
Economic Outlook and Monetary Policy

Global Interdependence Center and Financial Planning Association
Sarasota, FL
February 17, 2017

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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 or the Federal Reserve System.

The Fed Has A Dual Mandate

■ Full employment

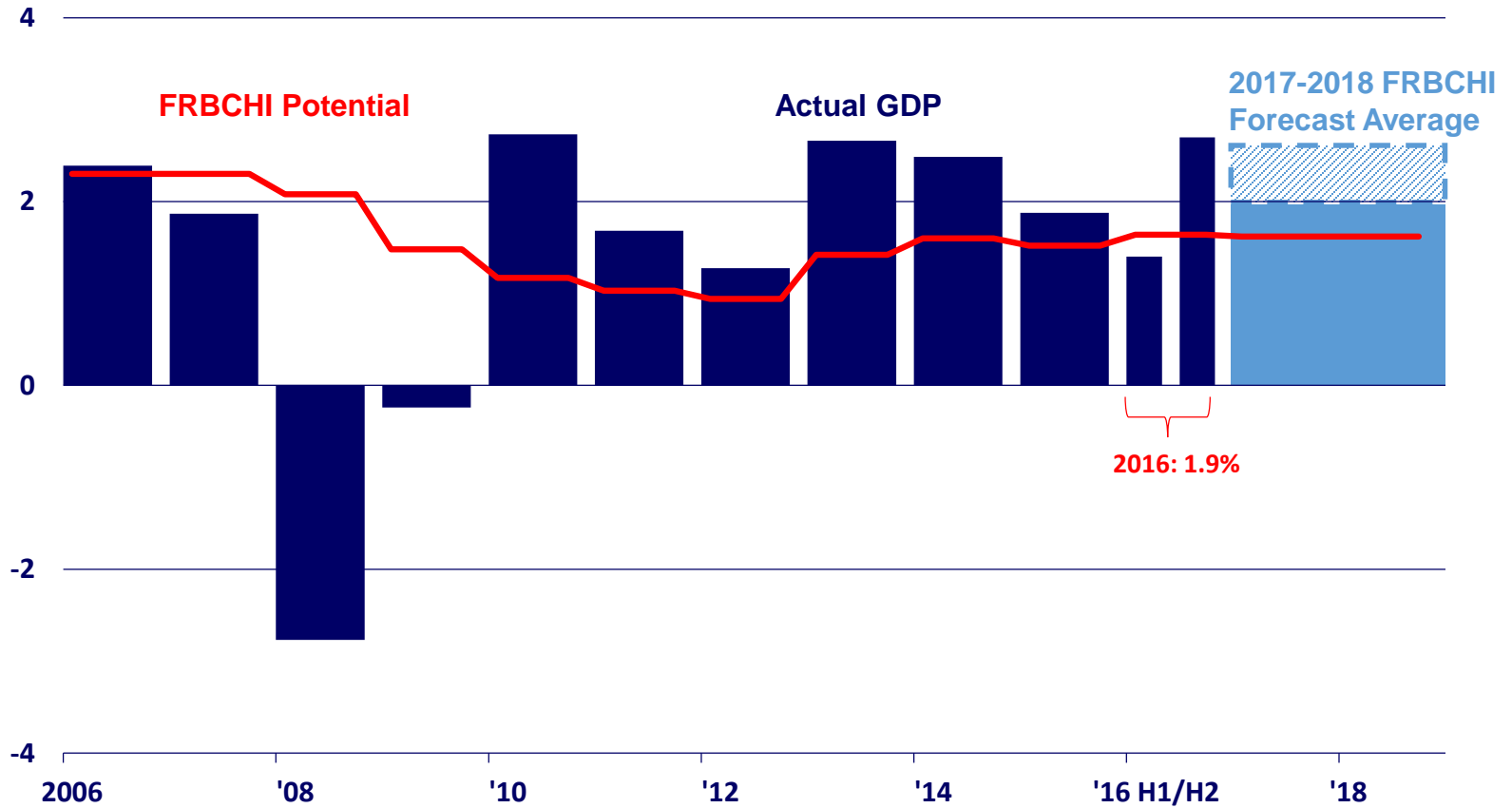
- (Rough) Meaning: Unemployment near its (time-varying) natural rate
 - with due allowance for other measures of slack
- Current state: Likely very close to -- but perhaps not quite at -- full employment

■ Stable prices

- (Exact) Meaning: Inflation as measured by PCE price index symmetrically near 2% over the medium term
- Current state: Making progress, but continuing to fall short of target

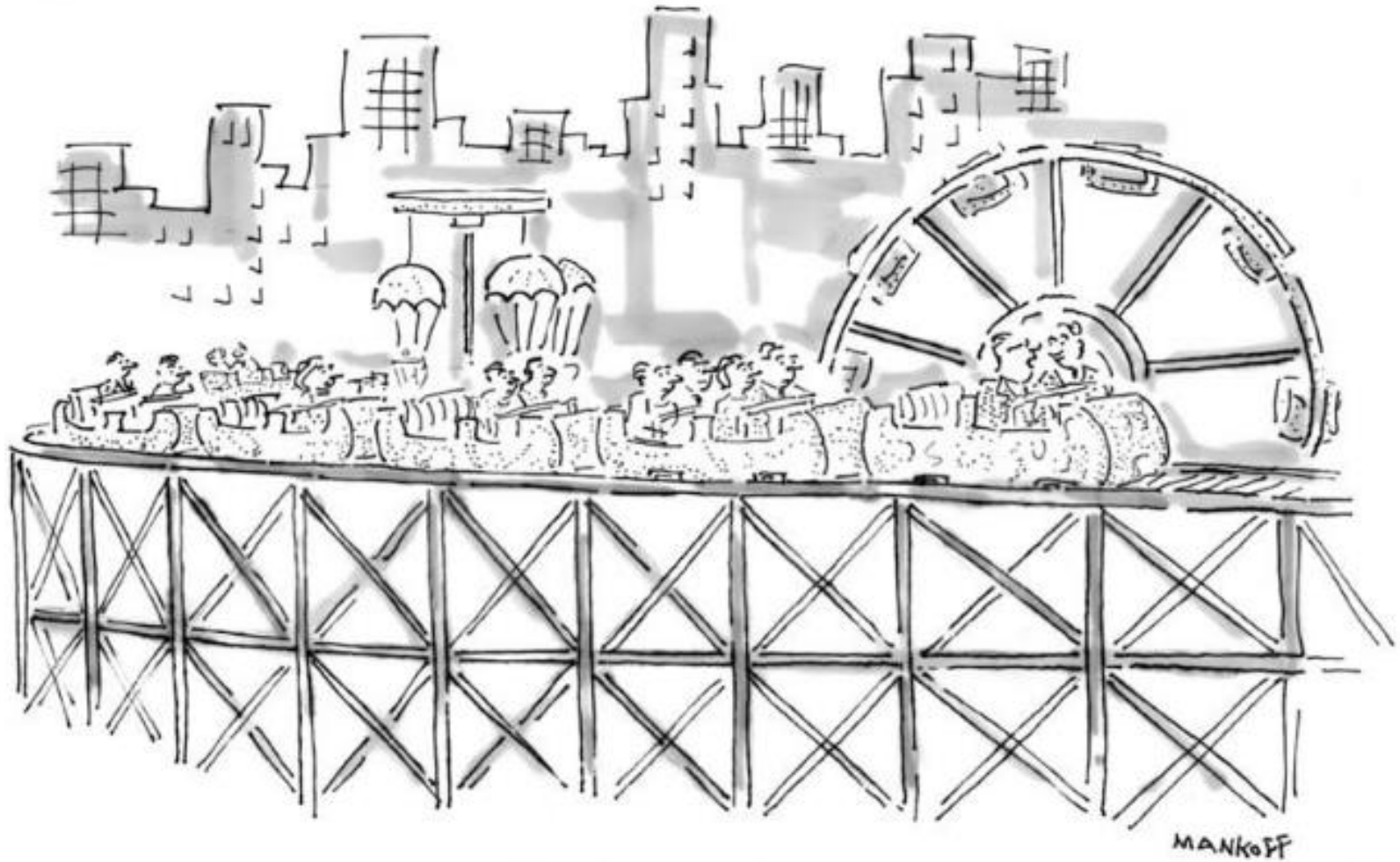
Continued Moderate GDP Growth

Real GDP Growth (Q4/Q4 percent change)



* Source: Data from the Bureau of Economic Analysis, accessed via Haver Analytics, and FRBCHI staff estimates.

Fed Nirvana?: Steady, Boring Growth



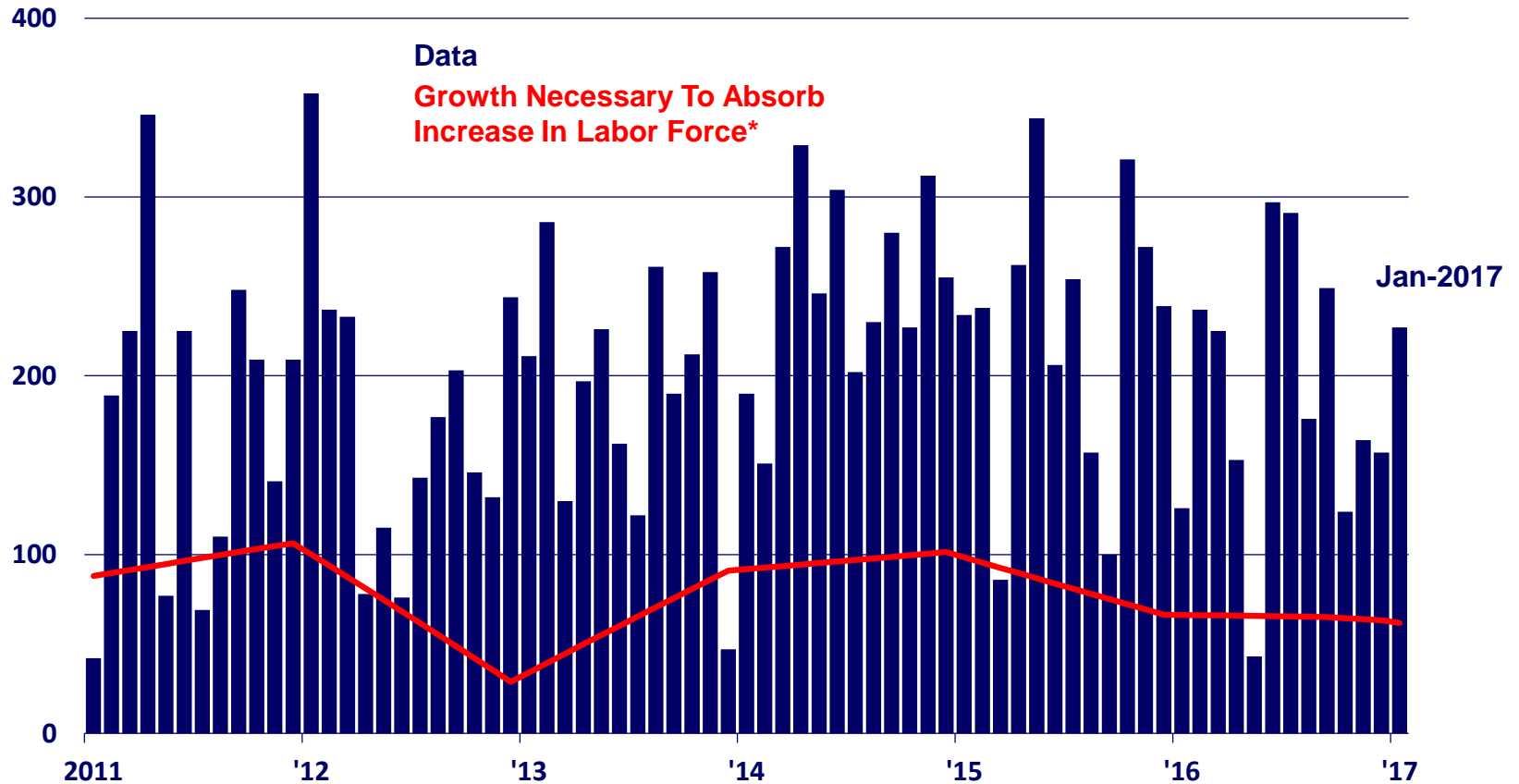
“Personally, I liked this roller coaster better before the Federal Reserve System got hold of it.”

Recent Spending Data

- **Consumption: Solid Growth**
- **Home building: Continuing modest uptrend**
- **Business investment: Now showing modest increases**
 - But that's an improvement over 2016:Q1-Q3
- **Net exports: Higher dollar will continue to slow exports**
- **Adds up to moderate growth this quarter and likely the next several quarters**

Employment Growth Remains Robust

Nonfarm Payroll Employment (change, thousands)

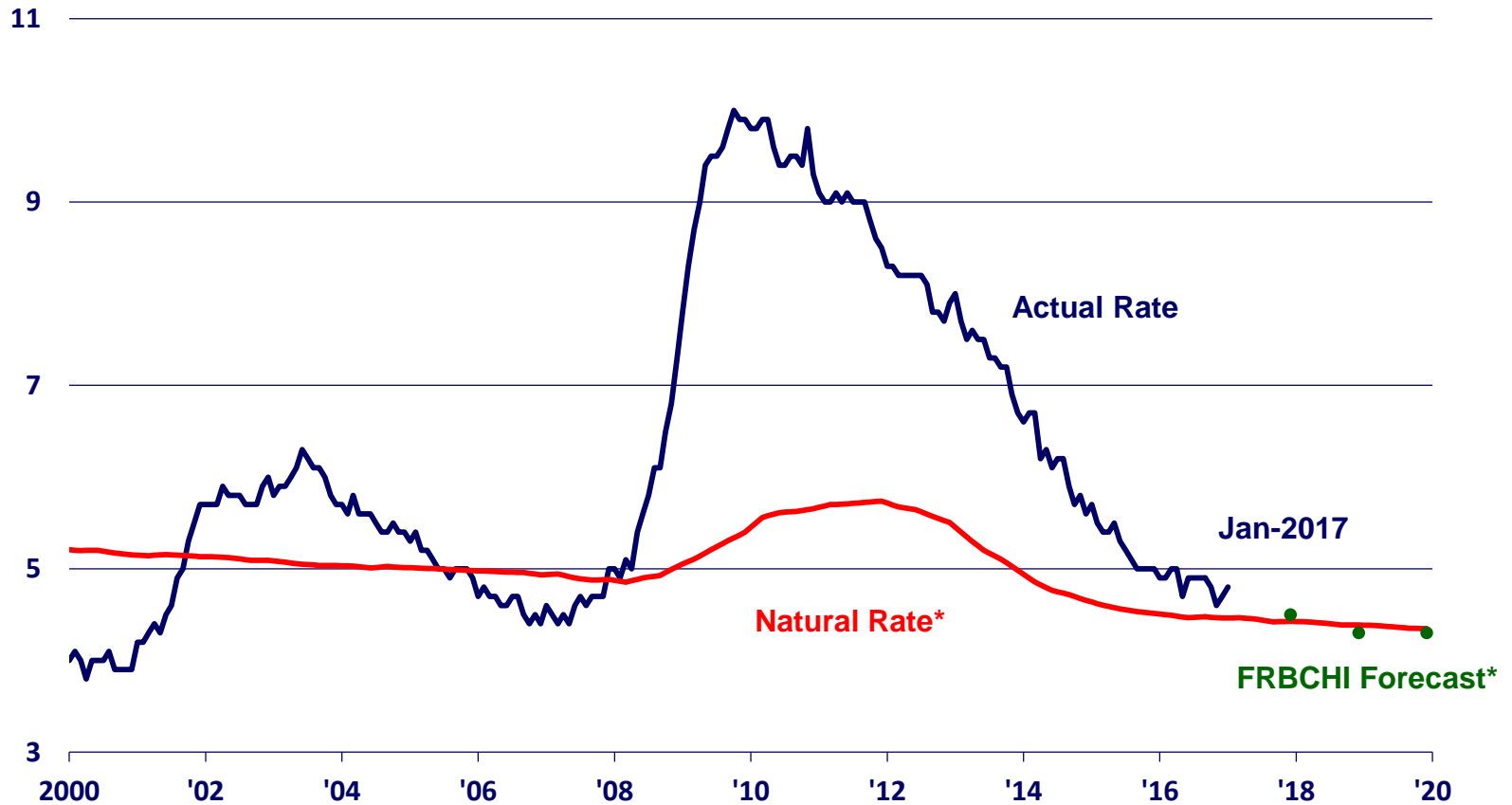


Source: Data from the Bureau of Labor Statistics, accessed via Haver analytics.

* Data based on Chicago Fed Letter, "Is There Still Slack in the Labor Market?", by Daniel Aaronson, Scott A. Brave, and David Kelly.

Unemployment Likely Very Near Natural Rate

Unemployment Rate (percent)



Source: Data from the Bureau of Labor Statistics, accessed via Haver Analytics.

* Natural rate and forecasts taken from FRBCHI staff estimates.

Time To Take Away The Punch Bowl?

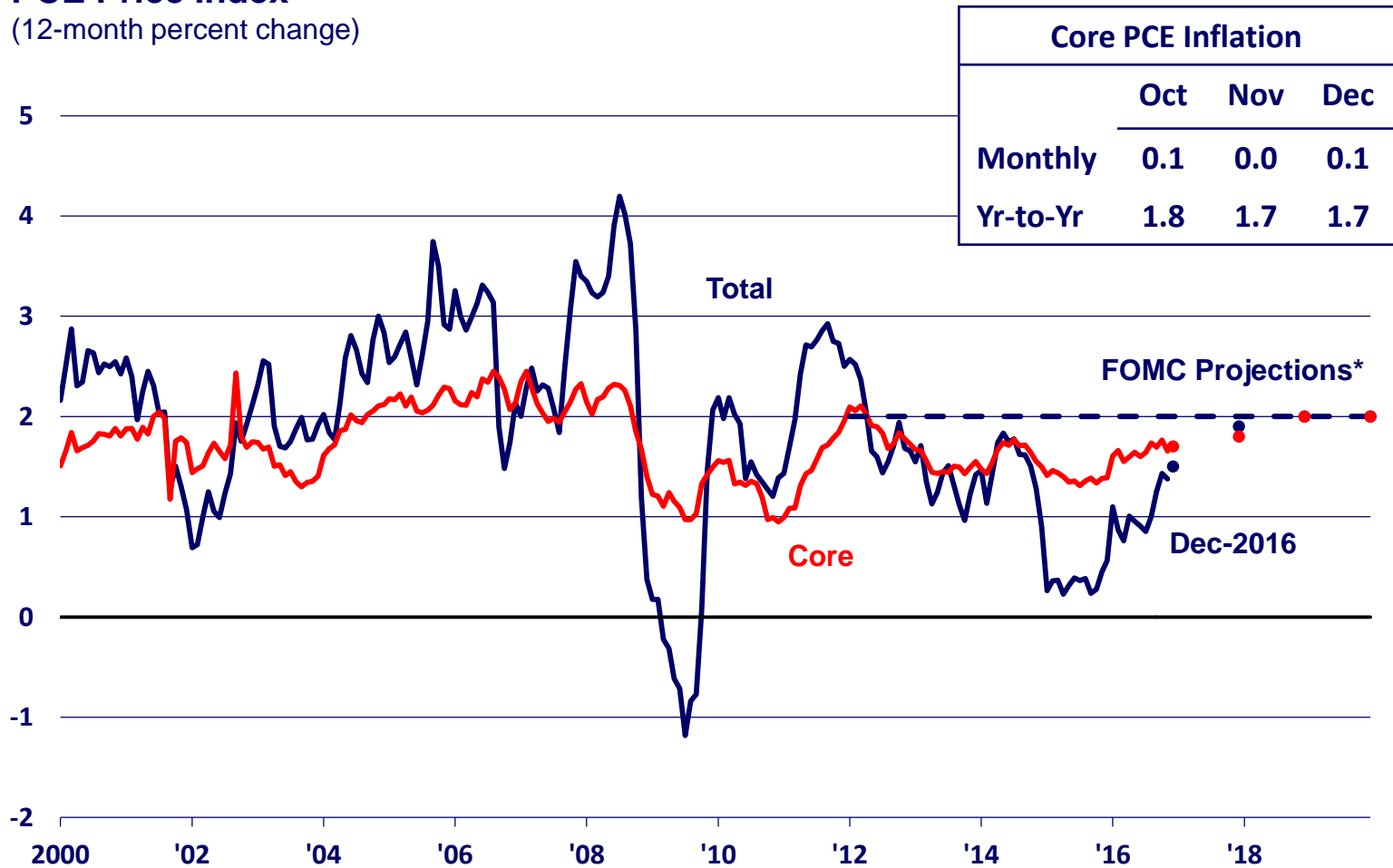


- **“The Federal Reserve’s role is to take away the punch bowl just as the party gets going”**
 - William McChesney Martin
- **Reasons to remove the punch bowl only gradually**
 - Uncertainty about whether we are truly at full employment
 - Inflation has been stubbornly low for a while; let’s not declare victory prematurely
 - Prudent risk management

Inflation Projected To Hit Target Soon

PCE Price Index

(12-month percent change)



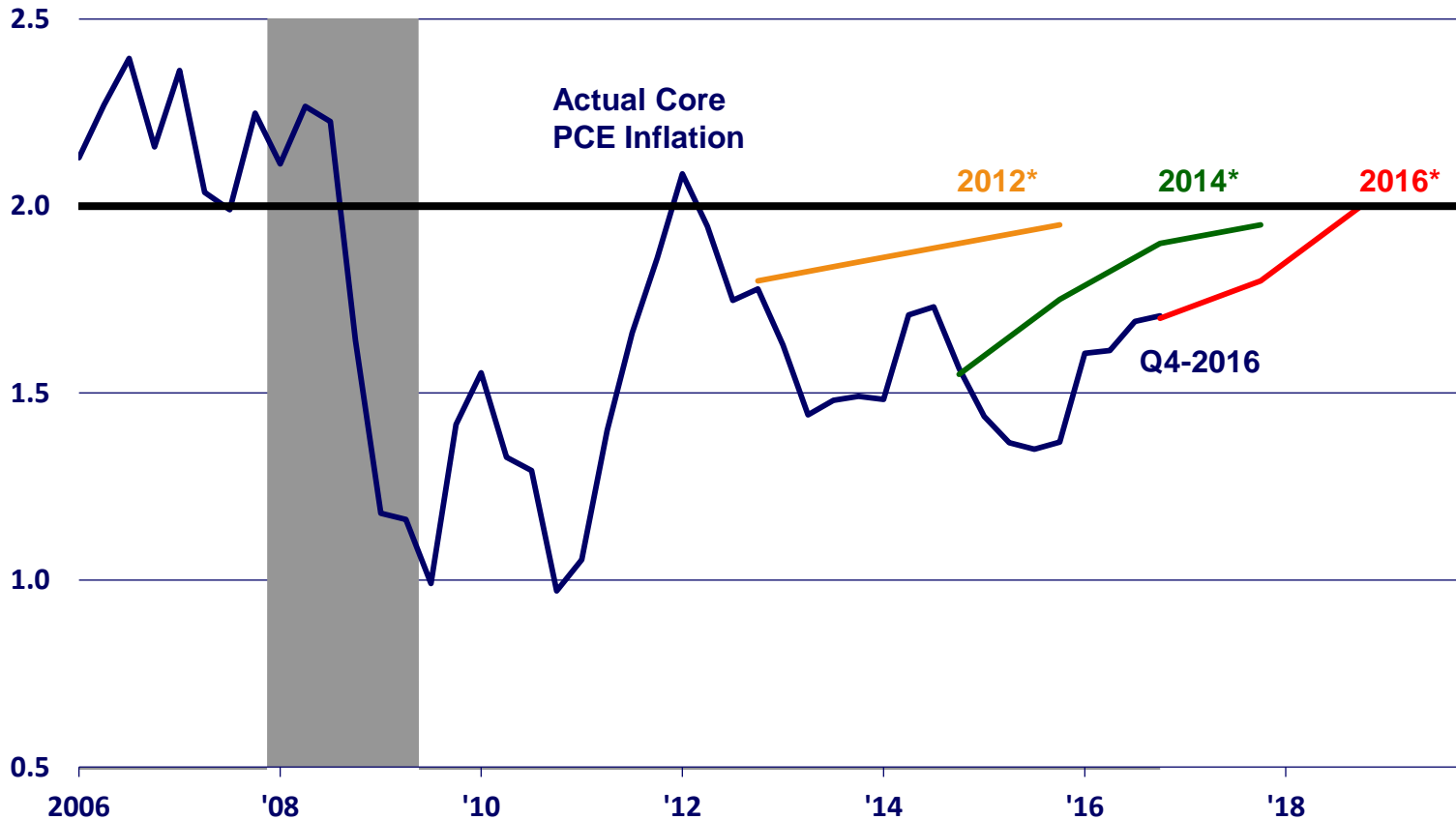
Source: Data from the Bureau of Economic Analysis, accessed via Haver Analytics.

* FOMC projections are the median values of the FOMC participants' forecasts for core PCE inflation as reported in the December 14, 2016 Summary of Economic Projections.

But We've Been Disappointed Before

Core PCE Inflation and Projections Over the Years

(year-over-year percent change)

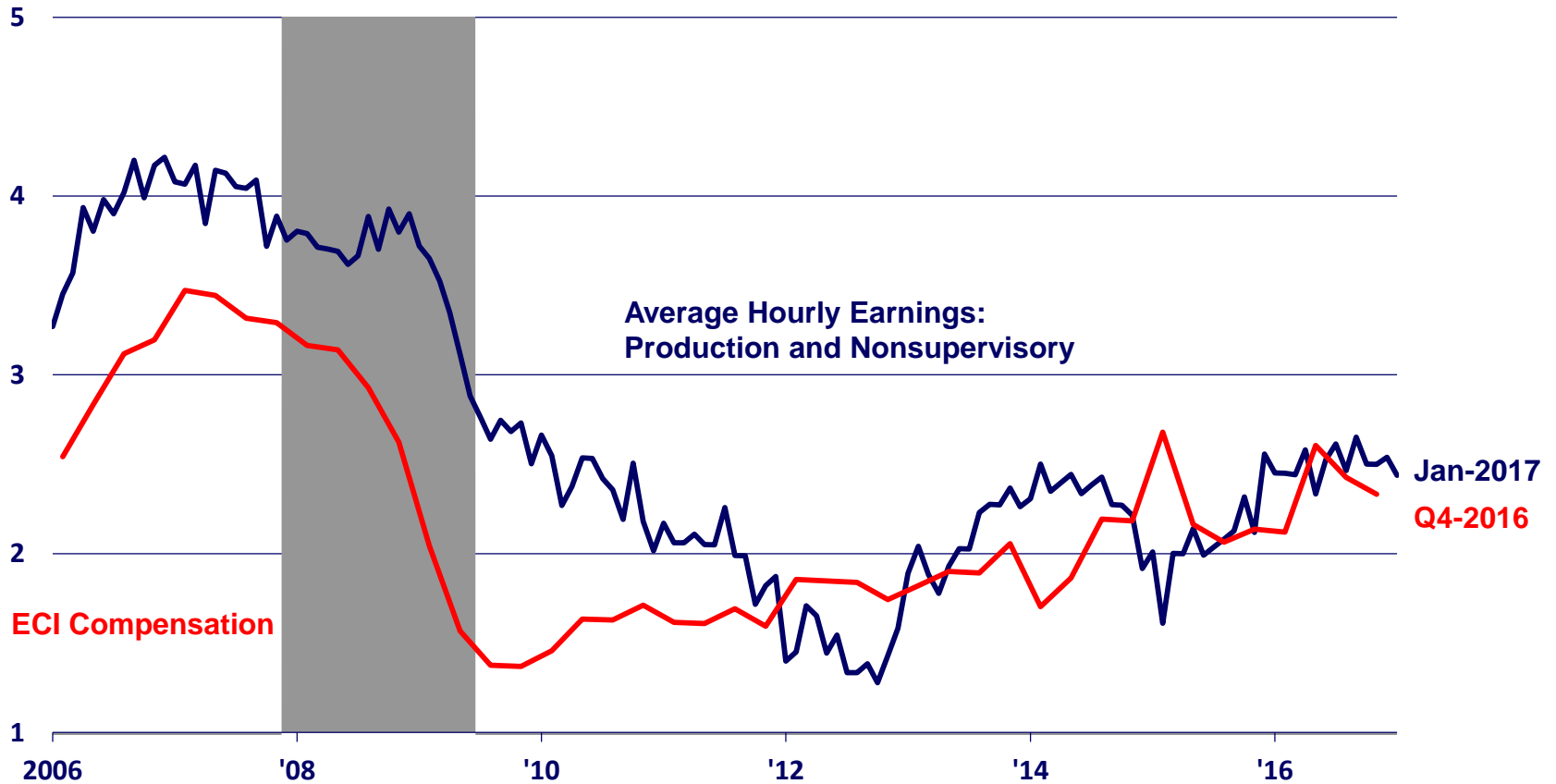


Source: Data from the Bureau of Economic Analysis, accessed via Haver Analytics.

* Projections are the median values from the September releases of the Summary of Economic Projections of the Federal Open Market Committee for every other year from 2012 to 2016.

Wage Growth Still Somewhat Slow

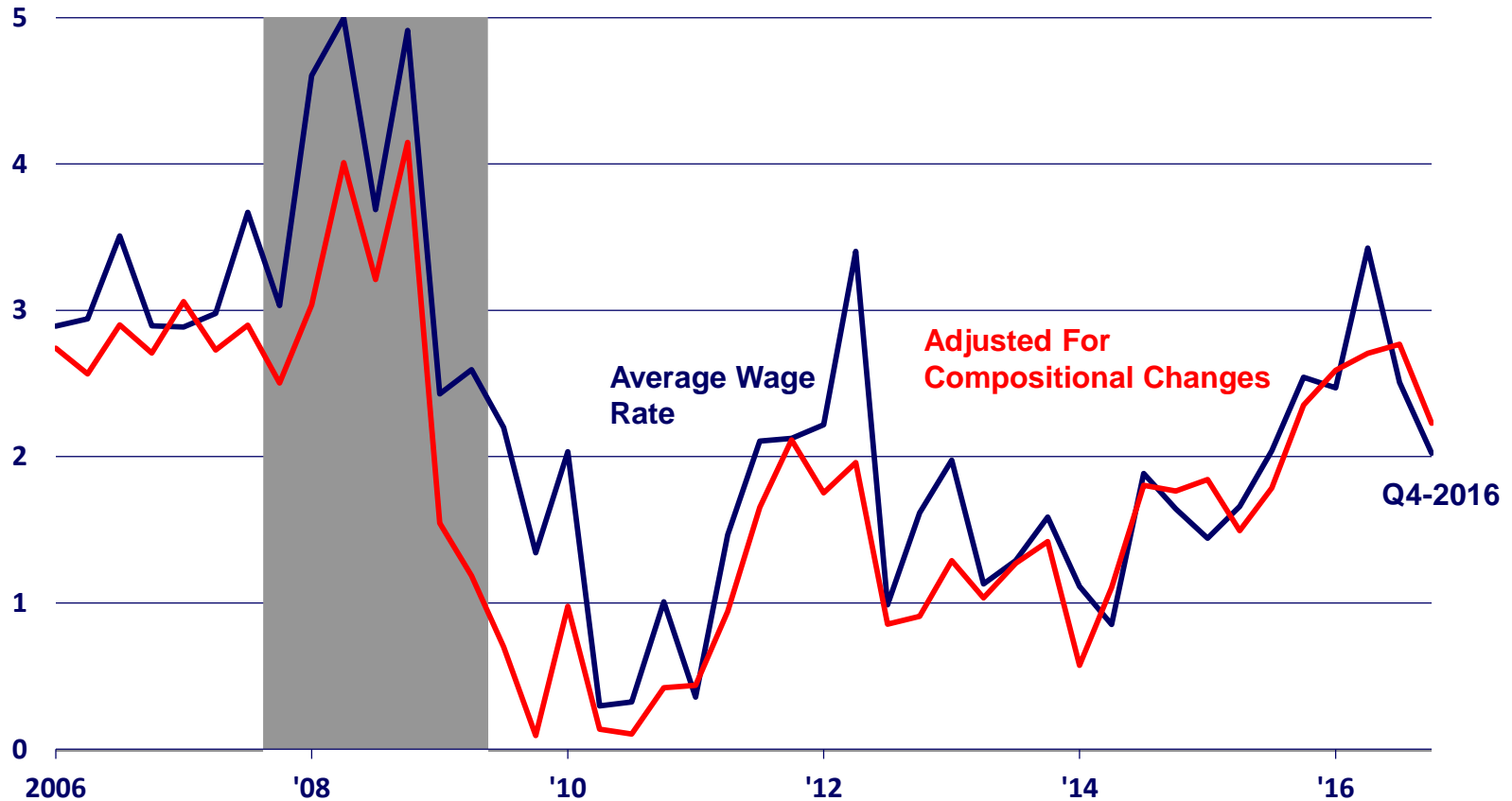
Nominal 12-Month or 4-Qtr Wage Growth
(percent)



Source: Data from the Bureau of Labor Statistics, accessed via Haver Analytics.

Workers Reporting Higher Wage Rates

4-Qtr Growth in Average Reported Wage Rate in Current Population Survey
(percent)



Source: Data based on Chicago Fed Economic Perspectives paper, "Growth in Work Quality", by Dan Aaronson and Dan Sullivan. Utilizing CPS data, the average wage rate is predicted using individual characteristics (e.g., education). The adjusted wage rate is the difference between individuals' actual and predicted wages.

Post-Election Financial Developments

S&P 500

(Index: Nov. 8, 2016 = 100)



Source: Data from the New York Times, accessed via Haver Analytics.

10 Year Treasury Rate

(percent)



Source: Data from the U.S. Treasury, accessed via Haver Analytics.

Post-Election Financial Developments

Broad Trade-Weighted Dollar

(Index: Jan-97=100)



Source: Data from the Board of Governors of the Federal Reserve System, accessed via Haver Analytics.

CPI Inflation Compensation Embedded in TIPS

(percent)

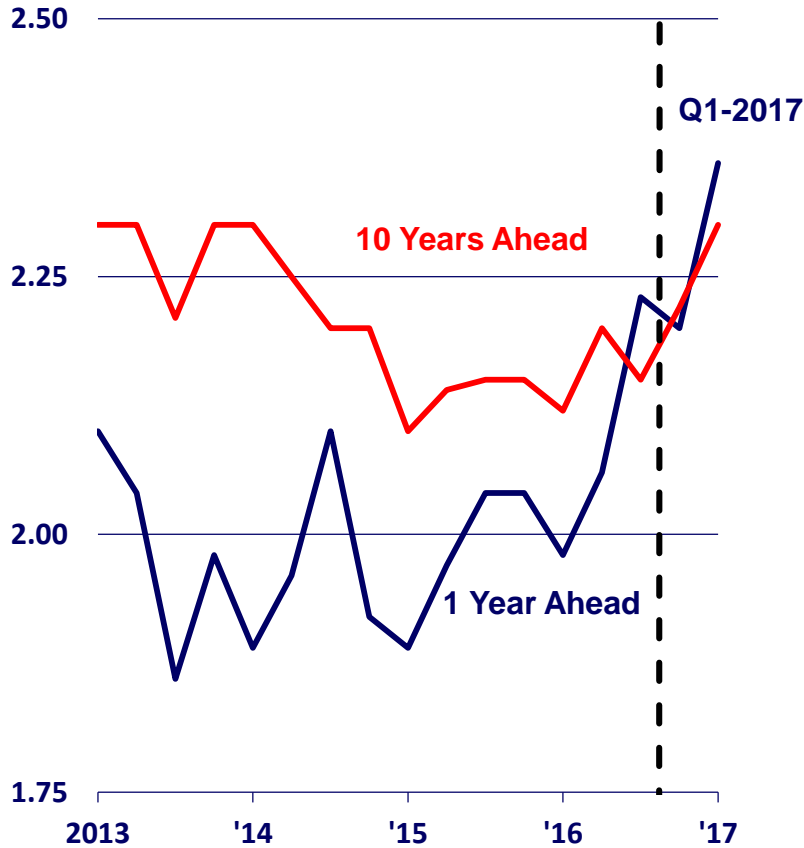


Source: Data based on "The U.S. Treasury Curve: 1961 to the Present" and "The TIPS Yield Curve and Inflation Compensation" (Gurkaynak, Sack, and Wright), accessed via Haver Analytics.

Inflation Expectations Recovering

**Survey of Professional Forecasters:
CPI Inflation**

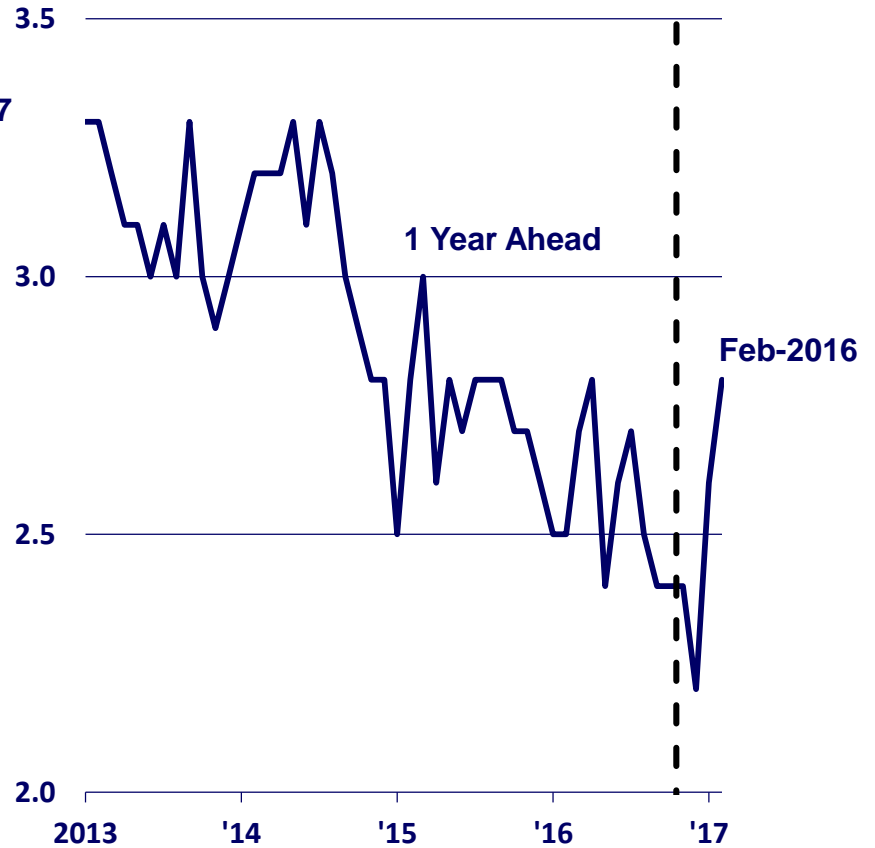
(percent)



Source: Data from the Federal Reserve Bank of Philadelphia, accessed via Haver Analytics.

**University of Michigan Median
Inflation Expectations**

(percent)

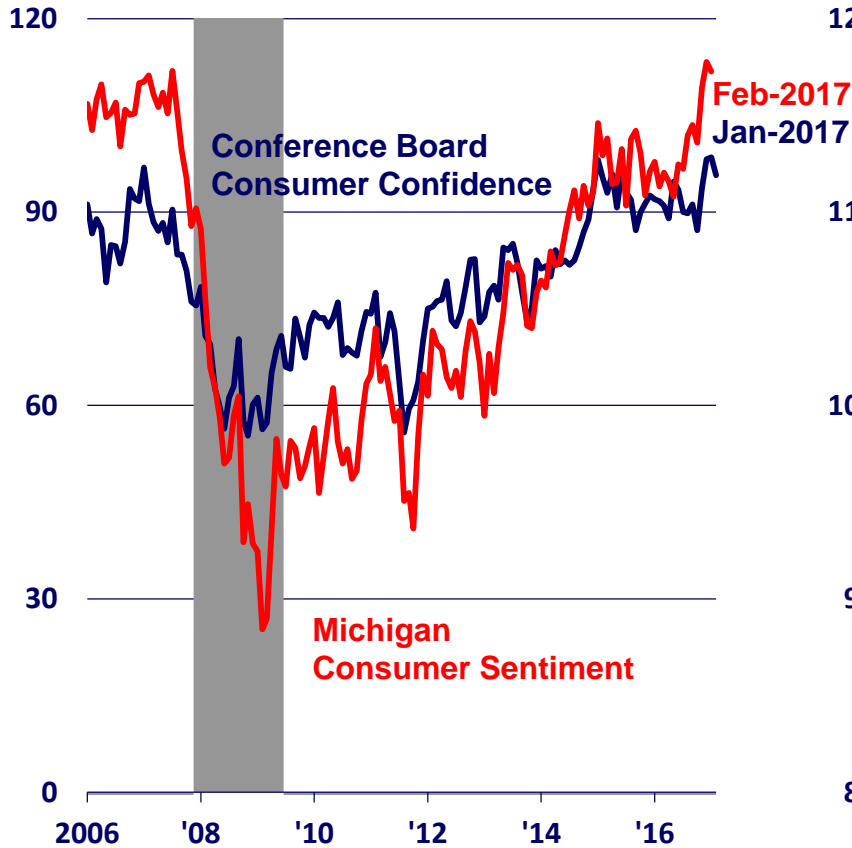


Source: Data from the University of Michigan Surveys of Consumers.

Greater Consumer and Small Business Optimism

Indices of Overall Consumer Sentiment

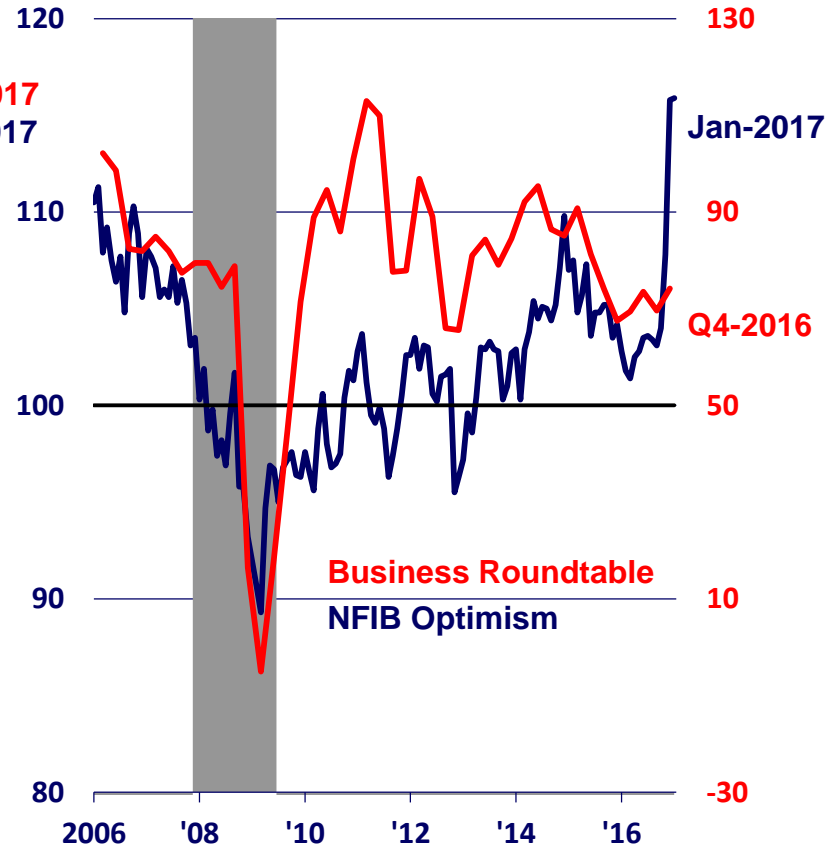
(Michigan: Q1-1966=100; Conference Board: 1985=100)



Source: Data from the University of Michigan Surveys of Consumers and The Conference Board, accessed via Haver Analytics.

NFIB Optimism and Business Roundtable Indexes

(NFIB: 1986=100; CEO: 50+ = Expansion)

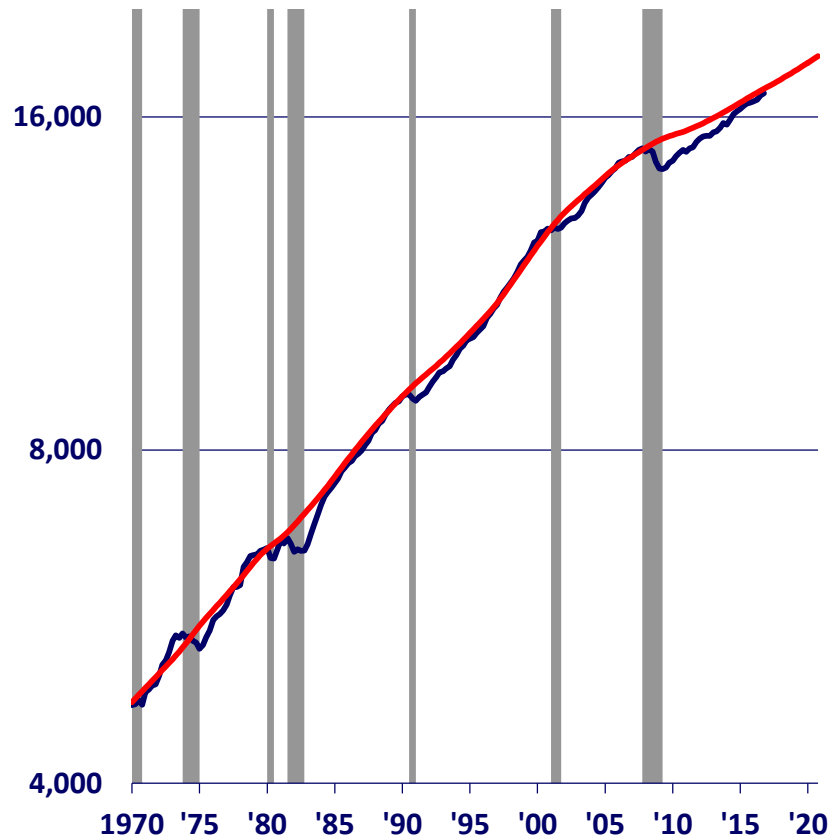


Source: Data from the National Federation of Independent Business and Business Roundtable, accessed via Haver Analytics.

Economy Close To Potential By Most Estimates

Real and Potential GDP

(Bil. Chained 2009 Dollars, SAAR)



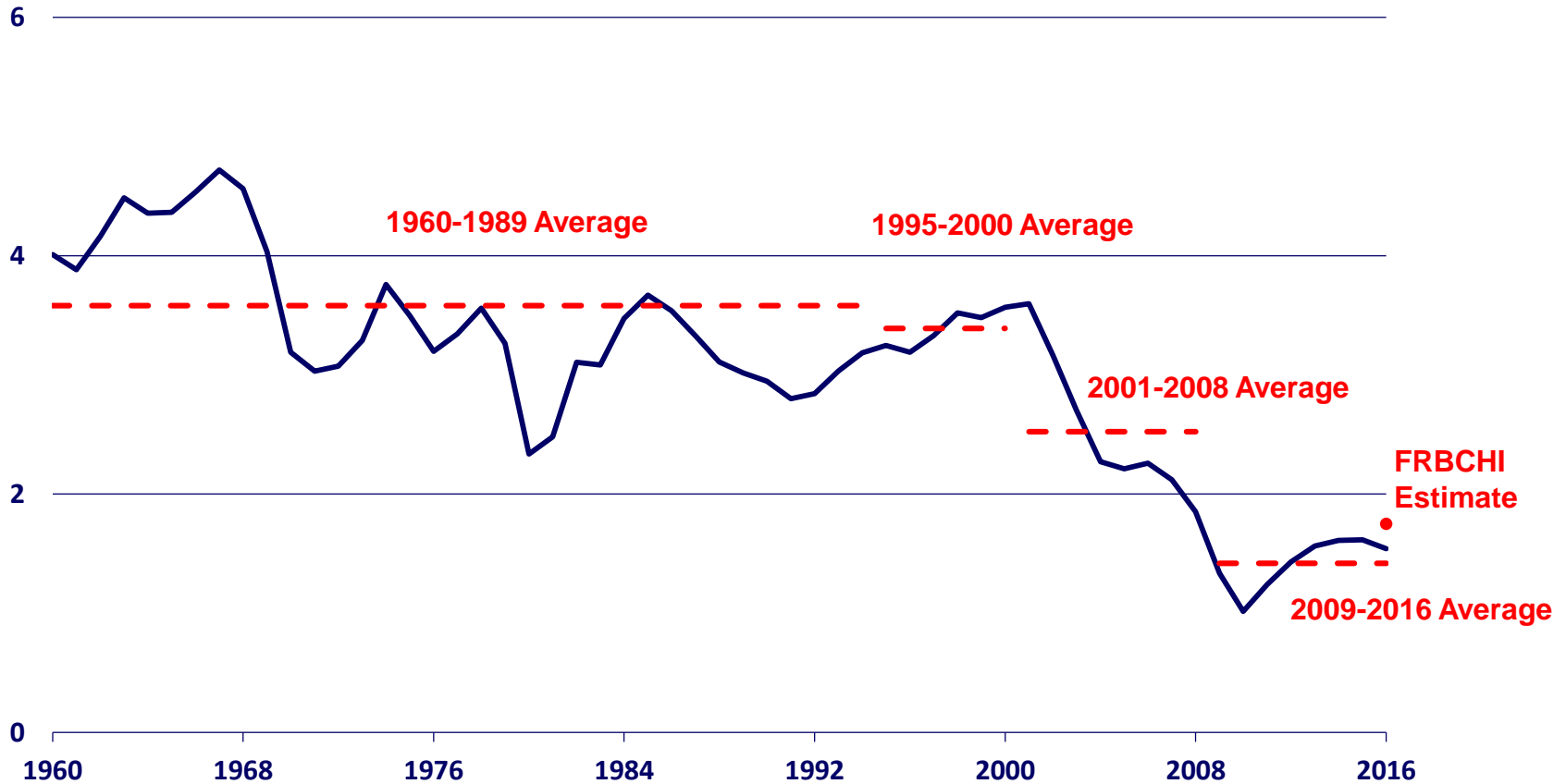
- **If estimates are correct, fiscal or other stimulus can only boost GDP temporarily ...**
 - And would likely be inflationary
- **... Unless it raises potential**
 - Increase available workers
 - Or make them more productive
 - Possible, but not easy

Source: Data from the Bureau of Economic Analysis and the Congressional Budget Office, accessed via Haver Analytics.

Slower Potential GDP Growth Rate

CBO Potential Real GDP

(Q4/Q4 percentage change)



Source: Data from the Bureau of Economic Analysis and the Congressional Budget Office, accessed via Haver Analytics.

Estimates Of Potential Growth Have Fallen

- **Slower population growth and declining labor force participation imply slower growth in available workers**
- **Slower growth in capital investment and disappointing total factor productivity growth imply slower labor productivity growth**
- **Both could be affected by fiscal and regulatory changes**
 - But big increases are not easy to achieve

Trend Growth In	1995-2000*	2009-2016**
Available Workers	1.2	0.5
Labor Productivity	2.6	0.9
GDP	3.8	1.4

* Source: CBO

** Source: FRBCHI staff estimates

Long-term Decline in Labor Force Participation

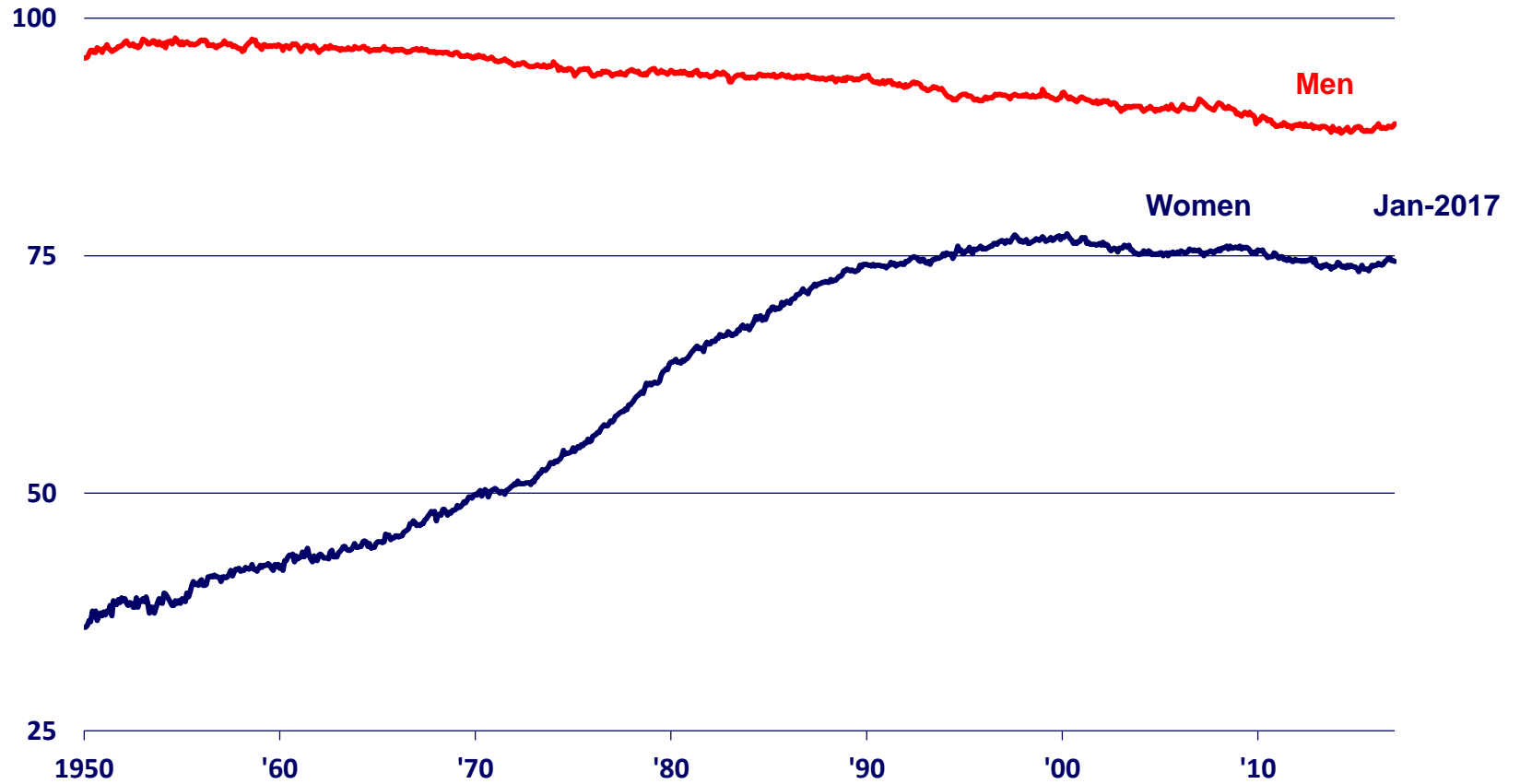


Source: Data from the Bureau of Labor Statistics, accessed via Haver Analytics.

* FRBCHI staff estimates.

Labor Force Participation

Participation Rates for Ages 25 to 54 (percent)

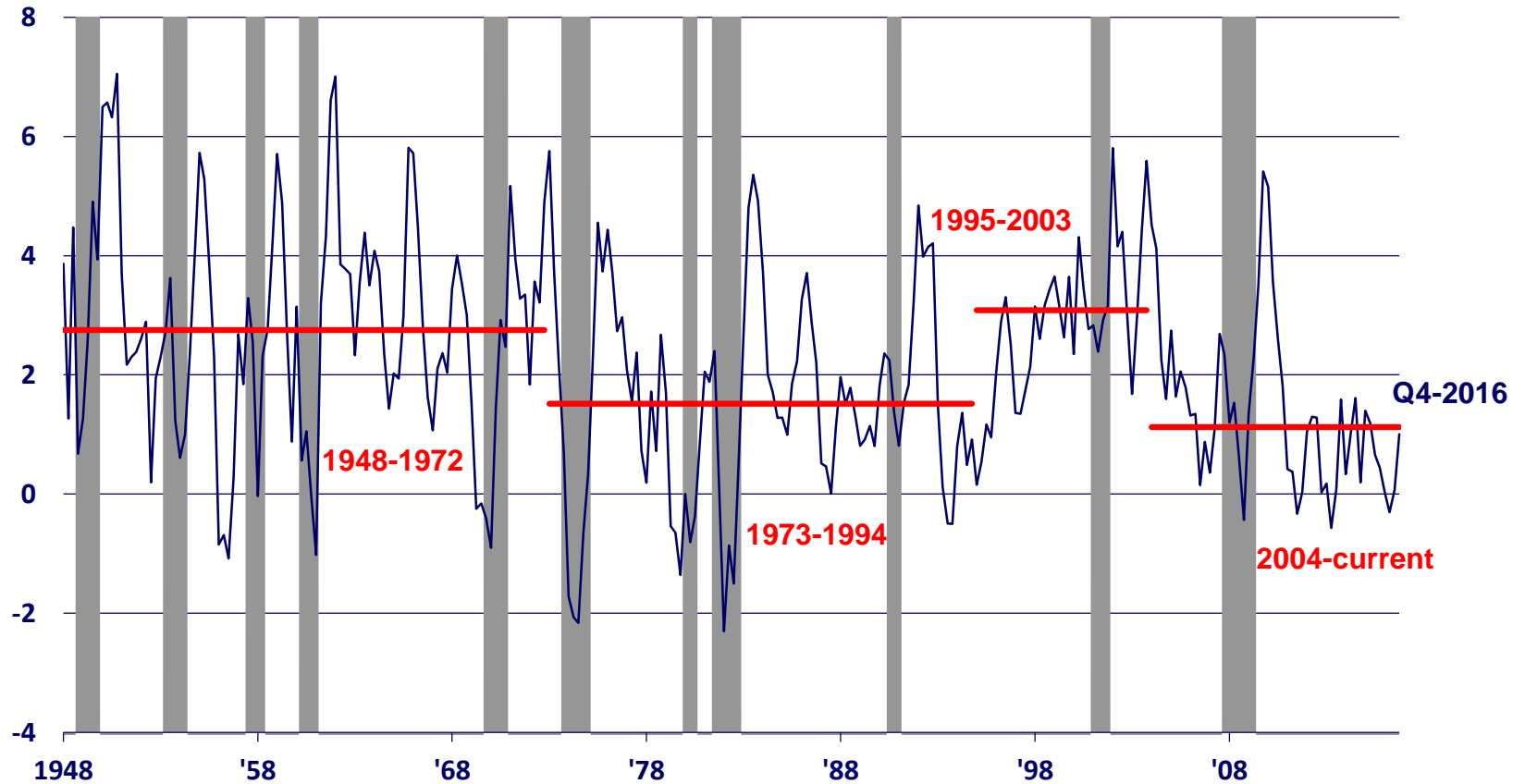


Source: Data from the Bureau of Labor Statistics, accessed via Haver Analytics.

Productivity Growth Slowed Before Recession

Real Output Per Hour

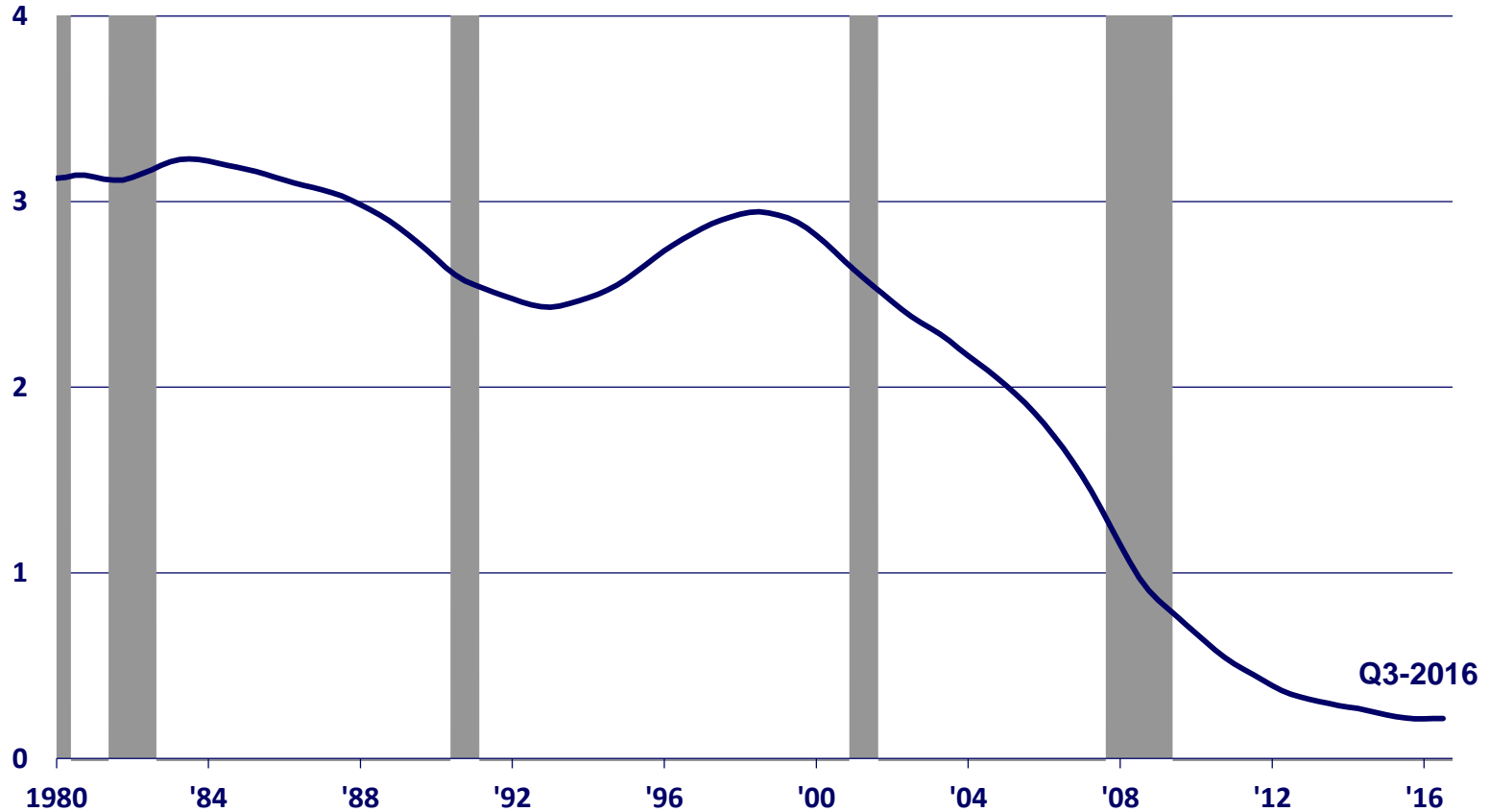
(4-qtr annualized percent change)



Source: Data from the Bureau of Labor Statistics, accessed via Haver Analytics.

Lower Equilibrium Real Interest Rates

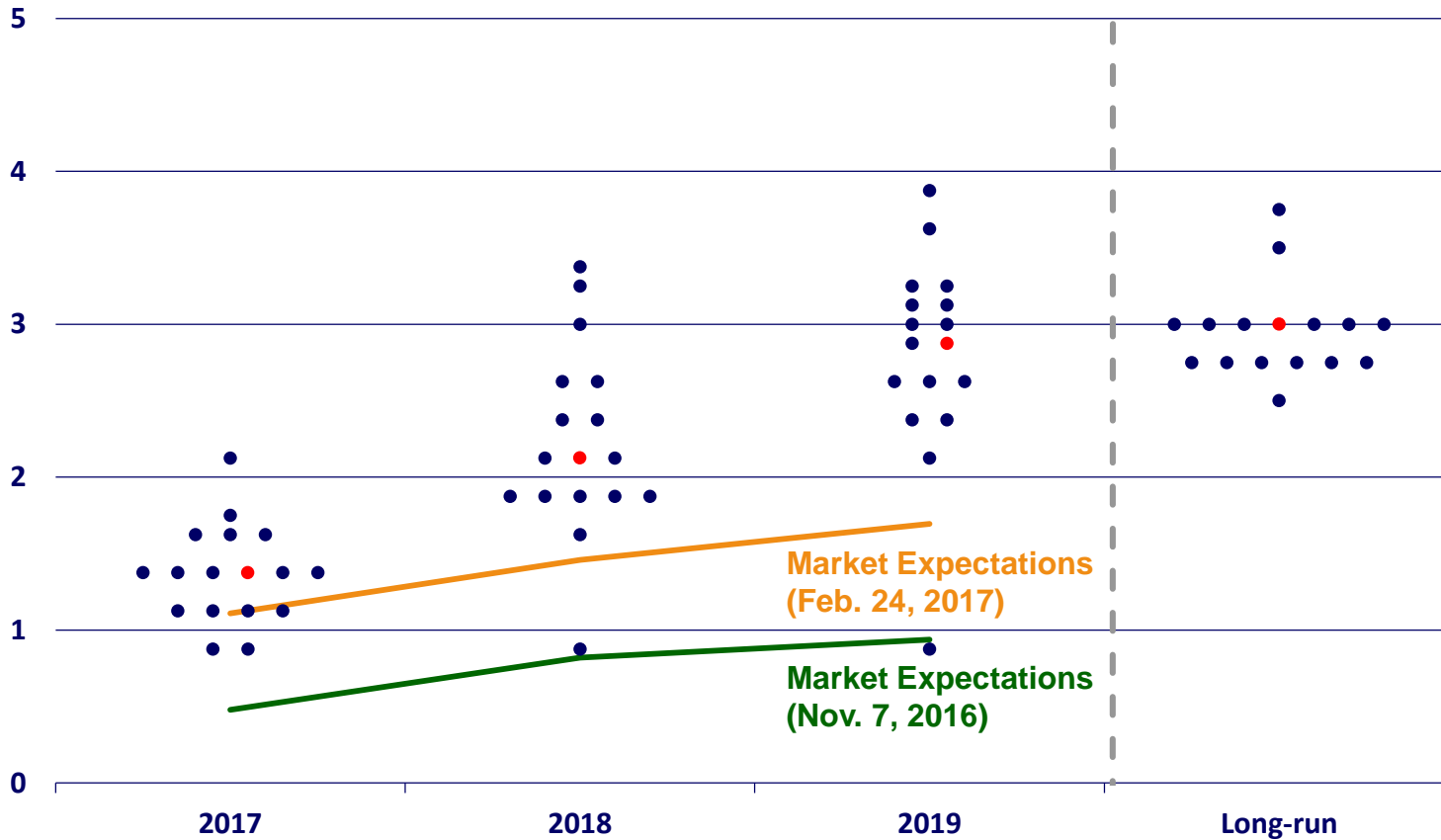
Laubach-Williams Equilibrium Real Fed Funds Rate Estimate
(percent)



Source: Data from the Bureau of Labor Statistics, accessed via Haver Analytics.
* FRBCHI staff estimates.

Appropriate Pace of Policy Firming

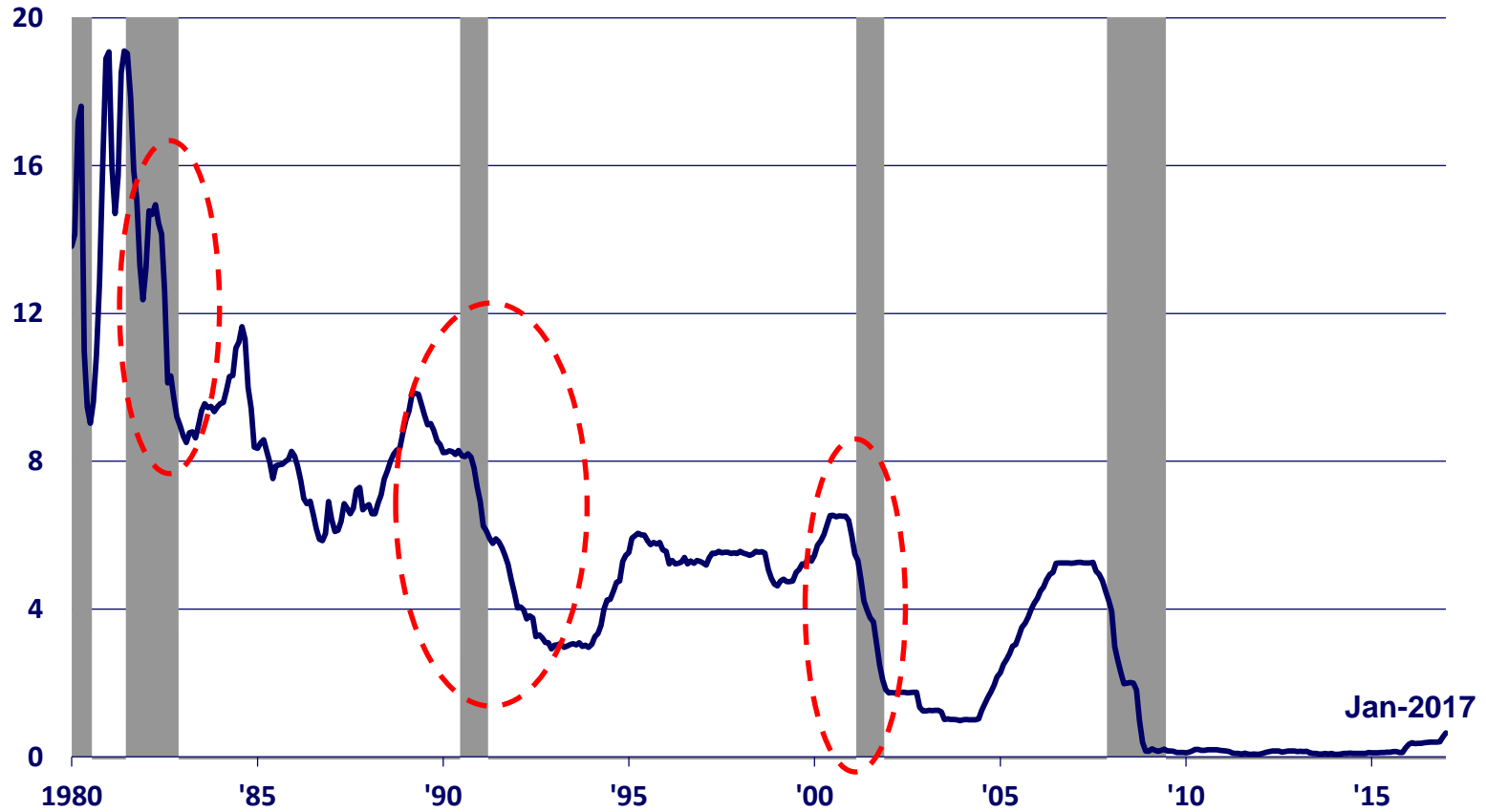
Federal Funds Rate at Year-End (percent)



Source: Interest rate projections are from the December 14, 2016 FOMC Summary of Economic Projections. Red dots indicate the median projection. Market expectations are from OIS futures as of Nov. 7, 2016 and Feb. 13, 2017.

Less Room To Cut Rates In Future

(percent)



Source: Data from the Board of Governors of the Federal Reserve System, accessed via Haver Analytics.

Risk Management Considerations

- **Risks for inflation forecast weighted to downside**
- **Policy options asymmetric**
 - Little room to loosen conventional policy to counter downside shocks
 - Ample room to tighten policy if inflationary pressures rise too much
- **Risk management thus prescribes accommodative policy**
 - Counter risk of inflation expectations becoming entrenched below target
 - Provide a buffer against possible future downside shocks that might otherwise drive us back to ZLB