
U.S. Economic Outlook and Monetary Policy

Bank of Portugal
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The views expressed are my own and not those of the Federal Reserve Bank of Chicago or the Federal Reserve System

Overview

■ Recent developments

- Data on activity mixed
- Significant cumulative improvement in labor markets since 9/12
- Inflation remains very low

■ Outlook

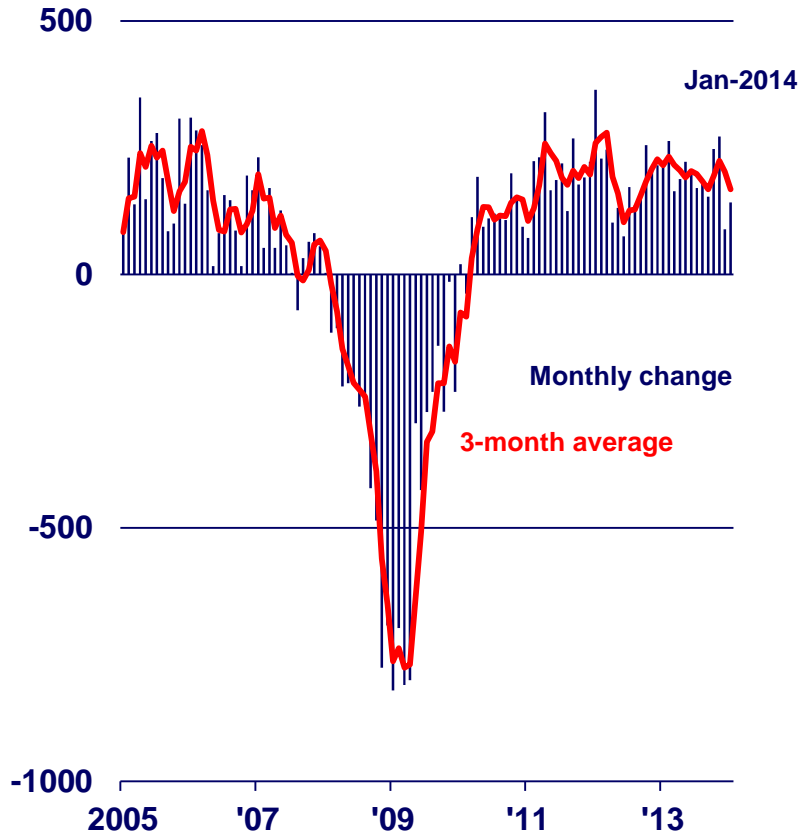
- Moderately above trend growth in 2014, better 2015
- Gradual updrift in inflation

■ Monetary policy at the zero lower bound

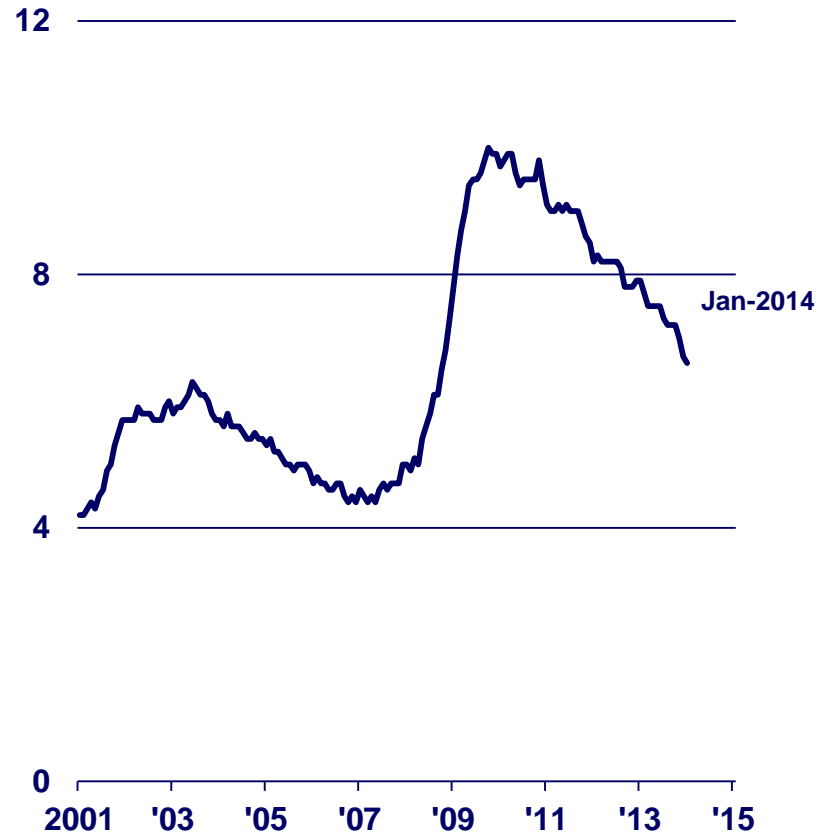
- Forward guidance
- Large scale asset purchases

Labor Market Improvement

Private Nonfarm Payroll Employment
(change, thousands)

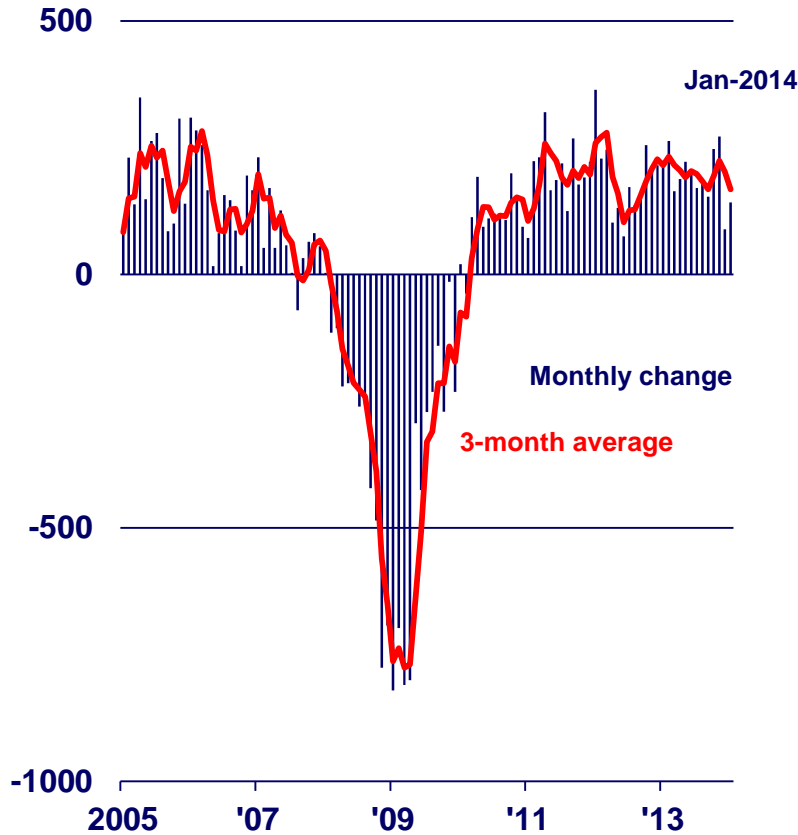


Unemployment Rate
(percent)

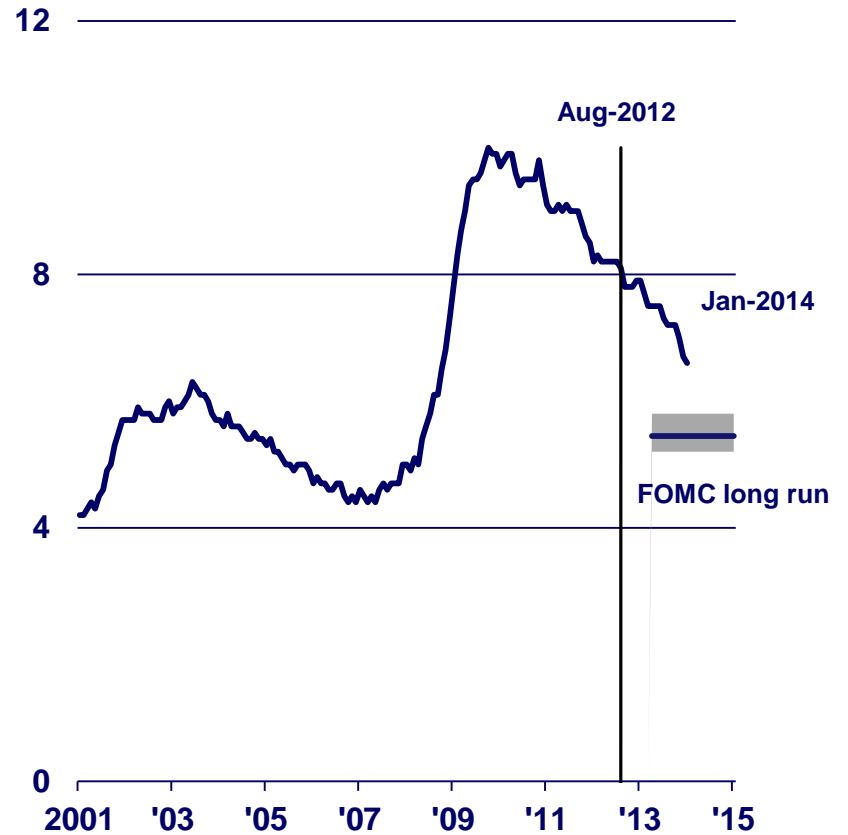


Labor Market Improvement

Private Nonfarm Payroll Employment
(change, thousands)



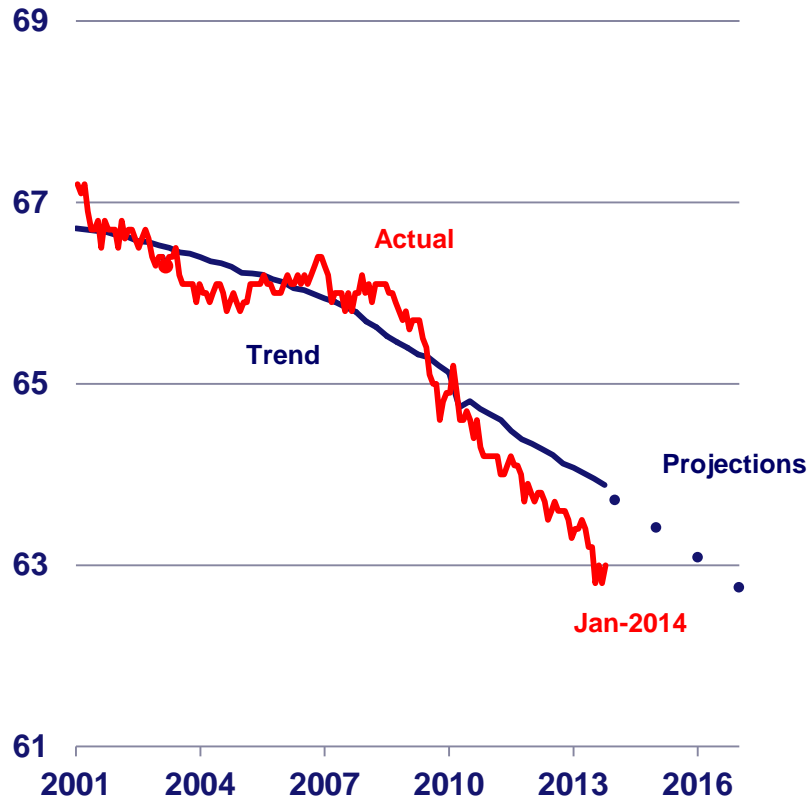
Unemployment Rate
(percent)



Participation Declines Slow Employment Gains

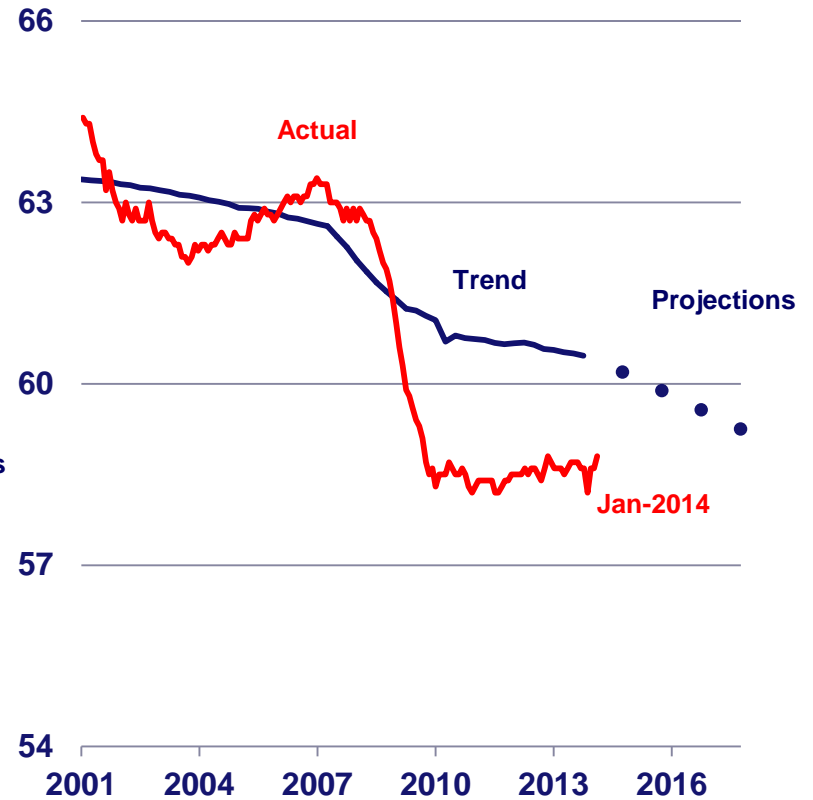
Labor Force Participation

(percent of the civilian noninstitutional population 16+)



Employment-to-Population Ratio

(percent of the civilian noninstitutional population 16+)

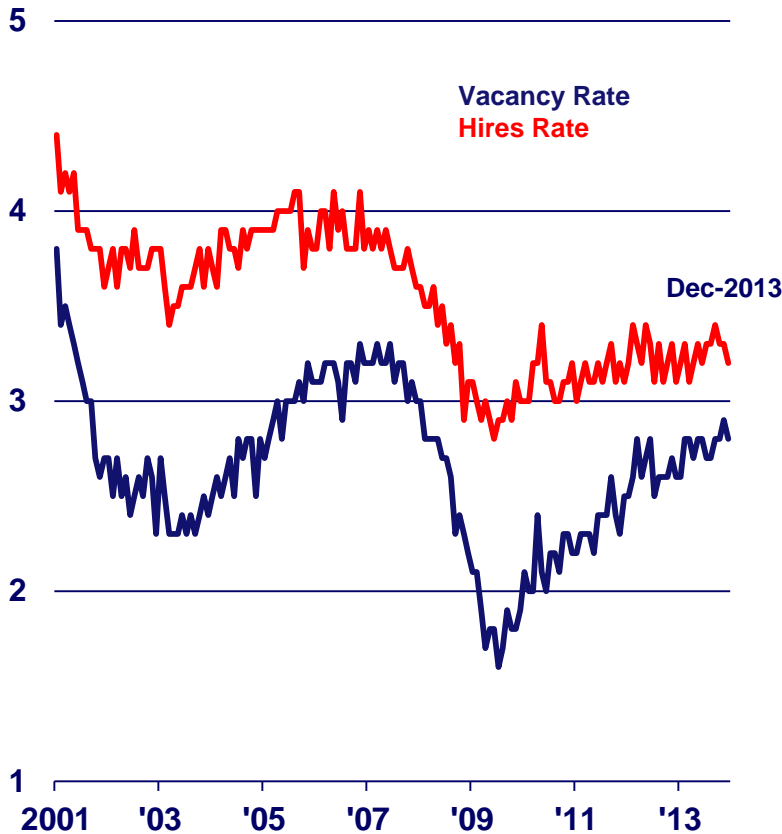


Source: Updated from "Estimating the trend in Employment Growth", Chicago Fed Letter July 2013

Other Labor Market Indicators

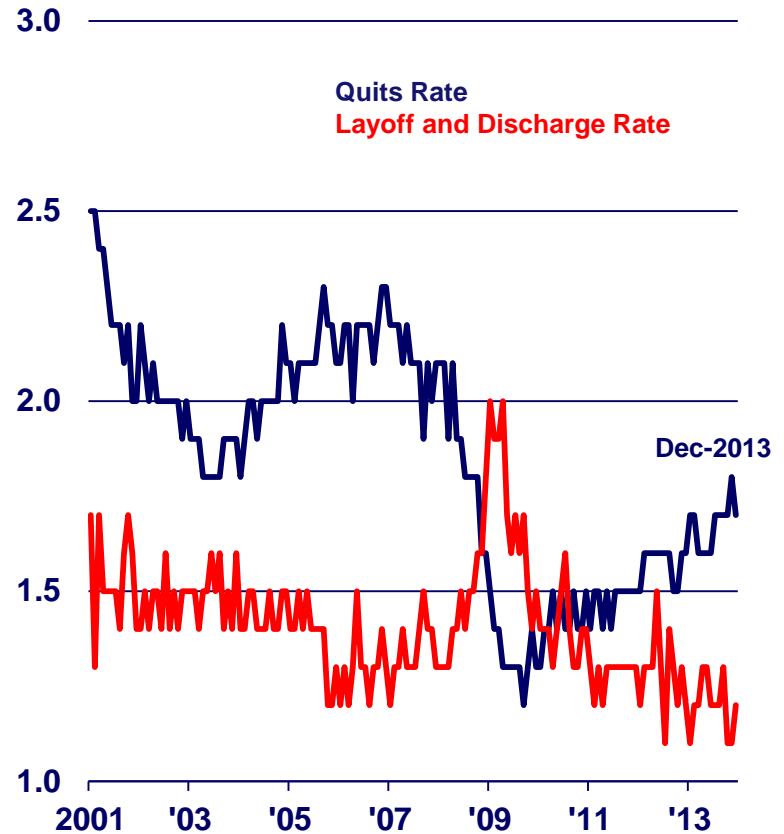
Vacancy Rate and Hires Rate (JOLTS Survey)

(SA, percent)



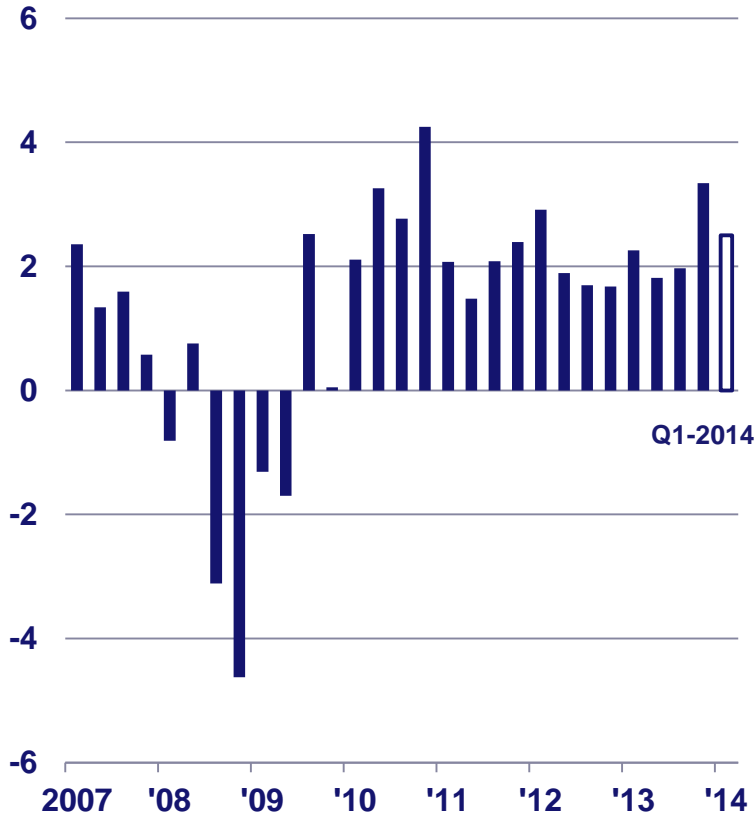
Quits Rate and Layoff and Discharge Rate (JOLTS Survey)

(SA, percent)

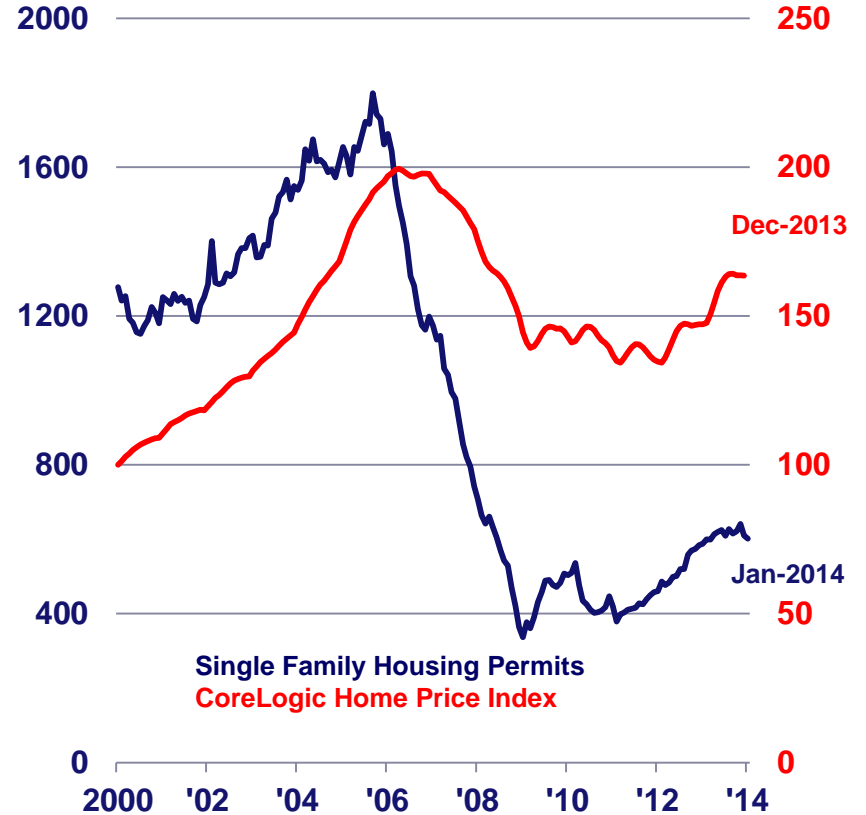


Consumption and Housing

Personal Consumption Expenditures
(percent change, annual rate)



Housing Permits and Home Prices
(millions of units, annual rate; Q1-2000=100)

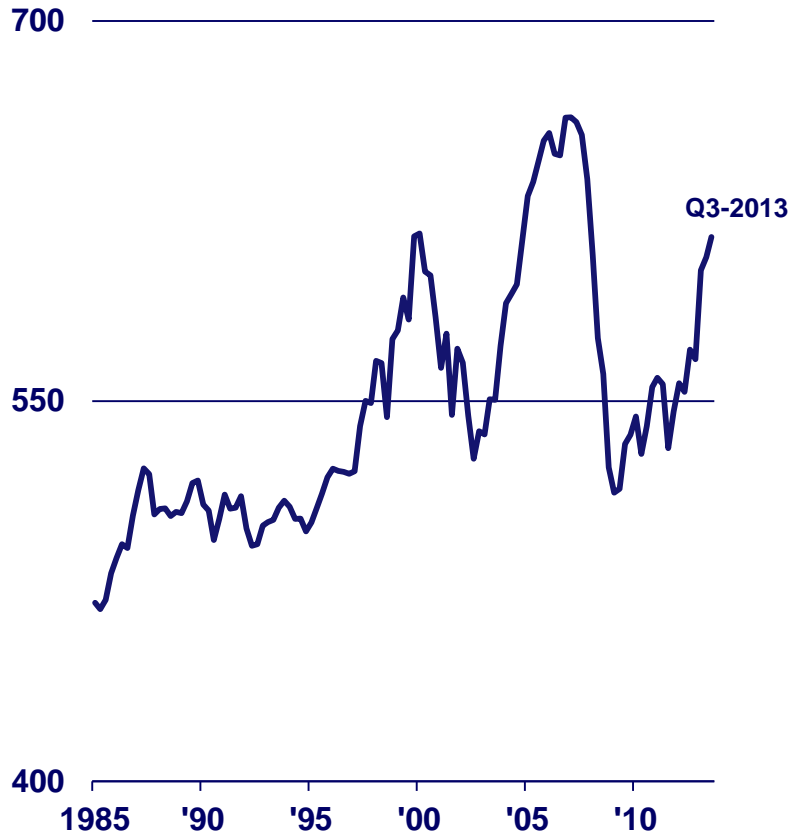


2014 Q1 Estimate from the Survey of Professional Forecasters, Feb. 2014

Household Balance Sheets: Crisis and Aftermath

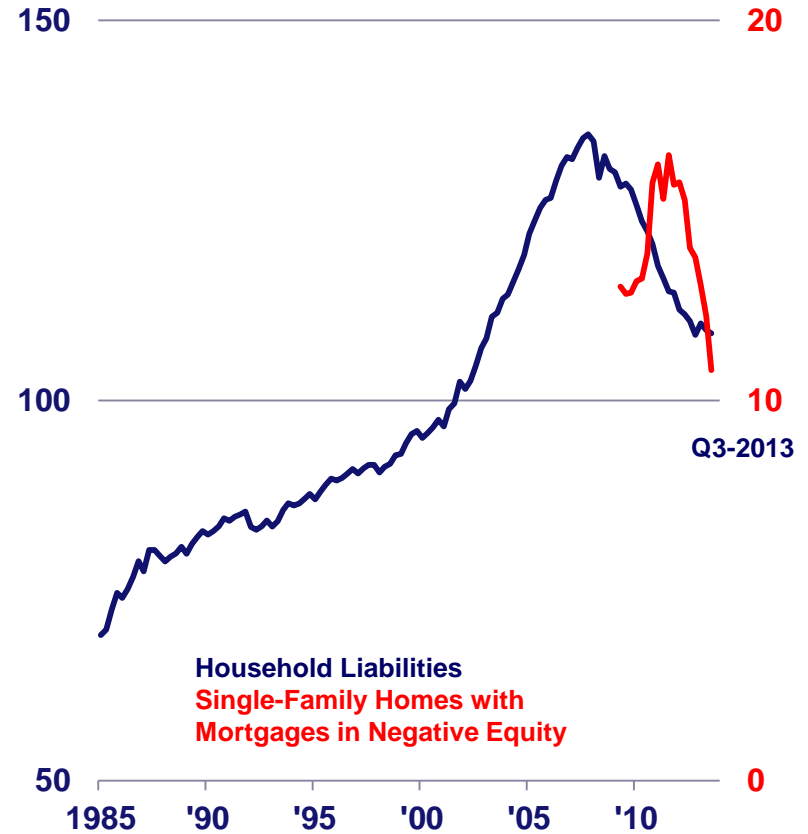
Household Net Worth

(percent of disposable income)



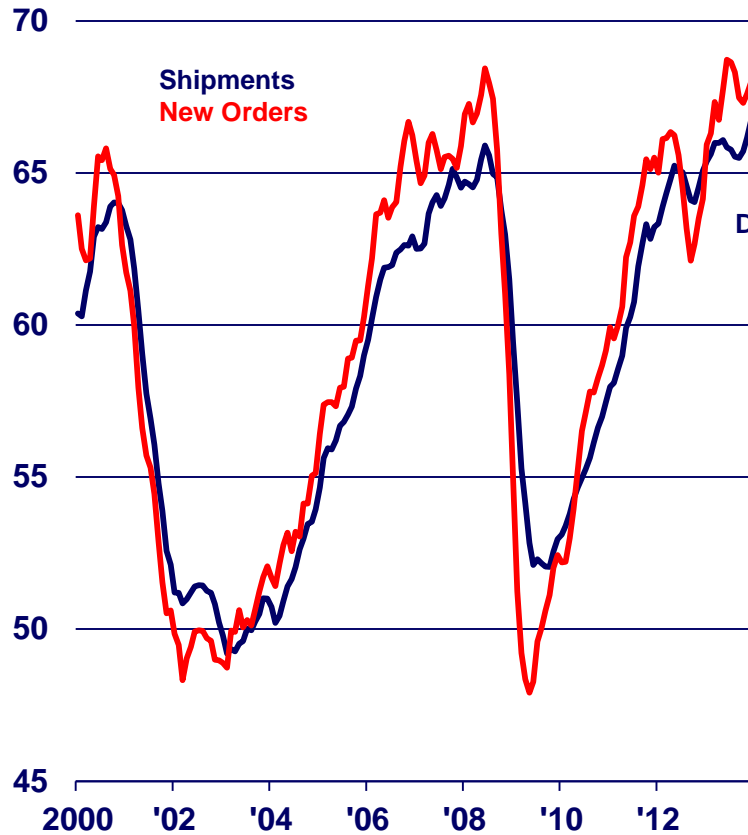
Household Liabilities and Homes with Mortgages in Negative Equity

(percent of disposable income; millions of units)

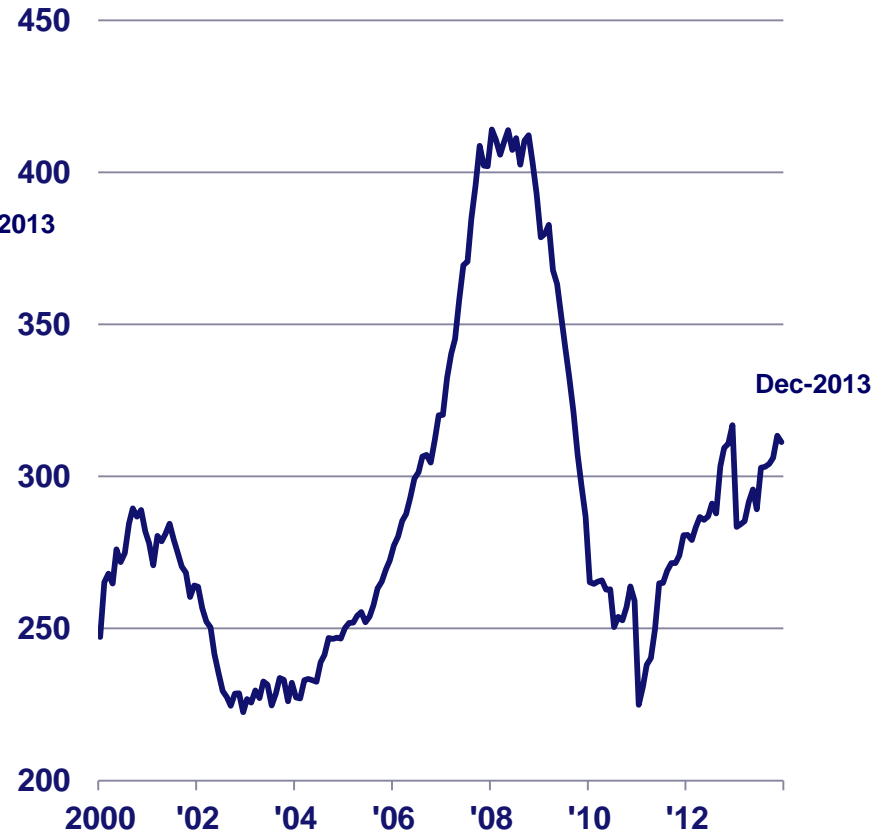


Business Investment Indicators

Nondefense Capital Goods ex. Aircraft
(Bils. \$, 3-month MA)



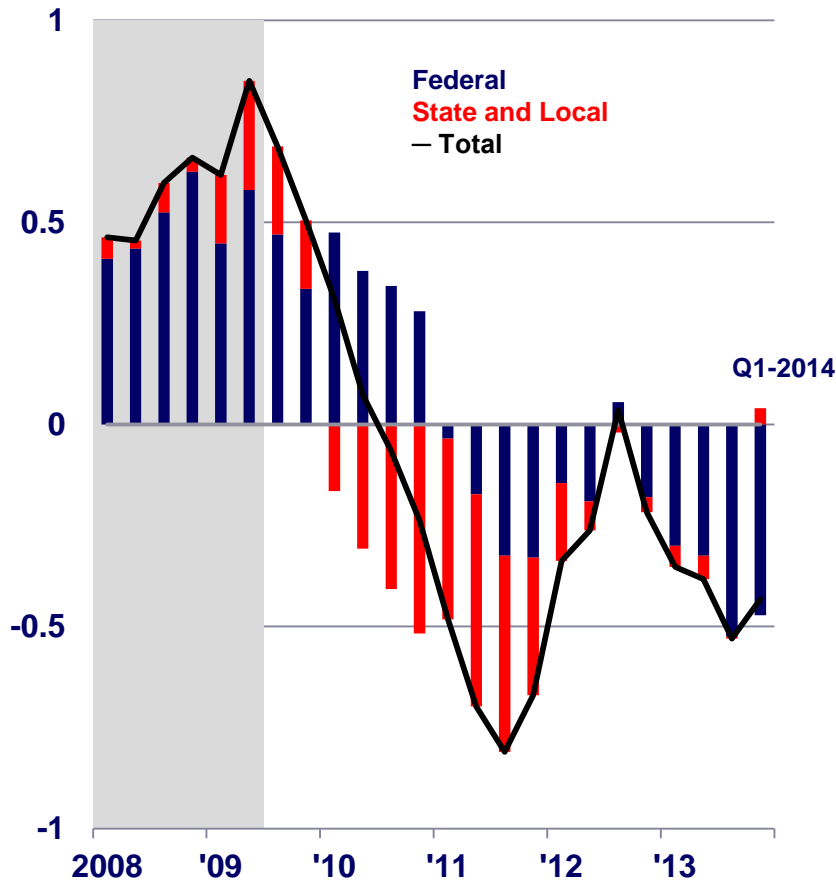
Nonresidential Private Construction
(Bils. \$)



Government Stimulus and Drag

Government Purchases Contribution to GDP Growth

(percent contribution to 4-quarter GDP growth)



Taxes less Transfers

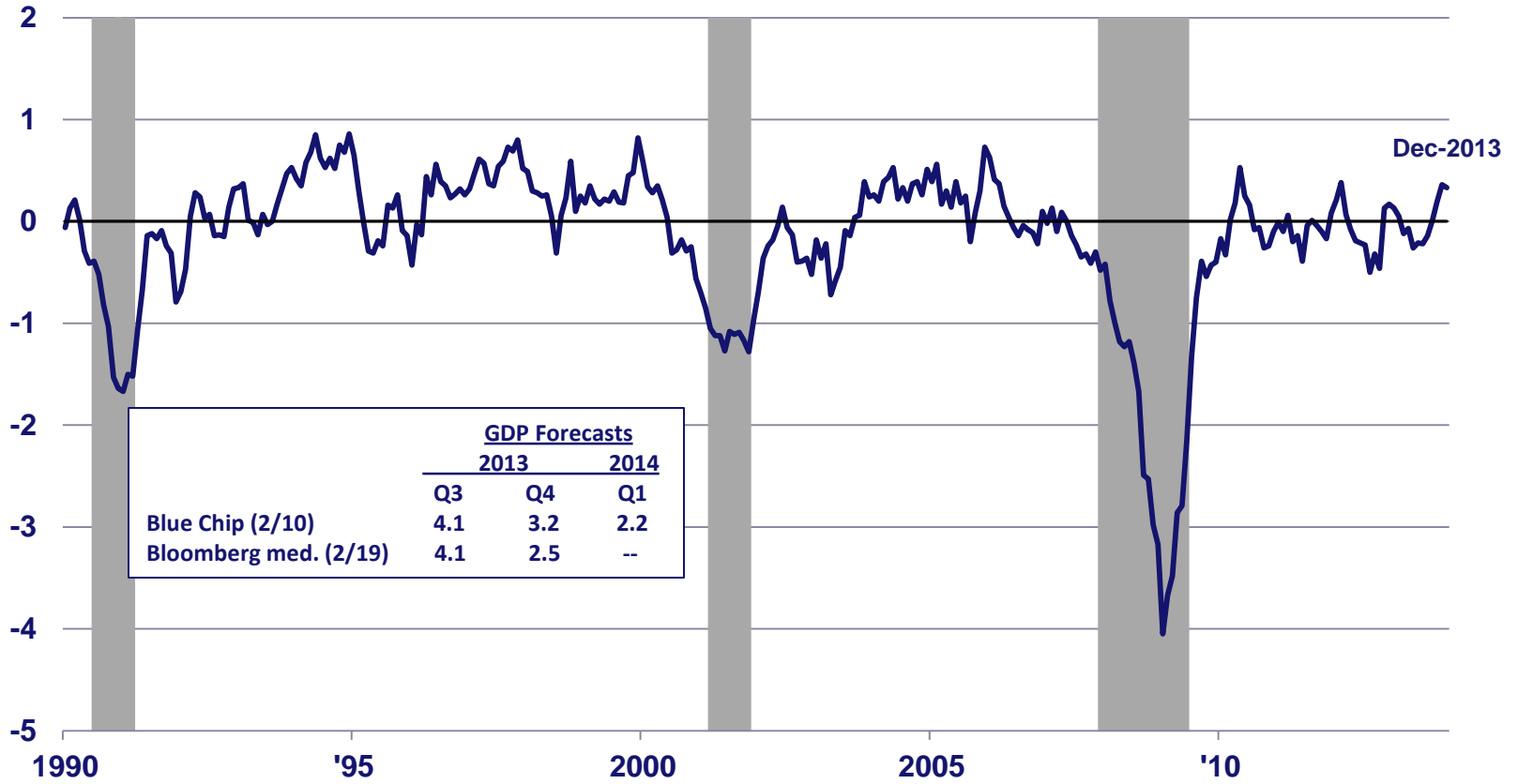
(ratio of social insurance and other taxes minus transfers to personal income less transfers)



Economic Activity Indicators: A Summary

Chicago Fed National Activity Index

(standard deviation from trend, 3-month average)



Shading corresponds with NBER recessions

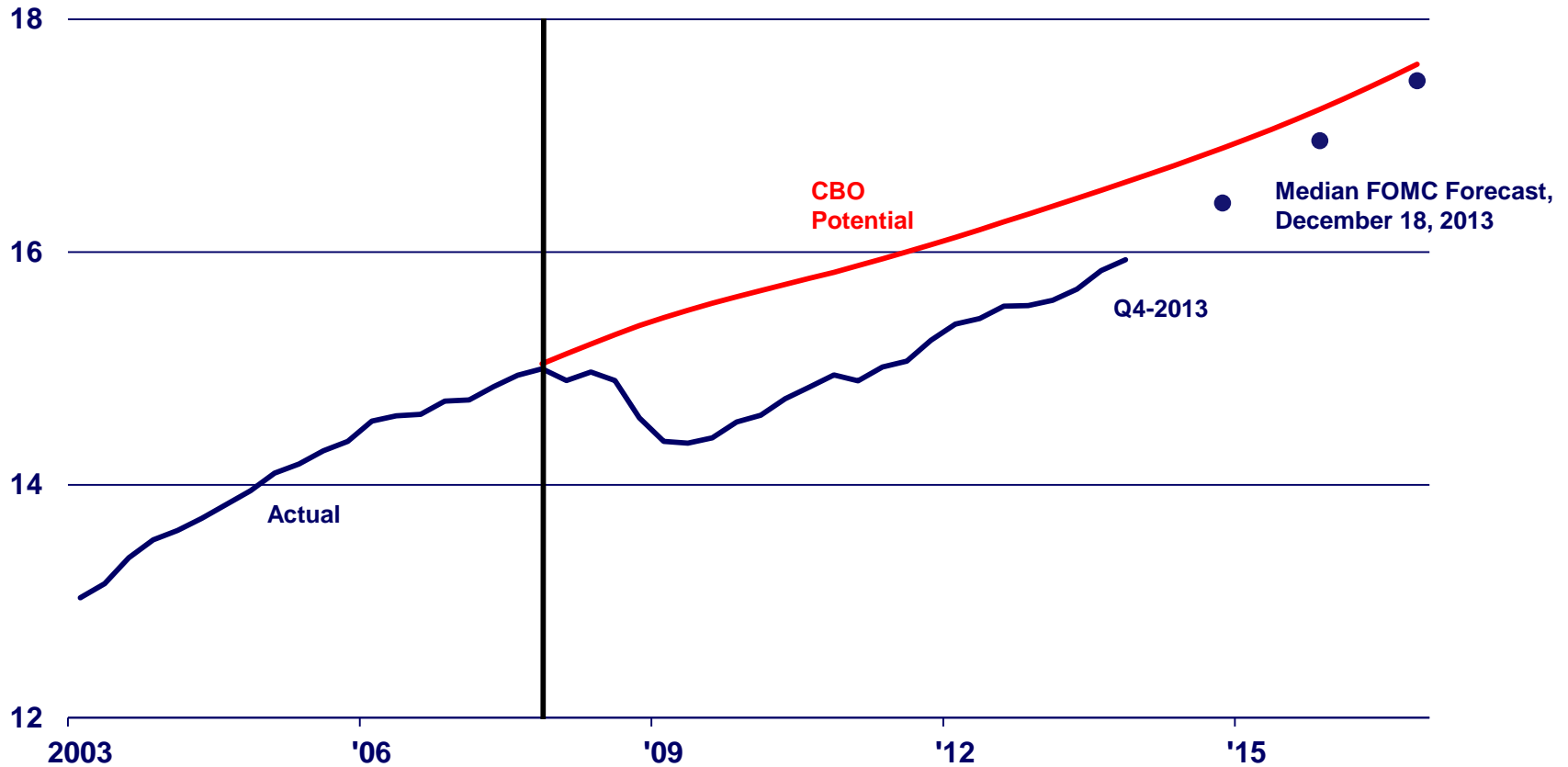
Medium Term Forecasts

	2013	2014	2015	2016
FOMC (12/19)				
GDP ¹	2.25 (2.2, 2.3)	3.05 (2.8, 3.2)	3.25 (3.0, 3.4)	3.05 (2.5, 3.2)
Unemploy. ²	7.05 (7.0, 7.1)	6.45 (6.3, 6.6)	5.85 (5.8, 6.1)	5.45 (5.3, 5.8)
Blue Chip (2/10)				
GDP ¹	2.7	2.7	3.0	
Unemploy. ²	7.0	6.4	5.9	
FOMC forecasts are pseudo medians; central tendency in parentheses. 1. Percent change, Q4 to Q4 2. Fourth-quarter average				

Output Gap

Actual and Potential GDP

(Trils. 2009\$)

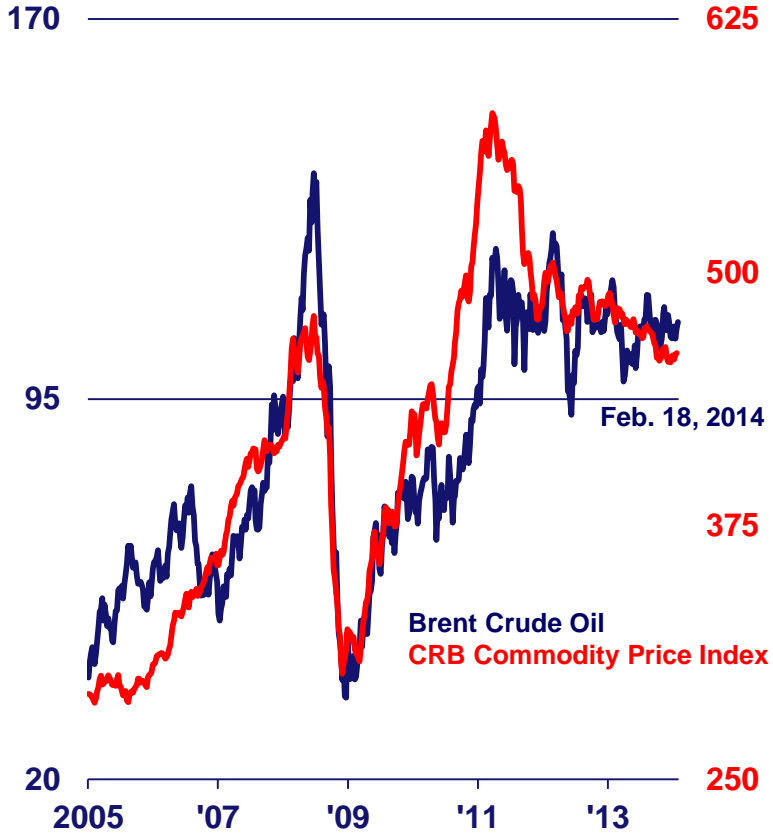


Potential output is CBO estimates, February 2014. FOMC forecasts are pseudo-medians

Little Cost Pressure

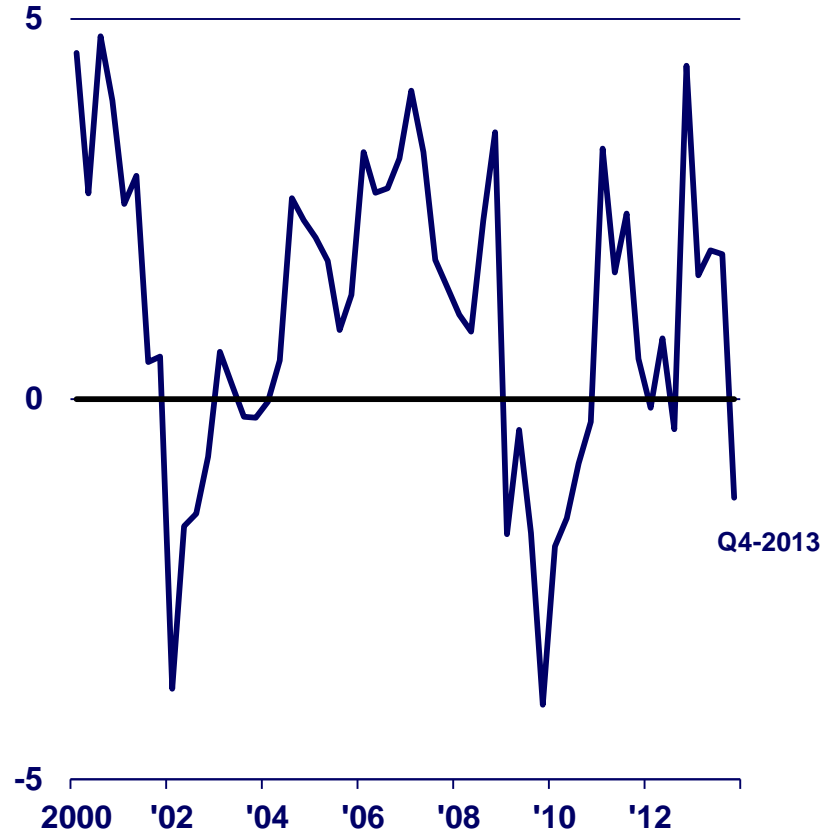
Commodity Prices

(dollars; index, 1967 = 100)



Unit Labor Costs

(4-quarter percent change)

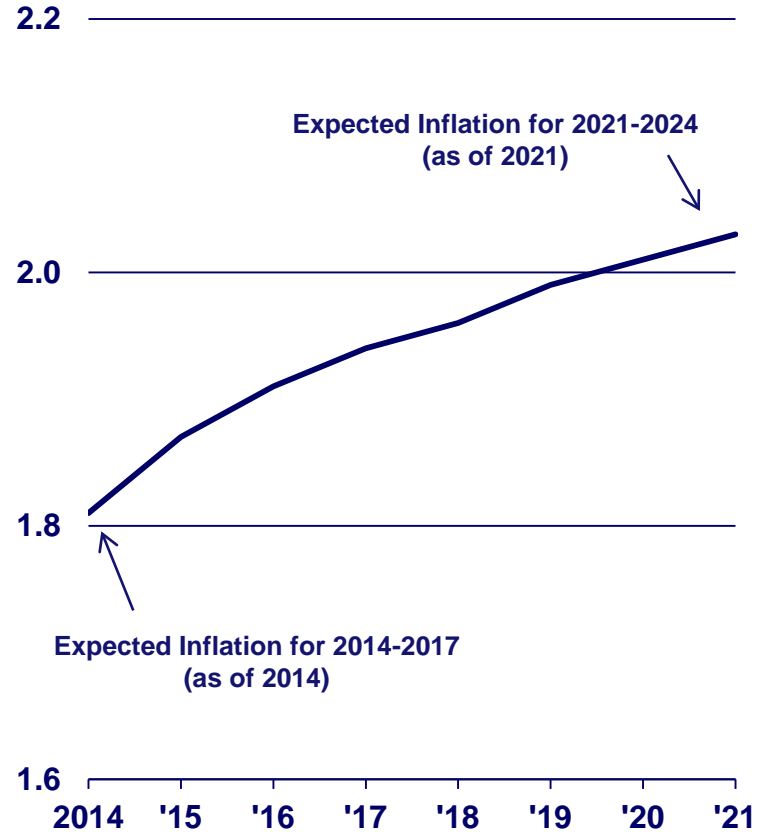


Inflation Expectations: An Anchor and A Buoy

TIPS CPI Inflation Compensation
(percent)



Expected Future Three-Year Ahead Total PCE Inflation
(percent)



Source: FRB-Chicago Staff Yield Curve Models

Inflation Low; Expected to Return to Target

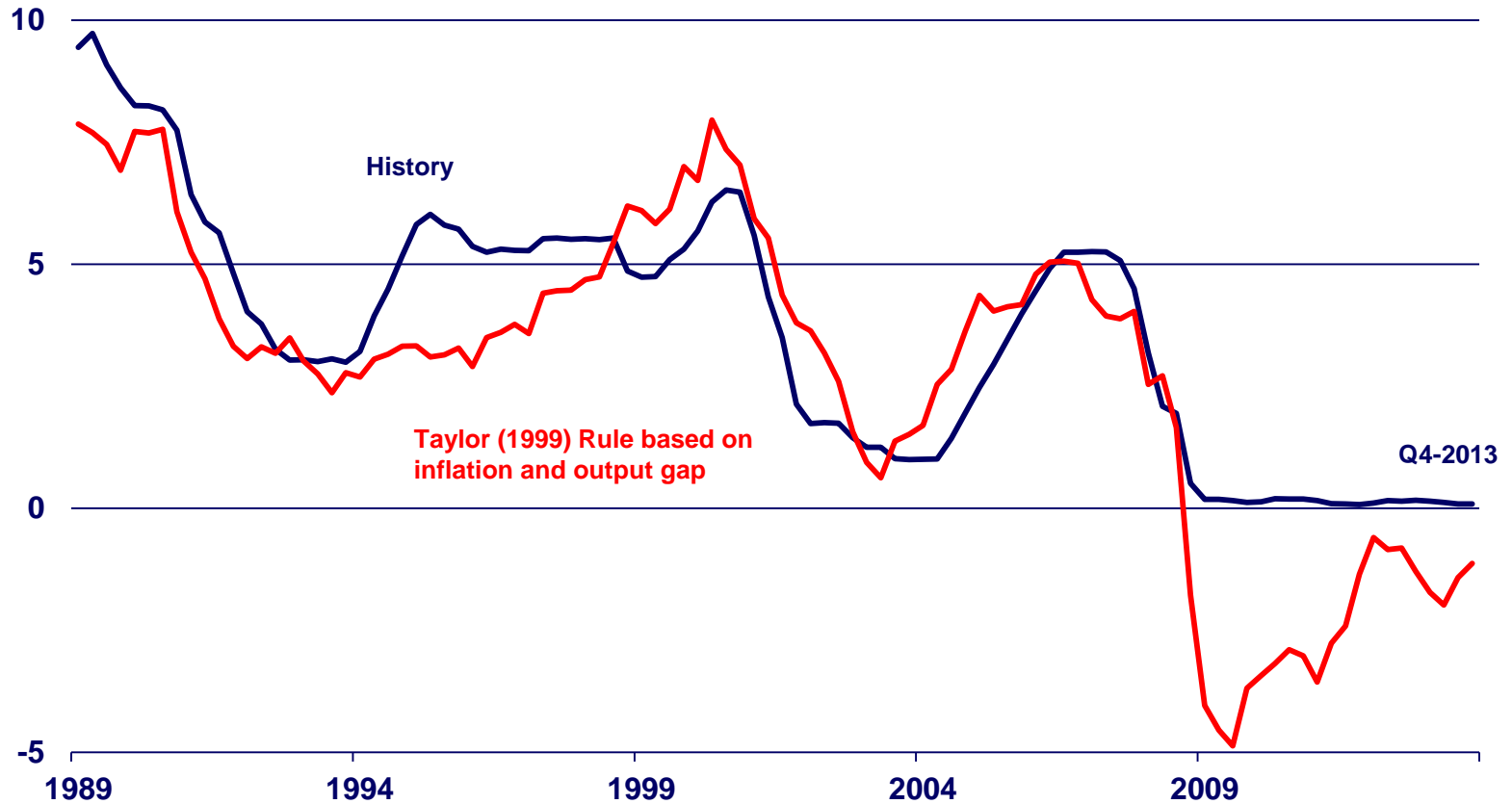
PCE Price Index (percent)



**Pseudo-medians of the forecasts made by the FOMC participants*

Policy Rate Constrained by Zero Lower Bound

Fed Funds Rate (percent)



Taylor Rule based on CBO output gap, SPF long-run inflation forecast (before 2009), and FOMC SEP long-run inflation target (after 2009)

Monetary Policy At The Zero Lower Bound

- **What to do when can't cut current short-term rate any further?**
- **Lower longer-term interest rates**
- **Long-term rates = average expected future short rates plus term premia**
 - **Option 1: Lower expectations of average future short-term rates through “forward guidance” on future policy rates**
 - **Option 2: Buy long-term bonds**
 - ◆ **Reduce term premium**
 - ◆ **Reinforces option 1**

Option 1: Forward Guidance on Funds Rate

- **Economic conditions likely to warrant exceptionally low level of the funds rate:**
 - **December 2008: “for some time”**
 - **March 2009: “for an extended period”**
 - **August 2011: “at least through mid 2013”**
 - **January 2012: “at least through late 2014”**

Forward Guidance on Funds Rate cont.

- September 2012: “...the Committee expects that a highly accommodative stance of monetary policy will remain appropriate for a considerable time after the economic recovery strengthens....at least through mid-2015.”
- Minutes: “...new language was meant to clarify that the maintenance of a very low federal funds rate over that period did not reflect an expectation that the economy would remain weak, but rather reflected the Committee’s intention to support a stronger economic recovery.”

Forward Guidance on Funds Rate cont.

- **December 2012:** “Economic conditions likely to warrant exceptionally low level of the funds rate at least as long as the unemployment rate remains above 6-1/2 percent, inflation between one and two years ahead is projected to be no more than a half of a percentage point above the Committee’s 2 percent long-run goal, and longer-term inflation expectations continue to be well-anchored.”

Forward Guidance on Funds Rate cont.

- December 2012 cont: “In determining how long to maintain a highly accommodative stance of monetary policy, the Committee will **also consider** other information, including **additional measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial developments.**”

Forward Guidance on Funds Rate cont.

- **December 2013:** “The Committee now anticipates, based on its assessment of these factors, that it likely will be appropriate to maintain the current target range for the federal funds rate well past the time that the unemployment rate declines below 6-1/2 percent, especially if projected inflation continues to run below the Committee's 2 percent longer-run goal.”

Forward Guidance on Funds Rate: Woodford

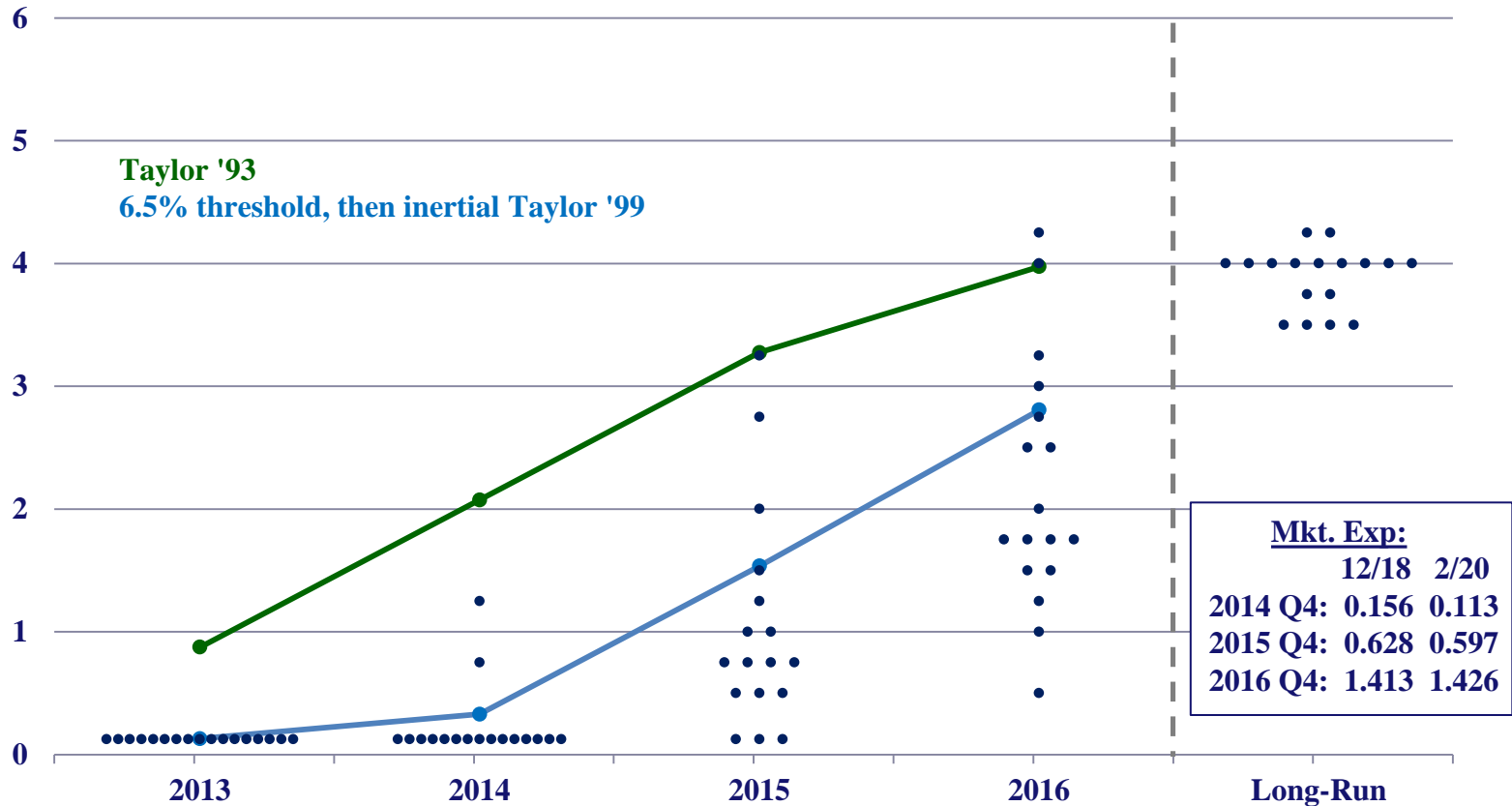
“If such an explicit criterion made it clear that short-term interest rates will not immediately be increased as soon as a Taylor rule descriptive of past FOMC behavior would justify a funds rate above 25 basis points, this would provide a reason for market participants to expect easier future monetary and financial conditions than they may currently be anticipating, and that should both ease current financial conditions and provide an incentive for increased spending. An example of a suitable target criterion would be a commitment to return nominal GDP to the trend path that it had been on up until the fall of 2008.”

Source: Michael Woodford, “Methods of Policy Accommodation at the Interest-Rate Lower Bound,” Jackson Hole Symposium, September 16, 2012.

Forward Guidance on Funds Rate cont.

- **October 2013 Minutes: “...statement could indicate ... anticipated keeping the rate below its longer-run equilibrium value for some time, as economic headwinds were likely to diminish only slowly. Other factors ... also mentioned as possibly providing a rationale for maintaining a low trajectory for the federal funds rate, including following through on a commitment to support the economy by maintaining more-accommodative policy for longer.”**

FG and FOMC “Appropriate” Policy Rates



Source: Interest rate forecasts are from the December 18, 2013 FOMC Summary of Economic Projections; market expectations from OIS futures. Taylor Rules based on unemployment and inflation gaps.

Option 2: Large Scale Asset Purchases (LSAP)

- **LSAP I (11/08): \$600 bill agency debt/MBS**
- **LSAP Ia (3/09): \$850 bill agency debt/MBS; \$300 bill Treas.**
- **LSAP II (11/10): \$600 bill Treas.**
- **MEP (9/11): Exchange \$400 bill short-term for \$400 bill long-term Treas.**
- **MEP extension (6/12): Extend MEP through end of 2012**

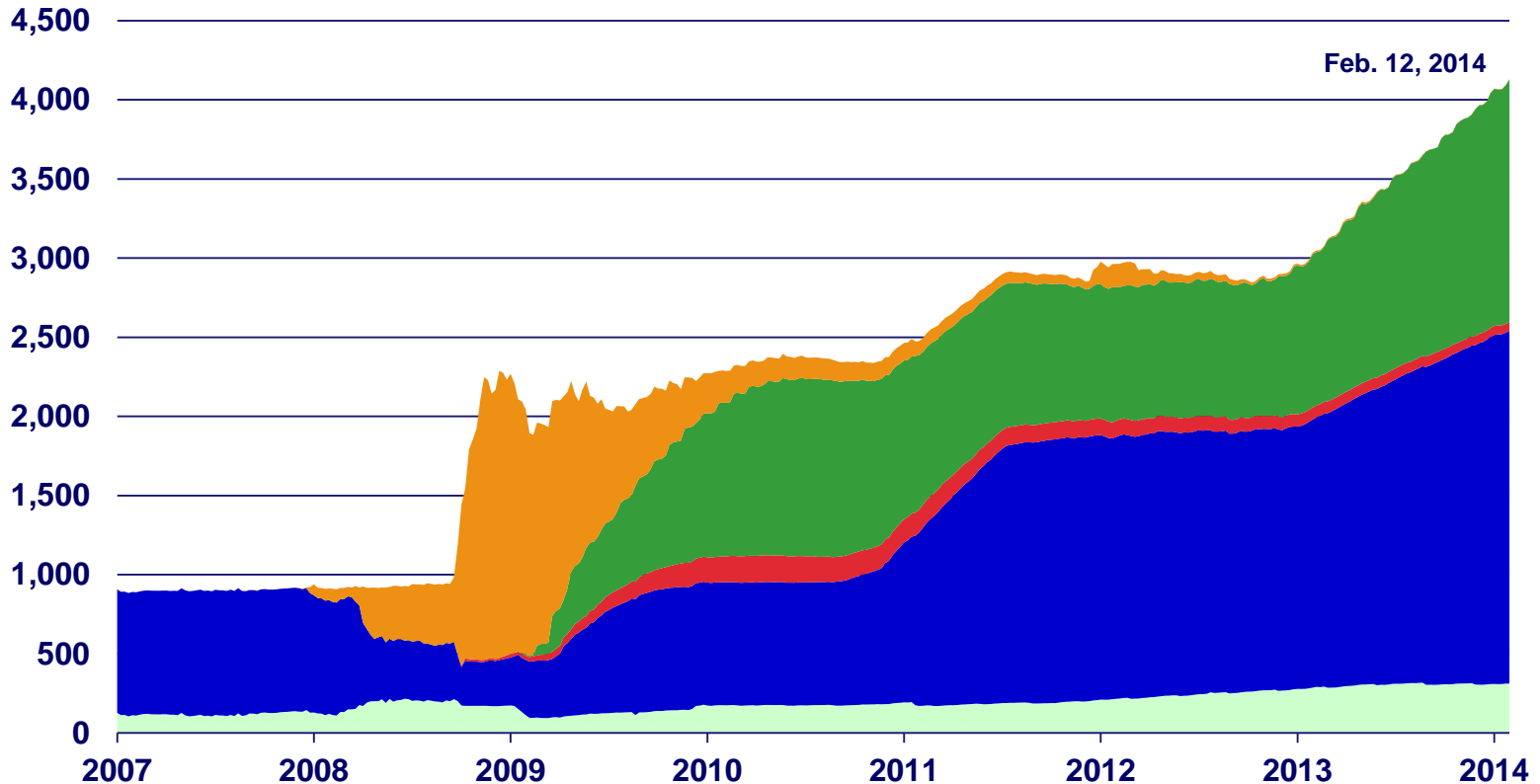
Option 2: Large Scale Asset Purchases (LSAP)

- **LSAP III (9/12): \$40 bill per month MBS, no fixed end date -- “until labor market outlook improved substantially”**
- **LSAP IIIa (12/12): \$40 bill per month MBS and \$45 bill per month long-term Treas; no fixed end date**
 - **Purchases reduced \$10 billion in 12/13 and 1/14**
 - **Current mkt expect purchases end in October 2014 => total purchases since January 2013 at about \$1.5 trillion**

Large-Scale Asset Purchases cont.

Federal Reserve Assets

(Bils. \$)



All Other Assets (\$314.7 bil.)

Agency Debt (\$51.4 bil.)

Lending and Liquidity Facilities (\$2.1 bil.)

Treas. Sec (\$2,258.6 bil.)

Agency MBS (\$1,532.2 bil.)

Long-Term Rates Down Significantly



10-Year Treasury Rates

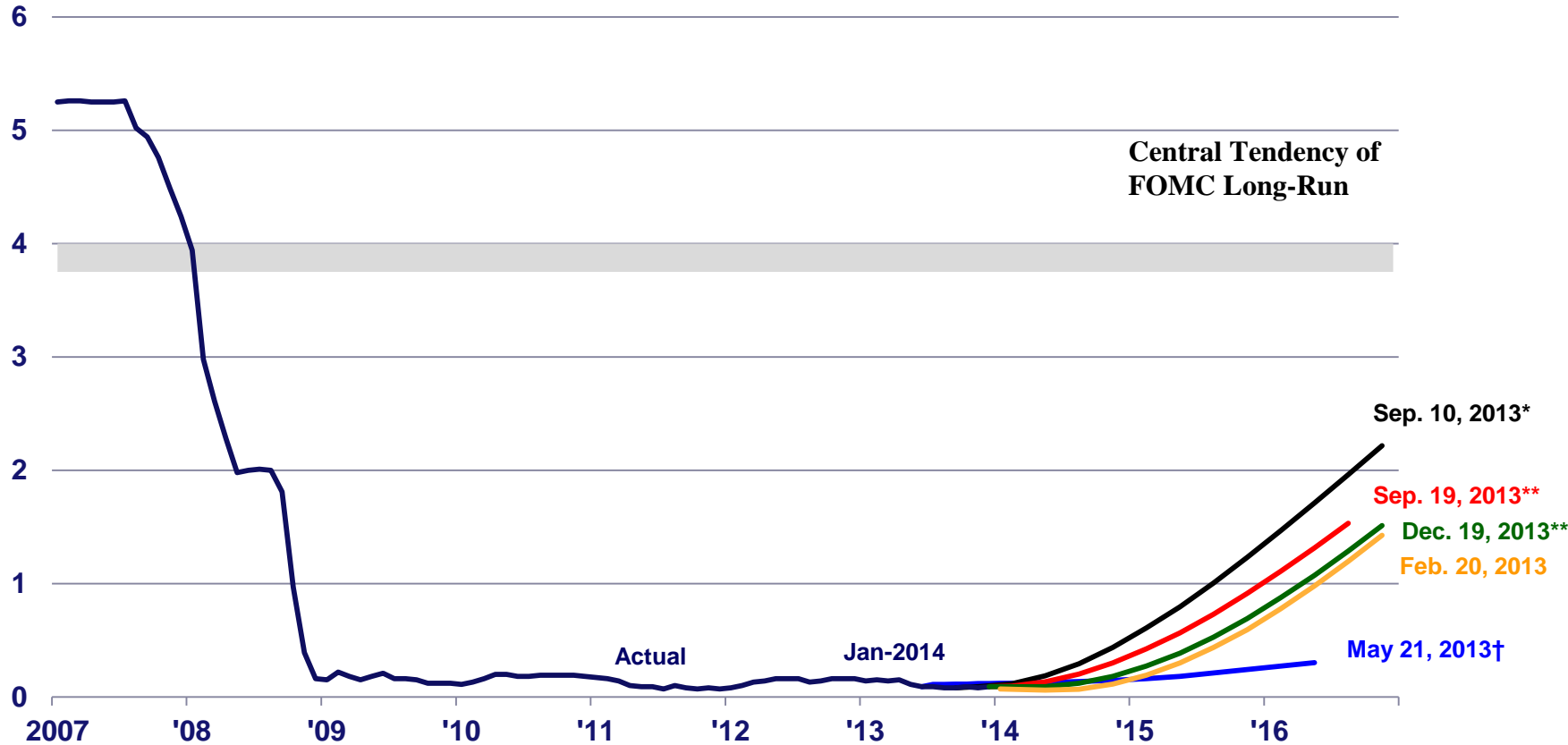


December 2013 Monetary Policy Actions

- **Maintain the overall level of policy accommodation, but change the mix of tools**
- **Reduce the pace of asset purchases modestly**
 - **Based on the economic outlook, expect further reductions in measured steps in the future**
- **At the same time, enhance forward guidance on interest rates**
 - **Maintain low interest rates well past the time we reach 6.5% unemployment**
 - **FOMC projections:**
 - ◆ **Unemployment reaches 6.5% by the end of 2014**
 - ◆ **But the first rate hike is expected near the end of 2015**
 - ◆ **Could be later**

Fed Funds Expectations

Fed Funds Rate (percent)



* Preceding FOMC meeting
 ** Following FOMC meeting
 † Preceding Chairman's Congressional Testimony

Appendix

Empirical Facts about Term Premia

Chart 2. Decomposition of 10-Year Treasury Yield
Monthly



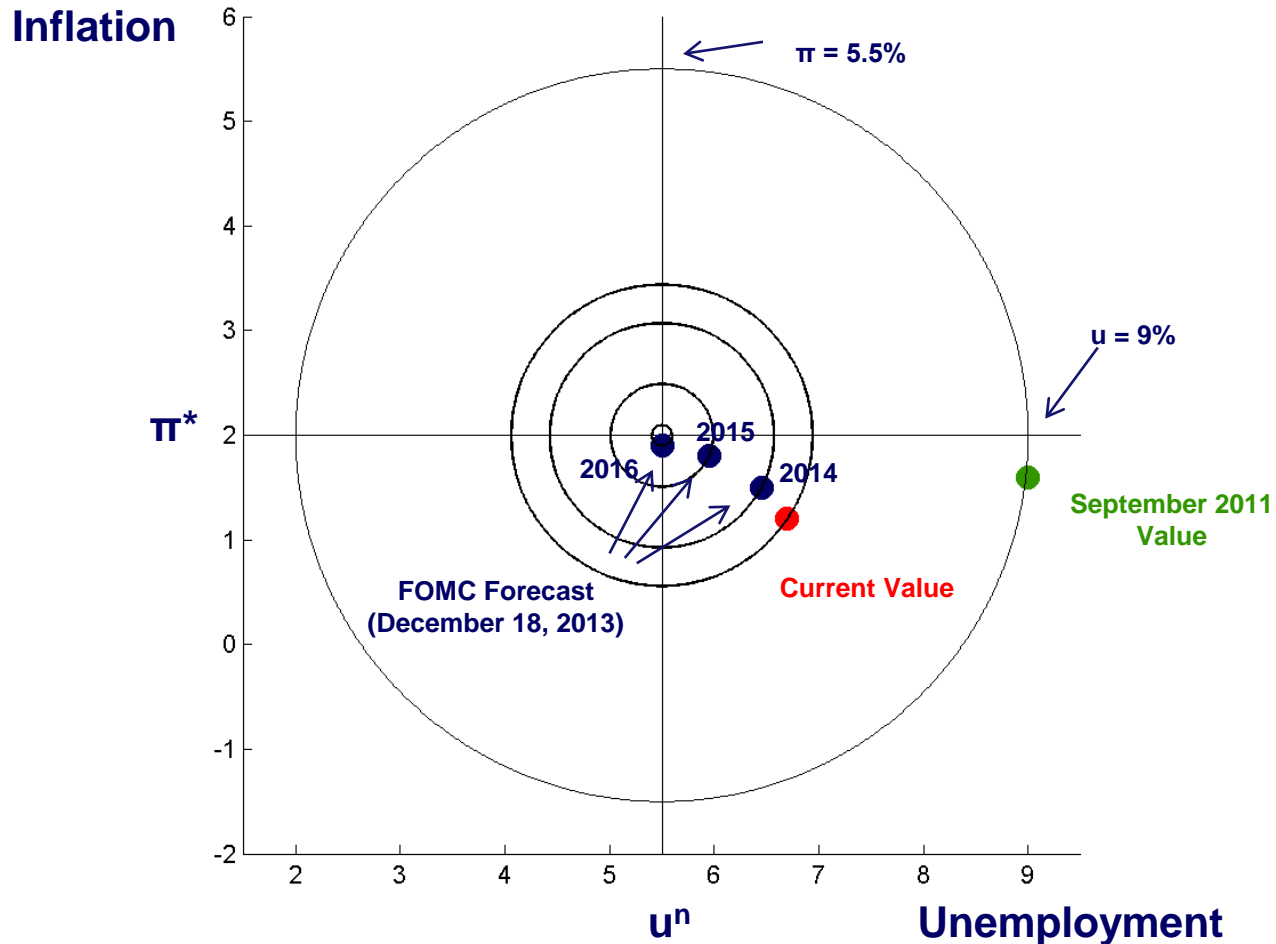
Note: Decomposition of 10-year zero-coupon Treasury yield based on the term structure model of D'Amico, Kim, and Wei (2010).
Source: Federal Reserve Board; Barclays PLC; staff calculations.

Balanced Approach to the Dual Mandate Is Consistent with Mainstream Macroeconomics

Loss Function
(percent)

$$L = (\pi - \pi^*)^2 + 0.25 (y - y^*)^2$$

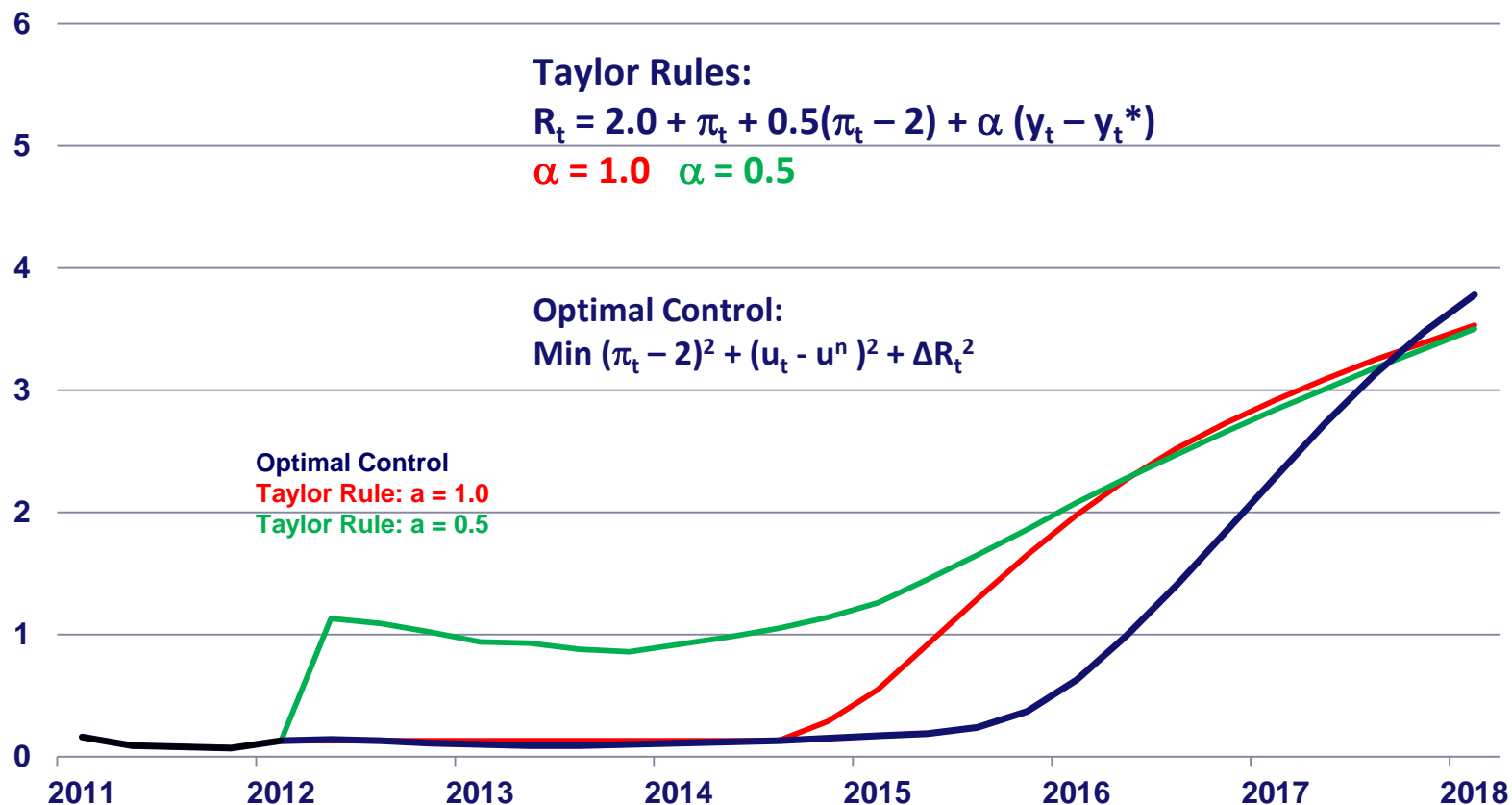
$$L = (\pi - 2)^2 + (u - u^n)^2$$



Optimal Control vs. Taylor Rules

Federal Funds Rate

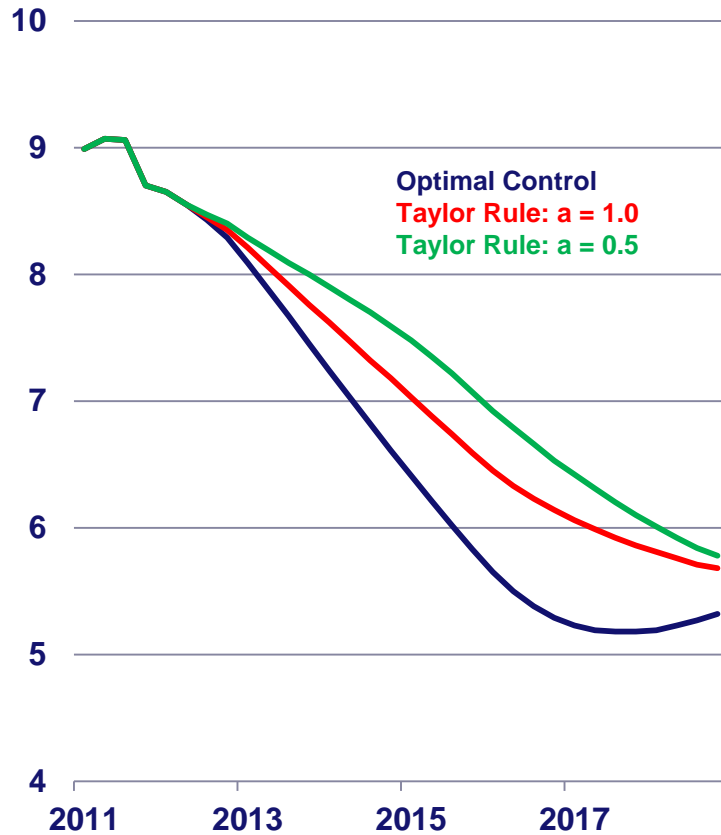
(percent)



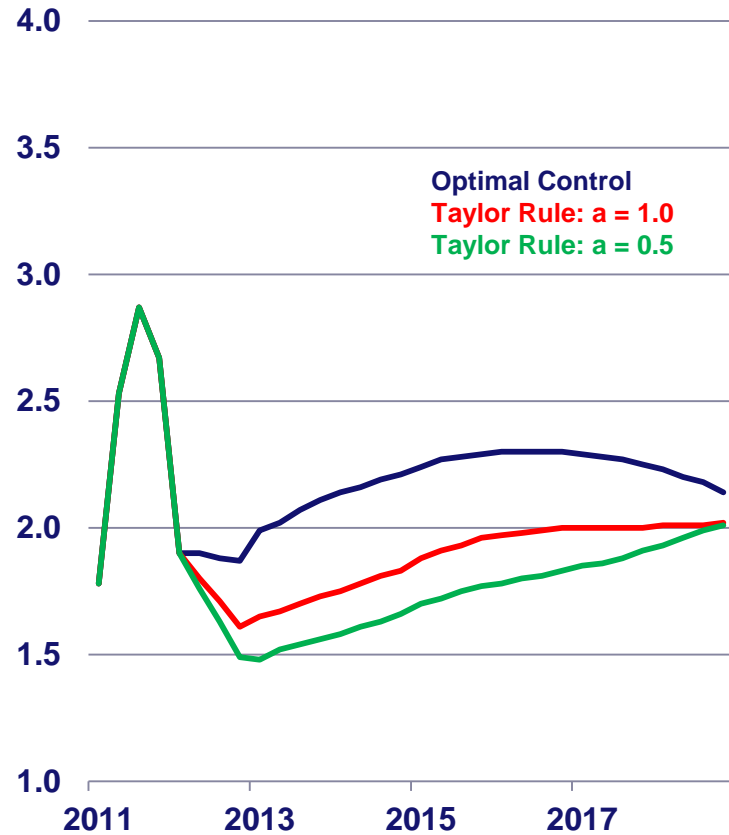
Source: Janet L. Yellen, "Perspectives on Monetary Policy," Boston, June 6, 2012

Forecasts Under Alternative Policy Rules

Unemployment Rate (percent)



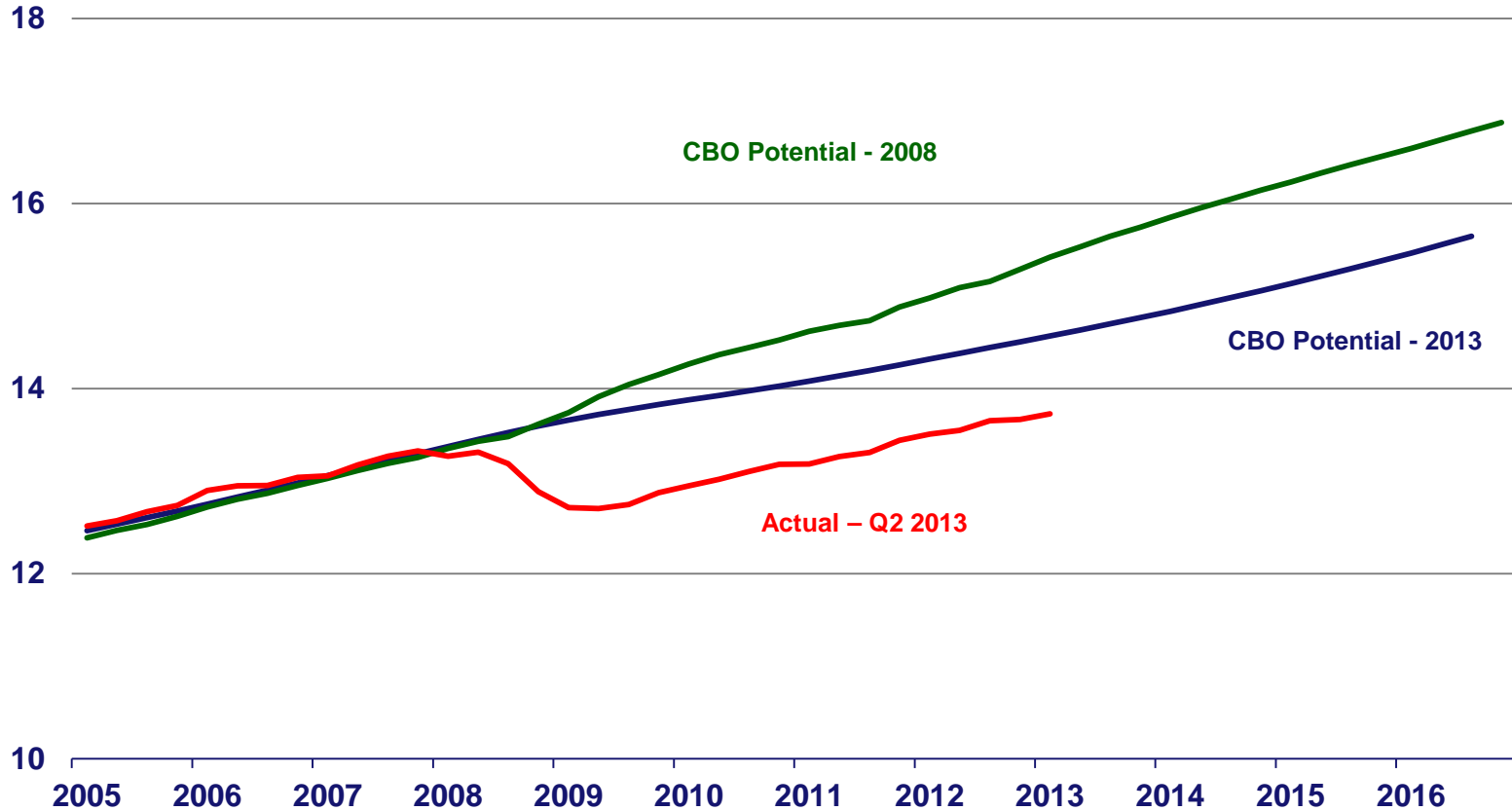
PCE Inflation (4-quarter percent change)



Source: Janet L. Yellen, "The Economic Outlook and Monetary Policy," New York, April 11, 2012

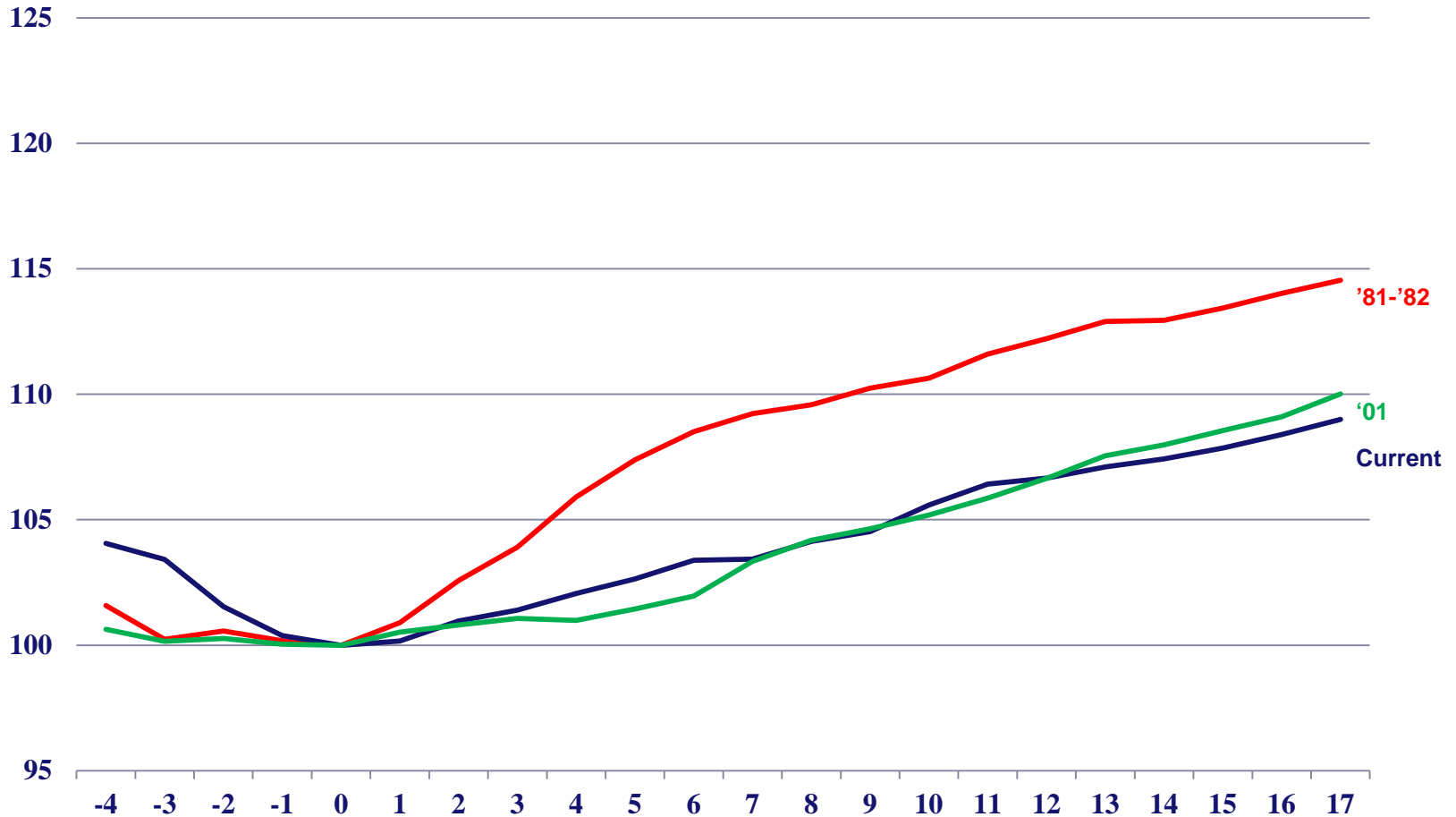
Large Gap Remains Even After Potential Revisions

Actual and Potential GDP
(Trils. 2005\$)



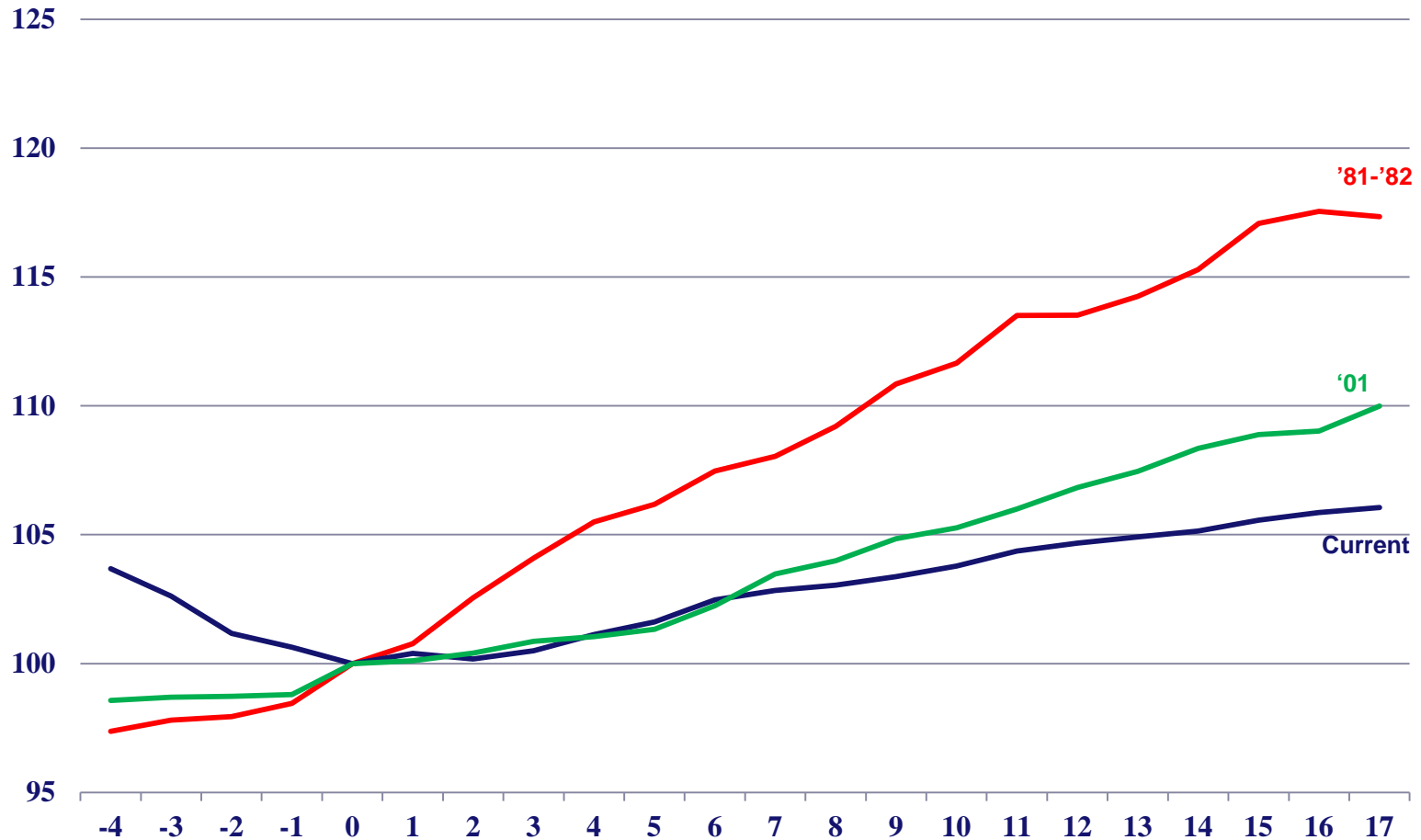
Private Sector Output Growth More Respectable

Real GDP ex. Government
(100 = Recession Trough)



Consumption Recovery Especially Slow

Per Capita Real PCE
(100 = Recession Trough)



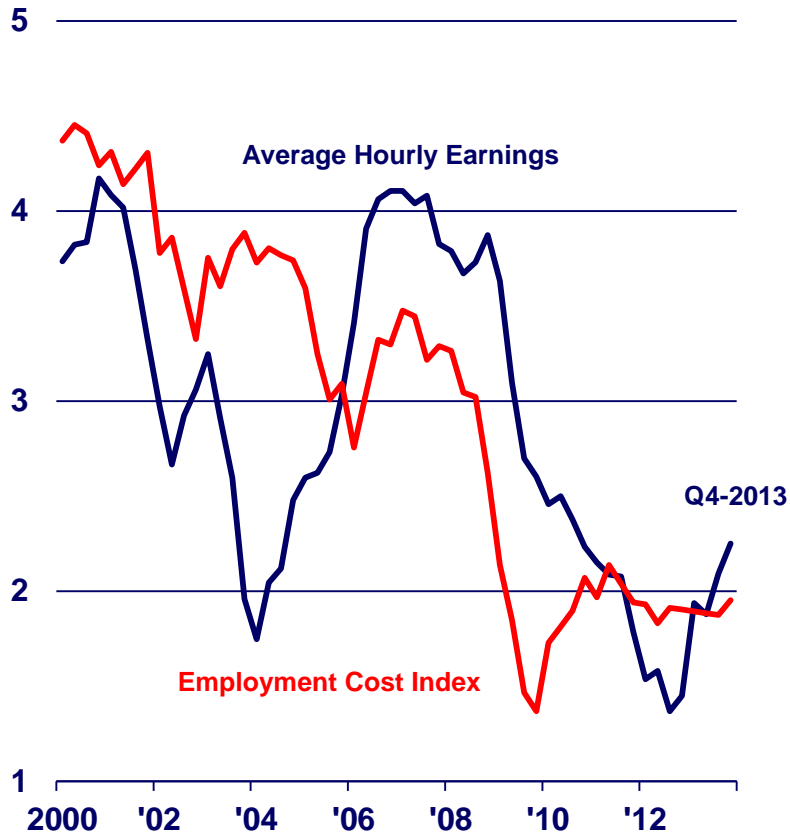
Forward Guidance on Funds Rate: Woodford

“Standard New Keynesian models imply that a higher level of expected real income or inflation in the future creates incentives for greater real expenditure and larger price increases now; but in the case of a conventional interest-rate reaction function for the central bank, short-term interest rates should increase, and the disincentive that this provides to current expenditure will attenuate (without completely eliminating) the sensitivity of current conditions to expectations. If nominal interest rates instead remain unchanged, the degree to which higher expected real income and inflation later produce higher real income and inflation now is amplified.... it is precisely when the interest-rate lower bound is expected to be a binding constraint for some time to come that expectations about the conduct of policy after the constraint ceases to bind should have a particularly large effect on current economic conditions...”

Source: Michael Woodford, “Methods of Policy Accommodation at the Interest-Rate Lower Bound,” Jackson Hole Symposium, September 16, 2012.

Labor Cost Pressures Very Modest

Wages and Total Compensation
(4-quarter percent change)



Unit Labor Costs
(4-quarter percent change)

