Current Growth, Inflation and Price Level Developments in the U.S.

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Any opinions expressed here are my own and do not necessarily reflect those of the Federal Open Market Committee.

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Introduction

Key themes in this talk

- On balance, the U.S. macroeconomic data have been relatively weak since the March FOMC meeting.
- U.S. inflation and inflation expectations have surprised to the downside in recent months.
- Low U.S. unemployment readings are probably not an indicator of meaningfully higher inflation over the forecast horizon.
- The U.S. price level has begun to deviate noticeably from the 2 percent path established in the mid-1990s.

Recent Economic Growth in the U.S.

Real GDP growth around 2 percent

- Real GDP growth measured from one year earlier has averaged just 2.1 percent over the last seven years.
- The last two years have shown very little change in year-over-year real GDP growth.
  - 2015-Q4: 1.9 percent; 2016-Q4: 2.0 percent.
- A natural conclusion is that the economy has converged upon a growth rate of about 2 percent.
- Is the U.S. economy likely to move meaningfully off of this trend in 2017?
  - The short answer is no.

U.S. real GDP growth in 2017

- The current estimate for U.S. real GDP growth in the first quarter of 2017 is 0.7 percent at an annual rate.*
- The current estimate for the year-over-year growth rate through the first quarter is 1.9 percent.
- Tracking estimates for second-quarter real GDP growth suggest some improvement from the first quarter, but not enough to move the U.S. economy away from a regime characterized by 2 percent trend growth.

** This is the Bureau of Economic Analysis' advance estimate released on April 28. A second estimate will be released on May 26 at 8:30 a.m. EDT.*

Tracking estimates for 2017-Q2 U.S. real GDP growth

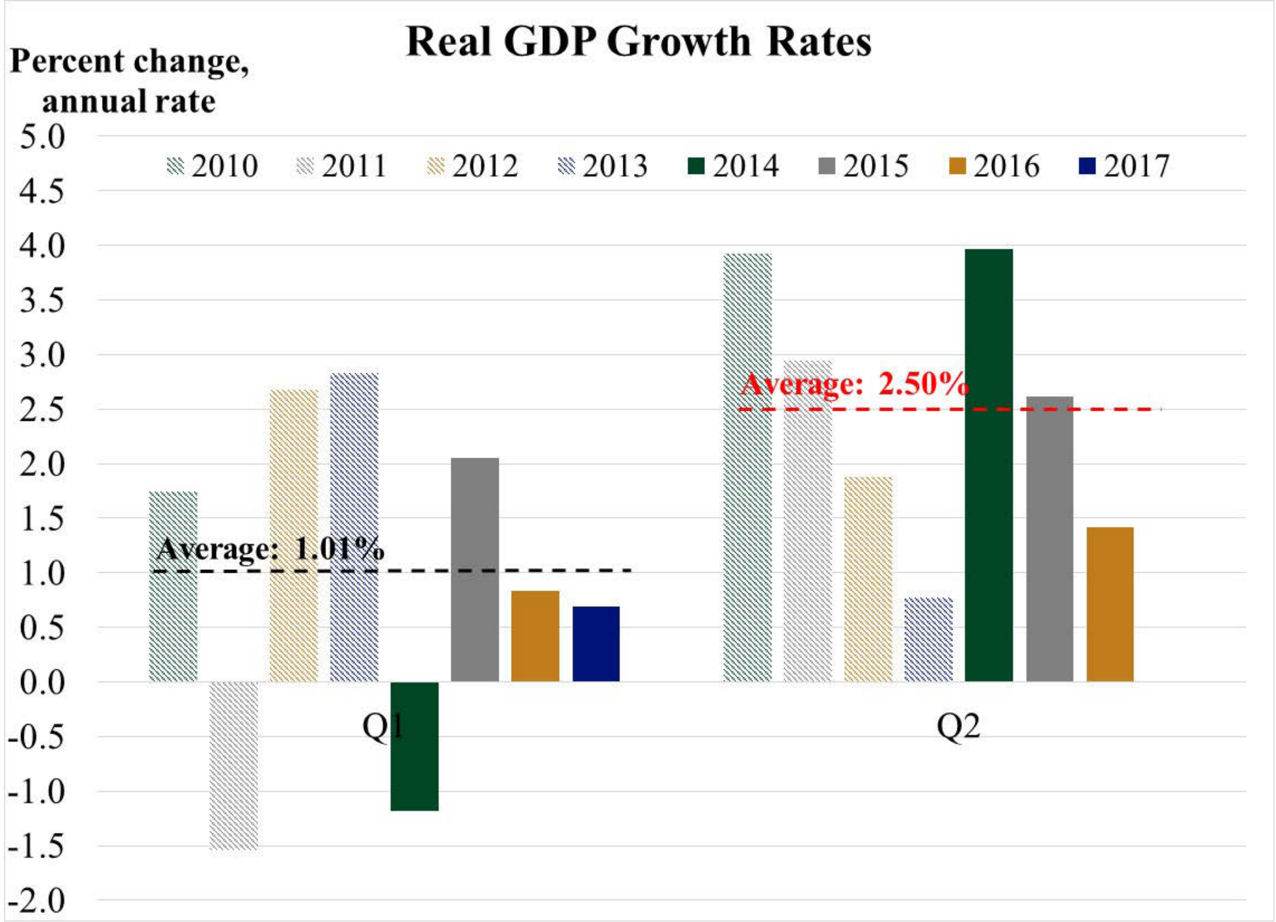
Source	Date	Estimate*	2017-H1†
Blue Chip Consensus	May 10	3.1%	1.9%
Atlanta Fed GDPNow	May 16	4.1%	2.4%
St. Louis Fed Economic News Index	May 19	2.6%	1.7%
FRBNY Staff Nowcast	May 19	2.3%	1.5%
CNBC Moody's Consensus (median)	May 23	3.7%	2.2%
Macroeconomic Advisers	May 23	3.9%	2.3%

* *percent change from the previous quarter, annualized*
† *average of Bureau of Economic Analysis' 2017-Q1 advance estimate (0.7%) and 2017-Q2 estimates*

Residual seasonality?

- In recent years, first-quarter real GDP growth in the U.S. has generally been lower than in other quarters, despite the deseasonalization process used to assemble the data.
- The magnitude of this effect is debatable.
- It may be better to use real GDP growth measured from one year earlier to gauge performance.
- If residual seasonality is the issue, then second-quarter real GDP growth should be discounted appropriately.

Q1 vs. Q2 real U.S. real GDP growth



Source: Bureau of Economic Analysis and author's calculations. Last observation: 2017-Q1 (advance estimate).

The Financial Market Reaction to the March Increase in the Policy Rate

The March FOMC decision

- The FOMC increased the policy rate at the March meeting.
- This was viewed in financial markets as suggesting a policy rate increase at the June meeting as well.
- Ordinarily, when the policy rate is on an increasing path:
  - longer-term interest rates are expected to rise in tandem,
  - both inflation and inflation expectations are expected to remain consistent with the FOMC's 2 percent inflation target, and
  - financial market expectations of the policy rate path should remain consistent with the Committee's projections.

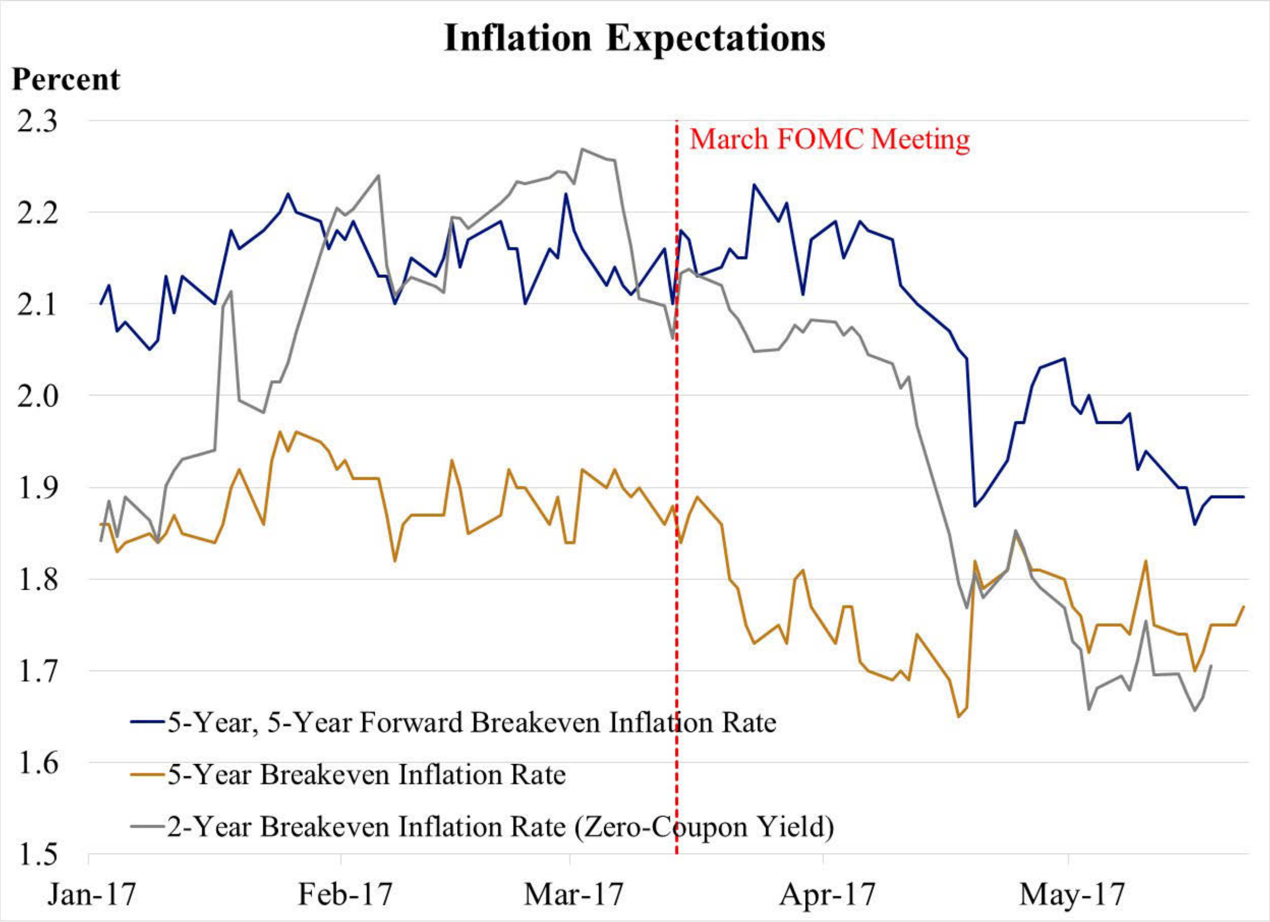
The financial market reaction

- Financial market readings since the March decision have moved in the opposite direction:
  - longer-term U.S. yields have declined,
  - U.S. inflation expectations have weakened, and
  - market expectations of the policy rate path have remained below the median path in the FOMC’s Summary of Economic Projections.
- This may suggest that the FOMC’s contemplated policy rate path is overly aggressive relative to actual incoming data on U.S. macroeconomic performance.

Longer-term U.S. yields have declined

Source: Federal Reserve Board. Last observation: May 22, 2017.

Inflation expectations have weakened



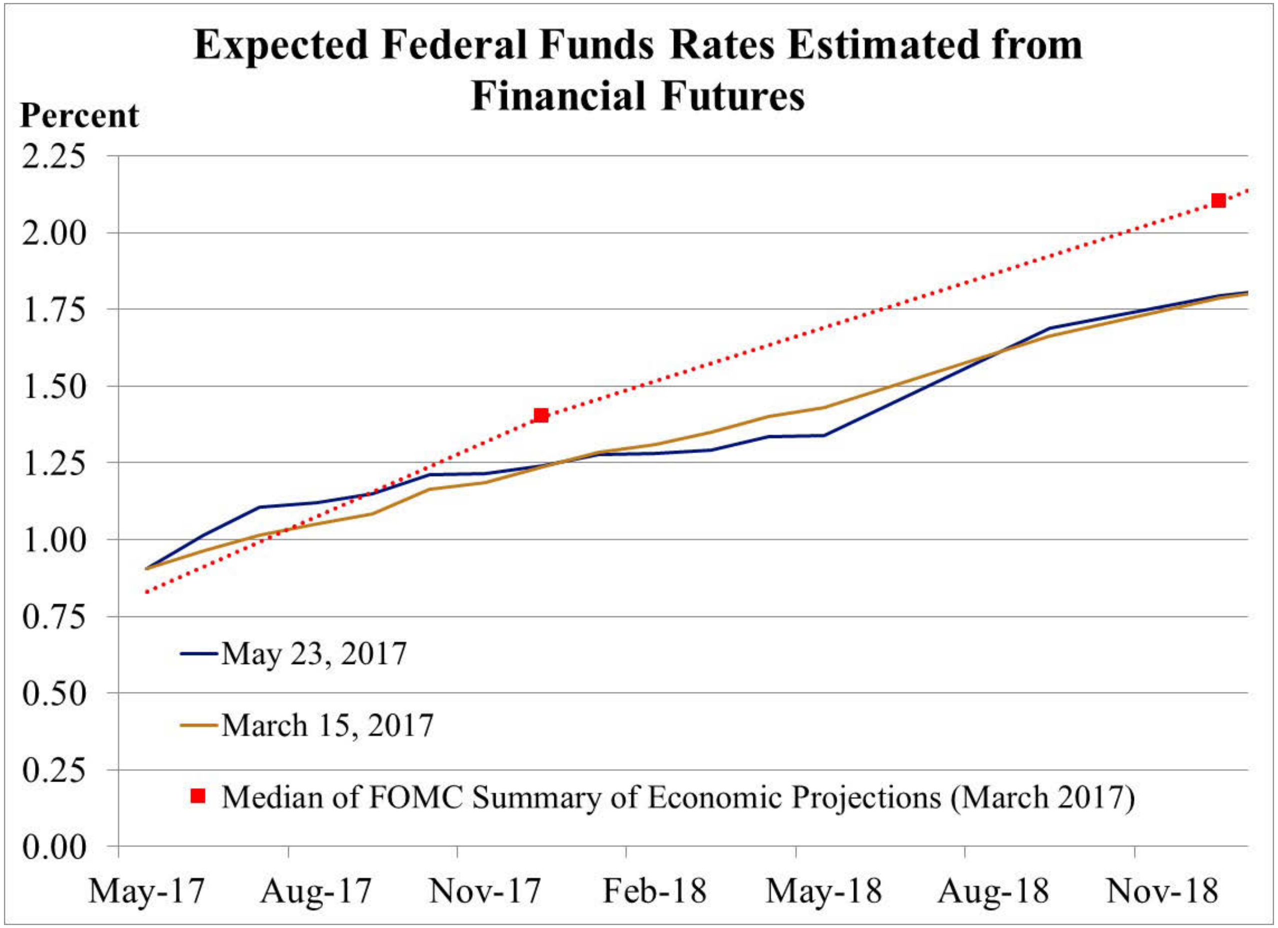
Source: Federal Reserve Board. Last observation: May 23, 2017.

Inflation readings are lower

Inflation measure	Dec-2016	Last obs.	Difference
Sticky CPI (FRB of Atlanta)	258	224	-34
Median CPI (FRB of Cleveland)	250	237	-13
Core CPI	220	190	-30
Trimmed-mean PCE (FRB of Dallas)	186	181	-5
Core PCE	175	156	-19

Values are expressed in basis points. Inflation rates are measured as percent changes from one year earlier.
Source: Bureau of Labor Statistics, FRB of Cleveland, FRB of Atlanta, Bureau of Economic Analysis, FRB of Dallas and author's calculations. Last observations: March 2017 (PCE) and April 2017 (CPI).

Market expectations of the policy rate path remain below FOMC projections



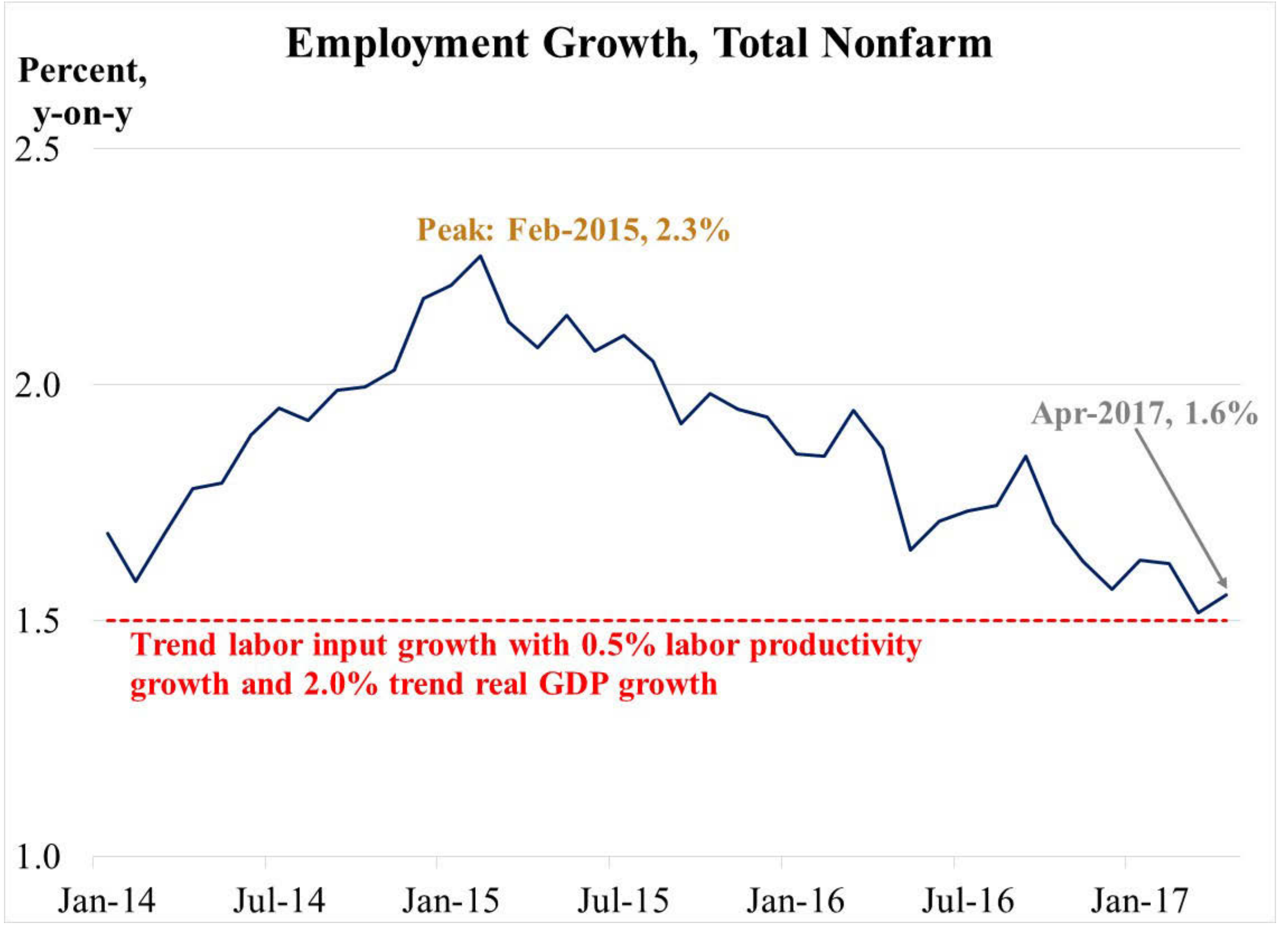
Source: Bloomberg and author's calculations. Last observation: May 23, 2017.

Labor Market Improvement Slowing

U.S. labor market improvement is slowing

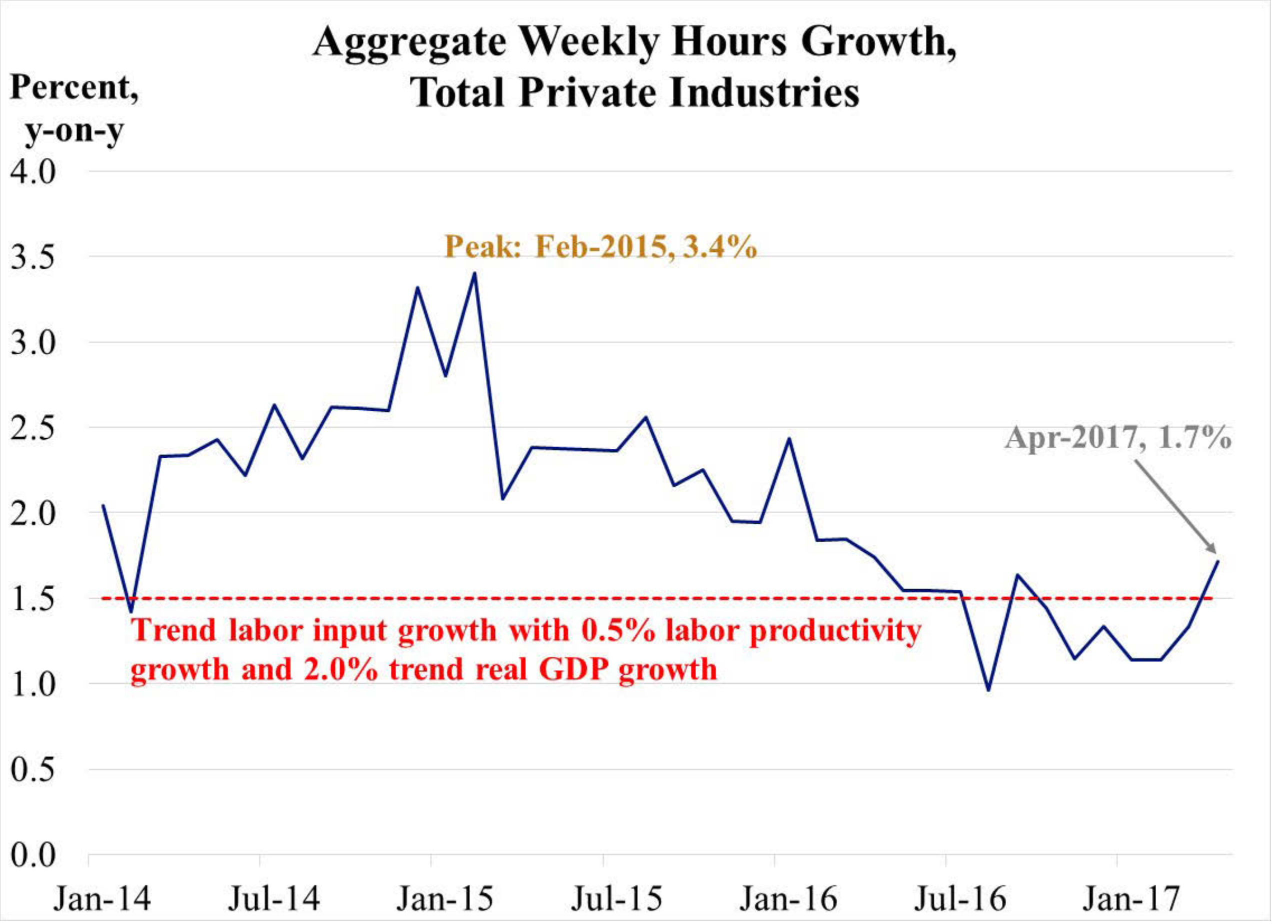
- Growth in the labor input has slowed over the last two years.
- Nonfarm payroll employment growth measured from one year earlier was 2.3 percent in February 2015 and has slowed to 1.6 percent today.
- Private hours growth measured from one year earlier was 3.4 percent in February 2015 and has slowed to 1.7 percent today.
- Bottom line: Labor market improvement has been slowing, perhaps close to a trend pace, given the current labor productivity growth regime.

U.S. employment growth has slowed



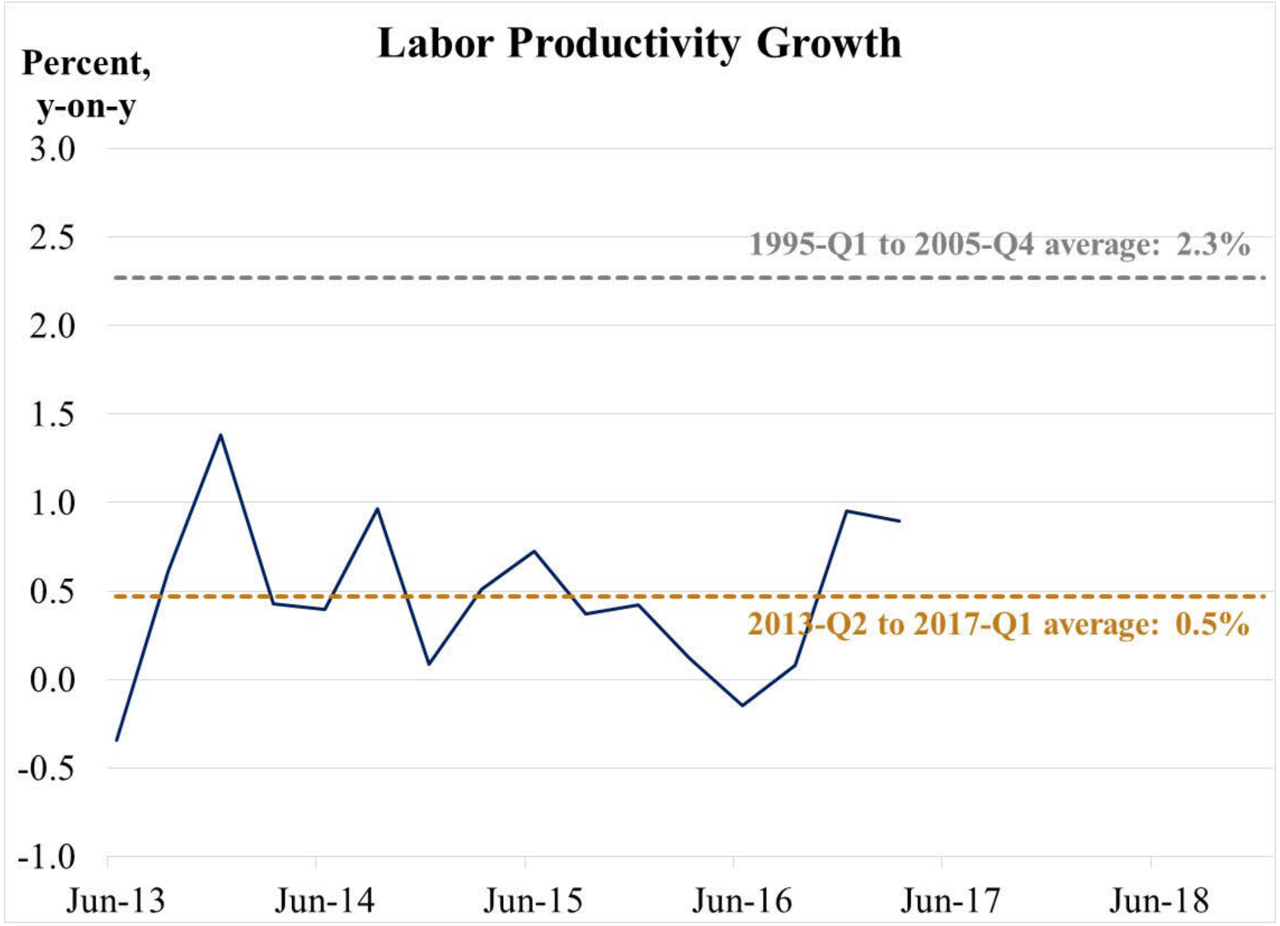
Source: Bureau of Labor Statistics and author's calculations. Last observation: April 2017.

U.S. hours growth has slowed



Source: Bureau of Labor Statistics and author's calculations. Last observation: April 2017.

U.S. labor productivity growth is low



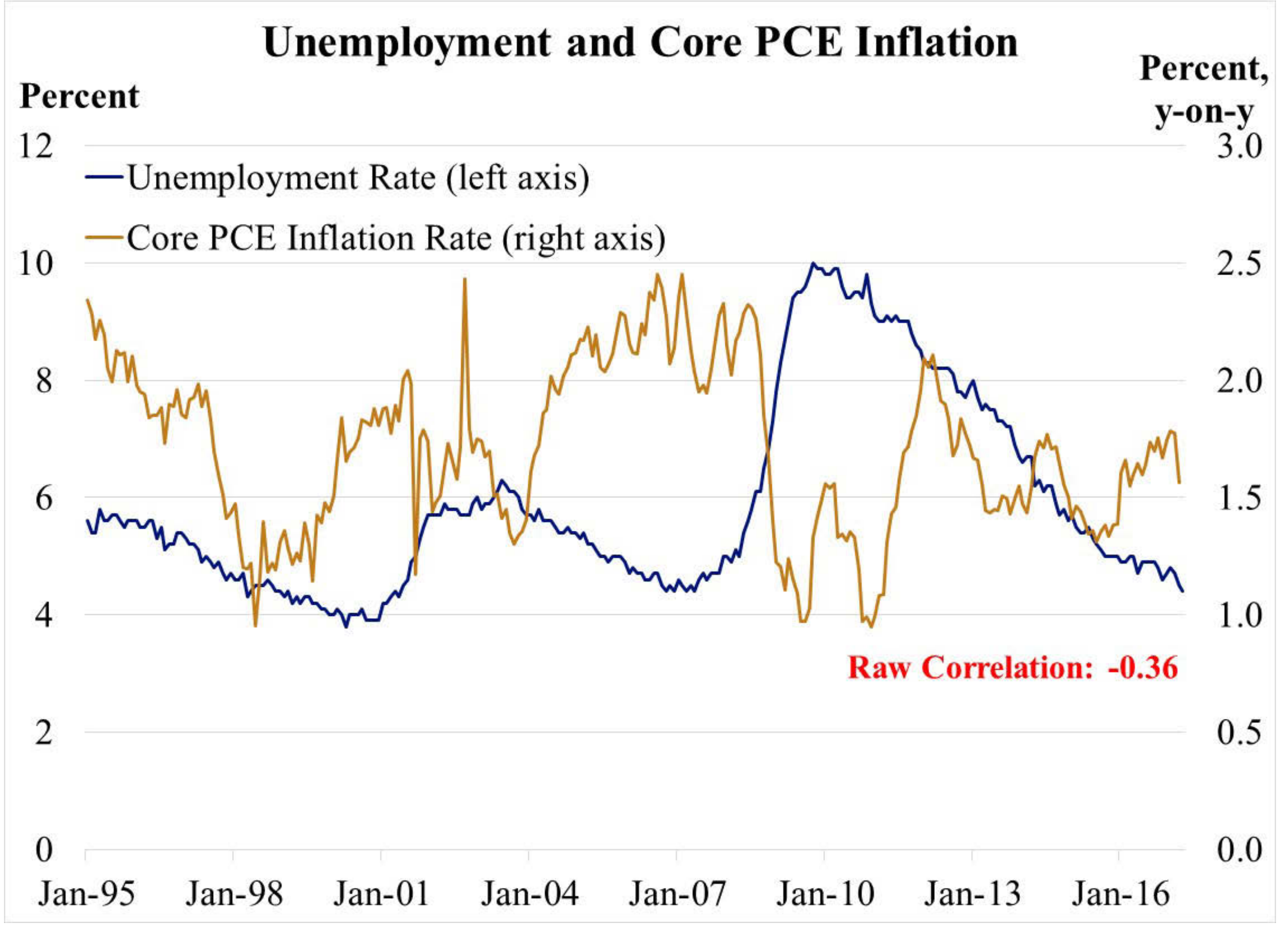
Source: Bureau of Labor Statistics, Bureau of Economic Analysis and author's calculations. Last observation: 2017-Q1.

Does the Low U.S. Unemployment Rate Signal a Meaningful Rise in Inflation?

Unemployment is low

- The U.S. unemployment rate declined to 4.4 percent in the April reading.
- Does this mean that U.S. inflation is about to increase substantially?
- The short answer is no, based on current estimates of the relationship between unemployment and inflation.

Unemployment and inflation



Source: Bureau of Labor Statistics and Bureau of Economic Analysis. Last observation: April 2017 (unemployment) and March 2017 (inflation).

The estimated influence of unemployment on inflation

- Let's consider one study, Blanchard (2016), which estimates a Phillips curve relationship for the U.S.*
- Let's suppose the unemployment rate continued to fall from current levels.
- How much would the inflation rate increase according to these estimates?

** See O. Blanchard, 2016, "The U.S. Phillips Curve: Back to the 60s?" Peterson Institute for International Economics,* Policy Brief No. PB16-1.

The estimated influence of unemployment on inflation

Unemployment rate	Core PCE inflation rate
4.4% *	1.6% *
4.1%	1.7%
3.6%	1.8%

* *current value (April 2017 for unemployment, March 2017 for inflation)*

- Bottom line: Even if the U.S. unemployment rate declines substantially further, the effects on U.S. inflation are likely to be small.

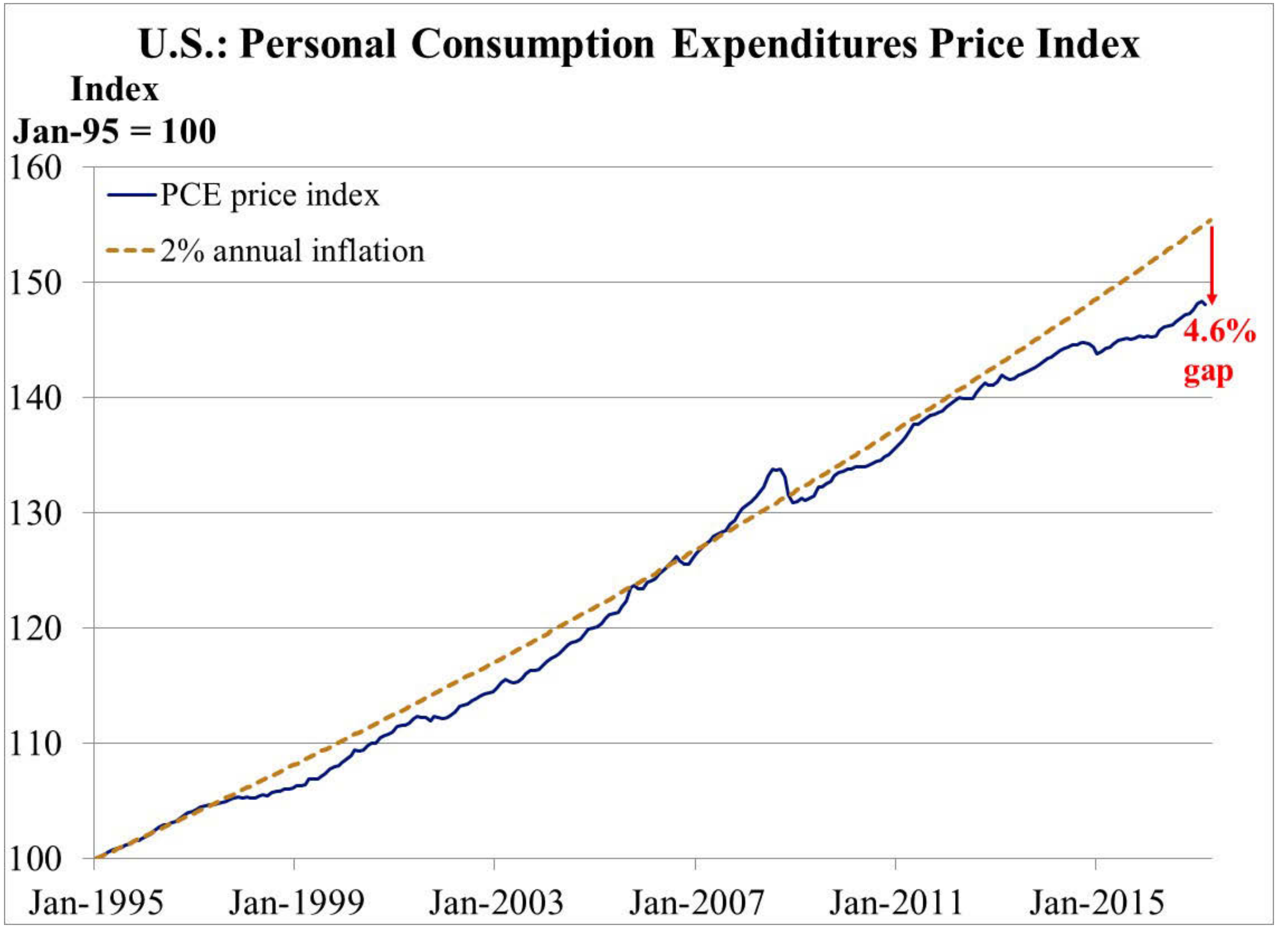
Is the U.S. Falling Off the 2 Percent Price Level Path?

The U.S. price level is falling short of the 2 percent path

- Standard macroeconomic theory suggests that the signature of optimal monetary policy is maintenance of a price level path.*
- The U.S. did maintain a 2 percent price level path between 1995 and 2012.
- Since then, however, the U.S. price level has begun to diverge from the 2 percent path.
- The current price level is 4.6 percent below the previously established path.
- This is not as severe as the 1990s Japanese experience, but it is worrisome.

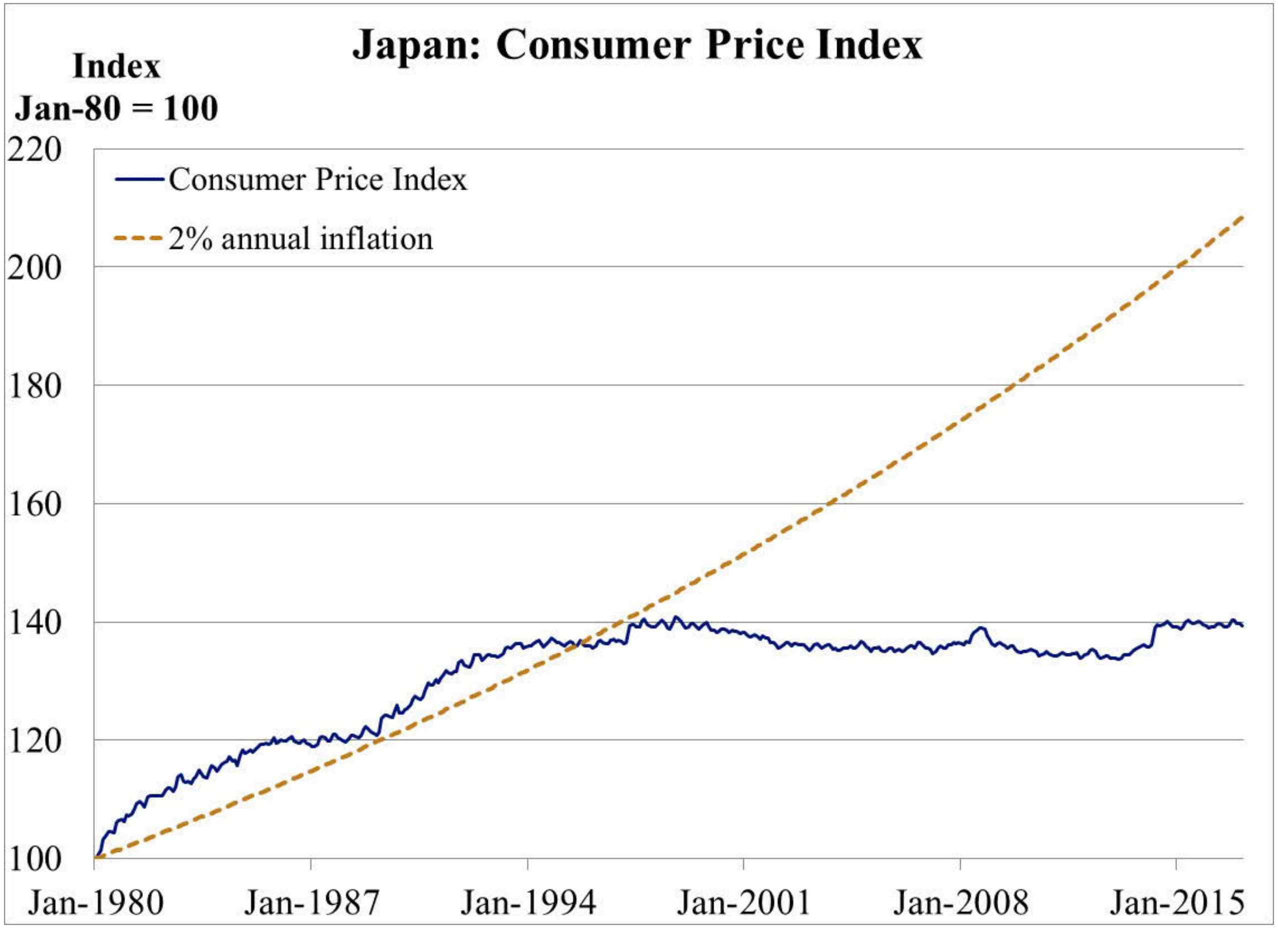
* *See J. Bullard, 2012, "Price Level Targeting: The Fed Has It About Right," remarks delivered at the Economic Club of Memphis.*

The U.S. price level path



Source: Bureau of Economic Analysis and author's calculations. Last observation: March 2017.

The Japanese price level path



Source: International Monetary Fund. Last observation: February 2017.

Conclusion

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- U.S. inflation and inflation expectations have surprised to the downside in recent months.
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