

Monetary Trends

May 2012

This publication contains charts and tables
compiled by the Data Desk staff
of the Federal Reserve Bank of St. Louis.

The data are related to U.S. monetary and financial conditions,
with an emphasis on various measures of the monetary policy stance.

Effective January 2012, all cover pages for the *International Economic Trends*, *Monetary Trends*, and *National Economic Trends* publications have been discontinued. Cover pages are now part of our *Economic Synopses* series.



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

We welcome your comments addressed to:

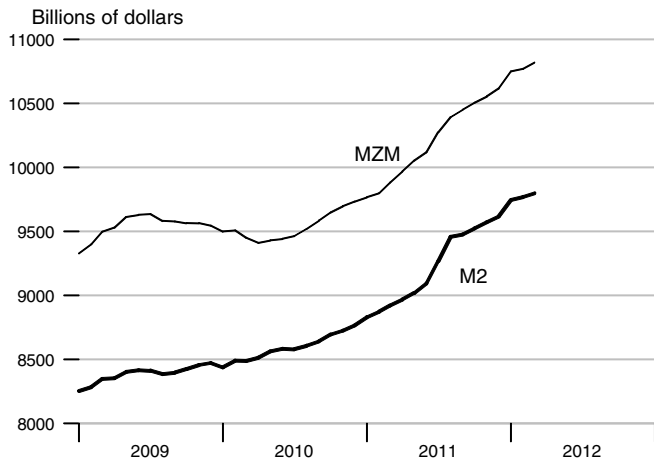
Editor, *Monetary Trends*
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St. Louis, MO 63166-0442

or to:

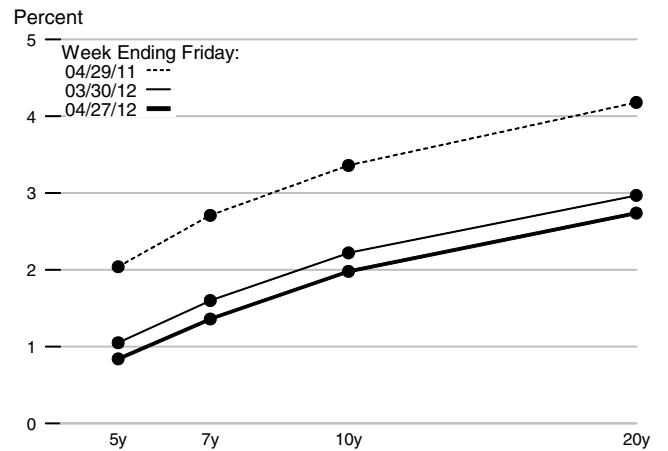
stlsFRED@stls.frb.org

On March 23, 2006, the Board of Governors of the Federal Reserve System ceased the publication of the M3 monetary aggregate. It also ceased publishing the following components: large-denomination time deposits, RPs, and eurodollars.

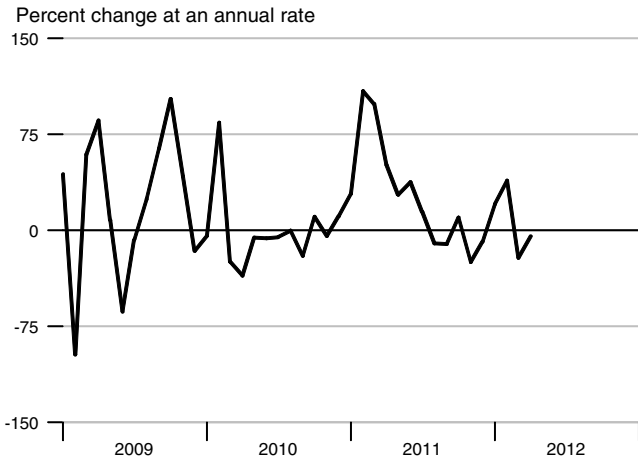
M2 and MZM



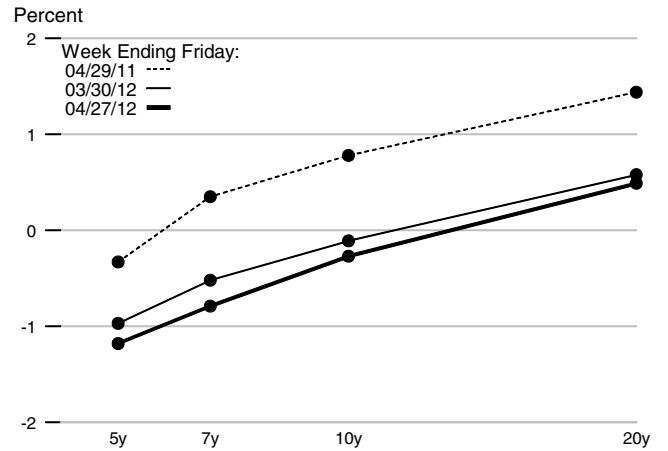
Treasury Yield Curve



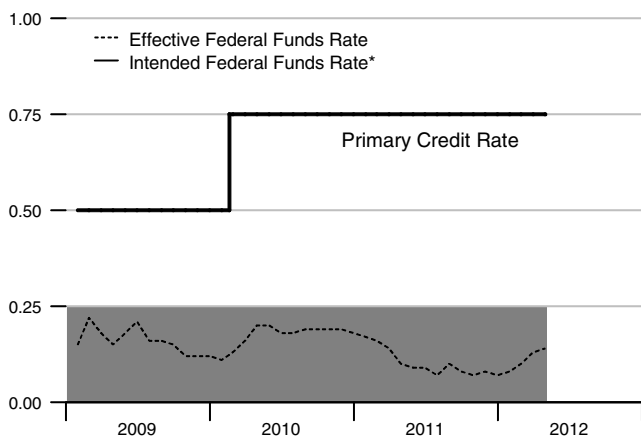
Adjusted Monetary Base



Real Treasury Yield Curve

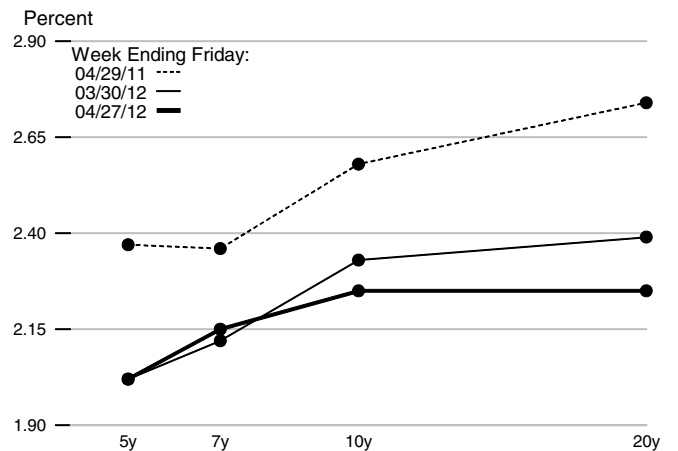


Reserve Market Rates



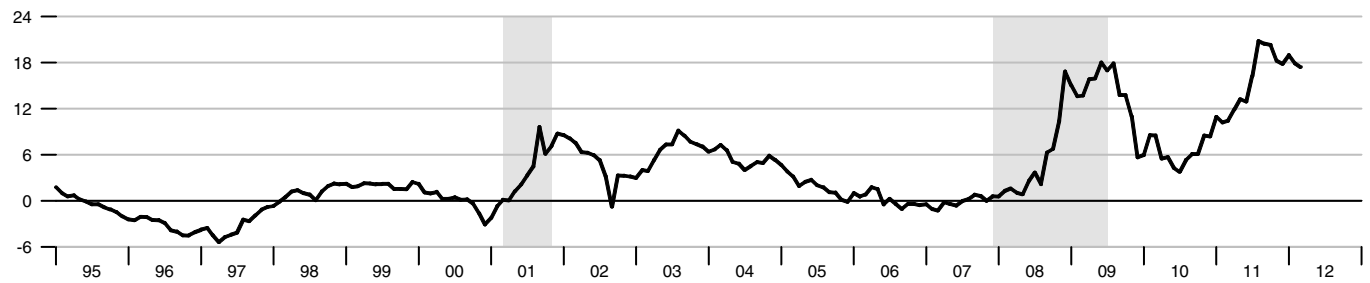
*Note: Effective December 16, 2008, FOMC reports the Intended Federal Funds Rate as a range. Currently, Intended Federal Funds Rate is not plotted on this chart due to the note above.

Inflation-Indexed Treasury Yield Spreads



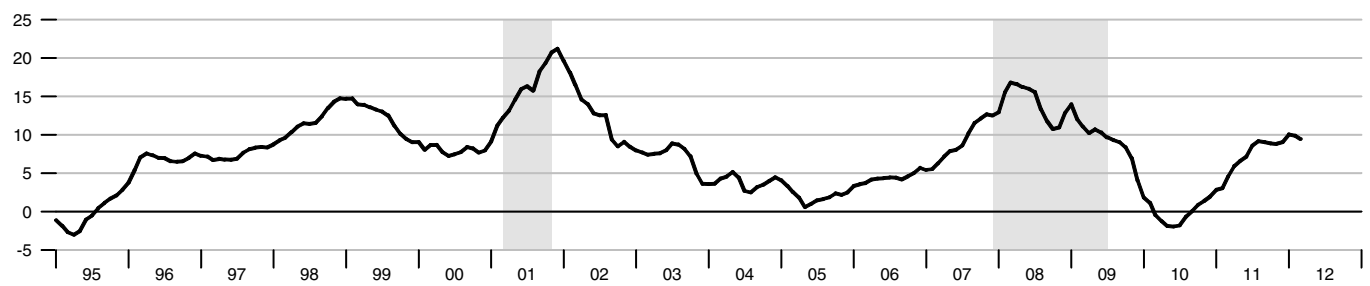
M1

Percent change from year ago



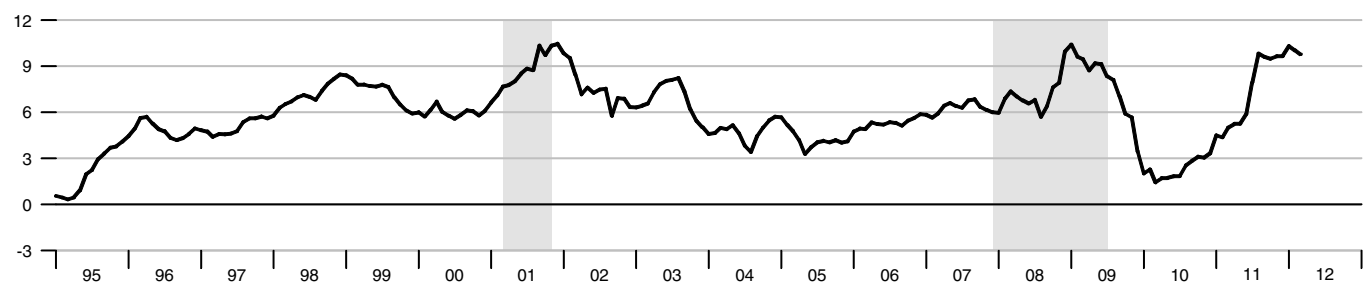
MZM

Percent change from year ago



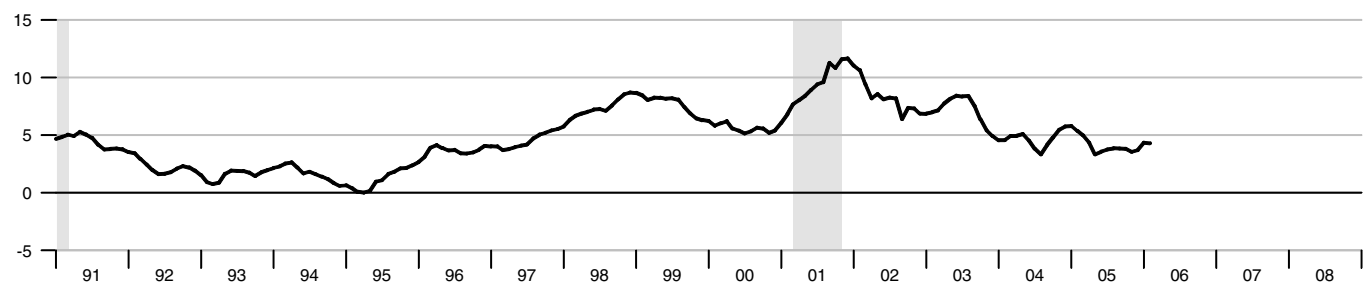
M2

Percent change from year ago



Monetary Services Index - M2**

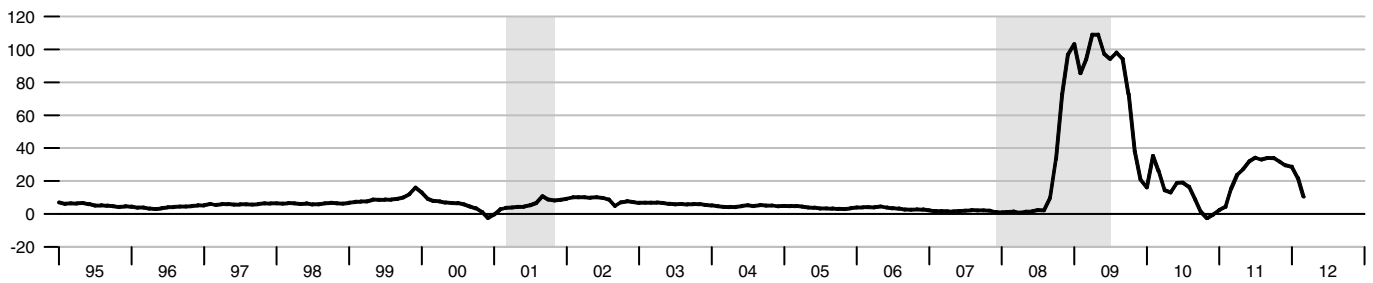
Percent change from year ago



**We will not update the MSI series until we revise the code to accommodate the discontinuation of M3.

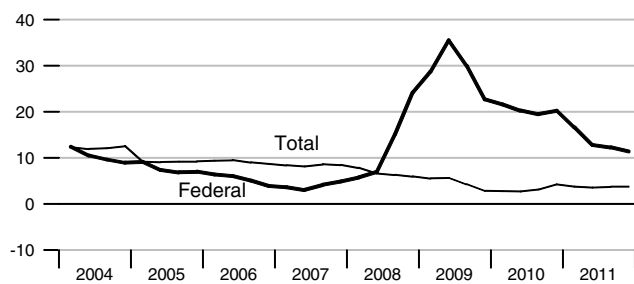
Adjusted Monetary Base

Percent change from year ago



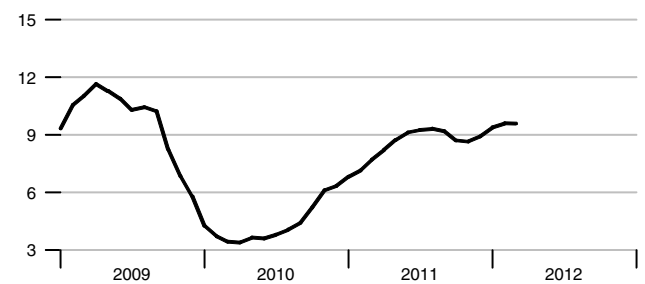
Domestic Nonfinancial Debt

Percent change from year ago



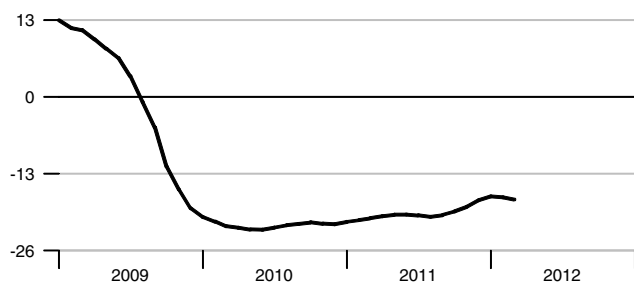
Currency Held by the Nonbank Public

Percent change from year ago



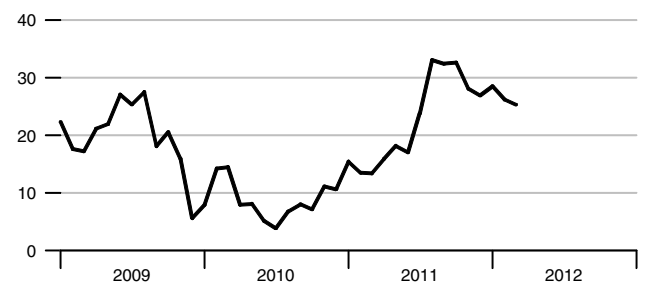
Small Denomination Time Deposits

Percent change from year ago



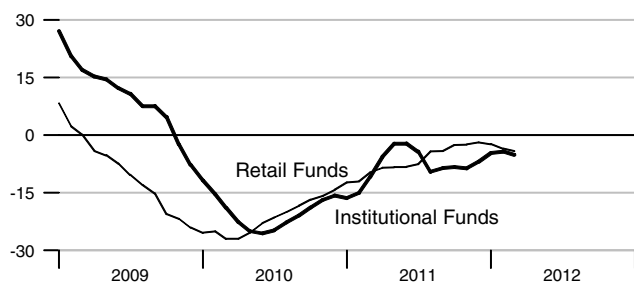
Checkable Deposits

Percent change from year ago



Money Market Mutual Fund Shares

Percent change from year ago



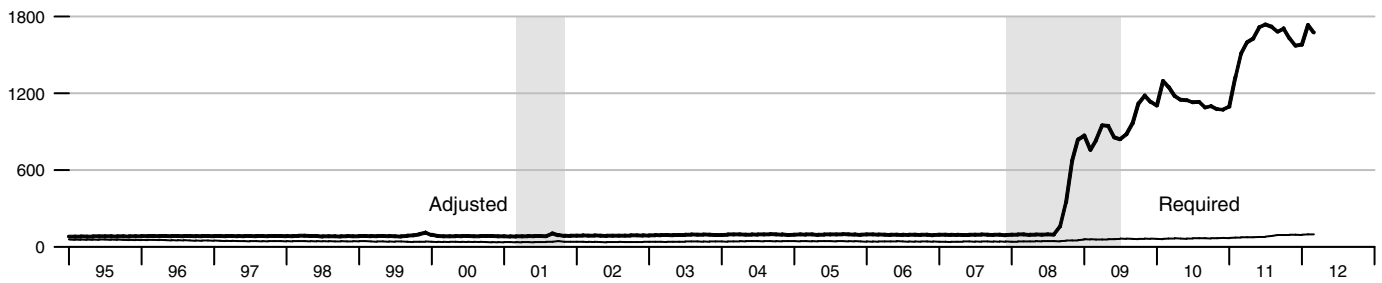
Savings Deposits

Percent change from year ago



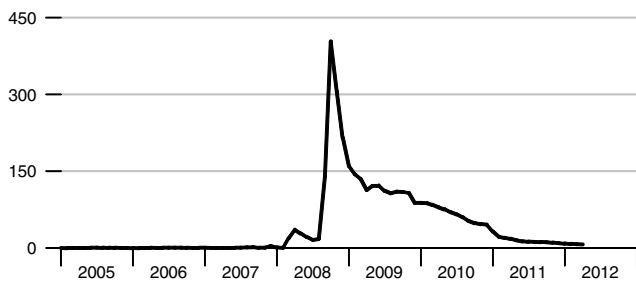
Adjusted and Required Reserves

Billions of dollars



Total Borrowings, nsa

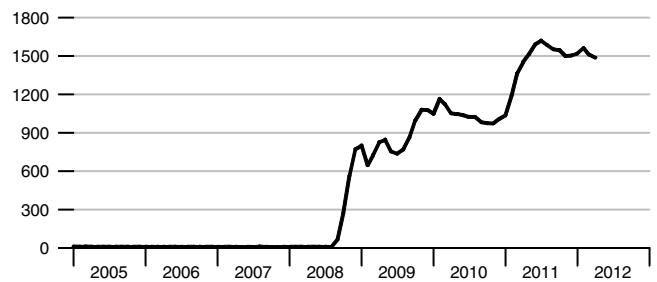
Billions of dollars



* Data exclude term auction credit

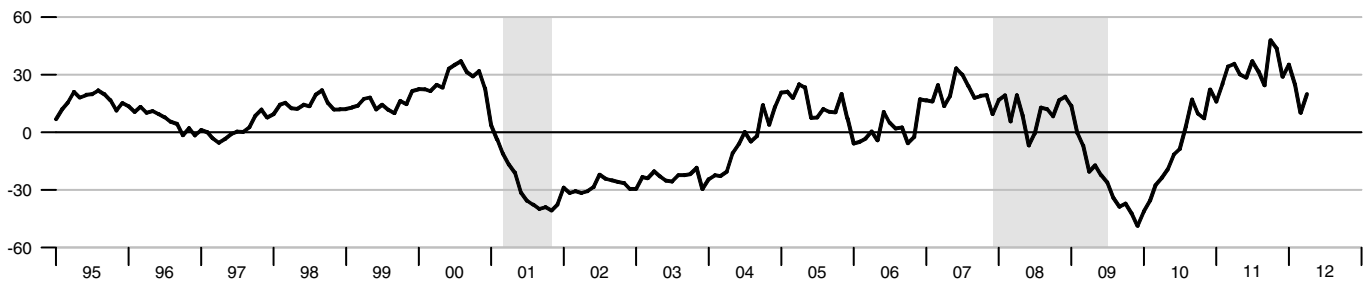
Excess Reserves plus RCB Contracts

Billions of dollars



Nonfinancial Commercial Paper

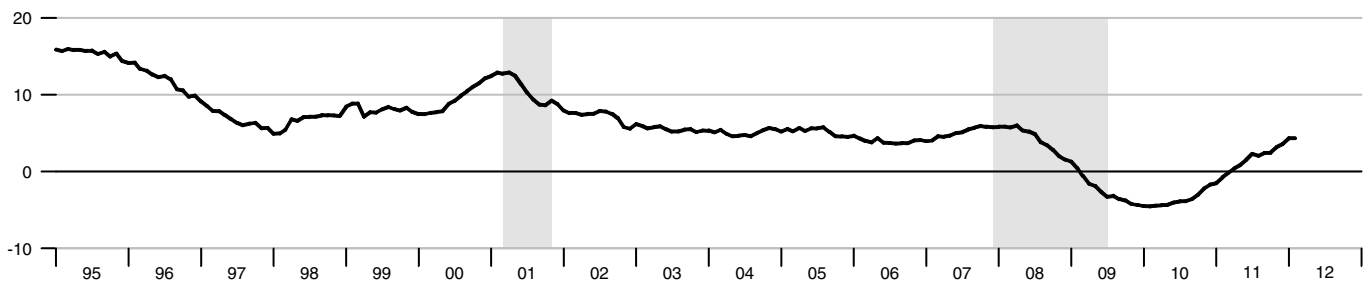
Percent change from year ago



As of April 10, 2006, the Federal Reserve Board made major changes to its commercial paper calculations. For more information, please refer to <http://www.federalreserve.gov/releases/cp/about.htm>.

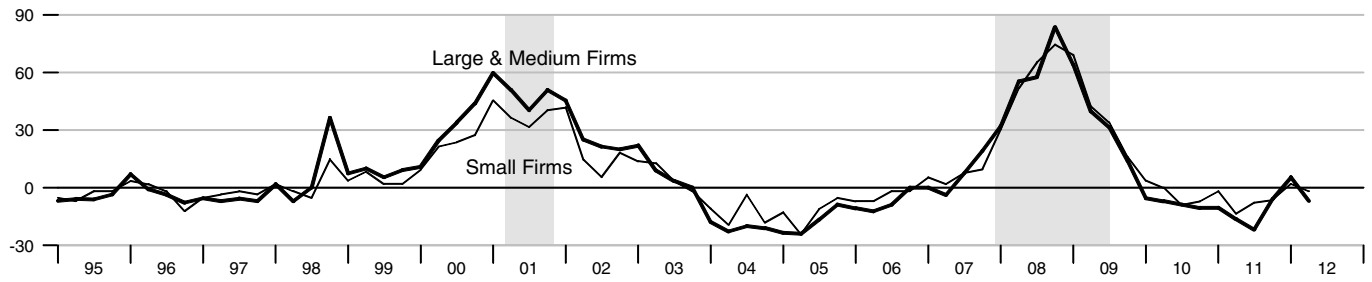
Consumer Credit

Percent change from year ago



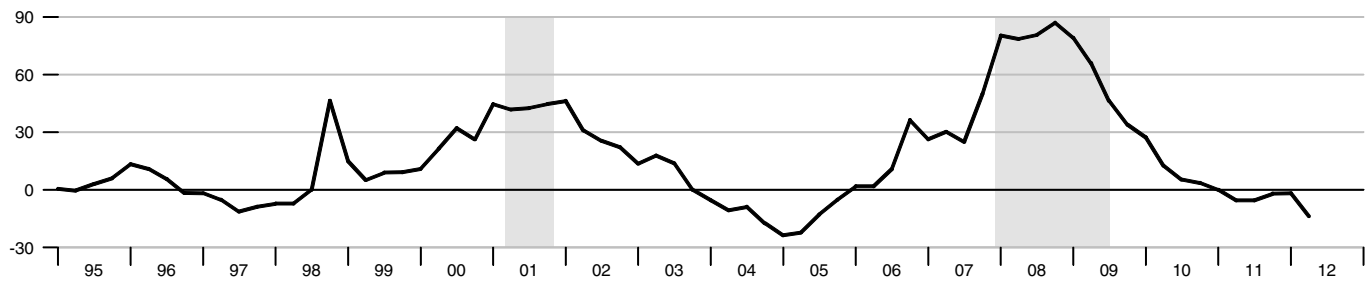
Net Percentage of Domestic Banks Tightening Standards for Commercial and Industrial Loans

Percentage



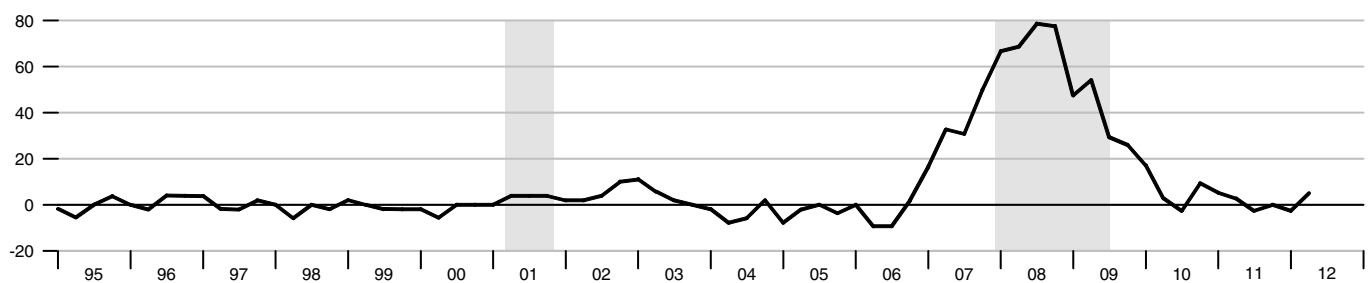
Net Percentage of Domestic Banks Tightening Standards for Commercial Real Estate Loans

Percentage



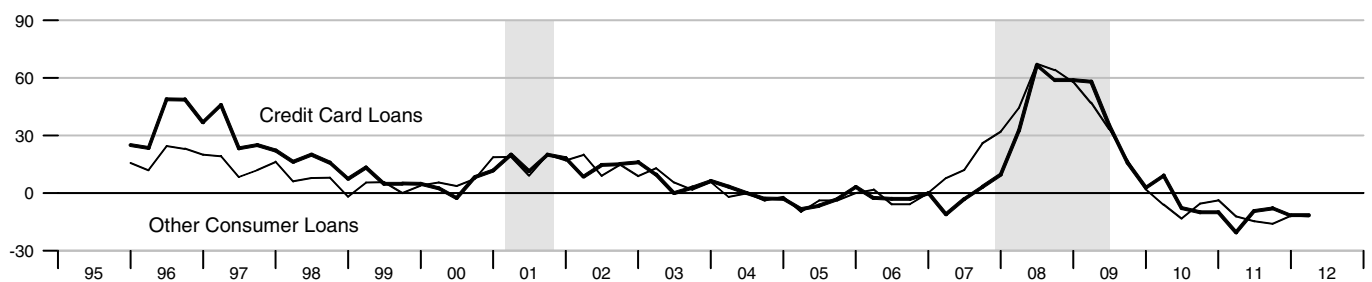
Net Percentage of Domestic Banks Tightening Standards for Residential Mortgage Loans

Percentage

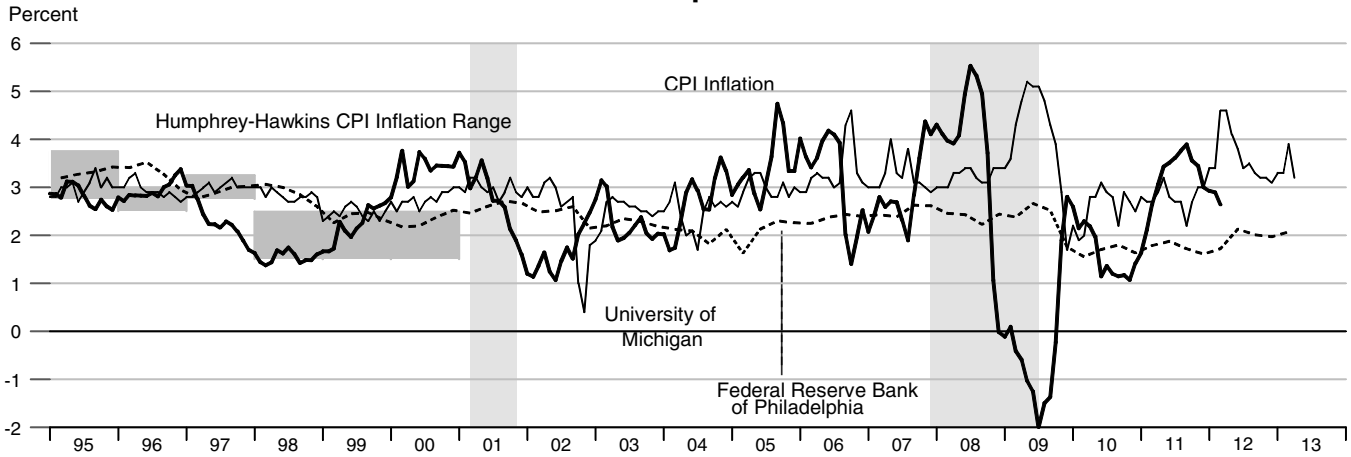


Net Percentage of Domestic Banks Tightening Standards for Consumer Loans

Percentage

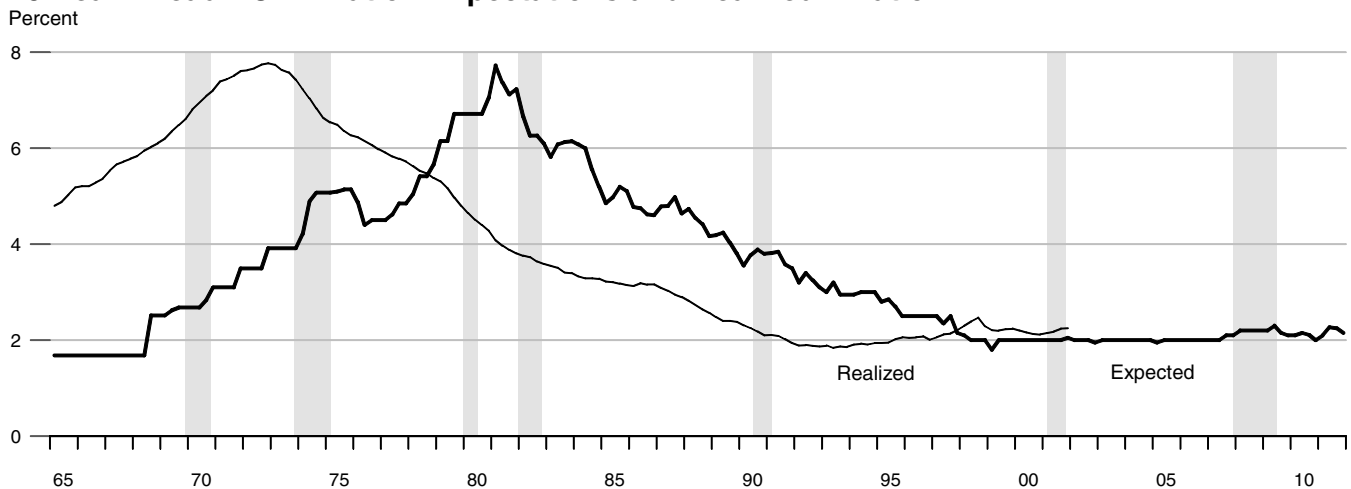


CPI Inflation and 1-Year-Ahead CPI Inflation Expectations



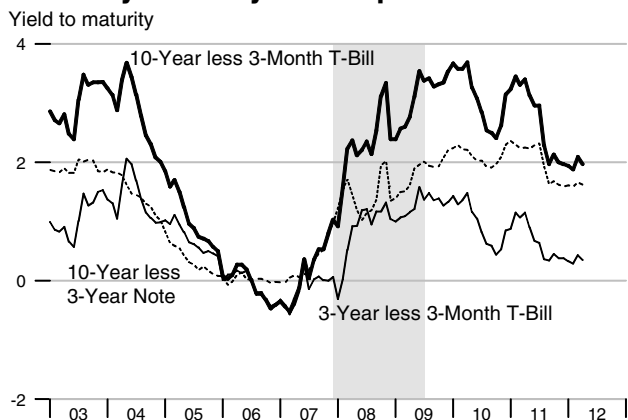
The shaded region shows the Humphrey-Hawkins CPI inflation range. Beginning in January 2000, the Humphrey-Hawkins inflation range was reported using the PCE price index and therefore is not shown on this graph.

10-Year Ahead PCE Inflation Expectations and Realized Inflation

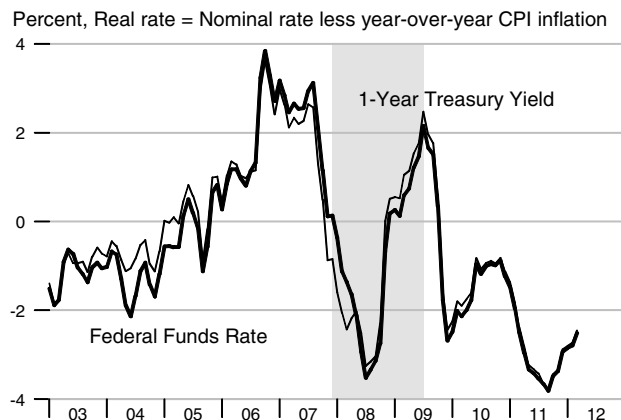


See the notes section for an explanation of the chart.

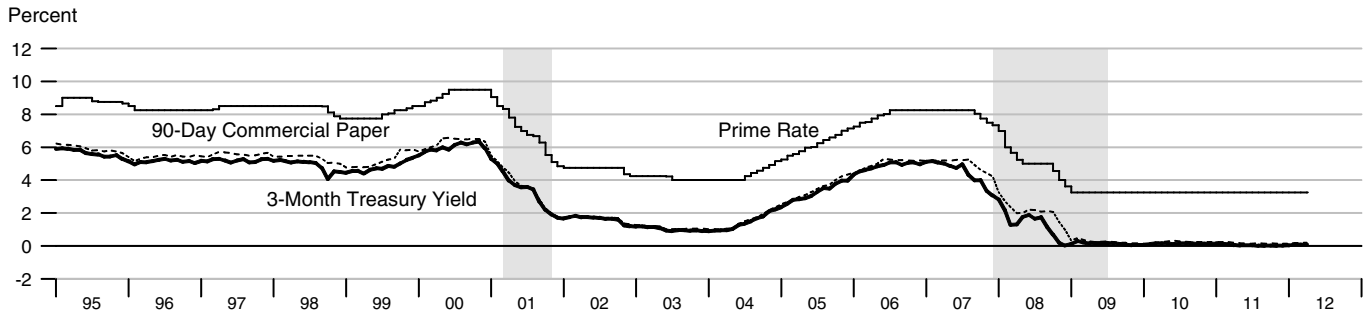
Treasury Security Yield Spreads



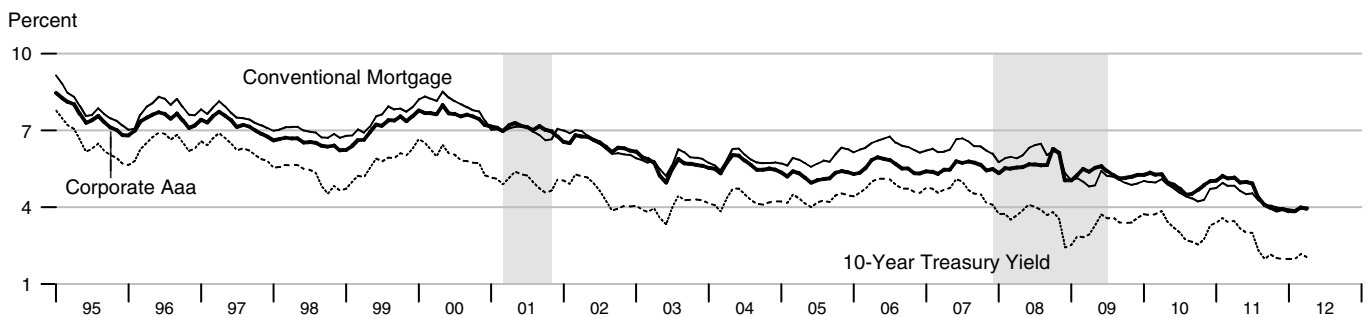
Real Interest Rates



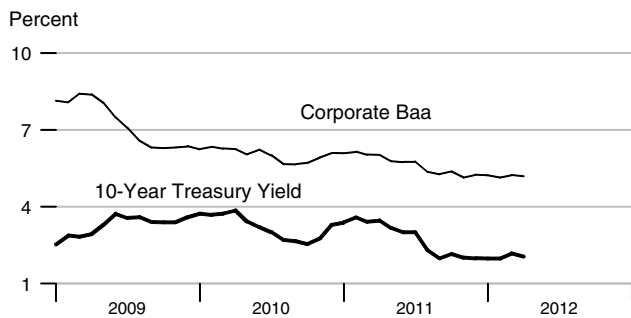
Short-Term Interest Rates



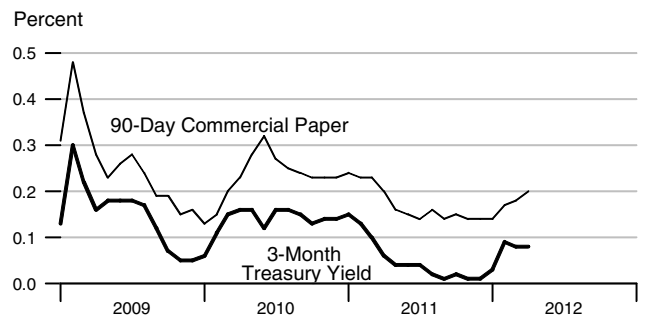
Long-Term Interest Rates



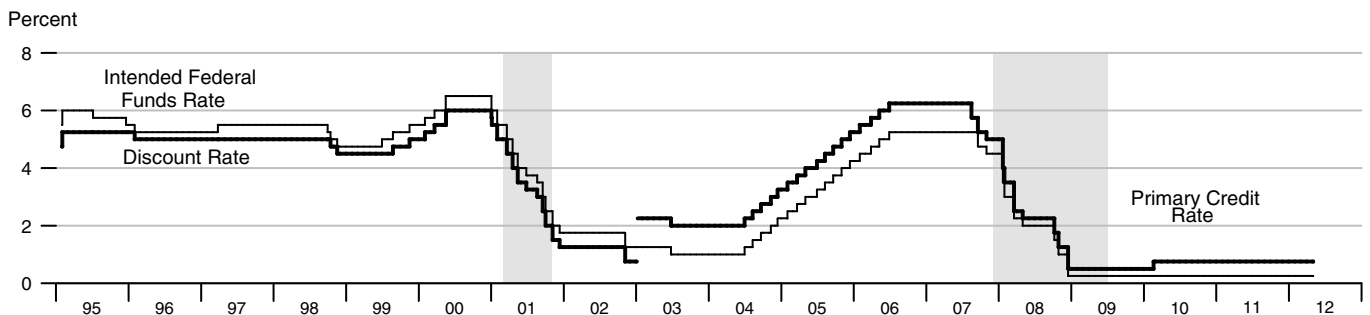
Long-Term Interest Rates



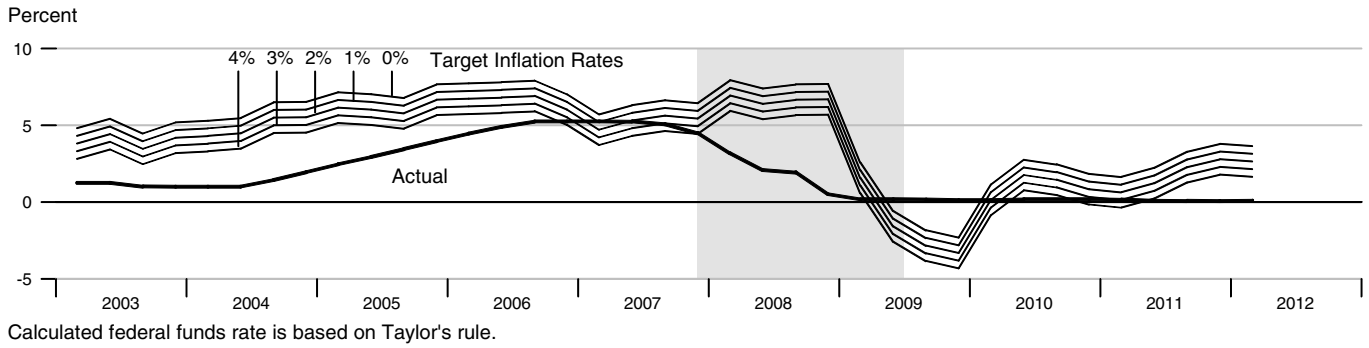
Short-Term Interest Rates



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

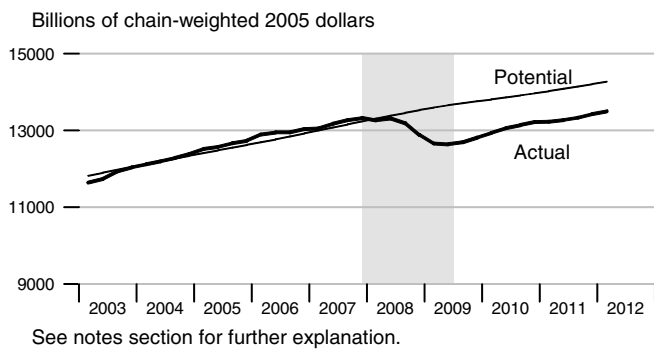


Federal Funds Rate and Inflation Targets

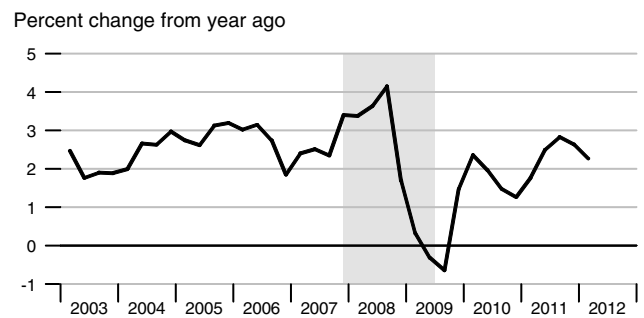


Components of Taylor's Rule

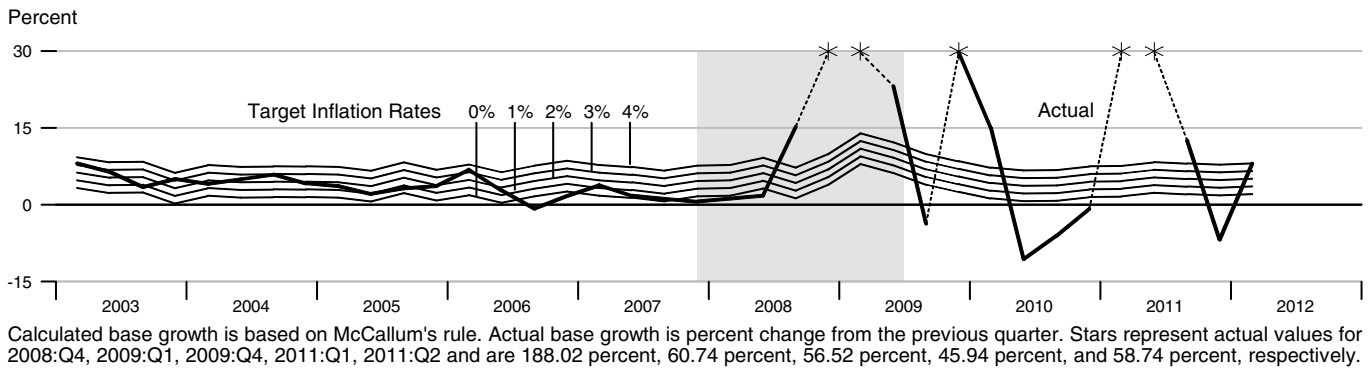
Actual and Potential Real GDP



PCE Inflation

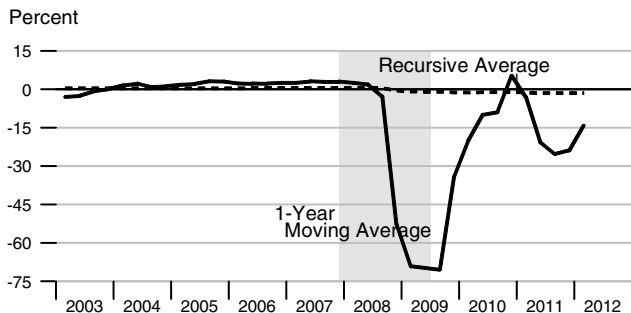


Monetary Base Growth and Inflation Targets

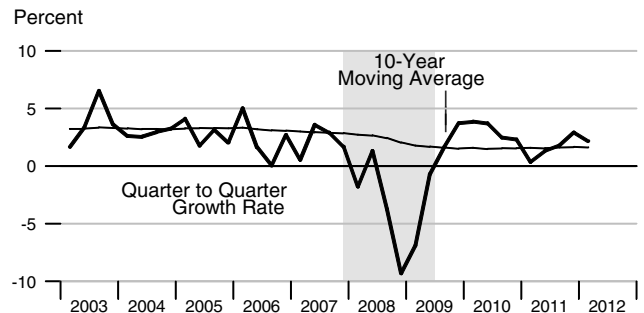


Components of McCallum's Rule

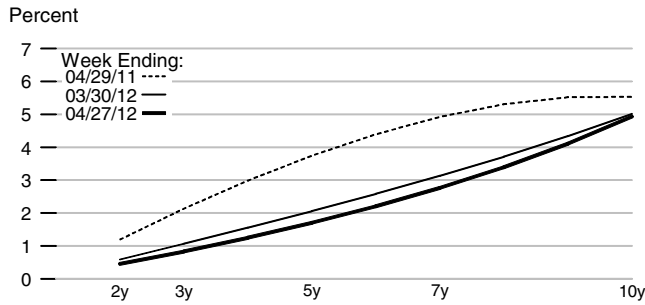
Monetary Base Velocity Growth



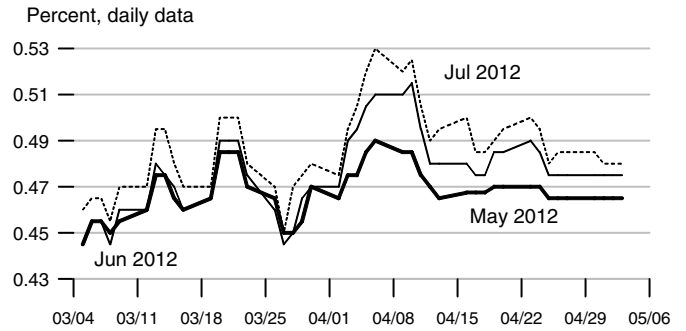
Real Output Growth



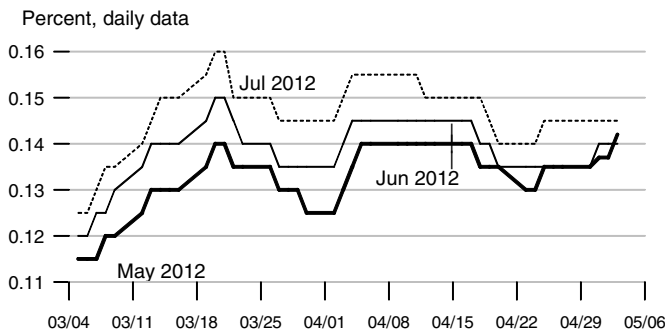
Implied One-Year Forward Rates



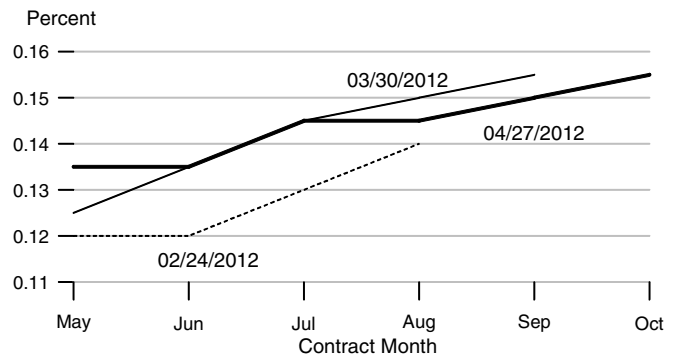
Rates on 3-Month Eurodollar Futures



Rates on Selected Federal Funds Futures Contracts



Rates on Federal Funds Futures on Selected Dates



Inflation-Indexed Treasury Securities



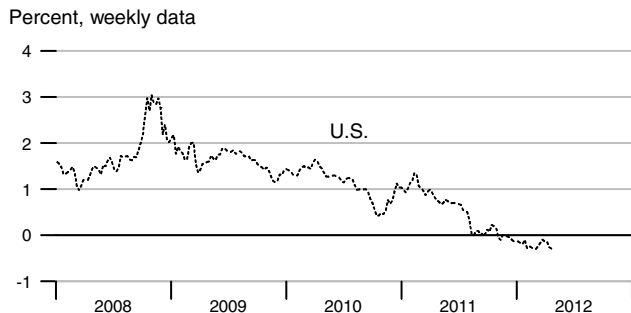
Note: Yields are inflation-indexed constant maturity U.S. Treasury securities

Inflation-Indexed Treasury Yield Spreads



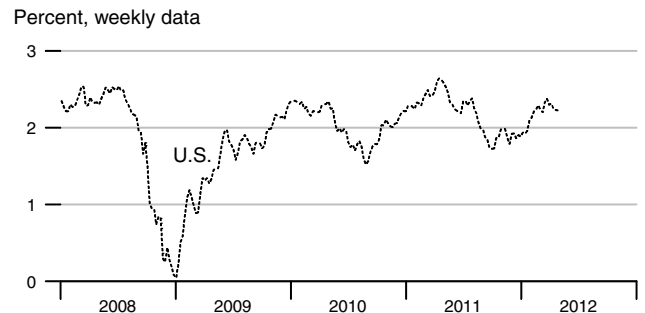
Note: Yield spread is between nominal and inflation-indexed constant maturity U.S. Treasury securities.

Inflation-Indexed 10-Year Government Notes



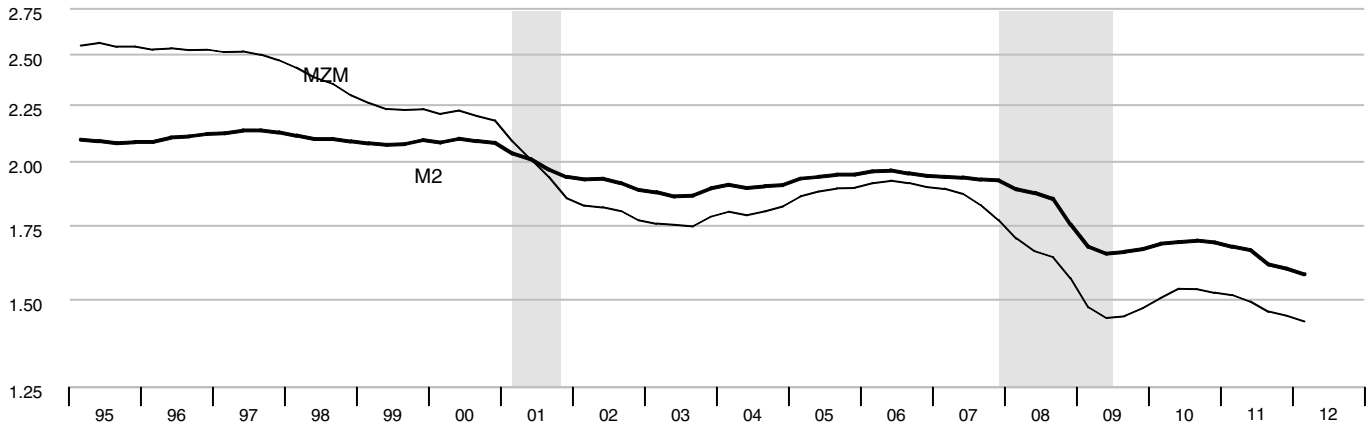
Note: Data is temporarily unavailable for the French and U.K. 10-Year Notes and Government Yield Spreads.

Inflation-Indexed 10-Year Government Yield Spreads



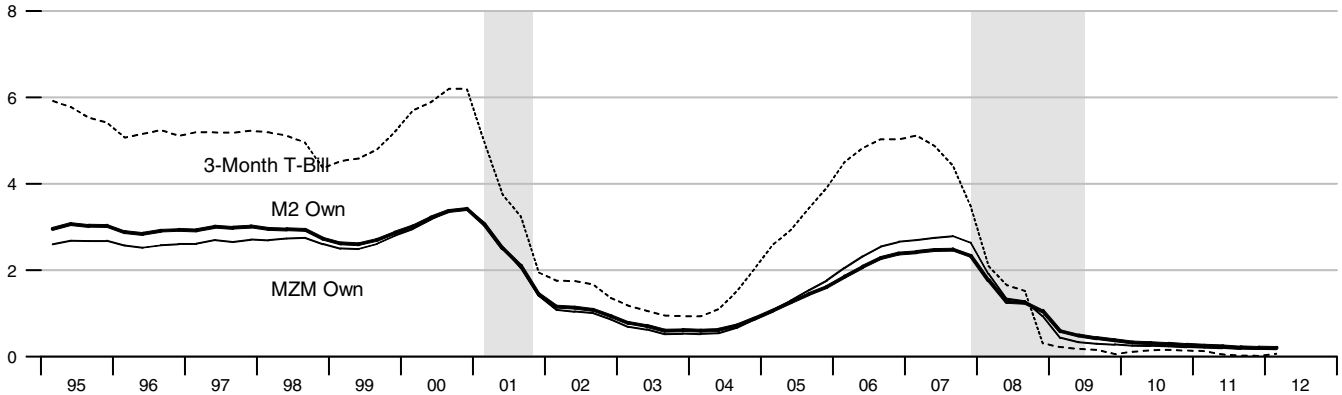
Velocity

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



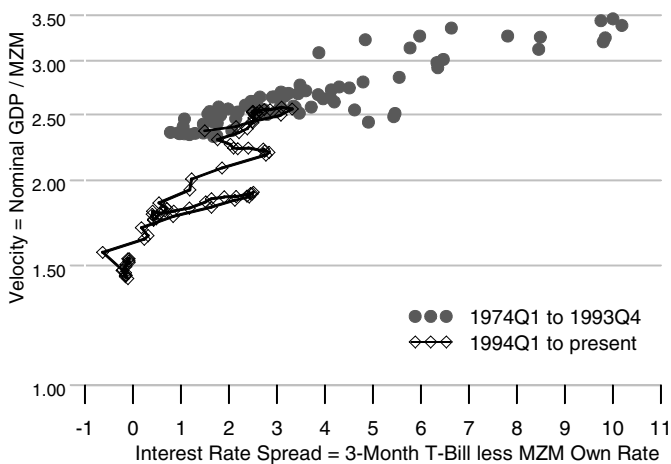
Interest Rates

Percent



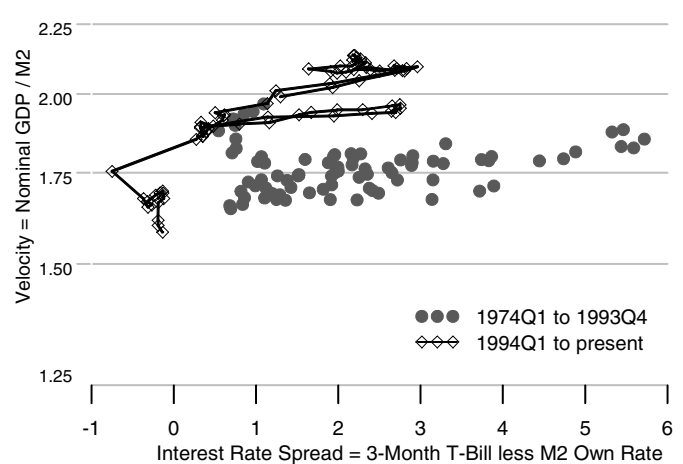
MZM Velocity and Interest Rate Spread

Ratio Scale



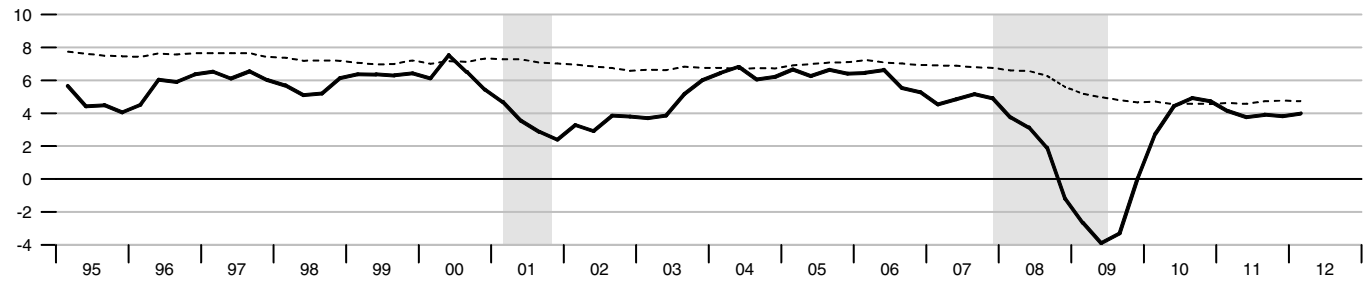
M2 Velocity and Interest Rate Spread

Ratio Scale



Gross Domestic Product

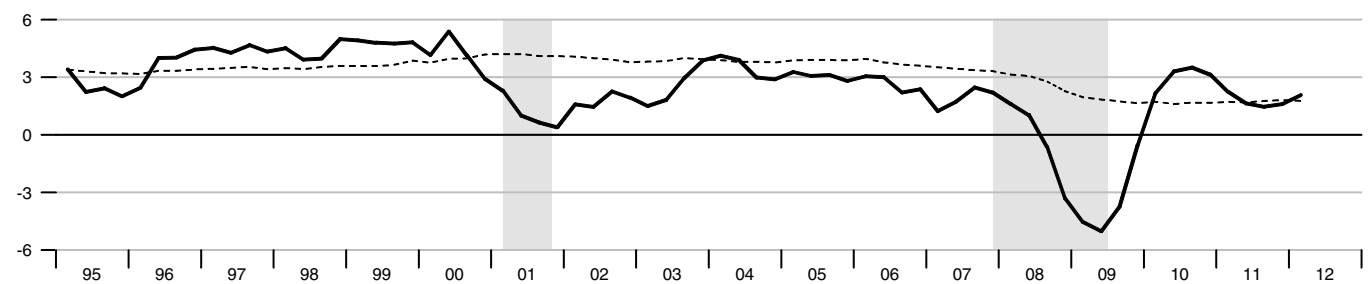
Percent change from year ago



Dashed lines indicate 10-year moving averages.

Real Gross Domestic Product

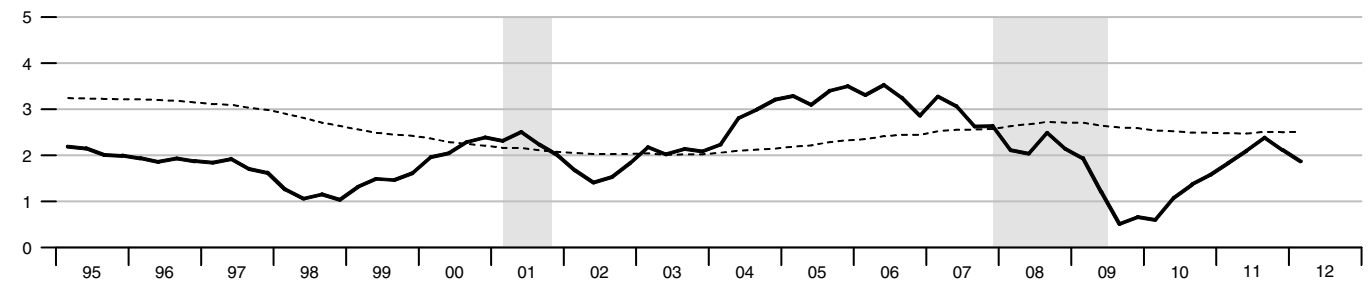
Percent change from year ago



Dashed lines indicate 10-year moving averages.

Gross Domestic Product Price Index

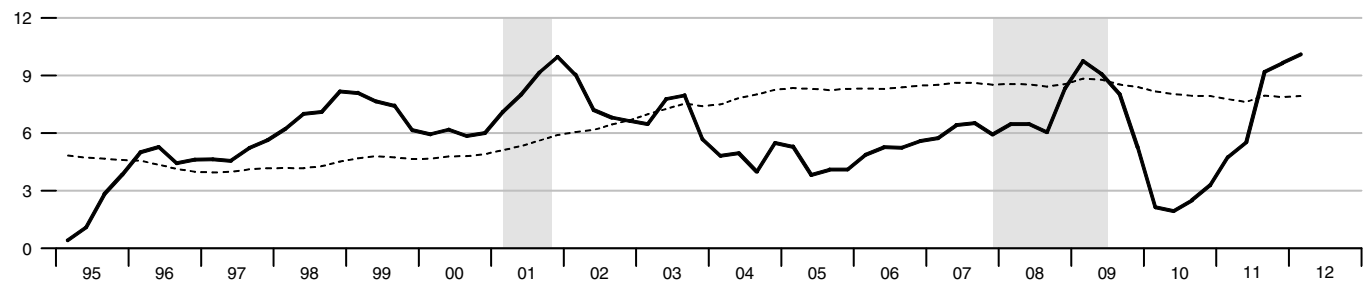
Percent change from year ago



Dashed lines indicate 10-year moving averages.

M2

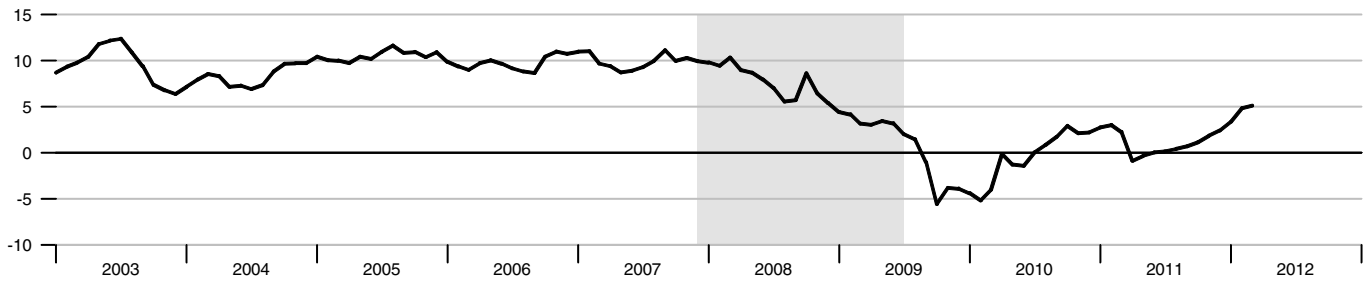
Percent change from year ago



Dashed lines indicate 10-year moving averages.

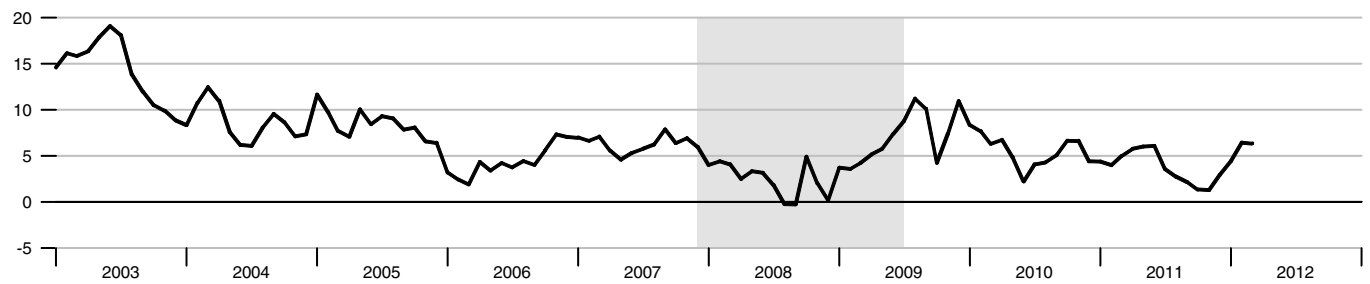
Bank Credit

Percent change from year ago



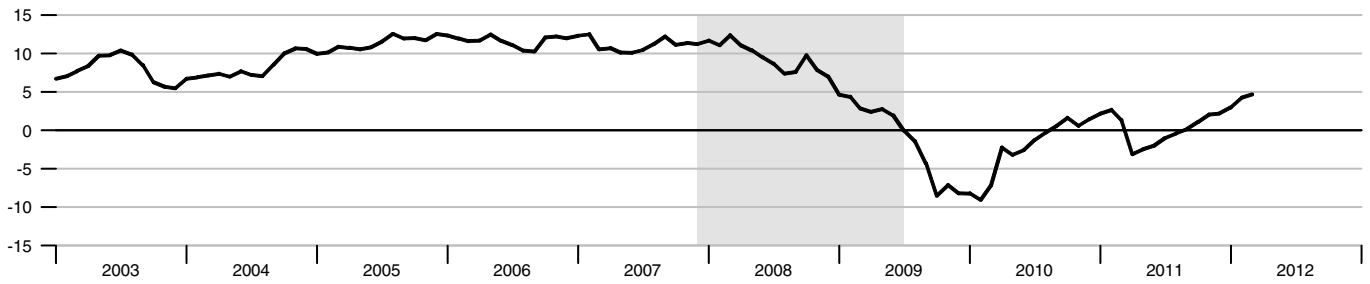
Investment Securities in Bank Credit at Commercial Banks

Percent change from year ago



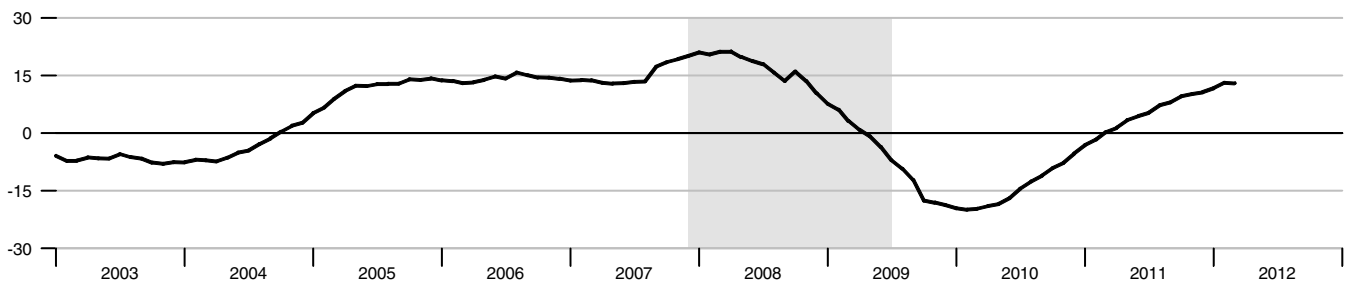
Total Loans and Leases in Bank Credit at Commercial Banks

Percent change from year ago

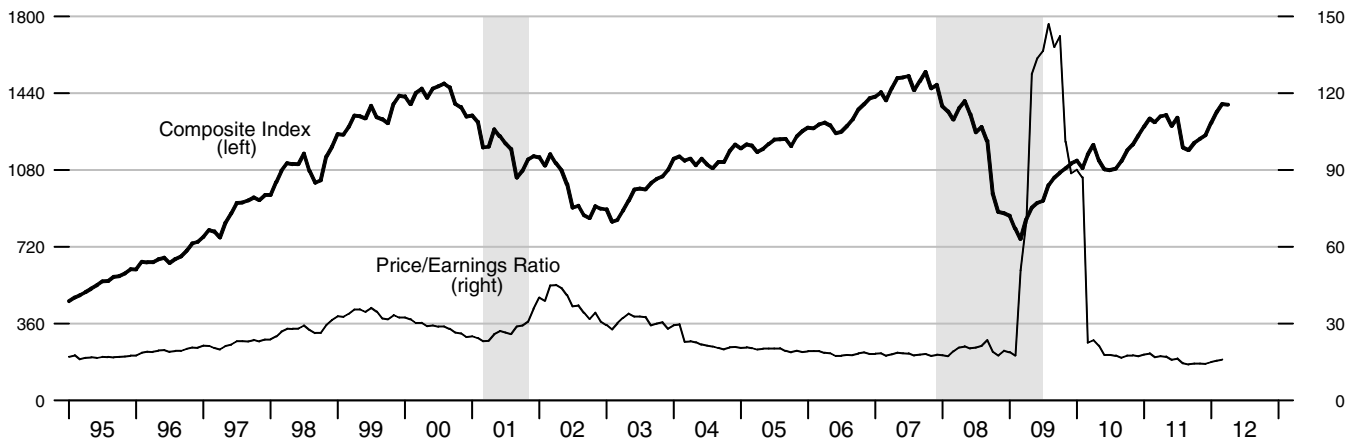


Commercial and Industrial Loans at Commercial Banks

Percent change from year ago



Standard & Poor's 500

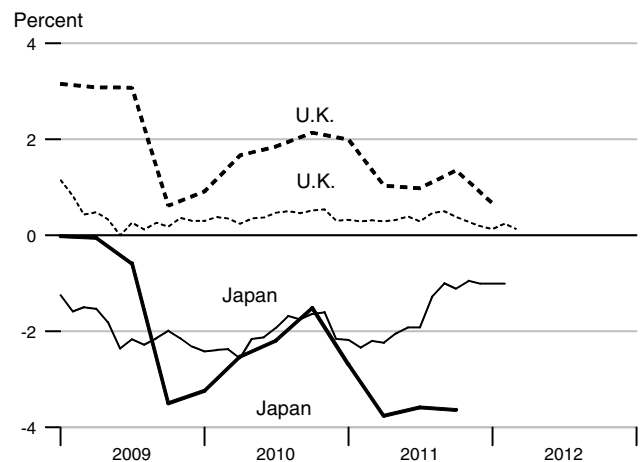
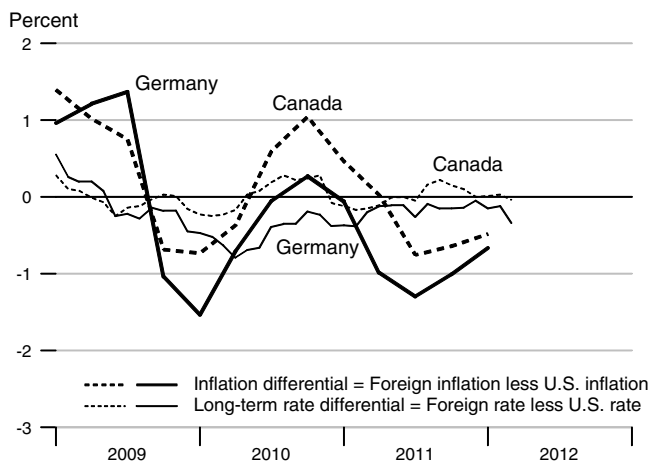


Recent Inflation and Long-Term Interest Rates

	Consumer Price Inflation Rates				Long-Term Government Bond Rates			
	Percent change from year ago				Percent			
	2011Q2	2011Q3	2011Q4	2012Q1	Jan12	Feb12	Mar12	Apr12
United States	3.34	3.76	3.34	2.82	1.97	1.97	2.17	2.05
Canada	3.36	3.00	2.69	2.34	1.98	2.00	2.13	.
France	2.07	2.15	2.44	2.31	3.18	3.02	2.95	.
Germany	2.35	2.46	2.33	2.16	1.82	1.85	1.83	.
Italy	2.67	2.80	3.30	3.24	6.54	5.55	5.05	.
Japan	-0.43	0.17	-0.30	.	0.96	0.96	.	.
United Kingdom	4.37	4.74	4.69	3.49	2.10	2.21	2.30	.

* Copyright © , 2011, Organisation for Economic Cooperation and Development, OECD Main Economic Indicators (www.oecd.org).

Inflation and Long-Term Interest Rate Differentials



		Money Stock			Bank	Adjusted		MSI M2**
		M1	MZM	M2	M3*	Credit	Monetary Base	
2007		1372.410	7631.855	7293.516		8461.879	850.538	94.154
2008		1434.292	8704.623	7811.291		9120.931	1010.159	232.563
2009		1637.145	9538.590	8426.512		9195.725	1796.563	944.791
2010		1741.695	9532.016	8621.133		9141.957	2031.706	1144.139
2011		2009.409	10198.37	9243.978		9243.787	2539.035	1577.109
2010	1	1700.425	9485.919	8507.632		8918.859	2089.194	1217.050
	2	1709.887	9427.514	8583.342		9213.525	2034.301	1158.475
	3	1743.325	9521.642	8637.995		9214.249	2003.664	1117.961
	4	1813.144	9692.990	8755.563		9221.196	1999.667	1083.072
2011	1	1879.350	9816.207	8900.646		9157.306	2242.981	1310.575
	2	1926.748	10046.33	9052.493		9177.620	2597.868	1647.717
	3	2077.780	10371.88	9426.236		9253.000	2680.223	1714.184
	4	2153.758	10559.07	9596.538		9387.220	2635.069	1635.963
2012	1	2219.540	10778.19	9794.564		9563.173	2688.384	1663.432
2010	Mar	1712.338	9450.231	8520.374		8938.609	2106.542	1249.476
	Apr	1701.551	9410.376	8545.502		9259.285	2044.317	1179.157
	May	1705.815	9429.986	8592.231		9206.547	2034.566	1149.888
	Jun	1722.296	9442.181	8612.294		9174.743	2024.019	1146.379
	Jul	1724.482	9462.922	8609.050		9207.413	2015.199	1131.113
	Aug	1743.506	9518.662	8635.186		9225.062	2014.644	1133.748
	Sep	1761.987	9583.343	8669.749		9210.273	1981.150	1089.021
	Oct	1776.845	9647.701	8722.179		9229.195	1998.544	1099.769
	Nov	1822.430	9697.922	8752.012		9228.157	1991.151	1076.450
	Dec	1840.156	9733.347	8792.498		9206.236	2009.305	1072.996
2011	Jan	1868.281	9767.701	8856.483		9182.892	2057.146	1095.882
	Feb	1878.777	9799.189	8899.502		9147.231	2243.574	1327.458
	Mar	1890.992	9881.730	8945.952		9141.796	2428.222	1508.384
	Apr	1903.680	9968.219	8993.481		9178.008	2531.677	1599.135
	May	1931.496	10052.54	9043.993		9176.210	2590.365	1627.354
	Jun	1945.069	10118.23	9120.005		9178.642	2671.563	1716.661
	Jul	2004.531	10273.69	9293.077		9221.589	2703.581	1738.001
	Aug	2106.198	10391.41	9483.040		9263.053	2680.464	1721.459
	Sep	2122.610	10450.54	9502.591		9274.358	2656.623	1683.091
	Oct	2137.664	10505.69	9550.072		9334.363	2678.492	1707.298
	Nov	2154.940	10555.96	9597.264		9398.967	2623.100	1628.025
	Dec	2168.669	10615.56	9642.277		9428.331	2603.614	1572.565
2012	Jan	2222.832	10748.99	9769.569		9491.249	2647.630	1580.262
	Feb	2215.040	10768.27	9792.757		9588.771	2733.207	1733.769
	Mar	2220.749	10817.30	9821.367		9609.499	2684.314	1676.264

Note: All values are given in billions of dollars. *See table of contents for changes to the series.

**We will not update the MSI series until we revise the code to accommodate the discontinuation of M3.

		Federal Funds	Primary Credit Rate	Prime Rate	3-mo CDs	Treasury Yields			Corporate Aaa Bonds	Municipal Aaa Bonds	Conventional Mortgage	
						3-mo	3-yr	10-yr				
2007		5.02	5.86	8.05	5.27	4.47	4.34	4.63	5.56	4.13	6.34	
2008		1.93	2.39	5.09	2.97	1.39	2.24	3.67	5.63	4.58	6.04	
2009		0.16	0.50	3.25	0.56	0.15	1.43	3.26	5.31	4.27	5.04	
2010		0.17	0.72	3.25	0.31	0.14	1.11	3.21	4.94	3.90	4.69	
2011		0.10	0.75	3.25	0.30	0.05	0.75	2.79	4.64	4.26	4.46	
2010	1	0.13	0.61	3.25	0.21	0.11	1.47	3.72	5.29	3.93	5.00	
	2	0.19	0.75	3.25	0.42	0.15	1.38	3.49	5.04	3.83	4.91	
	3	0.19	0.75	3.25	0.34	0.16	0.83	2.79	4.58	3.58	4.45	
	4	0.19	0.75	3.25	0.28	0.14	0.74	2.86	4.86	4.24	4.41	
2011	1	0.16	0.75	3.25	0.28	0.13	1.16	3.46	5.13	4.71	4.85	
	2	0.09	0.75	3.25	0.22	0.05	0.95	3.21	5.04	4.50	4.66	
	3	0.08	0.75	3.25	0.29	0.02	0.47	2.43	4.46	4.02	4.31	
	4	0.07	0.75	3.25	0.42	0.01	0.42	2.05	3.93	3.82	4.01	
2012	1	0.10	0.75	3.25	0.33	0.07	0.42	2.04	3.89	3.31	3.92	
2010	Apr	0.20	0.75	3.25	0.30	0.16	1.64	3.85	5.29	3.95	5.10	
	May	0.20	0.75	3.25	0.45	0.16	1.32	3.42	4.96	3.75	4.89	
	Jun	0.18	0.75	3.25	0.52	0.12	1.17	3.20	4.88	3.81	4.74	
	Jul	0.18	0.75	3.25	0.41	0.16	0.98	3.01	4.72	3.69	4.56	
	Aug	0.19	0.75	3.25	0.32	0.16	0.78	2.70	4.49	3.44	4.43	
	Sep	0.19	0.75	3.25	0.28	0.15	0.74	2.65	4.53	3.63	4.35	
	Oct	0.19	0.75	3.25	0.27	0.13	0.57	2.54	4.68	3.62	4.23	
	Nov	0.19	0.75	3.25	0.27	0.14	0.67	2.76	4.87	4.44	4.30	
	Dec	0.18	0.75	3.25	0.30	0.14	0.99	3.29	5.02	4.67	4.71	
	2011	Jan	0.17	0.75	3.25	0.29	0.15	1.03	3.39	5.04	4.86	4.76
		Feb	0.16	0.75	3.25	0.28	0.13	1.28	3.58	5.22	4.79	4.95
		Mar	0.14	0.75	3.25	0.28	0.10	1.17	3.41	5.13	4.47	4.84
Apr		0.10	0.75	3.25	0.23	0.06	1.21	3.46	5.16	4.93	4.84	
May		0.09	0.75	3.25	0.21	0.04	0.94	3.17	4.96	4.33	4.64	
Jun		0.09	0.75	3.25	0.22	0.04	0.71	3.00	4.99	4.23	4.51	
Jul		0.07	0.75	3.25	0.24	0.04	0.68	3.00	4.93	4.31	4.55	
Aug		0.10	0.75	3.25	0.29	0.02	0.38	2.30	4.37	3.90	4.27	
Sep		0.08	0.75	3.25	0.33	0.01	0.35	1.98	4.09	3.84	4.11	
Oct		0.07	0.75	3.25	0.37	0.02	0.47	2.15	3.98	3.93	4.07	
Nov		0.08	0.75	3.25	0.41	0.01	0.39	2.01	3.87	3.79	3.99	
Dec		0.07	0.75	3.25	0.49	0.01	0.39	1.98	3.93	3.75	3.96	
2012	Jan	0.08	0.75	3.25	0.40	0.03	0.36	1.97	3.85	3.48	3.92	
	Feb	0.10	0.75	3.25	0.30	0.09	0.38	1.97	3.85	3.09	3.89	
	Mar	0.13	0.75	3.25	0.29	0.08	0.51	2.17	3.99	3.37	3.95	
	Apr	0.14	0.75	3.25	0.29	0.08	0.43	2.05	3.96		3.91	

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

		M1	MZM	M2	M3*
Percent change at an annual rate					
2007		-0.16	9.05	6.27	
2008		4.51	14.06	7.10	
2009		14.14	9.58	7.88	
2010		6.39	-0.07	2.31	
2011		15.37	6.99	7.22	
<hr/>					
2010	1	3.91	-3.02	0.95	
	2	2.23	-2.46	3.56	
	3	7.82	3.99	2.55	
	4	16.02	7.20	5.44	
2011	1	14.61	5.08	6.63	
	2	10.09	9.38	6.82	
	3	31.35	12.96	16.51	
	4	14.63	7.22	7.23	
2012	1	12.22	8.30	8.25	
<hr/>					
2010	Mar	5.28	-7.25	-0.91	
	Apr	-7.56	-5.06	3.54	
	May	3.01	2.50	6.56	
	Jun	11.59	1.55	2.80	
	Jul	1.52	2.64	-0.45	
	Aug	13.24	7.07	3.64	
	Sep	12.72	8.15	4.80	
	Oct	10.12	8.06	7.26	
	Nov	30.79	6.25	4.10	
	Dec	11.67	4.38	5.55	
<hr/>					
2011	Jan	18.34	4.24	8.73	
	Feb	6.74	3.87	5.83	
	Mar	7.80	10.11	6.26	
	Apr	8.05	10.50	6.38	
	May	17.53	10.15	6.74	
	Jun	8.43	7.84	10.09	
	Jul	36.68	18.44	22.77	
	Aug	60.86	13.75	24.53	
	Sep	9.35	6.83	2.47	
	Oct	8.51	6.33	6.00	
	Nov	9.70	5.74	5.93	
	Dec	7.65	6.78	5.63	
<hr/>					
2012	Jan	29.97	15.08	15.84	
	Feb	-4.21	2.15	2.85	
	Mar	3.09	5.46	3.51	

*See table of contents for changes to the series.

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** and **Real Treasury Yield Curve** show constant maturity yields calculated by the U.S. Treasury for securities 5, 7, 10, and 20 years to maturity. **Inflation-Indexed Treasury Yield Spreads** are a measure of inflation compensation at those horizons, and it is simply the

nominal constant maturity yield less the real constant maturity yield. 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. **Retail Money Market Mutual Funds** are included in M2. **Institutional** money market funds are not included in M2.

Page 6: **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 7: Data are reported in the Senior Loan Officer Opinion Survey on Bank Lending Practices.

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 testimony that accompanies the Monetary Policy Report to the Congress. Beginning February 2000, the FOMC began using the personal consumption expenditures (PCE) price index to report its inflation range; the FOMC then switched to the PCE chain-type price index excluding food and energy prices ("core") beginning July 2004. Accordingly, neither are 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 year-over-year CPI inflation.

From 1991 to the present the source of the long-term PCE inflation expectations data is the Federal Reserve Bank of Philadelphia's *Survey of Professional Forecasters*. Prior to 1991, the data were obtained from the Board of Governors of the Federal Reserve System. Realized (actual) inflation is the annualized rate of change for the 40-quarter period that corresponds to the forecast horizon (the expectations measure). For example, in 1965:Q1, annualized PCE inflation over the next 40 quarters was expected to average 1.7 percent. In actuality, the average annualized rate of change measured 4.8 percent from 1965:Q1 to 1975:Q1. Thus, the vertical distance between the two lines in the chart at any point is the forecast error.

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 estimated by the Congressional Budget Office (CBO).

Monetary Base Growth and Inflation Targets shows the quarterly growth of the adjusted monetary base implied by applying McCallum's (2000, p. 52) equation

$$\Delta b_t = \Delta x_t^* - \Delta v_t^a + \lambda (\Delta x_t^* - \Delta x_{t-1}),$$

$$\Delta x_t^* = \pi^* + \Delta y_t^*$$

to five alternative target inflation rates, $\pi^* = 0, 1, 2, 3, 4$ percent, where Δb_t is the implied growth rate of the adjusted monetary base, Δy_t^* is the 10-year

moving average growth in real GDP, Δv_t^α is the average base velocity growth (calculated recursively), Δx_{t-1} is the lag growth rate of nominal GDP, and $\lambda = 0.5$.

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 and Yield Spreads** are those plotted on page 3. **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 7/25/2015, the current U.K. note has a maturity date of 4/16/2020, and the current U.S. note has a maturity date of 11/15/2020. **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 2005 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. Senior Loan Officer Opinion Survey on Bank Lending Practices.

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/.