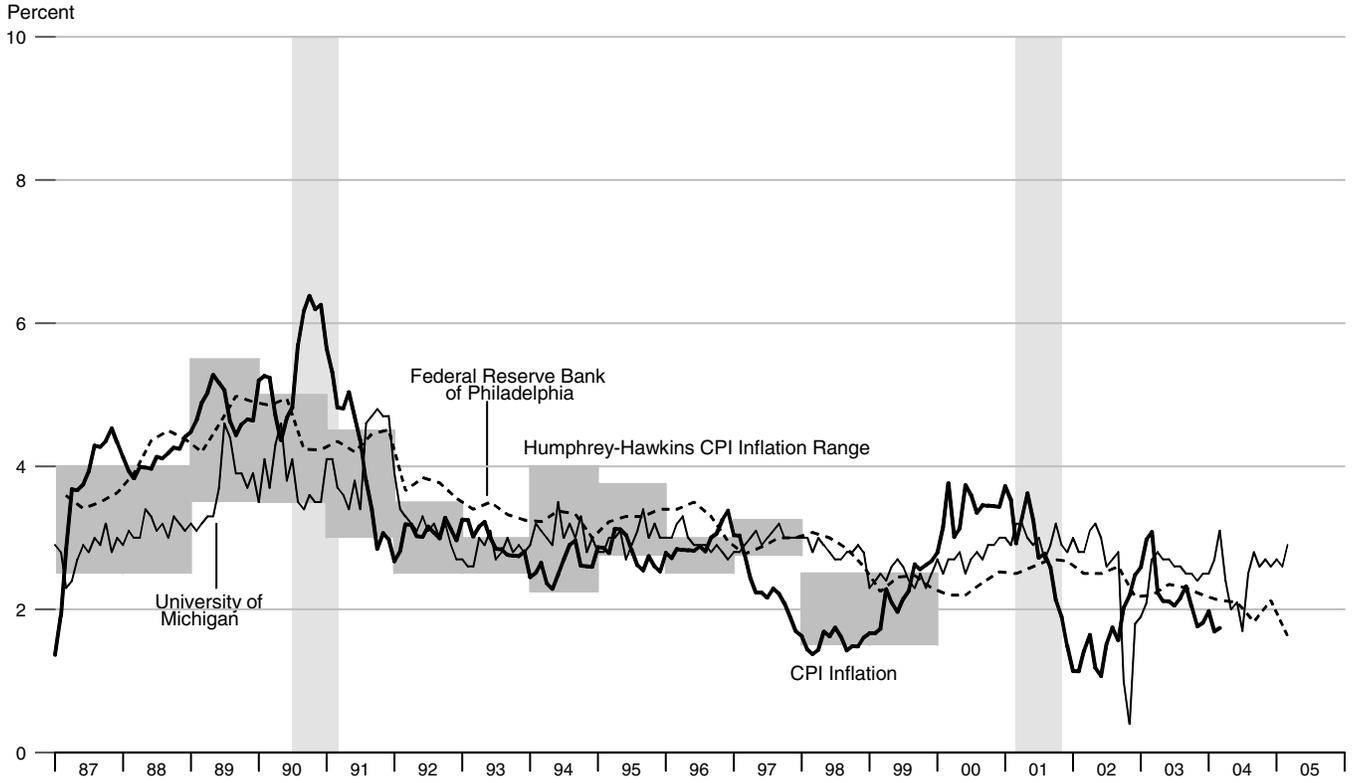


Consumer Credit

Percent change from year ago

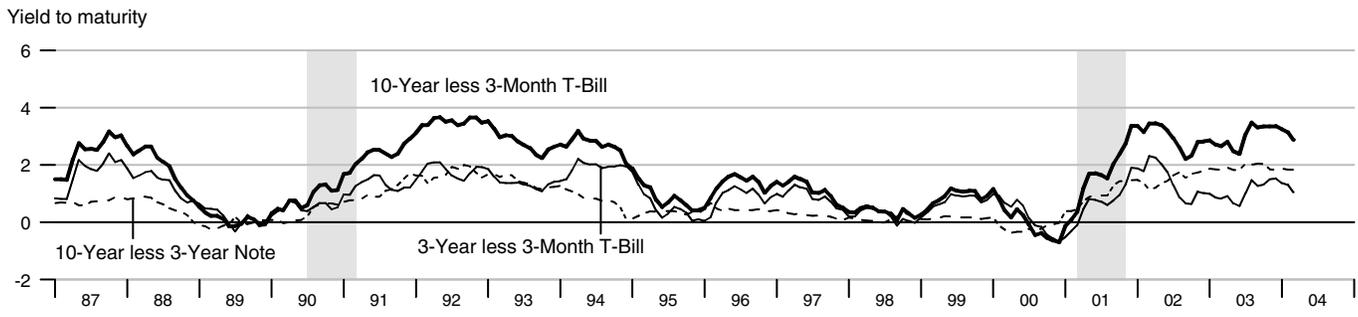


Inflation and Inflation Expectations

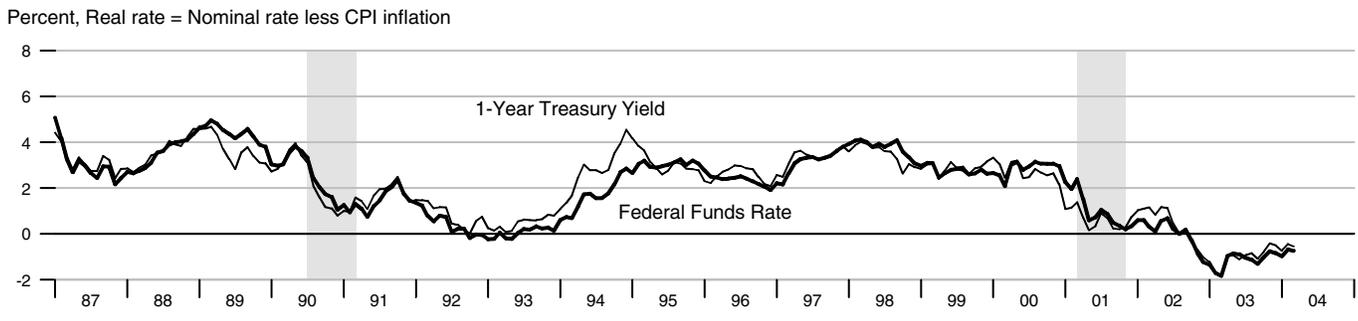


The shaded region shows the Humphrey-Hawkins CPI inflation range. Beginning in January 2000, the Humphrey-Hawkins inflation range was reported using the PCE price index and therefore is not shown on this graph. See notes on page 19.

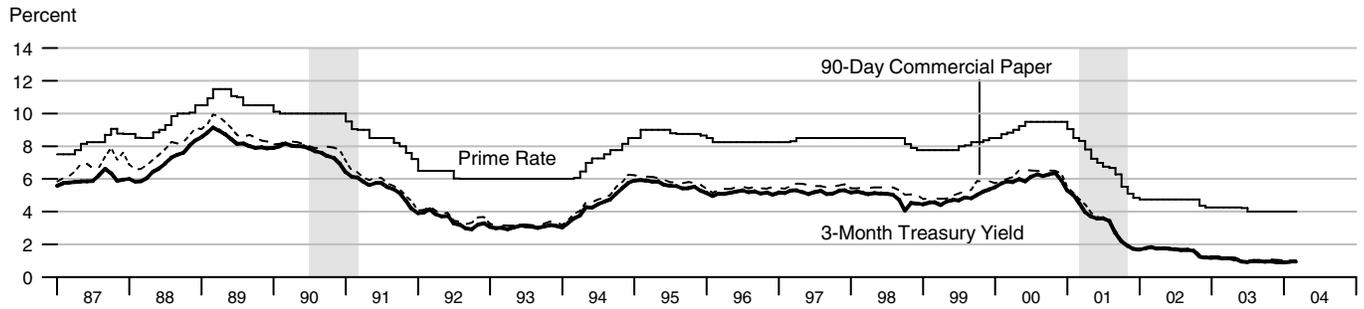
Treasury Security Yield Spreads



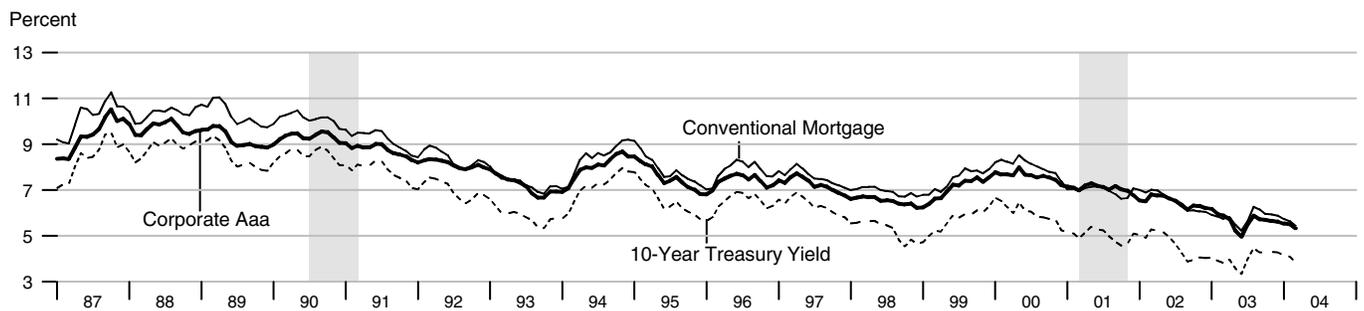
Real Interest Rates



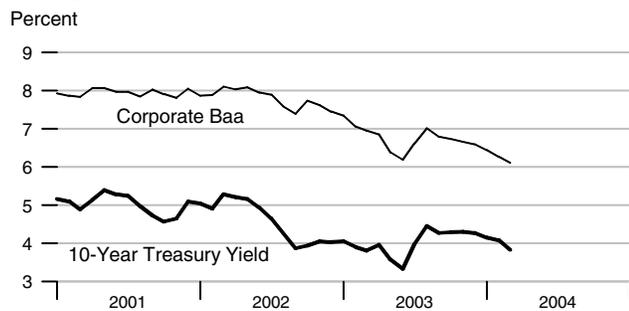
Short-Term Interest Rates



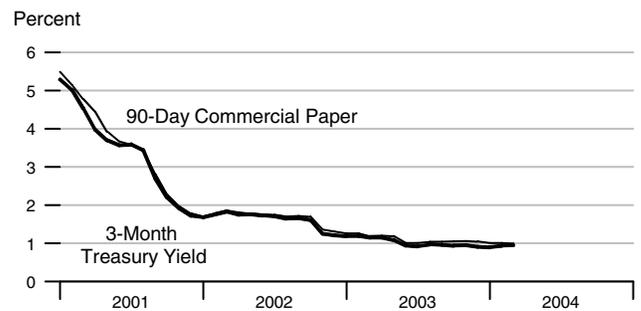
Long-Term Interest Rates



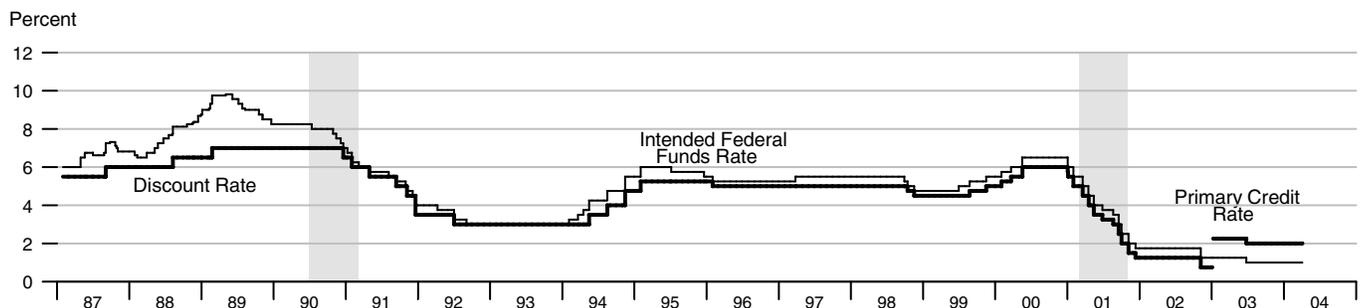
Long-Term Interest Rates



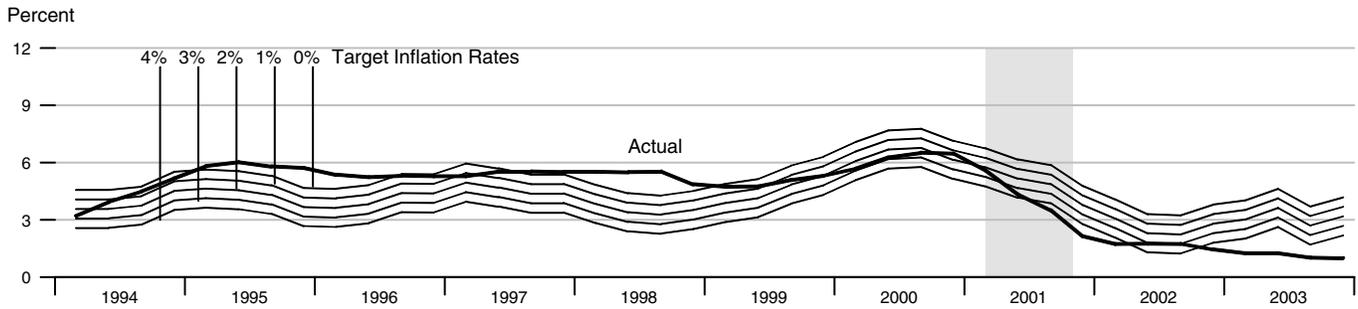
Short-Term Interest Rates



FOMC Intended Federal Funds Rate, Discount Rate, and Primary Credit Rate



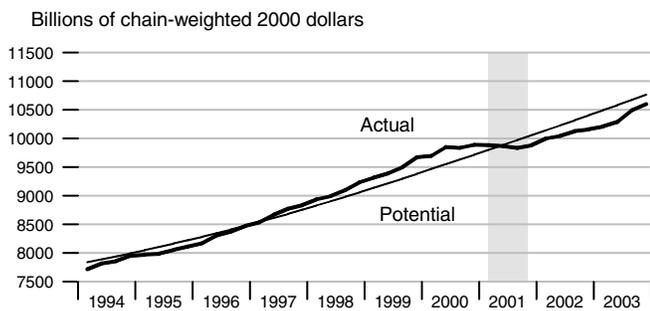
Federal Funds Rate and Inflation Targets



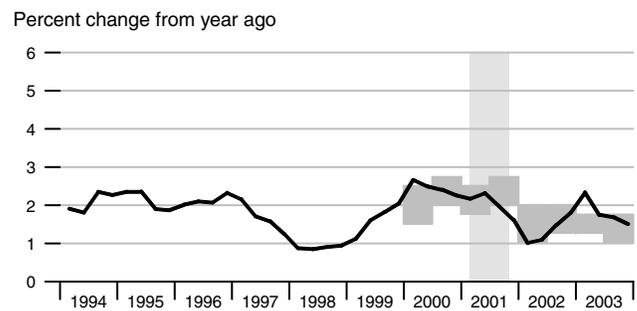
Calculated federal funds rate is based on Taylor's rule. See notes on page 19.

Components of Taylor's Rule

Actual and Potential Real GDP

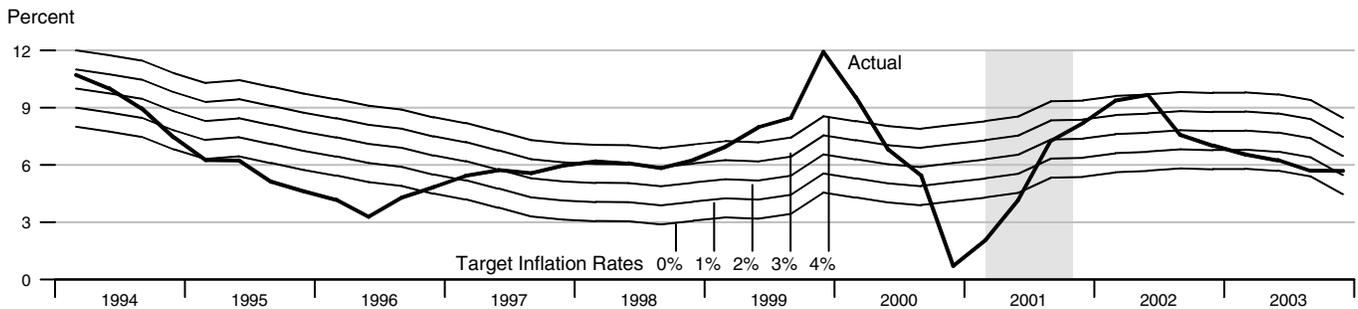


PCE Inflation and Projections



The shaded region shows the range of projections published in the Monetary Policy Report to the Congress.

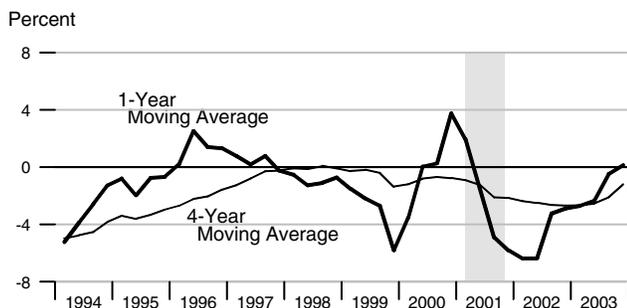
Monetary Base Growth* and Inflation Targets



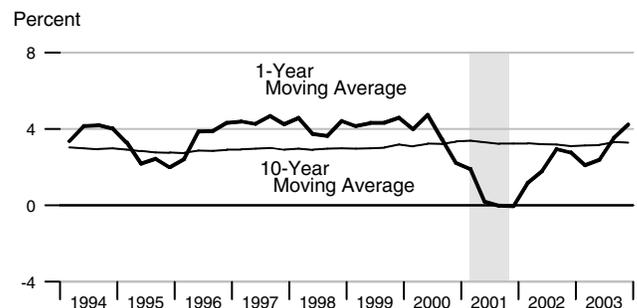
*Modified for the effects of sweeps programs on reserve demand. Calculated base growth is based on McCallum's rule. Actual base growth is percent change from year ago. See notes on page 19.

Components of McCallum's Rule

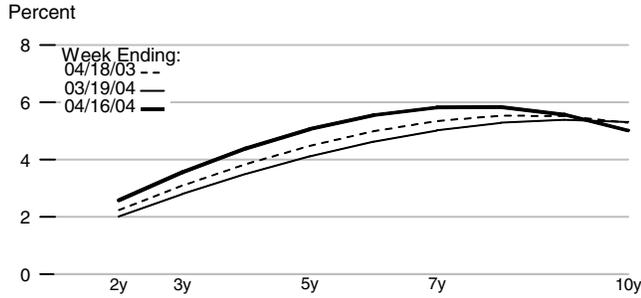
Monetary Base Velocity Growth



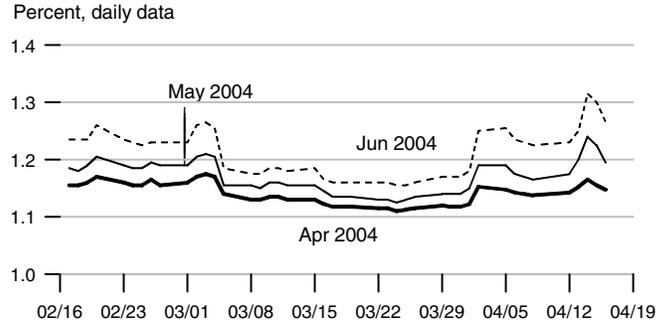
Real Output Growth



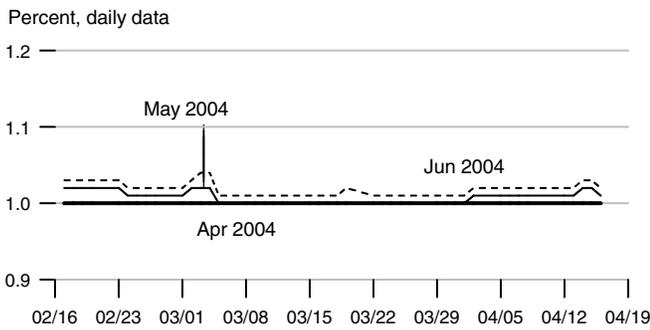
Implied One-Year Forward Rates



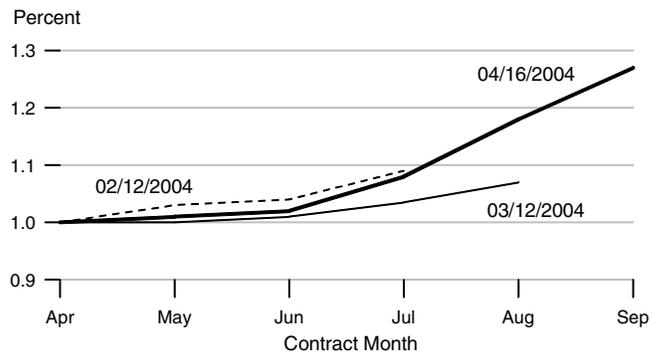
Rates on 3-Month Eurodollar Futures



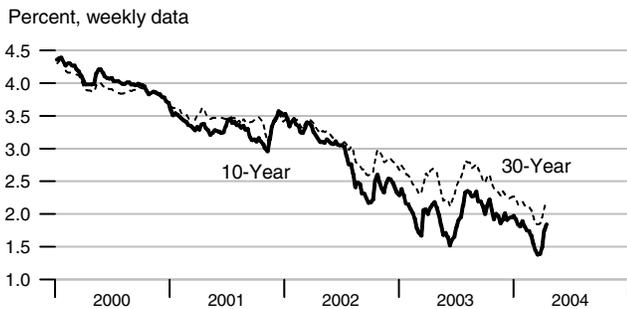
Rates on Selected Federal Funds Futures Contracts



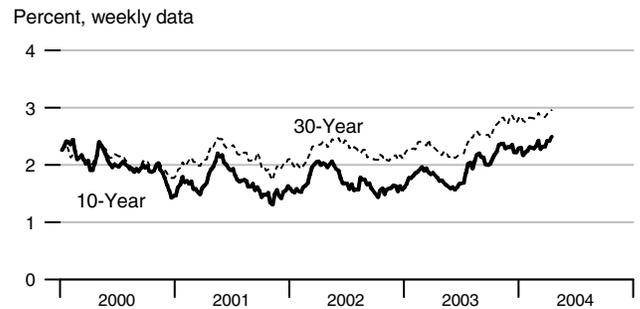
Rates on Federal Funds Futures on Selected Dates



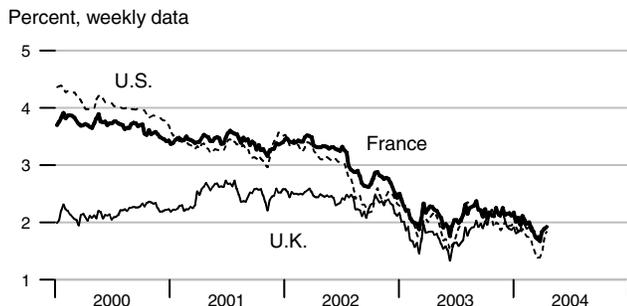
Inflation-Indexed Treasury Securities



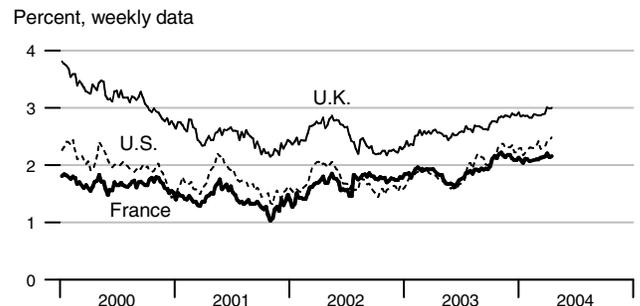
Inflation-Indexed Treasury Yield Spreads



Inflation-Indexed 10-Year Government Notes

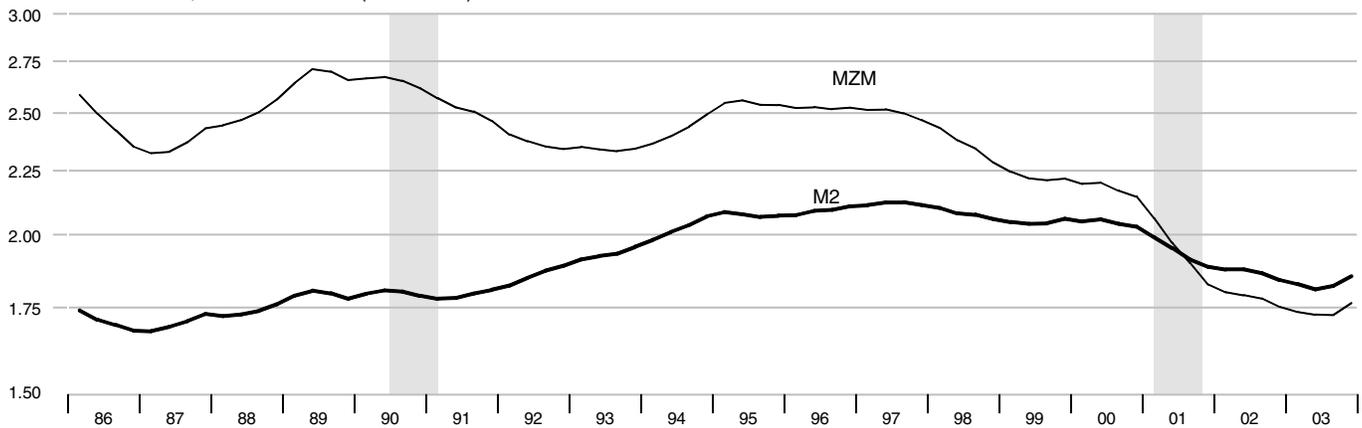


Inflation-Indexed 10-Year Government Yield Spreads



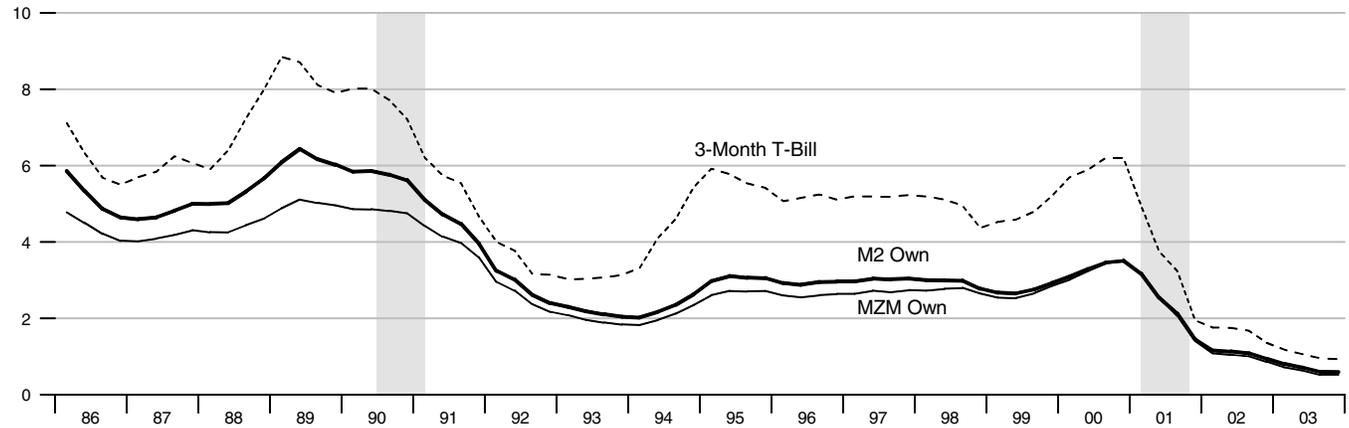
Velocity

Nominal GDP/MZM, Nominal GDP/M2 (Ratio Scale)



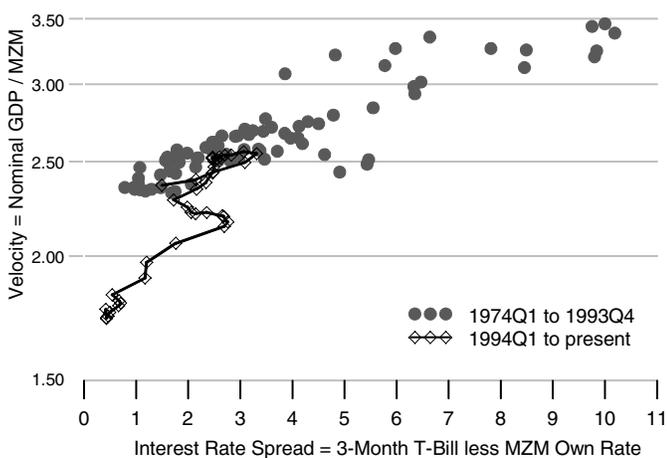
Interest Rates

Percent



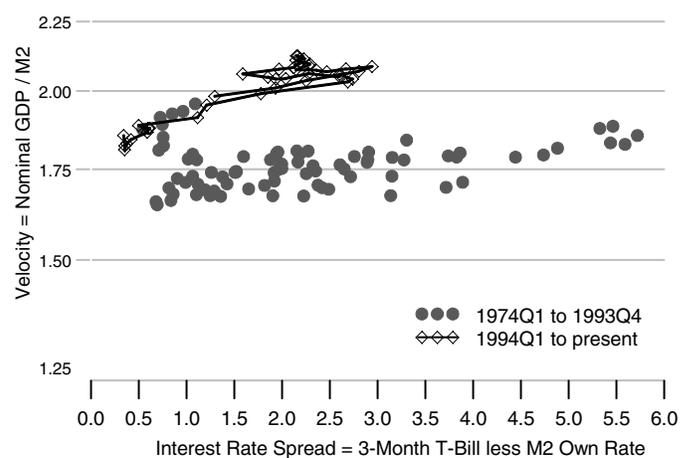
MZM Velocity and Interest Rate Spread

Ratio Scale



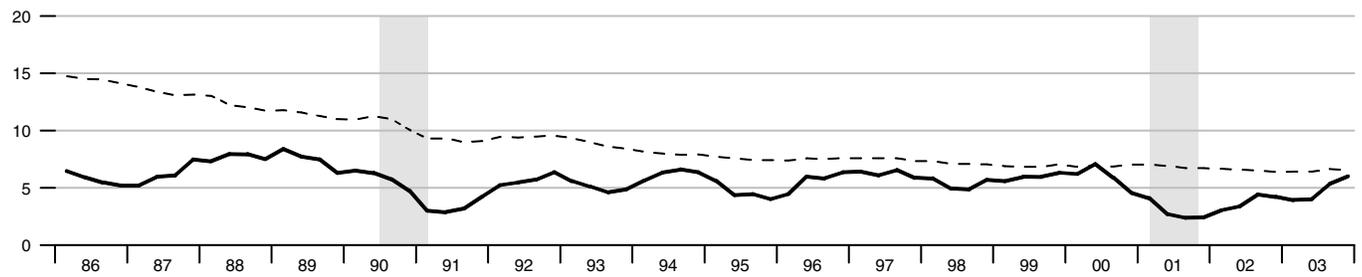
M2 Velocity and Interest Rate Spread

Ratio Scale



Gross Domestic Product

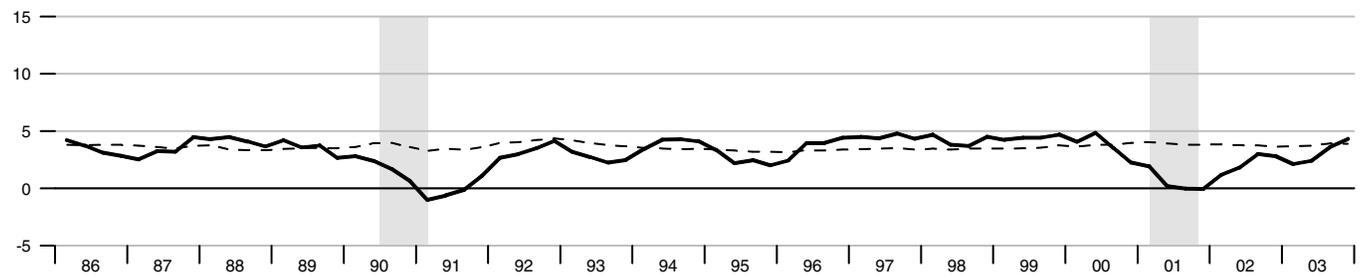
Percent change from year ago



Dashed lines indicate 10-year moving averages.

Real Gross Domestic Product

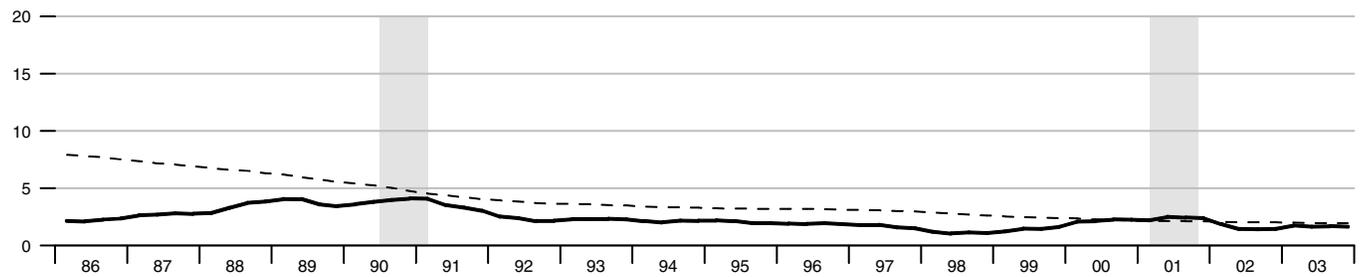
Percent change from year ago



Dashed lines indicate 10-year moving averages.

Gross Domestic Product Price Index

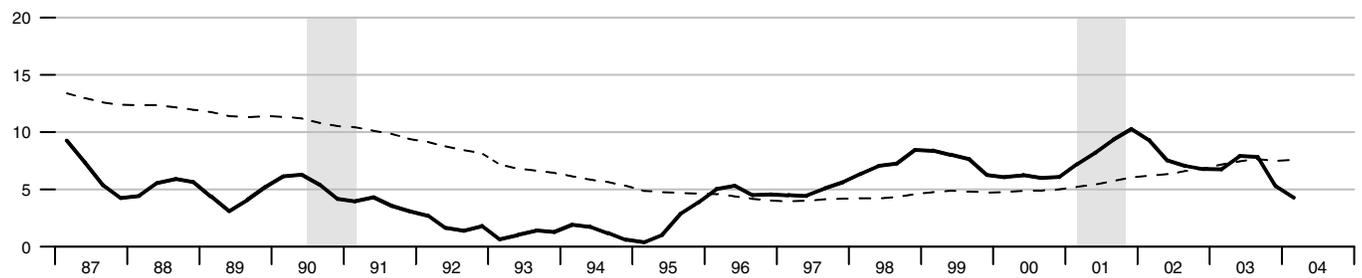
Percent change from year ago



Dashed lines indicate 10-year moving averages.

M2

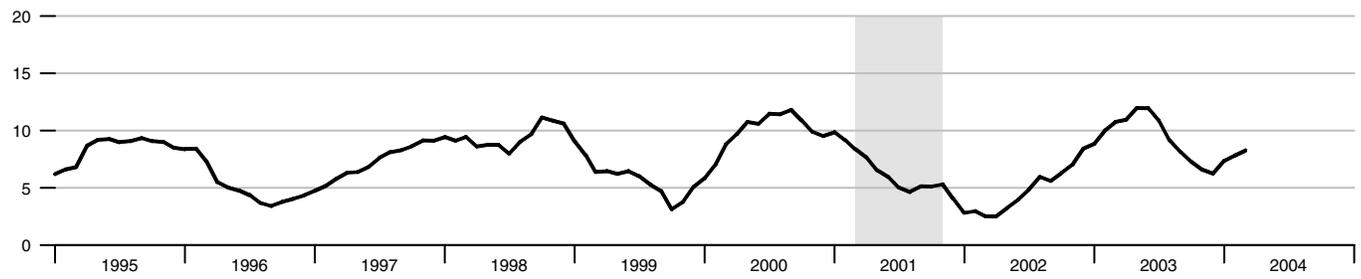
Percent change from year ago



Dashed lines indicate 10-year moving averages.

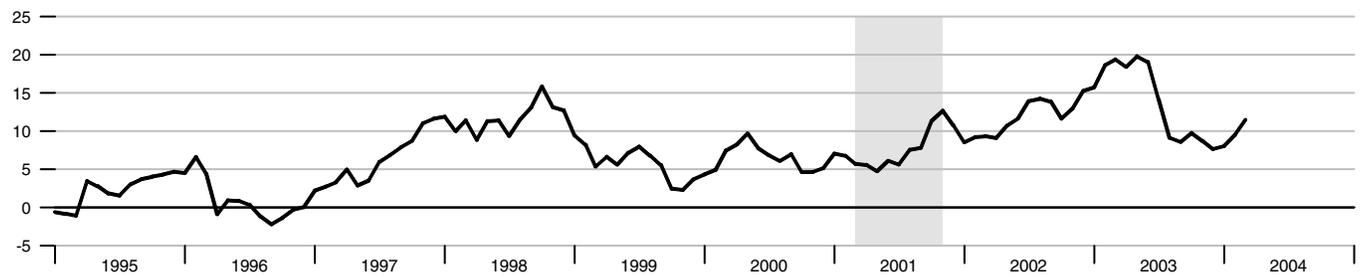
Bank Credit

Percent change from year ago



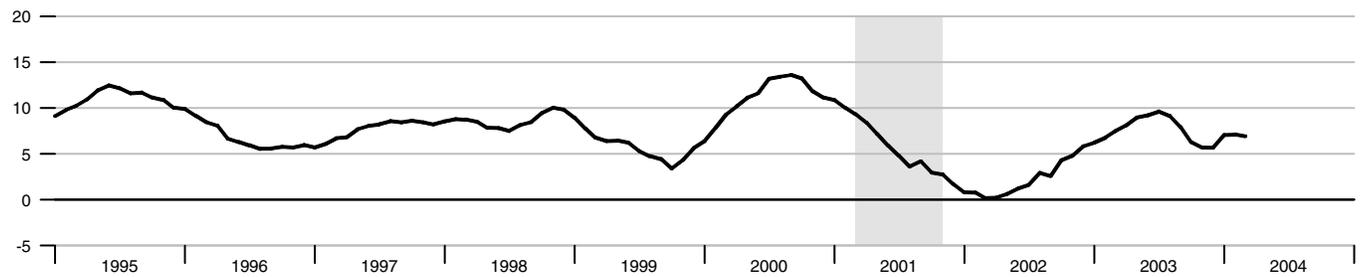
Investment Securities in Bank Credit at Commercial Banks

Percent change from year ago



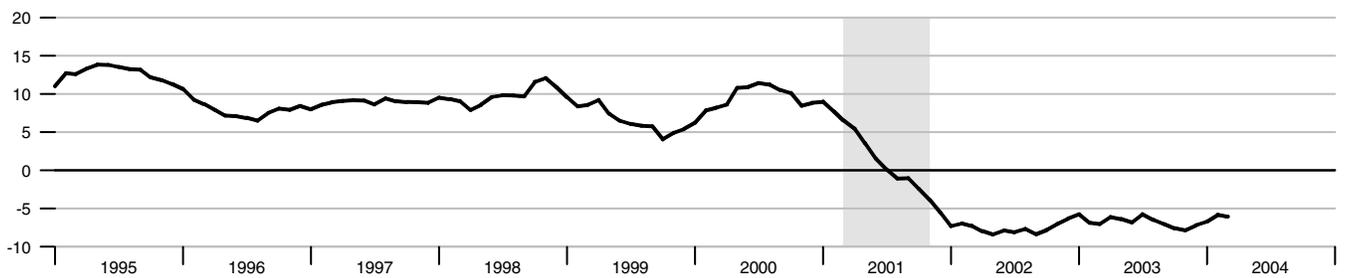
Total Loans and Leases in Bank Credit at Commercial Banks

Percent change from year ago

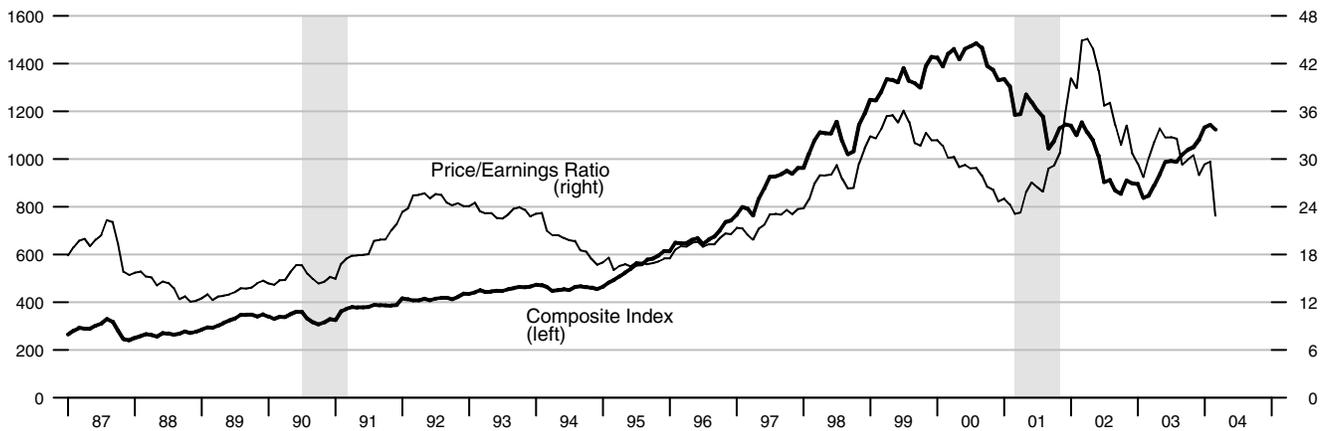


Commercial and Industrial Loans at Commercial Banks

Percent change from year ago



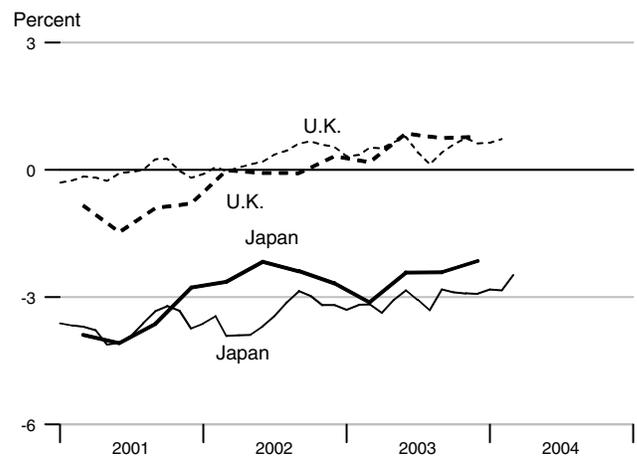
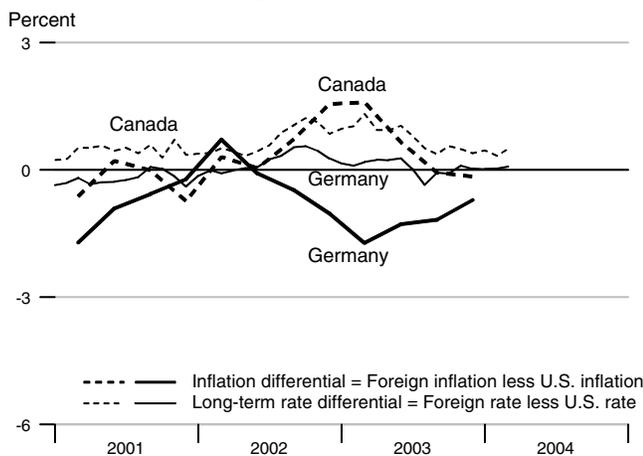
Standard & Poor's 500



Recent Inflation and Long-Term Interest Rates

	Consumer Price Inflation Rates				Long-Term Government Bond Rates			
	Percent change from year ago				Percent			
	2003Q2	2003Q3	2003Q4	2004Q1	Dec03	Jan04	Feb04	Mar04
United States	2.15	2.18	1.87	1.80	4.27	4.15	4.08	3.83
Canada	2.81	2.11	1.71	.	4.66	4.61	4.41	4.33
France	1.92	1.95	2.19	.	4.38	4.36	.	.
Germany	0.87	1.00	1.16	.	4.30	4.17	4.11	3.91
Italy	2.70	2.74	2.53	2.29	4.46	4.32	4.34	4.17
Japan	-0.27	-0.23	-0.27	.	1.35	1.33	1.24	1.35
United Kingdom	3.01	2.93	2.66	.	4.89	4.79	4.81	.

Inflation and Long-Term Interest Rate Differentials



		Money Stock				Bank	Adjusted		
		M1	MZM	M2	M3	Credit	Monetary Base	Reserves	MSI M2
1999		1101.461	4170.167	4525.993	6252.643	4578.886	574.181	88.664	257.940
2000		1103.437	4508.280	4801.878	6841.776	5028.391	607.106	84.511	272.588
2001		1136.500	5219.570	5222.885	7621.597	5347.824	641.167	85.931	296.386
2002		1190.125	5887.643	5621.579	8231.804	5599.260	697.071	87.927	319.537
2003		1263.045	6318.581	6010.922	8745.243	6123.249	740.707	92.849	343.976
2002	1	1185.211	5738.413	5504.075	8069.397	5422.080	680.264	88.156	312.109
	2	1181.936	5824.714	5555.591	8147.108	5498.524	692.937	86.979	315.680
	3	1187.477	5923.860	5655.401	8262.705	5657.828	702.753	86.821	321.630
	4	1205.875	6063.583	5771.247	8448.007	5818.609	712.330	89.753	328.727
2003	1	1229.847	6183.096	5875.219	8585.902	5957.562	726.824	90.847	335.184
	2	1255.849	6277.585	5994.667	8709.565	6138.802	738.229	91.750	342.444
	3	1279.336	6432.060	6098.014	8859.829	6188.471	744.024	94.581	348.950
	4	1287.148	6381.584	6075.790	8825.677	6208.160	753.751	94.216	349.325
2004	1	1310.187	6420.069	6126.482	8935.501	6423.814	761.251	94.616	354.121
2002	Mar	1188.391	5772.487	5521.488	8097.369	5427.344	685.165	87.937	313.287
	Apr	1177.508	5793.465	5527.635	8119.323	5453.150	689.008	88.352	313.968
	May	1181.982	5829.715	5558.579	8155.353	5497.093	692.736	86.586	315.844
	Jun	1186.317	5850.963	5580.559	8166.648	5545.328	697.068	85.999	317.229
	Jul	1192.608	5892.418	5623.042	8208.520	5587.414	701.032	86.101	319.473
	Aug	1181.130	5930.221	5658.272	8271.607	5663.797	702.878	86.383	321.742
	Sep	1188.693	5948.940	5684.888	8307.987	5722.272	704.350	87.978	323.676
	Oct	1200.029	5965.993	5730.746	8335.917	5748.444	710.665	89.827	326.419
	Nov	1202.601	6080.784	5777.203	8467.506	5820.268	712.473	89.839	329.035
	Dec	1214.994	6143.973	5805.793	8540.598	5887.114	713.851	89.594	330.728
2003	Jan	1218.414	6155.325	5838.166	8550.566	5890.107	719.529	89.444	332.918
	Feb	1232.904	6188.624	5881.045	8587.779	5971.859	728.659	91.818	335.492
	Mar	1238.223	6205.339	5906.445	8619.361	6010.719	732.283	91.279	337.141
	Apr	1243.363	6236.325	5949.716	8655.888	6050.638	736.485	92.277	339.764
	May	1255.507	6273.530	5998.537	8711.342	6155.932	738.665	91.422	342.635
	Jun	1268.678	6322.900	6035.747	8761.464	6209.836	739.537	91.552	344.933
	Jul	1273.333	6414.968	6079.537	8837.927	6196.682	741.243	93.478	347.770
	Aug	1282.308	6447.541	6118.151	8876.219	6181.607	745.276	95.405	350.029
	Sep	1282.367	6433.672	6096.353	8865.340	6187.124	745.554	94.861	349.051
	Oct	1284.654	6402.285	6080.344	8836.313	6165.970	753.735	95.271	349.134
	Nov	1283.778	6381.330	6076.093	8823.870	6203.151	754.697	94.821	349.350
	Dec	1293.012	6361.137	6070.934	8816.847	6255.360	752.820	92.556	349.491
2004	Jan	1287.062	6372.444	6076.192	8867.971	6323.765	756.653	92.777	350.676
	Feb	1311.982	6415.620	6129.108	8934.599	6439.587	763.031	95.490	354.228
	Mar	1331.516	6472.143	6174.145	9003.932	6508.091	764.070	95.580	357.458

*All values are given in billions of dollars.

	Federal Funds	Discount Rate	Primary Credit Rate	Prime Rate	3-mo CDs	Treasury Yields			Corporate Aaa Bonds	S & L Aaa Bonds	Conventional Mortgage
						3-mo	3-yr	10-yr			
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	5.01	6.97
2002	1.67	1.17		4.68	1.73	1.63	3.10	4.61	6.49	4.87	6.54
2003	1.13		2.11	4.12	1.15	1.03	2.11	4.02	5.67	4.52	5.82
2002	1	1.73		4.75	1.82	1.76	3.75	5.08	6.62	5.02	6.97
	2	1.75		4.75	1.83	1.75	3.77	5.10	6.71	5.01	6.81
	3	1.74		4.75	1.76	1.67	2.62	4.26	6.35	4.72	6.29
	4	1.44		4.45	1.49	1.36	2.27	4.01	6.28	4.71	6.08
2003	1	1.25		4.25	1.26	1.18	2.07	3.92	6.00	4.60	5.83
	2	1.25		4.24	1.17	1.06	1.77	3.62	5.31	4.28	5.51
	3	1.02		4.00	1.07	0.95	2.20	4.23	5.70	4.68	6.01
	4	1.00		4.00	1.10	0.93	2.38	4.29	5.66	4.52	5.92
2004	1	1.00		4.00	1.05	0.93	2.17	4.02	5.45	4.26	5.61
2002	Mar	1.73		4.75	1.91	1.83	4.14	5.28	6.81	5.09	7.01
	Apr	1.75		4.75	1.87	1.75	4.01	5.21	6.76	5.09	6.99
	May	1.75		4.75	1.82	1.76	3.80	5.16	6.75	5.03	6.81
	Jun	1.75		4.75	1.81	1.73	3.49	4.93	6.63	4.92	6.65
	Jul	1.73		4.75	1.79	1.71	3.01	4.65	6.53	4.81	6.49
	Aug	1.74		4.75	1.73	1.65	2.52	4.26	6.37	4.78	6.29
	Sep	1.75		4.75	1.76	1.66	2.32	3.87	6.15	4.58	6.09
	Oct	1.75		4.75	1.73	1.61	2.25	3.94	6.32	4.66	6.11
	Nov	1.34		4.35	1.39	1.25	2.32	4.05	6.31	4.77	6.07
	Dec	1.24		4.25	1.34	1.21	2.23	4.03	6.21	4.70	6.05
2003	Jan	1.24		4.25	1.29	1.19	2.18	4.05	6.17	4.72	5.92
	Feb	1.26		4.25	1.27	1.19	2.05	3.90	5.95	4.57	5.84
	Mar	1.25		4.25	1.23	1.15	1.98	3.81	5.89	4.51	5.75
	Apr	1.26		4.25	1.24	1.15	2.06	3.96	5.74	4.60	5.81
	May	1.26		4.25	1.22	1.09	1.75	3.57	5.22	4.16	5.48
	Jun	1.22		4.22	1.04	0.94	1.51	3.33	4.97	4.07	5.23
	Jul	1.01		4.00	1.05	0.92	1.93	3.98	5.49	4.59	5.63
	Aug	1.03		4.00	1.08	0.97	2.44	4.45	5.88	4.82	6.26
	Sep	1.01		4.00	1.08	0.96	2.23	4.27	5.72	4.63	6.15
	Oct	1.01		4.00	1.10	0.94	2.26	4.29	5.70	4.64	5.95
	Nov	1.00		4.00	1.11	0.95	2.45	4.30	5.65	4.50	5.93
	Dec	0.98		4.00	1.10	0.91	2.44	4.27	5.62	4.41	5.88
2004	Jan	1.00		4.00	1.06	0.90	2.27	4.15	5.54	4.42	5.74
	Feb	1.01		4.00	1.05	0.94	2.25	4.08	5.50	4.26	5.64
	Mar	1.00		4.00	1.05	0.95	2.00	3.83	5.33	4.11	5.45

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

		M1	MZM	M2	M3	
Percent change at an annual rate						
1999		2.00	12.41	7.56	8.74	
2000		0.18	8.11	6.10	9.42	
2001		3.00	15.78	8.77	11.40	
2002		4.72	12.80	7.63	8.01	
2003		6.13	7.32	6.93	6.24	
<hr/>						
2002	1	5.94	11.12	7.30	6.51	
	2	-1.11	6.02	3.74	3.85	
	3	1.88	6.81	7.19	5.68	
	4	6.20	9.43	8.19	8.97	
2003	1	7.95	7.88	7.21	6.53	
	2	8.46	6.11	8.13	5.76	
	3	7.48	9.84	6.90	6.90	
	4	2.44	-3.14	-1.46	-1.54	
2004	1	7.16	2.41	3.34	4.98	
<hr/>						
2002	Mar	3.89	5.50	2.41	2.94	
	Apr	-10.99	4.36	1.34	3.25	
	May	4.56	7.51	6.72	5.33	
	Jun	4.40	4.37	4.75	1.66	
	Jul	6.36	8.50	9.14	6.15	
	Aug	-11.55	7.70	7.52	9.22	
	Sep	7.68	3.79	5.64	5.28	
	Oct	11.44	3.44	9.68	4.03	
	Nov	2.57	23.09	9.73	18.94	
	Dec	12.37	12.47	5.94	10.36	
	2003	Jan	3.38	2.22	6.69	1.40
		Feb	14.27	6.49	8.81	5.22
Mar		5.18	3.24	5.18	4.41	
Apr		4.98	5.99	8.79	5.09	
May		11.72	7.16	9.85	7.69	
Jun		12.59	9.44	7.44	6.90	
Jul		4.40	17.47	8.71	10.47	
Aug		8.46	6.09	7.62	5.20	
Sep		0.06	-2.58	-4.28	-1.47	
Oct		2.14	-5.85	-3.15	-3.93	
Nov		-0.82	-3.93	-0.84	-1.69	
Dec		8.63	-3.80	-1.02	-0.96	
2004	Jan	-5.52	2.13	1.04	6.96	
	Feb	23.23	8.13	10.45	9.02	
	Mar	17.87	10.57	8.82	9.31	

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 (money, zero maturity): M2 minus small-denomination time deposits, plus institutional money market mutual funds (that is, those included in M3 but excluded from M2). The label MZM was coined by William Poole (1991); the aggregate itself was proposed earlier by Motley (1988).

M2: M1 plus savings deposits (including money market deposit accounts) and small-denomination (under \$100,000) time deposits issued by financial institutions; and shares in retail money market mutual funds (funds with initial investments under \$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 nonfinancial firms. End-of-period basis.

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, 2001, 2003).

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 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, 2001, 2003).

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, with additional data at research.stlouisfed.org/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 *Statistical Supplement to the 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: 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 research.stlouisfed.org/aggreg/swdata.html. **Primary Credit Rate**, **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. The **Treasury Yield Curve** shows constant maturity yields calculated by the U.S. Treasury for securities with 3 months and 1, 2, 3, 5, 7, and 10 years to maturity. Daily data and descriptions are available at research.stlouisfed.org/fred2/. See

also *Statistical Supplement to the Federal Reserve Bulletin*, table 1.35. The 30-year constant maturity series was discontinued by the Treasury as of February 18, 2002.

Page 5: **Checkable Deposits** is the sum of demand and other checkable deposits. **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 *Statistical Supplement to the 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 consumer price index 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 gross domestic product (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

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

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 $((y_t - y_{t-40})/40) \times 400$, where y_t is the log of real GDP. The 4-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 found at research.stlouisfed.org/aggreg/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 $m = 1, \dots, 10$ 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),

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

where duration is approximated as $D(m) = (1 - e^{-R(m) \times m})/R(m)$. These rates are linear approximations to the true instantaneous forward rates; see Shiller (1990). For a discussion of the use of forward rates as indicators of inflation expectations, see Sharpe (1997). **Rates on 3-Month Eurodollar Futures** and **Rates on Selected Federal Funds Futures Contracts** trace through time the yield on three specific contracts. **Rates on Federal Funds Futures on Selected Dates** displays a single day's snapshot of yields for contracts expiring in the months shown on the horizontal axis. **Inflation-Indexed Treasury Securities** are yields on the most recently issued inflation-indexed securities of 10- and 30-year original maturities. **Inflation-Indexed 10-Year Government Notes** shows the yield of an inflation-indexed note that is scheduled to mature in approximately (but not greater than) 10 years. The current French note has a maturity date of 7/25/2013, the current U.K. note has a maturity date of 8/16/2013, and the current U.S. note has a maturity date of 1/15/2014. **Inflation-Indexed Treasury Yield Spreads** and **Inflation-Indexed 10-Year Government Yield Spreads** equal the difference between the yields on the most recently issued inflation-indexed securities and the unadjusted security yields of similar maturity.

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. Prior to 1982, the 3-month T-bill rates are secondary market yields. From 1982 forward, rates are 3-month constant maturity yields.

Page 13: Real Gross Domestic Product is GDP as measured in chained 2000 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 2000 dollars.

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

Page 15: Inflation Rate Differentials are the differences between the foreign consumer price inflation rates and year-over-year changes in the U.S. all-items Consumer Price Index.

Page 17: Treasury Yields are Treasury constant maturities as reported in the Board of Governors of the Federal Reserve System's H.15 release.

Sources

Agence France Trésor: French note yields.

Bank of Canada: Canadian note yields.

Bank of England: U.K. note yields.

Board of Governors of the Federal Reserve System:

Monetary aggregates and components: 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 website. Nonfinancial debt: Z.1 release. M2 own rate.

Bureau of Economic Analysis: GDP.

Bureau of Labor Statistics: CPI.

Chicago Board of Trade: Federal funds futures contract.

Chicago Mercantile Exchange: Eurodollar futures.

Congressional Budget Office: Potential real GDP.

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

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

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

Standard & Poor's: Stock price-earnings ratio, stock price composite index.

University of Michigan Survey Research Center: Median expected price change.

U.S. Department of the Treasury: U.S. security yields.

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Note: *Available on the Internet at research.stlouisfed.org/publications/review/.

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STEP 1

Please go to research.stlouisfed.org/useraccount/register and enter your email address and your new password. Click the button “Continue, using our secure server” to proceed to the next step.

STEP 2

After Step 1 is complete, the research.stlouisfed.org website will email an account registration notification to the email address that you provided in Step 1. Open this message and please click one of the url addresses provided in the email to proceed to Step 3. (Please note: the url addresses that you receive in your email will be different from the screenshot below.)

Thank you for registering with research.stlouisfed.org, the St. Louis Fed's Economic Research web site. In order to activate your account, please visit the following web page on our secure server:

<https://research.stlouisfed.org/useraccount/register/step3/> ←

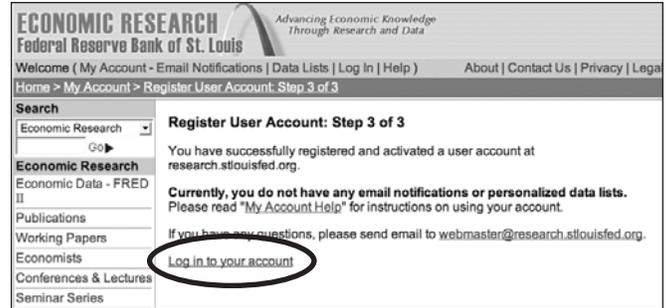
If you experience problems using our secure server, you can use our standard server instead by visiting the following web page:

<http://research.stlouisfed.org/useraccount/register/step3/> ←

Monetary Trends

STEP 3

You should receive a message indicating that you have registered and activated a user account at research.stlouisfed.org. Please click on the “Log in to your account” link to sign up for *Monetary Trends* email notifications.



• Signing up for *Monetary Trends* Email Notifications

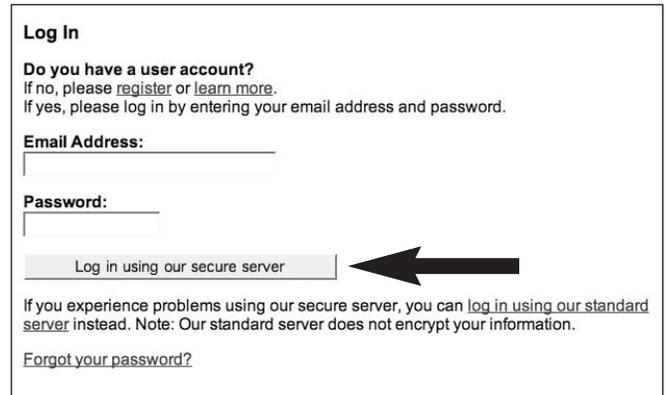
STEP 4

Please be sure to log in to your user account before proceeding to Step 5.

To log in, please visit the research.stlouisfed.org website and click the “Log In” link, which is on the masthead of each page on the site.

Users can also log in to their user account by visiting research.stlouisfed.org/useraccount/login directly.

Please enter your email address and password in the appropriate fields and click the button labeled “Log in using our secure server.”



STEP 5

Please go to the Publications index page. This index page can be reached by clicking the “Publications” link on the left-hand side of all research.stlouisfed.org pages.

Click on the “Email Notifications” link that is listed right below the *Monetary Trends* header.

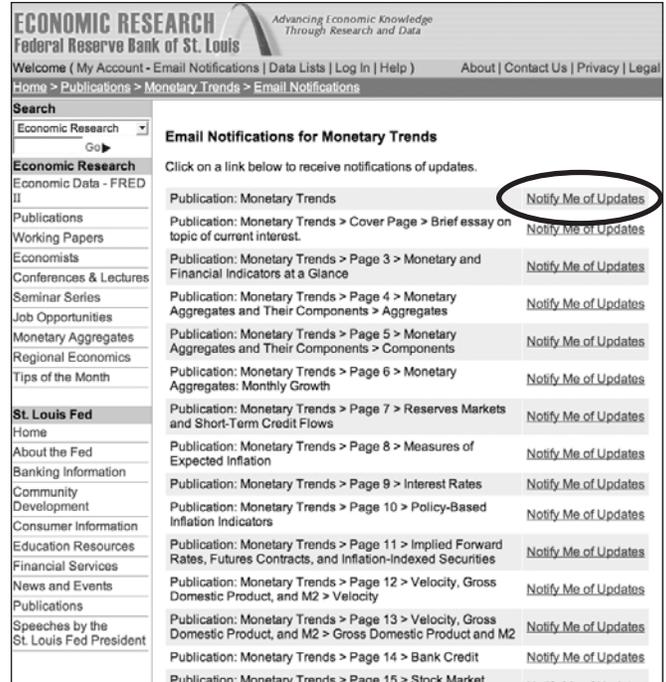


STEP 6

You now should have reached the index page that lists every email notification for *Monetary Trends*. To receive an email notification when a particular *Monetary Trends* item is updated, please click the “Notify Me of Updates” listed right across from that particular *Monetary Trends* item. For example, if you want to receive an email notification when a new issue of *Monetary Trends* is available, please click the first “Notify Me of Updates” link listed on the page.

If you would like to receive additional *Monetary Trends* email notifications, either hit the “Back” button on your web browser or repeat Step 5 under “Signing up for *Monetary Trends* Email Notifications.” Then click “Notify Me of Updates” for the additional *Monetary Trends* item you want to receive through email notification.

Please note that individual pages of *Monetary Trends* are updated periodically (at various times throughout the month) as new data become available.



• Revising Your Email Notifications

While you are logged in to your account, click on “Email Notifications” on the masthead of any page. Your current email notifications will appear, along with a “Remove” option for each notification. Click the “Remove” link to delete a notification from your account.

