Monetary Trends

June 2014

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.

Contents

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: $[(x_\tau/x_{\tau-1})-1]\times 1200$. 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: $[(x_\tau/x_{\tau-12})-1]\times 100$.

We welcome your comments addressed to:

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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.

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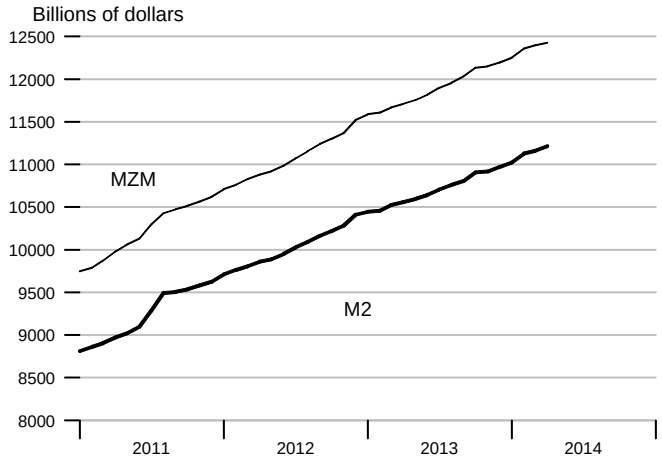
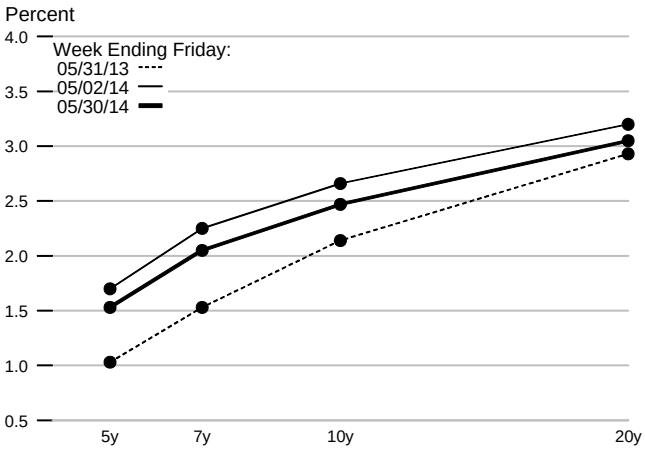
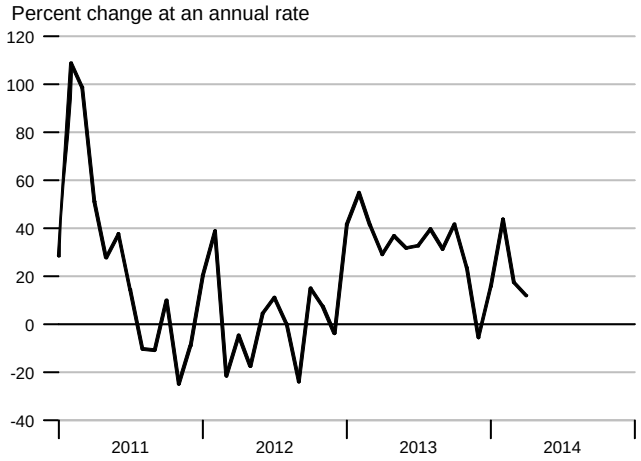
M2 and MZM



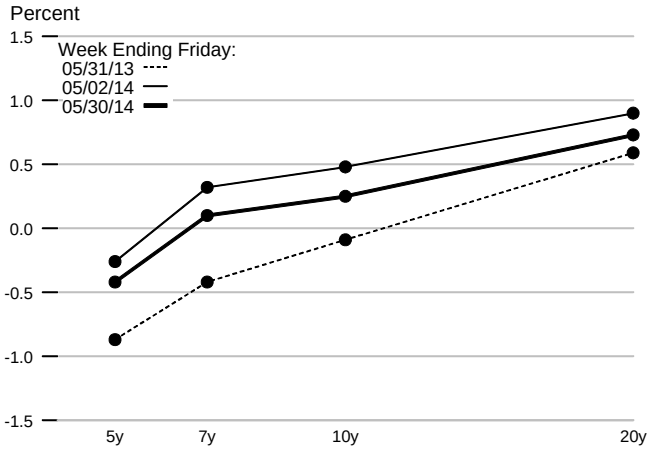
Treasury Yield Curve



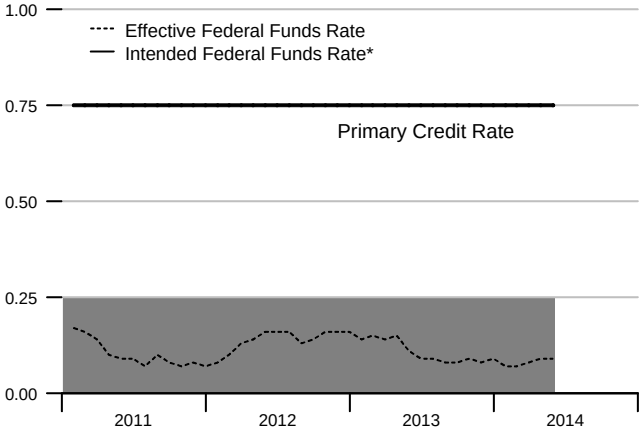
Adjusted Monetary Base



Real Treasury Yield Curve

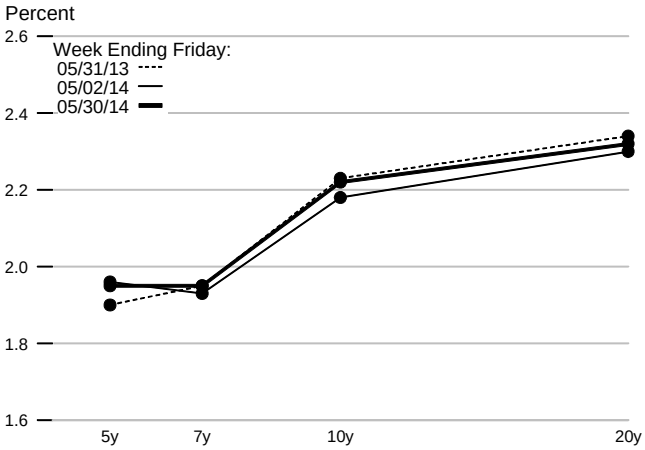


Reserve Market Rates



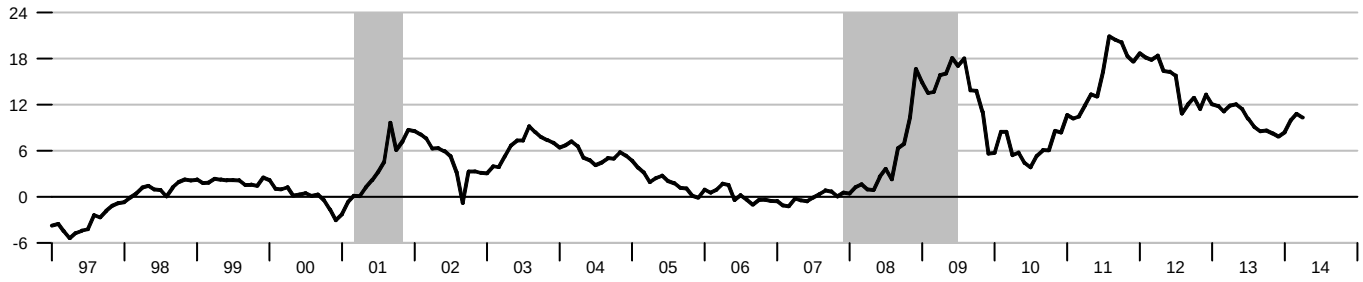
*Note: Effective December 16, 2008, FOMC reports the Intended Federal Funds Rate as a range. Currently, Intended Federal Funds Rate is not plotted on this chart due to the note above.

Inflation-Indexed Treasury Yield Spreads



M1

Percent change from year ago

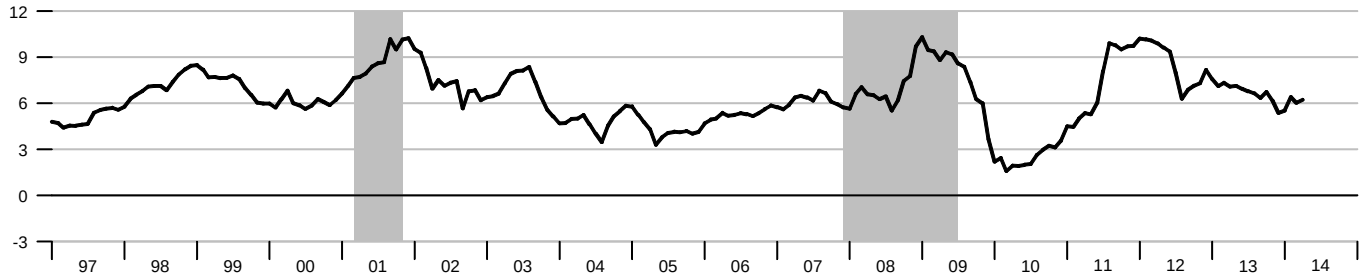


MZM

Percent change from year ago

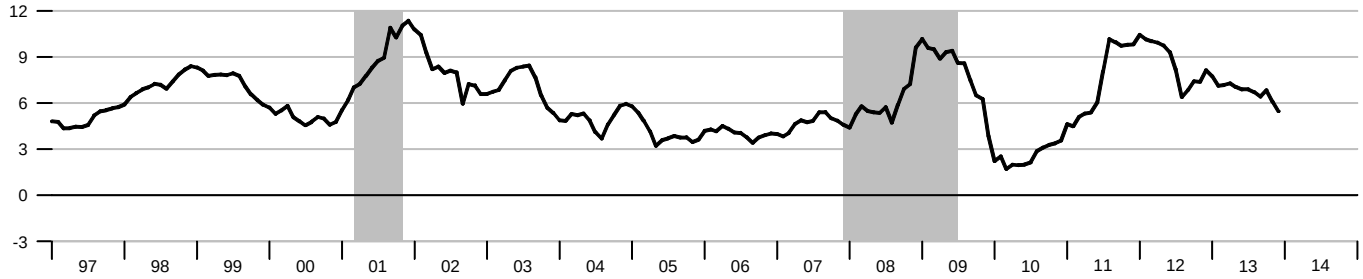
M2

Percent change from year ago



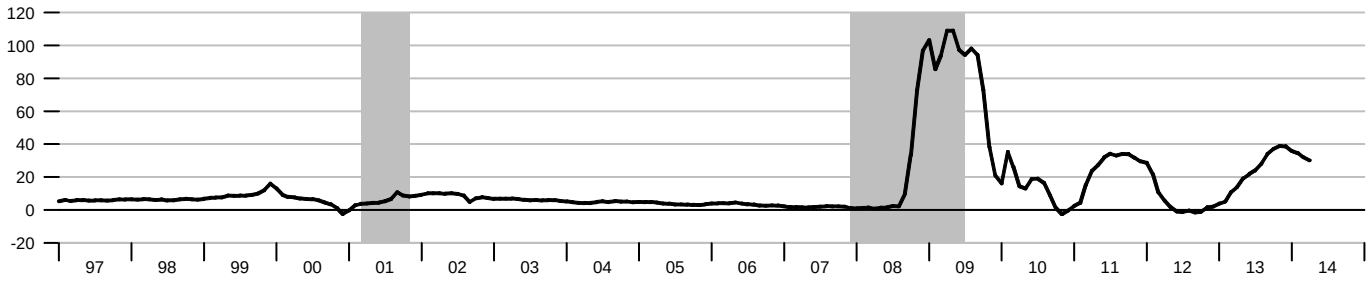
Monetary Services Index - M2

Percent change from year ago



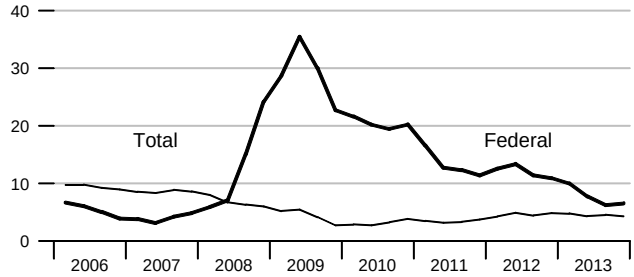
Adjusted Monetary Base

Percent change from year ago



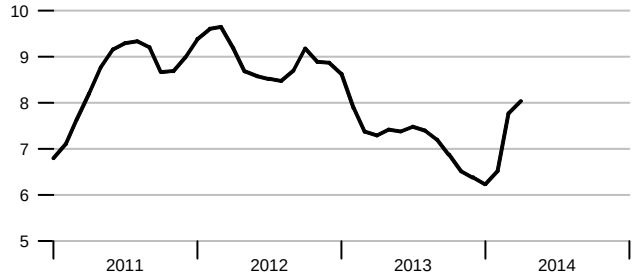
Domestic Nonfinancial Debt

Percent change from year ago



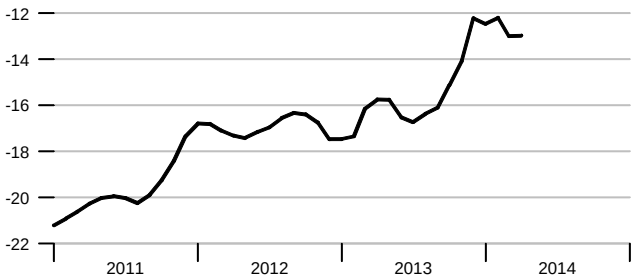
Currency Held by the Nonbank Public

Percent change from year ago



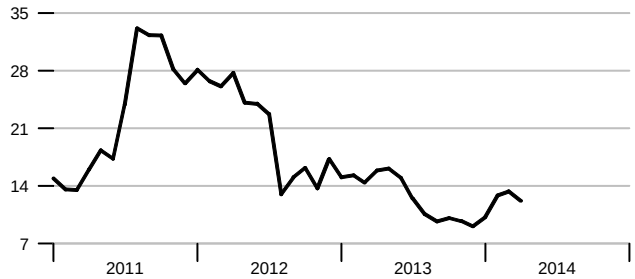
Small Denomination Time Deposits

Percent change from year ago



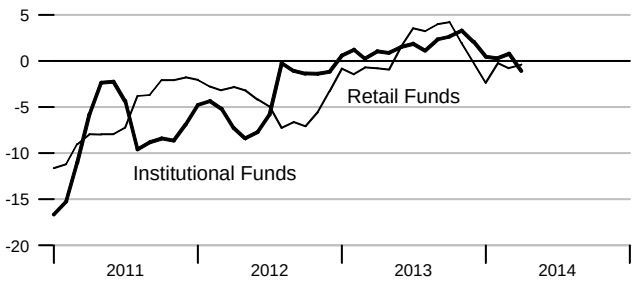
Checkable Deposits

Percent change from year ago



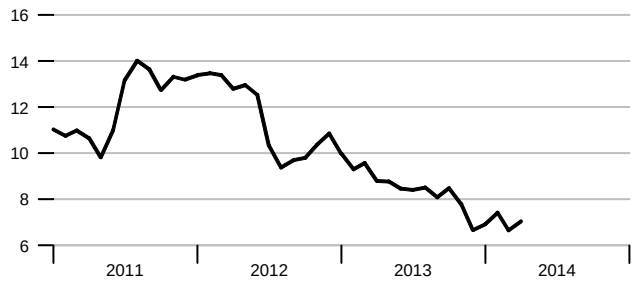
Money Market Mutual Fund Shares

Percent change from year ago



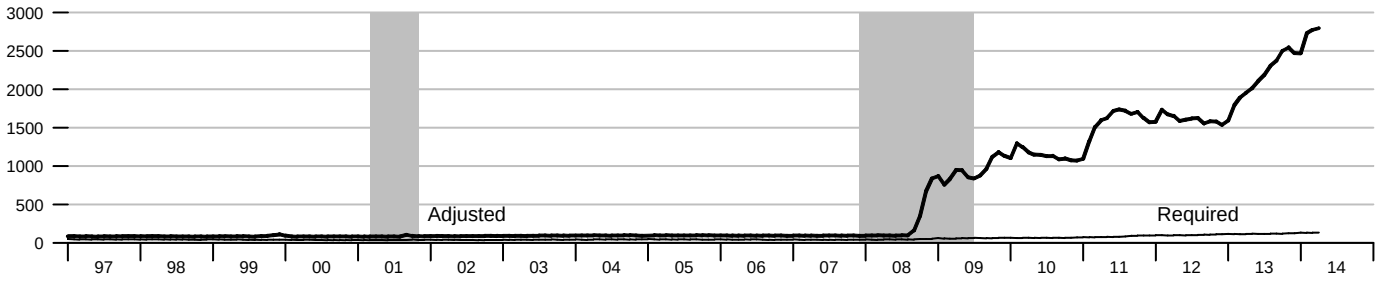
Savings Deposits

Percent change from year ago



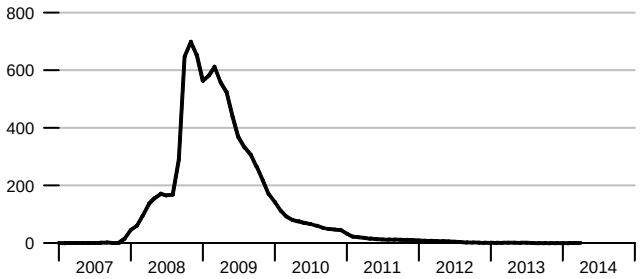
Adjusted and Required Reserves

Billions of dollars



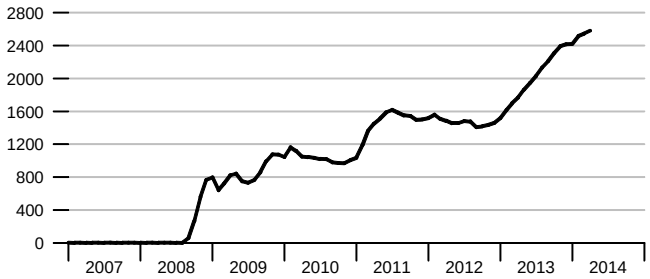
Total Borrowings

Billions of dollars



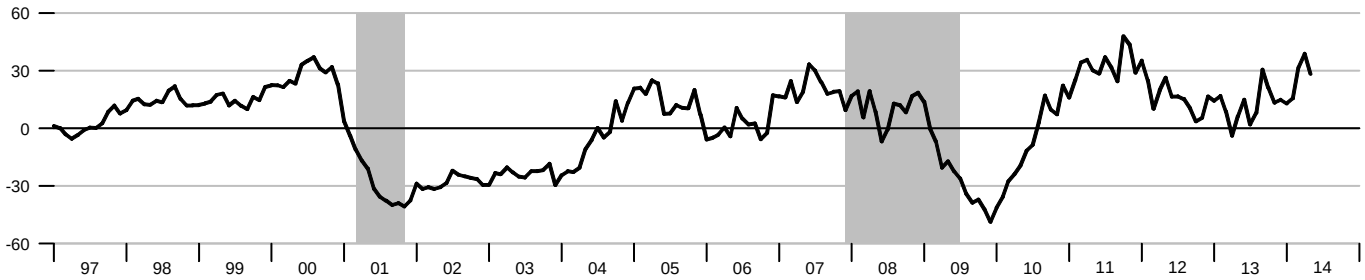
Excess Reserve Balances

Billions of dollars



Nonfinancial Commercial Paper

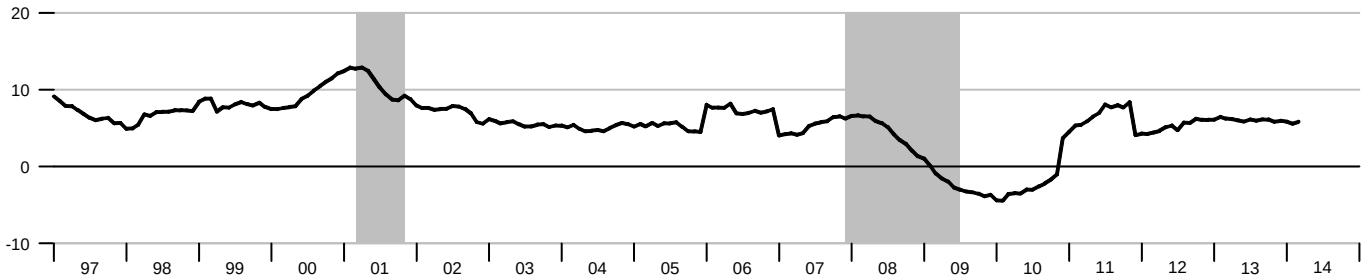
Percent change from year ago



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.

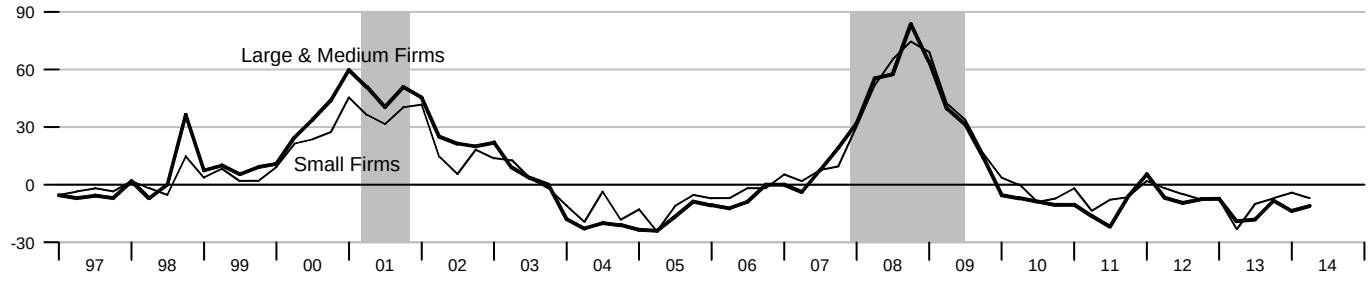
Consumer Credit

Percent change from year ago



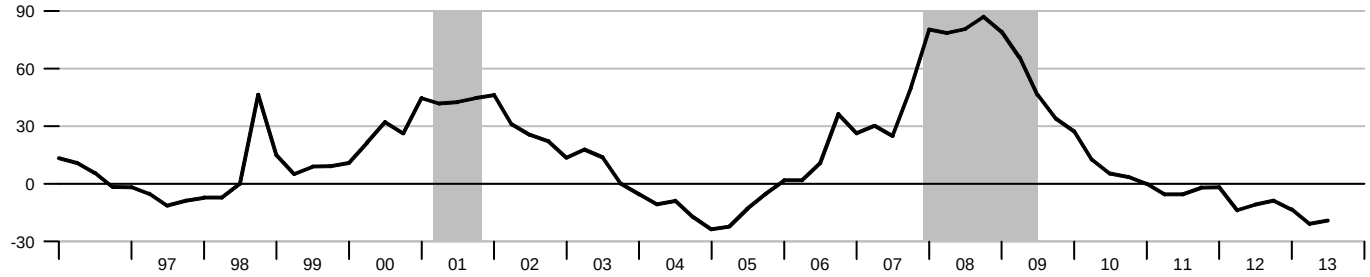
Net Percentage of Domestic Banks Tightening Standards for Commercial and Industrial Loans

Percentage



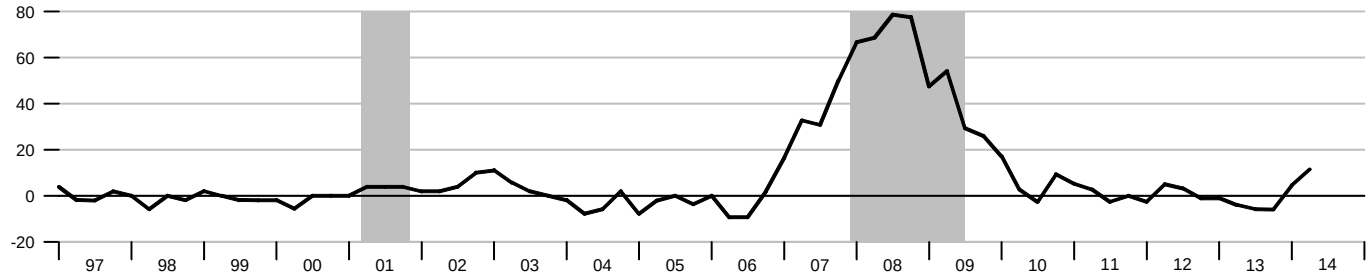
Net Percentage of Domestic Banks Tightening Standards for Commercial Real Estate Loans

Percentage



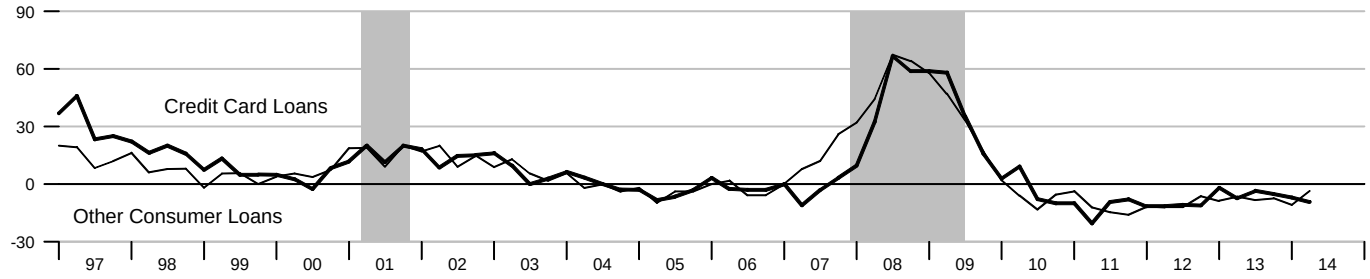
Net Percentage of Domestic Banks Tightening Standards for Residential Mortgage Loans

Percentage



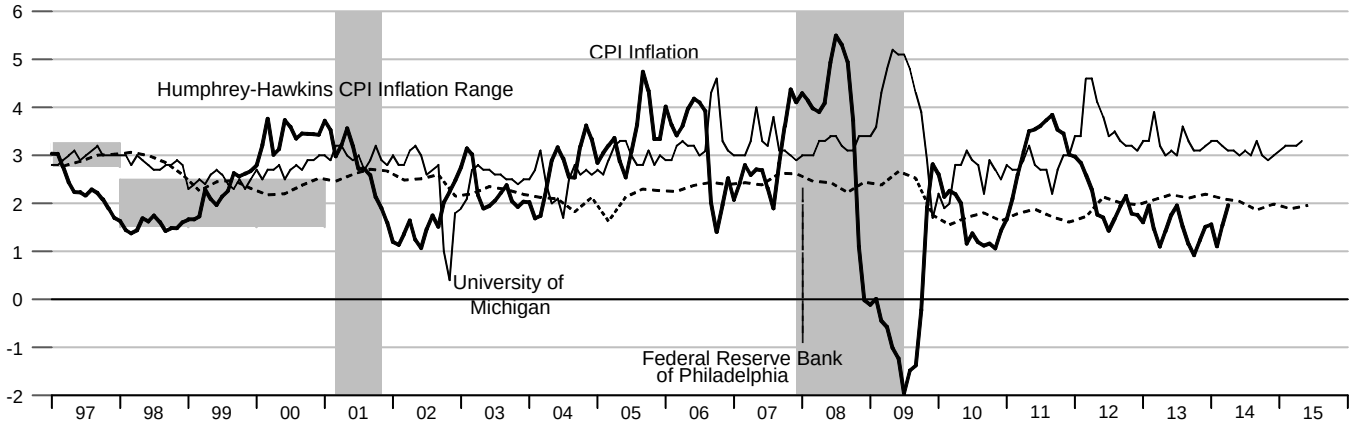
Net Percentage of Domestic Banks Tightening Standards for Consumer Loans

Percentage



CPI Inflation and 1-Year-Ahead CPI Inflation Expectations

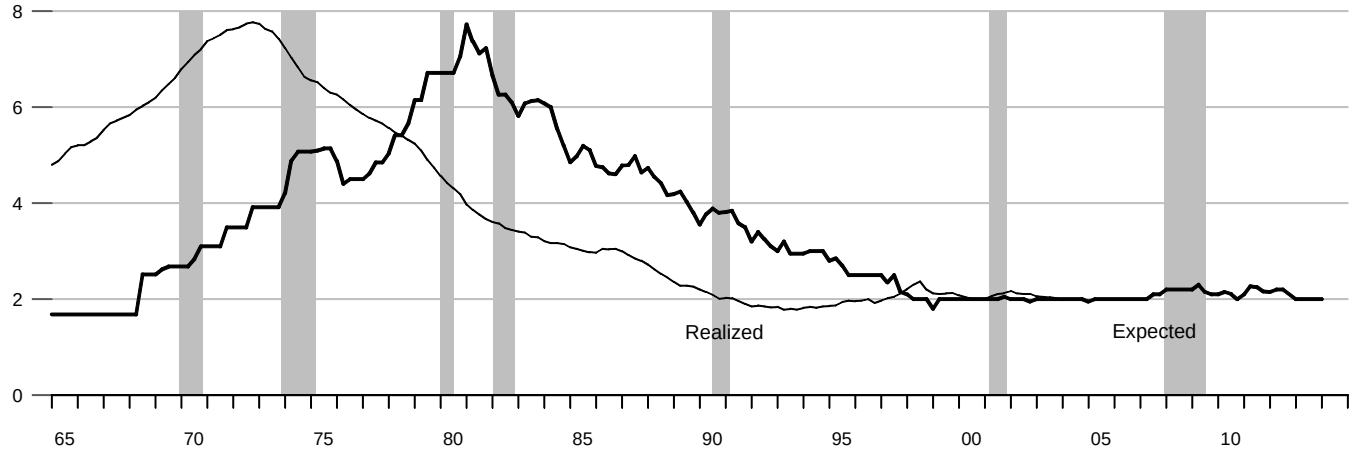
Percent



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

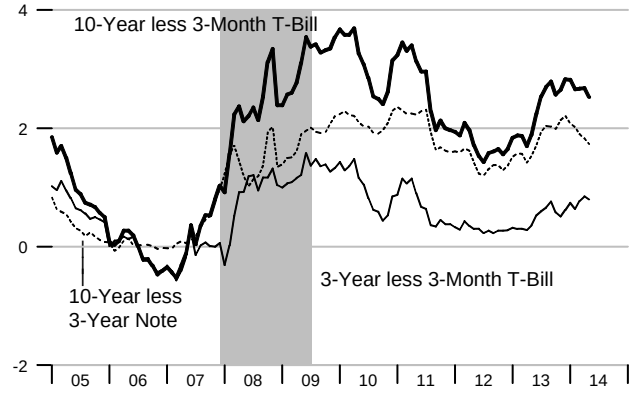
Percent



See the notes section for an explanation of the chart.

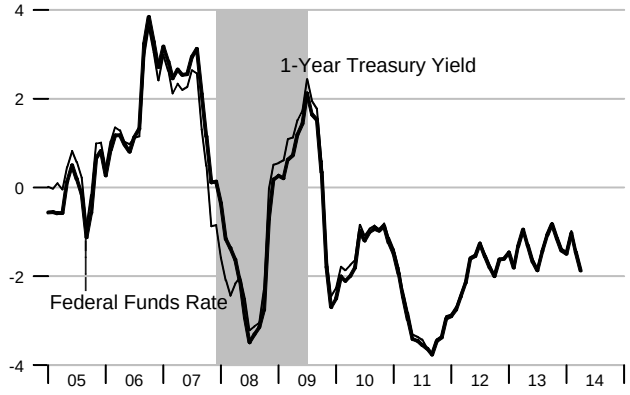
Treasury Security Yield Spreads

Yield to maturity

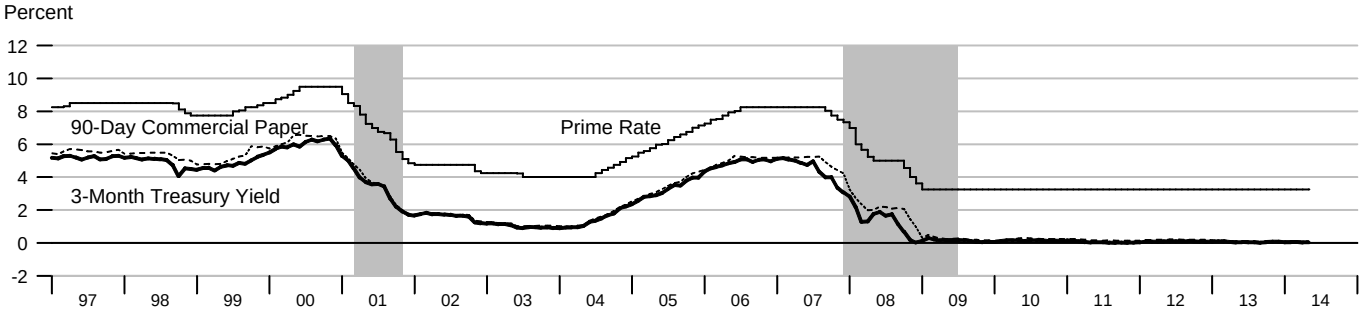


Real Interest Rates

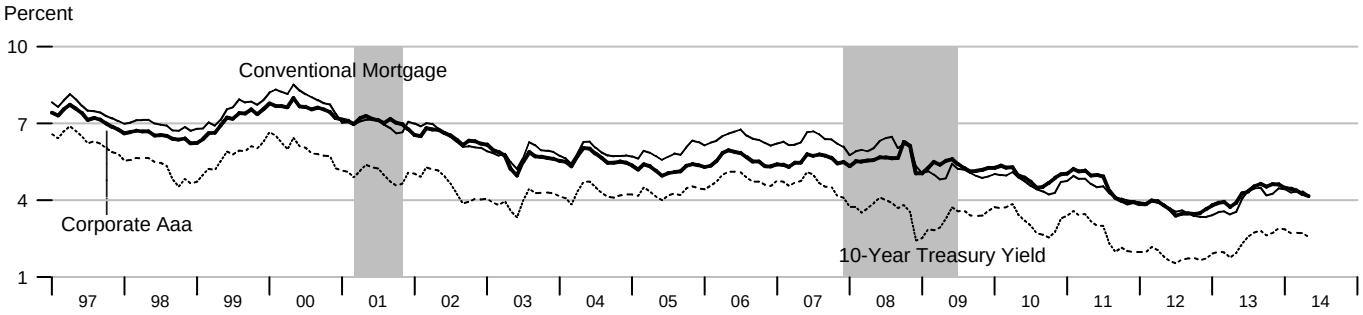
Percent, Real rate = Nominal rate less year-over-year CPI inflation



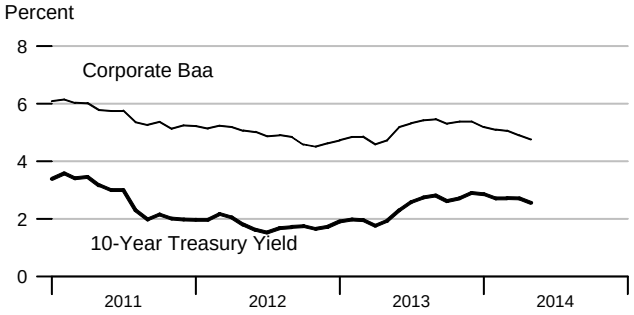
Short-Term Interest Rates



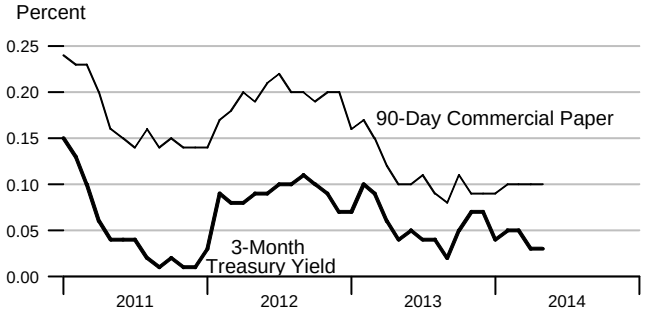
Long-Term Interest Rates



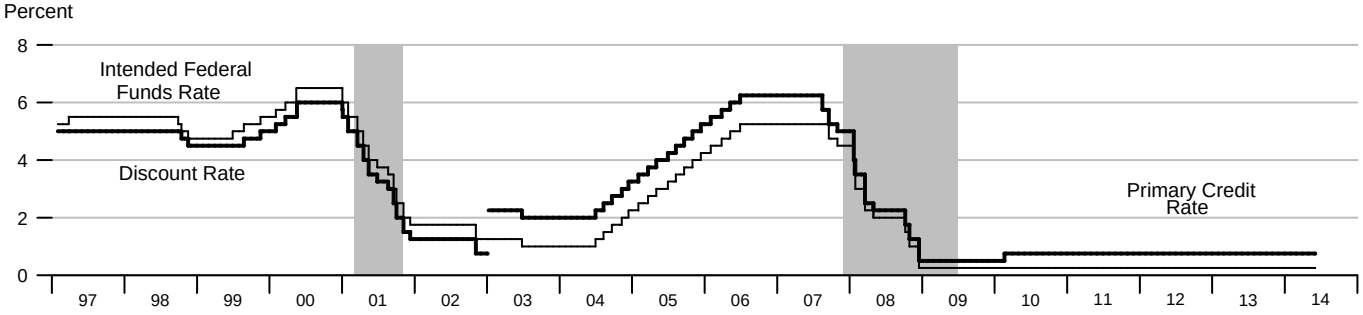
Long-Term Interest Rates



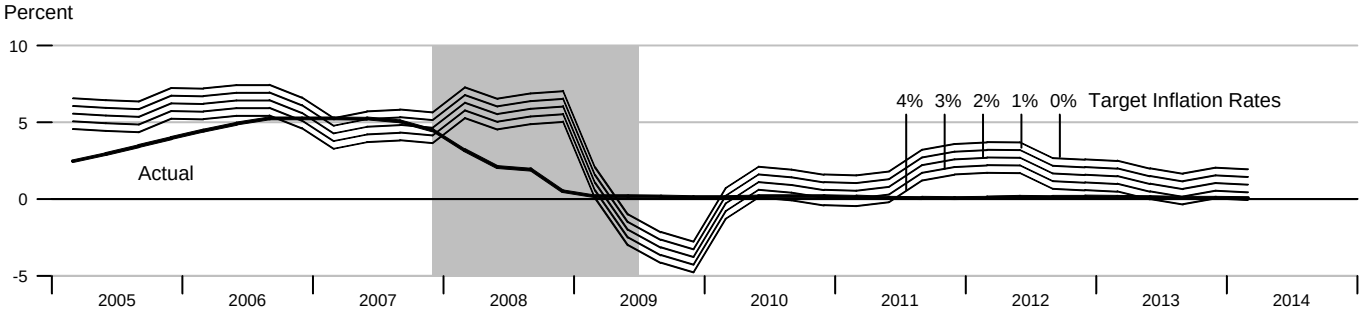
Short-Term Interest Rates



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



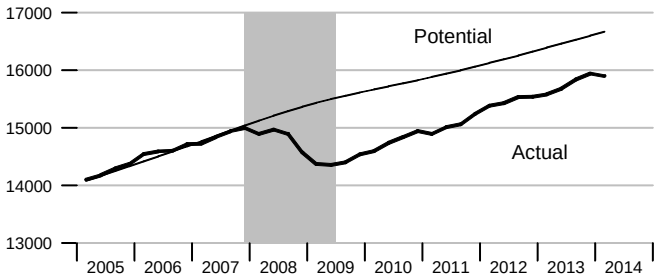
Federal Funds Rate and Inflation Targets



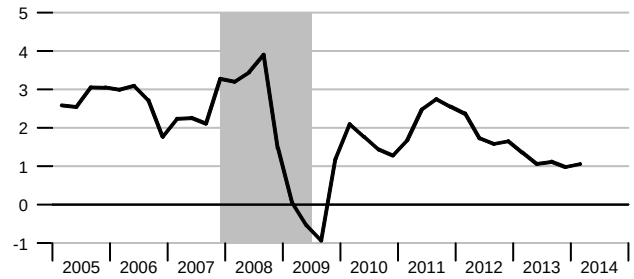
Calculated federal funds rate is based on Taylor's rule.

Components of Taylor's Rule

Actual and Potential Real GDP

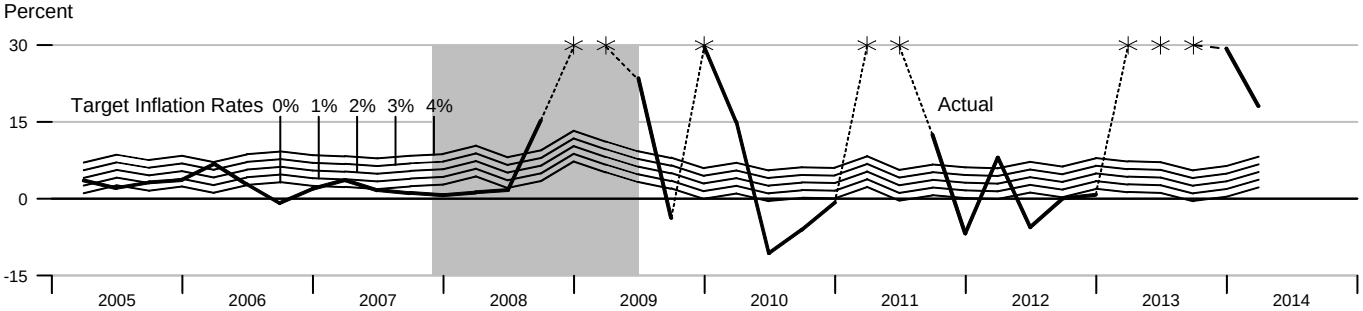


PCE Inflation



See notes section for further explanation.

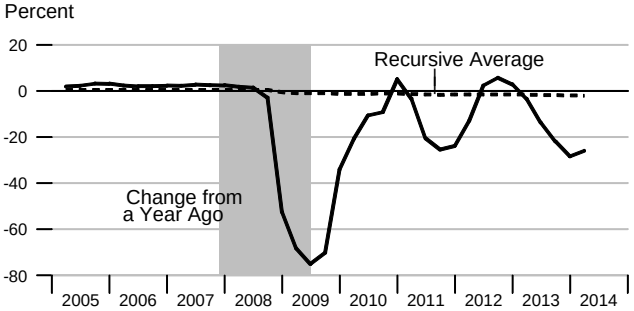
Monetary Base Growth and Inflation Targets



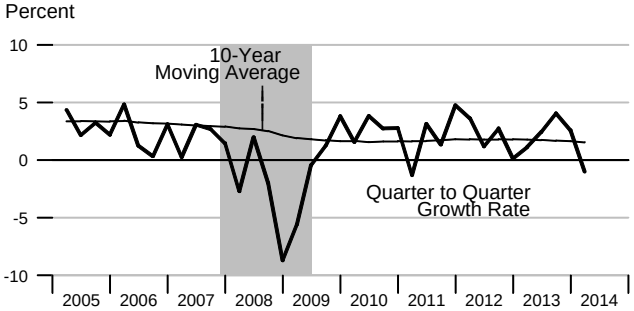
Calculated base growth is based on McCallum's rule. Actual base growth is percent change from the previous quarter. Stars represent actual values for 2008:Q4, 2009:Q1, 2009:Q4, 2011:Q1, 2011:Q2, 2013:Q1, 2013:Q2 and 2013:Q3 are 188.33%, 60.16%, 56.53%, 45.93%, 58.75%, 30.24%, 36.03% and 33.88%, respectively.

Components of McCallum's Rule

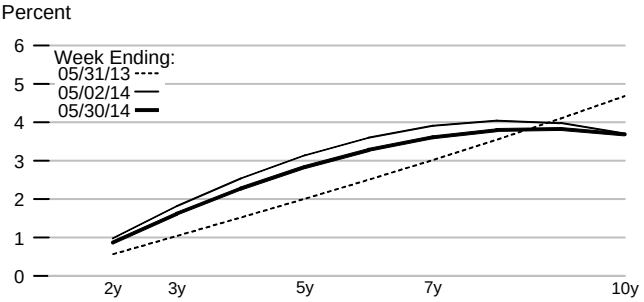
Monetary Base Velocity Growth



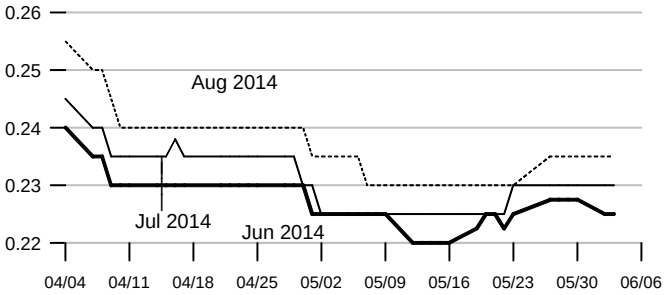
Real Output Growth



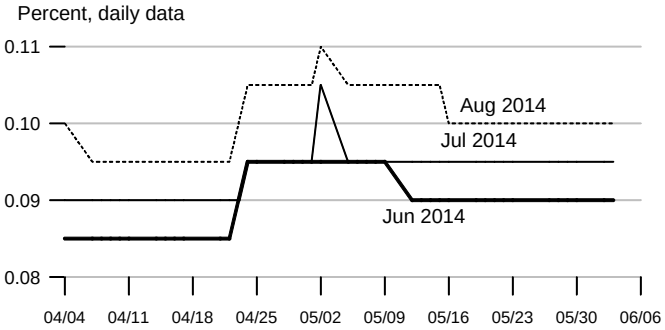
Implied One-Year Forward Rates



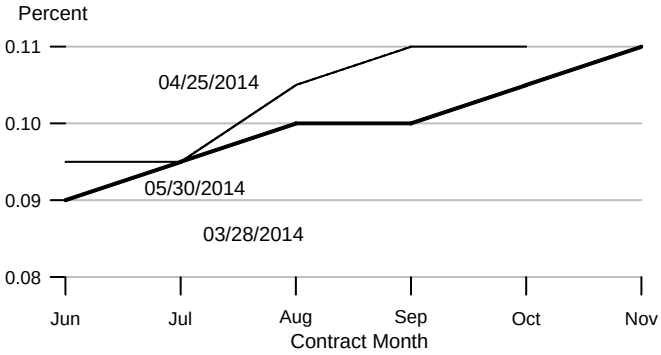
Rates on 3-Month Eurodollar Futures



Rates on Selected Federal Funds Futures Contracts



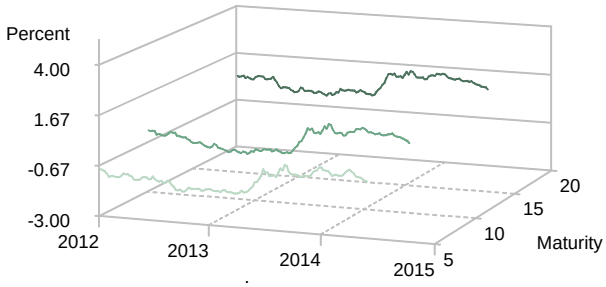
Rates on Federal Funds Futures on Selected Dates



Federal Funds Rates for 3/28/14 are the same as 5/30/14 for contract months Jun and Jul and as 4/25/14 for contract months Aug and Sep.

Inflation-Indexed Treasury Securities

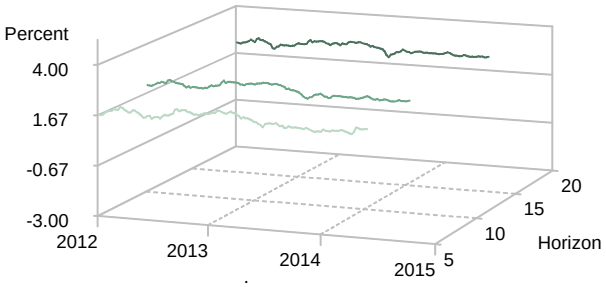
Weekly data



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

Inflation-Indexed Treasury Yield Spreads

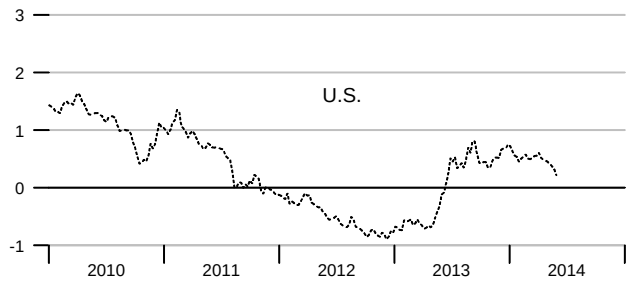
Weekly data



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

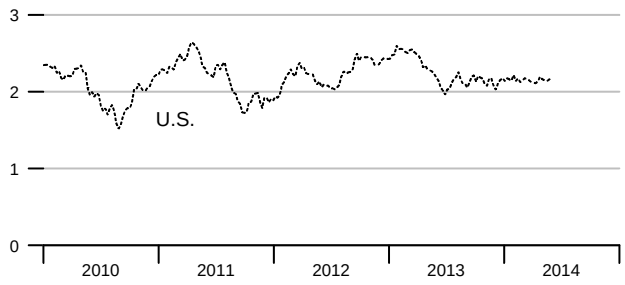
Inflation-Indexed 10-Year Government Notes

Percent, weekly data



Inflation-Indexed 10-Year Government Yield Spreads

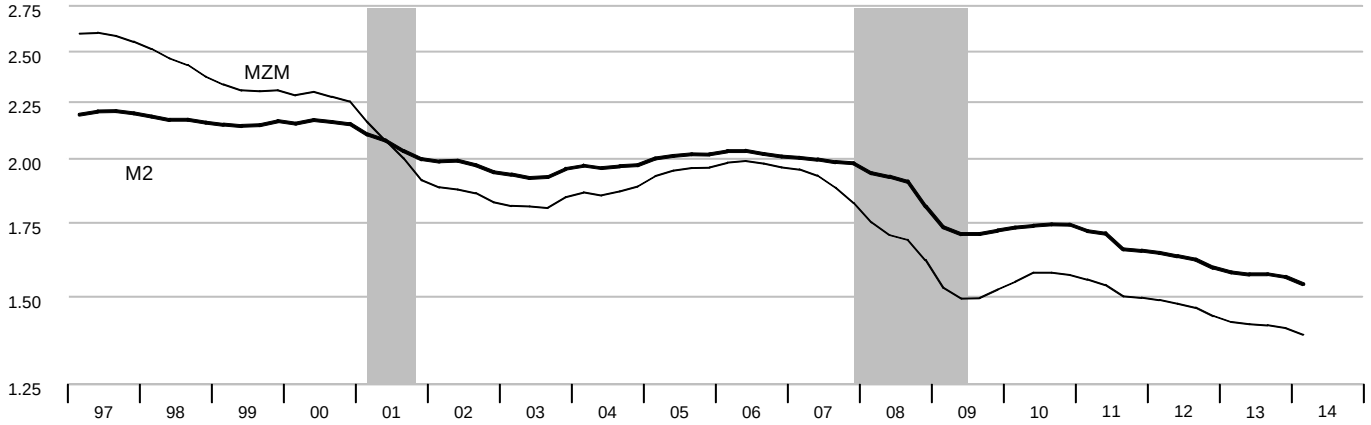
Percent, weekly data



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

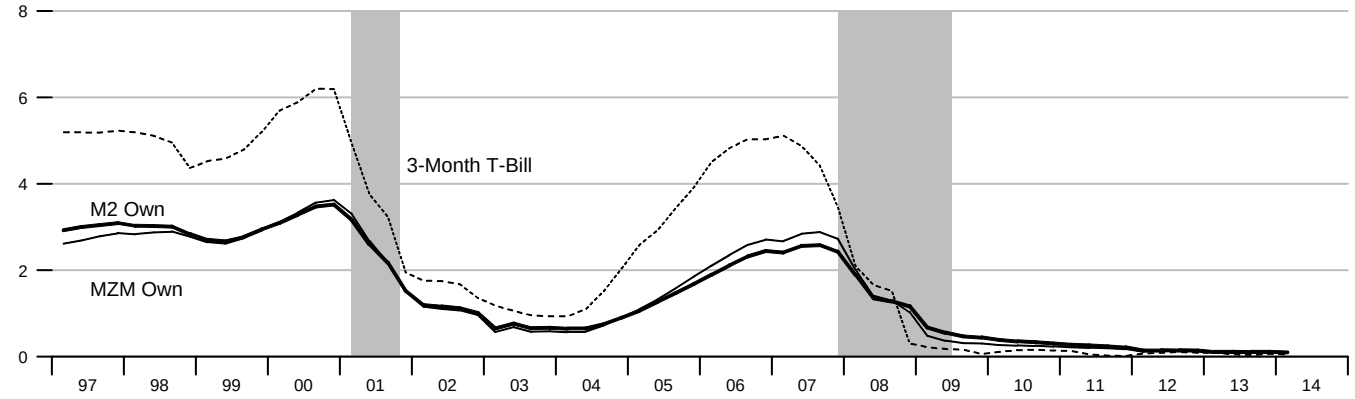
Velocity

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



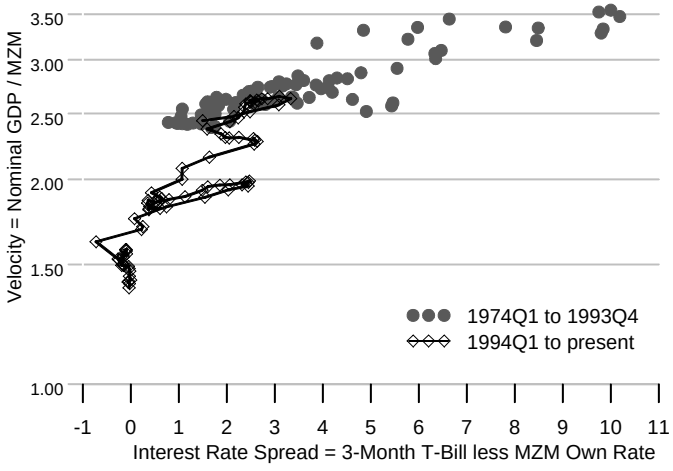
Interest Rates

Percent



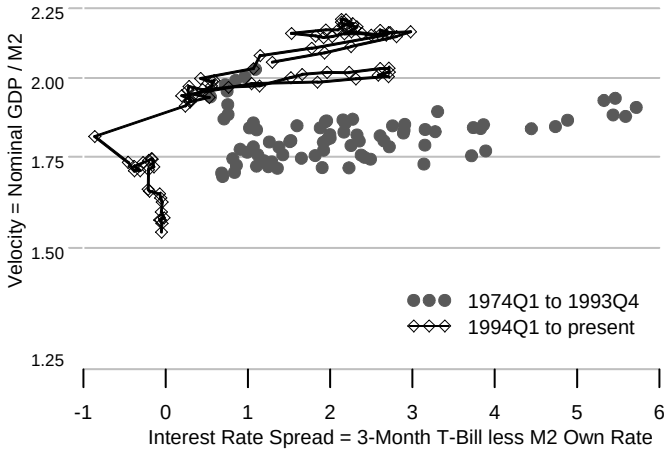
MZM Velocity and Interest Rate Spread

Ratio Scale



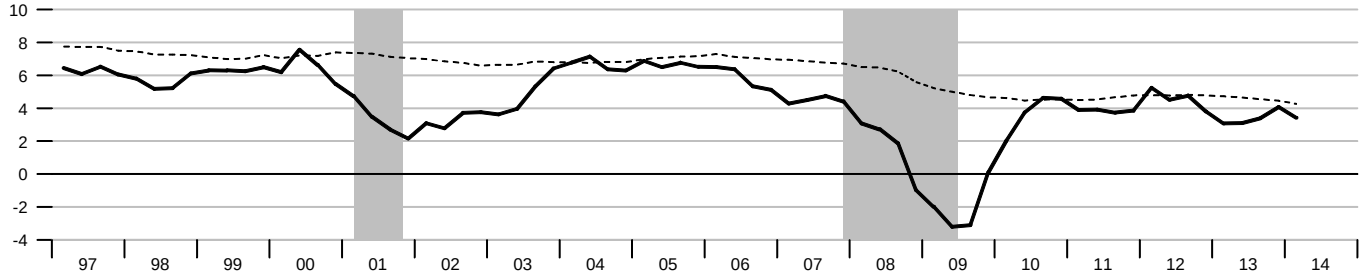
M2 Velocity and Interest Rate Spread

Ratio Scale



Gross Domestic Product

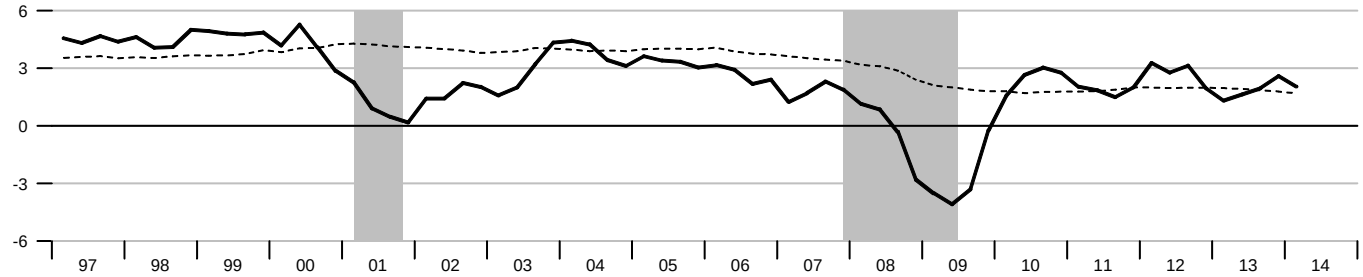
Percent change from year ago



Dashed lines indicate 10-year moving averages.

Real Gross Domestic Product

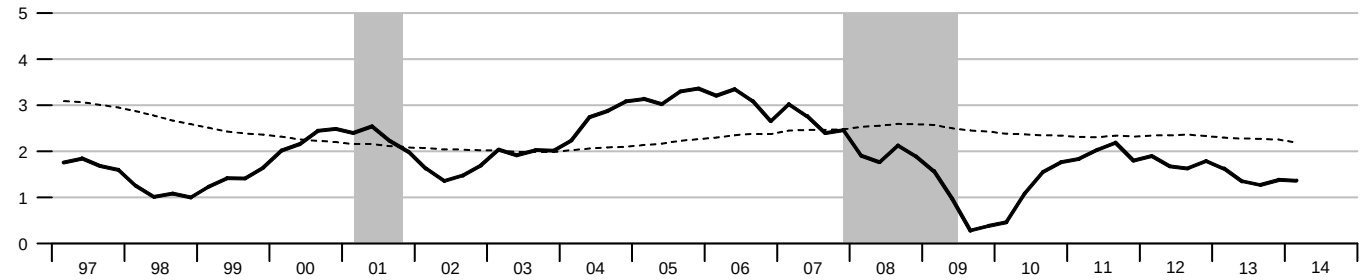
Percent change from year ago



Dashed lines indicate 10-year moving averages.

Gross Domestic Product Price Index

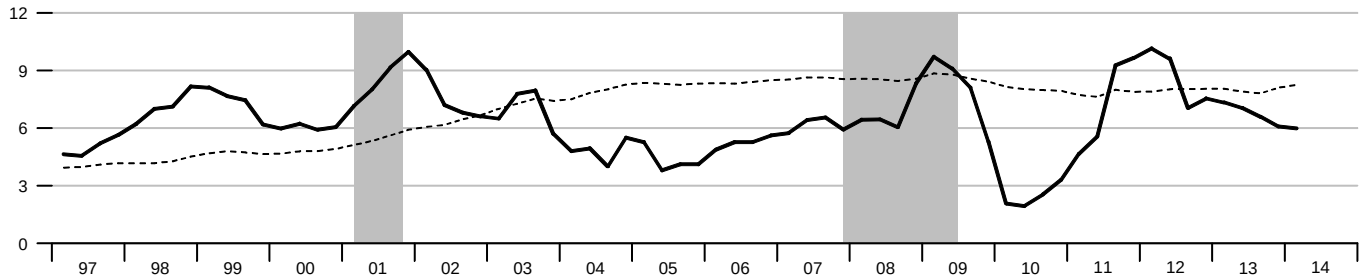
Percent change from year ago



Dashed lines indicate 10-year moving averages.

M2

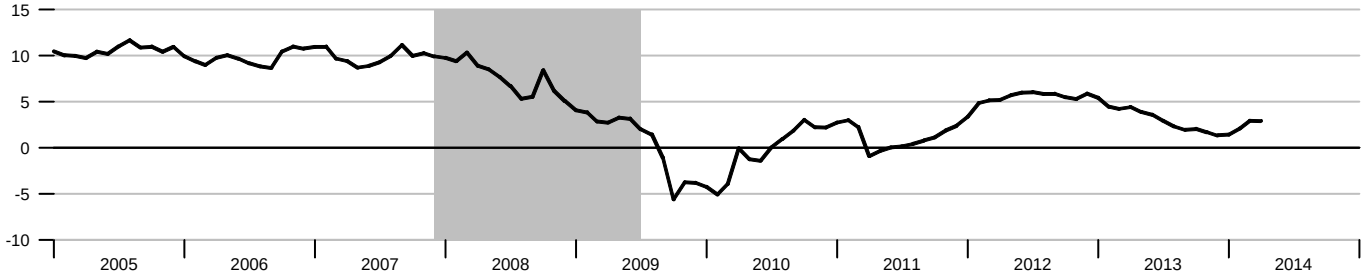
Percent change from year ago



Dashed lines indicate 10-year moving averages.

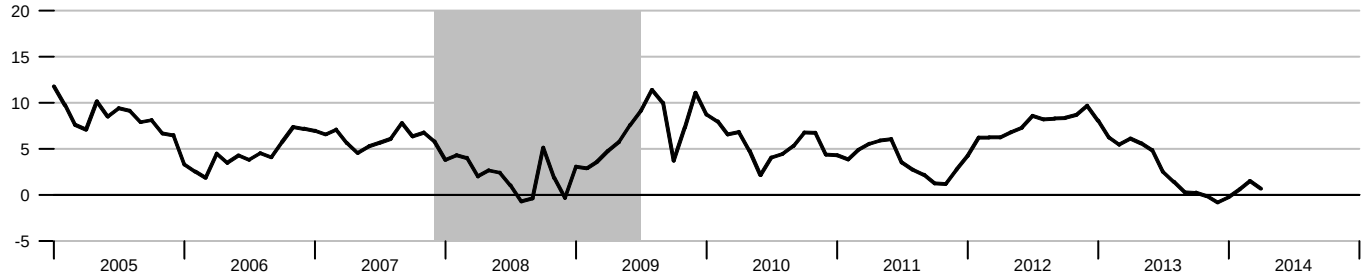
Bank Credit

Percent change from year ago



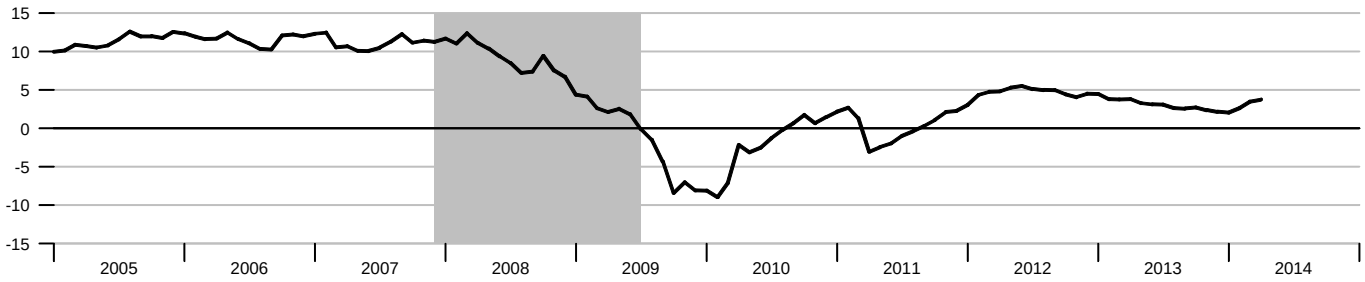
Investment Securities in Bank Credit at Commercial Banks

Percent change from year ago



Total Loans and Leases in Bank Credit at Commercial Banks

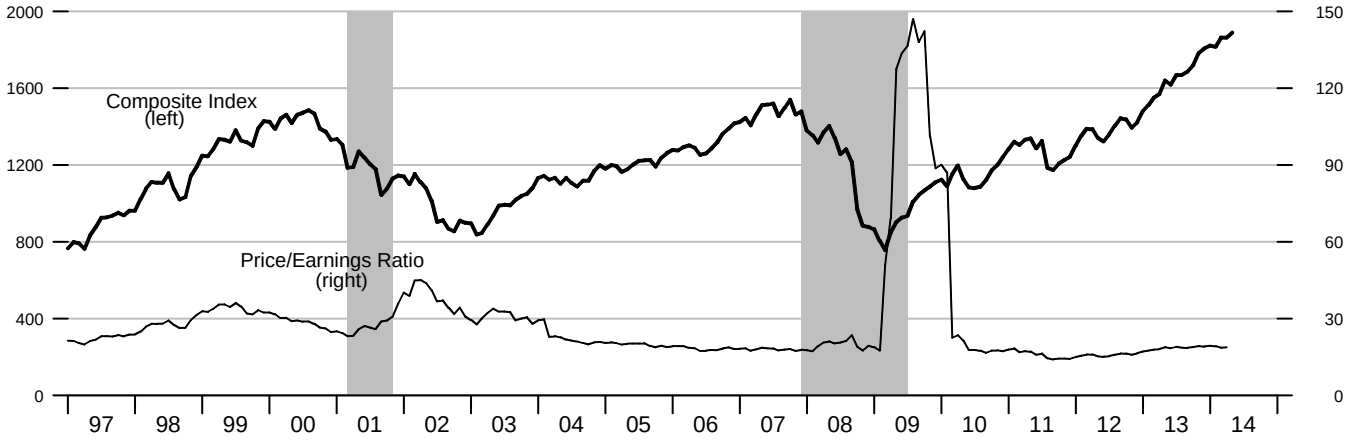
Percent change from year ago



Commercial and Industrial Loans at Commercial Banks

Percent change from year ago

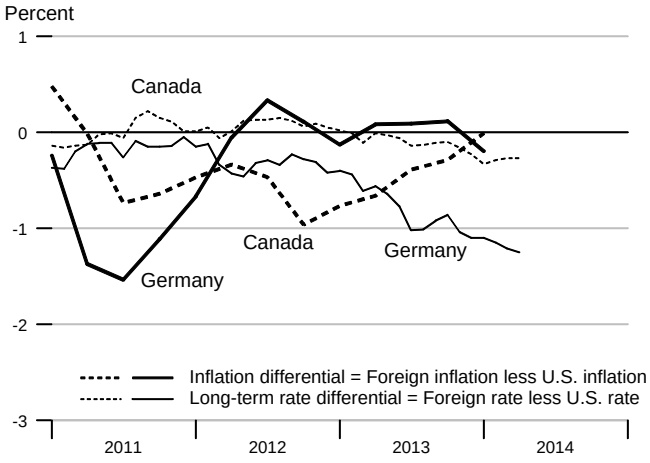
Standard & Poor's 500

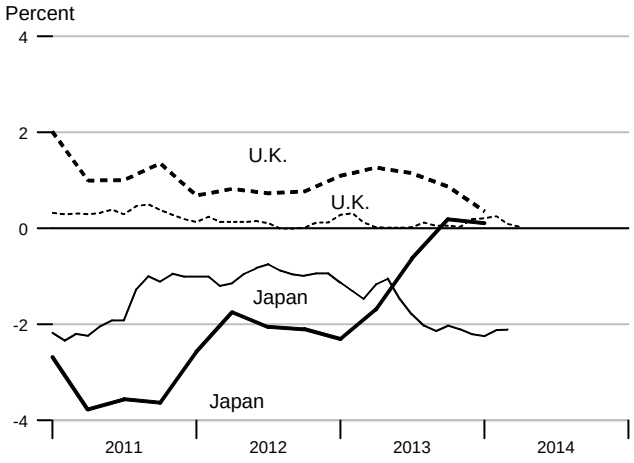


Recent Inflation and Long-Term Interest Rates

	Consumer Price Inflation Rates				Long-Term Government Bond Rates			
	Percent change from year ago				Percent			
	2013Q2	2013Q3	2013Q4	2014Q1	Feb14	Mar14	Apr14	May14
United States	1.43	1.54	1.22	1.40	2.71	2.72	2.71	2.56
Canada	0.77	1.15	0.93	1.39	2.42	2.45	2.44	.
France	0.81	0.95	0.65	0.72	2.25	2.15	2.03	.
Germany	1.51	1.63	1.34	1.21	1.56	1.51	1.46	.
Italy	1.16	1.13	0.69	0.50	3.65	3.40	3.23	.
Japan	-0.27	0.91	1.41	1.51	0.59	0.61	.	.
United Kingdom	2.69	2.69	2.09	1.76	2.96	2.81	2.74	.

Inflation and Long-Term Interest Rate Differentials





		Money Stock				Bank	Adjusted		
		M1	MZM	M2	M3*	Credit	Monetary Base	Reserves	MSI M2**
	2009	1637.784	9546.329	8389.167		9170.042	1796.556	944.368	8242.650
	2010	1742.109	9539.971	8596.337		9123.205	2031.689	1143.690	8453.833
	2011	2009.722	10206.69	9224.519		9224.852	2538.959	1576.503	9079.992
	2012	2311.577	11062.12	10013.71		9721.556	2661.969	1611.904	9863.150
	2013	2547.013	11876.48	10690.41		10030.01	3271.717	2144.987	10533.53
2012	1	2213.449	10766.39	9759.588		9538.194	2688.263	1662.512	9603.533
	2	2258.263	10929.01	9900.255		9664.427	2651.102	1615.814	9727.567
	3	2351.033	11155.61	10091.77		9787.252	2651.597	1601.127	9945.433
	4	2423.564	11397.47	10303.22		9896.352	2656.914	1568.164	10176.07
2013	1	2471.602	11621.60	10476.14		9986.127	2865.577	1760.055	10309.43
	2	2524.350	11760.82	10598.37		10048.33	3135.692	2025.830	10415.77
	3	2568.723	11963.17	10756.86		10022.10	3412.927	2287.552	10609.53
	4	2623.377	12160.34	10930.27		10063.50	3672.670	2506.510	10799.40
2014	1	2712.360	12335.64	11103.34		10200.67	3842.868	2658.987	
2012	Apr	2250.583	10881.35	9859.816		9623.695	2673.666	1654.389	9683.700
	May	2254.307	10920.38	9889.195		9669.550	2634.893	1587.891	9724.500
	Jun	2269.898	10985.28	9951.754		9700.036	2644.747	1605.162	9774.500
	Jul	2322.366	11070.46	10025.28		9752.909	2669.164	1621.476	9872.500
	Aug	2347.026	11156.29	10089.21		9789.467	2669.390	1626.136	9944.500
	Sep	2383.706	11240.08	10160.83		9819.379	2616.238	1555.769	10019.30
	Oct	2415.605	11300.89	10217.13		9839.432	2648.761	1584.758	10104.40
	Nov	2407.831	11370.86	10282.80		9889.100	2665.101	1581.304	10157.40
	Dec	2447.256	11520.66	10409.73		9960.524	2656.879	1538.430	10266.40
2013	Jan	2464.683	11588.05	10446.02		9983.948	2748.980	1594.014	10308.30
	Feb	2473.714	11608.51	10458.45		9986.680	2874.405	1794.638	10288.40
	Mar	2476.408	11668.24	10523.95		9987.752	2973.347	1891.514	10331.60
	Apr	2517.842	11711.36	10557.98		10049.99	3045.674	1954.976	10389.10
	May	2525.868	11752.98	10594.61		10046.81	3139.116	2013.761	10409.80
	Jun	2529.340	11818.13	10642.51		10048.19	3222.287	2108.753	10448.40
	Jul	2558.531	11898.25	10705.39		10039.25	3310.260	2184.857	10553.20
	Aug	2560.480	11957.64	10759.55		10016.20	3419.555	2303.546	10612.40
	Sep	2587.159	12033.61	10805.65		10010.85	3508.965	2374.254	10663.00
	Oct	2623.958	12134.34	10905.17		10040.05	3630.629	2500.929	10794.60
	Nov	2606.516	12152.55	10916.48		10056.35	3702.083	2545.480	10775.60
	Dec	2639.657	12194.14	10969.16		10094.11	3685.298	2473.120	10828.00
2014	Jan	2672.165	12252.02	11023.81		10125.83	3733.498	2471.941	
	Feb	2720.756	12358.23	11127.42		10195.43	3869.437	2731.284	
	Mar	2744.158	12396.68	11158.79		10280.75	3925.669	2773.735	
	Apr	2777.768	12427.89	11214.82		10343.15	3964.995	2796.249	

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 3-mo	3-yr	10-yr	Corporate Aaa Bonds	Municipal Aaa Bonds	Conventional Mortgage
2009		0.16	0.50	3.25		0.15	1.43	3.26	5.31	4.27	5.04
2010		0.17	0.72	3.25		0.14	1.11	3.21	4.94	3.90	4.69
2011		0.10	0.75	3.25		0.05	0.75	2.79	4.64	4.26	4.46
2012		0.14	0.75	3.25		0.09	0.38	1.80	3.67	3.12	3.66
2013		0.11	0.75	3.25		0.06	0.54	2.35	4.24	3.49	3.98
2012	1	0.10	0.75	3.25		0.07	0.42	2.04	3.89	3.31	3.92
	2	0.15	0.75	3.25		0.09	0.40	1.82	3.80	3.32	3.79
	3	0.14	0.75	3.25		0.10	0.35	1.64	3.45	3.05	3.55
	4	0.16	0.75	3.25		0.09	0.36	1.71	3.54	2.81	3.36
2013	1	0.14	0.75	3.25		0.09	0.39	1.95	3.88	3.01	3.50
	2	0.12	0.75	3.25		0.05	0.44	2.00	3.97	3.31	3.68
	3	0.08	0.75	3.25		0.03	0.71	2.71	4.51	3.86	4.44
	4	0.09	0.75	3.25		0.06	0.63	2.75	4.59	3.77	4.30
2014	1	0.07	0.75	3.25		0.05	0.76	2.76	4.44	3.81	4.36
2012	May	0.16	0.75	3.25		0.09	0.39	1.80	3.80	3.20	3.80
	Jun	0.16	0.75	3.25		0.09	0.39	1.62	3.64	3.32	3.68
	Jul	0.16	0.75	3.25		0.10	0.33	1.53	3.40	3.18	3.55
	Aug	0.13	0.75	3.25		0.10	0.37	1.68	3.48	3.01	3.60
	Sep	0.14	0.75	3.25		0.11	0.34	1.72	3.49	2.96	3.50
	Oct	0.16	0.75	3.25		0.10	0.37	1.75	3.47	2.86	3.38
	Nov	0.16	0.75	3.25		0.09	0.36	1.65	3.50	2.76	3.35
	Dec	0.16	0.75	3.25		0.07	0.35	1.72	3.65	2.81	3.35
2013	Jan	0.14	0.75	3.25		0.07	0.39	1.91	3.80	2.83	3.41
	Feb	0.15	0.75	3.25		0.10	0.40	1.98	3.90	3.08	3.53
	Mar	0.14	0.75	3.25		0.09	0.39	1.96	3.93	3.13	3.57
	Apr	0.15	0.75	3.25		0.06	0.34	1.76	3.73	3.11	3.45
	May	0.11	0.75	3.25		0.04	0.40	1.93	3.89	3.13	3.54
	Jun	0.09	0.75	3.25		0.05	0.58	2.30	4.27	3.70	4.07
	Jul	0.09	0.75	3.25		0.04	0.64	2.58	4.34	3.73	4.37
	Aug	0.08	0.75	3.25		0.04	0.70	2.74	4.54	3.91	4.46
	Sep	0.08	0.75	3.25		0.02	0.78	2.81	4.64	3.94	4.49
	Oct	0.09	0.75	3.25		0.05	0.63	2.62	4.53	3.60	4.19
	Nov	0.08	0.75	3.25		0.07	0.58	2.72	4.63	3.56	4.26
	Dec	0.09	0.75	3.25		0.07	0.69	2.90	4.62	4.15	4.46
2014	Jan	0.07	0.75	3.25		0.04	0.78	2.86	4.49	3.94	4.43
	Feb	0.07	0.75	3.25		0.05	0.69	2.71	4.45	3.77	4.30
	Mar	0.08	0.75	3.25		0.05	0.82	2.72	4.38	3.72	4.34
	Apr	0.09	0.75	3.25		0.03	0.88	2.71	4.24	3.57	4.34
	May	0.09	0.75	3.25		0.03	0.83	2.56	4.16		4.19

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

		M1	MZM	M2	M3*
Percent change at an annual rate					
	2009	14.17	9.62	8.02	
	2010	6.37	-0.07	2.47	
	2011	15.36	6.99	7.31	
	2012	15.02	8.38	8.56	
	2013	10.19	7.36	6.76	
2012	1	11.15	7.56	7.48	
	2	8.10	6.04	5.77	
	3	16.43	8.29	7.74	
	4	12.34	8.67	8.38	
2013	1	7.93	7.87	6.71	
	2	8.54	4.79	4.67	
	3	7.03	6.88	5.98	
	4	8.51	6.59	6.45	
2014	1	13.57	5.77	6.33	
2012	Apr	11.86	6.06	6.69	
	May	1.99	4.30	3.58	
	Jun	8.30	7.13	7.59	
	Jul	27.74	9.30	8.87	
	Aug	12.74	9.30	7.65	
	Sep	18.75	9.01	8.52	
	Oct	16.06	6.49	6.65	
	Nov	-3.86	7.43	7.71	
	Dec	19.65	15.81	14.81	
2013	Jan	8.55	7.02	4.18	
	Feb	4.40	2.12	1.43	
	Mar	1.31	6.18	7.52	
	Apr	20.08	4.43	3.88	
	May	3.83	4.27	4.16	
	Jun	1.65	6.65	5.43	
	Jul	13.85	8.13	7.09	
	Aug	0.91	5.99	6.07	
	Sep	12.50	7.62	5.14	
	Oct	17.07	10.05	11.05	
	Nov	-7.98	1.80	1.24	
	Dec	15.26	4.11	5.79	
2014	Jan	14.78	5.70	5.98	
	Feb	21.82	10.40	11.28	
	Mar	10.32	3.73	3.38	
	Apr	14.70	3.02	6.03	

*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 Reserve Balances** equals the amount of reserve balances maintained at depository institutions (DIs) less reserve balance requirements at DIs. **Total Borrowings** from the Federal Reserve is the sum of credit extended under the primary, second, and seasonal programs, as well as credit extended under the Term Asset-Backed Securities Loan Facility, and other credit extensions. [NOTE: Excess reserves and total borrowings are not seasonally adjusted.] The excess reserves calculation was changed with the introduction of the new H.3 statistical release, "Aggregate Reserves of Depository Institutions and the Monetary Base" on July 11, 2013. See http://www.federalreserve.gov/releases/h3/current/.

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^a 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 $m = 1,\ldots, 10$ 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 2009 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 2009 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

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Bank of Canada: Canadian note yields.

Bank of England: U.K. note yields.

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