

Monetary Trends

October 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:

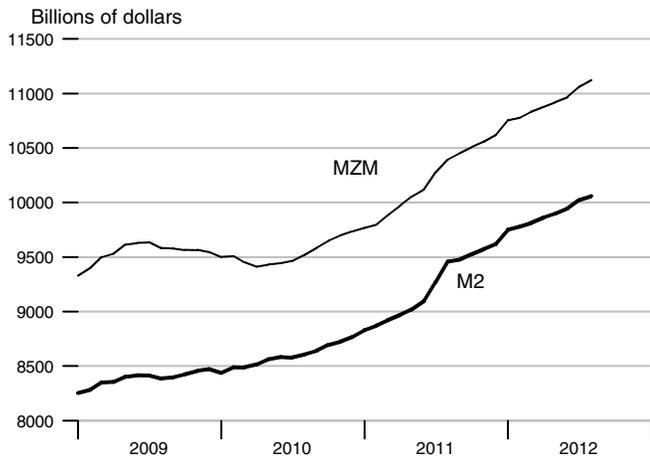
Editor, *Monetary Trends*
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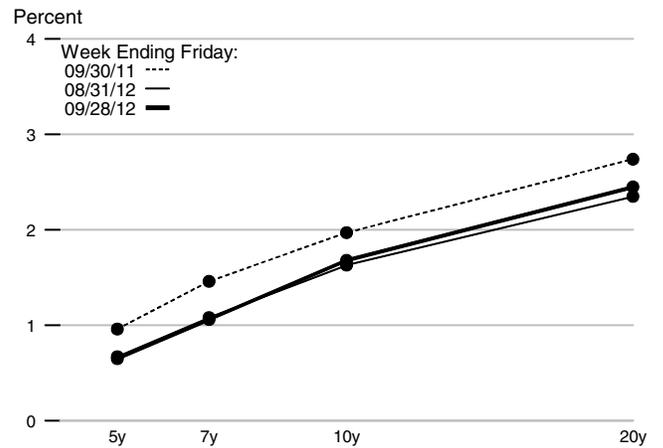
stlsFRED@stls.frb.org

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.

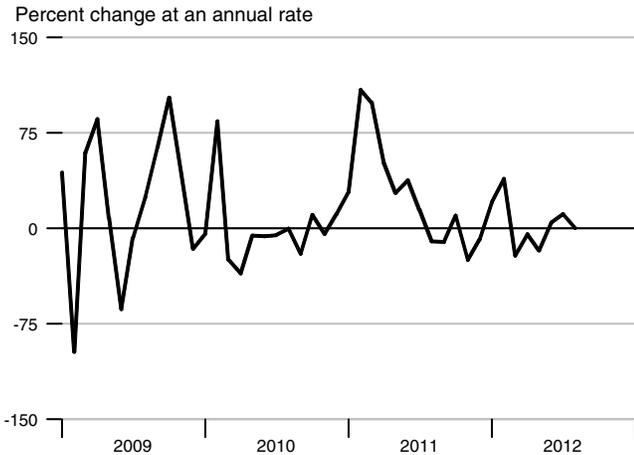
M2 and MZM



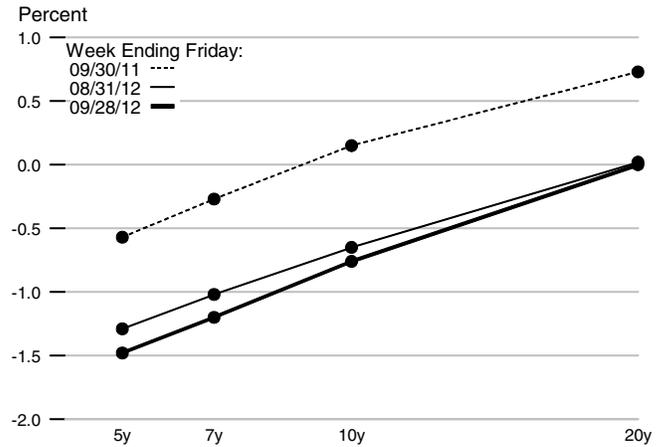
Treasury Yield Curve



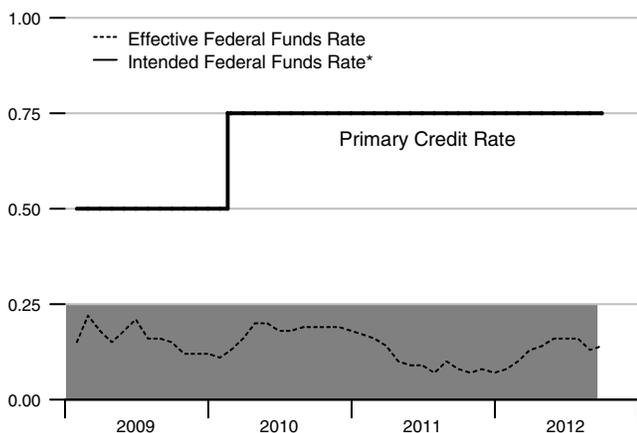
Adjusted Monetary Base



Real Treasury Yield Curve

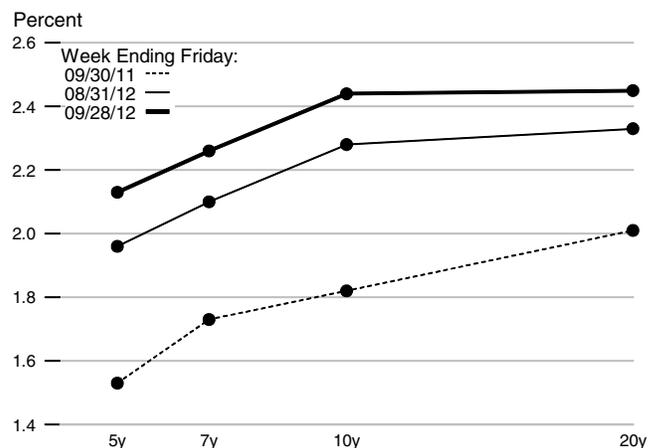


Reserve Market Rates



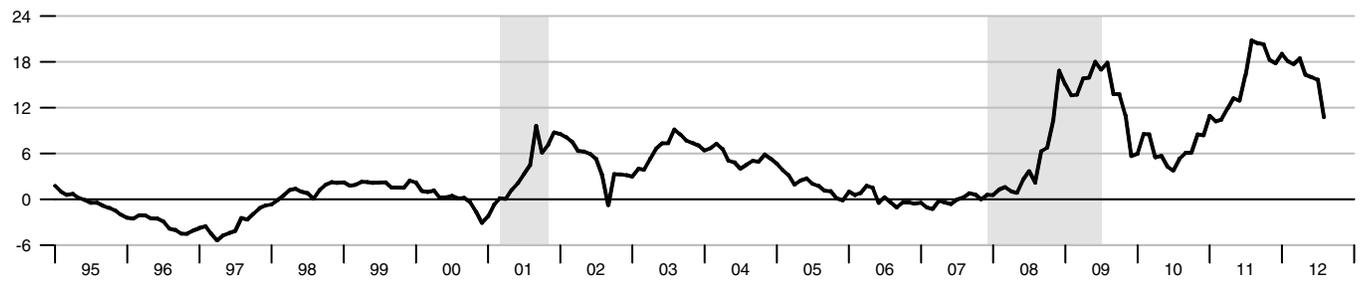
*Note: Effective December 16, 2008, FOMC reports the Intended Federal Funds Rate as a range. Currently, Intended Federal Funds Rate is not plotted on this chart due to the note above.

Inflation-Indexed Treasury Yield Spreads



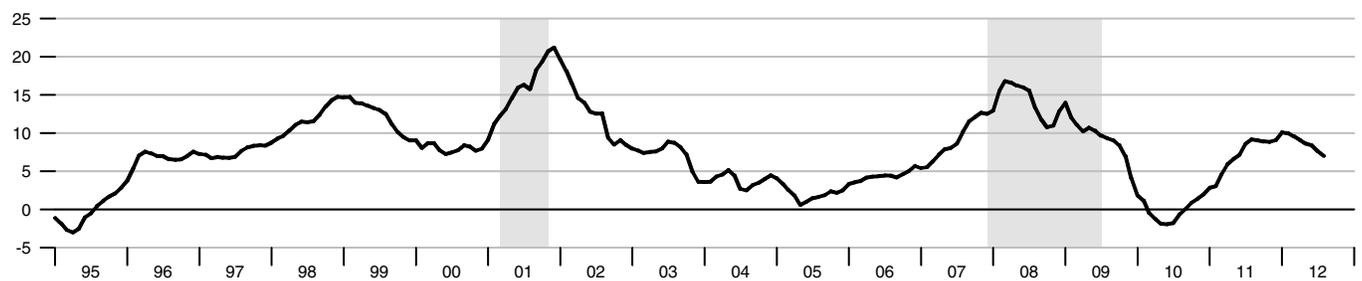
M1

Percent change from year ago



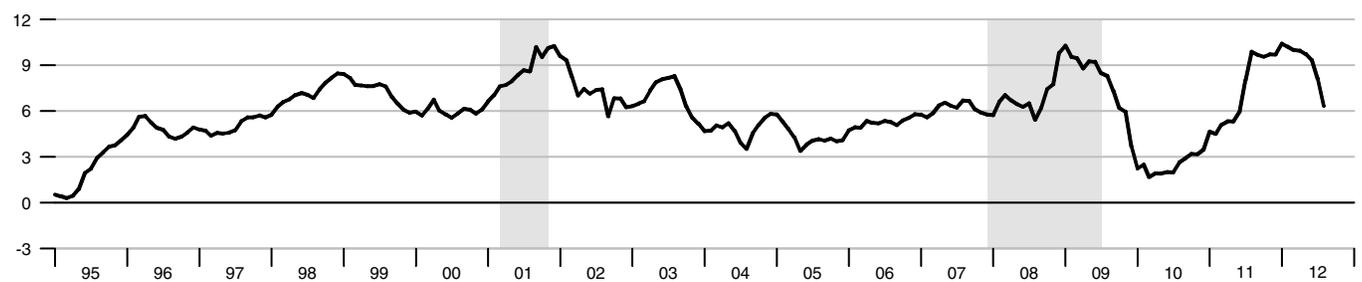
M2M

Percent change from year ago



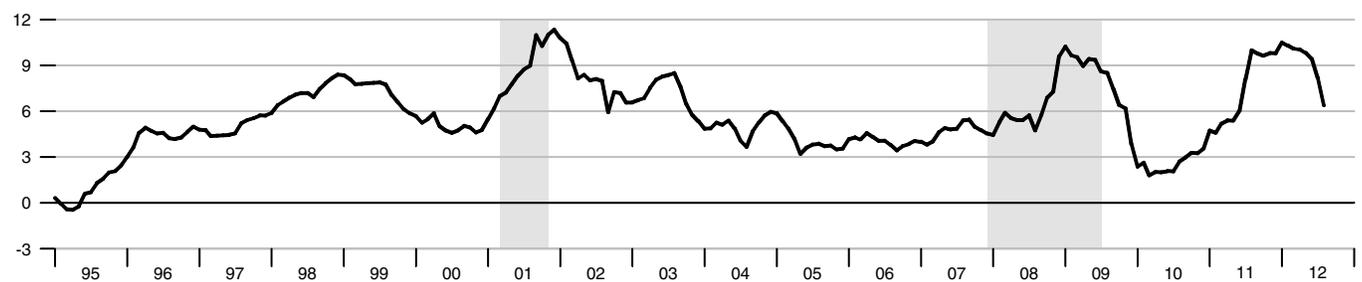
M2

Percent change from year ago



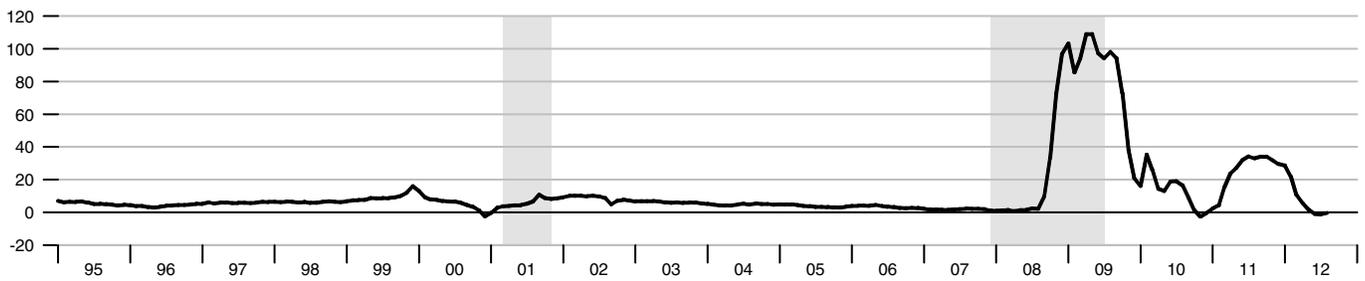
Monetary Services Index - M2

Percent change from year ago



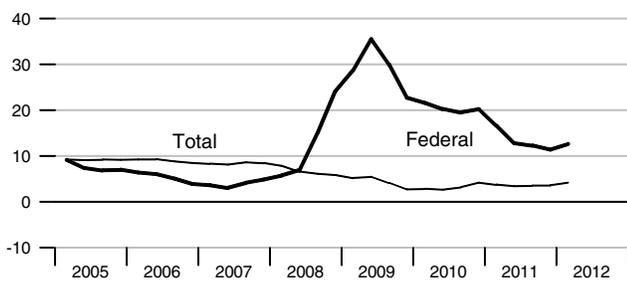
Adjusted Monetary Base

Percent change from year ago



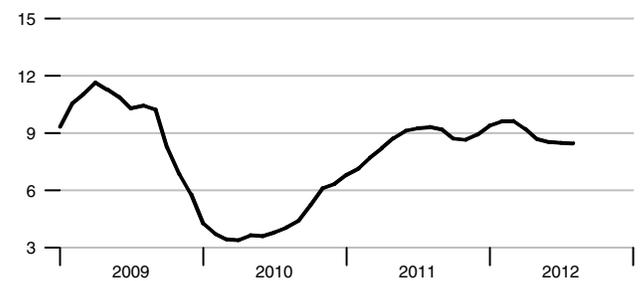
Domestic Nonfinancial Debt

Percent change from year ago



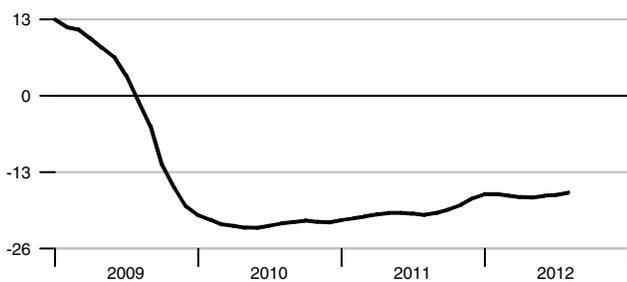
Currency Held by the Nonbank Public

Percent change from year ago



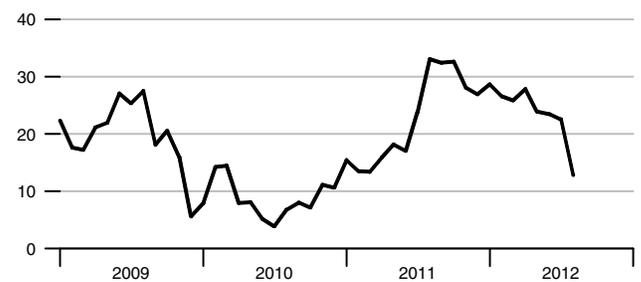
Small Denomination Time Deposits

Percent change from year ago



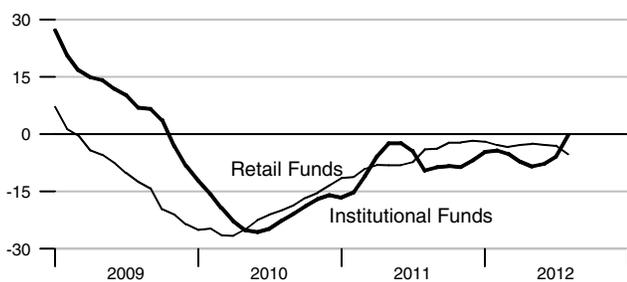
Checkable Deposits

Percent change from year ago



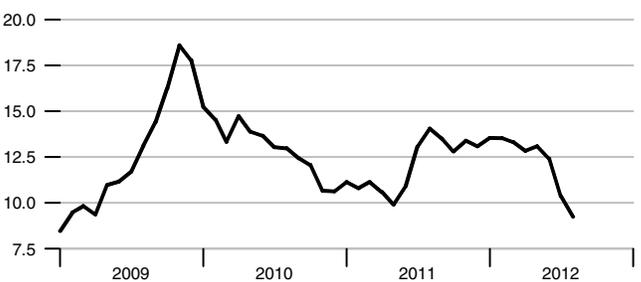
Money Market Mutual Fund Shares

Percent change from year ago



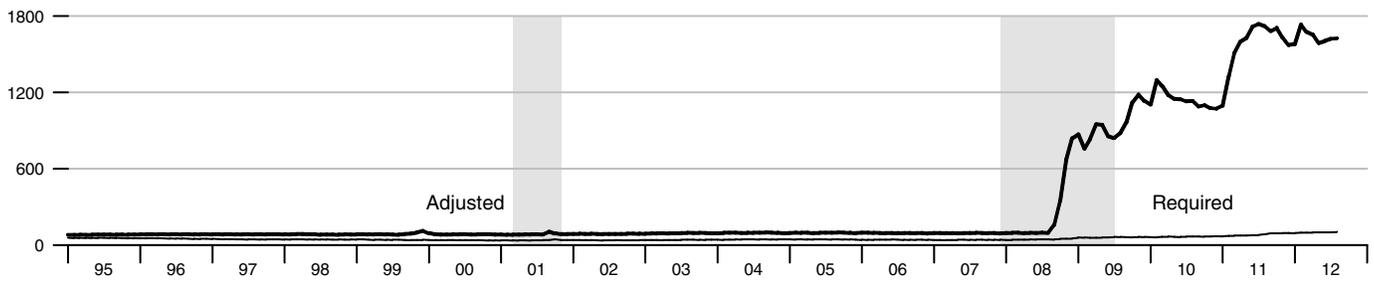
Savings Deposits

Percent change from year ago



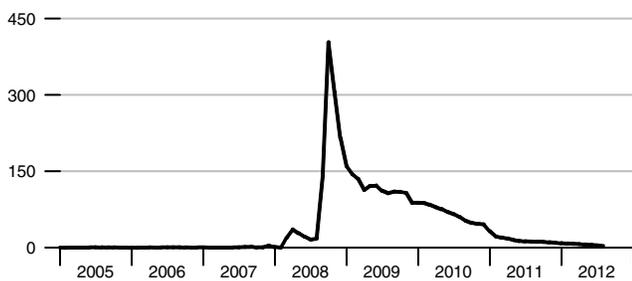
Adjusted and Required Reserves

Billions of dollars



Total Borrowings, nsa

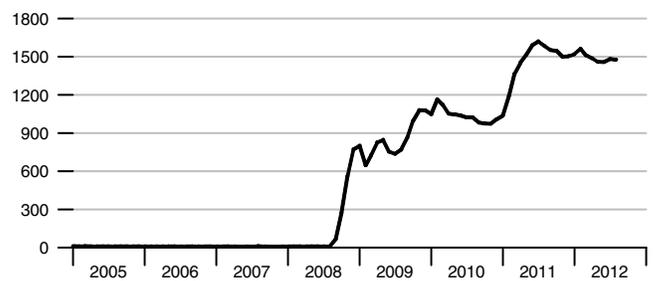
Billions of dollars



* Data exclude term auction credit

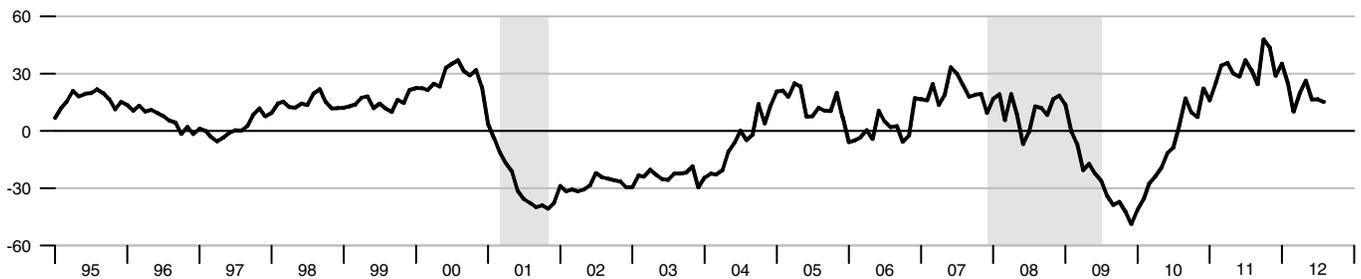
Excess Reserves plus RCB Contracts

Billions of dollars



Nonfinancial Commercial Paper

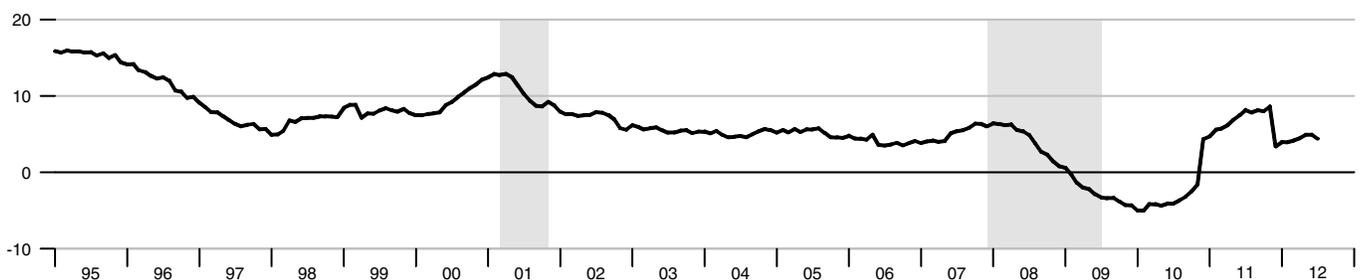
Percent change from year ago



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>.

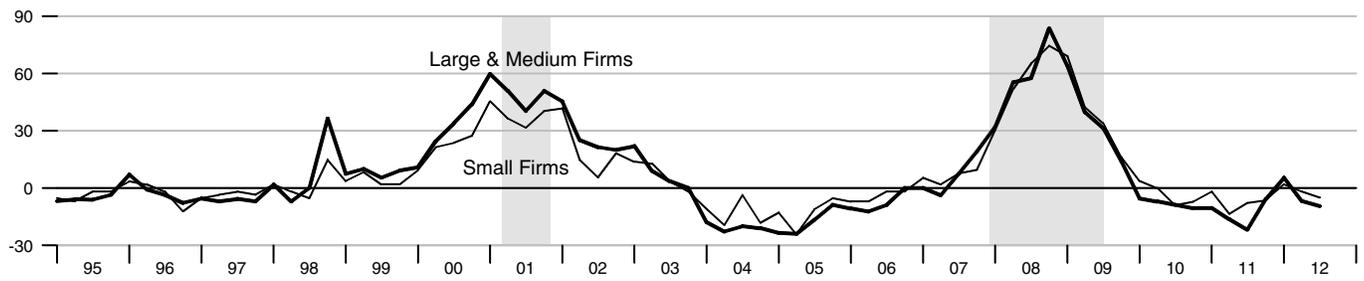
Consumer Credit

Percent change from year ago



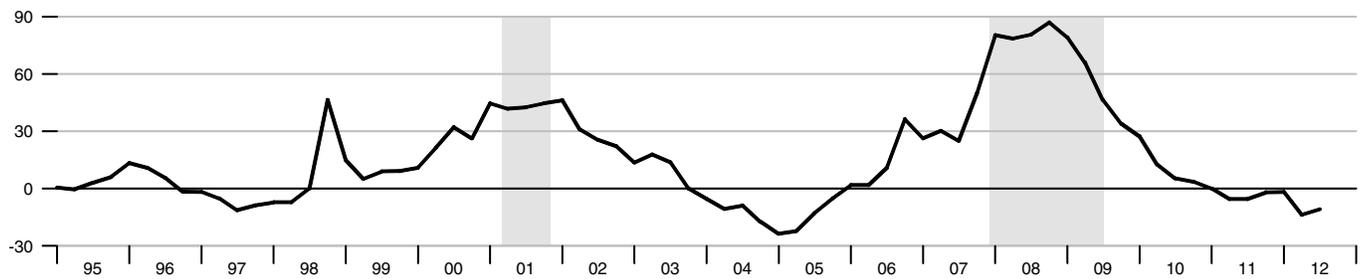
Net Percentage of Domestic Banks Tightening Standards for Commercial and Industrial Loans

Percentage



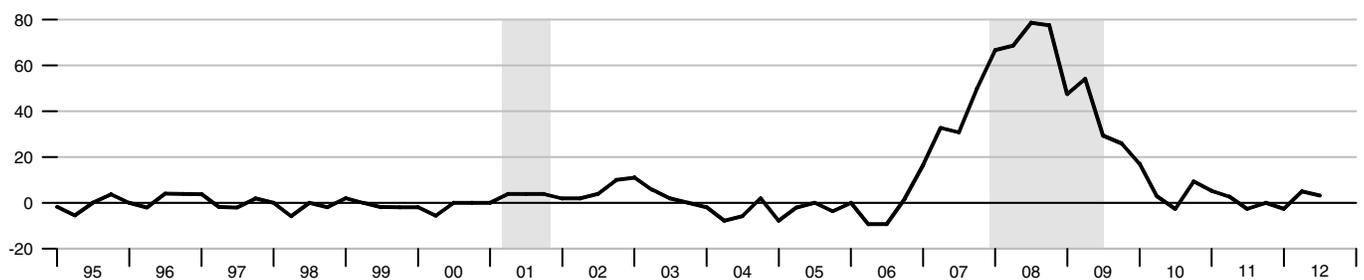
Net Percentage of Domestic Banks Tightening Standards for Commercial Real Estate Loans

Percentage



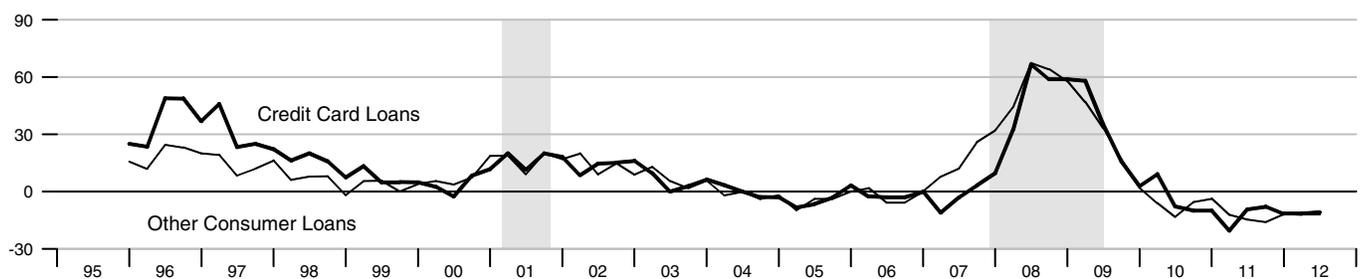
Net Percentage of Domestic Banks Tightening Standards for Residential Mortgage Loans

Percentage

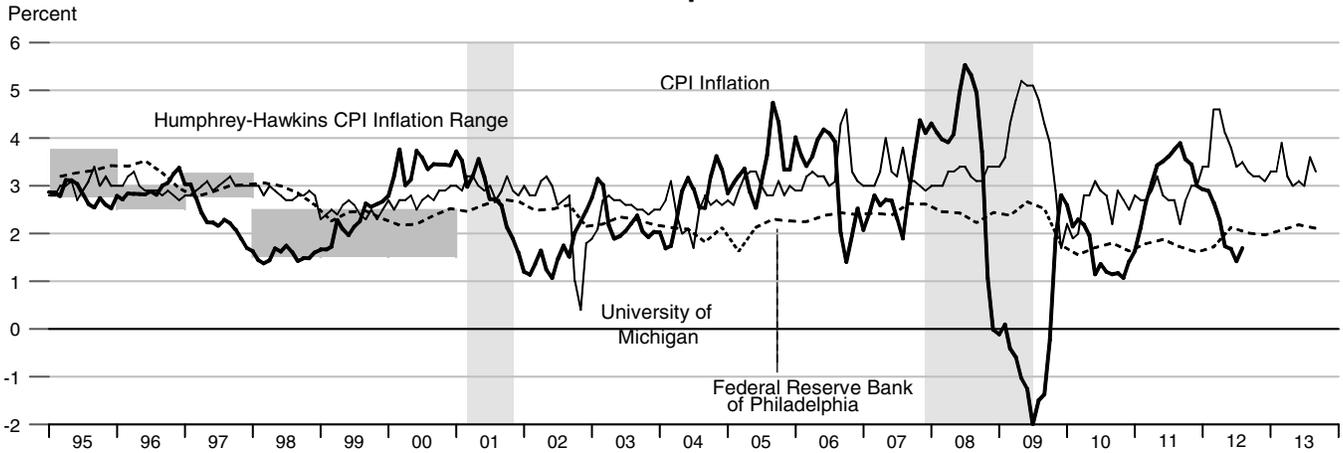


Net Percentage of Domestic Banks Tightening Standards for Consumer Loans

Percentage

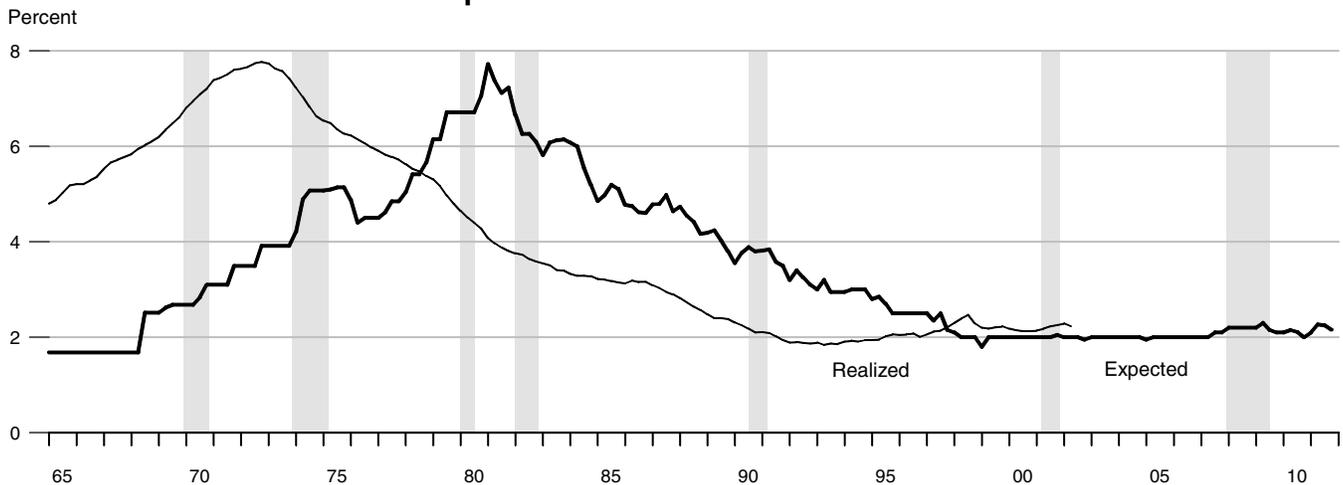


CPI Inflation and 1-Year-Ahead CPI Inflation Expectations



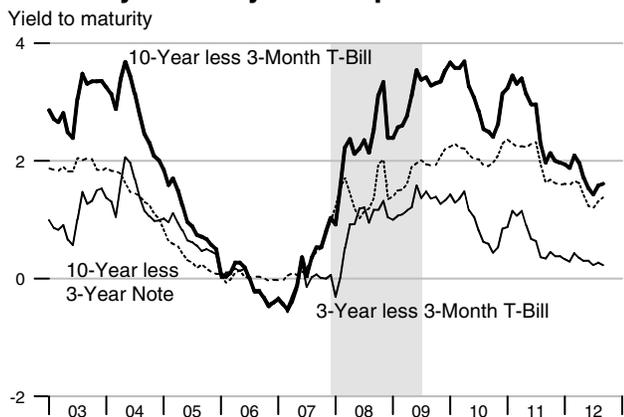
The shaded region shows the Humphrey-Hawkins CPI inflation range. Beginning in January 2000, the Humphrey-Hawkins inflation range was reported using the PCE price index and therefore is not shown on this graph.

10-Year Ahead PCE Inflation Expectations and Realized Inflation

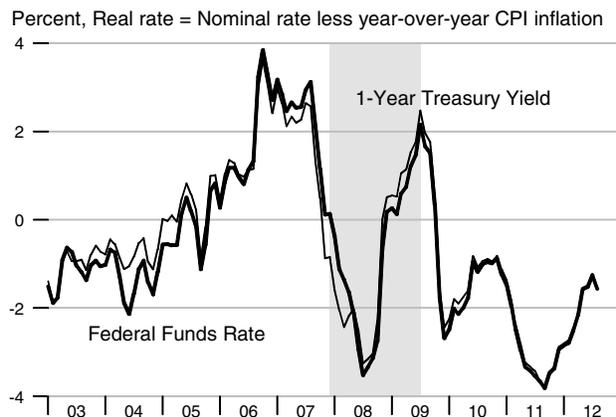


See the notes section for an explanation of the chart.

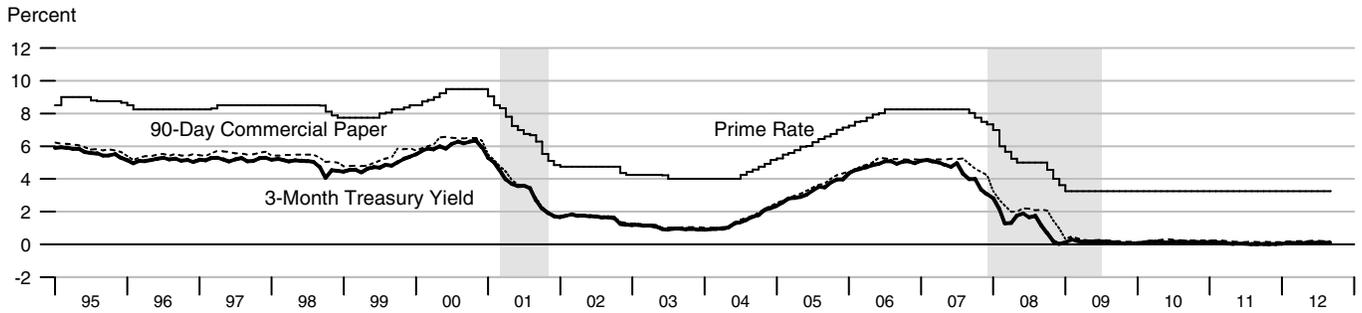
Treasury Security Yield Spreads



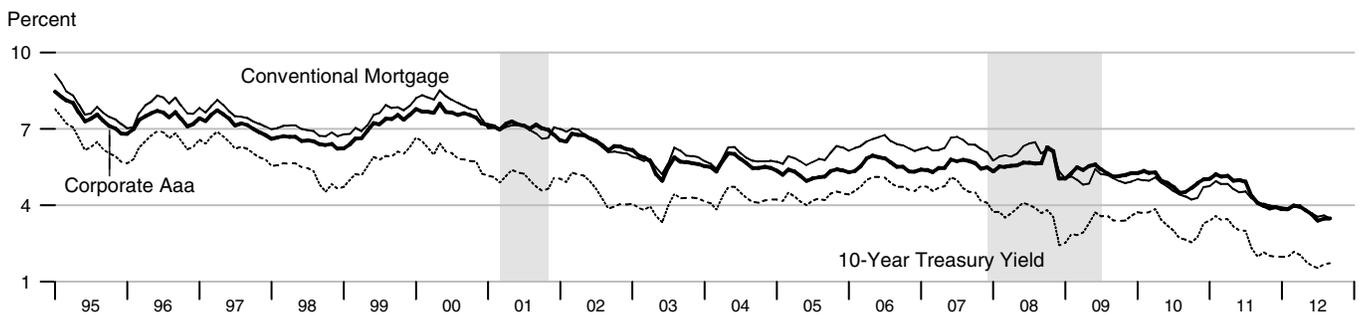
Real Interest Rates



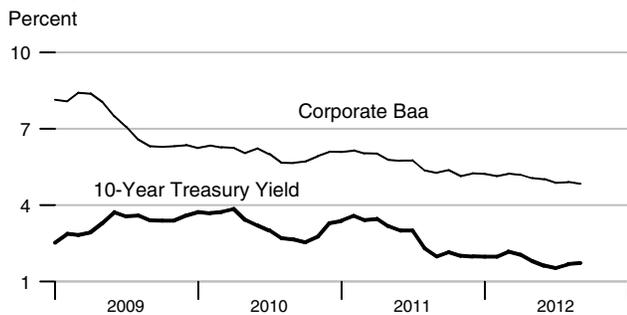
Short-Term Interest Rates



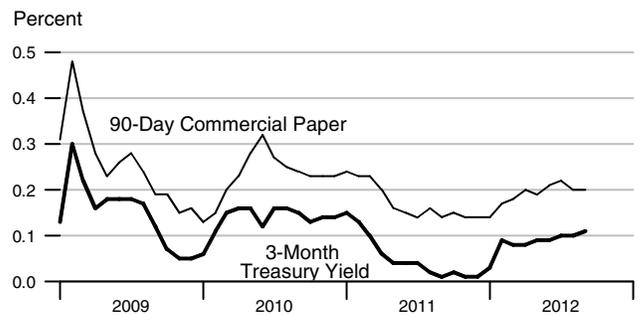
Long-Term Interest Rates



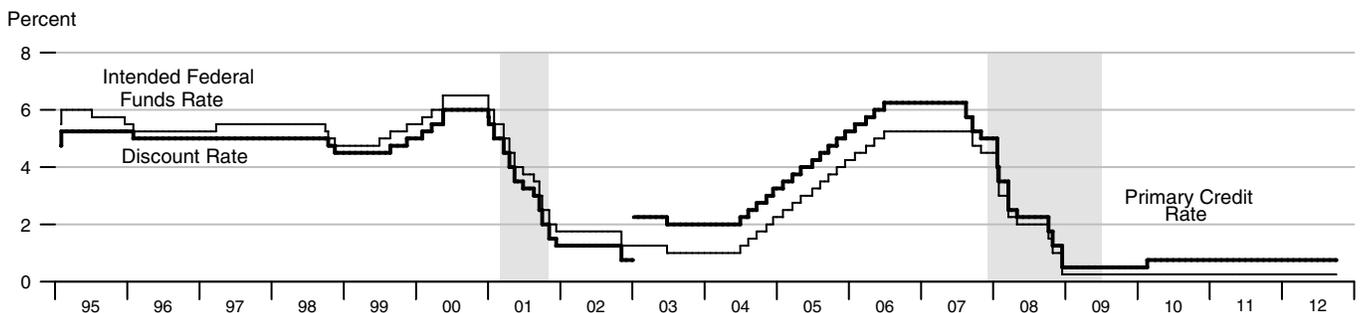
Long-Term Interest Rates



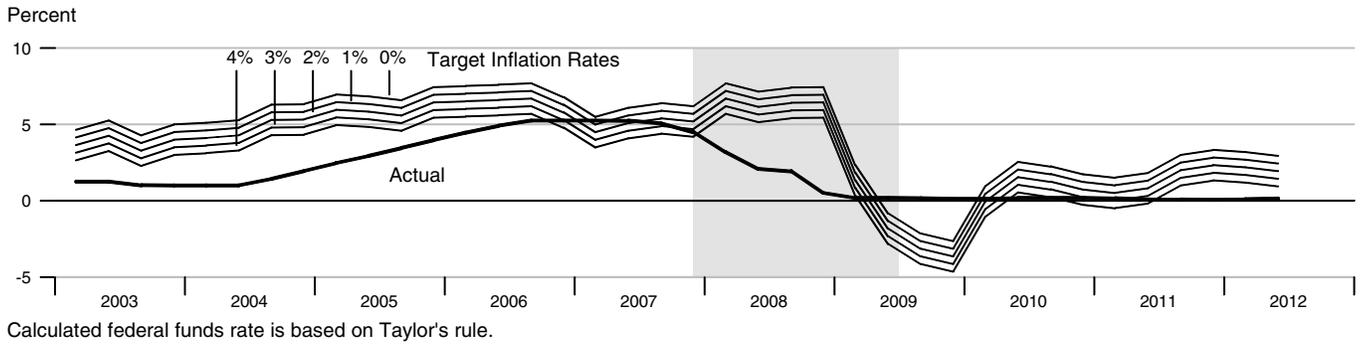
Short-Term Interest Rates



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

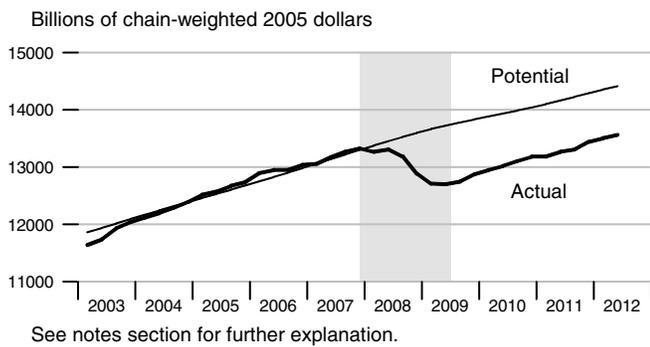


Federal Funds Rate and Inflation Targets

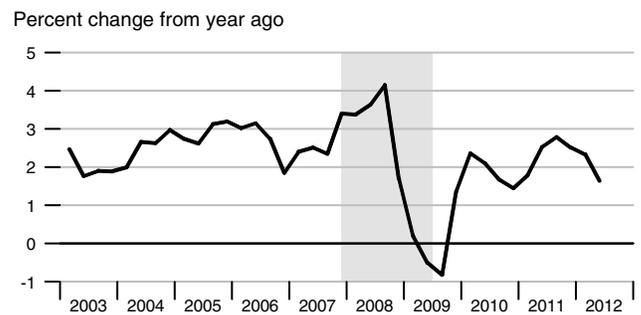


Components of Taylor's Rule

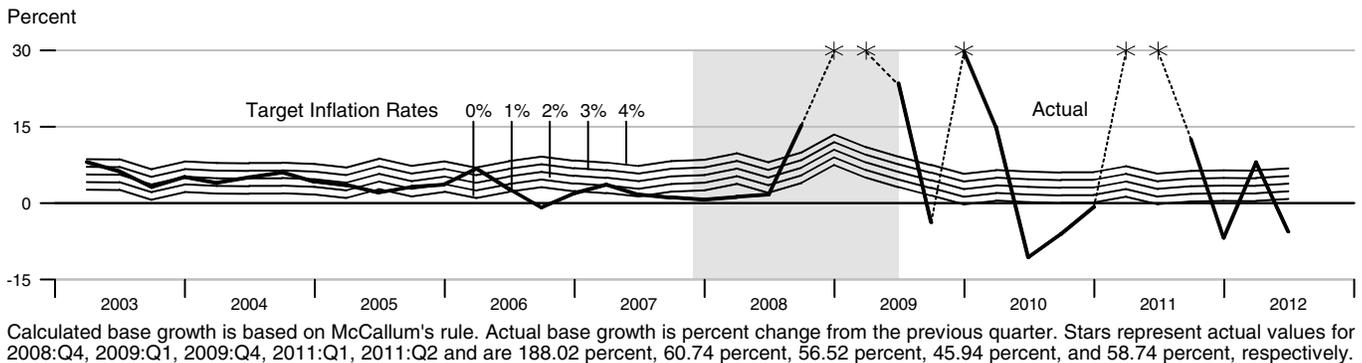
Actual and Potential Real GDP



PCE Inflation

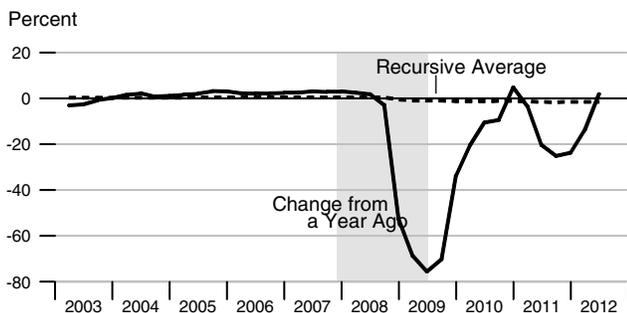


Monetary Base Growth and Inflation Targets

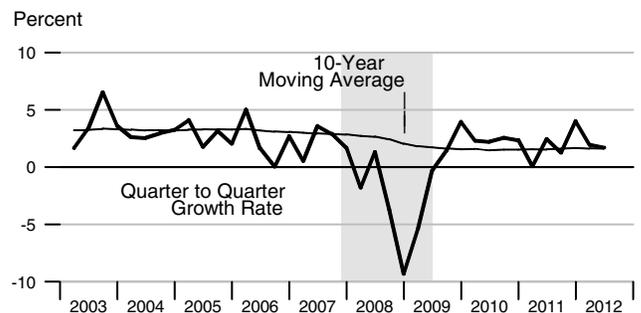


Components of McCallum's Rule

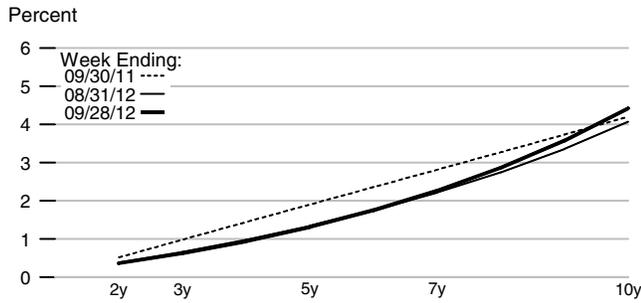
Monetary Base Velocity Growth



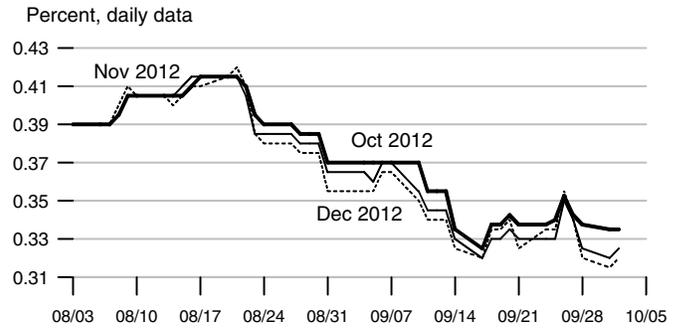
Real Output Growth



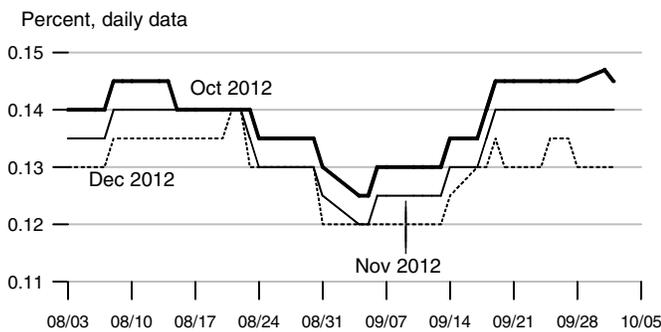
Implied One-Year Forward Rates



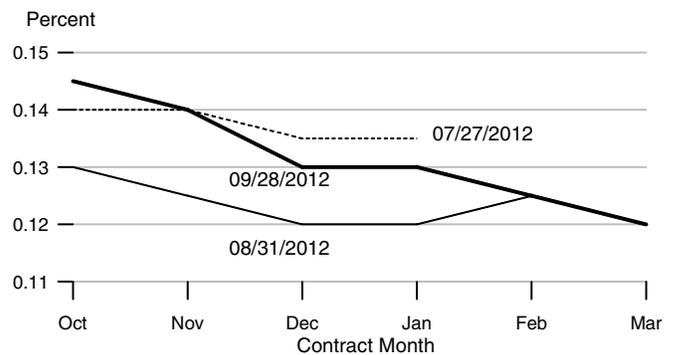
Rates on 3-Month Eurodollar Futures



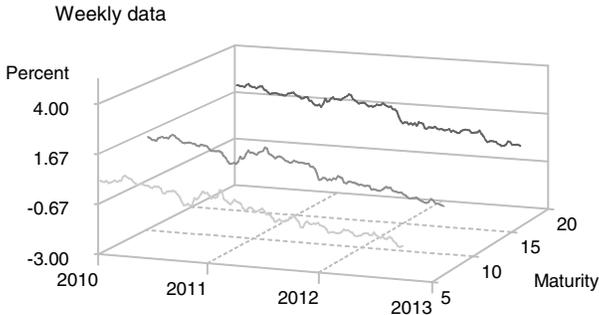
Rates on Selected Federal Funds Futures Contracts



Rates on Federal Funds Futures on Selected Dates

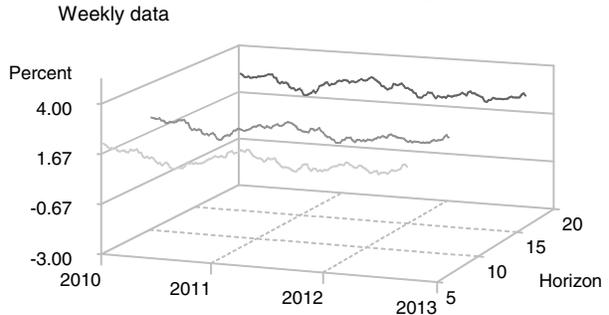


Inflation-Indexed Treasury Securities



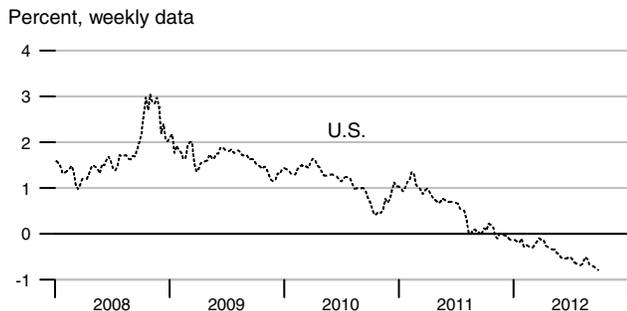
Note: Yields are inflation-indexed constant maturity U.S. Treasury securities

Inflation-Indexed Treasury Yield Spreads

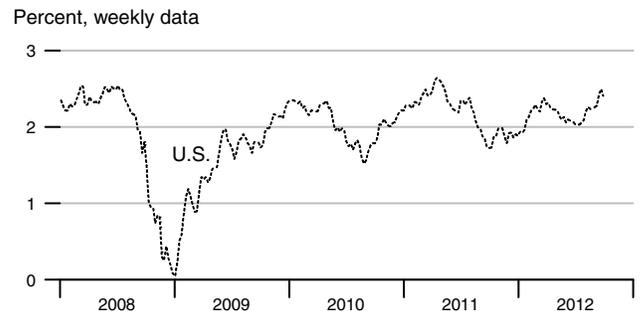


Note: Yield spread is between nominal and inflation-indexed constant maturity U.S. Treasury securities.

Inflation-Indexed 10-Year Government Notes



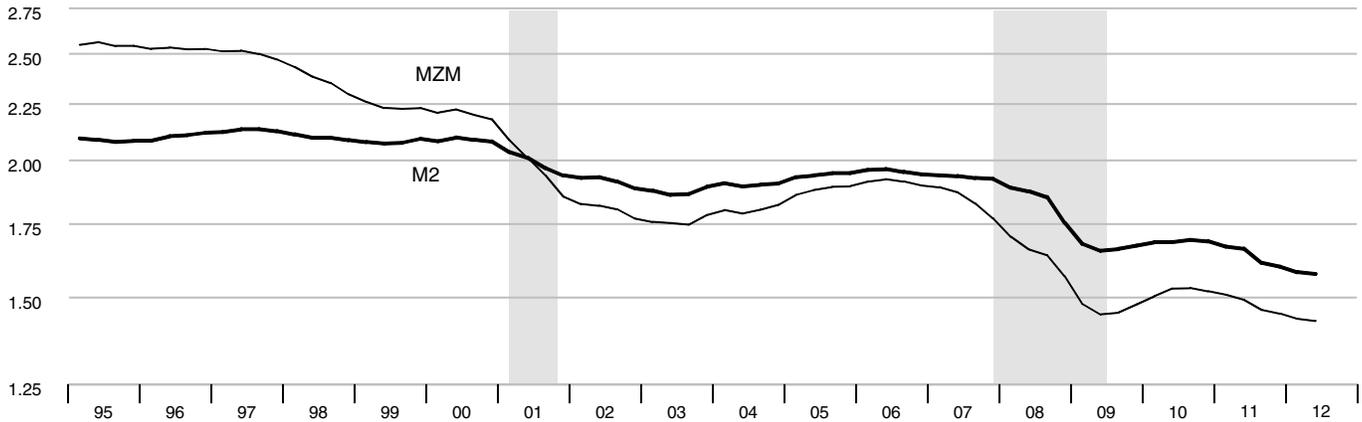
Inflation-Indexed 10-Year Government Yield Spreads



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

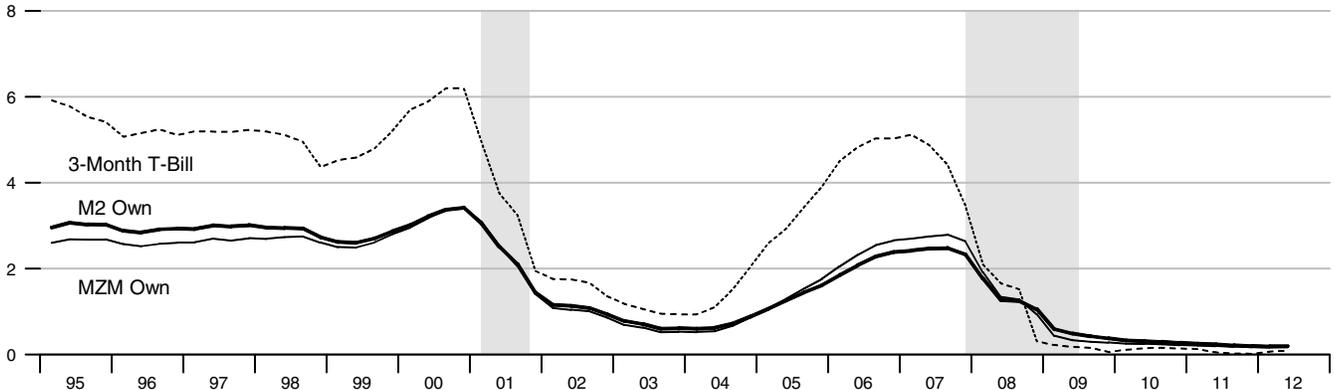
Velocity

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



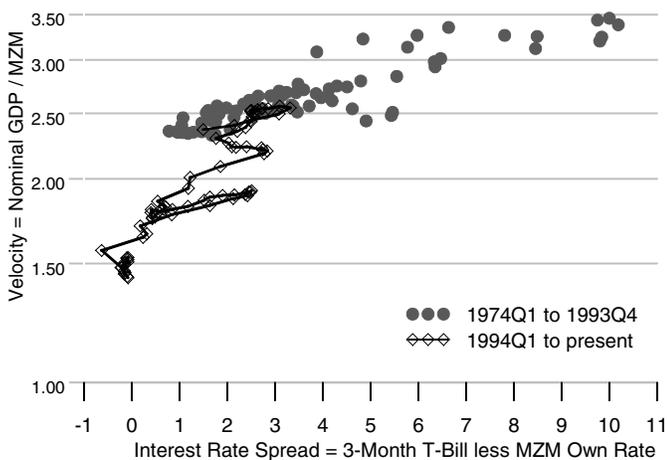
Interest Rates

Percent



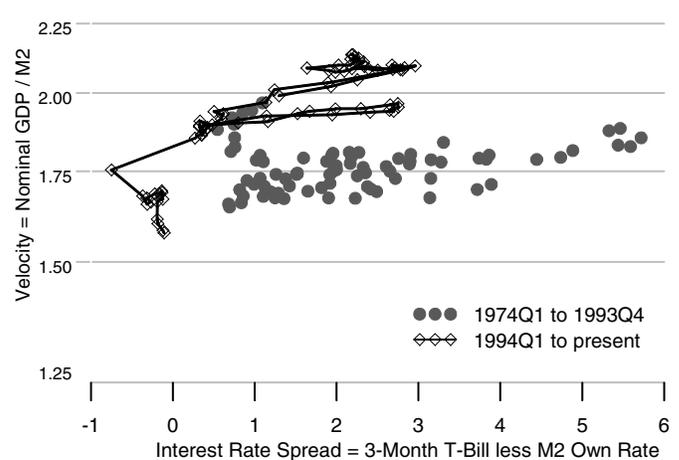
MZM Velocity and Interest Rate Spread

Ratio Scale



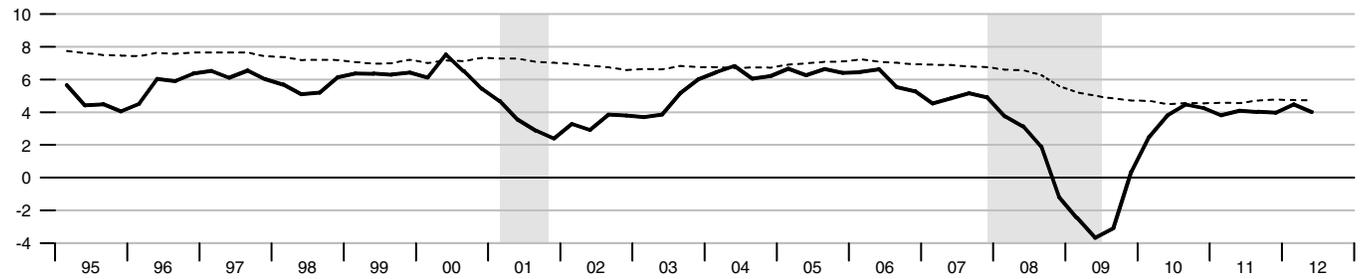
M2 Velocity and Interest Rate Spread

Ratio Scale



Gross Domestic Product

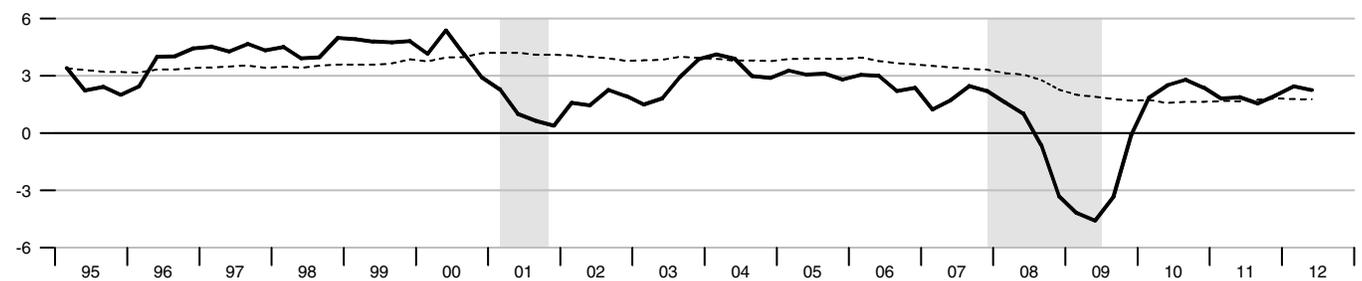
Percent change from year ago



Dashed lines indicate 10-year moving averages.

Real Gross Domestic Product

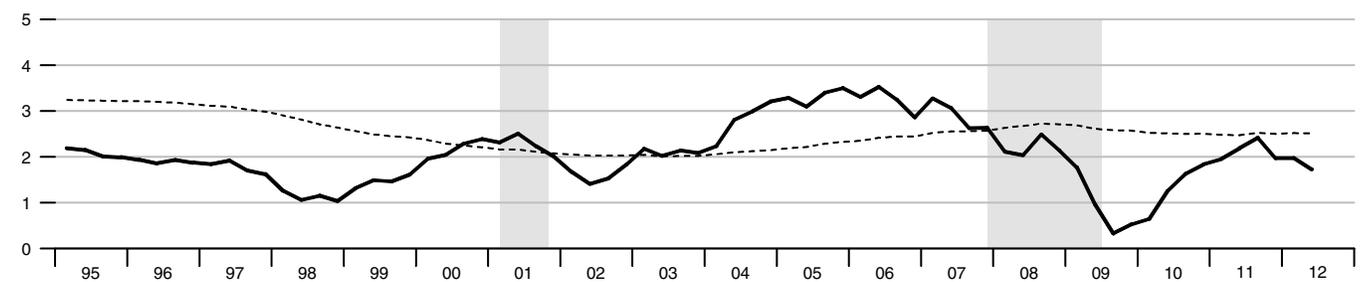
Percent change from year ago



Dashed lines indicate 10-year moving averages.

Gross Domestic Product Price Index

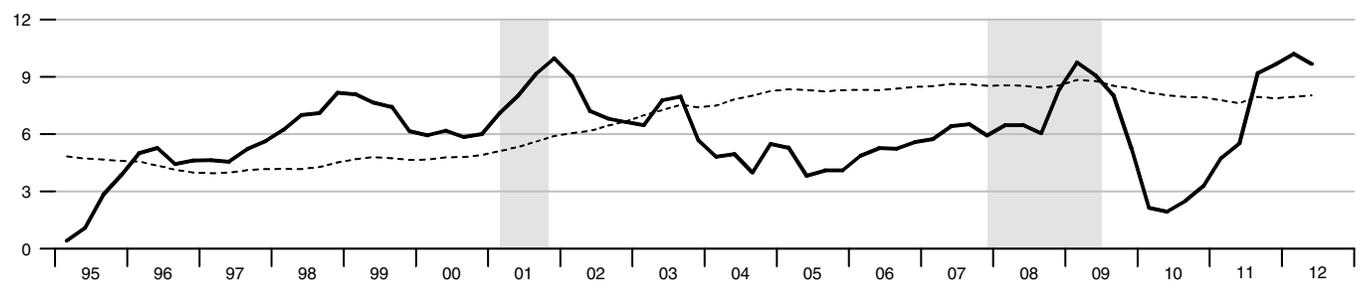
Percent change from year ago



Dashed lines indicate 10-year moving averages.

M2

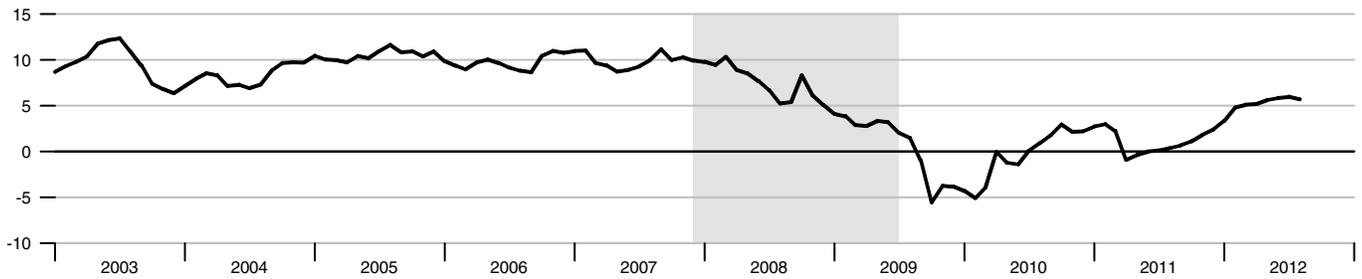
Percent change from year ago



Dashed lines indicate 10-year moving averages.

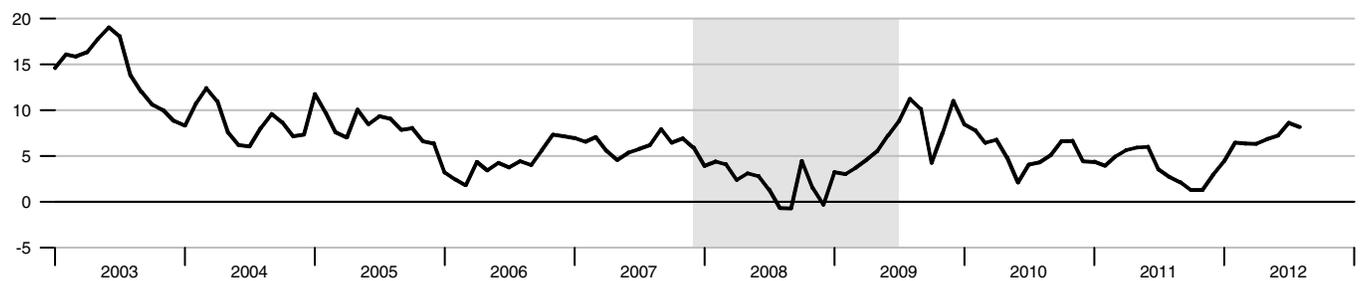
Bank Credit

Percent change from year ago



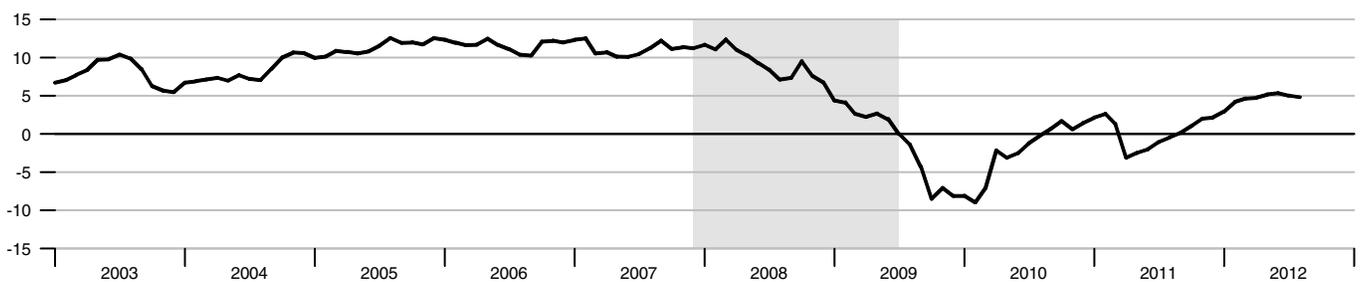
Investment Securities in Bank Credit at Commercial Banks

Percent change from year ago



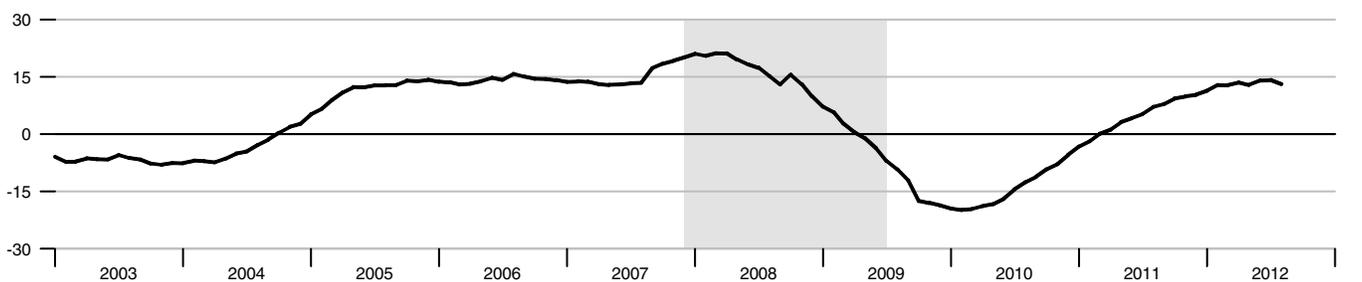
Total Loans and Leases in Bank Credit at Commercial Banks

Percent change from year ago

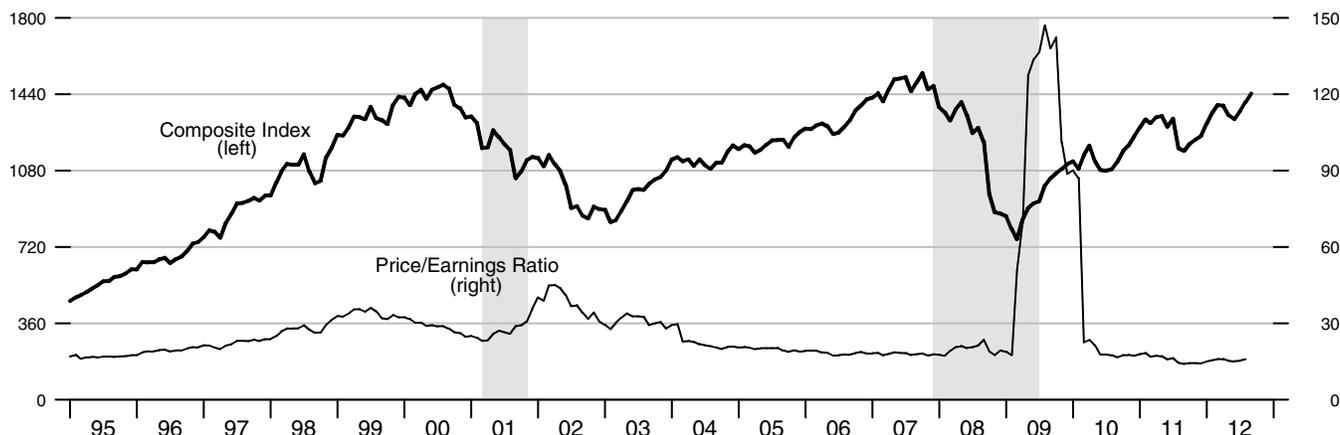


Commercial and Industrial Loans at Commercial Banks

Percent change from year ago



Standard & Poor's 500

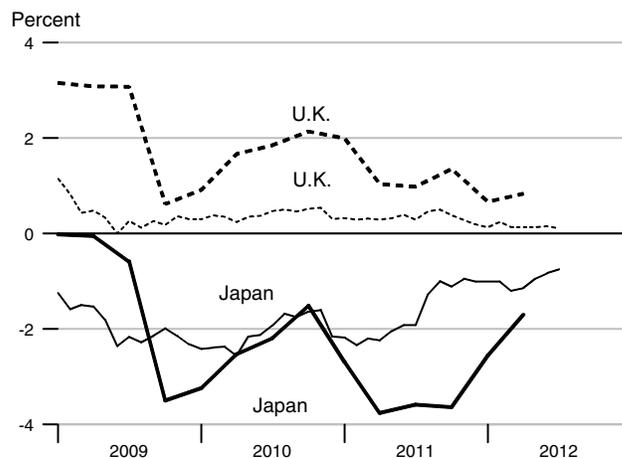
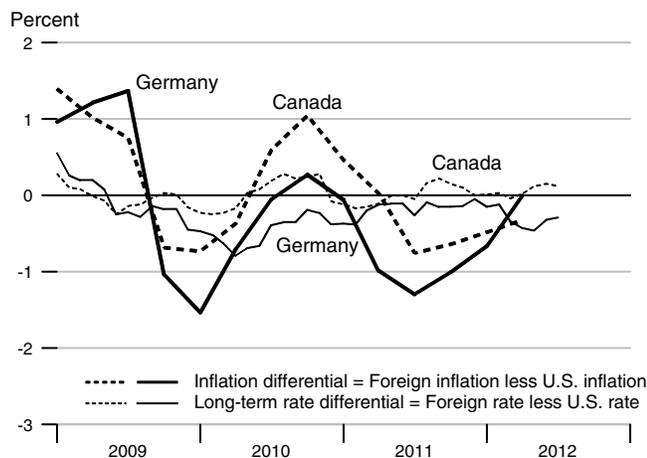


Recent Inflation and Long-Term Interest Rates

	Consumer Price Inflation Rates				Long-Term Government Bond Rates			
	Percent change from year ago				Percent			
	2011Q3	2011Q4	2012Q1	2012Q2	Apr12	May12	Jun12	Jul12
United States	3.76	3.34	2.82	1.90	2.05	1.80	1.62	1.53
Canada	3.00	2.69	2.34	1.58	2.07	1.92	1.77	1.65
France	2.15	2.44	2.31	2.00	2.99	2.75	2.57	2.28
Germany	2.46	2.33	2.16	1.90	1.62	1.34	1.30	1.24
Italy	2.80	3.30	3.24	3.28	5.68	5.78	5.90	6.00
Japan	0.17	-0.30	0.26	0.20	0.91	0.85	0.79	0.78
United Kingdom	4.74	4.69	3.49	2.74	2.18	1.93	1.77	1.64

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Inflation and Long-Term Interest Rate Differentials



		Money Stock			Bank	Adjusted			
		M1	MZM	M2	M3*	Credit	Monetary Base	Reserves	MSI M2**
2007		1372.410	7632.516	7265.615		8462.054	850.538	94.154	7189.417
2008		1434.292	8705.483	7762.796		9103.843	1010.159	232.563	7622.042
2009		1637.145	9539.609	8383.913		9170.819	1796.563	944.791	8242.750
2010		1741.696	9533.294	8591.212		9122.045	2031.706	1144.139	8453.867
2011		2009.427	10199.98	9219.095		9220.712	2539.035	1577.107	9079.183
2010	1	1700.425	9486.979	8472.497		8898.376	2089.194	1217.050	8334.533
	2	1709.888	9428.850	8553.996		9192.898	2034.301	1158.475	8416.067
	3	1743.325	9523.158	8609.698		9195.247	2003.664	1117.961	8472.767
	4	1813.144	9694.190	8728.655		9201.661	1999.667	1083.072	8592.100
2011	1	1879.350	9817.425	8875.014		9134.889	2242.981	1310.575	8737.600
	2	1926.754	10047.84	9027.411		9153.057	2597.868	1647.717	8888.567
	3	2077.811	10373.70	9401.592		9230.469	2680.222	1714.182	9260.333
	4	2153.794	10560.97	9572.362		9364.434	2635.068	1635.956	9430.233
2012	1	2223.015	10788.18	9781.074		9537.658	2688.389	1663.176	9637.367
	2	2252.543	10921.86	9901.135		9660.349	2651.221	1616.349	9756.300
2010	Aug	1743.506	9520.078	8607.164		9205.440	2014.644	1133.748	8470.200
	Sep	1761.987	9584.947	8641.609		9192.564	1981.150	1089.021	8505.000
	Oct	1776.846	9649.091	8694.498		9210.513	1998.544	1099.769	8557.600
	Nov	1822.430	9699.075	8725.189		9209.130	1991.151	1076.450	8588.800
	Dec	1840.156	9734.403	8766.278		9185.339	2009.305	1072.996	8629.900
2011	Jan	1868.281	9768.701	8830.064		9162.340	2057.146	1095.882	8693.300
	Feb	1878.777	9800.277	8873.590		9122.687	2243.574	1327.458	8736.200
	Mar	1890.993	9883.298	8921.389		9119.639	2428.222	1508.384	8783.300
	Apr	1903.683	9969.840	8968.548		9153.257	2531.677	1599.135	8830.200
	May	1931.501	10053.89	9018.647		9152.005	2590.365	1627.354	8879.800
	Jun	1945.077	10119.78	9095.038		9153.909	2671.563	1716.661	8955.700
	Jul	2004.548	10275.41	9268.266		9197.891	2703.581	1738.000	9127.500
	Aug	2106.230	10393.17	9458.314		9239.388	2680.463	1721.457	9316.700
	Sep	2122.655	10452.53	9478.195		9254.129	2656.623	1683.088	9336.800
	Oct	2137.704	10507.66	9525.504		9311.938	2678.492	1707.294	9383.800
	Nov	2154.971	10557.55	9573.255		9377.211	2623.100	1628.019	9431.100
	Dec	2168.706	10617.70	9618.326		9404.153	2603.613	1572.554	9475.800
2012	Jan	2224.212	10754.06	9749.402		9466.873	2647.630	1580.153	9605.700
	Feb	2218.614	10778.50	9779.583		9561.011	2733.189	1733.516	9636.100
	Mar	2226.219	10831.99	9814.236		9585.089	2684.348	1675.860	9670.300
	Apr	2255.342	10877.35	9861.605		9626.822	2673.852	1655.005	9717.500
	May	2246.151	10920.92	9897.282		9665.558	2635.055	1588.478	9752.300
	Jun	2256.136	10967.30	9944.518		9688.668	2644.757	1605.564	9799.100
	Jul	2318.874	11059.74	10021.01		9747.421	2669.161	1621.839	9875.300
	Aug	2332.865	11122.19	10058.23		9766.732	2669.407	1626.489	9912.200

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

		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
	2	0.15	0.75	3.25	0.30	0.09	0.40	1.82	3.80	3.32	3.79
	3	0.14	0.75	3.25	0.27	0.10	0.35	1.64	3.45		3.55
2010	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	3.43	3.91
	May	0.16	0.75	3.25	0.29	0.09	0.39	1.80	3.80	3.20	3.80
	Jun	0.16	0.75	3.25	0.32	0.09	0.39	1.62	3.64	3.32	3.68
	Jul	0.16	0.75	3.25	0.30	0.10	0.33	1.53	3.40	3.18	3.55
	Aug	0.13	0.75	3.25	0.26	0.10	0.37	1.68	3.48		3.60
	Sep	0.14	0.75	3.25	0.24	0.11	0.34	1.72	3.49		3.50

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	6.15	
2008		4.51	14.06	6.84	
2009		14.14	9.58	8.00	
2010		6.39	-0.07	2.47	
2011		15.37	6.99	7.31	
<hr/>					
2010	1	3.91	-3.01	1.01	
	2	2.23	-2.45	3.85	
	3	7.82	4.00	2.60	
	4	16.02	7.18	5.53	
2011	1	14.61	5.08	6.71	
	2	10.09	9.39	6.87	
	3	31.36	12.97	16.58	
	4	14.63	7.22	7.27	
2012	1	12.86	8.61	8.72	
	2	5.31	4.96	4.91	
<hr/>					
2010	Aug	13.24	7.05	3.75	
	Sep	12.72	8.18	4.80	
	Oct	10.12	8.03	7.34	
	Nov	30.79	6.22	4.24	
	Dec	11.67	4.37	5.65	
<hr/>					
2011	Jan	18.34	4.23	8.73	
	Feb	6.74	3.88	5.92	
	Mar	7.80	10.17	6.46	
	Apr	8.05	10.51	6.34	
	May	17.54	10.12	6.70	
	Jun	8.43	7.86	10.16	
	Jul	36.69	18.45	22.86	
	Aug	60.87	13.75	24.61	
	Sep	9.36	6.85	2.52	
	Oct	8.51	6.33	5.99	
	Nov	9.69	5.70	6.02	
	Dec	7.65	6.84	5.65	
<hr/>					
2012	Jan	30.71	15.41	16.35	
	Feb	-3.02	2.73	3.71	
	Mar	4.11	5.96	4.25	
	Apr	15.70	5.03	5.79	
	May	-4.89	4.81	4.34	
	Jun	5.33	5.10	5.73	
	Jul	33.37	10.11	9.23	
	Aug	7.24	6.78	4.46	

*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/.