

### **Prefatory Note**

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Class II FOMC – Restricted (FR)

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# Report to the FOMC on Economic Conditions and Monetary Policy



## Book A

### Economic and Financial Conditions: Current Situation and Outlook

December 9, 2015

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Prepared for the Federal Open Market Committee  
by the staff of the Board of Governors of the Federal Reserve System

Authorized for Public Release

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## Revisions to the Staff Projection since the Previous SEP

The FOMC most recently published its Summary of Economic Projections, or SEP, following the September FOMC meeting. The table below compares the staff's current economic projection with the one we presented in the September Tealbook.

Our forecast for real GDP growth in the second half of the year is unrevised from September, but our projection for 2016 is somewhat stronger, largely reflecting the anticipated boost to real activity from the recent federal budget deal. Beyond 2016, our forecast for real GDP growth is little revised. Altogether, our projection for the GDP gap over the projection period is stronger than in the September Tealbook. The unemployment rate has declined as we expected in September and is projected to average 5.0 percent in the fourth quarter of this year. The unemployment rate is forecast to gradually decline to 4.5 percent at the end of 2018, further below the staff's estimate of its natural rate than in the September forecast.

The staff's projection for headline PCE inflation has been revised up in the second half of this year, largely reflecting a slower-than-expected pass-through of the summer's crude oil price declines into consumer energy prices; with data through October, core PCE inflation over the second half of the year appears to be running just a shade above the September projection. Given our assumptions that longer-run inflation expectations will remain stable over the medium term, the declines in energy prices will be transitory, and core import prices will start to rise by the middle of next year, our forecasts for headline and core inflation are little changed beyond the near term. We continue to project that inflation will move up toward the Committee's 2 percent objective very gradually.

**Staff Economic Projections Compared with the September Tealbook**

Variable	2015		2015	2016	2017	2018	Longer run
	H1	H2					
Real GDP <sup>1</sup>	2.3	1.9	2.1	2.5	2.0	1.9	1.9
September Tealbook	2.2	1.9	2.0	2.1	2.0	1.8	1.9
Unemployment rate <sup>2</sup>	5.4	5.0	5.0	4.7	4.6	4.5	5.1
September Tealbook	5.4	5.0	5.0	4.9	4.8	4.7	5.1
PCE inflation <sup>1</sup>	.1	.7	.4	1.2	1.8	2.0	2.0
September Tealbook	.1	.4	.3	1.5	1.7	1.9	2.0
Core PCE inflation <sup>1</sup>	1.4	1.3	1.3	1.4	1.7	1.9	n.a.
September Tealbook	1.4	1.2	1.3	1.4	1.7	1.9	n.a.
Federal funds rate <sup>2</sup>	.12	.18	.18	1.44	2.53	3.42	3.25
September Tealbook	.12	.45	.45	1.44	2.31	3.00	3.25
Memo:							
Federal funds rate,							
end of period	.13	.25	.25	1.54	2.62	3.48	3.25
September Tealbook	.13	.55	.55	1.52	2.38	3.05	3.25
GDP gap <sup>2,3</sup>	-.5	-.1	-.1	.8	1.3	1.5	n.a.
September Tealbook	-.5	-.2	-.2	.4	.8	.9	n.a.

1. Percent change from final quarter of preceding period to final quarter of period indicated.

2. Percent, final quarter of period indicated.

3. Percent difference between actual and potential. A negative number indicates that the economy is operating below potential.

n.a. Not available.

We now assume that the federal funds rate will lift off from its effective lower bound in the fourth quarter of this year, one quarter later than in the September forecast. The federal funds rate is still assumed to rise gradually, but the stronger GDP gap in the current forecast, along with an inflation projection that is little changed, leaves the projected path for the federal funds rate a bit steeper than in the September forecast. At the end of 2018, the federal funds rate is assumed to be 3.5 percent, about  $\frac{1}{2}$  percentage point higher than in the September Tealbook and about  $\frac{1}{4}$  percentage point above the staff's assumption for its longer-run nominal value.

Because FOMC participants are providing additional information about their expectations of the economic conditions that will exist at the time they anticipate it will first become appropriate to increase the target range for the federal funds rate, we include the table below providing quarterly information from the staff projection. In the fourth quarter of this year—the quarter when our baseline projection assumes liftoff of the federal funds rate will occur—we forecast the unemployment rate to average 5.0 percent and the trailing four-quarter change in real GDP to be 2.1 percent. We project the trailing four-quarter change in core PCE inflation to be 1.3 percent and the four-quarter change in headline PCE prices to be only 0.4 percent because of decreases in energy prices over the past year.

**Staff Economic Projections Compared with the September Tealbook, Quarterly**

Variable	2015		2016				2017	
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
<i>Four-quarter percent change</i>								
Real GDP	2.2	2.1	2.4	2.1	2.3	2.5	2.4	2.3
September Tealbook	2.1	2.0	2.4	1.9	1.9	2.1	2.0	2.0
PCE inflation	.3	.4	.9	.7	.8	1.2	1.6	1.7
September Tealbook	.2	.3	1.1	1.0	1.0	1.5	1.6	1.7
Core PCE inflation	1.3	1.3	1.4	1.3	1.3	1.4	1.5	1.5
September Tealbook	1.3	1.3	1.4	1.3	1.4	1.4	1.5	1.6
<i>Percent</i>								
Unemployment rate	5.1	5.0	4.9	4.8	4.8	4.7	4.7	4.6
September Tealbook	5.2	5.0	5.0	5.0	4.9	4.9	4.9	4.8
Federal funds rate	.14	.18	.52	.82	1.13	1.44	1.72	2.00
September Tealbook	.16	.45	.74	.98	1.21	1.44	1.67	1.89
Memo								
Federal funds rate, end of period	.14	.25	.64	.92	1.23	1.54	1.82	2.09
September Tealbook	.22	.55	.83	1.06	1.29	1.52	1.74	1.96

## Comparing the Staff Projection with Other Forecasts

The staff's projection for real GDP growth in 2015 and 2016 is just a little below the Blue Chip consensus forecast and the median projection from the Survey of Professional Forecasters. The staff's forecast for unemployment is similar to the others. Its inflation projections are somewhat lower, particularly in 2016.

### Comparison of Tealbook and Outside Forecasts

	2015	2016	2017
<b>GDP (Q4/Q4 percent change)</b>			
December Tealbook	2.1	2.5	2.0
Blue Chip (12/10/15)	2.2	2.6	n.a.
SPF median (11/13/15)	2.3	2.6	n.a.
<b>Unemployment rate (Q4 level)</b>			
December Tealbook	5.0	4.7	4.6
Blue Chip (12/10/15)	5.0	4.6	n.a.
SPF median (11/13/15)	5.0	4.7	n.a.
<b>Consumer price inflation (Q4/Q4 percent change)</b>			
December Tealbook	0.4	1.6	2.3
Blue Chip (12/10/15)	0.5	2.1	n.a.
SPF median (11/13/15)	0.6	2.0	2.3
<b>PCE price inflation (Q4/Q4 percent change)</b>			
December Tealbook	0.4	1.2	1.8
SPF median (11/13/15)	0.6	1.8	1.9
<b>Core PCE price inflation (Q4/Q4 percent change)</b>			
December Tealbook	1.3	1.4	1.7
SPF median (11/13/15)	1.4	1.6	1.8

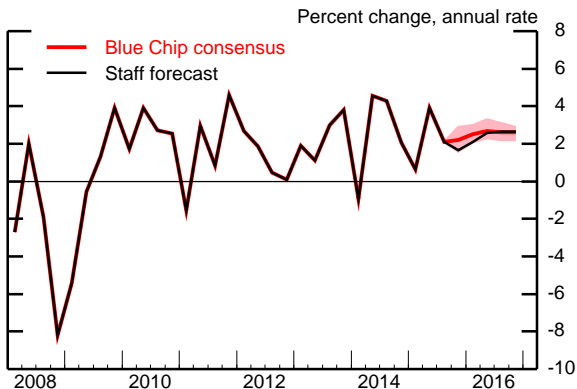
Note: SPF is the Survey of Professional Forecasters. Blue Chip does not provide results for PCE price inflation. The Blue Chip consensus forecast contains about 50 panelists, and the SPF about 40. Roughly 20 panelists contribute to both surveys.

n.a. Not available

Source: Blue Chip Economic Indicators; Federal Reserve Bank of Philadelphia.

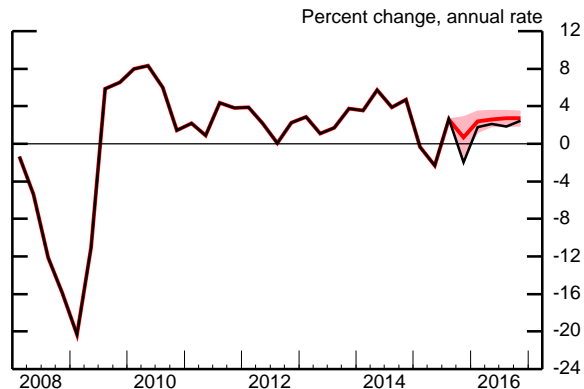
# Tealbook Forecast Compared with Blue Chip (Blue Chip survey released December 10, 2015)

Real GDP

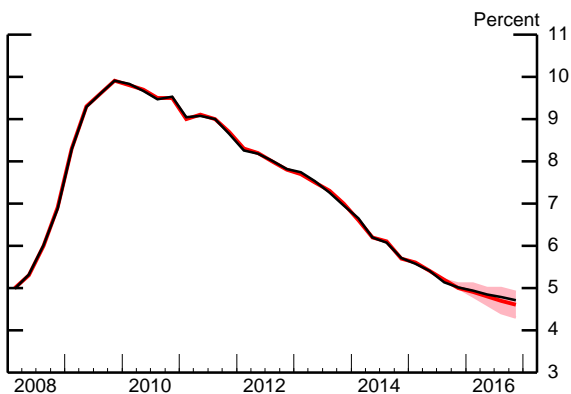


Note: The shaded area represents the area between the Blue Chip top 10 and bottom 10 averages.

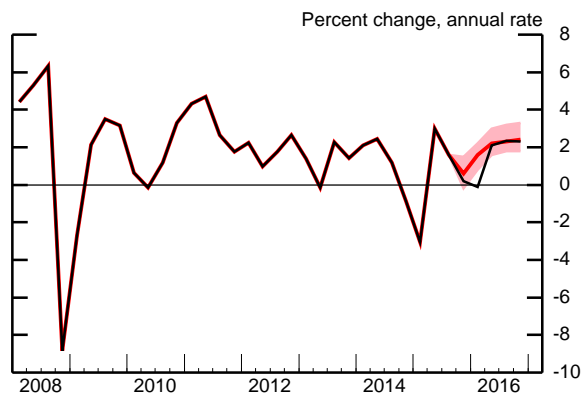
Industrial Production



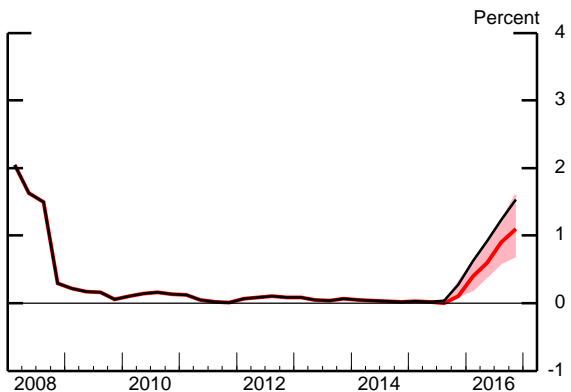
Unemployment Rate



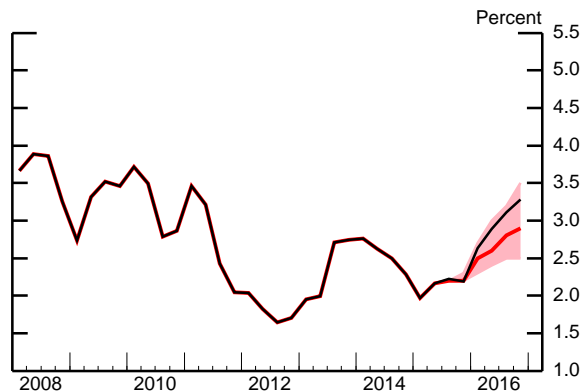
Consumer Price Index



Treasury Bill Rate



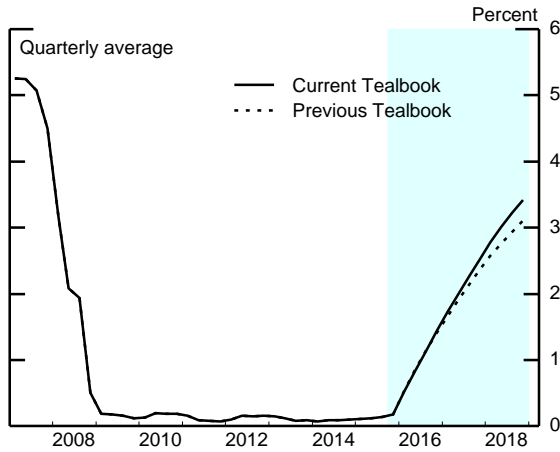
10-Year Treasury Yield



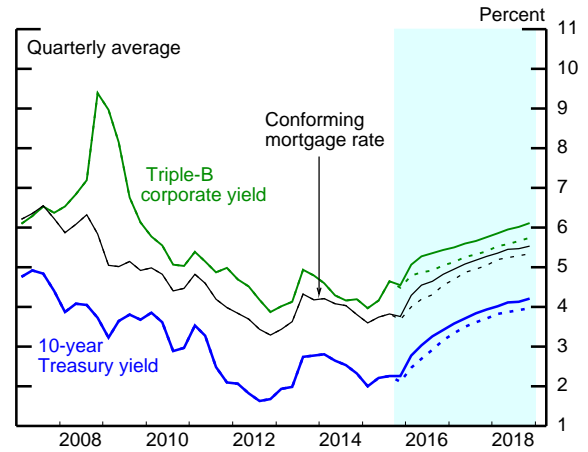
Note: The yield is for on-the-run Treasury securities. Over the forecast period, the staff's projected yield is assumed to be 15 basis points below the off-the-run yield.

## Key Background Factors underlying the Baseline Staff Projection

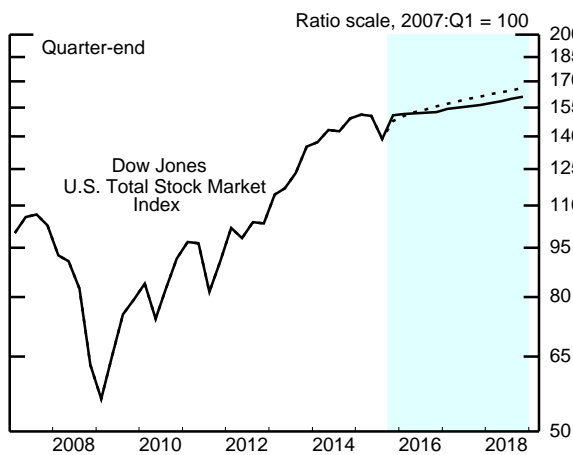
Federal Funds Rate



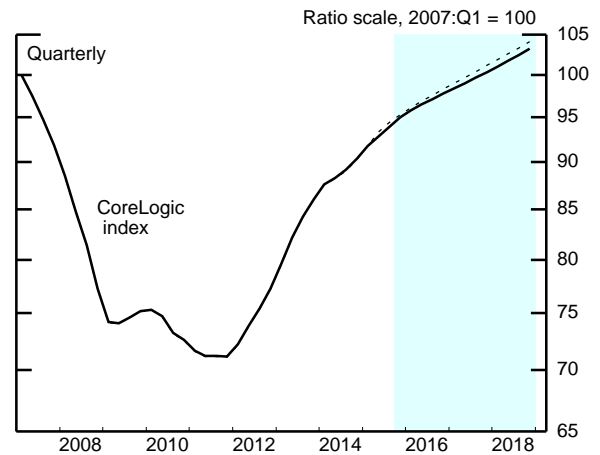
Long-Term Interest Rates



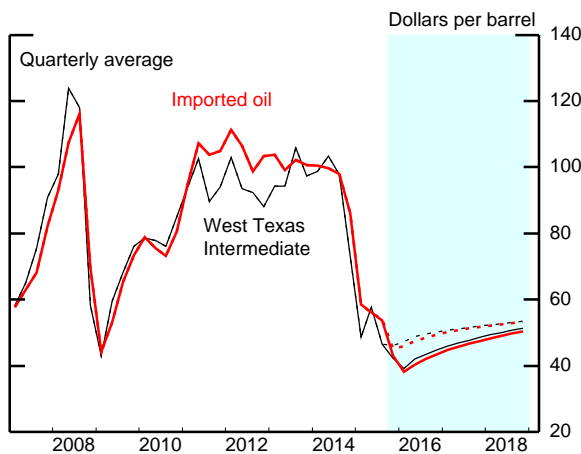
Equity Prices



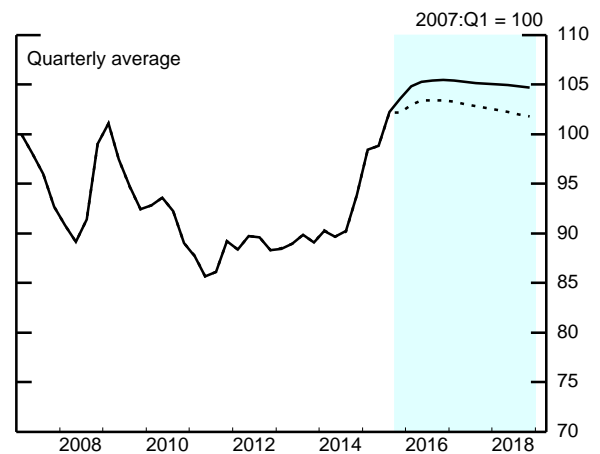
House Prices



Crude Oil Prices



Broad Real Dollar





**Federal Reserve System Nowcasts of 2015:Q4 Real GDP Growth**

(Percent change at annual rate from previous quarter)

Federal Reserve entity	Type of model	Nowcast as of Dec. 8, 2015
Federal Reserve Bank		
New York	<ul style="list-style-type: none"> <li>Factor-augmented autoregressive model combination</li> <li>Factor-augmented autoregressive model combination, financial factors only</li> <li>Dynamic factor model</li> </ul>	1.9 2.0 1.4
Cleveland	<ul style="list-style-type: none"> <li>Bayesian regressions with stochastic volatility</li> <li>Tracking model</li> </ul>	2.0 1.3
Atlanta	<ul style="list-style-type: none"> <li>Tracking model combined with Bayesian vector autoregressions (VARs), dynamic factor models, and factor-augmented autoregressions (known as GDPNow)</li> </ul>	1.5
Chicago	<ul style="list-style-type: none"> <li>Dynamic factor models</li> <li>Bayesian VARs</li> </ul>	2.0 1.8
St. Louis	<ul style="list-style-type: none"> <li>Dynamic factor models</li> <li>News index model</li> <li>Let-the-data-decide regressions</li> </ul>	2.2 2.8 1.8
Minneapolis	<ul style="list-style-type: none"> <li>Bayesian VARs</li> </ul>	2.7
Kansas City	<ul style="list-style-type: none"> <li>Accounting-based tracking estimate</li> </ul>	1.9
Board of Governors	<ul style="list-style-type: none"> <li>Board staff's forecast (judgmental tracking model)<sup>1</sup></li> <li>Dynamic factor models</li> </ul>	1.7 1.8
Memo: Median of Federal Reserve System nowcasts		1.9

1. The December Tealbook forecast, finalized on December 9, is also 1.7 percent.

### Summary of the Near-Term Outlook

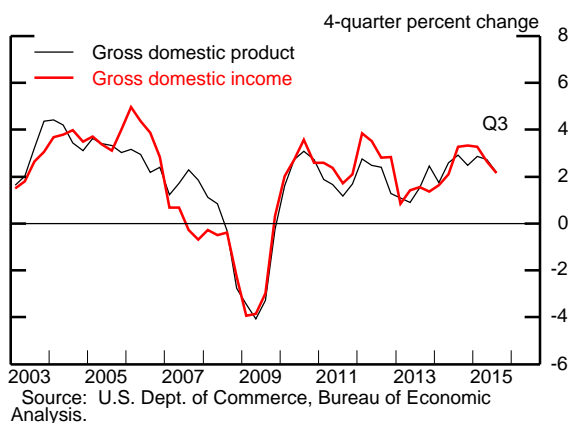
(Percent change at annual rate except as noted)

Measure	2015:Q3		2015:Q4		2016:Q1	
	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook
<b>Real GDP</b>	<b>1.4</b>	<b>2.1</b>	<b>2.1</b>	<b>1.7</b>	<b>2.0</b>	<b>2.1</b>
Private domestic final purchases	3.8	3.3	2.9	2.8	3.6	3.2
Personal consumption expenditures	3.2	3.0	2.8	2.4	3.2	3.4
Residential investment	7.4	8.5	.9	5.0	11.5	5.7
Nonres. private fixed investment	6.4	3.3	4.0	4.6	3.6	1.6
Government purchases	.7	1.8	.2	.5	.0	3.0
<i>Contributions to change in real GDP</i>						
Inventory investment <sup>1</sup>	-1.4	-.8	.4	-.3	.2	.2
Net exports <sup>1</sup>	-.6	-.2	-.7	-.5	-1.3	-1.3
<b>Unemployment rate</b>	<b>5.1</b>	<b>5.1</b>	<b>5.0</b>	<b>5.0</b>	<b>5.0</b>	<b>4.9</b>
<b>PCE chain price index</b>	<b>1.3</b>	<b>1.3</b>	<b>.4</b>	<b>.0</b>	<b>.8</b>	<b>.0</b>
Ex. food and energy	1.4	1.3	1.4	1.2	1.5	1.4

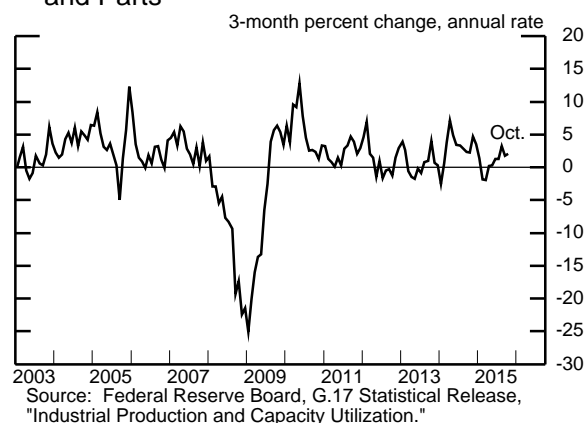
1. Percentage points.

### Recent Nonfinancial Developments (1)

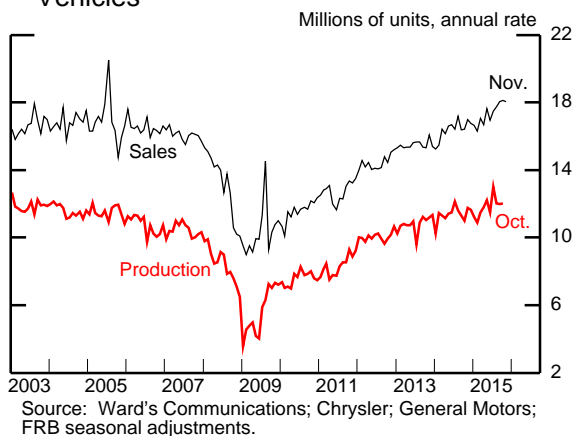
Real GDP and GDI



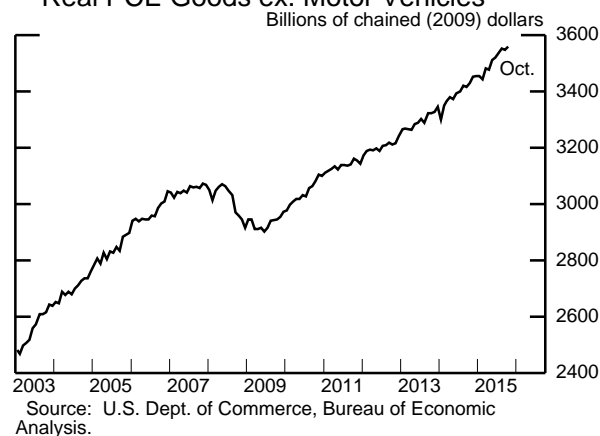
Manufacturing IP ex. Motor Vehicles and Parts



Sales and Production of Light Motor Vehicles

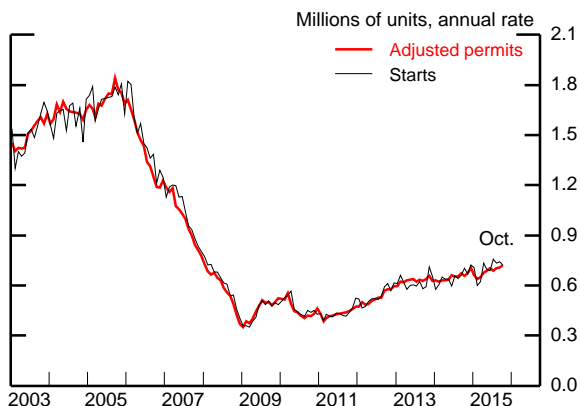


Real PCE Goods ex. Motor Vehicles



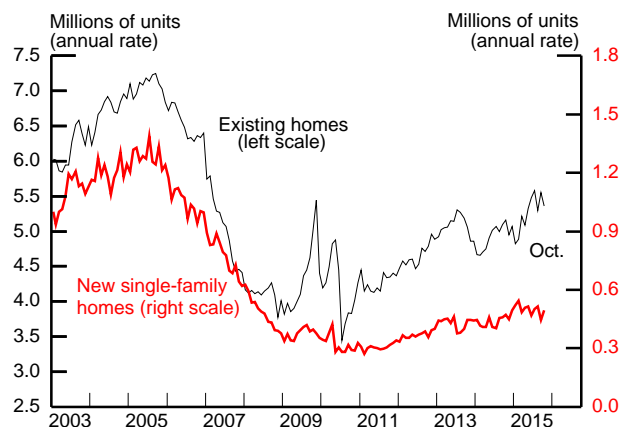
## Recent Nonfinancial Developments (2)

### Single-Family Housing Starts and Permits



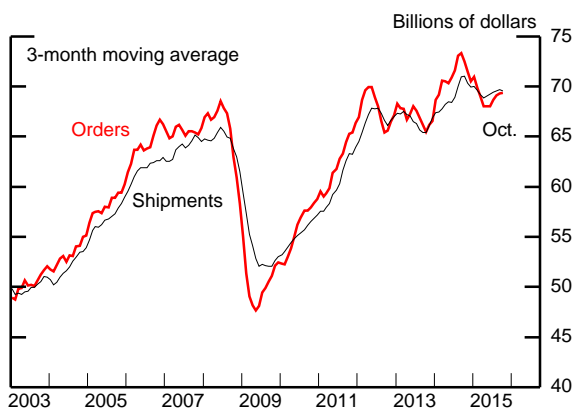
Note: Adjusted permits equal permit issuance plus total starts outside of permit-issuing areas.  
Source: U.S. Census Bureau.

### Home Sales



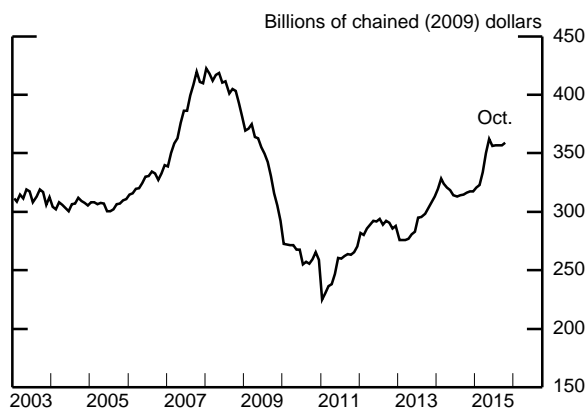
Source: For existing, National Association of Realtors; for new, U.S. Census Bureau.

### Nondefense Capital Goods ex. Aircraft



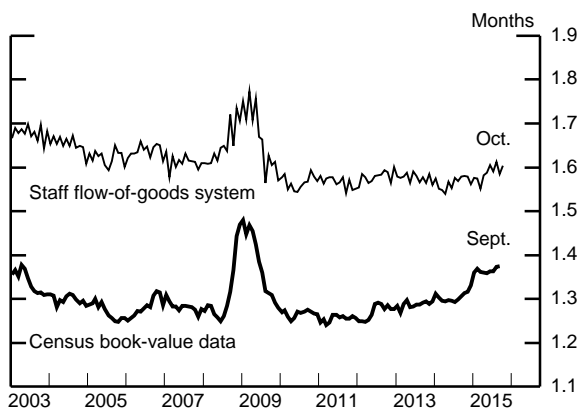
Source: U.S. Census Bureau.

### Nonresidential Construction Put in Place



Note: Nominal CIPPI deflated by BEA prices through 2015:Q2 and by the staff's estimated deflator thereafter.  
Source: U.S. Census Bureau.

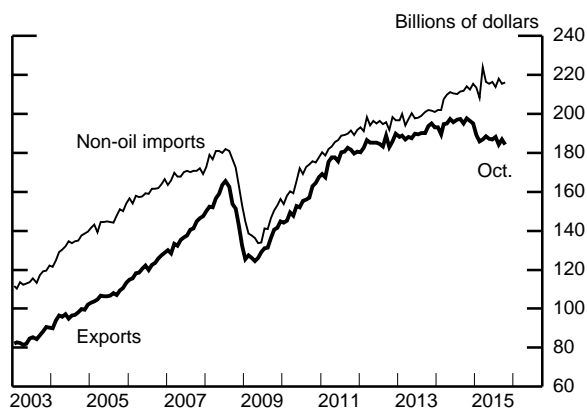
### Inventory Ratios



Note: Flow-of-goods system inventories include manufacturing and mining industries and are relative to consumption. Census data cover manufacturing and trade, and inventories are relative to sales.

Source: U.S. Census Bureau; staff calculations.

### Exports and Non-oil Imports

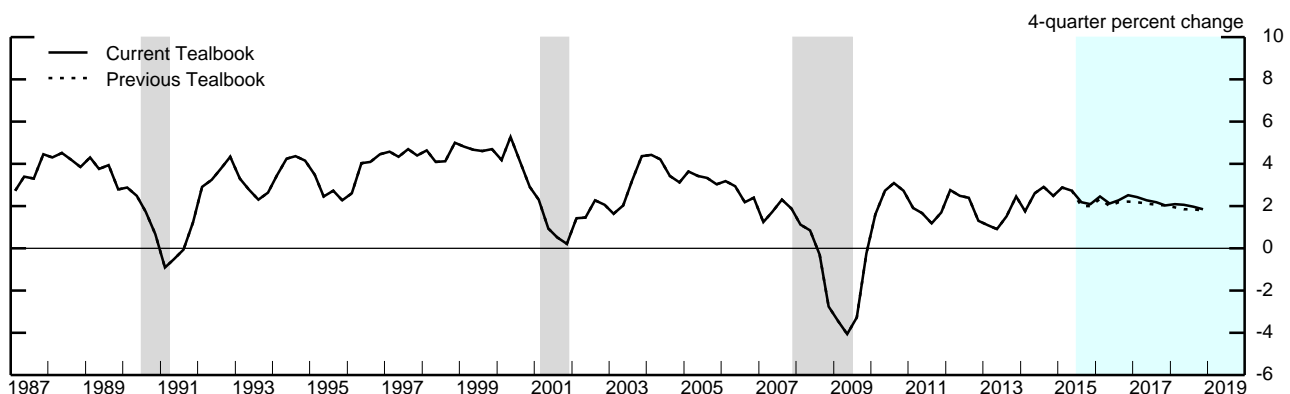


Source: U.S. Dept. of Commerce, Bureau of Economic Analysis; U.S. Census Bureau.

# **Projections of Real GDP and Related Components** (Percent change at annual rate from final quarter of preceding period except as noted)

Measure	2015	2015		2016	2017	2018
		H1	H2			
<b>Real GDP</b>	<b>2.1</b>	<b>2.3</b>	<b>1.9</b>	<b>2.5</b>	<b>2.0</b>	<b>1.9</b>
Previous Tealbook	2.0	2.3	1.7	2.2	2.0	1.8
Final sales	2.1	1.8	2.4	2.5	2.2	2.2
Previous Tealbook	2.0	1.8	2.3	2.3	2.1	2.0
Personal consumption expenditures	2.7	2.7	2.7	3.5	2.8	2.3
Previous Tealbook	2.8	2.7	3.0	3.2	2.6	2.1
Residential investment	8.2	9.7	6.7	6.7	7.8	5.4
Previous Tealbook	6.9	9.7	4.1	11.2	5.3	3.9
Nonresidential structures	-1.9	-.8	-3.0	.6	3.3	1.4
Previous Tealbook	.5	-.8	1.9	1.5	2.7	1.2
Equipment and intangibles	4.9	3.9	5.9	4.6	2.7	2.8
Previous Tealbook	5.0	3.9	6.1	5.0	2.6	2.2
Federal purchases	.4	.5	.3	2.4	-.5	-1.2
Previous Tealbook	-.5	.5	-1.6	-1.0	-.8	-.6
State and local purchases	1.7	1.7	1.7	1.5	1.8	1.8
Previous Tealbook	1.7	1.7	1.7	1.5	1.8	1.8
Exports	.0	-.6	.6	.5	1.7	3.8
Previous Tealbook	.3	-.6	1.3	1.1	2.2	4.2
Imports	3.9	5.1	2.8	7.2	4.6	3.6
Previous Tealbook	5.2	5.1	5.4	6.7	4.0	3.2
Contributions to change in real GDP (percentage points)						
Inventory change	.0	.4	-.5	.1	-.2	-.3
Previous Tealbook	.0	.4	-.5	-.1	-.1	-.2
Net exports	-.6	-.9	-.4	-1.0	-.5	-.1
Previous Tealbook	-.8	-.9	-.7	-.9	-.4	.0

## **Real GDP**

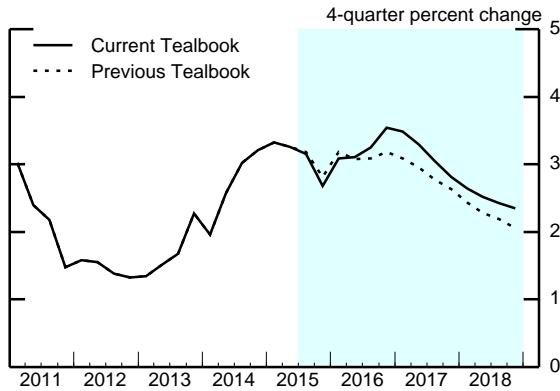


Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

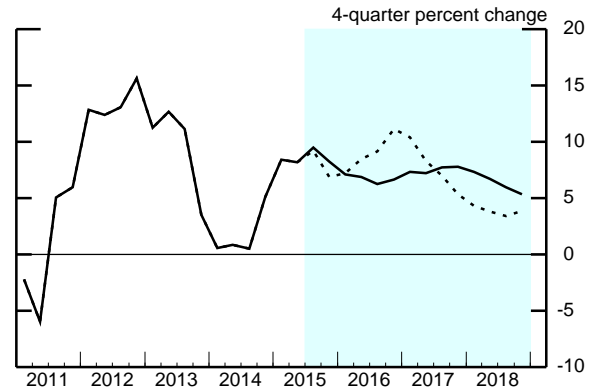
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

## Components of Final Demand

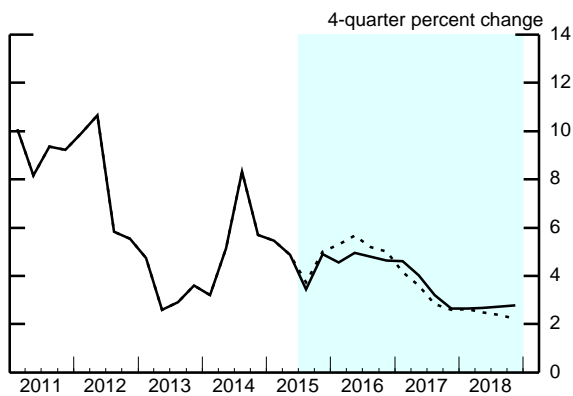
Personal Consumption Expenditures



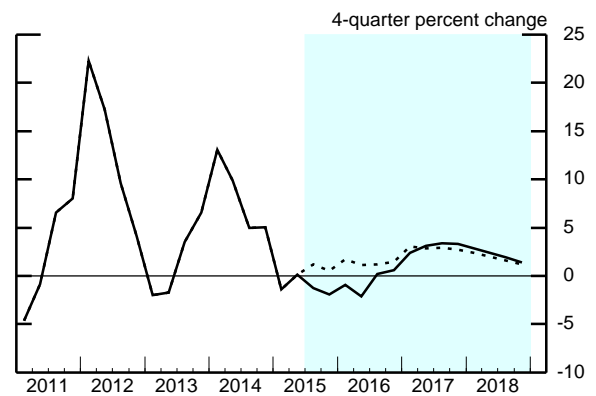
Residential Investment



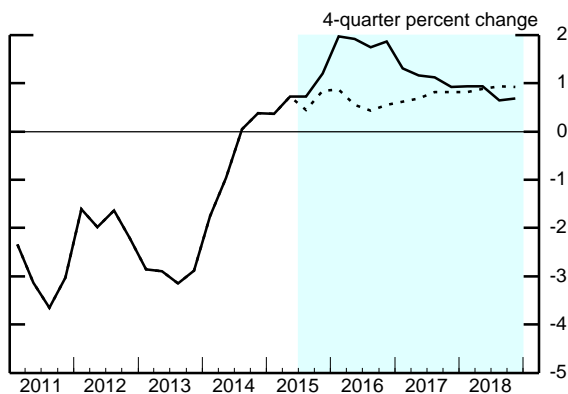
Equipment and Intangibles



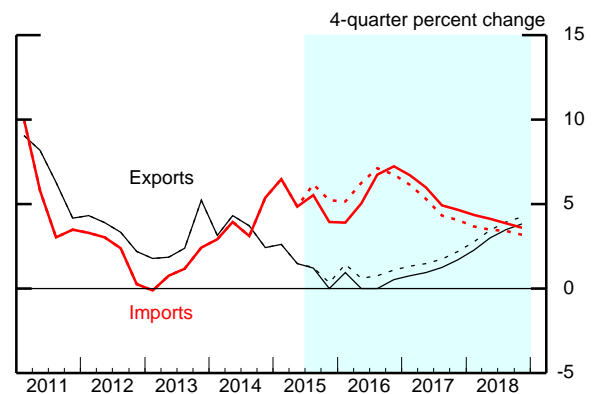
Nonresidential Structures



Government Consumption & Investment



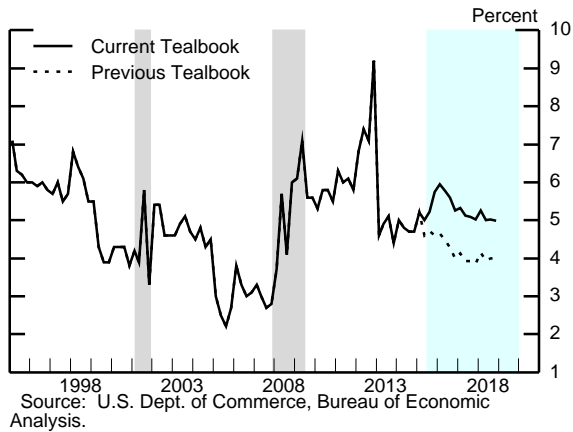
Exports and Imports



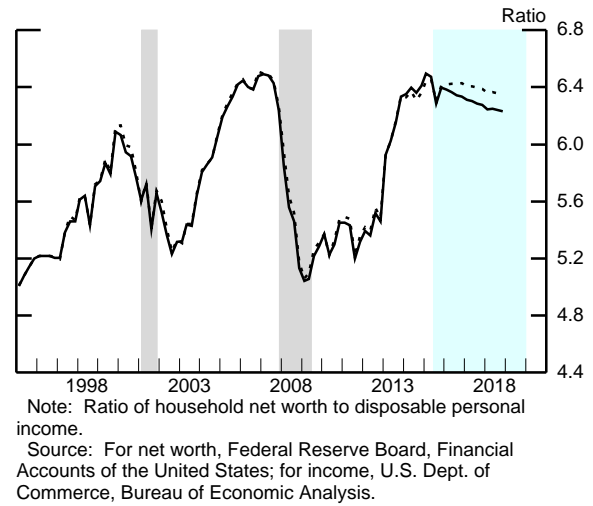
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

## Aspects of the Medium-Term Projection

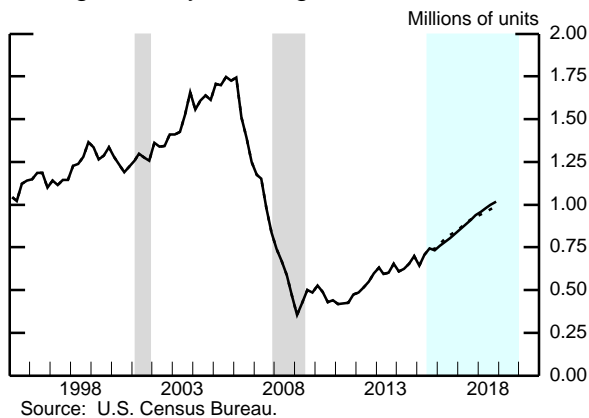
Personal Saving Rate



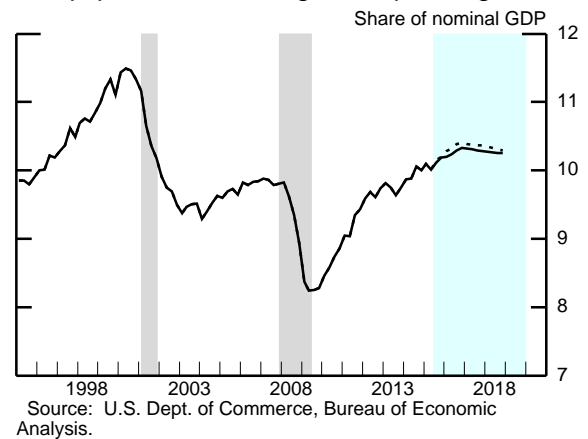
Wealth-to-Income Ratio



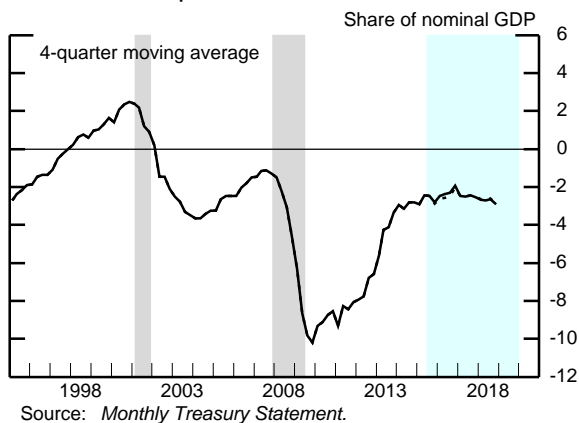
Single-Family Housing Starts



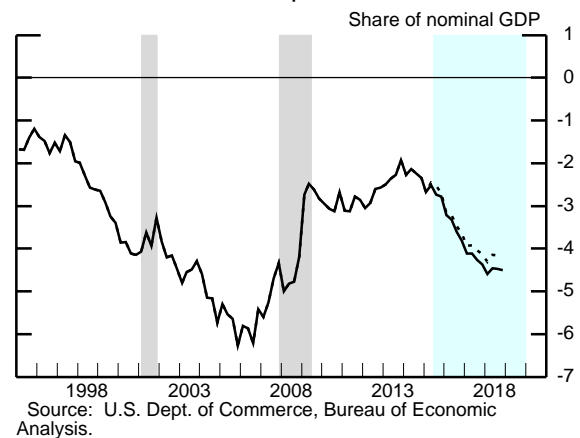
Equipment and Intangibles Spending



Federal Surplus/Deficit



Current Account Surplus/Deficit



Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

### Decomposition of Potential GDP (Percent change, Q4 to Q4, except as noted)

Measure	1974-95	1996-2000	2001-07	2008-10	2011-14	2015	2016	2017	2018
Potential real GDP	3.1	3.4	2.6	1.7	1.1	1.3	1.5	1.6	1.7
Previous Tealbook	3.1	3.4	2.6	1.7	1.1	1.3	1.5	1.6	1.7
<i>Selected contributions<sup>1</sup></i>									
Structural labor productivity <sup>2</sup>	1.6	2.9	2.8	1.5	.8	1.2	1.3	1.4	1.5
Previous Tealbook	1.6	2.9	2.8	1.5	.8	1.2	1.3	1.4	1.5
Capital deepening	.7	1.5	1.0	.3	.6	.8	.8	.8	.7
Multifactor productivity	.5	1.0	1.5	1.0	.1	.3	.4	.5	.7
Structural hours	1.6	1.2	.8	-.1	.6	.5	.4	.4	.3
Previous Tealbook	1.6	1.2	.8	-.1	.6	.5	.4	.4	.3
Labor force participation	.4	-.1	-.2	-.5	-.7	-.6	-.5	-.5	-.5
Previous Tealbook	.4	-.1	-.2	-.5	-.7	-.6	-.5	-.5	-.5
Memo:									
GDP gap <sup>3</sup>	-1.9	2.4	.8	-4.4	-.9	-.1	.8	1.3	1.5
Previous Tealbook	-1.9	2.4	.8	-4.4	-.9	-.2	.5	.9	1.0

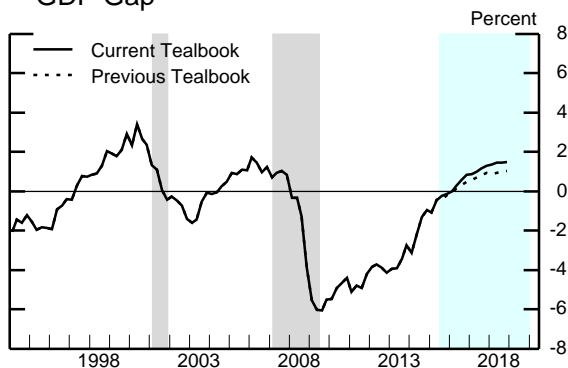
Note: For multiyear periods, the percent change is the annual average from Q4 of the year preceding the first year shown to Q4 of the last year shown.

1. Percentage points.

2. Total business sector.

3. Percent difference between actual and potential GDP in the final quarter of the period indicated. A negative number indicates that the economy is operating below potential.

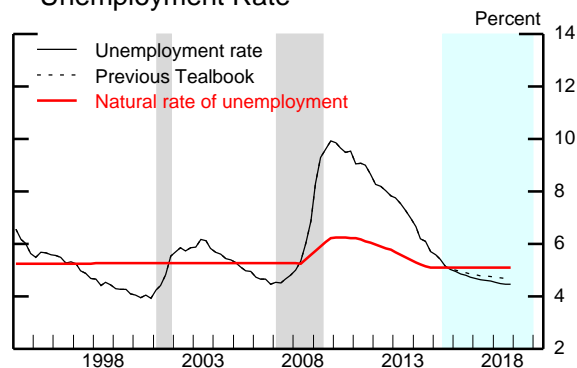
#### GDP Gap



Note: The GDP gap is the percent difference between actual and potential GDP; a negative number indicates that the economy is operating below potential.

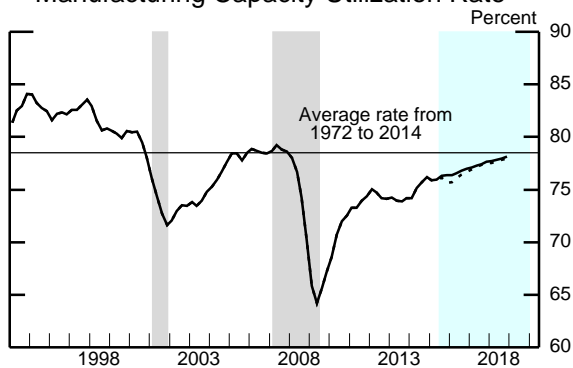
Source: U.S. Department of Commerce, Bureau of Economic Analysis; staff assumptions.

#### Unemployment Rate



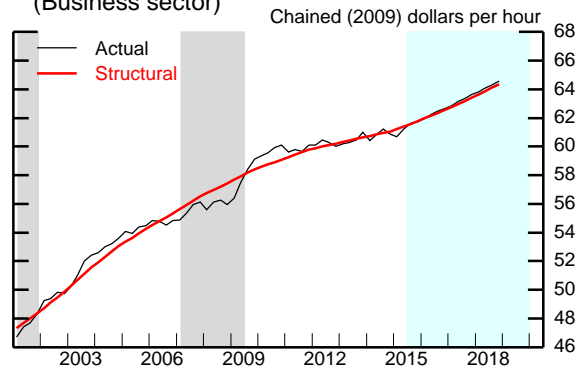
Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

#### Manufacturing Capacity Utilization Rate



Source: Federal Reserve Board, G.17 Statistical Release, "Industrial Production and Capacity Utilization."

#### Structural and Actual Labor Productivity (Business sector)



Source: U.S. Department of Labor, Bureau of Labor Statistics; U.S. Department of Commerce, Bureau of Economic Analysis; staff assumptions.

Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

**The Outlook for the Labor Market**

Measure	2015	2015		2016	2017	2018
		H1	H2			
Output per hour, business <sup>1</sup>	1.4	1.2	1.6	1.6	1.5	1.5
Previous Tealbook	1.4	1.2	1.6	1.5	1.4	1.5
Nonfarm payroll employment <sup>2</sup>	210	213	207	200	153	118
Previous Tealbook	193	213	174	163	139	107
Private employment <sup>2</sup>	202	207	198	185	135	100
Previous Tealbook	180	207	154	150	121	90
Labor force participation rate <sup>3</sup>	62.5	62.8	62.5	62.4	62.3	62.0
Previous Tealbook	62.5	62.8	62.5	62.4	62.3	62.0
Civilian unemployment rate <sup>3</sup>	5.0	5.4	5.0	4.7	4.6	4.5
Previous Tealbook	5.0	5.4	5.0	4.9	4.7	4.7

1. Percent change from final quarter of preceding period at annual rate.

2. Thousands, average monthly changes.

3. Percent, average for the final quarter in the period.

Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

**Inflation Projections**

(Percent change at annual rate from final quarter of preceding period)

Measure	2015	2015		2016	2017	2018
		H1	H2			
PCE chain-weighted price index	.4	.1	.7	1.2	1.8	2.0
Previous Tealbook	.5	.1	.9	1.4	1.7	1.9
Food and beverages	.7	-.7	2.1	1.7	2.0	2.0
Previous Tealbook	.7	-.7	2.1	1.8	2.0	2.0
Energy	-16.8	-20.0	-13.3	-4.1	4.3	2.8
Previous Tealbook	-15.7	-20.0	-11.2	-.9	2.7	1.8
Excluding food and energy	1.3	1.4	1.3	1.4	1.7	1.9
Previous Tealbook	1.4	1.4	1.4	1.4	1.7	1.9
Prices of core goods imports <sup>1</sup>	-3.2	-3.8	-2.5	-.4	1.2	1.2
Previous Tealbook	-3.1	-3.8	-2.3	.4	1.2	1.2

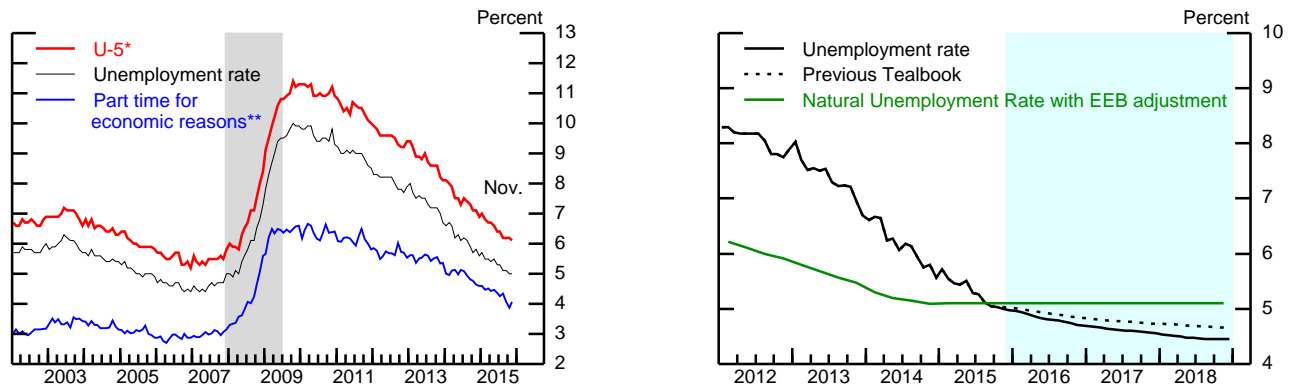
1. Core goods imports exclude computers, semiconductors, oil, and natural gas.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.



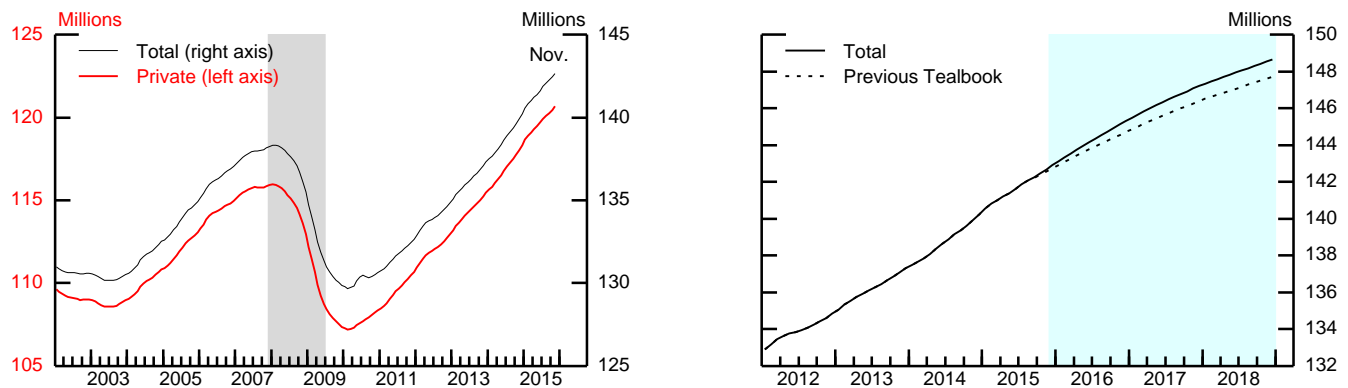
## Labor Market Developments and Outlook (1)

### Measures of Labor Underutilization



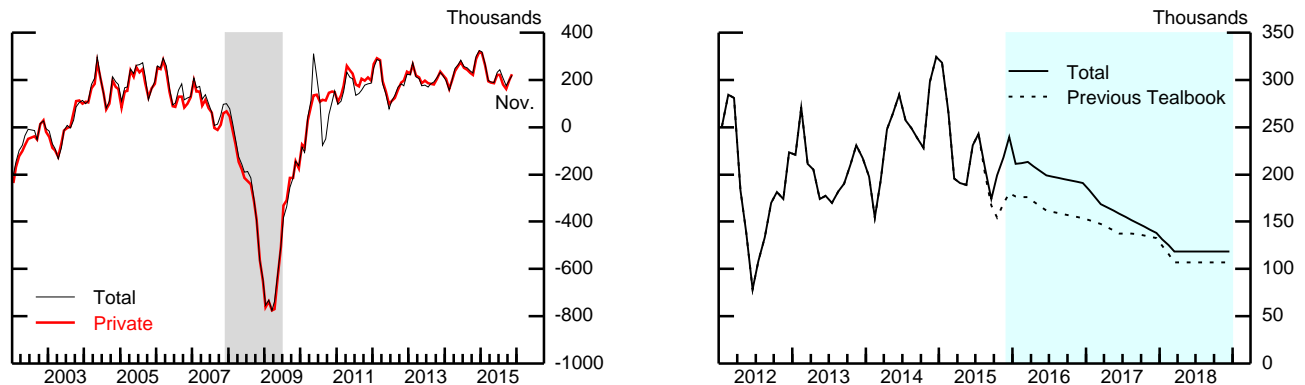
\* U-5 measures total unemployed persons plus all marginally attached to the labor force, as a percent of the labor force plus persons marginally attached to the labor force.  
 \*\* Percent of Current Population Survey employment.  
 EEB Extended and emergency unemployment benefits.  
 Source: U.S. Department of Labor, Bureau of Labor Statistics.

### Level of Payroll Employment\*



\* 3-month moving averages.  
 Source: U.S. Department of Labor, Bureau of Labor Statistics.

### Change in Payroll Employment\*

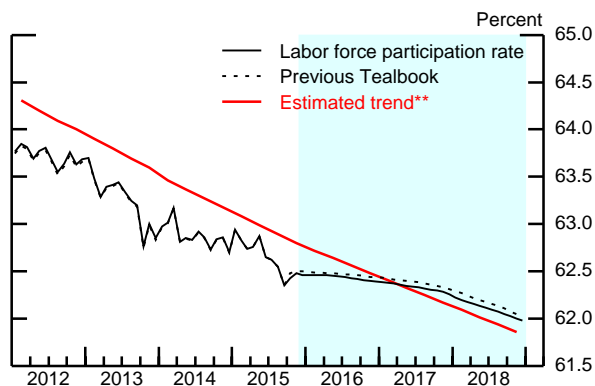
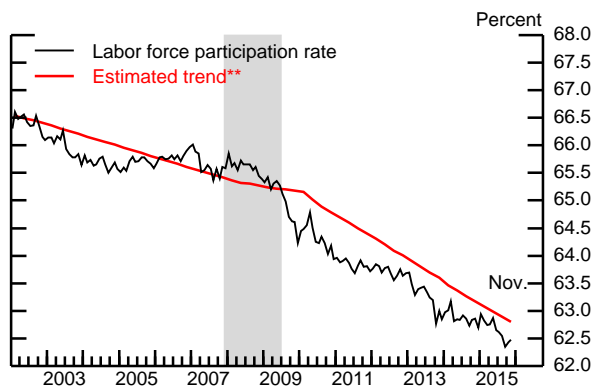


\* 3-month moving averages.  
 Source: U.S. Department of Labor, Bureau of Labor Statistics.

Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

## Labor Market Developments and Outlook (2)

### Labor Force Participation Rate\*

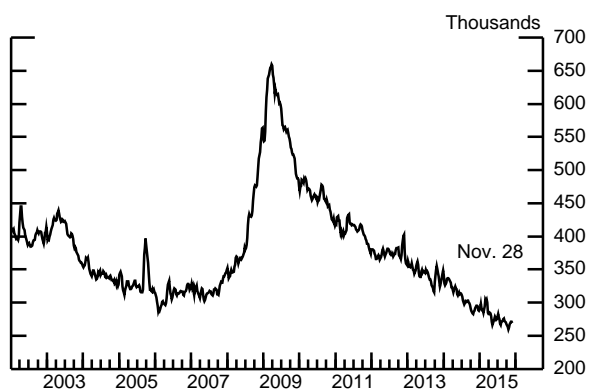


\* Published data adjusted by staff to account for changes in population weights.

\*\* Includes staff estimate of the effect of extended and emergency unemployment benefits.

Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

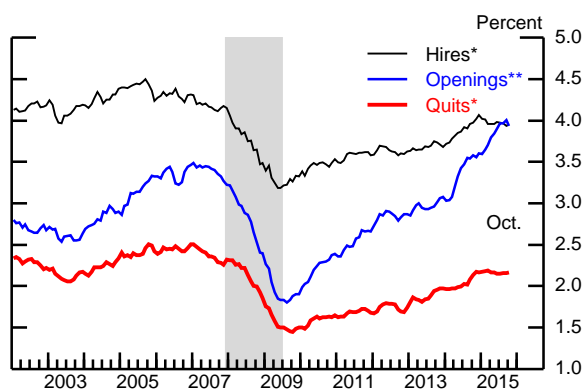
### Initial Unemployment Insurance Claims\*



\* 4-week moving average.

Source: U.S. Department of Labor, Employment and Training Administration.

### Private Hires, Quits, and Job Openings

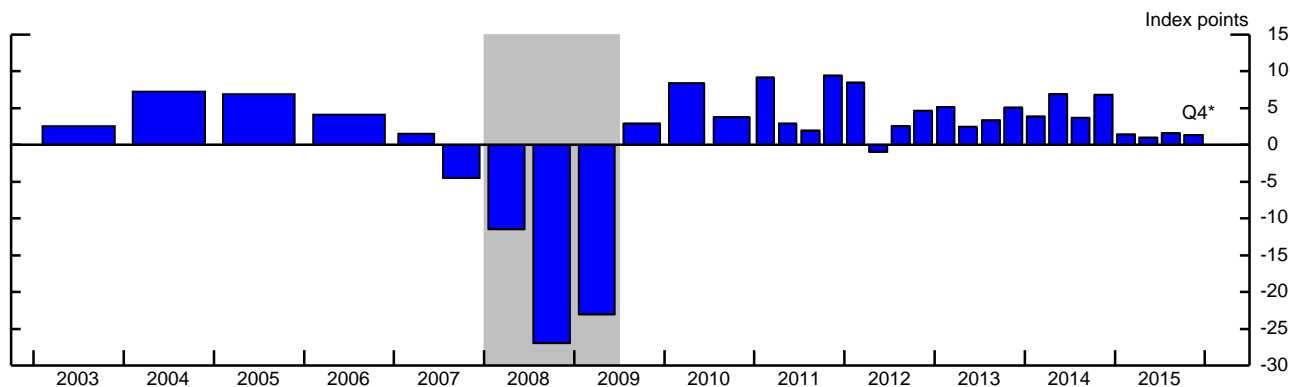


\* Percent of private nonfarm payroll employment, 3-month moving average.

\*\* Percent of private nonfarm payroll employment plus unfilled jobs, 3-month moving average.

Source: Job Openings and Labor Turnover Survey.

### Average Monthly Change in Labor Market Conditions Index



\* Value shown for Q4 is an average of November and October data.

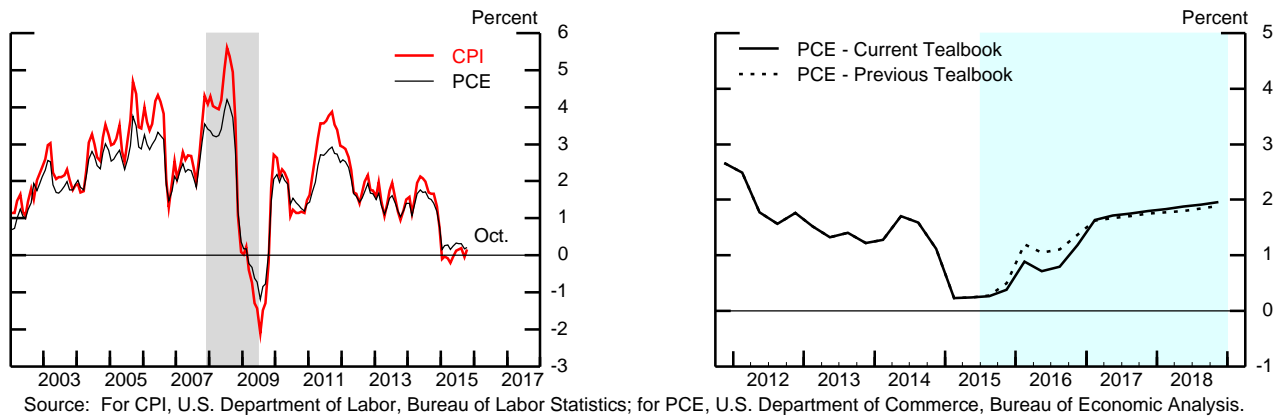
Source: Labor market conditions index estimated by staff.

Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

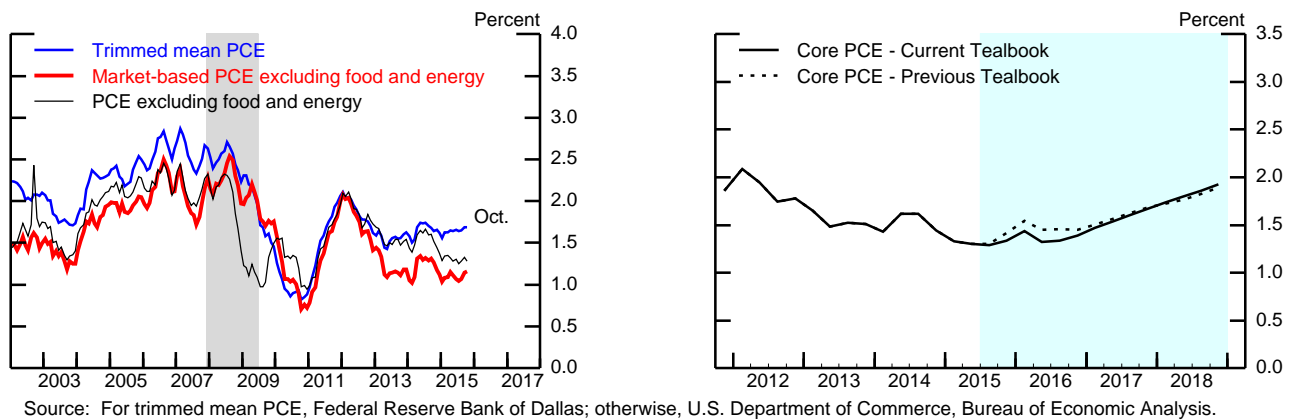
## Inflation Developments and Outlook (1)

(Percent change from year-earlier period)

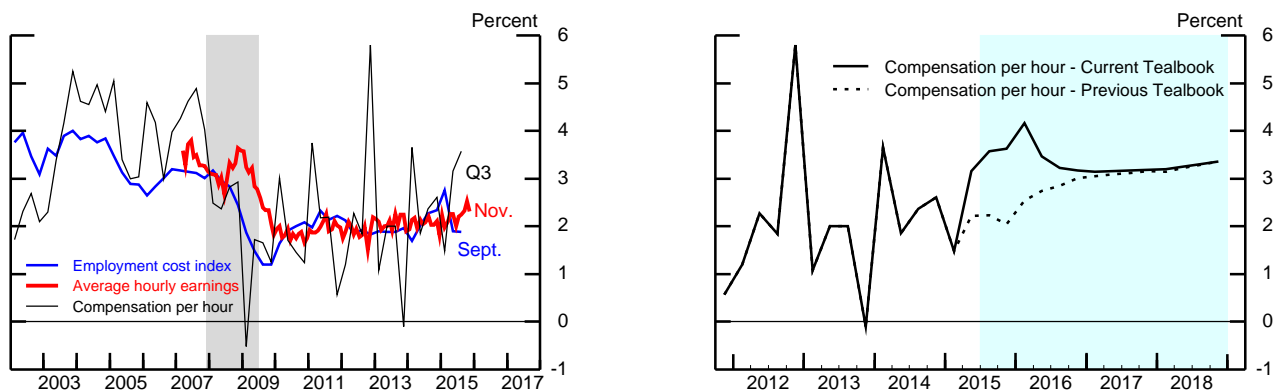
### Headline Consumer Price Inflation



### Measures of Underlying PCE Price Inflation



### Labor Cost Growth



Note: Compensation per hour is for the business sector. Average hourly earnings are for the private nonfarm sector. The employment cost index is for the private sector.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

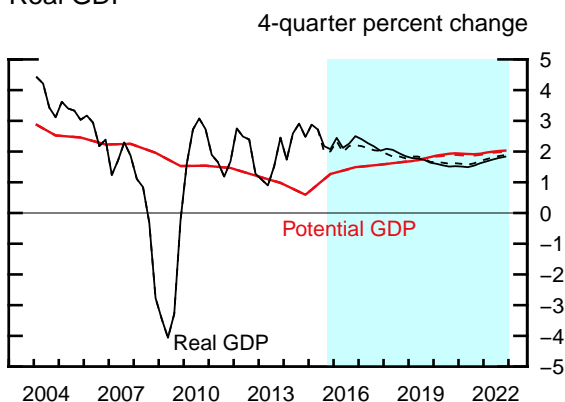
## The Long-Term Outlook

(Percent change, Q4 to Q4, except as noted)

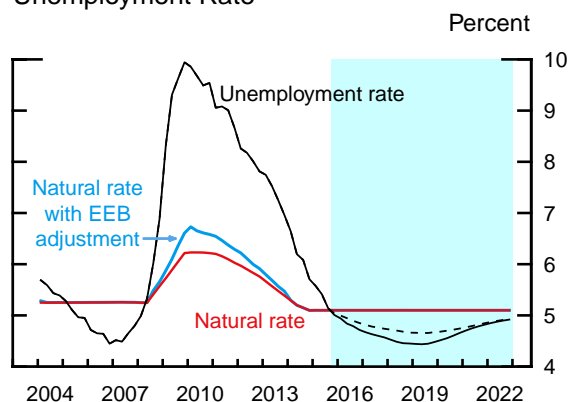
Measure	2015	2016	2017	2018	2019	2020	Longer run
Real GDP	2.1	2.5	2.0	1.9	1.6	1.5	1.9
Previous Tealbook	2.0	2.2	2.0	1.8	1.7	1.6	1.9
Civilian unemployment rate <sup>1</sup>	5.0	4.7	4.6	4.5	4.5	4.7	5.1
Previous Tealbook	5.0	4.9	4.7	4.7	4.7	4.7	5.1
PCE prices, total	.4	1.2	1.8	2.0	2.0	2.1	2.0
Previous Tealbook	.5	1.4	1.7	1.9	2.0	2.0	2.0
Core PCE prices	1.3	1.4	1.7	1.9	2.0	2.1	2.0
Previous Tealbook	1.4	1.4	1.7	1.9	2.0	2.0	2.0
Federal funds rate <sup>1</sup>	.2	1.4	2.5	3.4	3.9	4.1	3.3
Previous Tealbook	.2	1.4	2.4	3.1	3.6	3.7	3.3
10-year Treasury yield <sup>1</sup>	2.3	3.4	3.9	4.2	4.3	4.3	4.1
Previous Tealbook	2.1	3.2	3.7	4.0	4.1	4.2	4.1

1. Percent, average for the final quarter of the period.

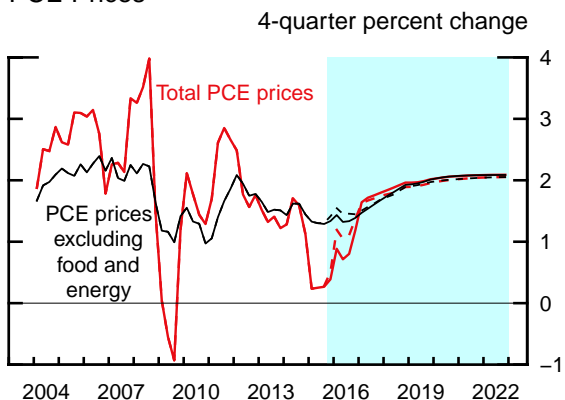
Real GDP



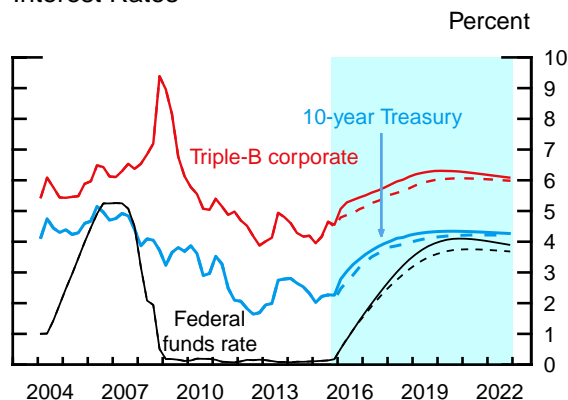
Unemployment Rate



PCE Prices



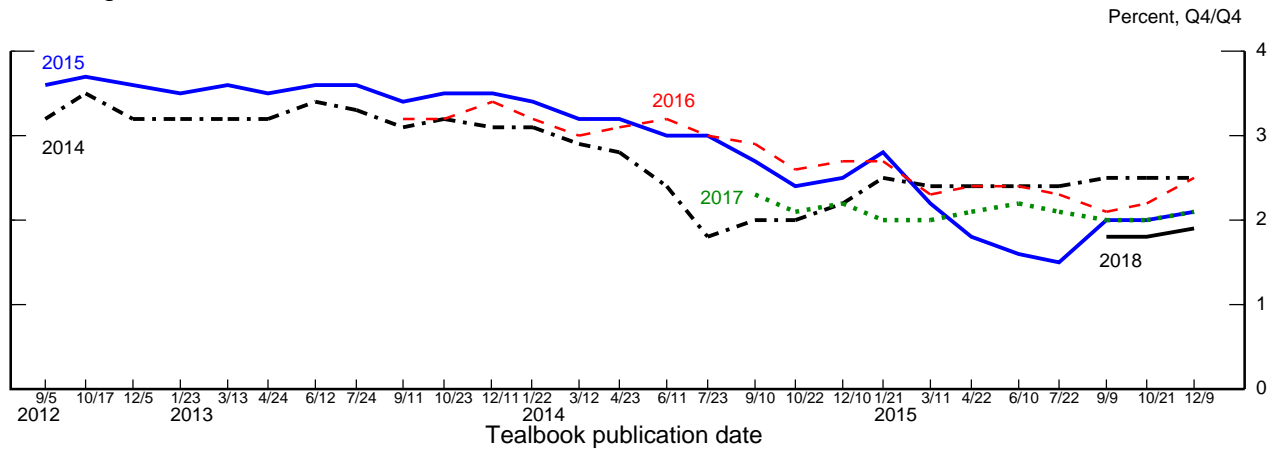
Interest Rates



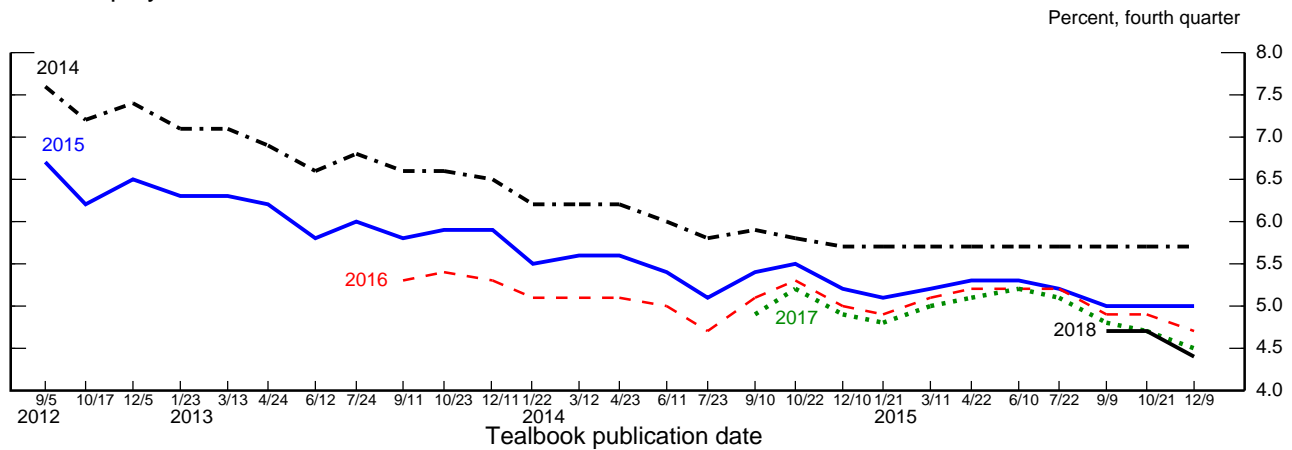
Note: In each panel, shading represents the projection period, and dashed lines are the previous Tealbook.

## Evolution of the Staff Forecast

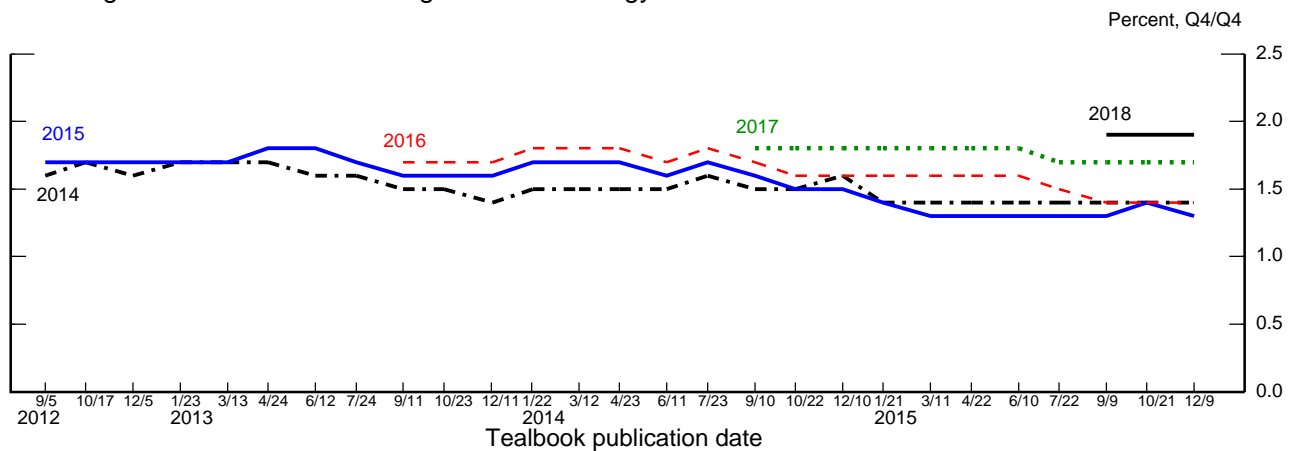
Change in Real GDP



Unemployment Rate

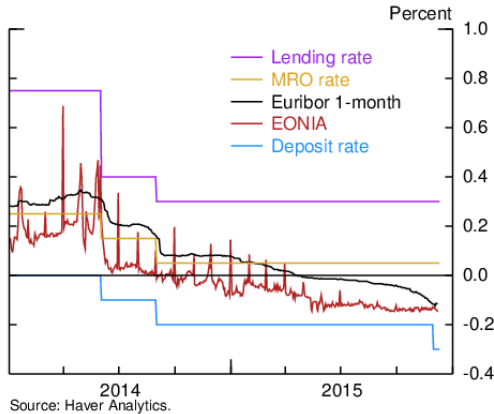


Change in PCE Prices excluding Food and Energy

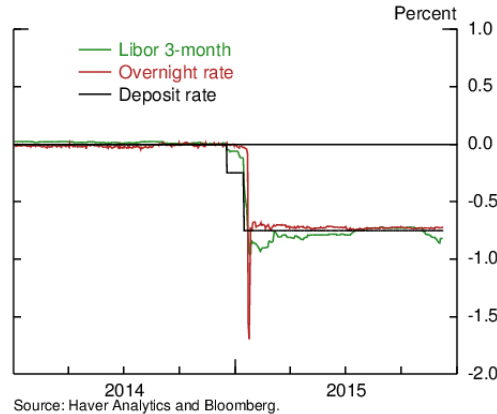


lending rates are falling. Some analysts have viewed the modest rise in Swiss long-term mortgage rates this year, even as bond yields declined, as an attempt by banks to bolster their profits (figure 6). If banks increase lending rates and fees to maintain profits, those actions could limit the effectiveness of negative policy rates in transmitting easier credit conditions to the general economy. However, the rise in Swiss mortgage rates is the exception, and, overall, it appears that moving policy rates into negative territory has contributed to an easing of credit conditions in these economies. It is unclear how low policy rates can go before problems arise, but the European experience has shown that zero is not the effective lower bound.

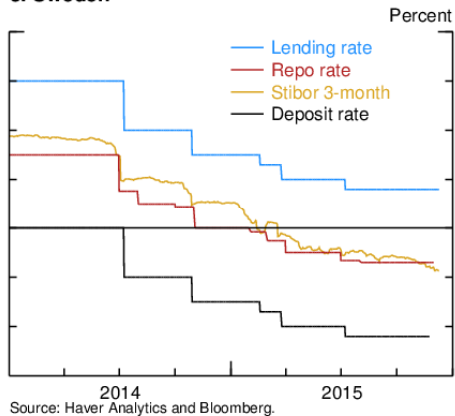
### 1. Euro Area



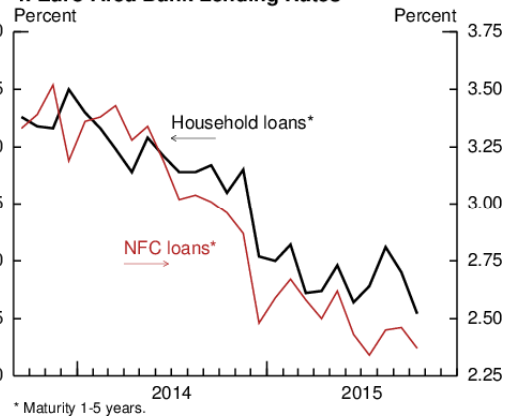
### 2. Switzerland



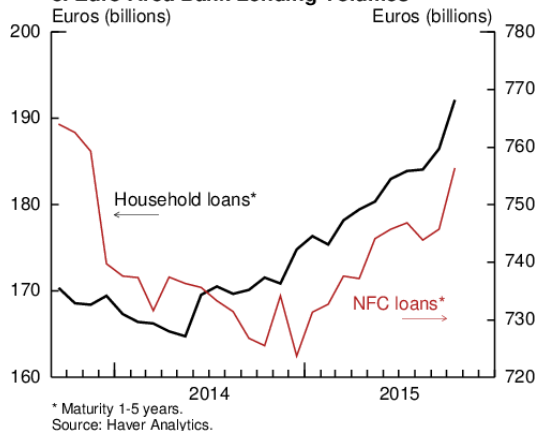
### 3. Sweden



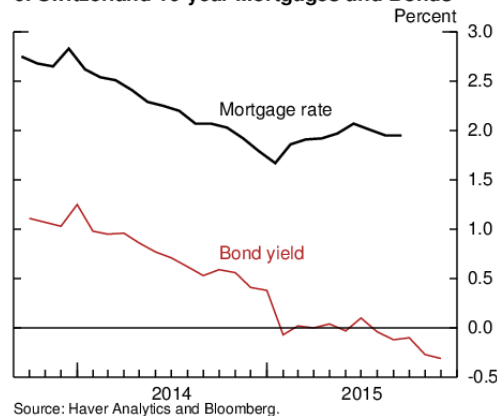
### 4. Euro-Area Bank Lending Rates



### 5. Euro-Area Bank Lending Volumes



### 6. Switzerland 10-year Mortgages and Bonds



## The Foreign GDP Outlook

### Real GDP\*

Percent change, annual rate

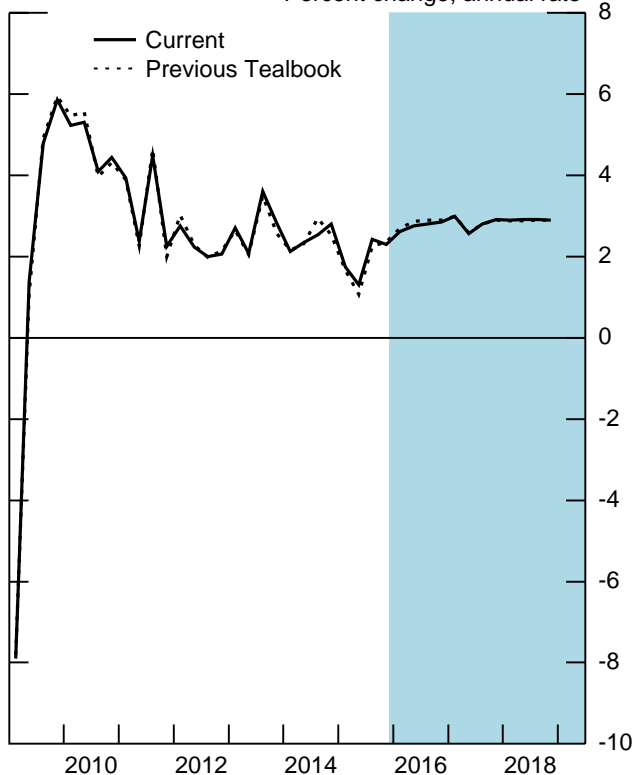
	2014	2015			2016		2017	2018
		H1	Q3	Q4	H1	H2		
<b>1. Total Foreign</b>	<b>2.5</b>	<b>1.5</b>	<b>2.4</b>	<b>2.3</b>	<b>2.7</b>	<b>2.8</b>	<b>2.8</b>	<b>2.9</b>
<i>Previous Tealbook</i>	2.5	1.4	2.3	2.4	2.8	2.9	2.8	2.9
<b>2. Advanced Foreign Economies</b>	<b>1.7</b>	<b>0.8</b>	<b>1.8</b>	<b>1.7</b>	<b>2.0</b>	<b>2.1</b>	<b>1.8</b>	<b>1.9</b>
<i>Previous Tealbook</i>	1.7	0.6	1.9	1.8	2.0	2.1	1.8	1.9
3. Canada	2.4	-0.5	2.3	2.0	2.2	2.1	1.9	1.8
4. Euro Area	0.9	1.9	1.2	1.4	1.8	2.2	2.1	2.1
5. Japan	-0.9	1.9	1.0	1.0	1.1	1.2	-0.3	1.0
6. United Kingdom	3.0	2.1	1.9	2.3	2.5	2.4	2.4	2.3
<b>7. Emerging Market Economies</b>	<b>3.2</b>	<b>2.3</b>	<b>3.0</b>	<b>2.8</b>	<b>3.4</b>	<b>3.6</b>	<b>3.8</b>	<b>3.9</b>
<i>Previous Tealbook</i>	3.2	2.1	2.6	3.0	3.5	3.7	3.8	3.9
8. China	7.2	6.5	7.2	6.5	6.3	6.2	6.1	6.0
9. Emerging Asia ex. China	3.5	2.7	3.6	3.6	4.1	4.2	4.1	4.1
10. Mexico	2.6	2.3	3.0	2.5	2.8	2.8	3.1	3.2
11. Brazil	-0.7	-5.7	-6.7	-4.2	-1.5	0.2	1.6	2.1

\* GDP aggregates weighted by shares of U.S. merchandise exports. The weights were updated in this forecast and the Previous Tealbook forecast has been updated to reflect this change.

... Not applicable.

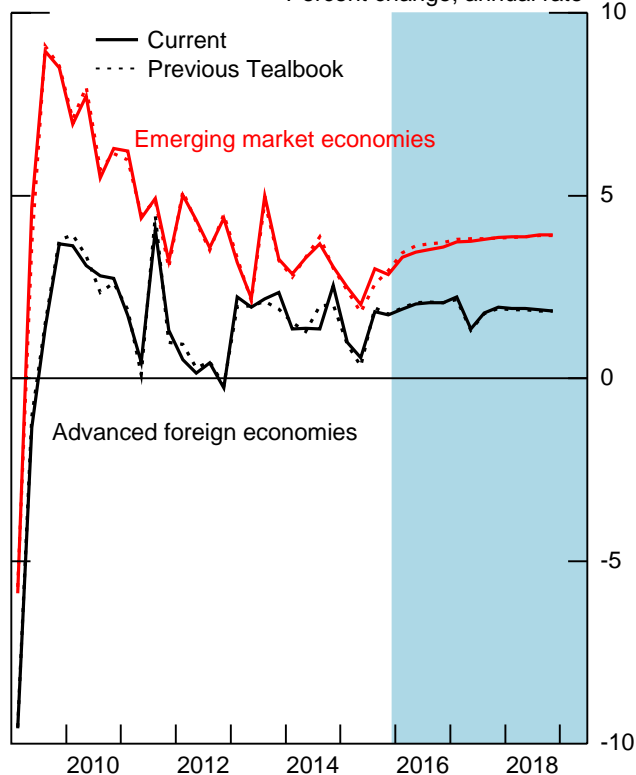
### Total Foreign GDP

Percent change, annual rate



### Foreign GDP

Percent change, annual rate



## The Foreign Inflation Outlook

### Consumer Prices\*

Percent change, annual rate

	2014	2015			2016		2017	2018
		H1	Q3	Q4	H1	H2		
<b>1. Total Foreign</b>	<b>2.0</b>	<b>1.4</b>	<b>2.0</b>	<b>1.0</b>	<b>2.0</b>	<b>2.4</b>	<b>2.5</b>	<b>2.5</b>
<i>Previous Tealbook</i>	2.0	1.3	2.0	1.7	2.3	2.4	2.6	2.5
<b>2. Advanced Foreign Economies</b>	<b>1.1</b>	<b>0.6</b>	<b>0.7</b>	<b>0.2</b>	<b>1.1</b>	<b>1.5</b>	<b>1.9</b>	<b>1.7</b>
<i>Previous Tealbook</i>	1.1	0.6	0.7	0.5	1.3	1.5	1.9	1.7
3. Canada	1.9	1.1	2.3	1.3	1.4	1.7	2.0	2.0
4. Euro Area	0.2	0.5	-0.2	-0.2	1.1	1.5	1.6	1.6
5. Japan	2.5	0.7	0.0	-0.6	0.4	1.0	2.5	1.3
6. United Kingdom	0.9	-0.2	0.9	-0.2	1.5	1.9	2.0	2.0
<b>7. Emerging Market Economies</b>	<b>2.6</b>	<b>2.0</b>	<b>2.9</b>	<b>1.6</b>	<b>2.7</b>	<b>3.0</b>	<b>3.0</b>	<b>3.0</b>
<i>Previous Tealbook</i>	2.6	1.9	3.1	2.7	3.1	3.1	3.1	3.1
8. China	1.5	1.4	3.1	-0.5	1.7	2.4	2.5	2.5
9. Emerging Asia ex. China	2.3	1.4	1.5	2.3	2.9	3.1	3.2	3.3
10. Mexico	4.2	1.8	3.0	3.2	3.2	3.2	3.2	3.2
11. Brazil	6.6	10.6	10.1	8.8	6.4	6.2	5.5	5.4

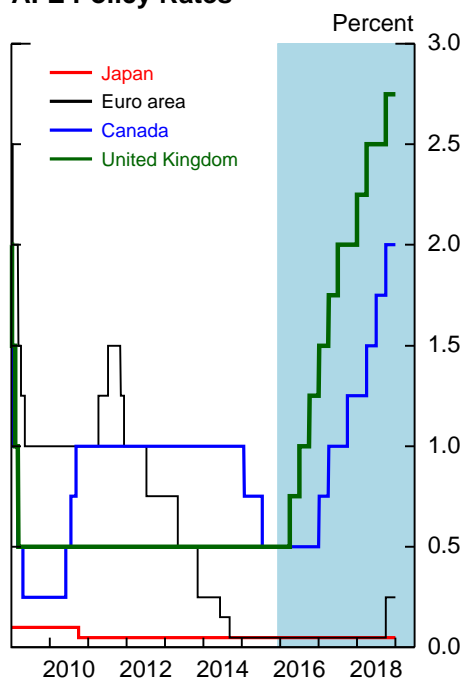
\* CPI aggregates weighted by shares of U.S. non-oil imports. The weights were updated in this forecast and the Previous Tealbook forecast has been updated to reflect this change.

... Not applicable.

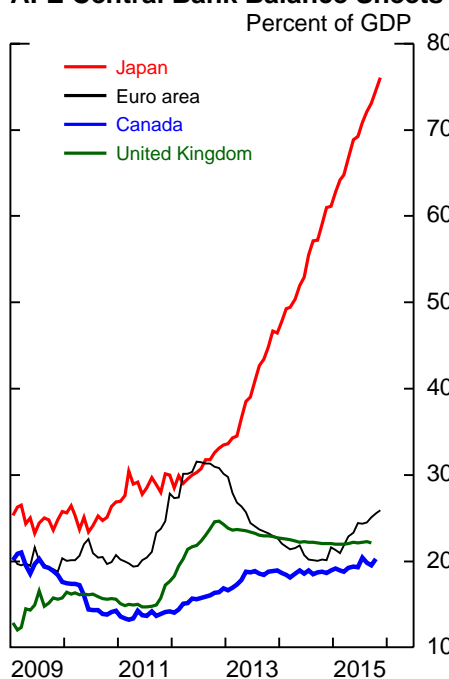
Int'l Econ Devel &amp; Outlook

## Foreign Monetary Policy

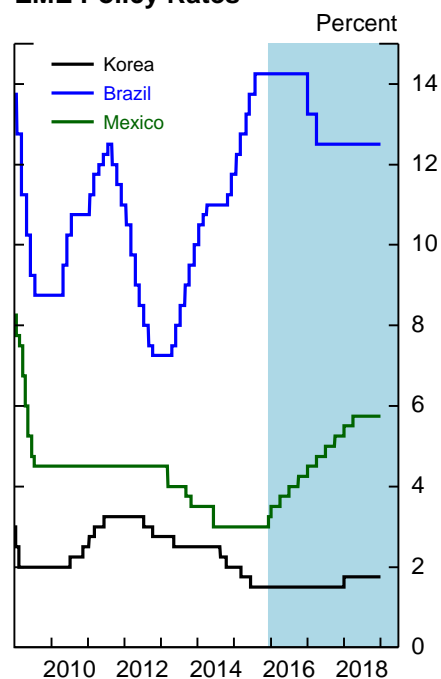
### AFE Policy Rates



### AFE Central Bank Balance Sheets



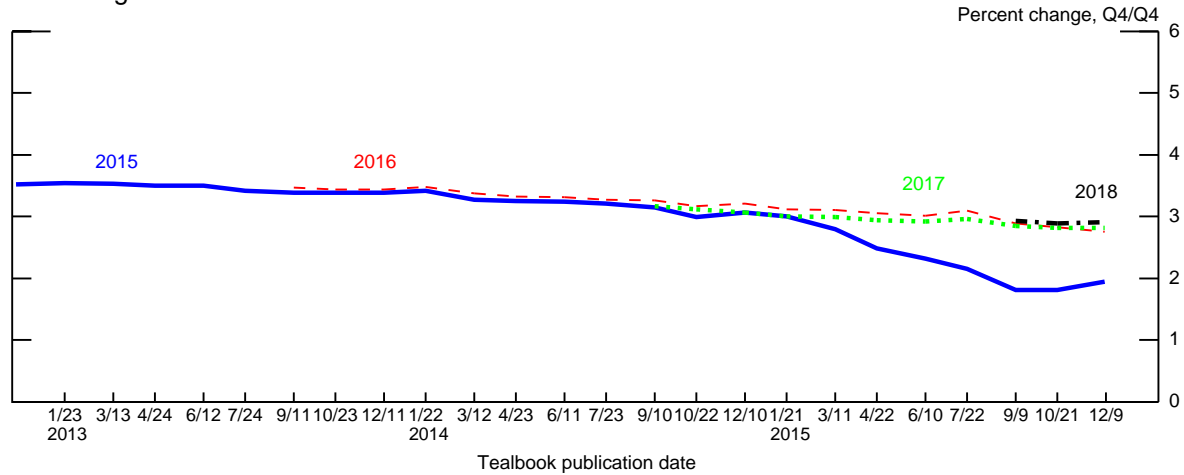
### EME Policy Rates



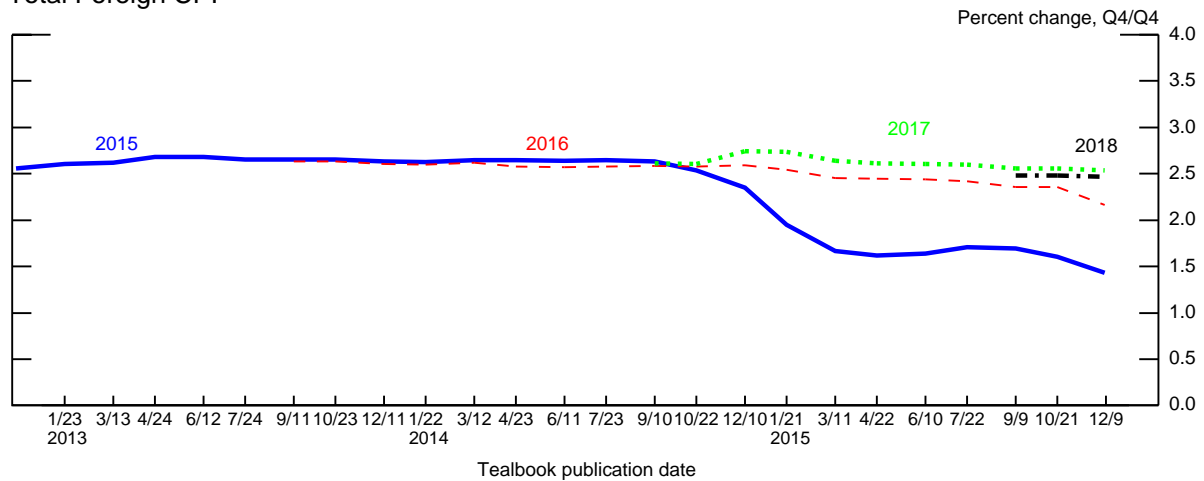


## Evolution of Staff's International Forecast

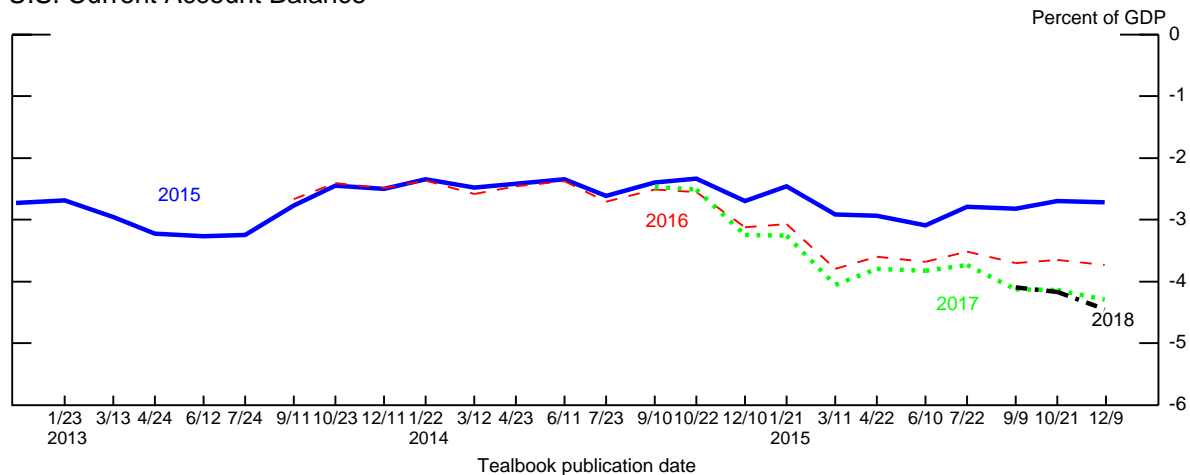
Total Foreign GDP



Total Foreign CPI

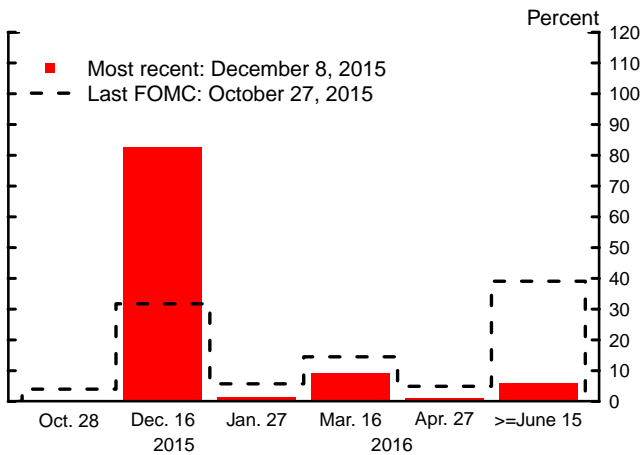


U.S. Current Account Balance



## Policy Expectations

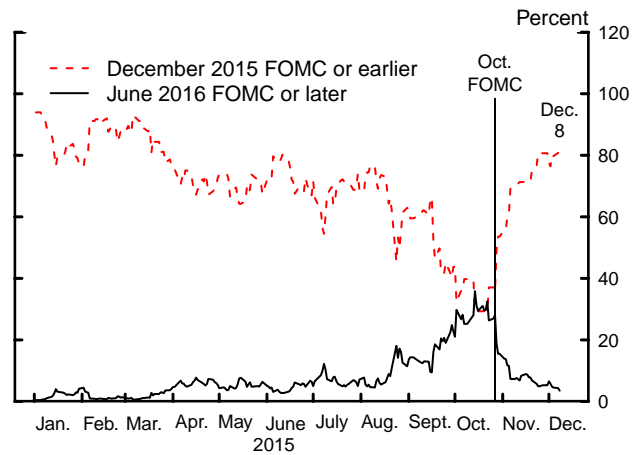
### Implied Probability Distribution of Liftoff



Note: Implied by federal funds futures. The model assumes that investors expect the federal funds rate to trade around 37.5 basis points after liftoff.

Source: CME Group; Federal Reserve Board staff estimates.

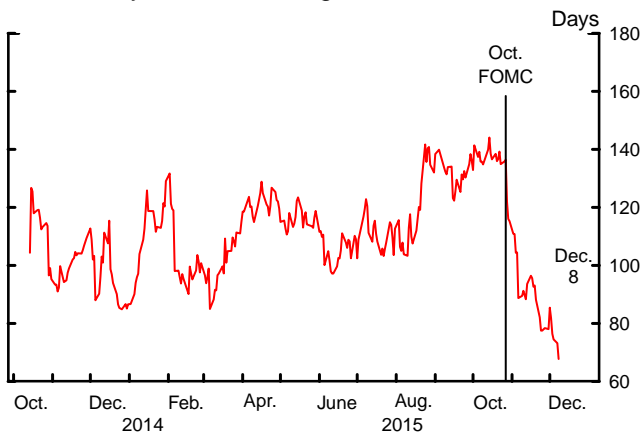
### Implied Probability of Liftoff



Note: Implied by federal funds futures. The model assumes that investors expect the federal funds rate to trade around 37.5 basis points after liftoff.

Source: CME Group; Federal Reserve Board staff estimates.

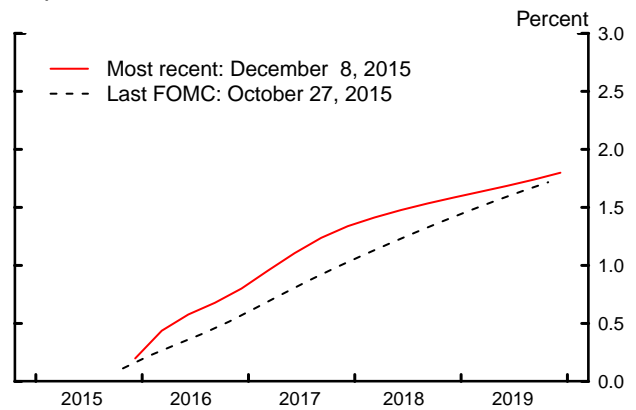
### Uncertainty of Liftoff Timing



Note: Implied by federal funds futures. Standard deviation (in days) of the date of liftoff as implied by rates on federal funds futures contracts.

Source: CME Group; Federal Reserve Board staff estimates.

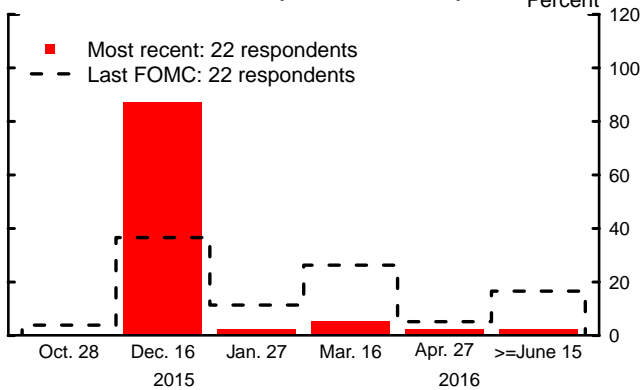
### Implied Federal Funds Rate



Note: Path is estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points.

Source: Bloomberg; Federal Reserve Board staff estimates.

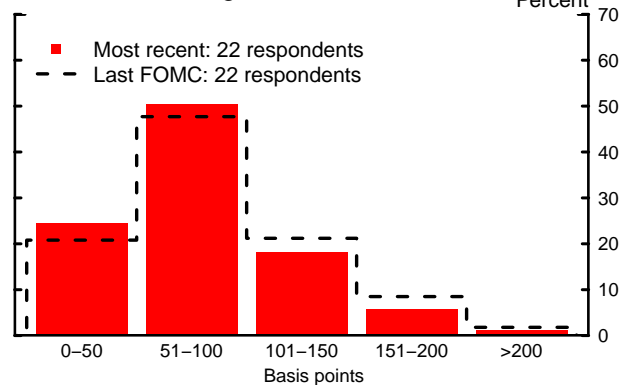
### Distribution of Expected Timing of First Rate Increase from the Desk's Primary Dealer Survey



Note: Average across dealers of their individual probabilities attached to the first tightening occurring at a particular meeting. For June 2016, expected timing is during or after that meeting.

Source: Desk's primary dealer survey from December 7, 2015.

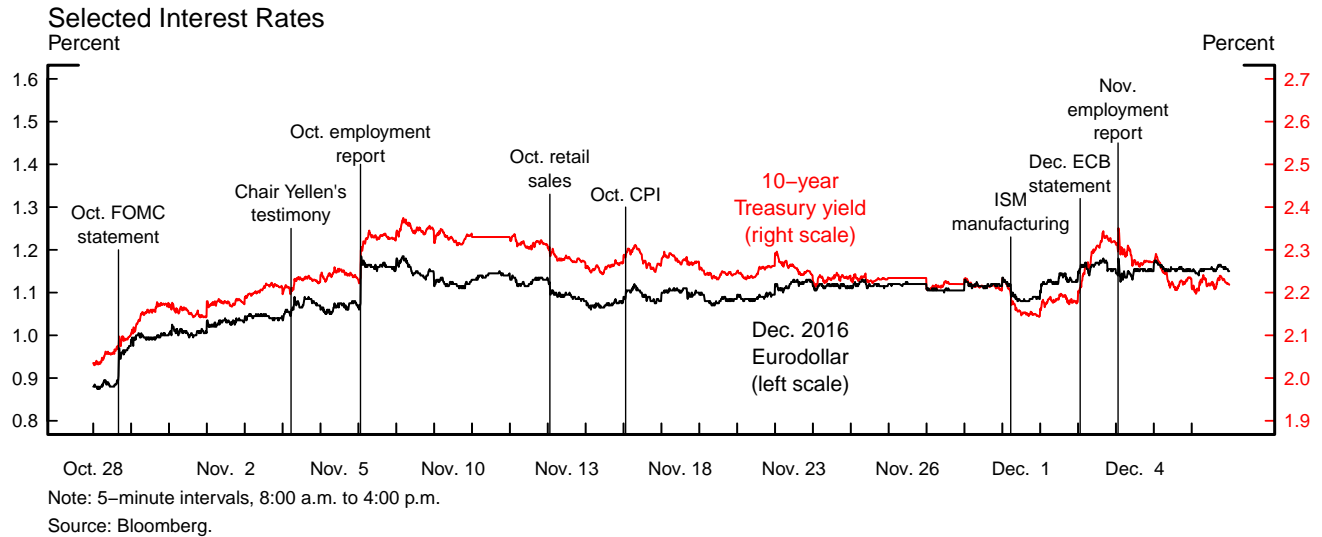
### Conditional Pace of Tightening, First Year following Liftoff



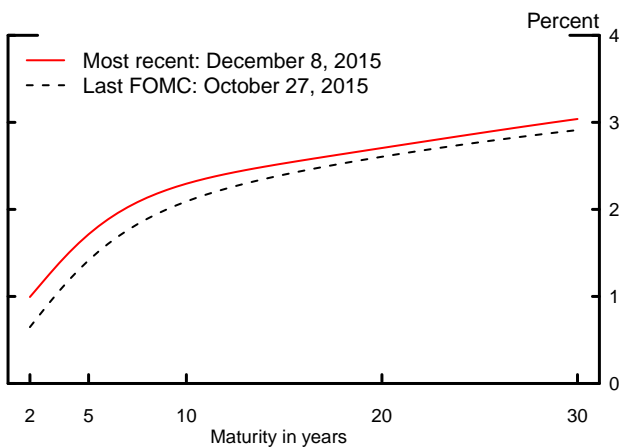
Note: Distribution conditional on the federal funds rate not returning to its zero lower bound.

Source: Desk's primary dealer survey from December 7, 2015.

## Treasury Yields



### Treasury Yield Curve



Note: Smoothed yield curve estimated from off-the-run Treasury coupon securities. Yields shown are those on notional par Treasury securities with semiannual coupons.

Source: Federal Reserve Board staff estimates.

### Inflation Compensation

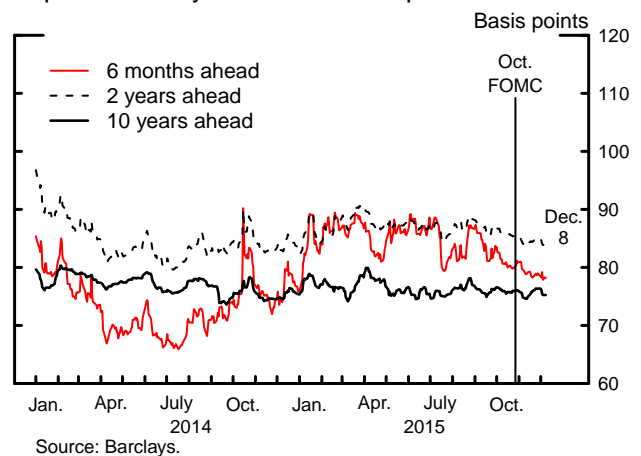


Note: Estimates based on smoothed nominal and inflation-indexed Treasury yield curves.

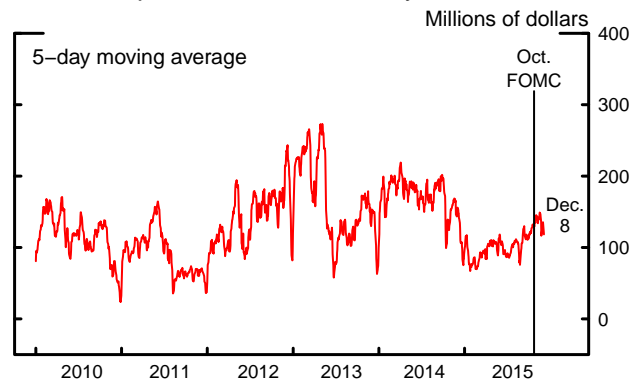
\* Adjusted for lagged indexation of Treasury Inflation-Protected Securities (carry effect).

Source: Federal Reserve Bank of New York; Federal Reserve Board staff estimates.

### Implied Volatility on 10-Year Swap Rate



### Market Depth in 10-Year Treasury Securities



Note: Market depth is defined as the average top 3 bid and asked quote sizes.

Source: BrokerTec.

**Alternative Scenarios**

(Percent change, annual rate, from end of preceding period except as noted)

Measure and scenario	2015	2016	2017	2018	2019-20
	H2				
<i>Real GDP</i>					
Extended Tealbook baseline	1.9	2.5	2.0	1.9	1.6
Faster growth with higher inflation	1.9	3.9	1.7	1.5	1.5
Recession near the zero lower bound	1.9	-1.3	.9	3.0	2.3
Recession near the ZLB (not binding)	1.9	-.2	1.1	2.3	2.0
Weaker supply side	1.9	2.3	1.5	.9	1.3
Lower long-term inflation expectations	1.9	2.5	2.0	1.9	1.7
Stronger dollar	1.9	2.0	1.7	1.9	1.8
Faster foreign growth	1.9	2.9	2.4	1.8	1.4
<i>Unemployment rate<sup>1</sup></i>					
Extended Tealbook baseline	5.0	4.7	4.6	4.5	4.7
Faster growth with higher inflation	5.0	4.2	4.3	4.3	4.5
Recession near the zero lower bound	5.0	6.6	6.5	5.4	4.7
Recession near the ZLB (not binding)	5.0	6.0	5.9	5.2	4.7
Weaker supply side	5.0	4.2	3.9	3.8	4.3
Lower long-term inflation expectations	5.0	4.7	4.6	4.4	4.5
Stronger dollar	5.0	4.9	5.0	4.9	4.9
Faster foreign growth	5.0	4.6	4.3	4.1	4.4
<i>Total PCE prices</i>					
Extended Tealbook baseline	.7	1.2	1.8	2.0	2.0
Faster growth with higher inflation	.7	1.8	2.3	2.4	2.4
Recession near the zero lower bound	.7	1.0	1.7	2.0	2.1
Recession near the ZLB (not binding)	.7	1.1	1.7	2.0	2.1
Weaker supply side	.7	1.3	2.1	2.3	2.1
Lower long-term inflation expectations	.7	1.0	1.3	1.4	1.7
Stronger dollar	.7	.5	1.5	1.8	1.9
Faster foreign growth	.7	1.7	2.1	2.1	2.0
<i>Core PCE prices</i>					
Extended Tealbook baseline	1.3	1.4	1.7	1.9	2.0
Faster growth with higher inflation	1.3	2.0	2.2	2.3	2.4
Recession near the zero lower bound	1.3	1.2	1.6	2.0	2.1
Recession near the ZLB (not binding)	1.3	1.3	1.6	2.0	2.1
Weaker supply side	1.3	1.5	2.0	2.2	2.1
Lower long-term inflation expectations	1.3	1.2	1.2	1.4	1.7
Stronger dollar	1.3	.9	1.4	1.8	1.9
Faster foreign growth	1.3	1.7	1.9	2.0	2.1
<i>Federal funds rate<sup>1</sup></i>					
Extended Tealbook baseline	.2	1.4	2.5	3.4	4.1
Faster growth with higher inflation	.2	2.2	3.7	4.6	5.0
Recession near the zero lower bound	.2	.1	.2	1.2	3.3
Recession near the ZLB (not binding)	.2	-2.2	-.7	1.0	3.2
Weaker supply side	.2	2.1	3.7	4.8	5.1
Lower long-term inflation expectations	.2	1.4	2.2	3.0	3.7
Stronger dollar	.2	1.2	2.0	2.8	3.7
Faster foreign growth	.2	1.6	3.0	4.0	4.4

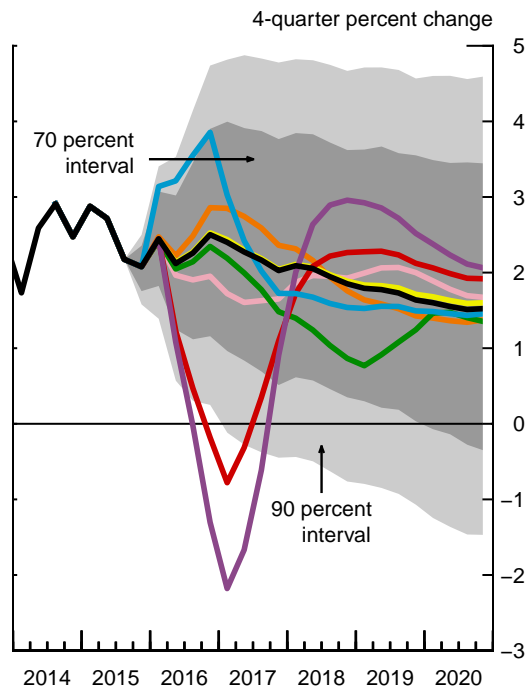
1. Percent, average for the final quarter of the period.

## Forecast Confidence Intervals and Alternative Scenarios

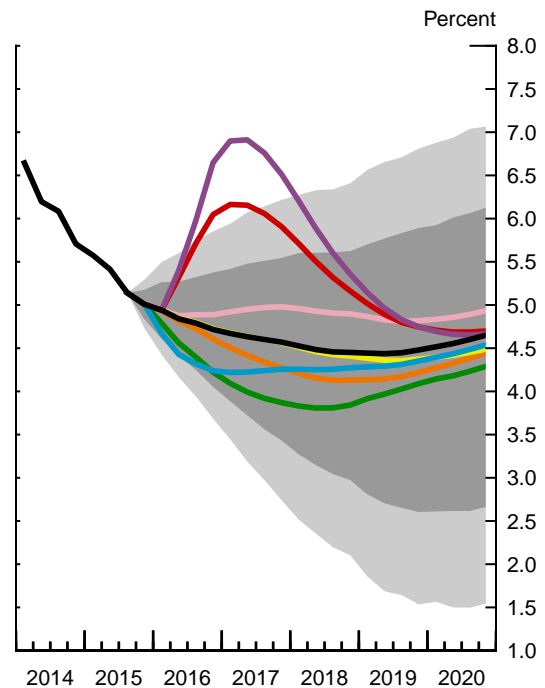
Confidence Intervals Based on FRB/US Stochastic Simulations

- Extended Tealbook baseline
- Recession near the ZLB (not binding)
- Stronger dollar
- Faster growth with higher inflation
- Weaker supply side
- Faster foreign growth
- Recession near the zero lower bound
- Lower long-term inflation expectations

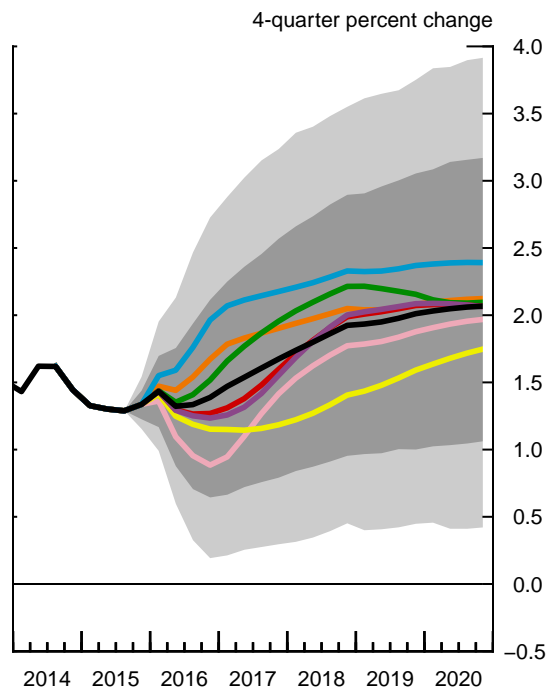
Real GDP



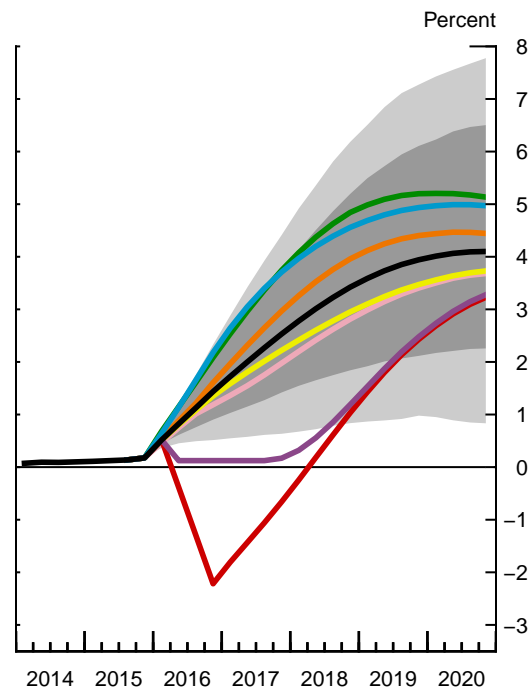
Unemployment Rate



PCE Prices excluding Food and Energy



Federal Funds Rate



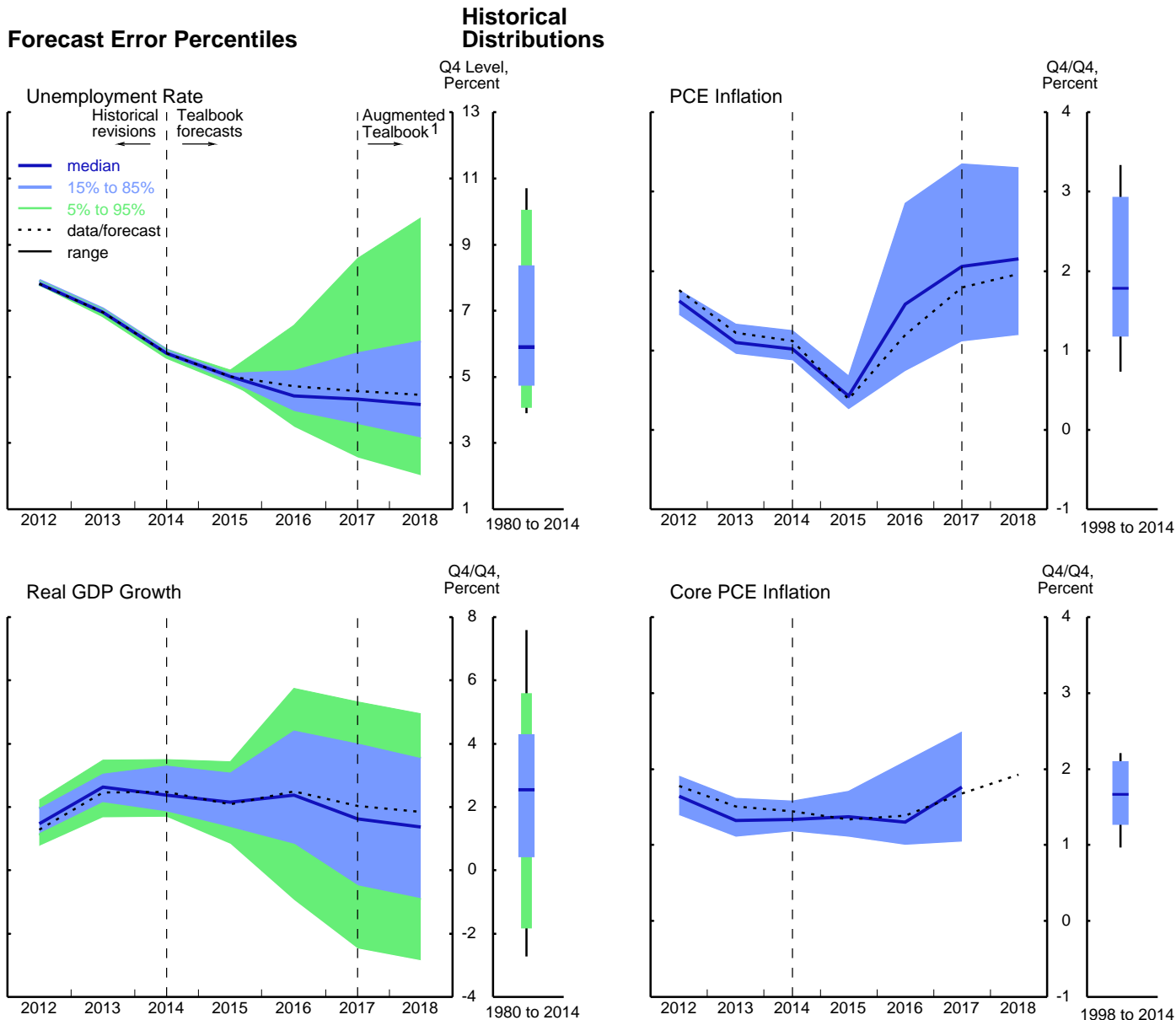
**Selected Tealbook Projections and 70 Percent Confidence Intervals Derived  
from Historical Tealbook Forecast Errors and FRB/US Simulations**

Measure	2015	2016	2017	2018	2019	2020
<i>Real GDP</i> (percent change, Q4 to Q4)						
Projection	2.1	2.5	2.0	1.9	1.6	1.5
Confidence interval						
Tealbook forecast errors	1.3–3.1	.8–4.4	-.5–4.0	-.9–3.5	...	...
FRB/US stochastic simulations	1.8–2.4	1.2–3.9	.5–3.8	.3–3.6	.0–3.6	-.4–3.4
<i>Civilian unemployment rate</i> (percent, Q4)						
Projection	5.0	4.7	4.6	4.5	4.5	4.7
Confidence interval						
Tealbook forecast errors	4.8–5.1	3.9–5.2	3.5–5.7	3.1–6.1	...	...
FRB/US stochastic simulations	4.8–5.2	4.1–5.4	3.4–5.5	3.0–5.6	2.6–5.9	2.7–6.1
<i>PCE prices, total</i> (percent change, Q4 to Q4)						
Projection	.4	1.2	1.8	2.0	2.0	2.1
Confidence interval						
Tealbook forecast errors	.2–.7	.7–2.9	1.1–3.4	1.2–3.3	...	...
FRB/US stochastic simulations	.2–.5	.4–2.0	.8–2.8	.9–3.0	.9–3.1	1.0–3.3
<i>PCE prices excluding food and energy</i> (percent change, Q4 to Q4)						
Projection	1.3	1.4	1.7	1.9	2.0	2.1
Confidence interval						
Tealbook forecast errors	1.1–1.7	1.0–2.1	1.0–2.5	...	...	...
FRB/US stochastic simulations	1.2–1.4	.6–2.1	.8–2.6	1.0–2.9	1.0–3.1	1.1–3.2
<i>Federal funds rate</i> (percent, Q4)						
Projection	.2	1.4	2.5	3.4	3.9	4.1
Confidence interval						
FRB/US stochastic simulations	.2–.2	.9–2.0	1.4–3.8	1.8–5.2	2.1–6.1	2.3–6.5

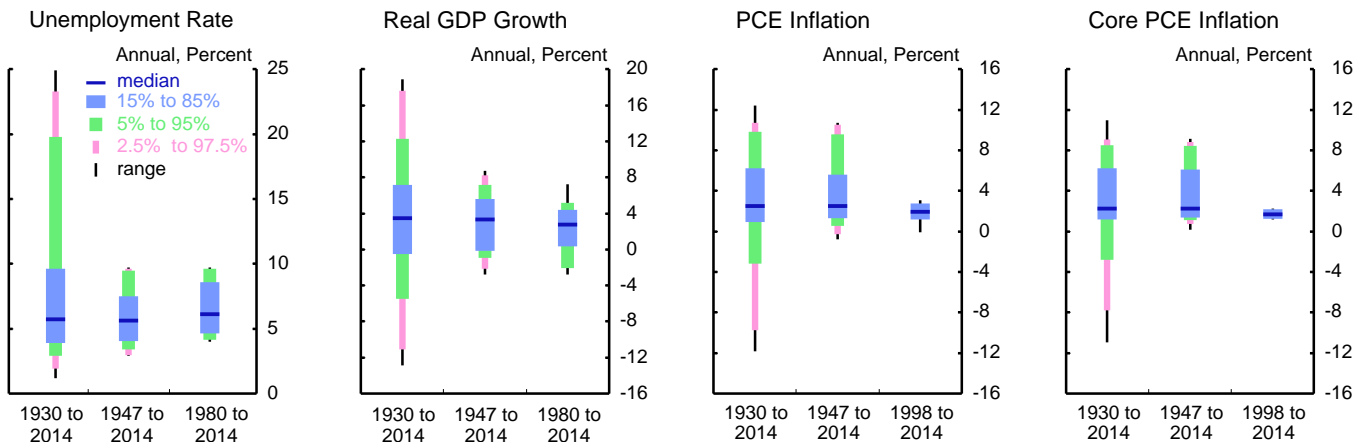
Note: Shocks underlying FRB/US stochastic simulations are randomly drawn from the 1969–2014 set of model equation residuals. Intervals derived from Tealbook forecast errors are based on projections made from 1980 to 2014 for real GDP and unemployment and from 1998 to 2014 for PCE prices. The intervals for real GDP, unemployment, and total PCE prices are extended into 2018 using information from the Blue Chip survey and forecasts from the CBO and CEA.

... Not applicable.

## Prediction Intervals Derived from Historical Tealbook Forecast Errors



### Historical Distributions



Note: See the technical note in the appendix for more information on this exhibit.

1. Augmented Tealbook prediction intervals use 2- and 3-year-ahead forecast errors from Blue Chip, CBO, and CEA to extend the Tealbook prediction intervals through 2018.

**Alternative Models**  
(Percent change, Q4 to Q4, except as noted)

Measure and projection	2015		2016		2017	
	September Tealbook	Current Tealbook	September Tealbook	Current Tealbook	September Tealbook	Current Tealbook
<i>Real GDP</i>						
Staff	2.0	2.1	2.1	2.5	2.0	2.0
FRB/US	2.2	2.1	2.2	2.5	2.0	1.7
EDO	2.2	2.1	2.6	2.7	2.7	2.6
<i>Unemployment rate<sup>1</sup></i>						
Staff	5.0	5.0	4.9	4.7	4.8	4.6
FRB/US	5.1	5.0	5.1	4.8	5.2	5.1
EDO	5.5	5.0	5.6	4.9	5.6	5.0
<i>Total PCE prices</i>						
Staff	.3	.4	1.5	1.2	1.7	1.8
FRB/US	.3	.4	1.4	1.4	1.1	1.6
EDO	.7	.4	1.8	1.8	2.0	2.2
<i>Core PCE prices</i>						
Staff	1.3	1.3	1.4	1.4	1.7	1.7
FRB/US	1.4	1.3	1.4	1.6	1.0	1.5
EDO	1.4	1.3	1.8	1.8	2.0	2.2
<i>Federal funds rate<sup>1</sup></i>						
Staff	.4	.2	1.4	1.4	2.3	2.5
FRB/US	.4	.2	.8	1.0	.6	1.0
EDO	.5	.2	1.7	1.7	2.4	2.8

1. Percent, average for Q4.



## Assessment of Key Macroeconomic Risks (1)

### Probability of Inflation Events (4 quarters ahead)

Probability that the 4-quarter change in total PCE prices will be ...	Staff	FRB/US	EDO	BVAR
<i>Greater than 3 percent</i>				
Current Tealbook	.02	.04	.03	.05
Previous Tealbook	.02	.02	.12	.04
<i>Less than 1 percent</i>				
Current Tealbook	.40	.29	.10	.20
Previous Tealbook	.46	.46	.26	.21

### Probability of Unemployment Events (4 quarters ahead)

Probability that the unemployment rate will ...	Staff	FRB/US	EDO	BVAR
<i>Increase by 1 percentage point</i>				
Current Tealbook	.02	.03	.15	.01
Previous Tealbook	.04	.04	.25	.01
<i>Decrease by 1 percentage point</i>				
Current Tealbook	.11	.07	.13	.24
Previous Tealbook	.13	.06	.02	.20

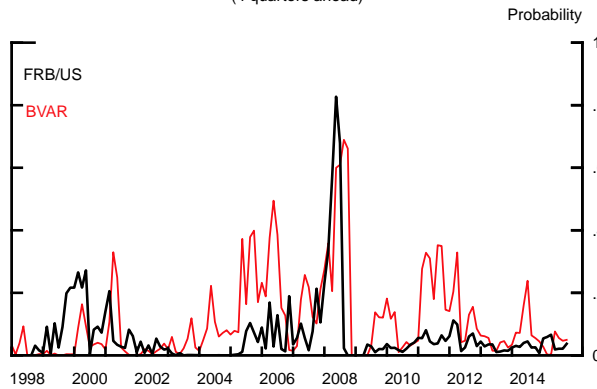
### Probability of Near-Term Recession

Probability that real GDP declines in the next two quarters	Staff	FRB/US	EDO	BVAR	Factor Model
Current Tealbook	.02	.01	.04	.03	.17
Previous Tealbook	.05	.05	.02	.03	.18

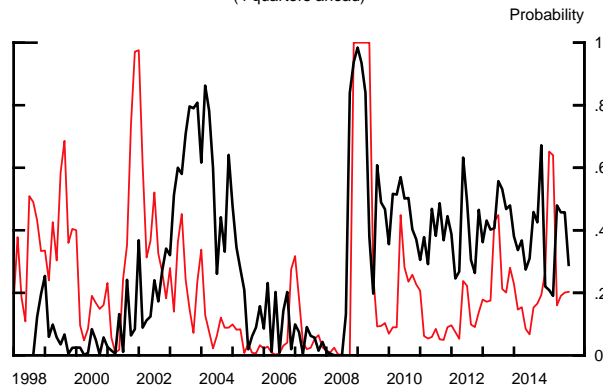
Note: "Staff" represents stochastic simulations in FRB/US around the staff baseline; baselines for FRB/US, BVAR, EDO, and the factor model are generated by those models themselves, up to the current-quarter estimate. Data for the current quarter are taken from the staff estimate for the second Tealbook in each quarter; if the second Tealbook for the current quarter has not yet been published, the preceding quarter is taken as the latest historical observation. Revisions to EDO probabilities reflect model re-specification and re-estimation since the October round.

## Assessment of Key Macroeconomic Risks (2)

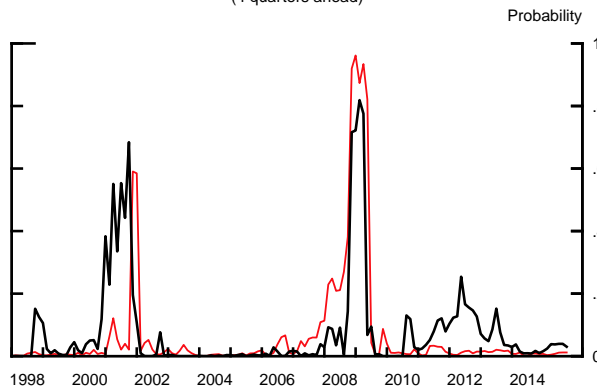
Probability that Total PCE Inflation Is above 3 Percent  
(4 quarters ahead)



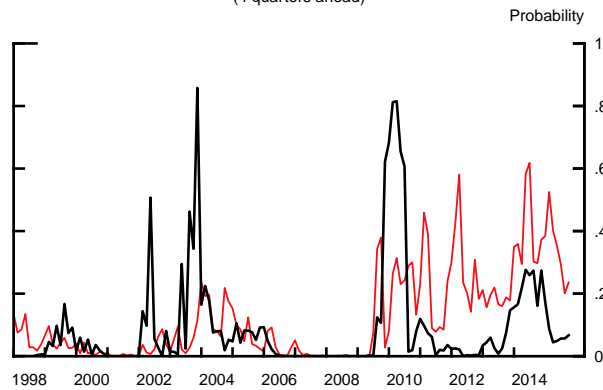
Probability that Total PCE Inflation Is below 1 Percent  
(4 quarters ahead)



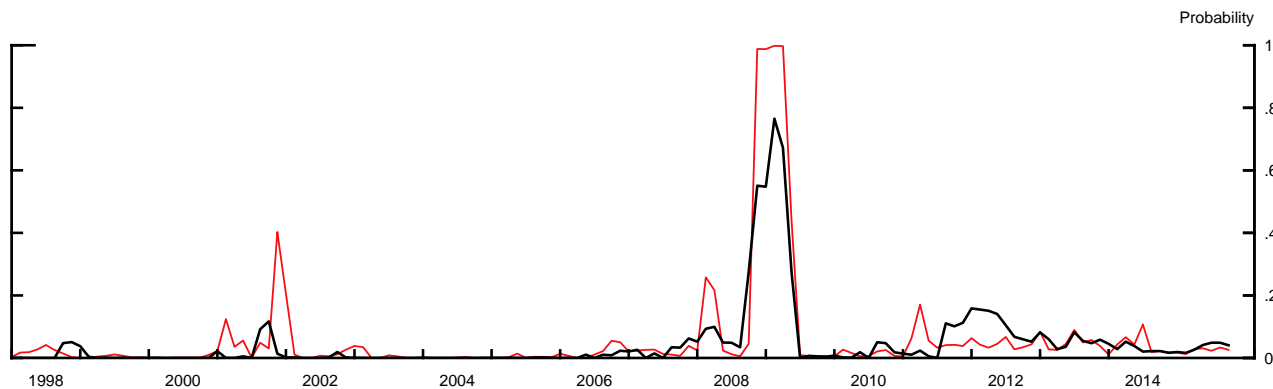
Probability that the Unemployment Rate Increases 1 ppt  
(4 quarters ahead)



Probability that the Unemployment Rate Decreases 1 ppt  
(4 quarters ahead)



Probability that Real GDP Declines in Each of the Next Two Quarters



Note: See notes on facing page. Recession and inflation probabilities for FRB/US and the BVAR are real-time estimates. See Robert J. Tetlow and Brian Ironside (2007), "Real-Time Model Uncertainty in the United States: The Fed, 1996–2003," *Journal of Money, Credit and Banking*, vol. 39 (October), pp. 1533–61.

**Changes in GDP, Prices, and Unemployment**  
(Percent, annual rate except as noted)

Interval	Nominal GDP		Real GDP		PCE price index		Core PCE price index		Unemployment rate <sup>1</sup>	
	10/21/15	12/09/15	10/21/15	12/09/15	10/21/15	12/09/15	10/21/15	12/09/15	10/21/15	12/09/15
<i>Quarterly</i>										
2015:Q1	.8	.8	.6	.6	-1.9	-1.9	1.0	1.0	5.6	5.6
Q2	6.1	6.1	3.9	3.9	2.2	2.2	1.9	1.9	5.4	5.4
Q3	2.9	3.4	1.4	2.1	1.3	1.3	1.4	1.3	5.1	5.1
Q4	3.0	2.5	2.1	1.7	.4	.0	1.4	1.2	5.0	5.0
2016:Q1	2.8	2.5	2.0	2.1	.8	.0	1.5	1.4	5.0	4.9
Q2	4.3	4.2	2.5	2.6	1.6	1.5	1.5	1.4	4.9	4.8
Q3	3.8	4.4	2.2	2.7	1.6	1.6	1.4	1.4	4.9	4.8
Q4	3.9	4.4	2.2	2.7	1.5	1.6	1.4	1.4	4.9	4.7
2017:Q1	3.9	3.8	1.8	1.7	1.8	1.8	1.7	1.7	4.8	4.7
Q2	4.1	4.0	2.2	2.1	1.8	1.8	1.7	1.7	4.8	4.6
Q3	3.7	4.1	1.9	2.2	1.7	1.8	1.6	1.7	4.8	4.6
Q4	3.9	4.0	2.1	2.1	1.7	1.8	1.6	1.7	4.7	4.6
<i>Two-quarter<sup>2</sup></i>										
2015:Q2	3.4	3.4	2.3	2.3	.1	.1	1.4	1.4	-3	-3
Q4	2.9	2.9	1.7	1.9	.9	.7	1.4	1.3	-4	-4
2016:Q2	3.5	3.3	2.2	2.4	1.2	.8	1.5	1.4	-1	-2
Q4	3.9	4.4	2.2	2.7	1.5	1.6	1.4	1.4	.0	-1
2017:Q2	4.0	3.9	2.0	1.9	1.8	1.8	1.7	1.7	-1	-1
Q4	3.8	4.0	2.0	2.2	1.7	1.8	1.6	1.7	-1	.0
<i>Four-quarter<sup>3</sup></i>										
2014:Q4	3.9	3.9	2.5	2.5	1.1	1.1	1.4	1.4	-1.3	-1.3
2015:Q4	3.2	3.2	2.0	2.1	.5	.4	1.4	1.3	-7	-7
2016:Q4	3.7	3.8	2.2	2.5	1.4	1.2	1.4	1.4	-1	-3
2017:Q4	3.9	4.0	2.0	2.0	1.7	1.8	1.7	1.7	-2	-1
2018:Q4	3.8	3.9	1.8	1.9	1.9	2.0	1.9	1.9	.0	-1
<i>Annual</i>										
2014	4.1	4.1	2.4	2.4	1.4	1.4	1.5	1.5	6.2	6.2
2015	3.4	3.5	2.4	2.5	.3	.3	1.3	1.3	5.3	5.3
2016	3.5	3.5	2.2	2.3	1.2	.9	1.5	1.4	4.9	4.8
2017	3.9	4.1	2.1	2.2	1.7	1.7	1.6	1.6	4.8	4.6
2018	3.8	4.0	1.8	2.0	1.8	1.9	1.8	1.8	4.7	4.5

1. Level, except for two-quarter and four-quarter intervals.

2. Percent change from two quarters earlier; for unemployment rate, change is in percentage points.

3. Percent change from four quarters earlier; for unemployment rate, change is in percentage points.

## Changes in Real Gross Domestic Product and Related Items

(Percent, annual rate except as noted)

Item	2015			2016				2017				2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>	2018 <sup>1</sup>
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Real GDP <i>Previous Tealbook</i>	3.9 3.9	2.1 1.4	1.7 2.1	2.1 2.0	2.6 2.5	2.7 2.2	2.7 2.2	1.7 1.8	2.1 2.2	2.2 1.9	2.1 2.1	2.1 2.0	2.5 2.2	2.0 2.0	1.9 1.8
Final sales <i>Previous Tealbook</i>	3.9 3.9	2.9 2.8	1.9 1.7	1.9 1.8	2.8 2.6	2.3 2.2	2.9 2.7	2.1 1.8	2.5 2.4	2.2 2.1	2.2 2.3	2.1 2.0	2.5 2.3	2.2 2.1	2.2 2.0
Priv. dom. final purch. <i>Previous Tealbook</i>	3.9 3.9	3.3 3.8	2.8 2.9	3.2 3.6	3.9 3.9	3.9 3.7	3.8 3.5	3.4 3.0	3.1 2.8	2.9 2.6	2.8 2.6	3.0 3.2	3.7 3.7	3.0 2.7	2.5 2.1
Personal cons. expend. <i>Previous Tealbook</i>	3.6 3.6	3.0 3.2	2.4 2.8	3.4 3.2	3.6 3.2	3.6 3.2	3.5 3.2	3.2 2.8	2.9 2.6	2.7 2.4	2.6 2.6	2.7 2.8	3.5 3.2	2.8 2.6	2.3 2.1
Durables	8.0	6.5	3.9	4.4	6.3	6.6	5.8	4.9	4.4	4.0	3.8	5.1	5.8	4.3	3.8
Nondurables	4.3	4.0	2.4	3.7	3.1	3.1	3.2	2.9	2.6	2.3	2.6	2.8	3.3	2.6	2.6
Services	2.7	2.2	2.1	3.1	3.4	3.3	3.3	3.0	2.7	2.6	2.4	2.3	3.3	2.6	2.1
Residential investment <i>Previous Tealbook</i>	9.3 9.3	8.5 7.4	5.0 .9	5.7 11.5	8.4 14.5	5.8 10.2	6.8 8.5	8.3 8.5	8.1 6.0	7.8 5.0	7.0 2.1	8.2 6.9	6.7 11.2	7.8 5.3	5.4 3.9
Nonres. priv. fixed invest. <i>Previous Tealbook</i>	4.1 4.1	3.3 6.4	4.6 4.0	1.6 3.6	4.2 4.7	5.0 4.9	4.4 3.7	3.0 2.4	2.9 2.8	2.6 2.6	2.5 2.7	3.4 4.0	3.8 4.2	2.8 2.6	2.5 2.0
Equipment & intangibles <i>Previous Tealbook</i>	3.5 3.5	6.4 7.6	5.4 4.7	3.0 5.5	5.0 5.0	5.8 5.6	4.8 3.9	2.9 2.2	2.7 2.7	2.6 2.6	2.5 2.8	4.9 5.0	4.6 5.0	2.7 2.6	2.8 2.2
Nonres. structures <i>Previous Tealbook</i>	6.2 6.2	-7.3 2.1	1.5 1.8	-3.6 -3.0	1.1 3.7	1.8 2.3	3.1 3.0	3.6 3.1	3.9 3.0	2.9 2.4	2.7 2.2	-1.9 .5	.6 1.5	3.3 2.7	1.4 1.2
Net exports <sup>2</sup> <i>Previous Tealbook</i> <sup>2</sup>	-535 -535	-543 -559	-566 -591	-624 -646	-669 -687	-723 -733	-749 -751	-791 -788	-815 -805	-837 -819	-846 -822	-546 -556	-691 -704	-822 -808	-873 -832
Exports	5.1	.7	.4	-2.4	1.2	.8	2.6	-1.5	1.9	2.0	4.5	.0	.5	1.7	3.8
Imports	3.0	1.9	3.7	7.0	7.6	8.7	5.6	4.9	4.7	4.4	4.5	3.9	7.2	4.6	3.6
Gov't. cons. & invest. <i>Previous Tealbook</i>	2.6 2.6	1.8 .7	.5 .2	3.0 .0	2.4 1.3	1.1 .2	.9 .6	.8 .3	1.8 1.6	.9 .7	.2 .7	1.2 .8	1.9 .5	.9 .8	.7 .9
Federal	.0	.1	.4	6.9	1.8	.6	.4	.4	-2	-3	-1.8	.4	2.4	-5	-1.2
Defense	.3	-1.5	-5	4.4	.6	-1.4	-6	1.5	-1.3	-1.5	-2.4	-2	.7	-9	-1.2
Nondefense	-5	2.6	1.7	10.8	3.6	3.8	1.8	-1.2	1.5	1.4	-1.0	1.3	4.9	.2	-1.2
State & local	4.3	2.9	.5	.7	2.8	1.4	1.3	1.1	3.0	1.7	1.4	1.7	1.5	1.8	1.8
Change in priv. inventories <sup>2</sup> <i>Previous Tealbook</i> <sup>2</sup>	114 114	81 57	71 73	79 80	73 76	87 74	79 55	64 56	49 52	51 45	46 38	95 89	79 71	52 48	20 15

1. Change from fourth quarter of previous year to fourth quarter of year indicated.

2. Billions of chained (2009) dollars.

**Changes in Real Gross Domestic Product and Related Items**  
(Change from fourth quarter of previous year to fourth quarter of year indicated, unless otherwise noted)

Item	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Real GDP <i>Previous Tealbook</i>	-2 -2	2.7 2.7	1.7 1.7	1.3 1.3	2.5 2.5	2.5 2.5	2.1 2.0	2.5 2.2	2.0 2.0	1.9 1.8
Final sales <i>Previous Tealbook</i>	-4 -4	2.0 2.0	1.5 1.5	1.7 1.7	1.9 1.9	2.6 2.6	2.1 2.0	2.5 2.3	2.2 2.1	2.2 2.0
Priv. dom. final purch. <i>Previous Tealbook</i>	-2.4 -2.4	3.5 3.5	2.6 2.6	2.3 2.3	2.6 2.6	3.6 3.6	3.0 3.2	3.7 3.7	3.0 2.7	2.5 2.1
Personal cons. expend. <i>Previous Tealbook</i>	-2 -2	3.1 3.1	1.5 1.5	1.3 1.3	2.3 2.3	3.2 3.2	2.7 2.8	3.5 3.2	2.8 2.6	2.3 2.1
Durables	2.5	9.3	4.8	7.2	4.6	7.5	5.1	5.8	4.3	3.8
Nondurables	.2	3.3	.4	.8	2.6	2.3	2.8	3.3	2.6	2.6
Services	-8	2.0	1.4	.6	1.8	2.8	2.3	3.3	2.6	2.1
Residential investment <i>Previous Tealbook</i>	-10.8 -10.8	-5.2 -5.2	6.0 6.0	15.7 15.7	3.5 3.5	5.1 5.1	8.2 6.9	6.7 11.2	7.8 5.3	5.4 3.9
Nonres. priv. fixed invest. <i>Previous Tealbook</i>	-12.2 -12.2	8.1 8.1	9.0 9.0	5.2 5.2	4.2 4.2	5.5 5.5	3.4 4.0	3.8 4.2	2.8 2.6	2.5 2.0
Equipment & intangibles <i>Previous Tealbook</i>	-6.0 -6.0	12.0 12.0	9.2 9.2	5.5 5.5	3.6 3.6	5.7 5.7	4.9 5.0	4.6 5.0	2.7 2.6	2.8 2.2
Nonres. structures <i>Previous Tealbook</i>	-27.1 -27.1	-4.0 -4.0	8.0 8.0	4.1 4.1	6.5 6.5	5.0 5.0	-1.9 .5	.6 1.5	3.3 2.7	1.4 1.2
Net exports <sup>1</sup> <i>Previous Tealbook</i> <sup>1</sup>	-395 -395	-459 -459	-459 -459	-447 -447	-417 -417	-443 -443	-546 -556	-691 -704	-822 -808	-873 -832
Exports	.8	10.1	4.2	2.2	5.2	2.4	.0	.5	1.7	3.8
Imports	-6.2	12.0	3.5	.3	2.4	5.4	3.9	7.2	4.6	3.6
Gov't. cons. & invest. <i>Previous Tealbook</i>	2.3 2.3	-1.1 -1.1	-3.0 -3.0	-2.2 -2.2	-2.9 -2.9	.4 .4	1.2 .8	1.9 .5	.9 .8	.7 .9
Federal	3.9	3.2	-4.0	-2.1	-6.8	-8	.4	2.4	-5	-1.2
Defense	3.6	2.0	-4.1	-3.9	-7.4	-2.9	-2	.7	-9	-1.2
Nondefense	4.6	5.5	-3.9	1.0	-5.9	2.7	1.3	4.9	.2	-1.2
State & local	1.3	-4.0	-2.3	-2.3	-2	1.1	1.7	1.5	1.8	1.8
Change in priv. inventories <sup>1</sup> <i>Previous Tealbook</i> <sup>1</sup>	-148 -148	58 58	38 38	55 55	61 61	68 68	95 89	79 71	52 48	20 15

1. Billions of chained (2009) dollars.

**Contributions to Changes in Real Gross Domestic Product**  
(Percentage points, annual rate except as noted)

Item	2015			2016				2017				2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>	2018 <sup>1</sup>
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Real GDP <i>Previous Tealbook</i>	3.9	2.1	1.7	2.1	2.6	2.7	2.7	1.7	2.1	2.2	2.1	2.1	2.5	2.0	1.9
	3.9	1.4	2.1	2.0	2.5	2.2	2.2	1.8	2.2	1.9	2.1	2.0	2.2	2.0	1.8
Final sales <i>Previous Tealbook</i>	3.9	2.9	1.9	1.9	2.7	2.3	2.8	2.1	2.5	2.2	2.2	2.1	2.5	2.2	2.2
Priv. dom. final purch. <i>Previous Tealbook</i>	3.3	2.8	2.4	2.7	3.3	3.3	3.2	1.8	2.3	2.1	2.3	2.0	2.3	2.1	2.0
	3.3	3.2	2.4	3.0	3.3	3.2	3.0	2.8	2.6	2.5	2.4	2.5	3.1	2.6	2.2
								2.6	2.4	2.2	2.2	2.7	3.1	2.4	1.8
Personal cons. expend. <i>Previous Tealbook</i>	2.4	2.1	1.6	2.3	2.5	2.5	2.4	2.2	2.0	1.8	1.8	1.8	2.4	1.9	1.6
Durables	2.4	2.1	1.9	2.2	2.2	2.2	2.2	1.9	1.8	1.7	1.8	1.9	2.2	1.8	1.4
Nondurables	.6	.5	.3	.3	.5	.5	.4	.4	.3	.3	.3	.4	.4	.3	.3
Services	.6	.6	.4	.5	.4	.4	.5	.4	.4	.3	.4	.4	.5	.4	.4
	1.2	1.0	1.0	1.4	1.6	1.6	1.5	1.4	1.3	1.2	1.1	1.0	1.5	1.2	1.0
Residential investment <i>Previous Tealbook</i>	.3	.3	.2	.2	.3	.2	.2	.3	.3	.3	.3	.3	.2	.3	.2
	.3	.2	.0	.4	.5	.4	.3	.3	.2	.2	.1	.2	.4	.2	.2
Nonres. priv. fixed invest. <i>Previous Tealbook</i>	.5	.4	.6	.2	.5	.6	.6	.4	.4	.3	.3	.4	.5	.4	.3
Equipment & intangibles <i>Previous Tealbook</i>	.5	.8	.5	.5	.6	.6	.5	.3	.4	.3	.4	.5	.5	.3	.3
	.4	.6	.5	.3	.5	.6	.5	.3	.3	.3	.3	.5	.5	.3	.3
Nonres. structures <i>Previous Tealbook</i>	.4	.7	.5	.5	.5	.6	.4	.2	.3	.3	.3	.5	.5	.3	.2
	.2	-.2	.0	-.1	.0	.0	.1	.1	.1	.1	.1	-.1	.0	.1	.0
	.2	.1	.0	-.1	.1	.1	.1	.1	.1	.1	.1	.0	.0	.1	.0
Net exports <i>Previous Tealbook</i>	.2	-.2	-.5	-.13	-1.0	-1.2	-.5	-.9	-.5	-.5	-.2	-.6	-1.0	-.5	-.1
Exports	.2	-.6	-.7	-1.3	-.9	-1.0	-.4	-.8	-.4	-.3	.0	-.8	-.9	-.4	.0
Imports	.6	.1	.1	-.3	.1	.1	.3	-.2	.2	.2	.5	.0	.1	.2	.4
	-.5	-.3	-.6	-1.0	-1.1	-1.3	-.9	-.7	-.7	-.7	-.7	-.6	-1.1	-.7	-.6
Gov't. cons. & invest. <i>Previous Tealbook</i>	.5	.3	.1	.5	.4	.2	.2	.1	.3	.2	.0	.2	.3	.2	.1
Federal	.5	.1	.0	.0	.2	.0	.1	.1	.3	.1	.1	.2	.1	.1	.2
Defense	.0	.0	.0	.5	.1	.0	.0	.0	.0	.0	-.1	.0	.2	.0	-.1
Nondefense	.0	-.1	.0	.2	.0	-.1	.0	.1	-.1	-.1	-.1	.0	.0	.0	.0
State & local	.0	.1	.0	.3	.1	.1	.0	.0	.0	.0	.0	.0	.1	.0	.0
	.5	.3	.1	.1	.3	.2	.1	.1	.3	.2	.2	.2	.2	.2	.2
Change in priv. inventories <i>Previous Tealbook</i>	.0	-.8	-.3	.2	-.1	.3	-.2	-.4	-.4	.0	-.1	.0	.1	-.2	-.3
	.0	-1.4	.4	.2	-.1	.0	-.5	.0	-.1	-.2	-.2	.0	-.1	-.1	-.2

1. Change from fourth quarter of previous year to fourth quarter of year indicated.

**Changes in Prices and Costs**  
(Percent, annual rate except as noted)

Item	2015			2016				2017				2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>	2018 <sup>1</sup>
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
GDP chain-wt. price index <i>Previous Tealbook</i>	2.1 2.1	1.3 1.6	.8 .9	.4 .8	1.5 1.7	1.7 1.7	1.7 1.6	2.0 2.0	1.9 1.8	1.8 1.8	1.8 1.8	1.1 1.2	1.3 1.4	1.9 1.9	2.0 2.0
PCE chain-wt. price index <i>Previous Tealbook</i>	2.2 2.2	1.3 1.3	.0 .4	.0 .8	1.5 1.6	1.6 1.6	1.6 1.5	1.8 1.8	1.8 1.8	1.8 1.7	1.7 1.7	.4 .5	1.2 1.4	1.8 1.7	2.0 1.9
Energy <i>Previous Tealbook</i>	15.1 15.1	-1.8 -1.9	-23.5 -19.6	-28.2 -14.3	3.6 4.2	7.0 4.2	6.0 3.8	5.4 3.4	4.4 2.8	3.8 2.3	3.6 2.1	-16.8 -15.7	-4.1 -9	4.3 2.7	2.8 1.8
Food <i>Previous Tealbook</i>	-1.1 -1.1	2.2 2.2	2.0 2.0	1.7 1.7	1.6 1.7	1.7 1.8	1.9 1.9	1.9 1.9	1.9 1.9	2.0 2.0	2.0 2.0	.7 .7	1.7 1.8	2.0 2.0	2.0 2.0
Ex. food & energy <i>Previous Tealbook</i>	1.9 1.9	1.3 1.4	1.2 1.4	1.4 1.5	1.4 1.5	1.4 1.4	1.4 1.4	1.7 1.7	1.7 1.7	1.7 1.6	1.7 1.6	1.3 1.4	1.4 1.4	1.7 1.7	1.9 1.9
Ex. food & energy, market based <i>Previous Tealbook</i>	1.8 1.8	1.2 1.1	1.3 1.3	1.3 1.5	1.4 1.5	1.4 1.4	1.4 1.3	1.7 1.7	1.7 1.7	1.6 1.6	1.6 1.6	1.2 1.2	1.4 1.4	1.7 1.7	1.9 1.9
CPI <i>Previous Tealbook</i>	3.0 3.0	1.6 1.6	.2 .2	-.1 .9	2.1 2.1	2.3 2.1	2.3 2.1	2.4 2.2	2.3 2.2	2.3 2.1	2.3 2.1	.4 .4	1.6 1.8	2.3 2.1	2.4 2.1
Ex. food & energy <i>Previous Tealbook</i>	2.5 2.5	1.7 1.7	2.1 1.7	2.0 2.0	2.0 2.0	2.1 2.0	2.1 2.0	2.2 2.1	2.2 2.1	2.2 2.1	2.2 2.1	2.0 1.9	2.0 2.0	2.2 2.1	2.3 2.1
ECL, hourly compensation <sup>2</sup> <i>Previous Tealbook</i> <sup>2</sup>	.0 .0	2.6 2.5	2.4 2.5	2.4 2.6	2.4 2.6	2.4 2.6	2.4 2.6	2.6 2.8	2.6 2.8	2.6 2.8	2.6 2.8	2.0 2.0	2.4 2.6	2.6 2.8	2.6 2.8
Business sector															
Output per hour <i>Previous Tealbook</i>	3.7 3.8	2.7 .5	.5 2.6	1.5 1.7	2.1 1.7	1.3 1.4	1.3 1.3	1.1 1.1	1.8 1.7	1.6 1.4	1.5 1.4	1.4 1.4	1.6 1.5	1.5 1.4	1.5 1.5
Compensation per hour <i>Previous Tealbook</i>	5.9 2.1	4.1 2.5	3.3 2.3	3.4 3.2	3.1 2.9	3.1 2.9	3.1 2.9	3.3 3.4	3.1 3.1	3.1 3.1	3.1 3.1	3.6 2.0	3.2 3.0	3.2 3.2	3.4 3.4
Unit labor costs <i>Previous Tealbook</i>	2.1 -1.6	1.3 2.0	2.8 -3	1.9 1.5	.9 1.2	1.8 1.6	1.8 1.6	2.2 2.2	1.3 1.3	1.5 1.6	1.6 1.6	2.2 .6	1.6 1.5	1.7 1.7	1.8 1.8
Core goods imports chain-wt. price index <sup>3</sup> <i>Previous Tealbook</i> <sup>3</sup>	-3.1 -3.1	-2.0 -2.5	-3.0 -2.2	-2.3 -3	-.9 .0	.5 .8	1.0 1.1	1.2 1.2	1.2 1.2	1.2 1.2	1.2 1.2	-3.2 -3.1	-.4 .4	1.2 1.2	1.2 1.2

1. Change from fourth quarter of previous year to fourth quarter of year indicated.

2. Private-industry workers.

3. Core goods imports exclude computers, semiconductors, oil, and natural gas.

## Greensheets

## Changes in Prices and Costs

(Change from fourth quarter of previous year to fourth quarter of year indicated, unless otherwise noted)

Item	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
GDP chain-wt. price index <i>Previous Tealbook</i>	.4	1.8	1.9	1.9	1.6	1.3	1.1	1.3	1.9	2.0
PCE chain-wt. price index <i>Previous Tealbook</i>	.4	1.8	1.9	1.9	1.6	1.3	1.2	1.4	1.9	2.0
Energy <i>Previous Tealbook</i>	1.2	1.3	2.7	1.8	1.2	1.1	.4	1.2	1.8	2.0
Food <i>Previous Tealbook</i>	1.2	1.3	2.7	1.8	1.2	1.1	.5	1.4	1.7	1.9
Ex. food & energy <i>Previous Tealbook</i>	2.3	6.4	12.0	2.3	-2.5	-6.4	-16.8	-4.1	4.3	2.8
Ex. food & energy, market based <i>Previous Tealbook</i>	2.3	6.4	12.0	2.3	-2.5	-6.4	-15.7	-9	2.7	1.8
CPI <i>Previous Tealbook</i>	-1.8	1.3	5.1	1.2	.8	2.8	.7	1.7	2.0	2.0
Ex. food & energy <i>Previous Tealbook</i>	-1.8	1.3	5.1	1.2	.8	2.8	.7	1.8	2.0	2.0
Ex. food & energy, market based <i>Previous Tealbook</i>	1.4	1.0	1.9	1.8	1.5	1.4	1.3	1.4	1.7	1.9
CPI <i>Previous Tealbook</i>	1.4	1.0	1.9	1.8	1.5	1.4	1.4	1.4	1.7	1.9
Ex. food & energy <i>Previous Tealbook</i>	1.8	.7	1.9	1.5	1.2	1.2	1.2	1.4	1.7	1.9
Ex. food & energy, market based <i>Previous Tealbook</i>	1.8	.7	1.9	1.5	1.2	1.2	1.2	1.4	1.7	1.9
ECL, hourly compensation <sup>1</sup> <i>Previous Tealbook</i> <sup>1</sup>	1.5	1.2	3.3	1.9	1.2	1.2	.4	1.6	2.3	2.4
ECL, hourly compensation <sup>1</sup> <i>Previous Tealbook</i> <sup>1</sup>	1.5	1.2	3.3	1.9	1.2	1.2	.4	1.8	2.1	2.1
Business sector Output per hour <i>Previous Tealbook</i>	1.8	.6	2.2	1.9	1.7	1.7	2.0	2.0	2.2	2.3
Compensation per hour <i>Previous Tealbook</i>	1.8	.6	2.2	1.9	1.7	1.7	1.9	2.0	2.1	2.1
Unit labor costs <i>Previous Tealbook</i>	1.2	2.1	2.2	1.8	2.0	2.3	2.0	2.4	2.6	2.6
Core goods imports chain-wt. price index <sup>2</sup> <i>Previous Tealbook</i> <sup>2</sup>	1.2	2.1	2.2	1.8	2.0	2.3	2.0	2.6	2.8	2.8
Business sector Output per hour <i>Previous Tealbook</i>	5.6	1.7	.0	-2	1.6	-2	1.4	1.6	1.5	1.5
Compensation per hour <i>Previous Tealbook</i>	5.6	1.7	.0	-2	1.6	-2	1.4	1.5	1.4	1.5
Unit labor costs <i>Previous Tealbook</i>	1.3	1.2	.6	5.8	-1	2.6	3.6	3.2	3.2	3.4
Core goods imports chain-wt. price index <sup>2</sup> <i>Previous Tealbook</i> <sup>2</sup>	1.3	1.2	.6	5.8	-1	2.6	2.0	3.0	3.2	3.4
Unit labor costs <i>Previous Tealbook</i>	-4.2	-4	.6	6.0	-1.7	2.8	2.2	1.6	1.7	1.8
Core goods imports chain-wt. price index <sup>2</sup> <i>Previous Tealbook</i> <sup>2</sup>	-4.2	-4	.6	6.0	-1.7	2.8	.6	1.5	1.7	1.8
Core goods imports chain-wt. price index <sup>2</sup> <i>Previous Tealbook</i> <sup>2</sup>	-1.9	2.3	4.3	.1	-1.1	.5	-3.2	-4	1.2	1.2
Core goods imports chain-wt. price index <sup>2</sup> <i>Previous Tealbook</i> <sup>2</sup>	-1.9	2.3	4.3	.1	-1.1	.5	-3.1	.4	1.2	1.2

1. Private-industry workers.

2. Core goods imports exclude computers, semiconductors, oil, and natural gas.



## Other Macroeconomic Indicators

Item	2015				2016				2017				2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>	2018 <sup>1</sup>
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q4	2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>	2018 <sup>1</sup>
<i>Employment and production</i>																
Nonfarm payroll employment <sup>2</sup>	.6	.6	.7	.6	.6	.6	.6	.5	.5	.5	.4	.4	2.7	2.4	1.9	1.4
Unemployment rate <sup>3</sup>	5.4	5.1	5.0	4.9	4.8	4.8	4.7	4.7	4.6	4.6	4.6	4.6	5.0	4.7	4.6	4.5
<i>Previous Tealbook<sup>3</sup></i>	5.4	5.1	5.0	5.0	4.9	4.9	4.9	4.8	4.8	4.8	4.7	4.7	5.0	4.9	4.7	4.7
Natural rate of unemployment <sup>3</sup>	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
<i>Previous Tealbook<sup>3</sup></i>	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
Employment-to-Population Ratio <sup>3</sup>	59.4	59.3	59.3	59.4	59.4	59.4	59.5	59.5	59.5	59.5	59.4	59.4	59.3	59.5	59.4	59.2
Employment-to-Population Trend <sup>3</sup>	59.8	59.7	59.6	59.5	59.4	59.4	59.3	59.2	59.1	59.1	59.0	59.0	59.6	59.3	59.0	58.7
GDP gap <sup>4</sup>	-5	-2	-1	.0	.3	.6	.8	.9	1.0	1.2	1.3	1.3	-1	.8	1.3	1.5
<i>Previous Tealbook<sup>4</sup></i>	-5	-4	-2	-1	.1	.3	.5	.6	.7	.8	.9	.9	-2	.5	.9	1.0
Industrial production <sup>5</sup>	-2.3	2.7	-2.0	1.8	2.1	1.8	2.4	2.5	2.2	1.9	2.2	2.2	-5	2.0	2.2	1.9
<i>Previous Tealbook<sup>5</sup></i>	-2.4	1.8	-2.2	1.6	2.4	2.3	2.6	2.8	2.5	2.1	1.9	1.9	-8	2.2	2.3	1.8
Manufacturing industr. prod. <sup>5</sup>	1.5	3.4	1.5	1.2	2.4	2.3	2.3	1.9	2.2	1.9	2.2	2.2	1.4	2.0	2.1	1.8
<i>Previous Tealbook<sup>5</sup></i>	1.4	2.5	-1.4	1.7	3.2	3.0	2.6	2.4	2.6	2.2	1.9	1.9	.5	2.6	2.3	1.8
Capacity utilization rate - mfg. <sup>3</sup>	75.9	76.3	76.4	76.4	76.6	76.8	77.0	77.1	77.3	77.4	77.6	77.6	76.4	77.0	77.6	78.1
<i>Previous Tealbook<sup>3</sup></i>	75.9	76.1	75.6	75.7	76.1	76.4	76.7	76.9	77.2	77.4	77.5	77.5	75.6	76.7	77.5	78.0
Housing starts <sup>6</sup>	1.2	1.2	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.1	1.3	1.4	1.5
Light motor vehicle sales <sup>6</sup>	17.1	17.8	17.9	17.6	17.4	17.2	17.1	17.0	17.0	16.9	16.8	16.8	17.4	17.3	16.9	16.7
<i>Income and saving</i>																
Nominal GDP <sup>5</sup>	6.1	3.4	2.5	2.5	4.2	4.4	4.4	3.8	4.0	4.1	4.0	4.0	3.2	3.8	4.0	3.9
Real disposable pers. income <sup>5</sup>	2.6	4.0	4.7	4.3	2.9	2.8	2.0	3.5	2.0	2.5	2.3	2.3	3.8	3.0	2.6	2.3
<i>Previous Tealbook<sup>5</sup></i>	1.2	3.5	2.3	3.4	2.5	2.3	1.9	3.4	1.8	2.4	2.3	2.3	2.7	2.5	2.5	2.2
Personal saving rate <sup>3</sup>	5.0	5.2	5.7	5.9	5.8	5.6	5.3	5.3	5.1	5.1	5.0	5.0	5.7	5.3	5.0	5.0
<i>Previous Tealbook<sup>3</sup></i>	4.6	4.7	4.6	4.6	4.5	4.3	4.0	4.1	3.9	3.9	3.9	3.9	4.6	4.0	3.9	4.0
Corporate profits <sup>7</sup>	14.7	-4.1	-14.1	-14.9	-4	5.7	6.3	-4.3	-2.5	2.0	1.7	1.7	-7.1	-1.2	-.8	2.0
Profit share of GNP <sup>3</sup>	11.5	11.3	10.8	10.3	10.2	10.2	10.3	10.1	9.9	9.9	9.8	9.8	10.8	10.3	9.8	9.7
Gross national saving rate <sup>3</sup>	18.7	18.5	18.9	18.6	18.5	18.4	18.2	17.9	17.9	17.8	17.8	17.8	18.9	18.2	17.8	17.5
Net national saving rate <sup>3</sup>	3.8	3.8	4.0	3.5	3.4	3.2	3.0	2.6	2.5	2.4	2.3	2.3	4.0	3.0	2.3	1.8

1. Change from fourth quarter of previous year to fourth quarter of year indicated, unless otherwise indicated.

2. Change, millions.

3. Percent; annual values are for the fourth quarter of the year indicated.

4. Percent difference between actual and potential GDP; a negative number indicates that the economy is operating below potential.

Annual values are for the fourth quarter of the year indicated.

5. Percent change, annual rate.

6. Level, millions; annual values are annual averages.

7. Percent change, annual rate, with inventory valuation and capital consumption adjustments.

## Greensheets

## Other Macroeconomic Indicators

(Change from fourth quarter of previous year to fourth quarter of year indicated, unless otherwise noted)

Item	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<i>Employment and production</i>										
Nonfarm payroll employment <sup>1</sup>	-5.6	.8	2.0	2.2	2.5	2.9	2.7	2.4	1.9	1.4
Unemployment rate <sup>2</sup>	9.9	9.5	8.7	7.8	7.0	5.7	5.0	4.7	4.6	4.5
<i>Previous Tealbook<sup>2</sup></i>	9.9	9.5	8.7	7.8	7.0	5.7	5.0	4.9	4.7	4.7
Natural rate of unemployment <sup>2</sup>	6.2	6.2	6.0	5.8	5.4	5.1	5.1	5.1	5.1	5.1
<i>Previous Tealbook<sup>2</sup></i>	6.2	6.2	6.0	5.8	5.4	5.1	5.1	5.1	5.1	5.1
Employment-to-Population Ratio <sup>2</sup>	58.4	58.3	58.5	58.7	58.5	59.2	59.3	59.5	59.4	59.2
Employment-to-Population Trend <sup>2</sup>	61.3	60.9	60.6	60.2	60.1	59.9	59.6	59.3	59.0	58.7
GDP gap <sup>3</sup>	-5.5	-4.4	-4.2	-4.2	-2.8	-9	-1	.8	1.3	1.5
<i>Previous Tealbook<sup>3</sup></i>	-5.5	-4.4	-4.2	-4.2	-2.8	-9	-2	.5	.9	1.0
Industrial production <sup>4</sup>	-5.4	5.9	2.8	2.1	2.3	4.5	-5	2.0	2.2	1.9
<i>Previous Tealbook<sup>4</sup></i>	-5.4	5.9	2.8	2.1	2.3	4.5	-8	2.2	2.3	1.8
Manufacturing industr. prod. <sup>4</sup>	-6.1	6.0	2.7	1.5	1.3	3.4	1.4	2.0	2.1	1.8
<i>Previous Tealbook<sup>4</sup></i>	-6.1	6.0	2.7	1.5	1.3	3.4	.5	2.6	2.3	1.8
Capacity utilization rate - mfg. <sup>2</sup>	67.1	72.5	74.4	74.1	74.2	76.2	76.4	77.0	77.6	78.1
<i>Previous Tealbook<sup>2</sup></i>	67.1	72.5	74.4	74.1	74.2	76.2	75.6	76.7	77.5	78.0
Housing starts <sup>5</sup>	.6	.6	.6	.8	.9	1.0	1.1	1.3	1.4	1.5
Light motor vehicle sales <sup>5</sup>	10.4	11.5	12.7	14.4	15.5	16.4	17.4	17.3	16.9	16.7
<i>Income and saving</i>										
Nominal GDP <sup>4</sup>	.1	4.6	3.6	3.2	4.1	3.9	3.2	3.8	4.0	3.9
Real disposable pers. income <sup>4</sup>	-7	2.6	1.7	5.1	-2.9	3.6	3.8	3.0	2.6	2.3
<i>Previous Tealbook<sup>4</sup></i>	-7	2.6	1.7	5.1	-2.9	3.6	2.7	2.5	2.5	2.2
Personal saving rate <sup>2</sup>	5.6	5.5	5.8	9.2	4.4	4.7	5.7	5.3	5.0	5.0
<i>Previous Tealbook<sup>2</sup></i>	5.6	5.5	5.8	9.2	4.4	4.7	4.6	4.0	3.9	4.0
Corporate profits <sup>6</sup>	53.7	18.0	6.8	.6	4.1	3.4	-7.1	-1.2	-.8	2.0
Profit share of GNP <sup>2</sup>	10.6	12.0	12.3	12.0	12.0	11.9	10.8	10.3	9.8	9.7
Gross national saving rate <sup>2</sup>	14.6	15.2	16.1	18.0	18.1	18.8	18.9	18.2	17.8	17.5
Net national saving rate <sup>2</sup>	-1.7	-.3	.8	2.9	3.1	3.9	4.0	3.0	2.3	1.8

1. Change, millions.

2. Percent; values are for the fourth quarter of the year indicated.

3. Percent difference between actual and potential GDP; a negative number indicates that the economy is operating below potential.

Values are for the fourth quarter of the year indicated.

4. Percent change.

5. Level, millions; values are annual averages.

6. Percent change, with inventory valuation and capital consumption adjustments.

**Staff Projections of Federal Sector Accounts and Related Items**  
(Billions of dollars except as noted)

Item	Fiscal year			2015				2016				2017					
	2015	2016	2017	2018	Q1 <sup>a</sup>	Q2 <sup>a</sup>	Q3 <sup>a</sup>	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Unified budget	Receipts	3,249	3,458	3,579	3,703	680	1,027	802	750	741	1,094	873	805	758	1,127	888	832
	Outlays	3,688	3,880	4,048	4,228	943	904	924	993	944	958	984	988	1,065	1,004	991	1,034
	Surplus/deficit	-439	-422	-469	-524	-263	123	-123	-244	-203	136	-112	-183	-307	123	-104	-202
	<i>Previous Tealbook</i>	-439	-455	-463	-515	-263	123	-123	-255	-219	129	-110	-179	-305	121	-100	-198
	Means of financing:																
	Borrowing	337	757	595	645	67	-16	46	559	163	-108	143	228	325	-92	135	234
	Cash decrease	-40	-62	-6	-0	123	-154	56	-125	63	2	-1	-16	12	-1	-1	-1
	Other <sup>1</sup>	142	-273	-120	-120	73	47	21	-190	-23	-30	-30	-30	-30	-30	-30	-30
	Cash operating balance, end of period	199	261	267	267	100	254	199	324	261	260	261	276	265	265	267	268
	NIPA federal sector	Receipts	3,393	3,530	3,676	3,822	3,356	3,440	3,481	3,491	3,503	3,539	3,587	3,635	3,654	3,687	3,727
Expenditures		3,988	4,141	4,367	4,595	3,936	4,015	4,080	4,055	4,127	4,155	4,226	4,281	4,372	4,375	4,440	4,492
Consumption expenditures		956	988	1,016	1,028	957	957	961	964	990	997	1,001	1,005	1,017	1,020	1,023	1,022
Defense		594	602	610	615	595	595	595	595	604	606	605	605	613	612	611	610
Nondefense		362	386	406	414	362	362	367	369	386	391	396	400	404	408	411	413
Other spending		3,032	3,153	3,351	3,567	2,979	3,057	3,119	3,091	3,137	3,158	3,225	3,275	3,355	3,355	3,417	3,469
Current account surplus		-595	-611	-691	-773	-579	-574	-599	-564	-624	-616	-639	-645	-717	-688	-712	-727
Gross investment		263	268	274	275	262	264	263	263	268	270	271	271	274	274	275	273
Gross saving less gross investment <sup>2</sup>		-586	-605	-688	-768	-569	-567	-590	-553	-618	-612	-635	-642	-715	-686	-710	-722
Fiscal indicators		High-employment (HEB)															
	surplus/deficit <sup>3</sup>	-543.0	-626.1	-763.2	-875.5	-506.1	-537.4	-580.5	-555.0	-631.0	-638.7	-679.7	-706.1	-783.0	-764.2	-799.6	-821.2
	Change in HEB, percent of potential GDP	.5	.4	.6	.4	-2	.1	.2	-2	.4	.0	.2	.1	.4	-.1	.2	.1
	Fiscal impetus (FI), percent of GDP <sup>4</sup>	.4	.4	.2	.2	.0	.7	.6	.3	.6	.5	.3	.3	.2	.4	.2	.1
	<i>Previous Tealbook</i>	.3	.2	.2	.2	.0	.6	.3	.3	.1	.3	.1	.2	.1	.3	.2	.2
	Federal purchases	.0	.2	.0	-.1	.1	.0	.0	.0	.5	.1	.0	.0	.0	.0	.0	-.1
	State and local purchases	.2	.2	.2	.2	-.1	.5	.3	.1	.1	.3	.1	.1	.1	.3	.2	.1
	Taxes and transfers	.2	.1	.1	.0	.0	.2	.2	.3	.1	.1	.1	.1	.1	.1	.1	.1

1. Other means of financing include checks issued less checks paid, accrued items, and changes in other financial assets and liabilities.

2. Gross saving is the current account surplus plus consumption of fixed capital of the general government as well as government enterprises.

3. HEB is gross saving less gross investment (NIPA) of the federal government in current dollars, with cyclically sensitive receipts and outlays adjusted to the staff's measure of potential output and the natural rate of unemployment. The sign on Change in HEB, as a percent of nominal potential GDP, is reversed. Quarterly figures for change in HEB are not at annual rates.

4. Fiscal impetus measures the contribution to growth of real GDP from fiscal policy actions at the general government level (excluding multiplier effects). It equals the sum of the direct contributions to real GDP growth from changes in federal purchases and state and local purchases, plus the estimated contribution from real consumption and investment that is induced by discretionary policy changes in transfers and taxes.

a Actual.

# Foreign Real GDP and Consumer Prices: Selected Countries

(Quarterly percent changes at an annual rate)

Measure and country	2015				2016				2017			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Real GDP<sup>1</sup></b>												
Total foreign	1.8	1.3	2.4	2.3	2.6	2.8	2.8	2.8	3.0	2.6	2.8	2.9
<i>Previous Tealbook</i>	1.7	1.1	2.3	2.4	2.7	2.9	2.9	2.9	3.0	2.6	2.8	2.9
Advanced foreign economies	1.0	.6	1.8	1.7	1.9	2.0	2.1	2.1	2.2	1.4	1.8	2.0
Canada	-.7	-.3	2.3	2.0	2.1	2.2	2.2	2.1	2.0	1.9	1.9	1.9
Japan	4.4	-.5	1.0	1.0	1.1	1.1	1.2	1.2	3.2	-4.9	-.3	1.1
United Kingdom	1.5	2.6	1.9	2.3	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.3
Euro area	2.2	1.6	1.2	1.4	1.7	2.0	2.1	2.2	2.1	2.1	2.0	2.2
Germany	1.4	1.8	1.3	1.5	1.7	1.9	2.1	2.1	2.0	2.0	2.0	2.0
Emerging market economies	2.5	2.0	3.0	2.8	3.3	3.5	3.5	3.6	3.7	3.8	3.8	3.9
Asia	4.3	4.0	5.0	4.7	5.0	5.0	5.0	5.0	4.9	4.9	4.9	4.9
Korea	3.3	1.3	5.3	4.1	4.0	4.0	4.0	4.0	3.8	3.8	3.8	3.8
China	5.7	7.2	7.2	6.5	6.4	6.3	6.3	6.2	6.1	6.1	6.1	6.1
Latin America	1.2	.5	1.2	1.3	1.9	2.1	2.3	2.4	2.8	2.8	2.9	3.0
Mexico	2.1	2.5	3.0	2.5	2.8	2.8	2.8	2.9	3.0	3.0	3.1	3.2
Brazil	-3.3	-8.0	-6.7	-4.2	-2.2	-.8	-.1	-.5	1.1	1.5	1.8	2.0
<b>Consumer prices<sup>2</sup></b>												
Total foreign	.2	2.5	2.0	1.0	1.8	2.2	2.3	2.4	2.4	2.8	2.4	2.5
<i>Previous Tealbook</i>	.2	2.6	2.0	1.7	2.3	2.4	2.4	2.4	2.5	2.8	2.5	2.5
Advanced foreign economies	-.7	2.0	.7	.2	.8	1.3	1.5	1.5	1.6	2.6	1.7	1.7
Canada	-.2	2.5	2.3	1.3	1.3	1.5	1.7	1.8	1.9	2.0	2.0	2.0
Japan	-.3	1.7	.0	-.6	.2	.7	.9	1.1	1.2	6.5	1.2	1.2
United Kingdom	-1.3	.9	-.9	-.2	1.2	1.8	1.9	1.9	2.0	2.1	2.1	2.0
Euro area	-1.2	2.2	-.2	-.2	.7	1.4	1.5	1.5	1.6	1.6	1.6	1.6
Germany	-1.5	2.2	-.3	.0	.8	1.5	1.6	1.7	1.7	1.7	1.7	1.7
Emerging market economies	.9	3.0	2.9	1.6	2.5	2.8	2.9	3.0	3.0	3.0	3.0	3.0
Asia	.2	2.7	2.5	.5	1.9	2.4	2.6	2.7	2.7	2.8	2.8	2.8
Korea	.1	1.5	.9	1.9	2.5	2.8	3.0	3.0	3.0	3.0	3.1	3.2
China	.3	2.6	3.1	-.5	1.4	2.1	2.3	2.5	2.5	2.5	2.5	2.5
Latin America	2.1	3.7	4.0	4.1	3.9	3.8	3.7	3.7	3.6	3.6	3.6	3.6
Mexico	1.0	2.7	3.0	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Brazil	10.9	10.2	10.1	8.8	6.6	6.2	6.2	6.2	5.7	5.4	5.4	5.4

<sup>1</sup> Foreign GDP aggregates calculated using shares of U.S. exports.

<sup>2</sup> Foreign CPI aggregates calculated using shares of U.S. non-oil imports.

**Foreign Real GDP and Consumer Prices: Selected Countries**  
(Percent change, Q4 to Q4)

Measure and country	2010	2011	2012	2013	2014	-----Projected-----			
						2015	2016	2017	2018
<b>Real GDP<sup>1</sup></b>									
Total foreign	4.8	3.3	2.3	2.8	2.5	1.9	2.8	2.8	2.9
<i>Previous Tealbook</i>	4.8	3.2	2.4	2.7	2.5	1.8	2.8	2.8	2.9
Advanced foreign economies	3.1	1.9	.2	2.2	1.7	1.3	2.0	1.8	1.9
Canada	3.6	3.1	.7	3.1	2.4	.8	2.1	1.9	1.8
Japan	3.6	.3	.0	2.1	-.9	1.5	1.1	-3	1.0
United Kingdom	1.8	2.1	1.0	2.8	3.0	2.1	2.5	2.4	2.3
Euro area	2.4	.5	-1.1	.6	.9	1.6	2.0	2.1	2.1
Germany	4.5	2.4	.1	1.3	1.5	1.5	1.9	2.0	1.9
Emerging market economies	6.6	4.7	4.3	3.4	3.2	2.6	3.5	3.8	3.9
Asia	8.2	5.1	5.6	5.3	4.9	4.5	5.0	4.9	4.8
Korea	6.1	2.9	2.1	3.4	2.7	3.5	4.0	3.8	3.8
China	10.0	8.6	7.9	7.6	7.2	6.7	6.3	6.1	6.0
Latin America	4.7	4.2	3.4	1.6	1.9	1.0	2.2	2.9	3.1
Mexico	4.4	4.2	3.4	1.1	2.6	2.5	2.8	3.1	3.2
Brazil	5.7	2.5	2.6	2.4	-.7	-5.5	-.7	1.6	2.1
<b>Consumer prices<sup>2</sup></b>									
Total foreign	3.2	3.4	2.3	2.3	2.0	1.4	2.2	2.5	2.5
<i>Previous Tealbook</i>	3.2	3.4	2.3	2.3	2.0	1.6	2.4	2.6	2.5
Advanced foreign economies	1.7	2.2	1.3	1.0	1.1	.5	1.3	1.9	1.7
Canada	2.2	2.7	1.0	1.0	1.9	1.5	1.6	2.0	2.0
Japan	-.3	-.3	-.2	1.4	2.5	.2	.7	2.5	1.3
United Kingdom	3.4	4.6	2.6	2.1	.9	.1	1.7	2.0	2.0
Euro area	2.0	2.9	2.3	.8	.2	.2	1.3	1.6	1.6
Germany	1.6	2.6	2.0	1.3	.4	.1	1.4	1.7	1.8
Emerging market economies	4.3	4.3	3.1	3.3	2.6	2.1	2.8	3.0	3.0
Asia	4.3	4.5	2.6	3.1	1.8	1.5	2.4	2.8	2.8
Korea	3.2	3.9	1.7	1.1	1.0	1.1	2.8	3.1	3.2
China	4.6	4.6	2.0	2.9	1.5	1.4	2.1	2.5	2.5
Latin America	4.4	4.0	4.3	4.0	4.7	3.5	3.8	3.6	3.6
Mexico	4.3	3.5	4.1	3.6	4.2	2.5	3.2	3.2	3.2
Brazil	5.6	6.7	5.6	5.9	6.6	10.0	6.3	5.5	5.4

<sup>1</sup> Foreign GDP aggregates calculated using shares of U.S. exports.

<sup>2</sup> Foreign CPI aggregates calculated using shares of U.S. non-oil imports.

## U.S. Current Account

## Quarterly Data

	2015				2016				Projected-----2017			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<i>Billions of dollars, s.a.a.r.</i>												
<b>U.S. current account balance</b>	<b>-473.2</b>	<b>-451.0</b>	<b>-493.9</b>	<b>-506.1</b>	<b>-587.2</b>	<b>-611.9</b>	<b>-672.8</b>	<b>-720.5</b>	<b>-783.3</b>	<b>-790.3</b>	<b>-827.7</b>	<b>-856.7</b>
<i>Previous Tealbook</i>	-473.2	-438.7	-454.9	-491.3	-578.7	-595.7	-647.4	-688.5	-748.7	-752.6	-783.5	-809.5
Current account as percent of GDP	-2.7	-2.5	-2.7	-2.8	-3.2	-3.3	-3.6	-3.8	-4.1	-4.1	-4.3	-4.4
<i>Previous Tealbook</i>	-2.7	-2.4	-2.5	-2.7	-3.2	-3.2	-3.5	-3.7	-3.9	-3.9	-4.0	-4.1
Net goods & services	-537.2	-532.3	-534.8	-536.9	-598.4	-635.2	-690.8	-723.0	-769.8	-785.9	-810.5	-828.1
Investment income, net	208.8	212.7	183.0	168.6	162.0	156.0	150.6	140.4	137.3	128.3	115.3	109.2
Direct, net	278.8	280.6	241.5	234.7	243.3	253.6	265.2	273.7	290.0	302.4	312.7	330.5
Portfolio, net	-70.0	-67.9	-58.5	-66.2	-81.3	-97.6	-114.6	-133.3	-152.7	-174.1	-197.4	-221.3
Other income and transfers, net	-144.8	-131.4	-142.1	-137.9	-150.9	-132.7	-132.6	-137.9	-150.9	-132.7	-132.6	-137.9

## Annual Data

	2010	2011	2012	2013	2014	2015	2016	2017	2018

## Abbreviations

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ABS	asset-backed securities
AFE	advanced foreign economy
BHC	bank holding company
BOC	Bank of Canada
BOE	Bank of England
BOJ	Bank of Japan
CDS	credit default swaps
C&I	commercial and industrial
CMBS	commercial mortgage-backed securities
CP	commercial paper
Desk	Open Market Desk
DSGE	dynamic stochastic general equilibrium
ECB	European Central Bank
ECI	employment cost index
E&I	equipment and intangibles
EME	emerging market economy
FOMC	Federal Open Market Committee; also, the Committee
GCF	General Collateral Finance
GDP	gross domestic product
IP	industrial production
LMCI	labor market conditions index
M&A	mergers and acquisitions
MBS	mortgage-backed securities
MERS	Middle East Respiratory Syndrome
OIS	overnight index swap
ON RRP	overnight reverse repurchase agreement
OPEC	Organization of the Petroleum Exporting Countries
PBOC	People's Bank of China

PCE	personal consumption expenditures
PMI	purchasing managers index
RRP	reverse repurchase agreement
SOMA	System Open Market Account
S&P	Standard & Poor's
TIPS	Treasury Inflation-Protected Securities
ZLB	zero lower bound



### **Prefatory Note**

The attached document represents the most complete and accurate version available based on original files from the FOMC Secretariat at the Board of Governors of the Federal Reserve System.

Please note that some material may have been redacted from this document if that material was received on a confidential basis. Redacted material is indicated by occasional gaps in the text or by gray boxes around non-text content. All redacted passages are exempt from disclosure under applicable provisions of the Freedom of Information Act.

Class I FOMC – Restricted Controlled (FR)

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# Report to the FOMC on Economic Conditions and Monetary Policy



## Book B Monetary Policy: Strategies and Alternatives

December 10, 2015

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Prepared for the Federal Open Market Committee  
by the staff of the Board of Governors of the Federal Reserve System

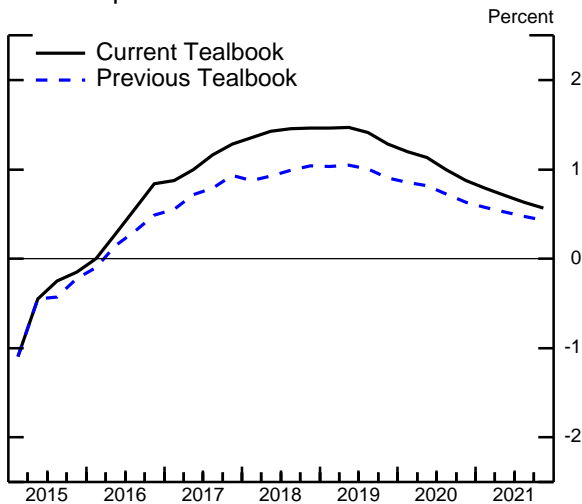
## Policy Rules and the Staff Projection

### Near-Term Prescriptions of Selected Policy Rules<sup>1</sup>

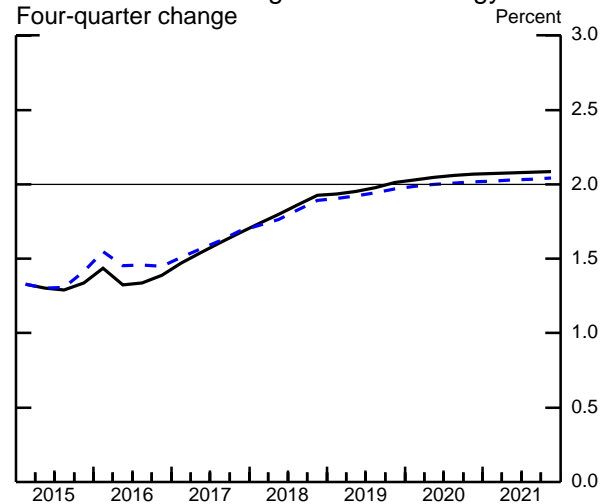
	(Percent)	
	2016:Q1	2016:Q2
Taylor (1993) rule	<b>2.41</b>	<b>2.37</b>
Previous Tealbook	2.53	2.50
Taylor (1999) rule	<b>2.41</b>	<b>2.51</b>
Previous Tealbook	2.48	2.57
Inertial Taylor (1999) rule	<b>0.51</b>	<b>0.81</b>
Previous Tealbook outlook	0.52	0.83
First-difference rule	<b>0.37</b>	<b>0.54</b>
Previous Tealbook outlook	0.25	0.34

### Key Elements of the Staff Projection

GDP Gap



PCE Prices Excluding Food and Energy  
Four-quarter change



### Real Federal Funds Rate Estimates<sup>2</sup>

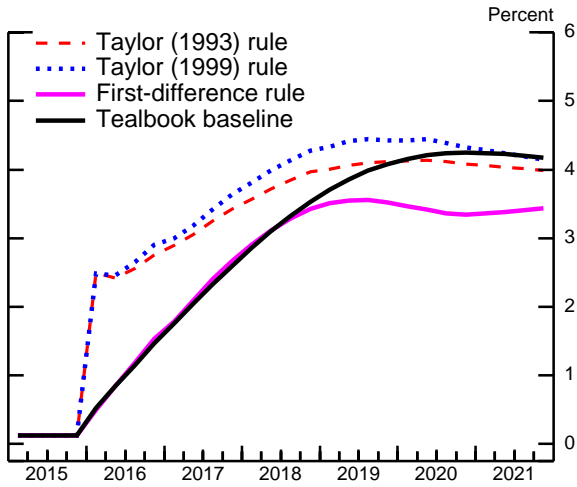
	(Percent)	
	Current Tealbook	Previous Tealbook
Tealbook-consistent FRB/US $r^*$	1.24	0.74
Current real federal funds rate	-1.16	-1.17
Average projected real federal funds rate	0.36	0.21

1. For rules that have a lagged policy rate as a right-hand-side variable, the lines denoted "Previous Tealbook outlook" report rule prescriptions based on the previous Tealbook's staff outlook, but jumping off from the average value for the policy rate thus far in the current quarter.

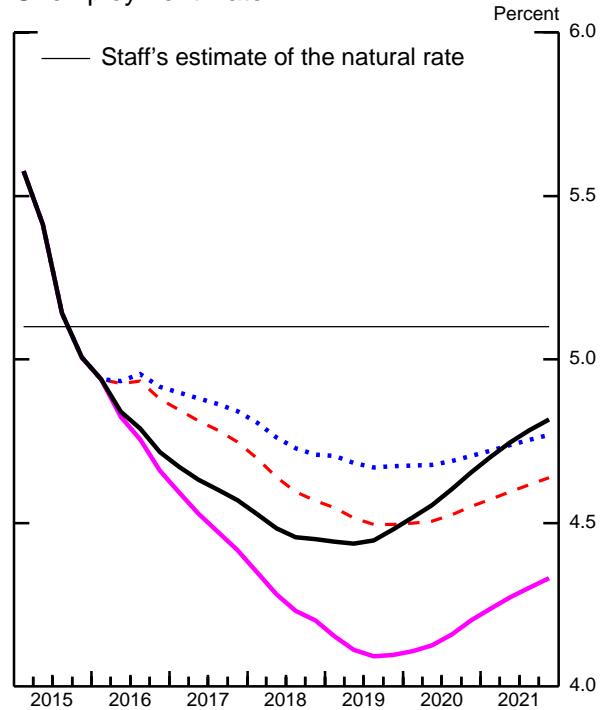
2. The "Tealbook-consistent FRB/US  $r^*$ " is the level of the real federal funds rate that, if maintained over a 12-quarter period in the FRB/US model, sets the output gap equal to zero in the final quarter of that period. The "current real federal funds rate" is the difference between the federal funds rate and the trailing four-quarter change in core PCE. The "average projected real federal funds rate" is the 12-quarter average of the current real federal funds rate and its projected values under the Tealbook baseline over the next 11 quarters.

## Policy Rule Simulations

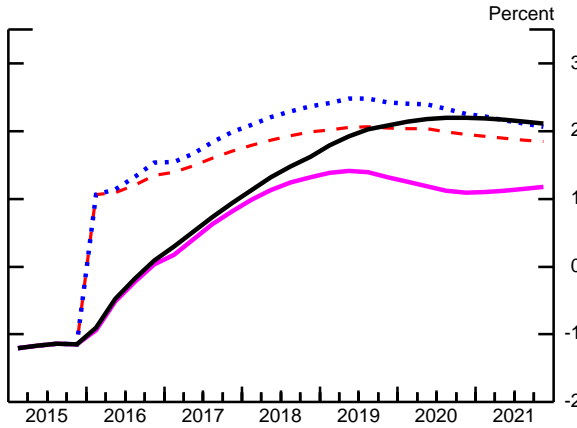
Nominal Federal Funds Rate



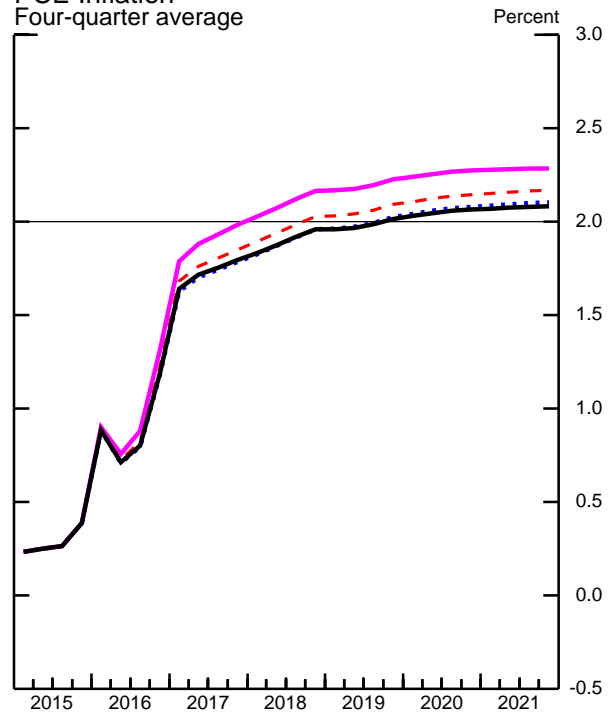
Unemployment Rate



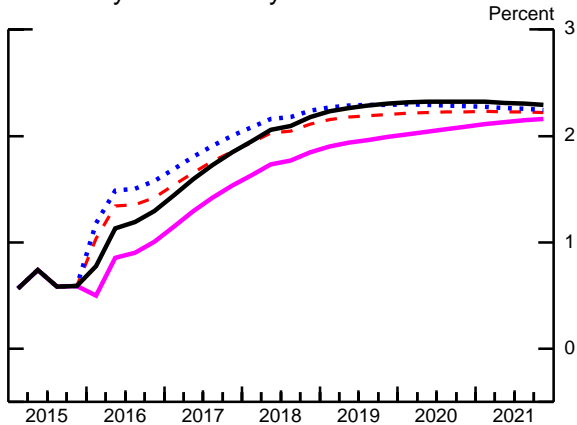
Real Federal Funds Rate



PCE Inflation  
Four-quarter average



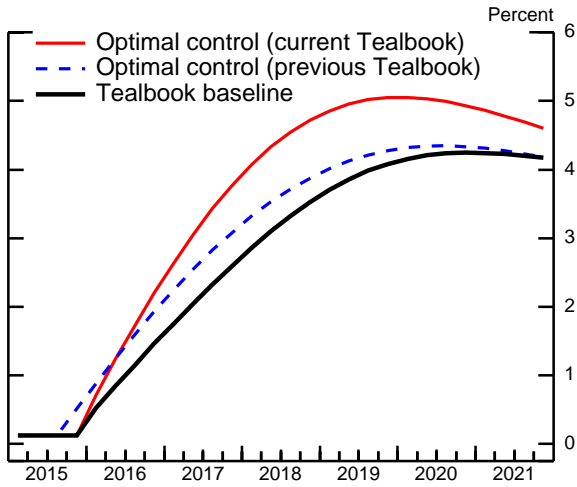
Real 10-year Treasury Yield



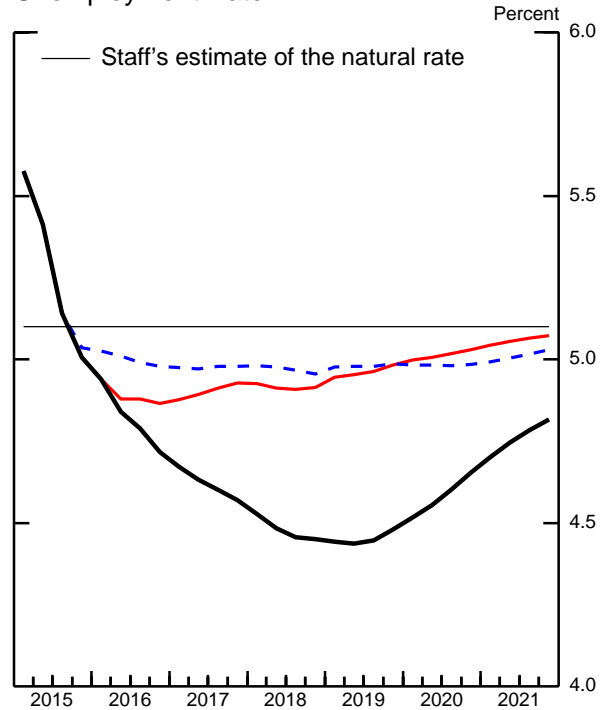
Note: The policy rule simulations in this exhibit are based on rules that respond to core inflation. This choice of rule specification was made in light of the tendency for current and near-term core inflation rates to outperform headline inflation rates as predictors of the medium-term behavior of headline inflation.

## Optimal Control Policy under Commitment

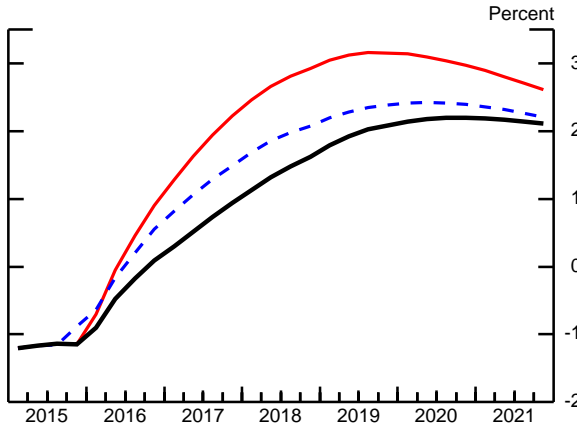
Nominal Federal Funds Rate



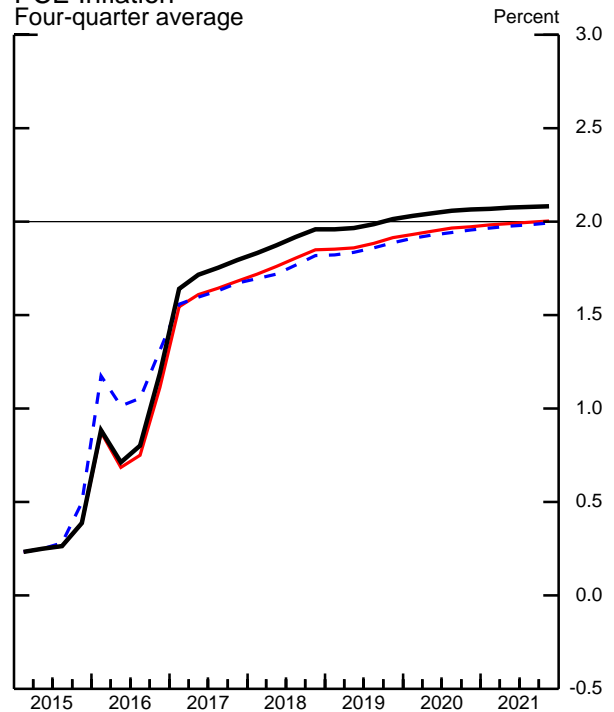
Unemployment Rate



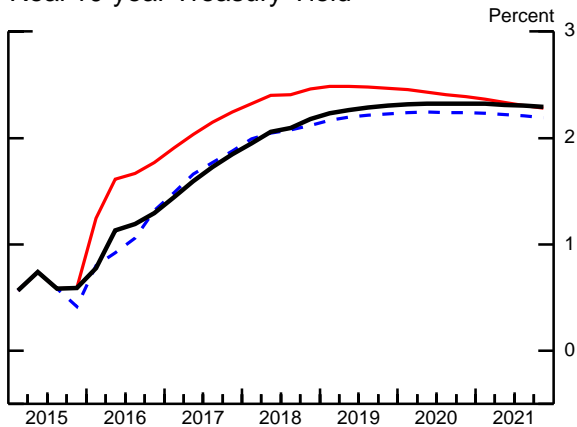
Real Federal Funds Rate



PCE Inflation  
Four-quarter average

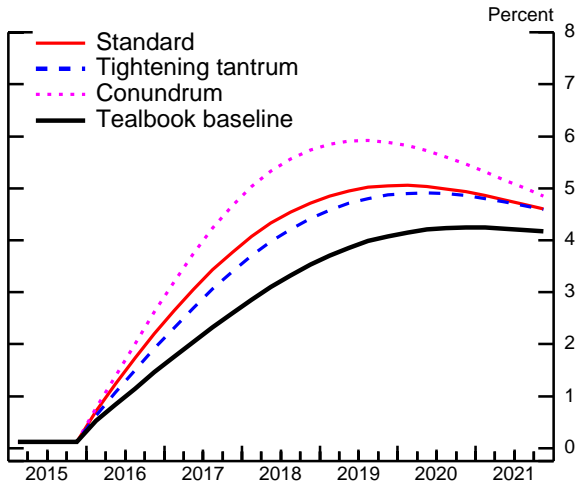


Real 10-year Treasury Yield

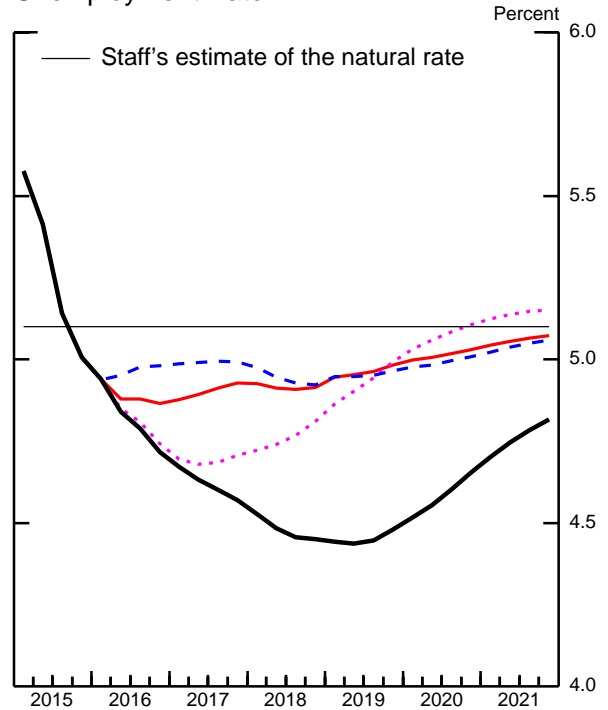


## Optimal Control in the Presence of Term-Premium Shocks

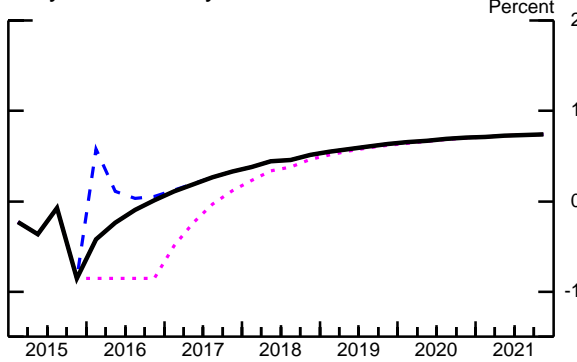
Nominal Federal Funds Rate



Unemployment Rate

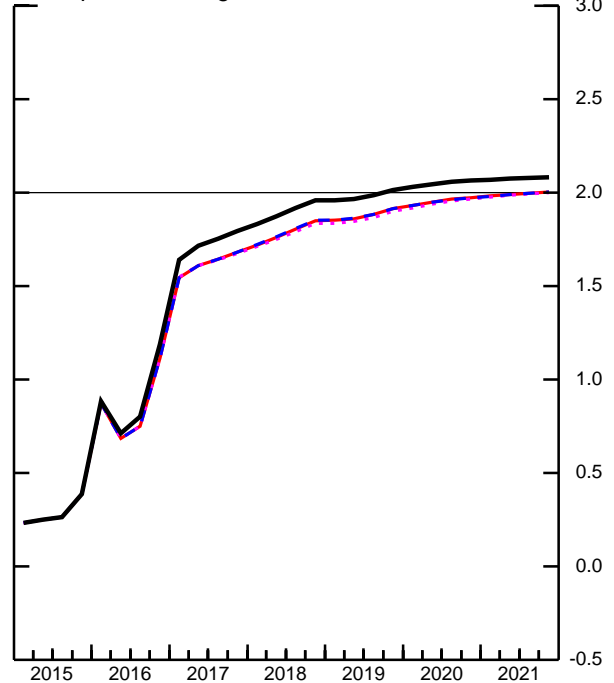


10-year Treasury Term Premium

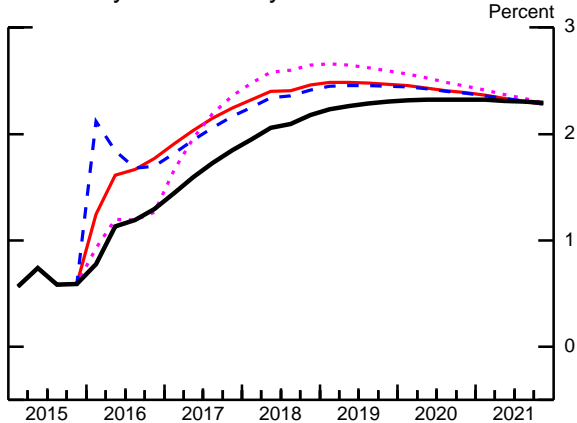


Note: The Tealbook baseline and standard optimal control embed identical term premium assumptions.

PCE Inflation  
Four-quarter average



Real 10-year Treasury Yield



## Outcomes under Alternative Policies

(Percent change, annual rate, from end of preceding period except as noted)

Measure and policy	2015		2016	2017	2018	2019
	H1	H2				
<i>Real GDP</i>						
Extended Tealbook baseline <sup>1</sup>	2.3	1.9	2.5	2.0	1.9	1.6
Taylor (1993)	2.3	1.9	2.2	2.0	2.0	1.8
Taylor (1999)	2.3	1.9	2.1	1.8	1.9	1.8
Inertial Taylor (1999)	2.3	1.9	2.5	2.0	1.9	1.6
First-difference	2.3	1.9	2.6	2.3	2.1	1.8
Optimal control	2.3	1.9	2.2	1.6	1.6	1.7
<i>Unemployment Rate<sup>2</sup></i>						
Extended Tealbook baseline <sup>1</sup>	5.4	5.0	4.7	4.6	4.5	4.5
Taylor (1993)	5.4	5.0	4.9	4.7	4.6	4.5
Taylor (1999)	5.4	5.0	4.9	4.8	4.7	4.7
Inertial Taylor (1999)	5.4	5.0	4.7	4.6	4.4	4.5
First-difference	5.4	5.0	4.7	4.4	4.2	4.1
Optimal control	5.4	5.0	4.9	4.9	4.9	5.0
<i>Total PCE prices</i>						
Extended Tealbook baseline <sup>1</sup>	0.1	0.7	1.2	1.8	2.0	2.0
Taylor (1993)	0.1	0.7	1.2	1.9	2.0	2.1
Taylor (1999)	0.1	0.7	1.2	1.8	2.0	2.0
Inertial Taylor (1999)	0.1	0.7	1.2	1.8	2.0	2.0
First-difference	0.1	0.7	1.3	2.0	2.2	2.2
Optimal control	0.1	0.7	1.1	1.7	1.9	1.9
<i>Core PCE prices</i>						
Extended Tealbook baseline <sup>1</sup>	1.4	1.3	1.4	1.7	1.9	2.0
Taylor (1993)	1.4	1.3	1.4	1.7	2.0	2.1
Taylor (1999)	1.4	1.3	1.4	1.7	1.9	2.0
Inertial Taylor (1999)	1.4	1.3	1.4	1.7	1.9	2.0
First-difference	1.4	1.3	1.5	1.9	2.1	2.2
Optimal control	1.4	1.3	1.3	1.6	1.8	1.9
<i>Nominal federal funds rate<sup>3</sup></i>						
Extended Tealbook baseline <sup>1</sup>	0.1	0.2	1.5	2.6	3.5	4.1
Taylor (1993)	0.1	0.2	2.8	3.4	4.0	4.1
Taylor (1999)	0.1	0.2	2.9	3.6	4.3	4.4
Inertial Taylor (1999)	0.1	0.2	1.5	2.6	3.5	4.1
First-difference	0.1	0.2	1.5	2.7	3.4	3.5
Optimal control	0.1	0.2	2.2	3.8	4.7	5.1

1. In the Tealbook baseline, the federal funds rate first departs from an effective lower bound of 12½ basis points in December of 2015. Thereafter, the federal funds rate follows the prescriptions of the inertial Taylor (1999) rule.

2. Percent, average for the final quarter of the period.

3. Effective rate in percent, average for the final quarter of the period.

### Outcomes under Alternative Policies, Quarterly

(Four-quarter percent change, except as noted)

Measure and policy	2016				2017			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<i>Real GDP</i>								
Extended Tealbook baseline <sup>1</sup>	2.4	2.1	2.3	2.5	2.4	2.3	2.2	2.0
Taylor (1993)	2.4	2.0	2.1	2.2	2.1	2.1	2.0	2.0
Taylor (1999)	2.4	2.0	2.0	2.1	2.0	1.9	1.9	1.8
Inertial Taylor (1999)	2.4	2.1	2.3	2.5	2.4	2.3	2.2	2.0
First-difference	2.4	2.2	2.3	2.6	2.6	2.5	2.4	2.3
Optimal control	2.4	2.0	2.1	2.2	2.0	1.8	1.7	1.6
<i>Unemployment Rate<sup>2</sup></i>								
Extended Tealbook baseline <sup>1</sup>	4.9	4.8	4.8	4.7	4.7	4.6	4.6	4.6
Taylor (1993)	4.9	4.9	4.9	4.9	4.8	4.8	4.8	4.7
Taylor (1999)	4.9	4.9	5.0	4.9	4.9	4.9	4.9	4.8
Inertial Taylor (1999)	4.9	4.8	4.8	4.7	4.7	4.6	4.6	4.6
First-difference	4.9	4.8	4.8	4.7	4.6	4.5	4.5	4.4
Optimal control	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
<i>Total PCE prices</i>								
Extended Tealbook baseline <sup>1</sup>	0.9	0.7	0.8	1.2	1.6	1.7	1.8	1.8
Taylor (1993)	0.9	0.7	0.8	1.2	1.7	1.8	1.8	1.9
Taylor (1999)	0.9	0.7	0.8	1.2	1.6	1.7	1.7	1.8
Inertial Taylor (1999)	0.9	0.7	0.8	1.2	1.6	1.7	1.8	1.8
First-difference	0.9	0.8	0.9	1.3	1.8	1.9	1.9	2.0
Optimal control	0.9	0.7	0.8	1.1	1.5	1.6	1.6	1.7
<i>Core PCE prices</i>								
Extended Tealbook baseline <sup>1</sup>	1.4	1.3	1.3	1.4	1.5	1.5	1.6	1.7
Taylor (1993)	1.4	1.3	1.4	1.4	1.5	1.6	1.7	1.7
Taylor (1999)	1.4	1.3	1.3	1.4	1.5	1.5	1.6	1.7
Inertial Taylor (1999)	1.4	1.3	1.3	1.4	1.5	1.5	1.6	1.7
First-difference	1.5	1.4	1.4	1.5	1.6	1.7	1.8	1.9
Optimal control	1.4	1.3	1.3	1.3	1.4	1.4	1.5	1.6
<i>Nominal federal funds rate<sup>3</sup></i>								
Extended Tealbook baseline <sup>1</sup>	0.5	0.8	1.1	1.5	1.8	2.0	2.3	2.6
Taylor (1993)	2.5	2.4	2.6	2.8	2.9	3.1	3.2	3.4
Taylor (1999)	2.5	2.5	2.7	2.9	3.0	3.2	3.4	3.6
Inertial Taylor (1999)	0.5	0.8	1.1	1.5	1.8	2.0	2.3	2.6
First-difference	0.5	0.8	1.2	1.5	1.8	2.1	2.4	2.7
Optimal control	0.7	1.2	1.7	2.2	2.6	3.1	3.4	3.8

1. In the Tealbook baseline, the federal funds rate first departs from an effective lower bound of 12½ basis points in December of 2015. Thereafter, the federal funds rate follows the prescriptions of the inertial Taylor (1999) rule.

2. Percent, average for the quarter.

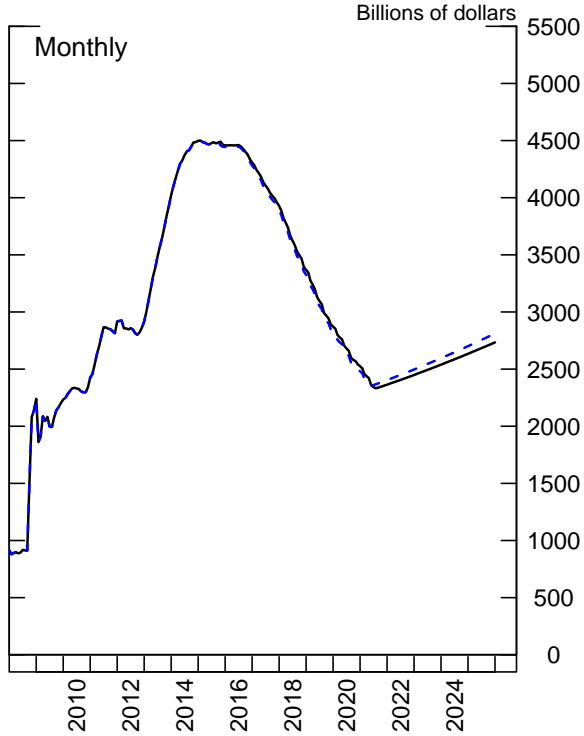
3. Effective rate in percent, average for the quarter.



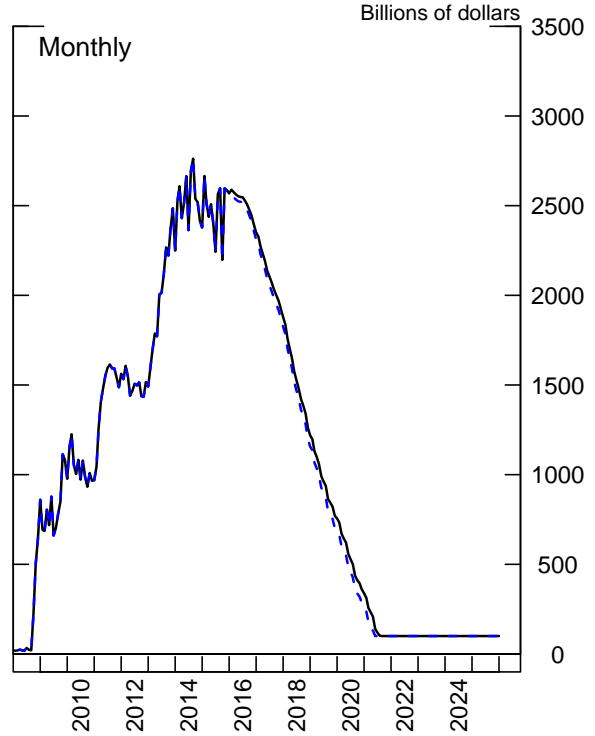
# Total Assets and Selected Balance Sheet Items

— December Tealbook — October Tealbook

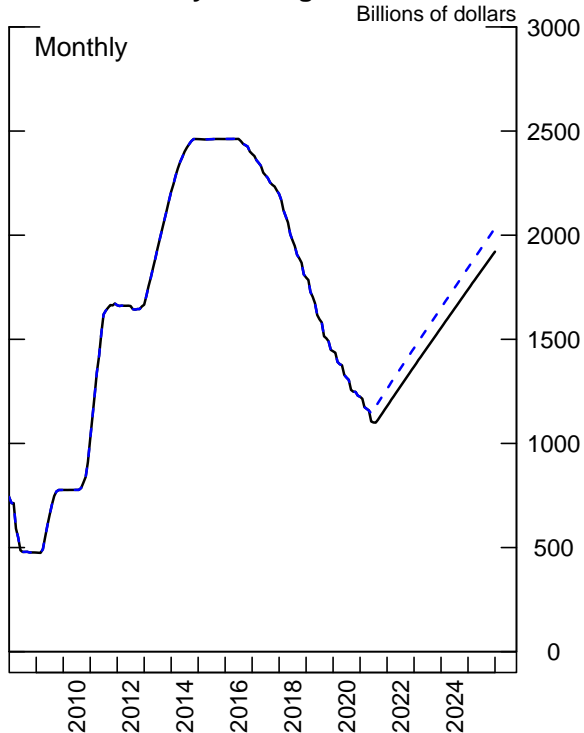
## Total Assets



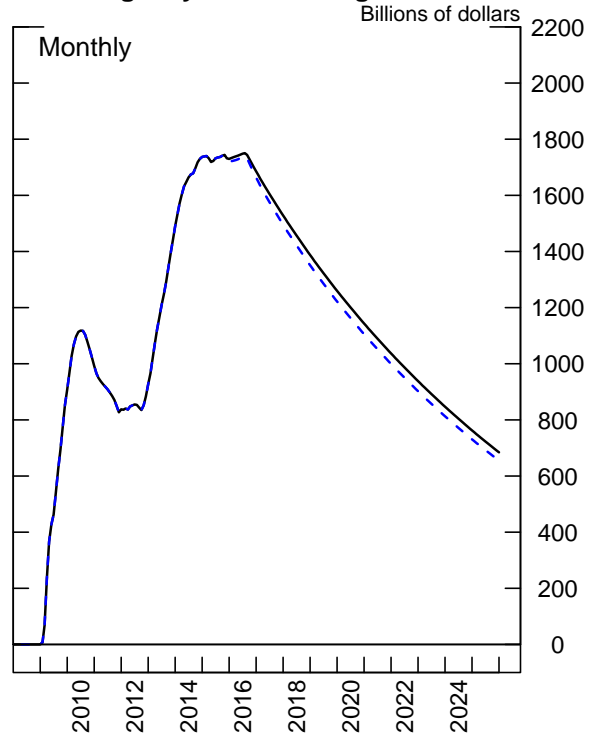
## Reserve Balances



## SOMA Treasury Holdings



## SOMA Agency MBS Holdings



Projections

**Federal Reserve Balance Sheet**  
**End-of-Year Projections -- December Tealbook**  
 (Billions of dollars)

	Oct 31, 2015	2015	2017	2019	2021	2023	2025
Total assets	4,490	4,458	3,928	2,872	2,364	2,539	2,734
Selected assets							
Loans and other credit extensions*	2	0	0	0	0	0	0
Securities held outright	4,240	4,224	3,730	2,704	2,218	2,404	2,607
U.S. Treasury securities	2,462	2,462	2,198	1,442	1,179	1,555	1,921
Agency debt securities	34	33	4	2	2	2	2
Agency mortgage-backed securities	1,744	1,730	1,528	1,260	1,037	847	684
Unamortized premiums	192	188	150	116	93	80	71
Unamortized discounts	-17	-17	-14	-11	-9	-7	-6
Total other assets	53	55	55	55	55	55	55
Total liabilities	4,432	4,399	3,884	2,819	2,300	2,460	2,637
Selected liabilities							
Federal Reserve notes in circulation	1,350	1,370	1,545	1,702	1,839	2,000	2,176
Reverse repurchase agreements	426	301	301	201	201	201	201
Deposits with Federal Reserve Banks	2,649	2,723	2,034	911	255	255	255
Reserve balances held by depository institutions	2,596	2,568	1,879	756	100	100	100
U.S. Treasury, General Account	23	150	150	150	150	150	150
Other deposits	30	5	5	5	5	5	5
Interest on Federal Reserve Notes due to U.S. Treasury	2	0	0	0	0	0	0
Total capital**	59	59	44	53	64	79	97

Projections

Source: Federal Reserve H.4.1 statistical releases and staff calculations.

Note: Components may not sum to totals due to rounding.

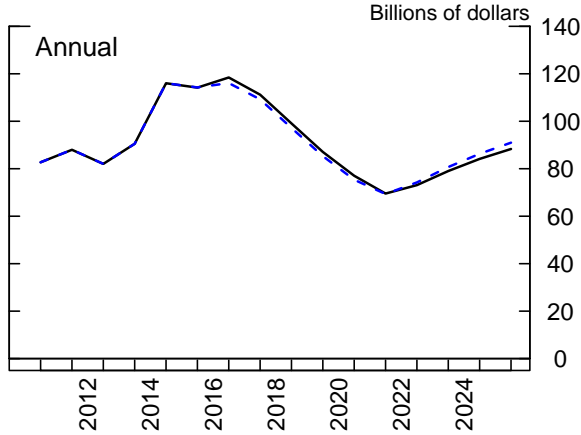
\*Loans and other credit extensions includes primary, secondary, and seasonal credit; central bank liquidity swaps; and net portfolio holdings of Maiden Lane LLC.

\*\*Total capital includes capital paid-in and capital surplus accounts.

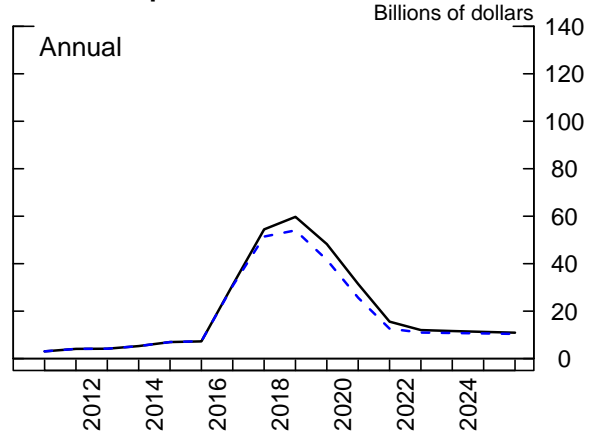
## Income Projections

— December Tealbook — October Tealbook

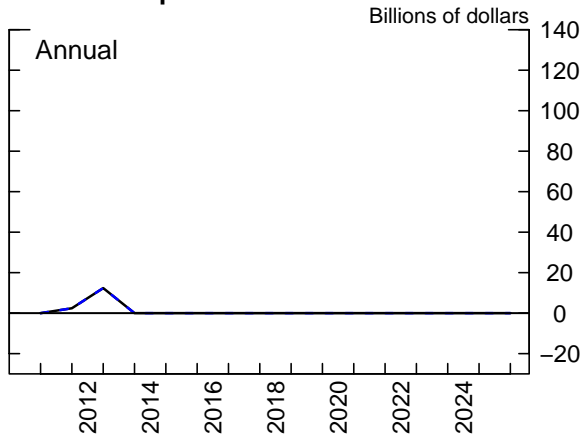
### Interest Income



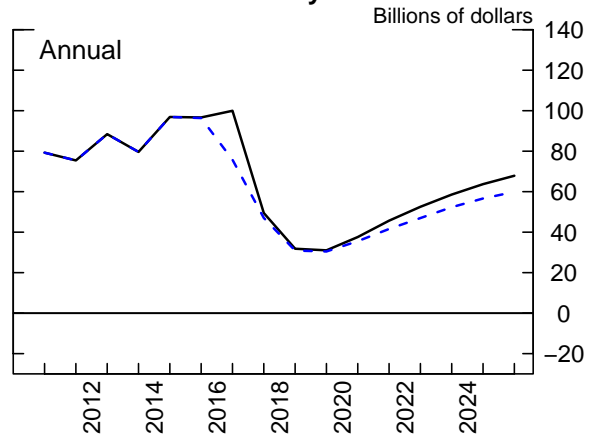
### Interest Expense



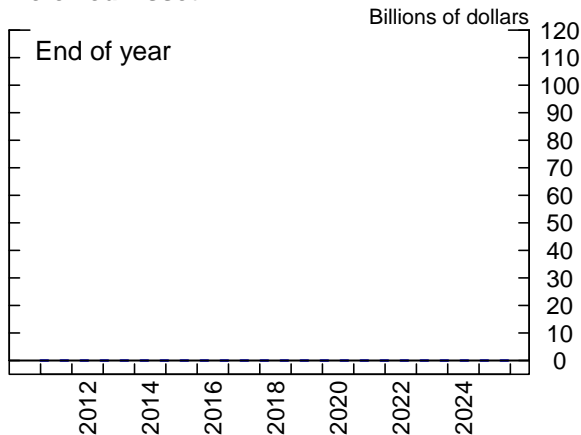
### Realized Capital Gains



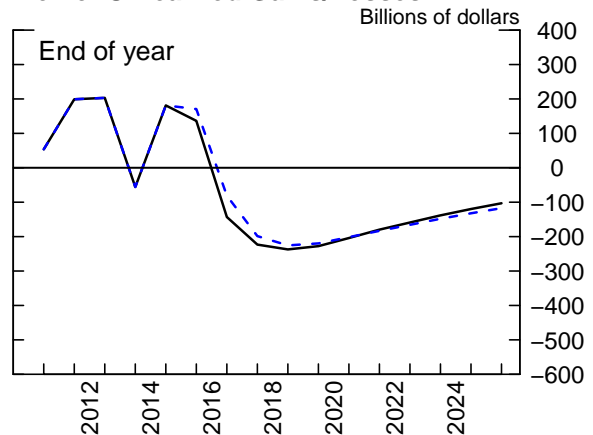
### Remittances to Treasury



### Deferred Asset



### Memo: Unrealized Gains/Losses

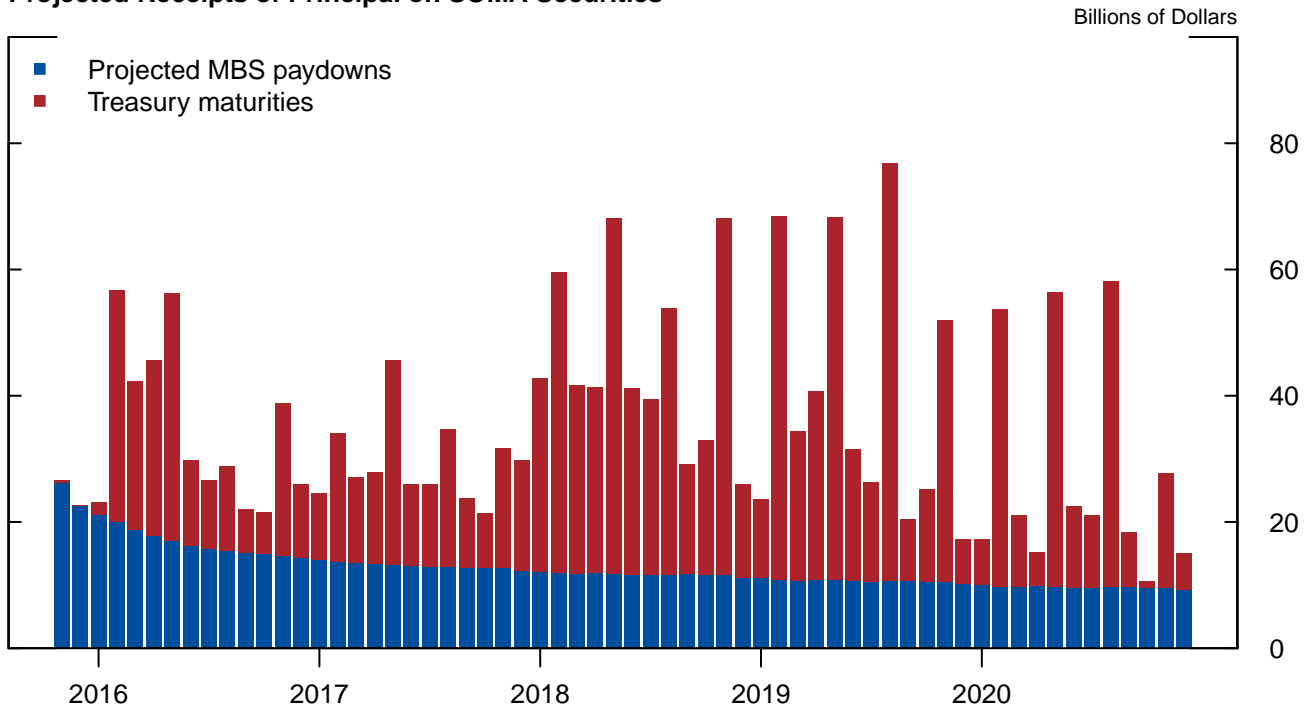


**Projections for the 10-Year Treasury Term Premium Effect**  
(Basis Points)

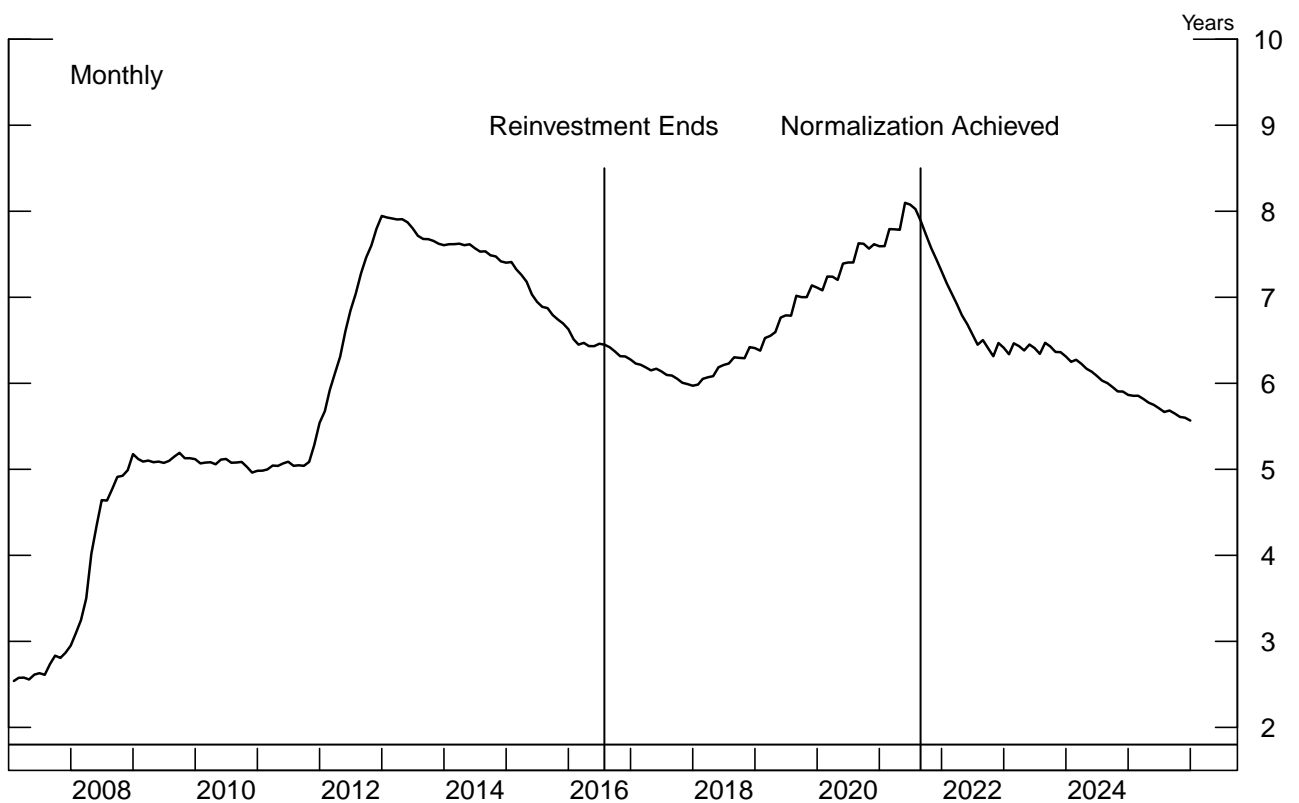
Date	December Tealbook	October Tealbook
Quarterly Averages		
2015:Q4	-109	-108
2016:Q1	-105	-103
Q2	-100	-99
Q3	-95	-94
Q4	-91	-90
2017:Q4	-75	-74
2018:Q4	-62	-62
2019:Q4	-52	-52
2020:Q4	-43	-44
2021:Q4	-37	-37
2022:Q4	-31	-32
2023:Q4	-25	-26
2024:Q4	-20	-20
2025:Q4	-14	-15

## Projections for the Characteristics of SOMA Holdings

### Projected Receipts of Principal on SOMA Securities



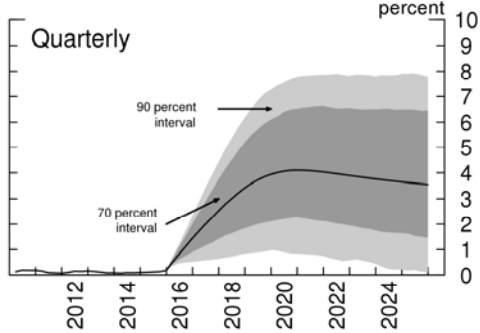
### SOMA Weighted-Average Treasury Duration



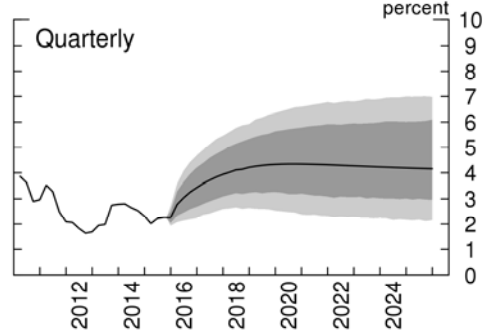
## Interest Rates and Selected Assets and Liabilities of the Balance Sheet

— December Tealbook

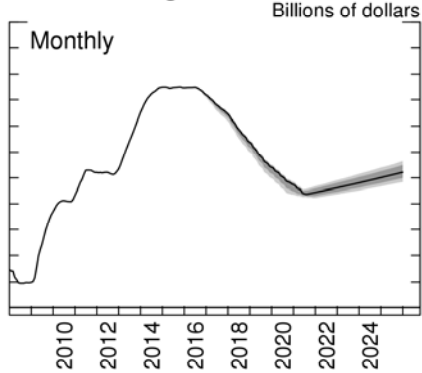
**Federal Funds Rate**



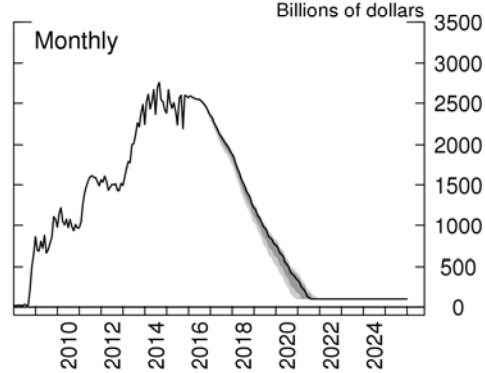
**10-Year Treasury Rate**



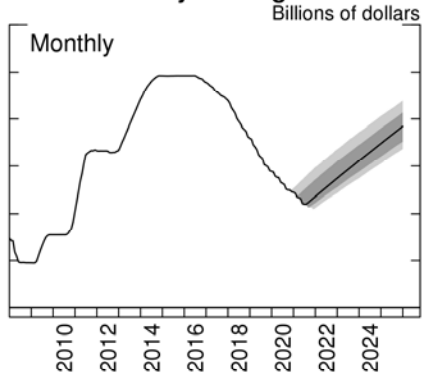
**SOMA Holdings**



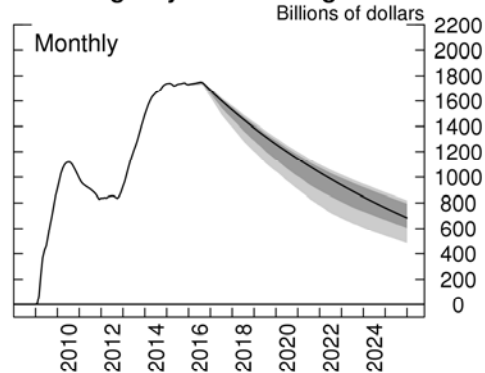
**Reserve Balances**



**SOMA Treasury Holdings**



**SOMA Agency MBS Holdings**

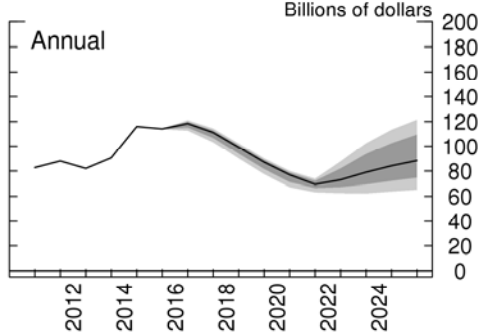


Projections

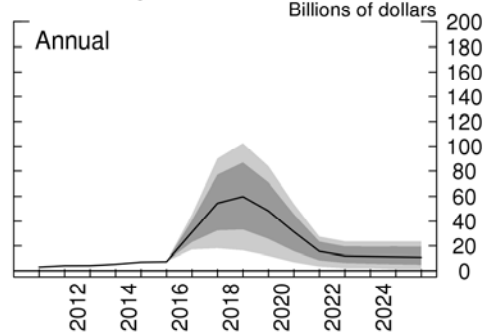
## Income Projections

— December Tealbook

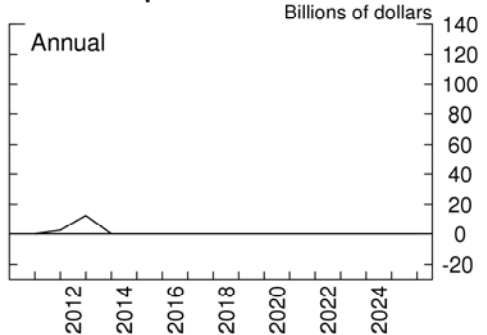
### Interest Income



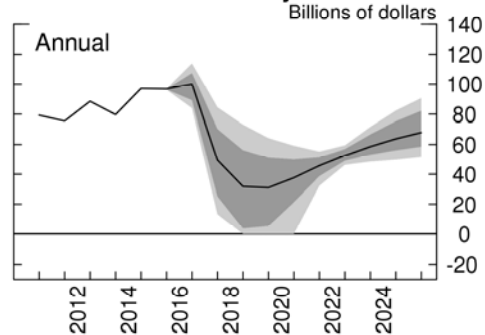
### Interest Expense



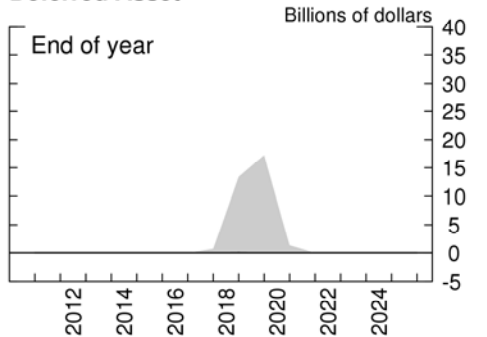
### Realized Capital Gains



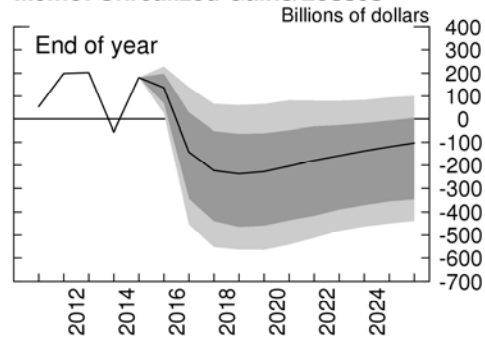
### Remittances to Treasury



### Deferred Asset



### Memo: Unrealized Gains/Losses



## Abbreviations

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ABS	asset-backed securities
BEA	Bureau of Economic Analysis, Department of Commerce
BHC	bank holding company
CDS	credit default swaps
CFTC	Commodity Futures Trading Commission
C&I	commercial and industrial
CLO	collateralized loan obligation
CMBS	commercial mortgage-backed securities
CPI	consumer price index
CRE	commercial real estate
Desk	Open Market Desk
ECB	European Central Bank
EDO	Estimated, dynamic, optimization-based model
EME	emerging market economy
FDIC	Federal Deposit Insurance Corporation
FOMC	Federal Open Market Committee; also, the Committee
GCF	general collateral finance
GDI	gross domestic income
GDP	gross domestic product
GSIBs	globally systemically important banking organizations
HQLA	high-quality liquid assets
ISM	Institute for Supply Management
LIBOR	London interbank offered rate
MBS	mortgage-backed securities
MMFs	money market funds
NIPA	national income and product accounts
OIS	overnight index swap



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ON RRP	overnight reverse repurchase agreement
PCE	personal consumption expenditures
repo	repurchase agreement
RMBS	residential mortgage-backed securities
RRP	reverse repurchase agreement
SCOOS	Senior Credit Officer Opinion Survey on Dealer Financing Terms
SEP	Summary of Economic Projections
SFA	Supplemental Financing Account
SLOOS	Senior Loan Officer Opinion Survey on Bank Lending Practices
SOMA	System Open Market Account
TBA	to be announced (for example, TBA market)
TGA	U.S. Treasury's General Account
TIPS	Treasury inflation-protected securities
TPE	Term premium effects