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# U.S. Monetary Policy: Assessing Strategy and Effectiveness

*Norges Bank*

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*The views I express here are my own and do not necessarily reflect the views of the Federal Reserve Bank of Chicago, my colleagues on the Federal Open Market Committee (FOMC) or within the Federal Reserve System.*

# Overview

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- 1. Strategy for U.S. Monetary Policy**
- 2. Have non-traditional policies at the ZLB been effective?**
- 3. Monetary Policy, Financial Stability and Macro-Prudential policies**

Section 1.

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# **Strategy for U.S. Monetary Policy**

# Multiple Choice Quiz

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- **The objective of Monetary Policy in the U.S. is to:**
  - a. Mechanically adhere to a simple policy rule
  - b. Implement the popular monetary policy du jour
  - c. Provide financial and monetary conditions to facilitate maximum employment and price stability
  - d. None of the above

# Current Scorecard for the U.S.

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- **Unacceptably high unemployment**
- **Inflation is well below long-run inflation objective**
- **Simple policy rules break down at ZLB**

# Understanding U.S. Monetary Policy

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## ■ Possible Strategies

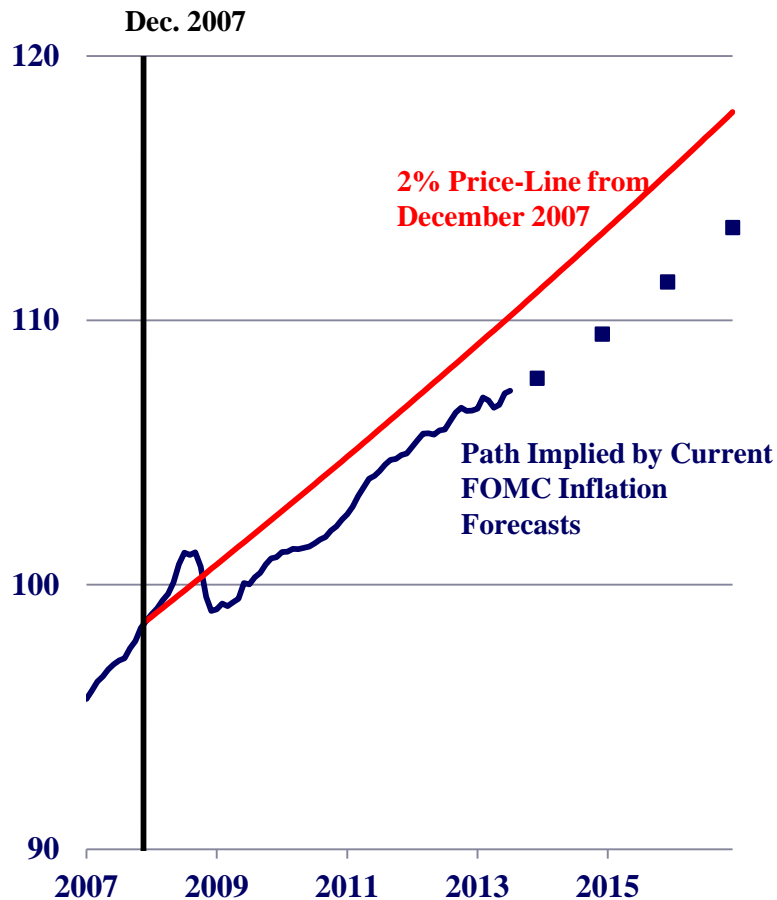
- Business as usual
- Not business as usual at the ZLB
  - ◆ Can require some unpopular monetary policies

## ■ Central Bank independence is crucial. If independence means anything...

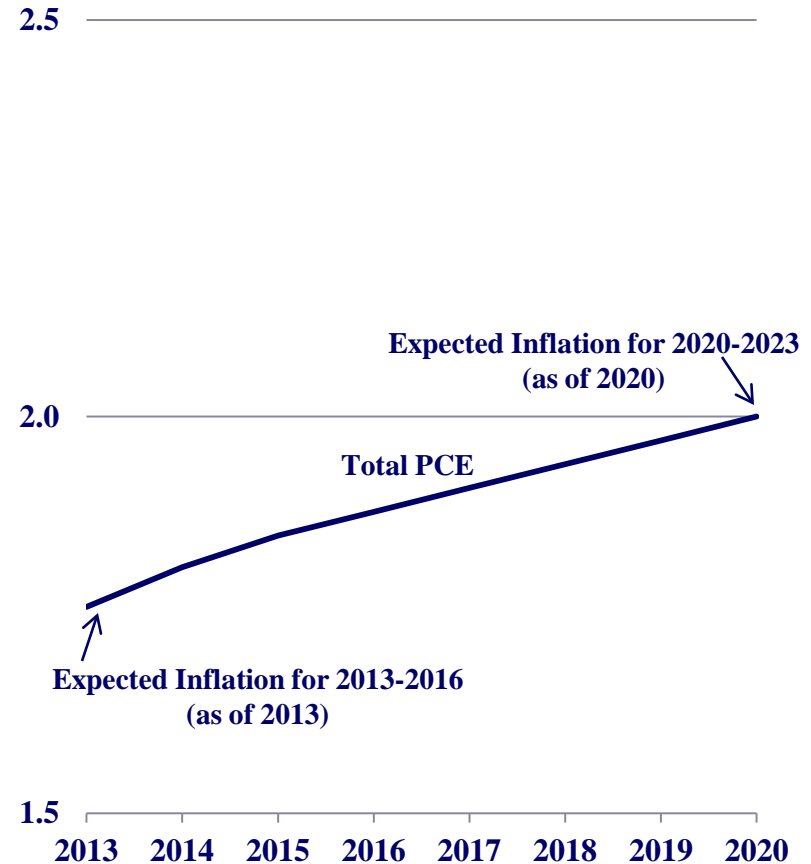
- Pursue best policies to meet statutory objectives
- No matter how unpopular [cf Volcker Fed]
- And be held accountable to democratically elected officials

# What if There Was a Single Mandate in U.S.?

**Total PCE Price Index**  
(level)



**Expected Future Three-Year Ahead Inflation**  
(percent)



Source: Inflation forecasts are from the September 18, 2013 FOMC Summary of Economic Projections

Source: FRB-Chicago Staff Models

# Long-Run Strategy for Monetary Policy (January 2012 and January 2013)

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■  $\pi^* = 2\%$  PCE inflation

■  $U_t^* \sim 5\frac{1}{4}\% - 6\%$  time-varying

SEP long-run central tendency

■ Balanced approach to reducing deviations of inflation  
and employment from long-run objectives

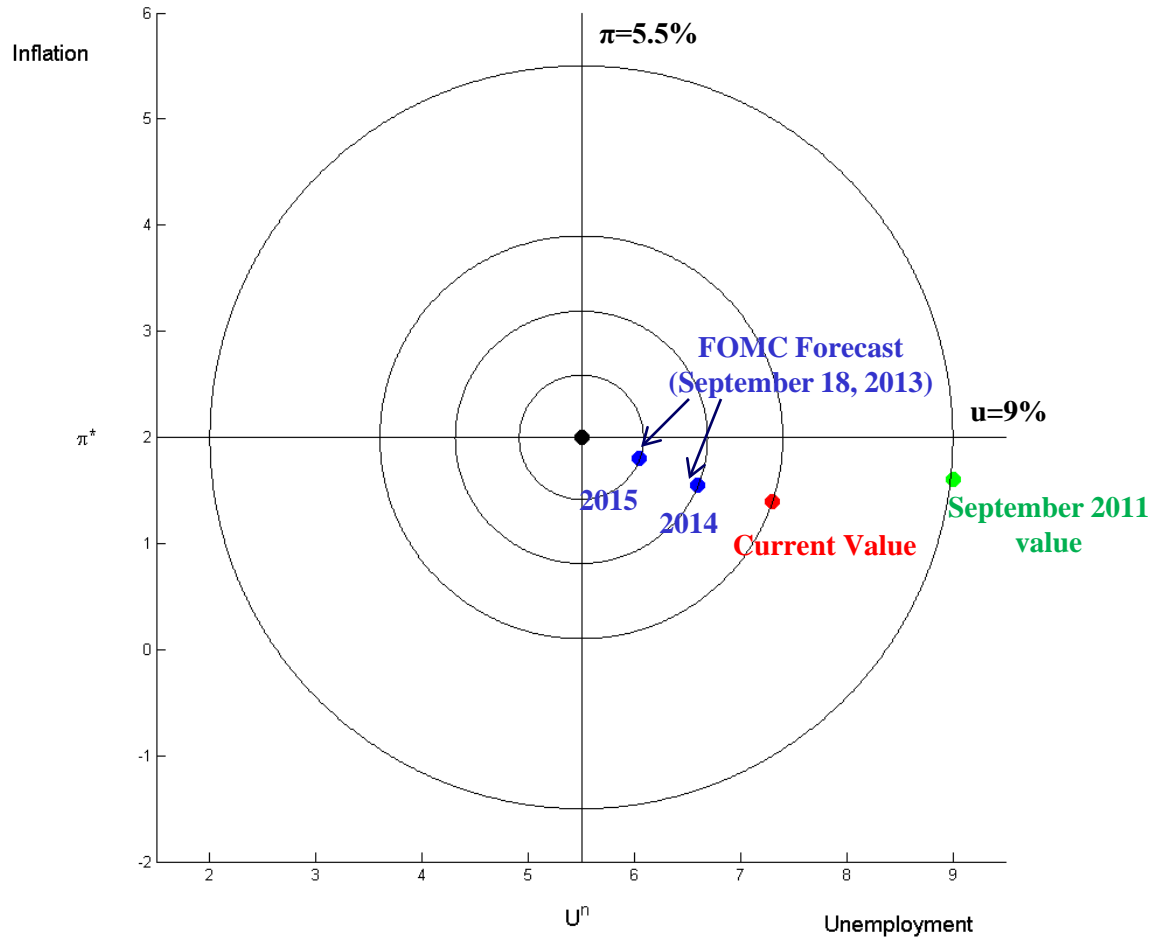


# Balanced Approach to the Dual Mandate is Consistent with Mainstream Macroeconomics

**Loss Function**  
(percent)

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

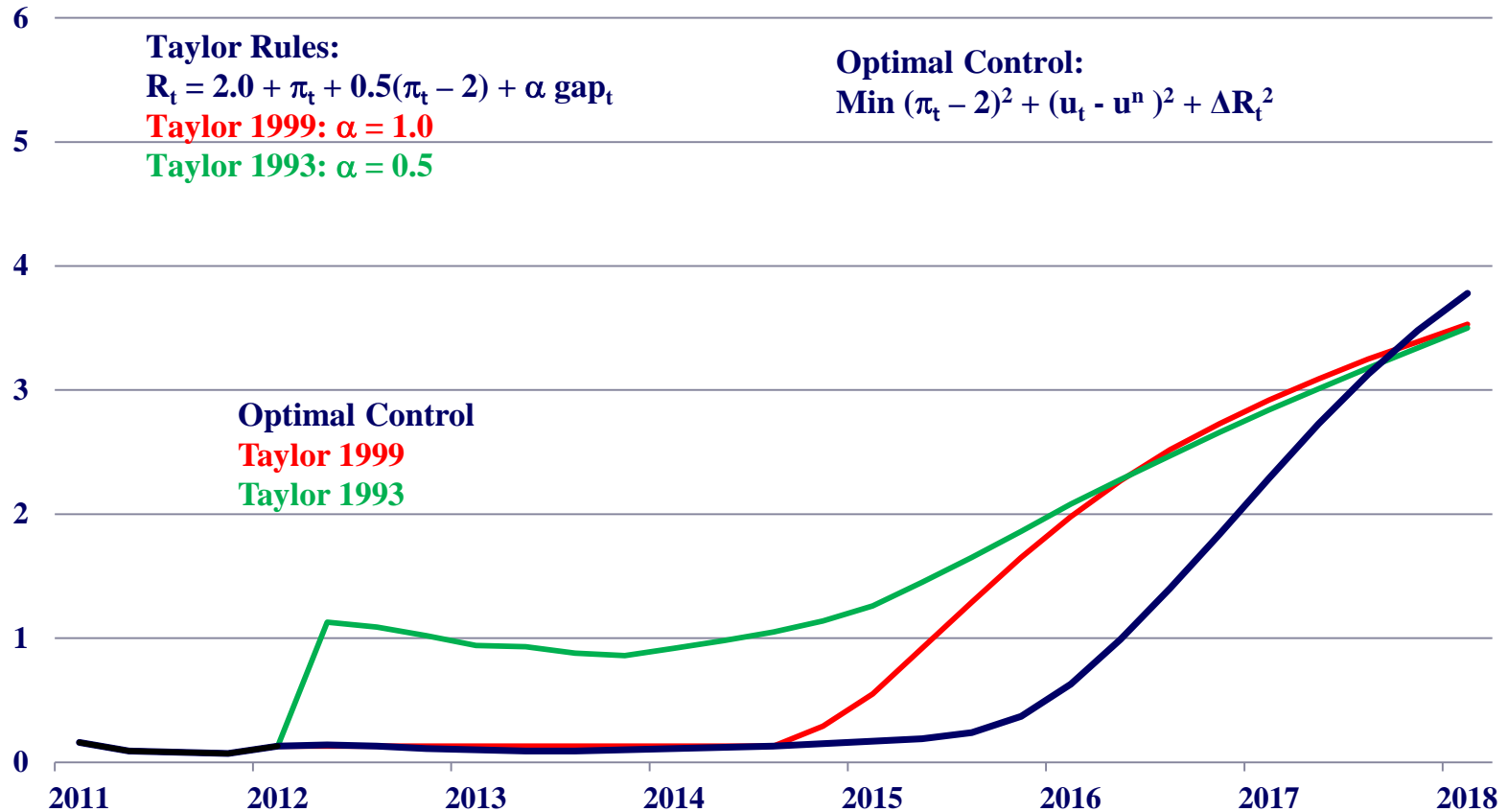
$$L = (\pi - 2)^2 + (u - u^n)^2$$



# The Problem is the Zero Lower Bound

## Federal Funds Rate

(percent)

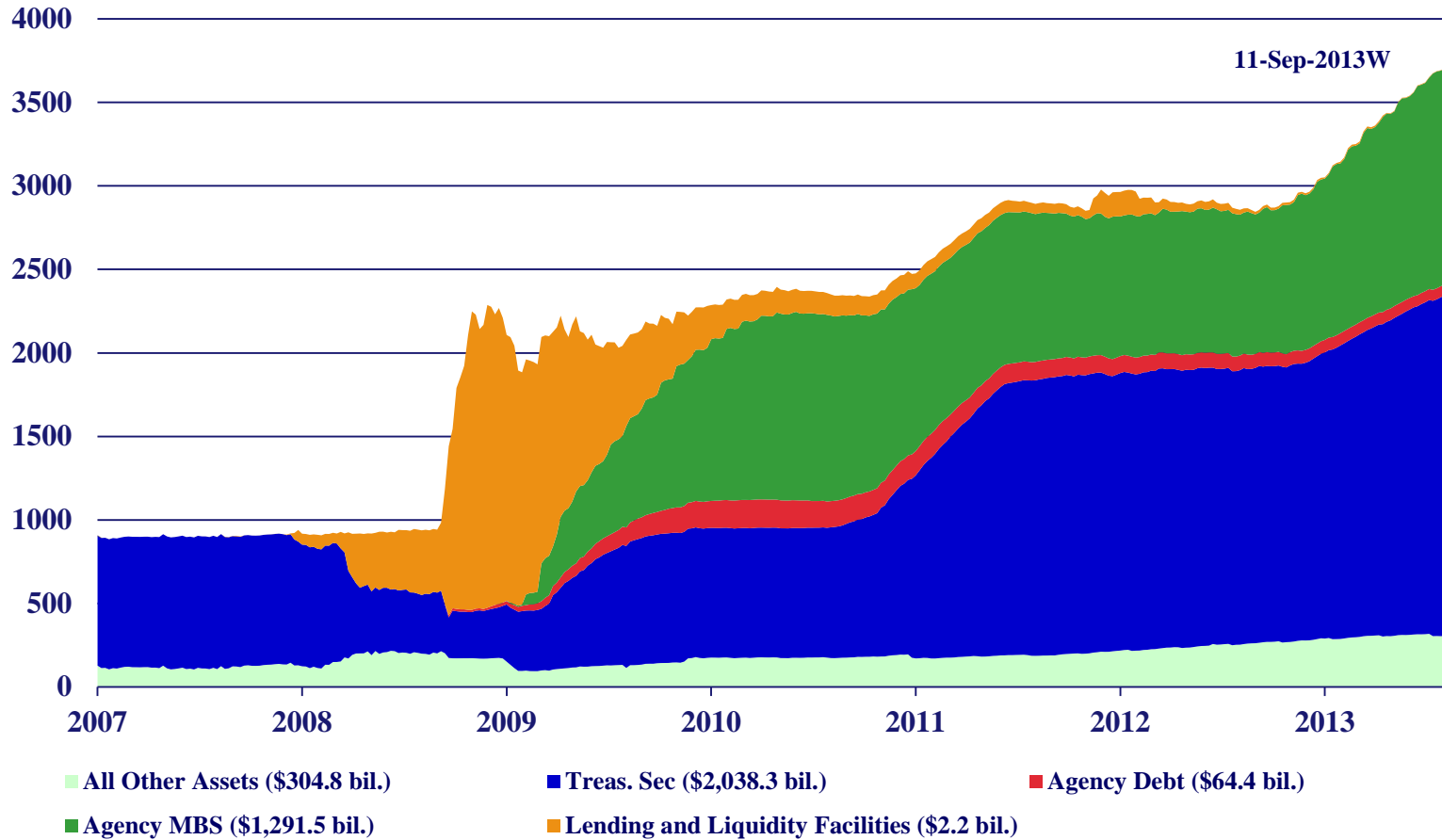


Source: Janet L. Yellen, "Perspectives on Monetary Policy," Boston, June 6 2012

# Asset Purchases: The Fed's Balance Sheet

## Federal Reserve Assets

(Bils. \$)

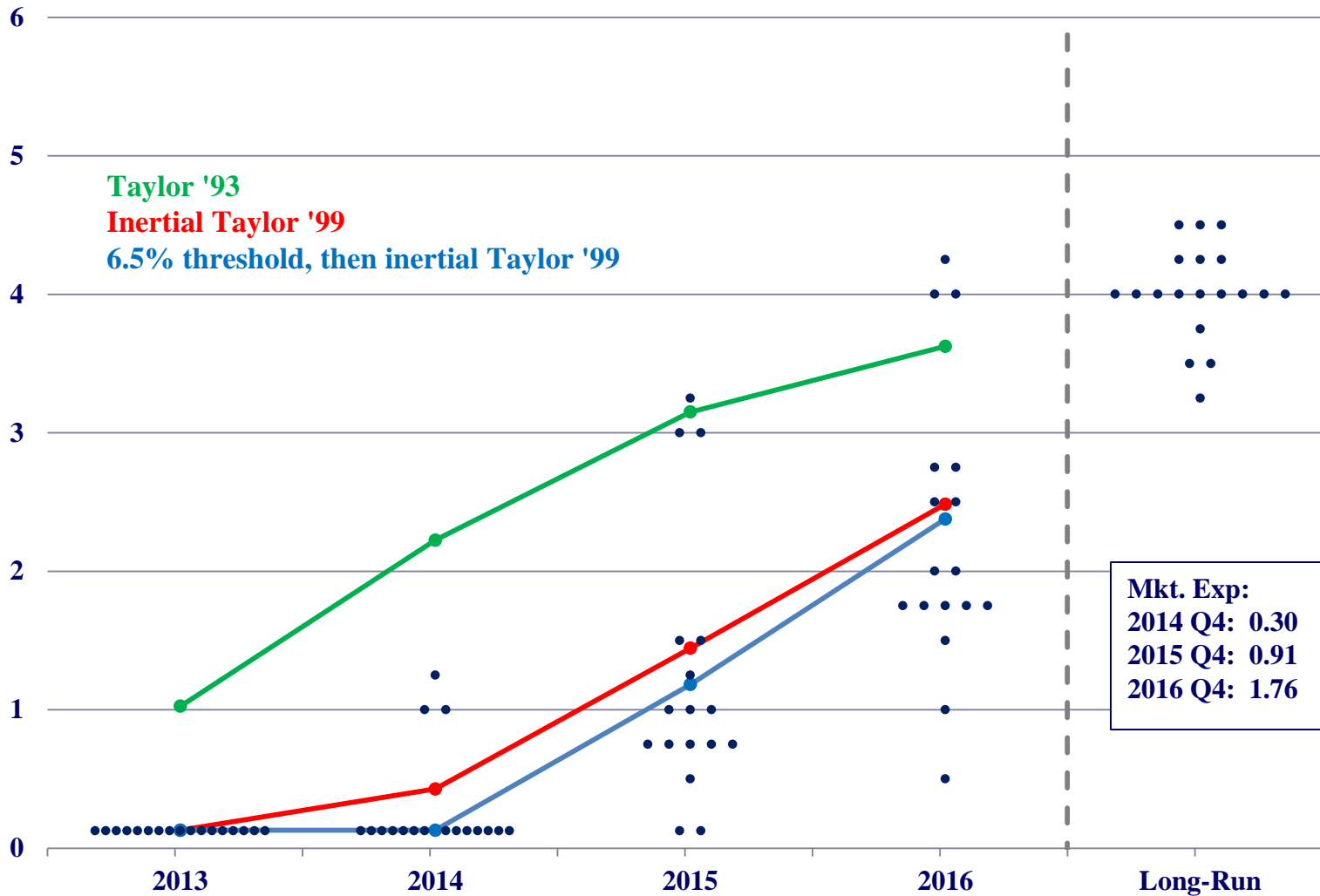


# Forward Guidance on the Federal Funds Rate

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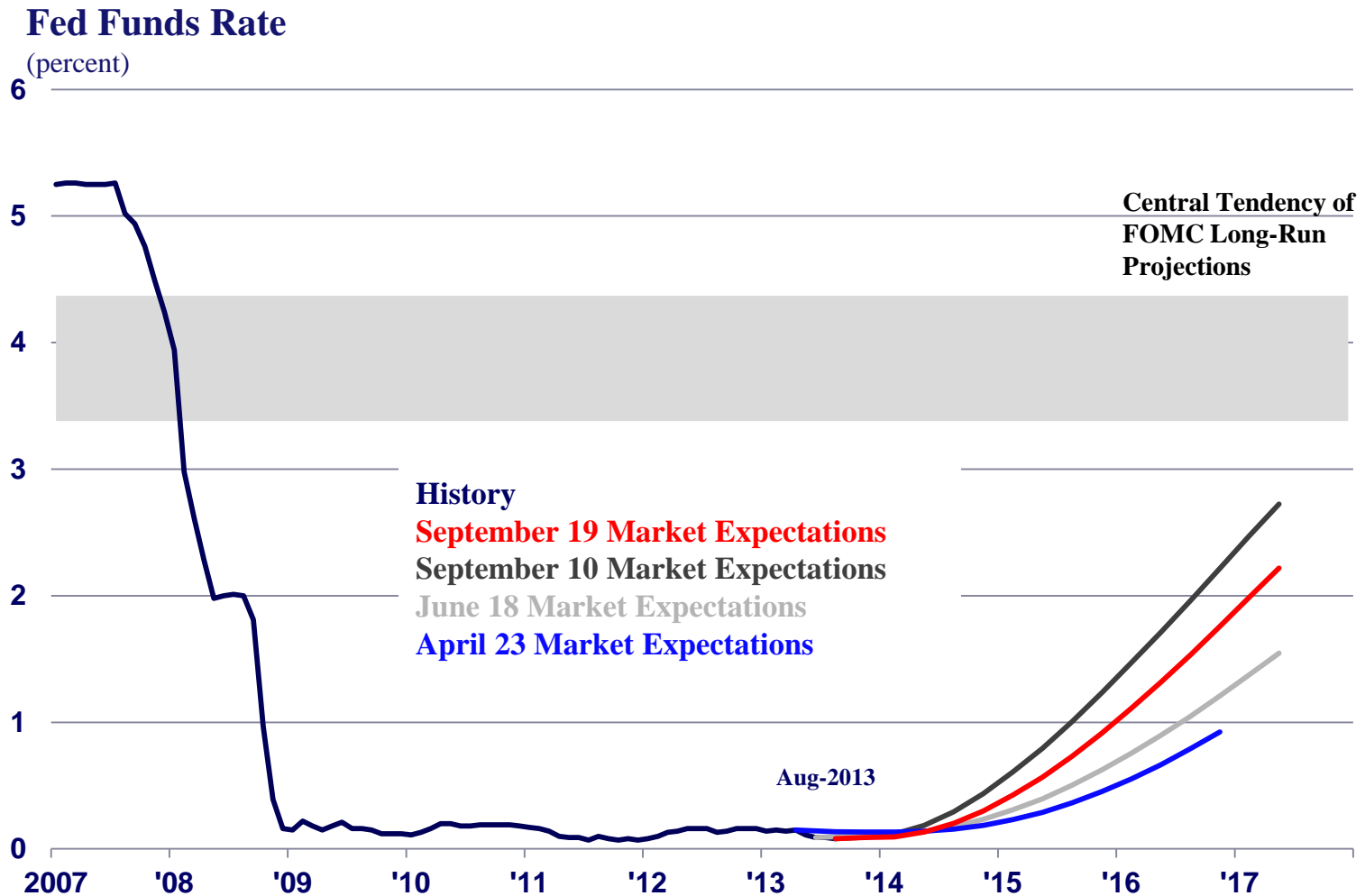
- **December 2012:** “Economic conditions likely to warrant exceptionally low level of the funds rate at least as long as the unemployment rate remains above 6-1/2 percent, inflation between one and two years ahead is projected to be no more than a half of a percentage point above the Committee’s 2 percent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

# FG and FOMC “Appropriate” Policy Rates



Source: Interest rate forecasts are from the September 18, 2013 FOMC Summary of Economic Projections; market expectations from OIS futures, September 19, 2013

# Change in Fed Funds Rate Expectations



## Section 2.

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**Have non-traditional policies at the ZLB been effective?**

# Policy Evaluation

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## ■ Common op-ed page policy evaluation:

- “After \$3+ trillion of asset purchases and all this forward guidance, there has been no effect on the economic recovery. Therefore nontraditional monetary policy has been impotent.”

## ■ Standard economic policy evaluation:

- What does economic theory say?
- What do the data say?
- Have all important factors been accounted for in the data analysis? (controls)
- What assumptions are required for this evaluation to be meaningful?



# Reviewing Data: Facts About Growth

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(percent change at an annual rate and contribution to annualized percent change)

	2007:Q4 to 2009:Q2	2009:Q2 to 2010:Q4	2010:Q4 to 2013:Q2
GDP	-2.9	2.7	1.9
Contribution to growth:			
PDFP <sup>1</sup>	-3.8	2.1	2.3
Gov	0.7	-0.1	-0.5
NX	1.2	-0.5	0.1
CBI	-1.0	1.2	0.0

1. Private domestic final purchases

# Headwinds Contributing to Weak recovery

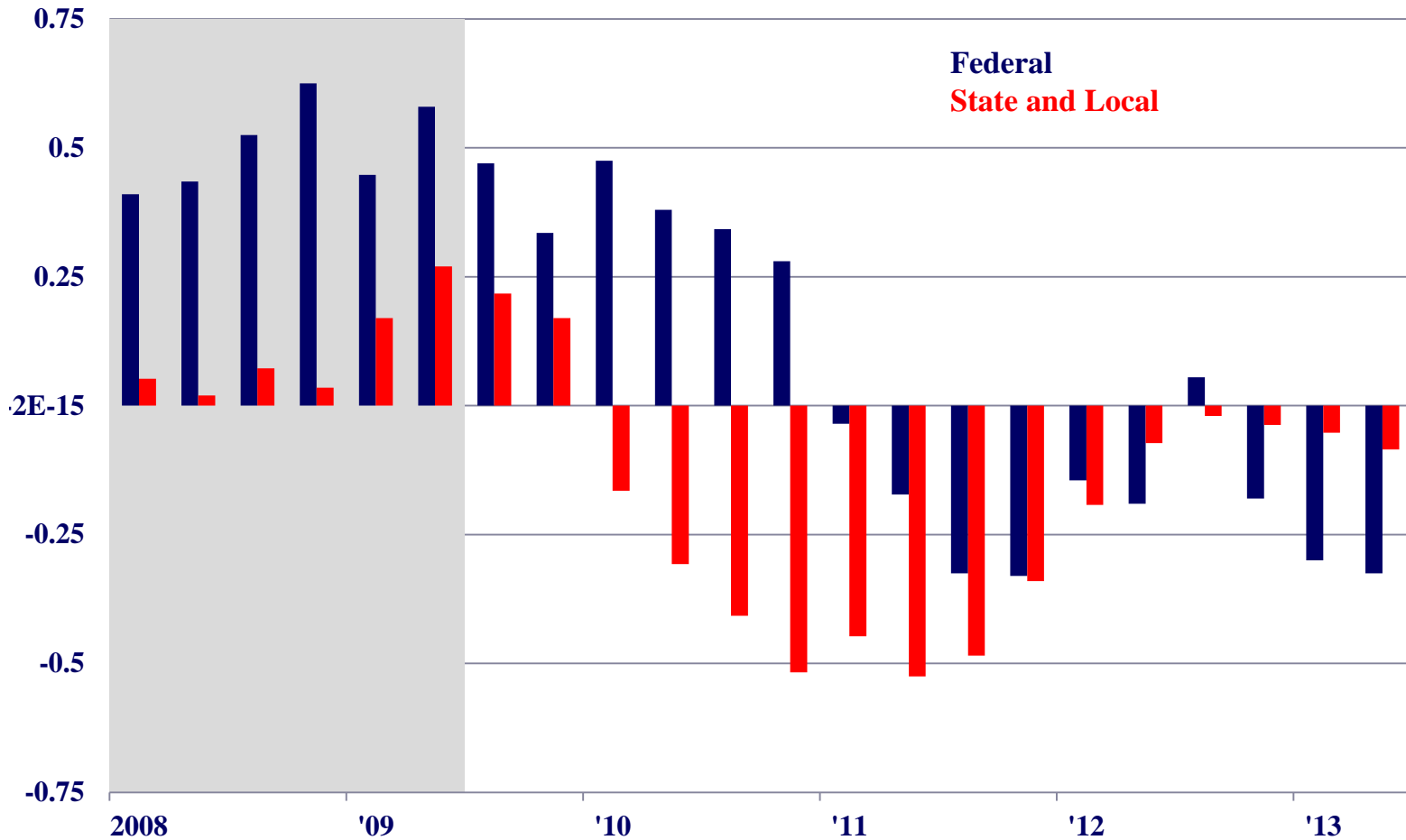
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- **Fiscal**
- **International**
- **Hangover from housing collapse**

# Federal + State and Local Purchases Weak

## Government Contributions to Real GDP Growth

(percent)

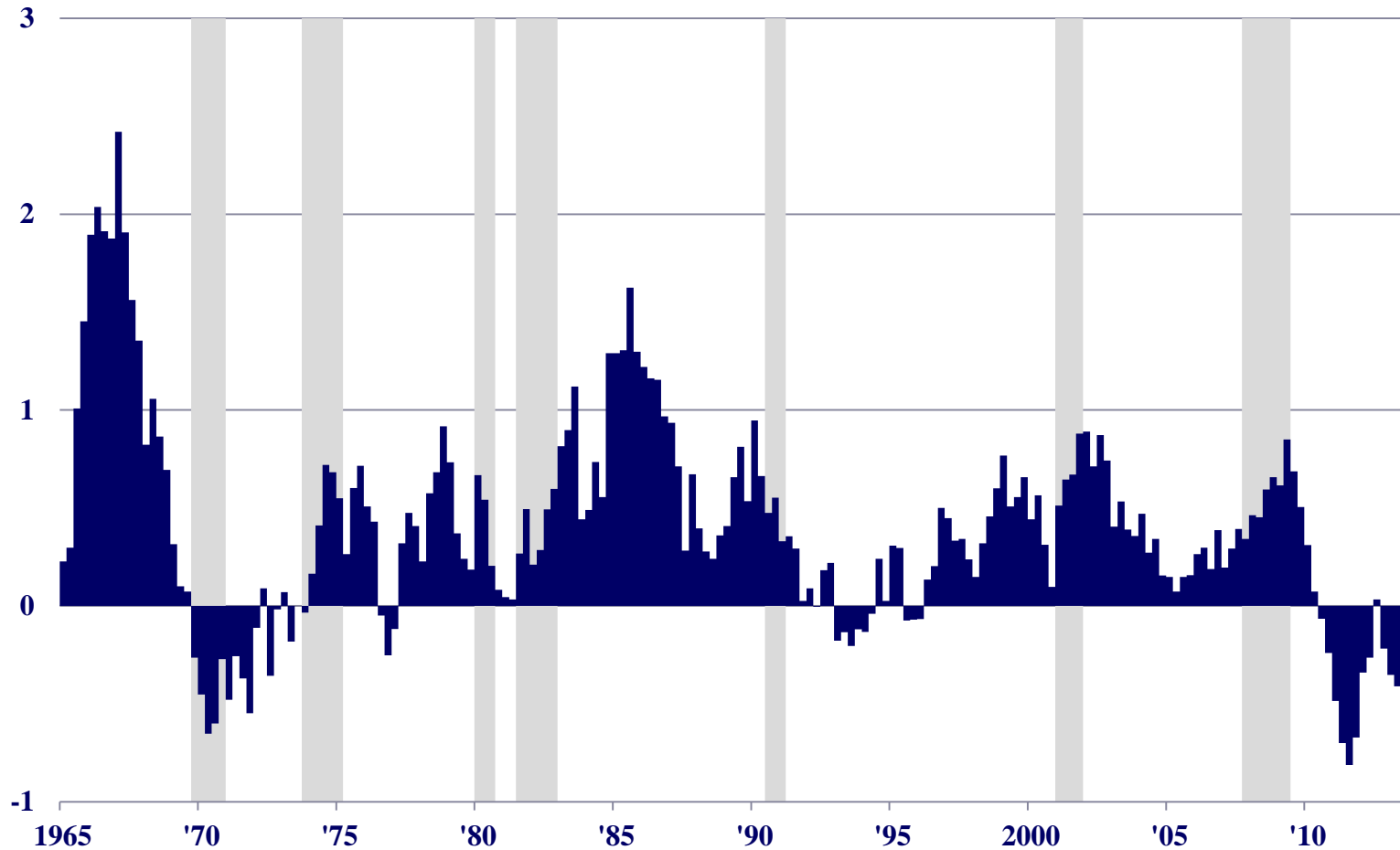


# Historically Unusual

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## Government Contributions to Real GDP Growth

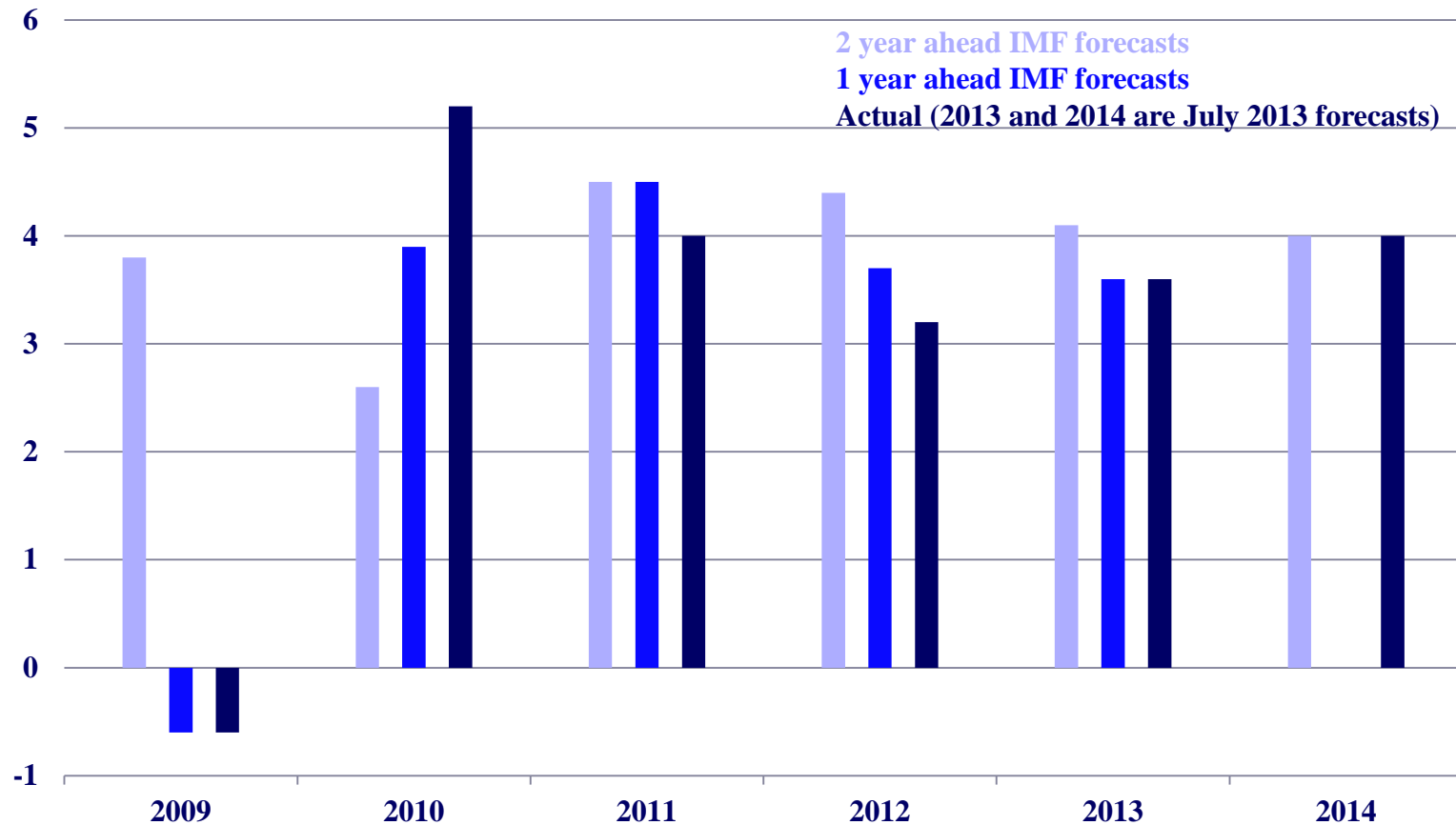
(percent)



# World Growth

## Real World GDP Growth

(4-quarter percent change)

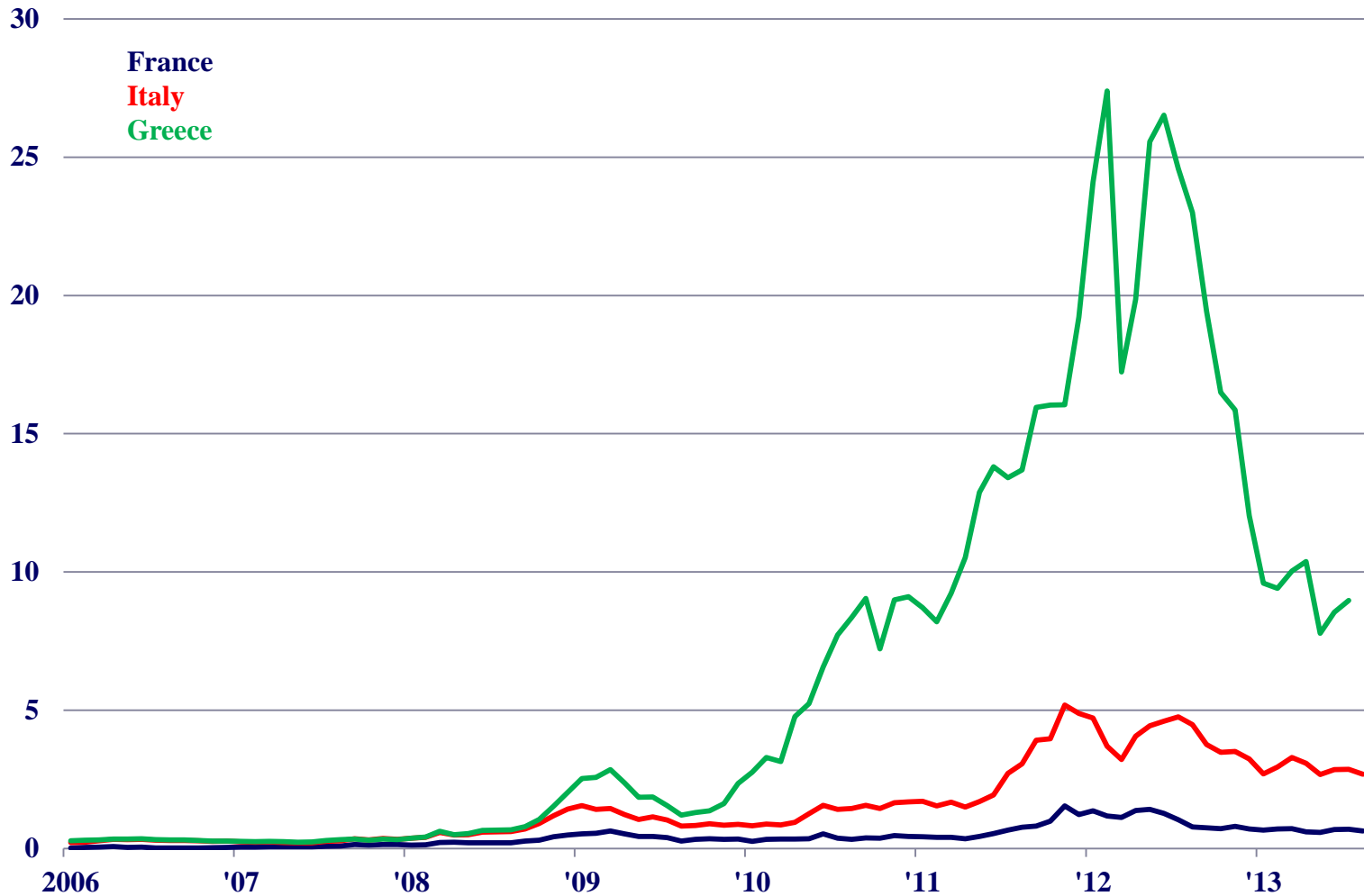


Source: International Monetary Fund April World Economic Outlooks except as noted

# European Sovereign Debt Spreads

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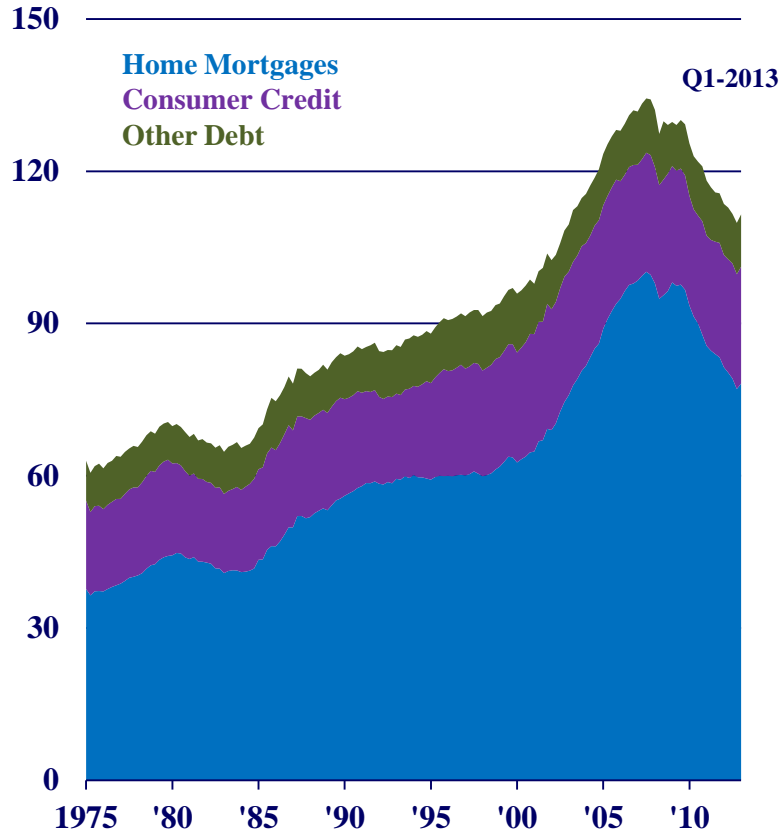
(spread to German long-term rates)



# Household Deleveraging

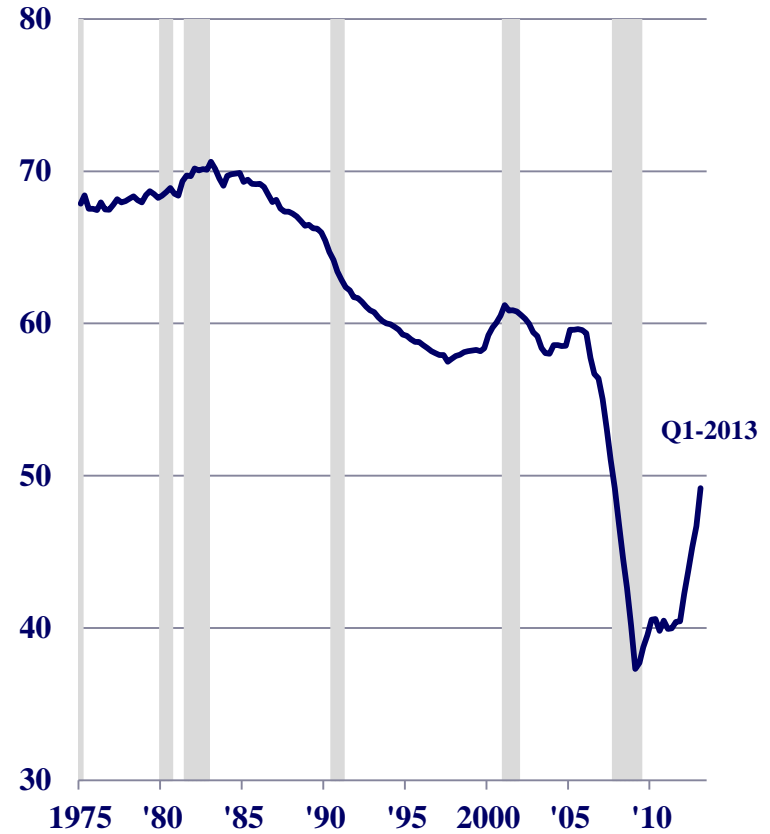
## Household Liabilities

(% of DPI)



## Owners' Equity

(% of household real estate)



# Volatility in Treasury Rates also Informs Economic Factors for Growth

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## Ten-Year Treasury Bond Yield

(percent)





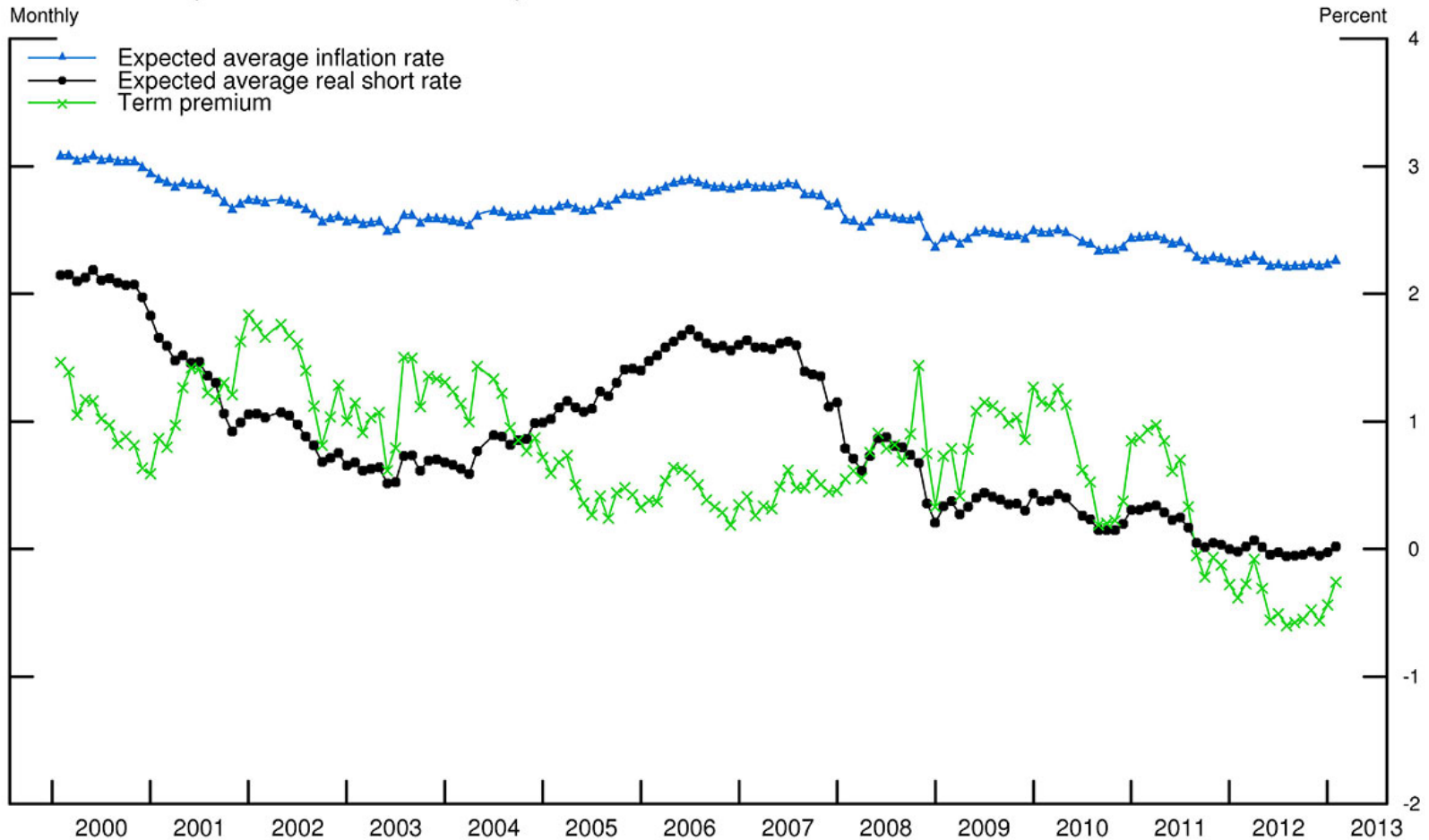
# LSAP Effects

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- **Wide range of estimates regarding the effect of LSAP on Treasury rates through**
  - Portfolio balance effect on term premia
  - Signaling effect on expected future short-term rates
- **Reasonable estimate is \$500 billion of LSAP worth about 25 bps on 10-year Treasury rates**

# 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.

Source: Ben Bernanke, "Long-Term Interest Rates," San Francisco, March 1, 2013

# Lessons from the 10-Year Treasury Rate

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- **Change in rates and term premia are larger than what can be explained by reasonable estimates of portfolio balance and forward guidance**
- **Many factors influenced 10-year Treasury rates**
  - Is it plausible that these and other factors had “no effect” on growth and inflation experience in U.S.? (importance of controls)
- **We need counterfactual accounting**
  - First class in Econ 101: supply and demand equilibrium
  - Second class in Econ 101: comparative statics

# Accounting for Growth: It Takes a Model

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- **Medium scale New Keynesian DSGE model**
- **Demand shocks: Discount factor, interest rate spread, net worth, “NIPA residual” (GOV+NX+CBI)**
- **Supply shocks: Neutral technology, investment specific technology, wage and price markups**
- **Policy shocks: Current target and forward guidance on the funds rate, inflation expectations**
- **Estimated using standard (Bayesian) methods**

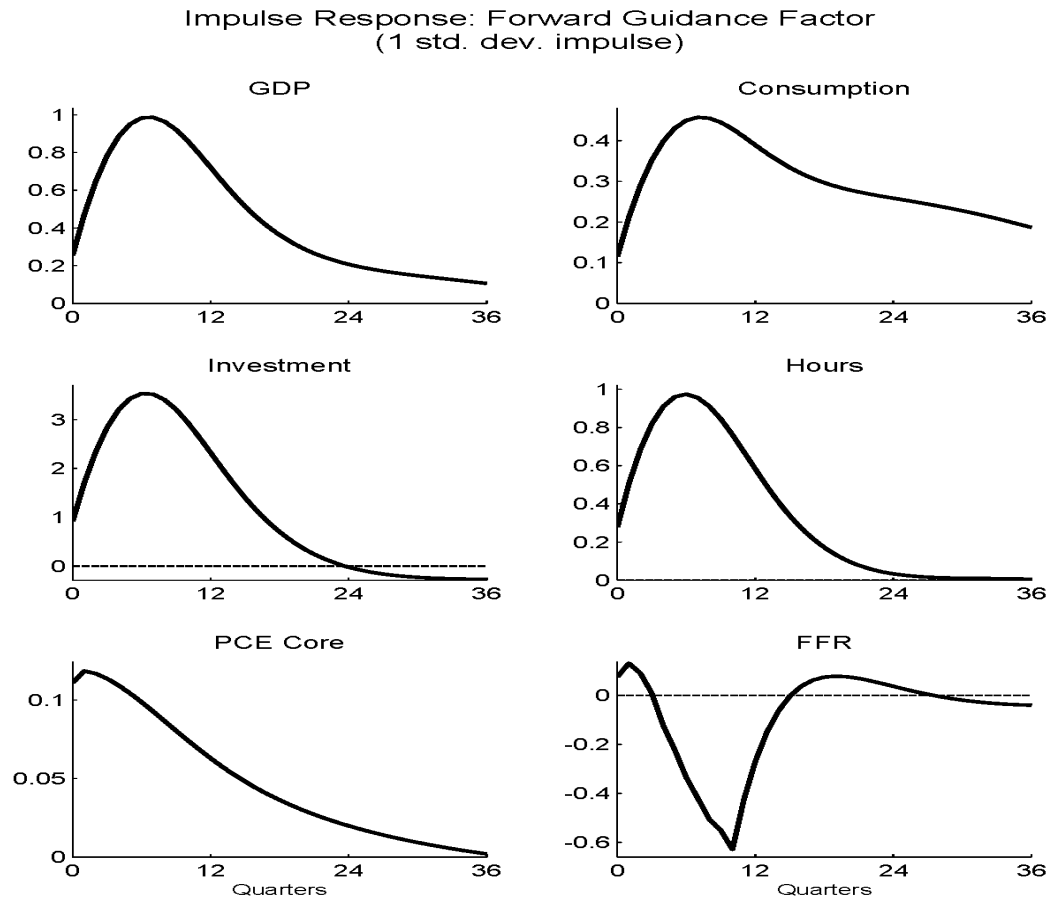
# Forward Guidance: Theory and Evidence

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- **Bedrock principle for Monetary Policy: lower rates support higher economic activity**
- **At the ZLB, does forward guidance lower rates and increase activity?**

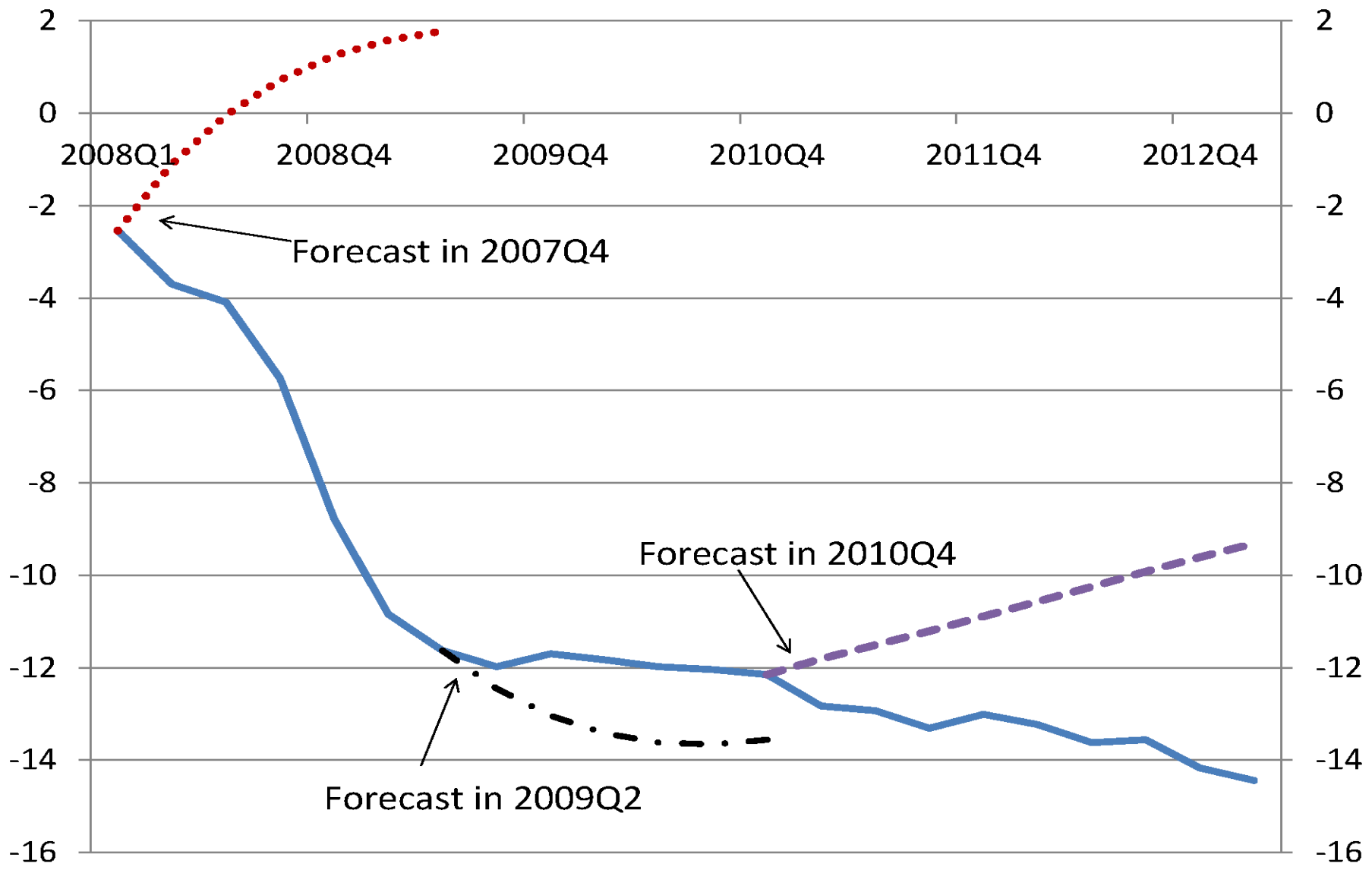
# Effects of Forward Guidance

Estimates from Chicago FED DSGE model



# DSGE Model Forecasts of GDP

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# 2008Q1-2009Q2: Great Recession

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	Conditional Forecast Error Decomposition		
	Demand	Policy	Total
GDP	-8.1	-3.2	-13.4
Consumption	-8.2	-1.5	-12.4
Core PCE Inflation	-5.4	1.2	-3.0
Federal funds rate	-7.9	1.2	-7.5

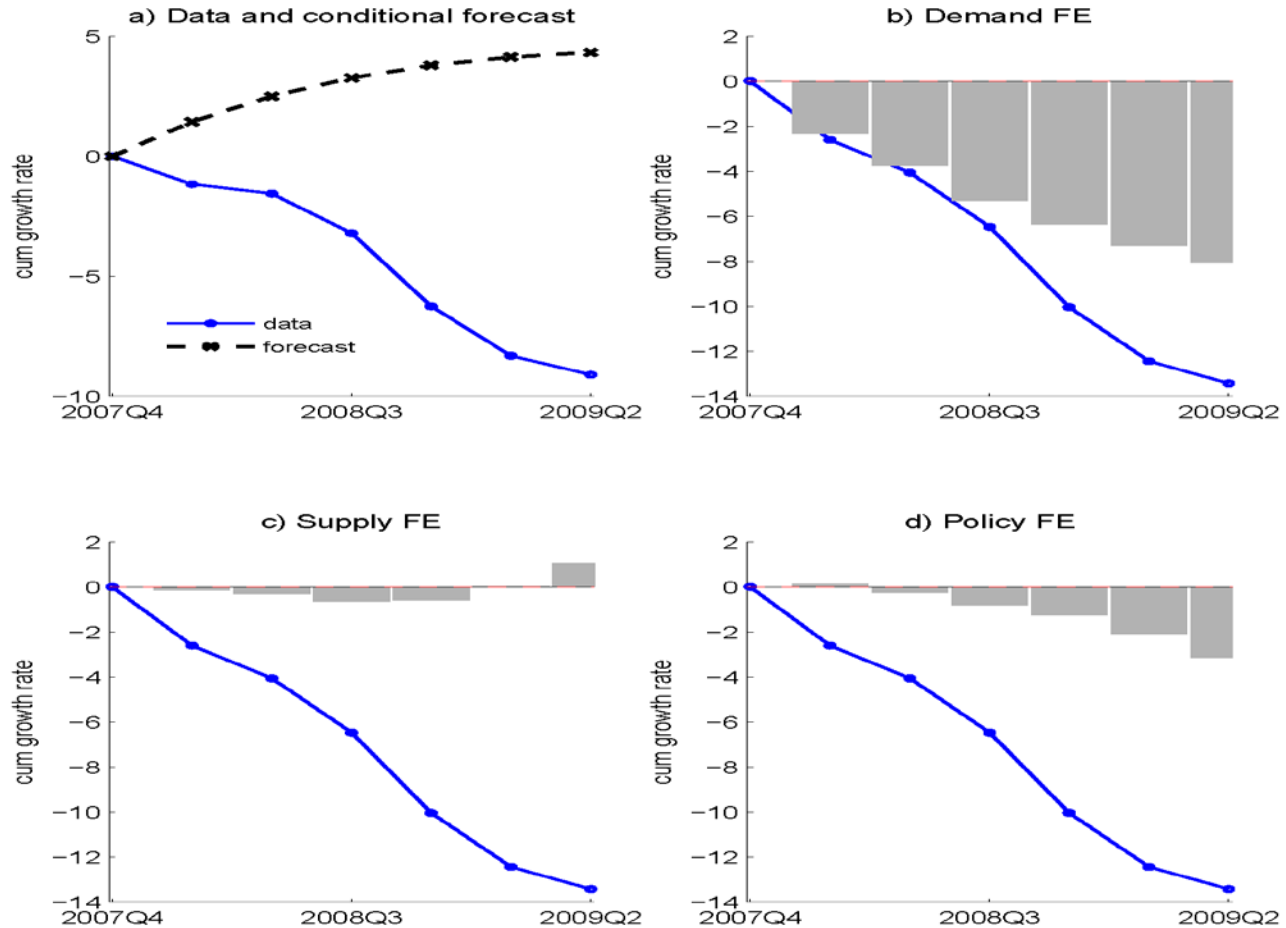
Percentage point errors in forecasts made in 2007:Q4 for the 2009:Q2: level of GDP and consumption; quarterly percent change (annual rate) in core PCE; quarterly-average federal funds rate.

- Severe downturn for all macro variables compared against expected solid growth for the period.
- Weak Demand drove downturn, particularly the discount factor/beta shock
- Contractionary target and FG policy shocks also a drag on GDP owing to ZLB.



# 2008Q1-2009Q2: Great Recession

GDP (per capita), Forecast Error and Decomposition  
Forecast sample: 2008Q1-2009Q2



Notes: In Panels b) through d) the total forecast error (FE) is given by the solid line, with grey bars corresponding to the contribution of each group. Forecast for cumulated sum of quarterly GDP growth rate, data as of 2007Q4.

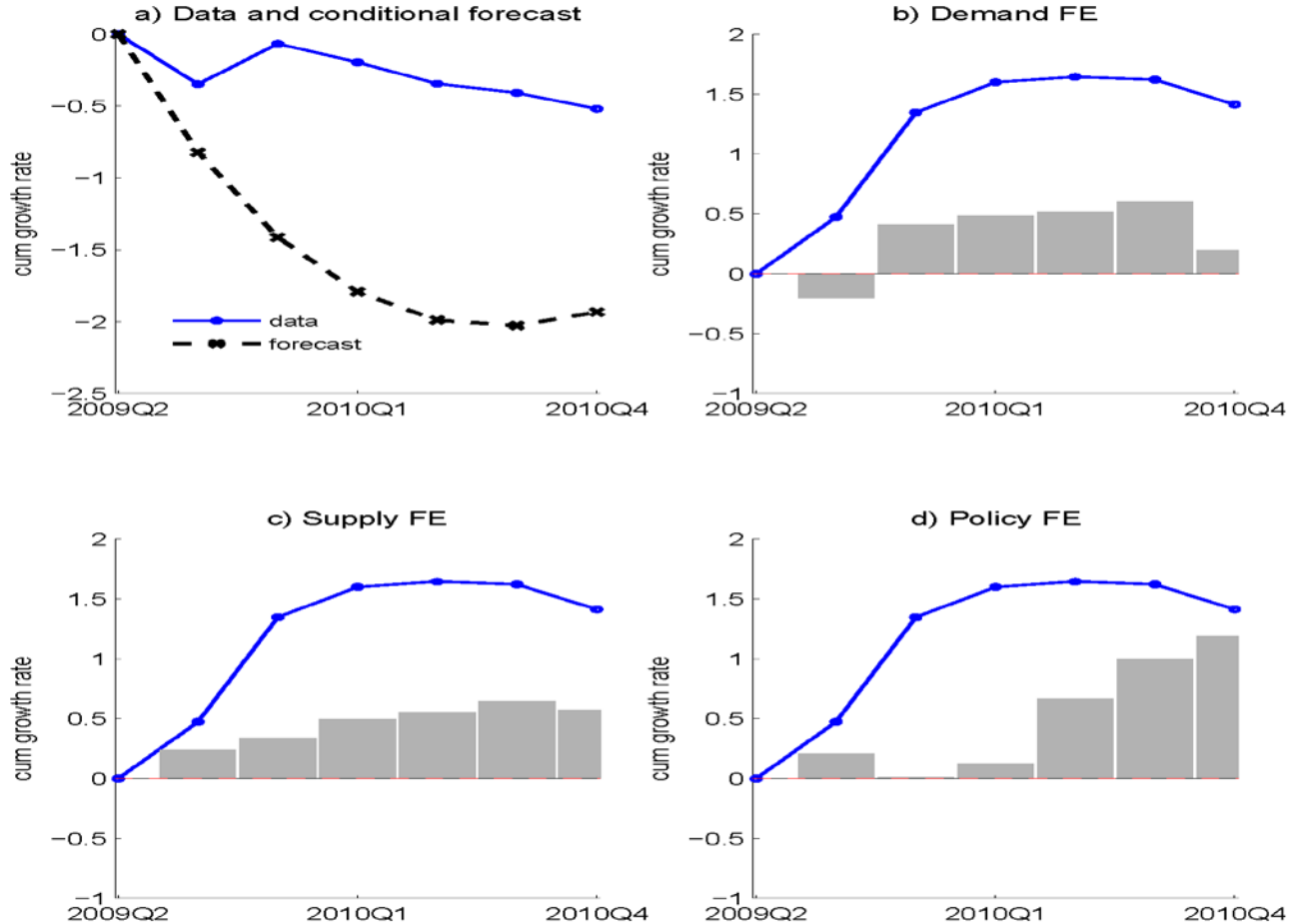
## 2009Q2-2010Q4: “Green Shoots”

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- **As of spring of 2009, the model forecast saw continuing decline, as follow-through from large previous shocks.**
- **Overall, GDP outperformed model forecast by 1.4 percentage points.**
- **Favorable forward guidance shocks accounted for 1.2 percentage points.**

# 2009Q2-2010Q4: “Green Shoots”

GDP (per capita), Forecast Error and Decomposition  
Forecast sample: 2009Q3-2010Q4



Notes: In Panels b) through d) the total forecast error (FE) is given by the solid line, with grey bars corresponding to the contribution of each group. Forecast for cumulated sum of quarterly GDP growth rate, data as of 2009Q2.

# 2011Q1-2013Q1: Massive Headwinds

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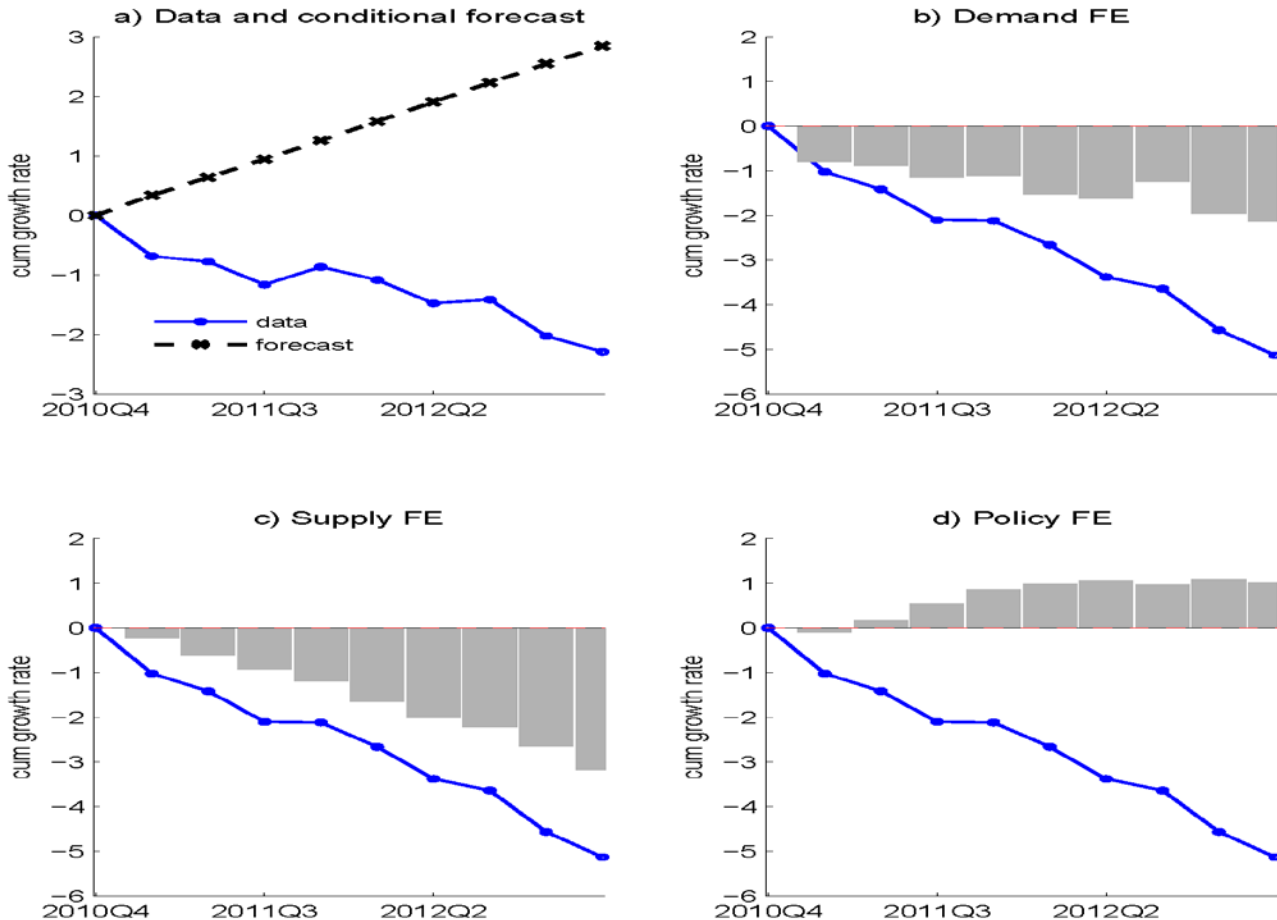
	Conditional Forecast Error Decomposition		
	Demand	Policy	Total
GDP	-2.1	1.0	-5.1
Consumption	0.9	0.4	-0.6
Core PCE Inflation	-0.8	0.4	0.6
Federal funds rate	-1.6	-0.2	-1.1

Percentage point errors in forecasts made in 2010:Q4 for the 2013:Q1: level of GDP and consumption; quarterly percent change (annual rate) in core PCE; quarterly-average federal funds rate.

- Model forecast more robust recovery; but output actually fell relative to trend.
- Adverse demand and supply shocks contribute substantially to weak GDP.
- Principle demand shock was model NIPA residual (GOV+NX+CBI).
- Policy shocks offset 1 percentage point of adverse shocks; but past policy shocks also provided uplift for conditional forecast.

# 2011Q1-2013Q1: Massive Headwinds

GDP (per capita), Forecast Error and Decomposition  
Forecast sample: 2011Q1-2013Q1



Notes: In Panels b) through d) the total forecast error (FE) is given by the solid line, with grey bars corresponding to the contribution of each group. Forecast for cummulated sum of quarterly GDP growth rate, data as of 2010Q4.

## Section 3.

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# **Monetary Policy, Financial Stability and Macro-Prudential policies**

# MP and Financial Stability: Mandates and Tools

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- **Tensions from low interest rates**
  - Appropriate MP accommodation at ZLB
  - Incentivize additional risk-taking: cross-current
- **Degrading MP tools to mitigate Financial Instability risks would lead to inflation below target and additional resource slack.**
- **In order to avoid excess risk-taking, use combination of Supervisory oversight, macro-prudential tools (separate from MP tools), and Market Discipline**