

**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: Outlook, Risks, and Policy Strategies

January 23, 2017

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

## Comparing the Staff Projection with Other Forecasts

The staff's projection for real GDP growth in 2017 and 2018 is a touch below the projections from the Survey of Professional Forecasters (SPF) and the Blue Chip consensus forecast. The staff's forecast for the unemployment rate is a bit below Blue Chip in 2018 and the rather outdated SPF survey in 2017. The staff's inflation projection is roughly in line with the outside forecasters for the CPI but below the SPF forecasts for PCE price inflation in 2017 and 2018.

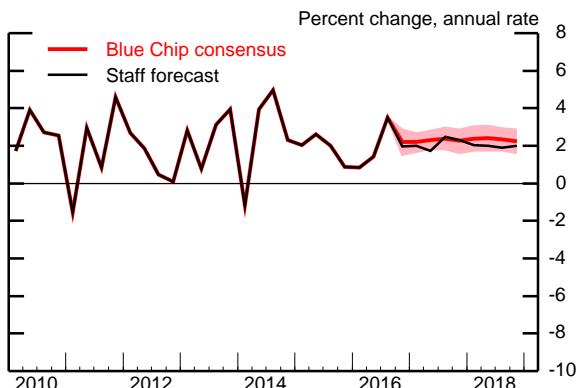
### Comparison of Tealbook and Outside Forecasts

	2016	2017	2018
<b>GDP (Q4/Q4 percent change)</b>			
January Tealbook	1.9	2.1	2.0
Blue Chip (1/10/17)	2.0	2.3	2.3
SPF median (11/14/16)	1.8	2.2	n.a.
<b>Unemployment rate (Q4 level)</b>			
January Tealbook	4.7	4.5	4.2
Blue Chip (1/10/17)	4.7	4.5	4.4
SPF median (11/14/16)	4.8	4.7	n.a.
<b>CPI inflation (Q4/Q4 percent change)</b>			
January Tealbook	1.8	2.4	2.2
Blue Chip (1/10/17)	1.7	2.4	2.3
SPF median (11/14/16)	1.5	2.2	2.2
<b>PCE price inflation (Q4/Q4 percent change)</b>			
January Tealbook	1.5	1.7	1.8
SPF median (11/14/16)	1.4	1.9	2.0
<b>Core PCE price inflation (Q4/Q4 percent change)</b>			
January Tealbook	1.7	1.7	1.9
SPF median (11/14/16)	1.8	1.9	1.9

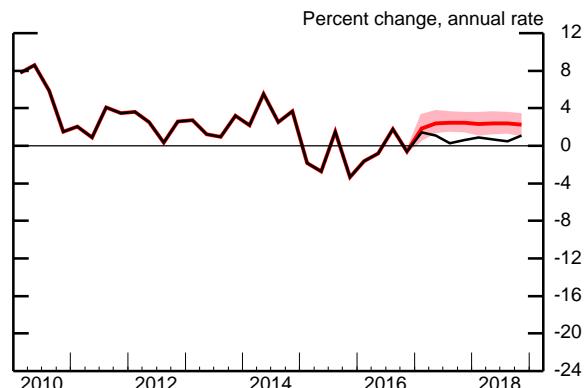
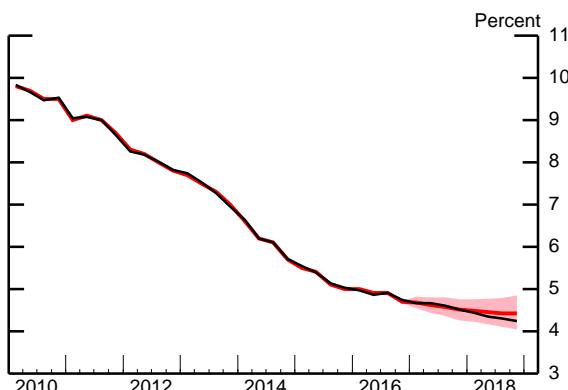
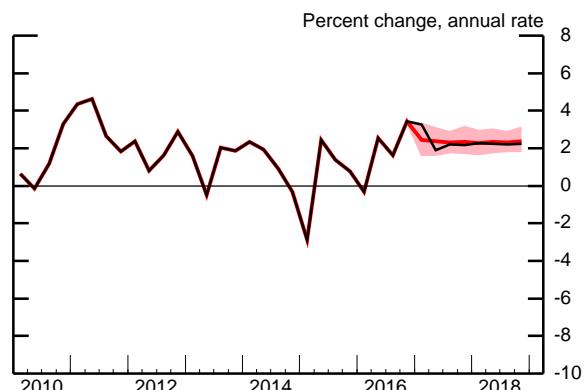
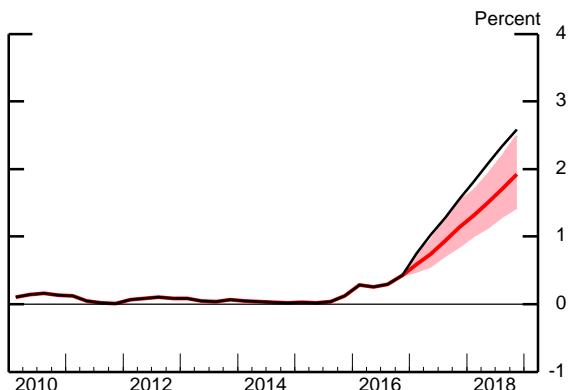
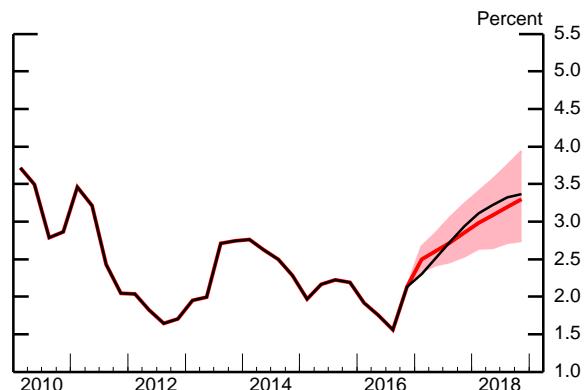
Note: SPF is the Survey of Professional Forecasters, CPI is the consumer price index, and PCE is personal consumption expenditures. Blue Chip does not provide results for PCE price inflation. The Blue Chip consensus forecast includes input from about 50 panelists, and the SPF about 40. Roughly 20 panelists 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 January 10, 2017)

**Real GDP**

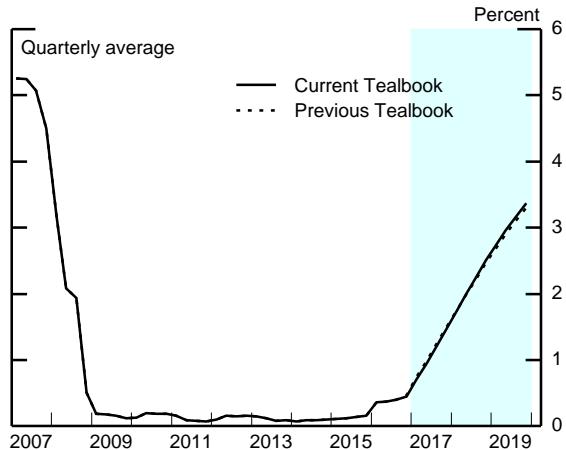
Note: The shaded area represents the area between the Blue Chip top 10 and bottom 10 averages.

**Industrial Production****Unemployment Rate****Consumer Price Index****Treasury Bill Rate****10-Year Treasury Yield**

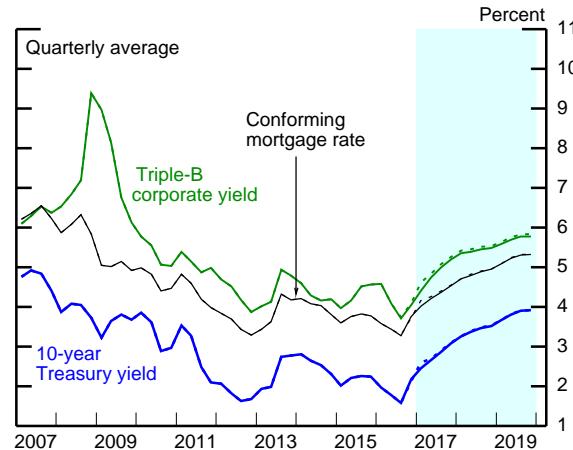
Note: The yield is for on-the-run Treasury securities. Over the forecast period, the staff's projected yield is assumed to be 15 basis points below the off-the-run yield.

## Key Background Factors underlying the Baseline Staff Projection

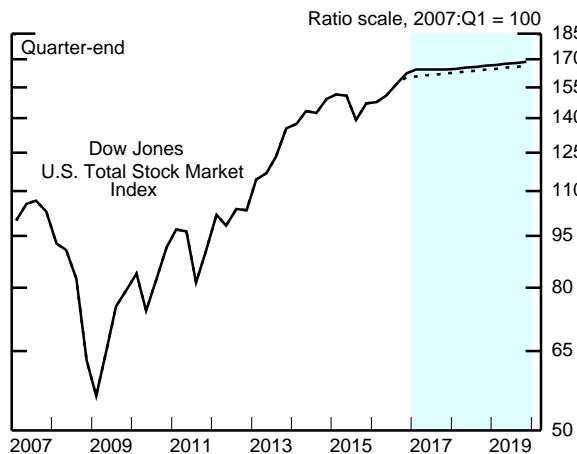
Federal Funds Rate



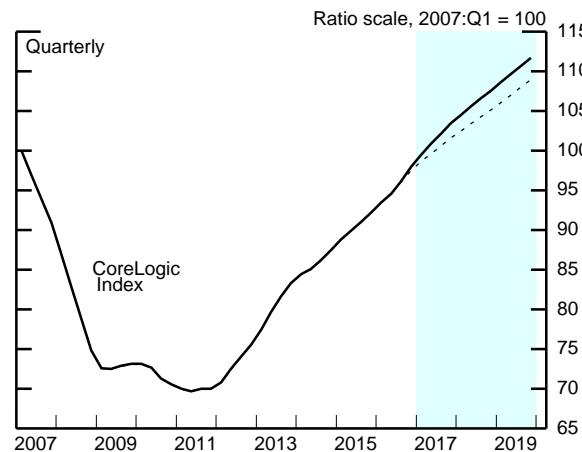
Long-Term Interest Rates



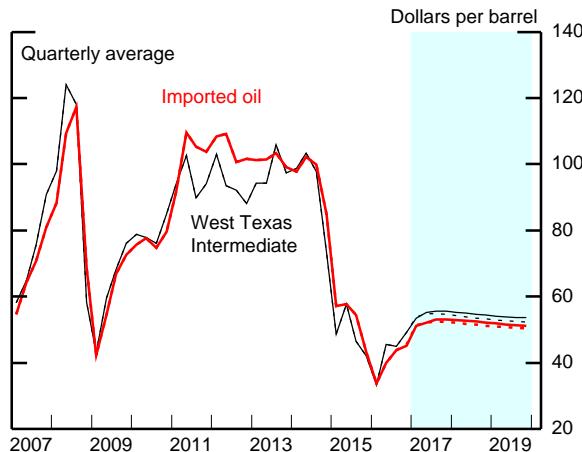
Equity Prices



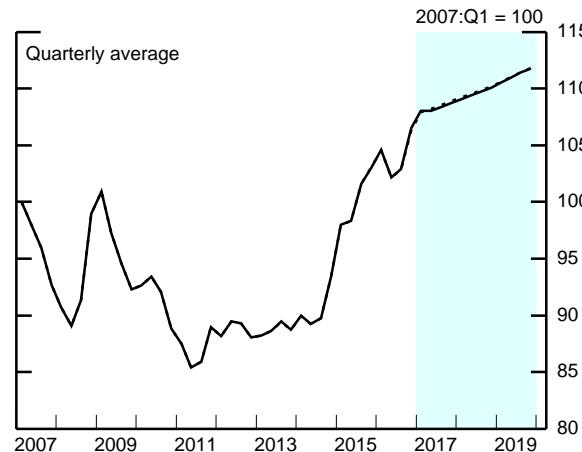
House Prices



Crude Oil Prices



Broad Real Dollar



**Federal Reserve System Nowcasts of 2016:Q4 Real GDP Growth**  
 (Percent change at annual rate from previous quarter)

Federal Reserve entity	Type of model	Nowcast as of Jan. 17, 2017
Federal Reserve Bank		
Boston	• Mixed-frequency BVAR	3.3
New York	• Factor-augmented autoregressive model combination • Factor-augmented autoregressive model combination, financial factors only • Dynamic factor model	2.6 2.0 2.1
Cleveland	• Bayesian regressions with stochastic volatility • Tracking model	2.1 1.6
Atlanta	• Tracking model combined with Bayesian vector autoregressions (VARs), dynamic factor models, and factor-augmented autoregressions (known as GDPNow)	2.8
Chicago	• Dynamic factor models • Bayesian VARs	2.8 1.7
St. Louis	• Dynamic factor models • News index model • Let-the-data-decide regressions	2.8 3.0 2.4
Kansas City	• Accounting-based tracking estimate	1.6
Board of Governors	• Board staff's forecast (judgmental tracking model) <sup>1</sup> • Monthly dynamic factor models (DFM-45) • Mixed-frequency dynamic factor model (DFM-BM)	2.0 3.2 3.9
Memo: Median of Federal Reserve System nowcasts		2.5

1. The January Tealbook forecast, finalized on January 18, is 2.0 percent.

## Summary of the Near-Term Outlook

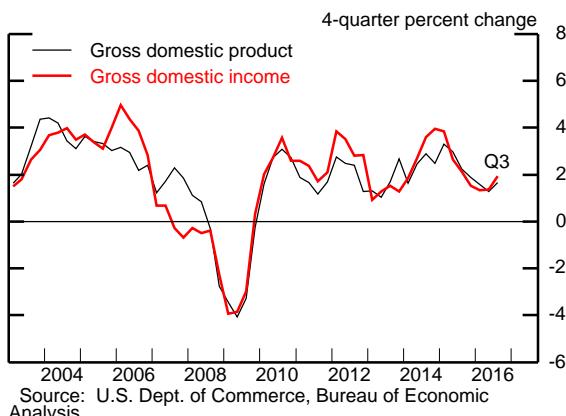
(Percent change at annual rate except as noted)

Measure	2016:Q3		2016:Q4		2017:H1	
	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook
<b>Real GDP</b>	<b>3.3</b>	<b>3.5</b>	<b>1.6</b>	<b>2.0</b>	<b>2.1</b>	<b>1.9</b>
Private domestic final purchases	2.1	2.4	2.5	2.9	2.7	2.5
Personal consumption expenditures	2.8	3.0	2.1	2.8	2.6	2.4
Residential investment	-4.1	-4.1	11.5	10.7	2.7	-.4
Nonres. private fixed investment	.3	1.4	1.9	1.4	3.3	4.3
Government purchases	.8	.8	2.3	2.4	1.7	1.7
<i>Contributions to change in real GDP</i>						
Inventory investment <sup>1</sup>	.5	.5	-.3	.2	.2	.0
Net exports <sup>1</sup>	.8	.9	-.6	-1.1	-.7	-.6
<b>Unemployment rate</b>	<b>4.9</b>	<b>4.9</b>	<b>4.8</b>	<b>4.7</b>	<b>4.7</b>	<b>4.7</b>
<b>PCE chain price index</b>	<b>1.4</b>	<b>1.5</b>	<b>2.3</b>	<b>2.1</b>	<b>1.8</b>	<b>1.8</b>
Ex. food and energy	1.7	1.7	1.4	1.2	1.7	1.7

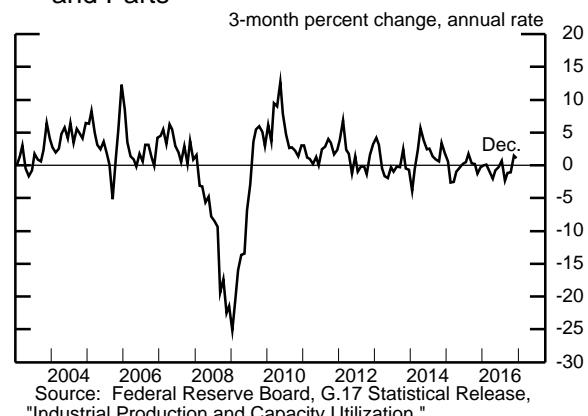
1. Percentage points.

### Recent Nonfinancial Developments (1)

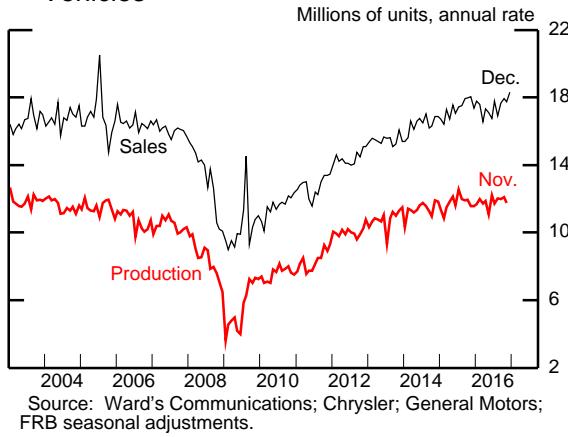
Real GDP and GDI



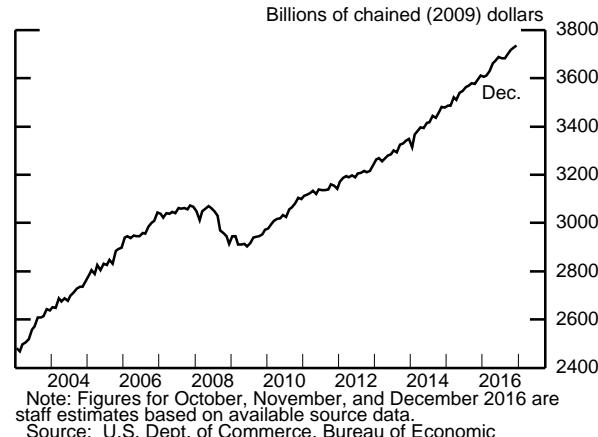
Manufacturing IP ex. Motor Vehicles and Parts



Sales and Production of Light Motor Vehicles

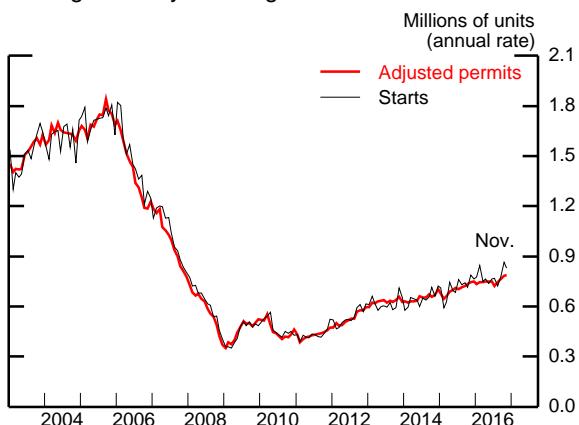


Real PCE Goods ex. Motor Vehicles



## Recent Nonfinancial Developments (2)

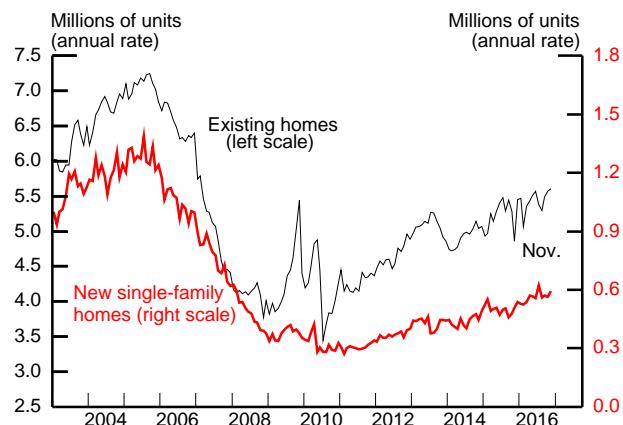
### Single-Family Housing Starts and Permits



Note: Adjusted permits equal permit issuance plus total starts outside of permit-issuing areas.

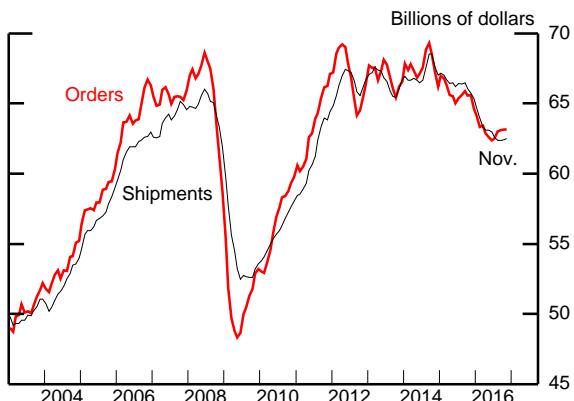
Source: U.S. Census Bureau.

### Home Sales



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

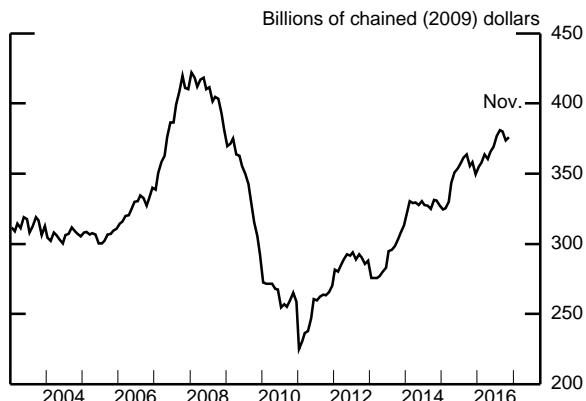
### Nondefense Capital Goods ex. Aircraft



Note: Data are 3-month moving averages.

Source: U.S. Census Bureau.

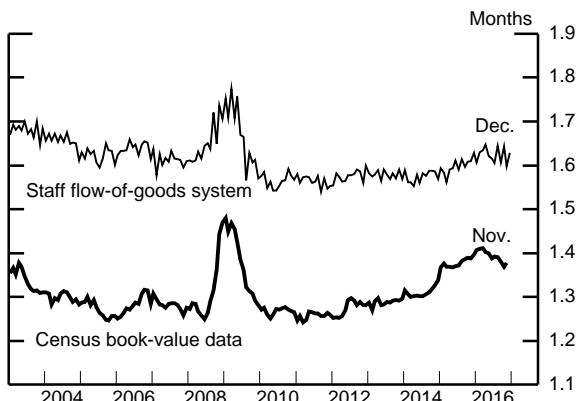
### Nonresidential Construction Put in Place



Note: Nominal CPIP deflated by BEA prices through 2016:Q3 and by the staff's estimated deflator thereafter.

Source: U.S. Census Bureau.

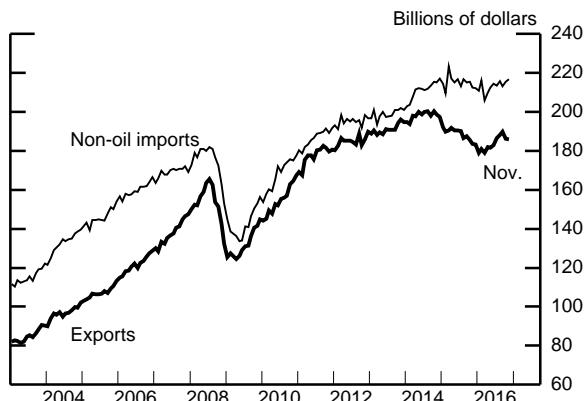
### Inventory Ratios



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.

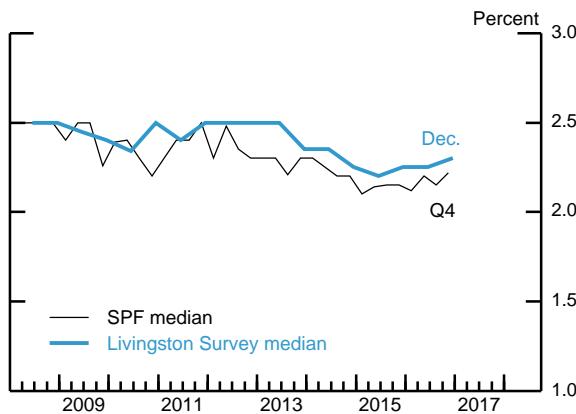
### Exports and Non-oil Imports



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

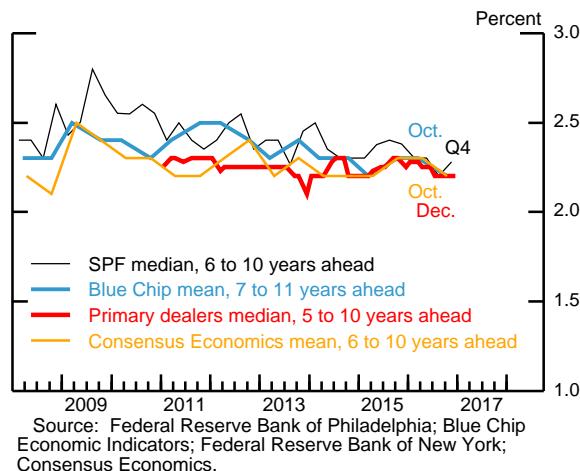
## Survey Measures of Longer-Term Inflation Expectations

CPI Next 10 Years

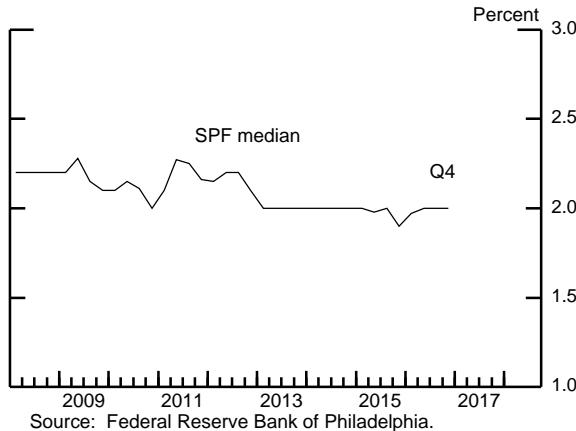


Note: SPF is Survey of Professional Forecasters.  
Source: Federal Reserve Bank of Philadelphia.

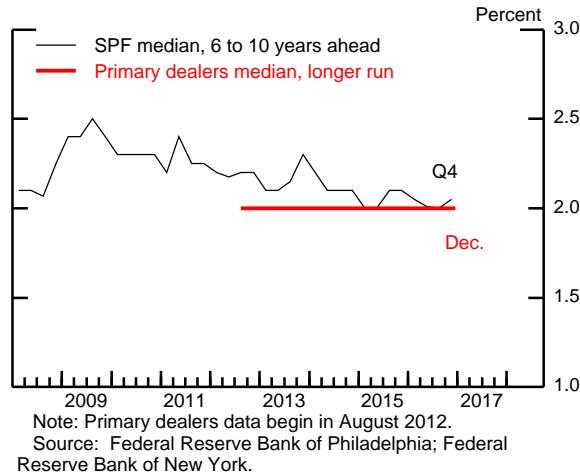
CPI Forward Expectations



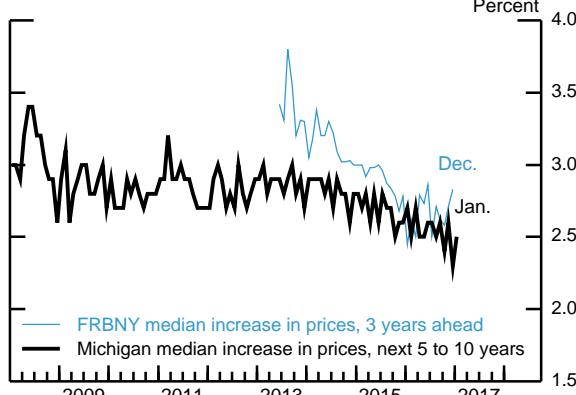
PCE Next 10 Years



PCE Forward Expectations



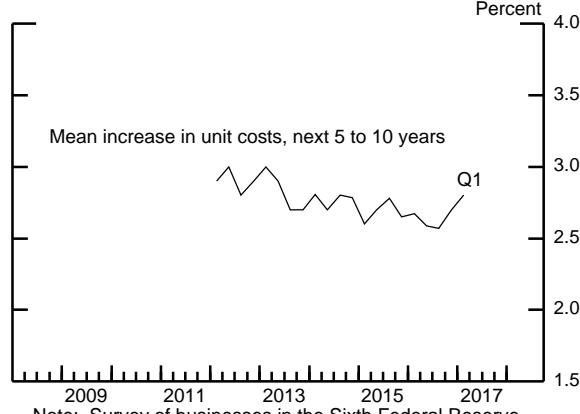
Surveys of Consumers



Note: Federal Reserve Bank of New York (FRBNY) Survey of Consumer Expectations reports expected 12-month inflation rate 3 years from the current survey date. FRBNY data begin in June 2013.

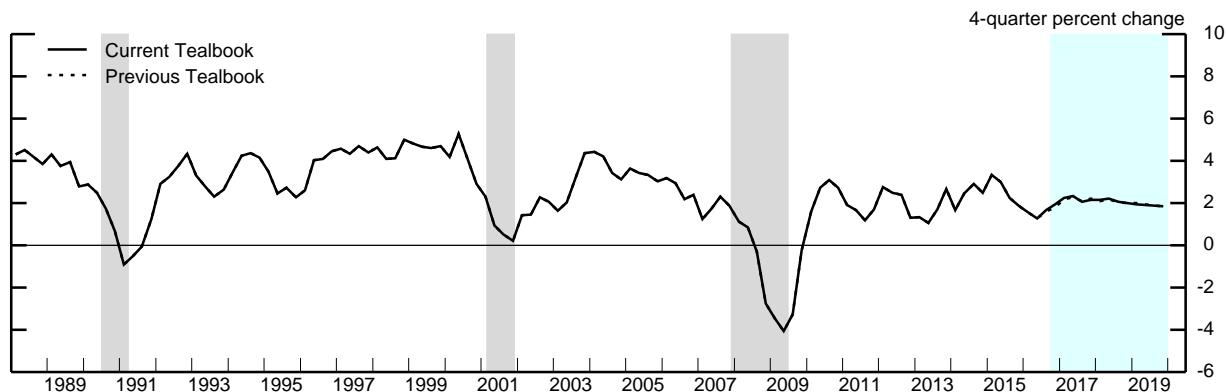
Source: University of Michigan Surveys of Consumers; Federal Reserve Bank of New York Survey of Consumer Expectations.

Survey of Business Inflation Expectations



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

Measure	2016	2017		2017	2018	2019
		H1	H2			
<b>Real GDP</b>	<b>1.9</b>	<b>1.9</b>	<b>2.4</b>	<b>2.1</b>	<b>2.0</b>	<b>1.8</b>
Previous Tealbook	1.8	2.1	2.3	2.2	2.0	1.8
Final sales	2.2	1.9	2.5	2.2	1.9	2.0
Previous Tealbook	2.1	1.8	2.4	2.1	2.0	1.9
Personal consumption expenditures	2.9	2.4	3.4	2.9	2.7	2.5
Previous Tealbook	2.7	2.6	3.4	3.0	2.7	2.5
Residential investment	1.4	-.4	2.0	.8	3.9	5.2
Previous Tealbook	1.5	2.7	.8	1.7	5.6	3.7
Nonresidential structures	.9	4.5	2.6	3.6	.2	-.4
Previous Tealbook	.8	2.2	1.2	1.7	-.3	-.7
Equipment and intangibles	-.2	4.2	3.9	4.1	3.0	2.2
Previous Tealbook	-.3	3.6	3.8	3.7	3.0	2.2
Federal purchases	.7	2.1	1.1	1.6	-.5	-.4
Previous Tealbook	.7	2.1	1.1	1.6	-.5	-.4
State and local purchases	.8	1.5	1.3	1.4	1.2	1.2
Previous Tealbook	.7	1.4	1.3	1.4	1.2	1.2
Exports	1.7	.3	1.1	.7	2.1	2.8
Previous Tealbook	2.4	.0	1.0	.5	1.9	2.7
Imports	1.4	4.2	4.4	4.3	5.0	3.8
Previous Tealbook	1.3	5.0	4.4	4.7	4.7	4.1
Contributions to change in real GDP (percentage points)						
Inventory change	-.2	.0	-.1	-.1	.0	-.1
Previous Tealbook	-.3	.2	-.1	.1	.0	-.1
Net exports	.0	-.6	-.5	-.5	-.5	-.3
Previous Tealbook	.1	-.7	-.5	-.6	-.5	-.3

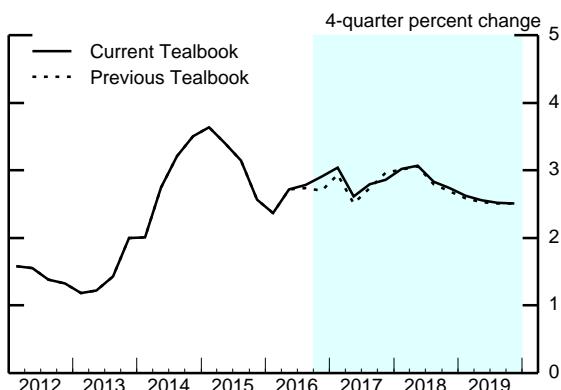
**Real GDP**

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

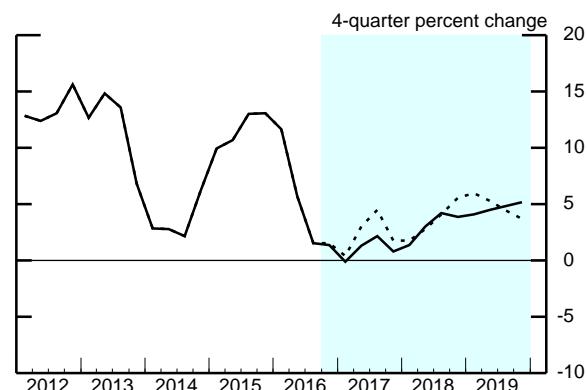
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

## Components of Final Demand

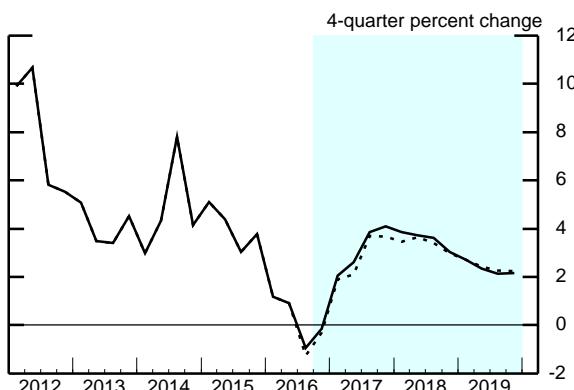
**Personal Consumption Expenditures**



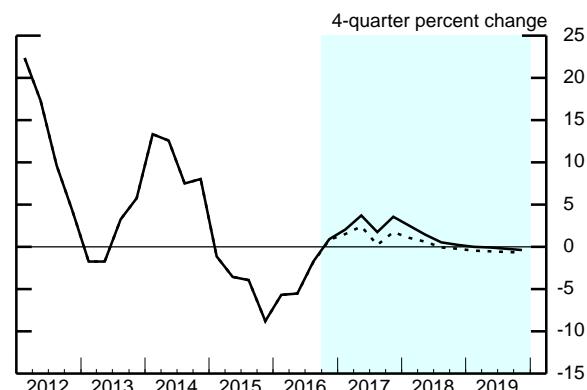
**Residential Investment**



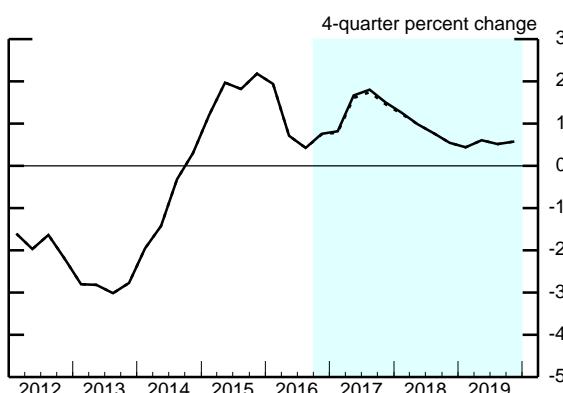
**Equipment and Intangibles**



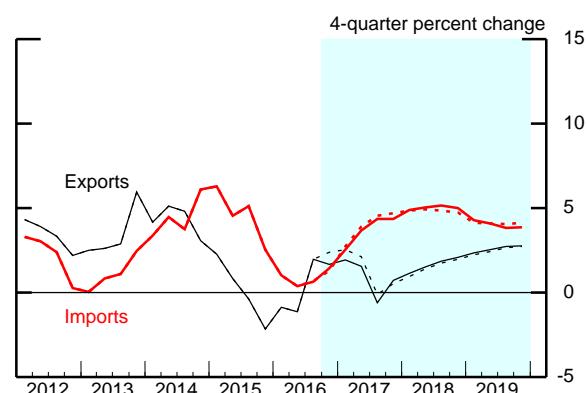
**Nonresidential Structures**



**Government Consumption and Investment**

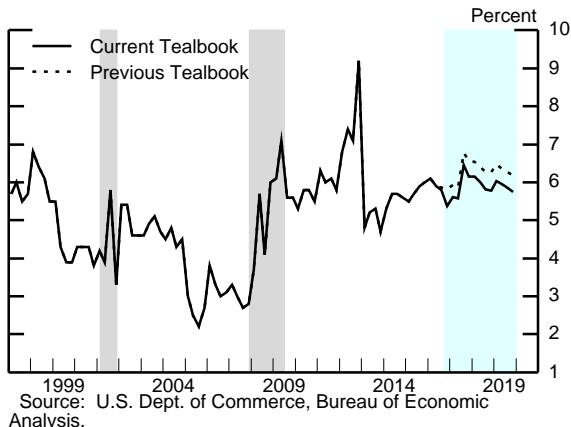
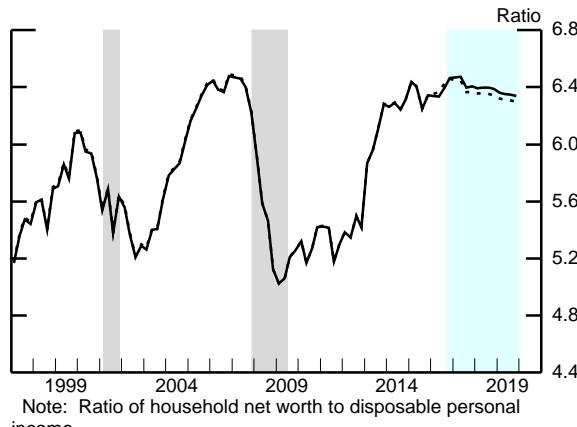
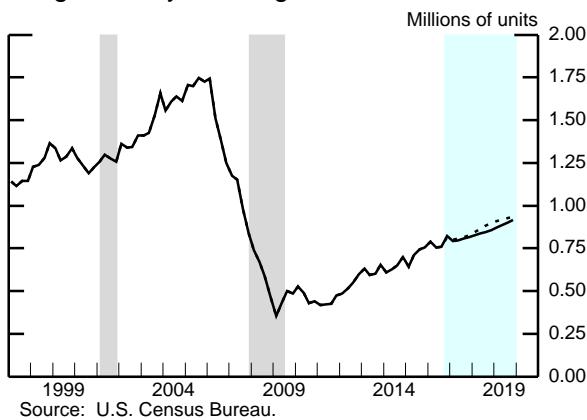
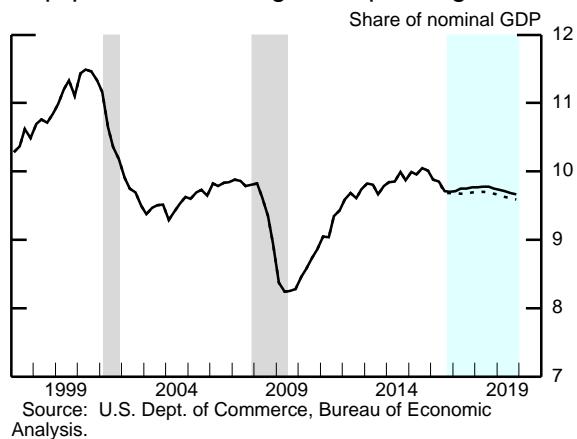
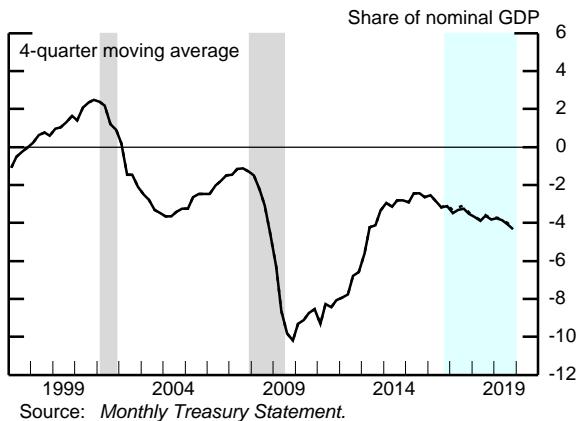
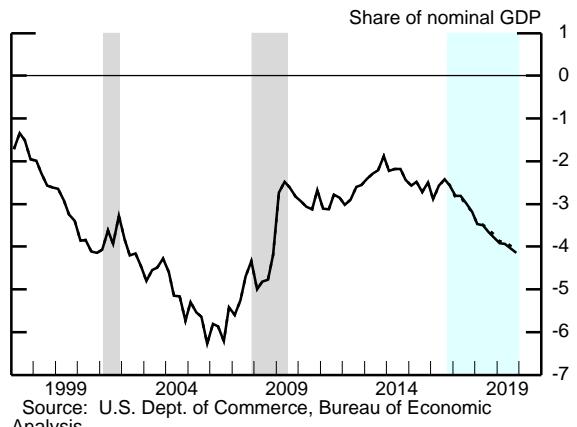


**Exports and Imports**



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)

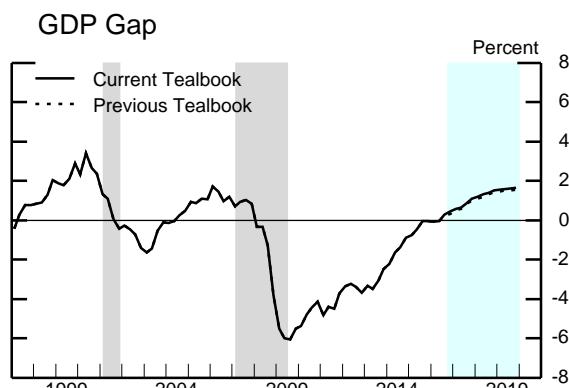
Measure	1974-95	1996-2000	2001-07	2008-10	2011-15	2016	2017	2018	2019
Potential real GDP	3.1	3.4	2.6	1.6	1.1	1.4	1.5	1.6	1.7
Previous Tealbook	3.1	3.4	2.6	1.6	1.1	1.4	1.5	1.6	1.7
<i>Selected contributions<sup>1</sup></i>									
Structural labor productivity <sup>2</sup>	1.6	2.9	2.8	1.4	.8	.9	1.1	1.1	1.2
Previous Tealbook	1.6	2.9	2.8	1.4	.8	.9	1.1	1.1	1.2
Capital deepening	.7	1.5	1.0	.3	.5	.4	.4	.4	.4
Multifactor productivity	.7	1.0	1.5	.9	.0	.2	.5	.5	.7
Structural hours	1.6	1.2	.8	.1	.6	.6	.4	.3	.3
Previous Tealbook	1.6	1.2	.8	.1	.6	.6	.4	.3	.3
Labor force participation	.4	-.1	-.2	-.5	-.6	-.5	-.5	-.5	-.5
Previous Tealbook	.4	-.1	-.2	-.5	-.6	-.5	-.5	-.5	-.5
Memo:									
GDP gap <sup>3</sup>	-1.9	2.4	.8	-4.2	.0	.4	1.1	1.5	1.7
Previous Tealbook	-1.9	2.4	.8	-4.2	.0	.3	1.0	1.4	1.6

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.

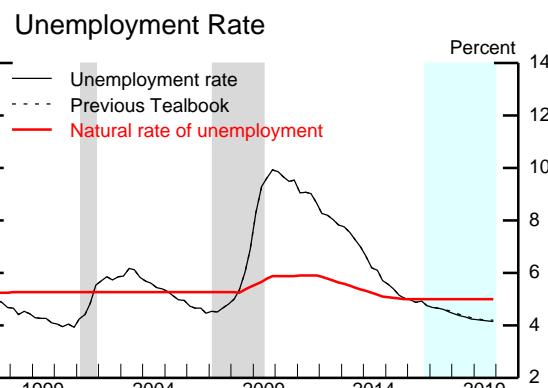
2. Total business sector.

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.

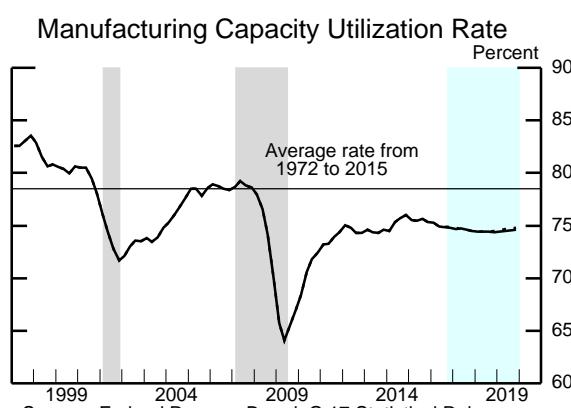


Note: The GDP gap is the percent difference between actual and potential GDP; a negative number indicates that the economy is operating below potential.

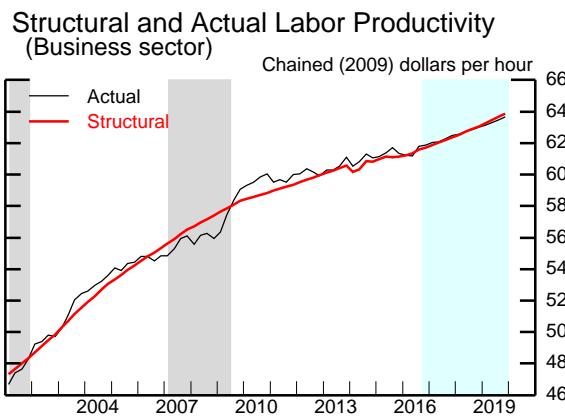
Source: U.S. Department of Commerce, Bureau of Economic Analysis; staff assumptions.



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



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



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	2016	2017		2017	2018	2019
		H1	H2			
Output per hour, business <sup>1</sup> Previous Tealbook	.9 .7	.7 .8	1.3 1.1	1.0 1.0	.9 .9	1.0 1.1
Nonfarm payroll employment <sup>2</sup> Previous Tealbook	180 180	183 180	185 182	184 181	162 157	125 121
Private employment <sup>2</sup> Previous Tealbook	165 161	172 168	173 170	173 169	150 145	113 109
Labor force participation rate <sup>3</sup> Previous Tealbook	62.7 62.7	62.7 62.7	62.6 62.6	62.6 62.6	62.3 62.3	62.0 62.0
Civilian unemployment rate <sup>3</sup> Previous Tealbook	4.7 4.8	4.7 4.7	4.5 4.5	4.5 4.5	4.2 4.3	4.1 4.2

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**

Measure	2016	2017		2017	2018	2019
		H1	H2			
<i>Percent change at annual rate from final quarter of preceding period</i>						
PCE chain-weighted price index Previous Tealbook	1.5 1.5	1.8 1.8	1.6 1.6	1.7 1.7	1.8 1.8	1.9 1.9
Food and beverages Previous Tealbook	-1.7 -1.5	1.6 1.3	2.2 2.0	1.9 1.7	2.2 2.2	2.2 2.2
Energy Previous Tealbook	2.1 1.7	4.3 3.5	-.3 .8	2.0 2.1	.1 .4	.6 .8
Excluding food and energy Previous Tealbook	1.7 1.7	1.7 1.7	1.6 1.6	1.7 1.7	1.9 1.8	2.0 1.9
Prices of core goods imports <sup>1</sup> Previous Tealbook	-.1 .1	.4 .1	1.2 .9	.8 .5	.7 .7	.7 .7
	Dec. 2016 <sup>2</sup>	Jan. 2017 <sup>2</sup>	Feb. 2017 <sup>2</sup>	Mar. 2017 <sup>2</sup>	Apr. 2017 <sup>2</sup>	May 2017 <sup>2</sup>
<i>12-month percent change</i>						
PCE chain-weighted price index Previous Tealbook	1.6 1.7	1.8 1.7	2.0 1.9	2.0 2.0	1.8 1.8	1.8 1.8
Excluding food and energy Previous Tealbook	1.7 1.8	1.6 1.7	1.6 1.6	1.6 1.7	1.6 1.6	1.6 1.6

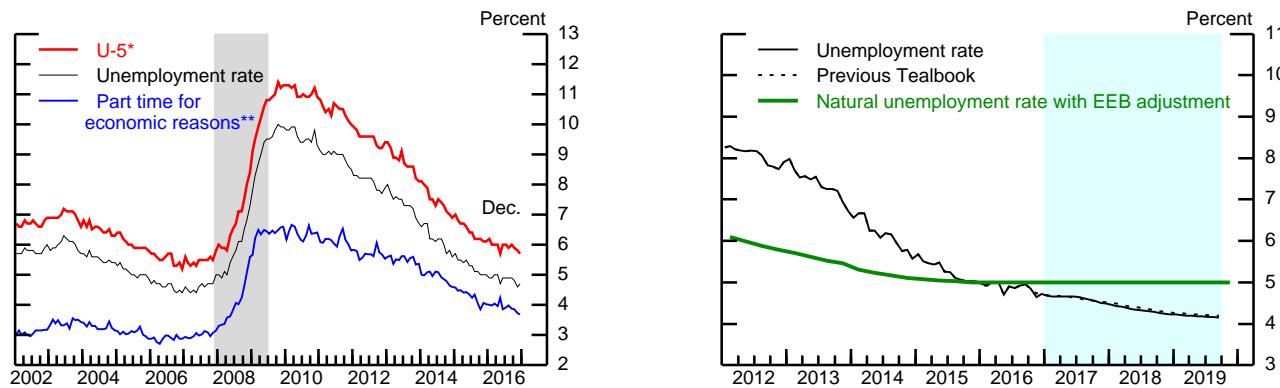
1. Core goods imports exclude computers, semiconductors, oil, and natural gas.

2. Staff forecast.

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

## Labor Market Developments and Outlook (1)

### Measures of Labor Underutilization



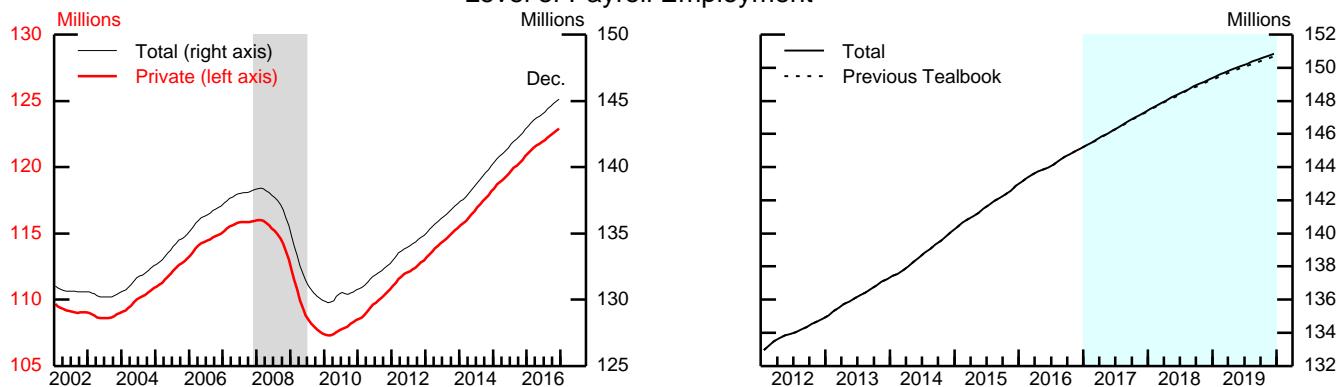
\* U-5 measures total unemployed persons plus all marginally attached to the labor force, as a percent of the labor force plus persons marginally attached to the labor force.

\*\* Percent of Current Population Survey employment.

EEB Extended and emergency unemployment benefits.

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

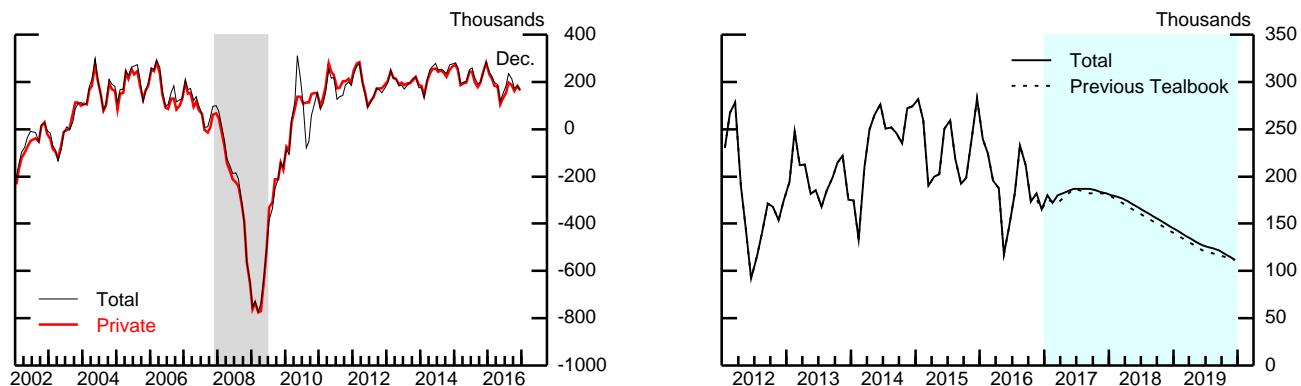
### Level of Payroll Employment\*



\* 3-month moving averages.

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

### Change in Payroll Employment\*



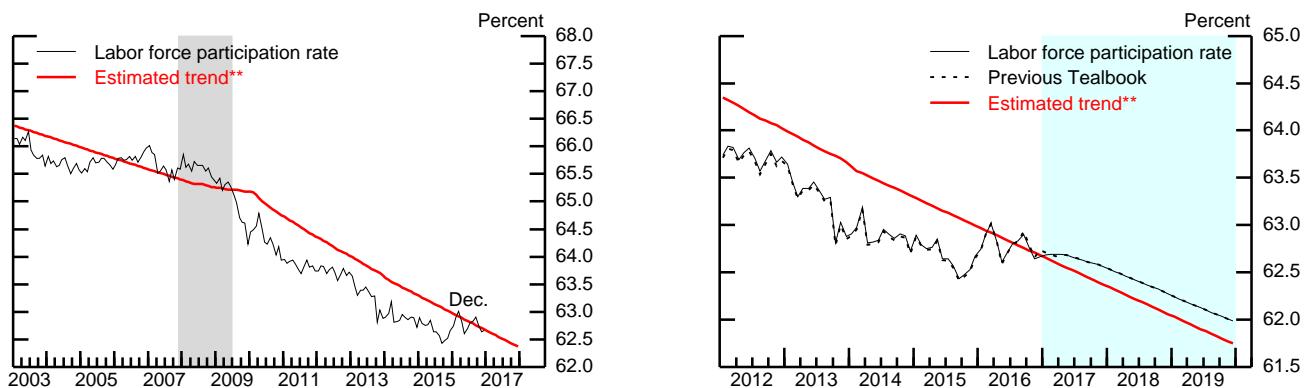
\* 3-month moving averages.

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\*

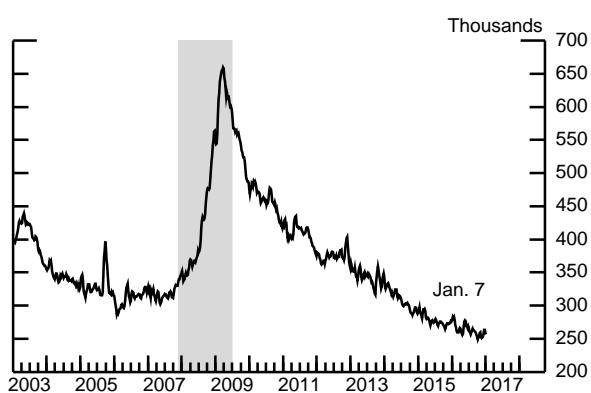


\* Published data adjusted by staff to account for changes in population weights.

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

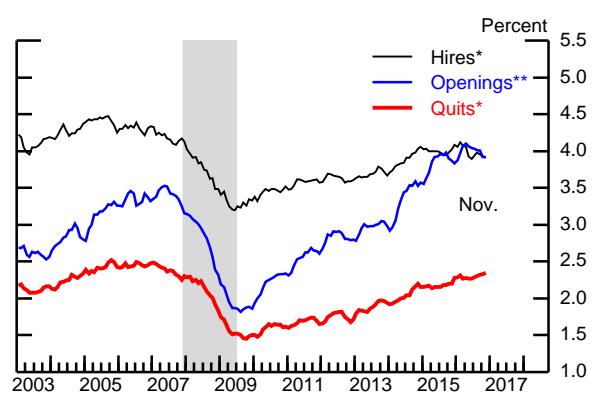
Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

### Initial Unemployment Insurance Claims\*



\* 4-week moving average.  
Source: U.S. Department of Labor, Employment and Training Administration.

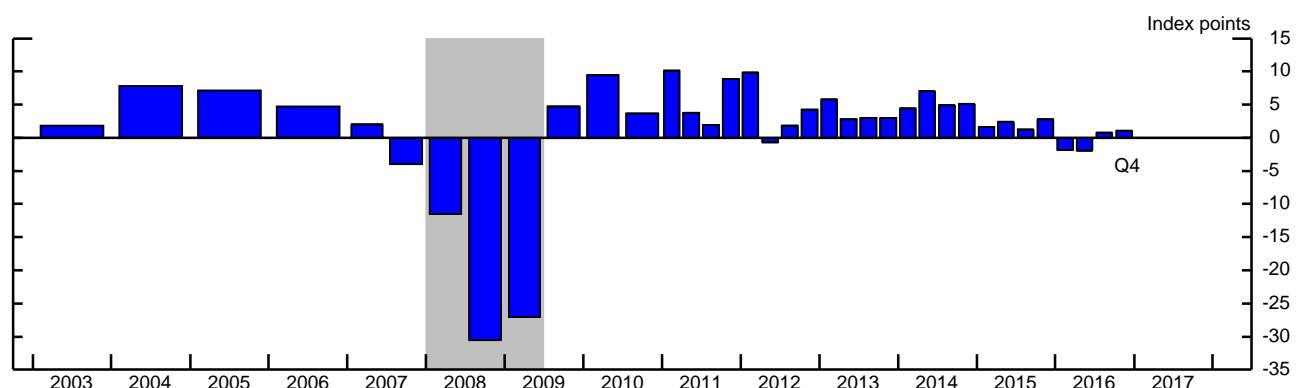
### Hires, Quits, and Job Openings



\* 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



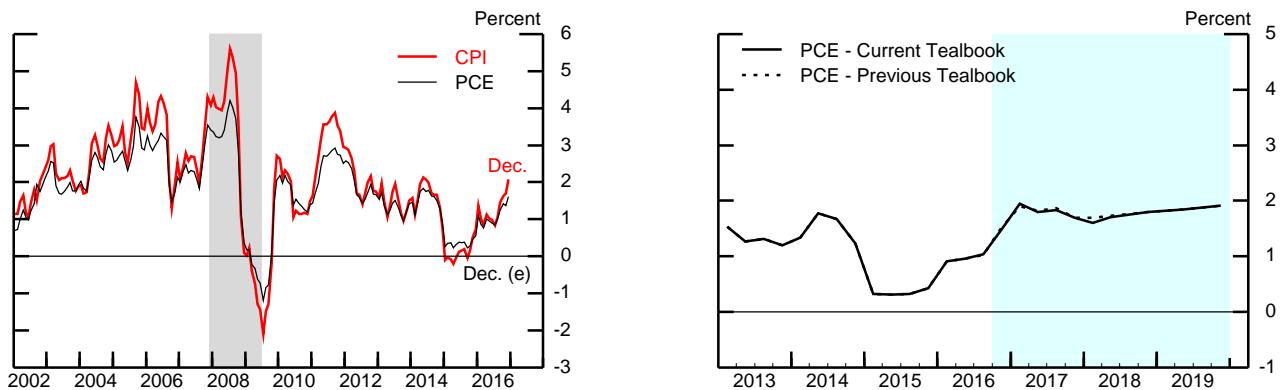
Source: Labor market conditions index estimated by staff.

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)

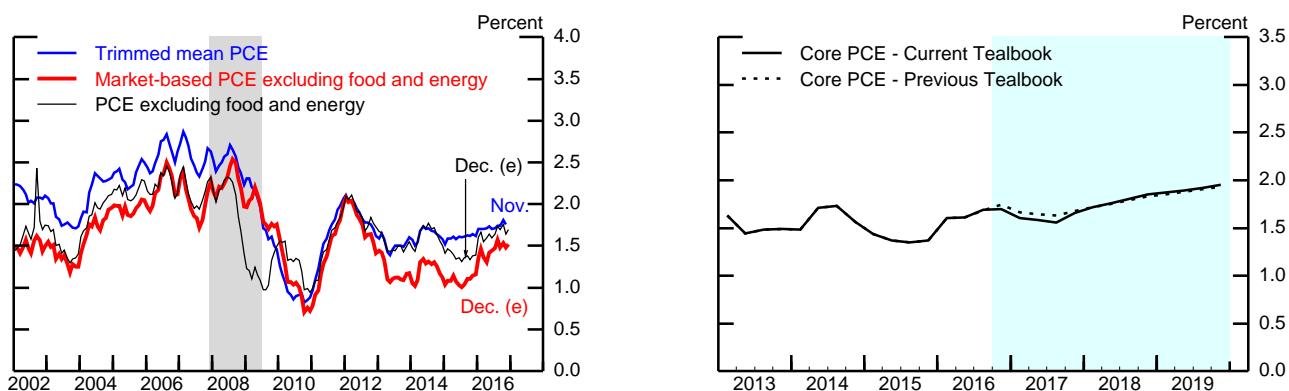
### Headline Consumer Price Inflation



Note: PCE prices from October to December 2016 are staff estimates (e).

Source: For CPI, U.S. Department of Labor, Bureau of Labor Statistics; for PCE, U.S. Department of Commerce, Bureau of Economic Analysis.

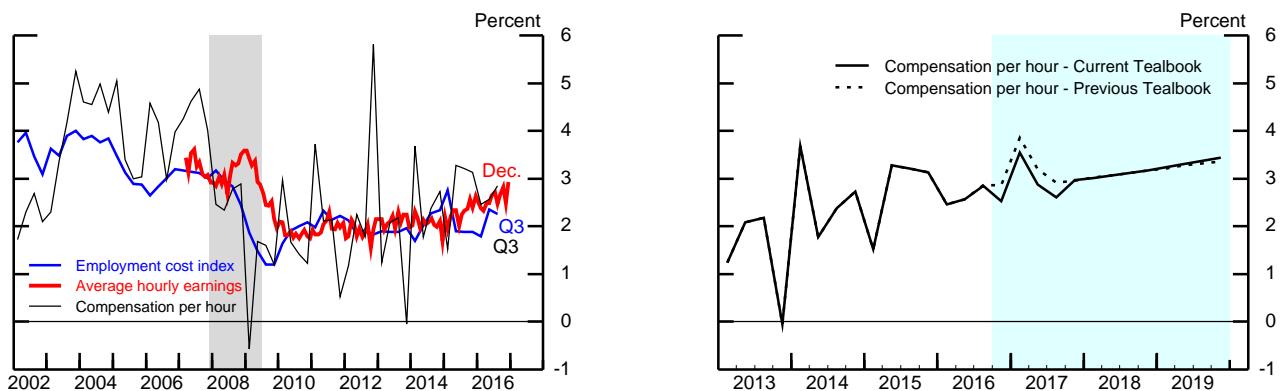
### Measures of Underlying PCE Price Inflation



Note: Core PCE prices from October to December 2016 are staff estimates (e).

Source: For trimmed mean PCE, Federal Reserve Bank of Dallas; otherwise, U.S. Department of Commerce, Bureau of Economic Analysis.

### 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.

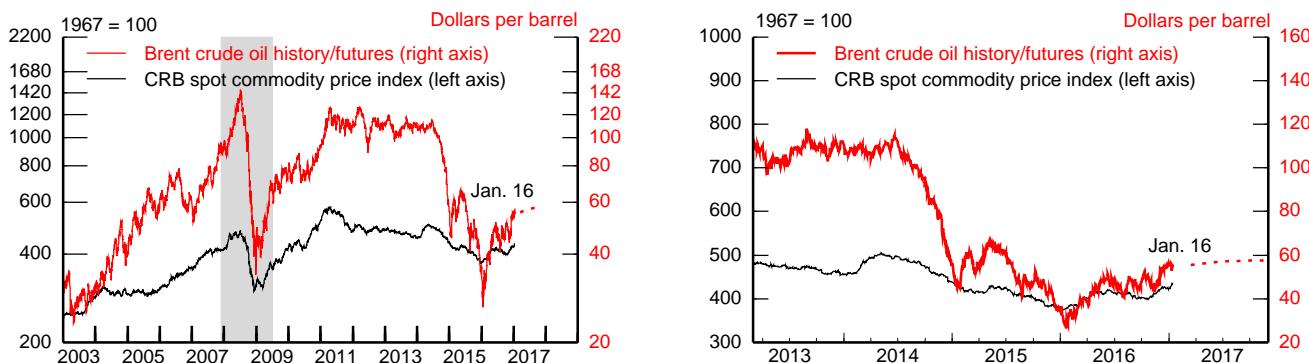
Source: U.S. Department of Labor, Bureau of Labor Statistics.

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

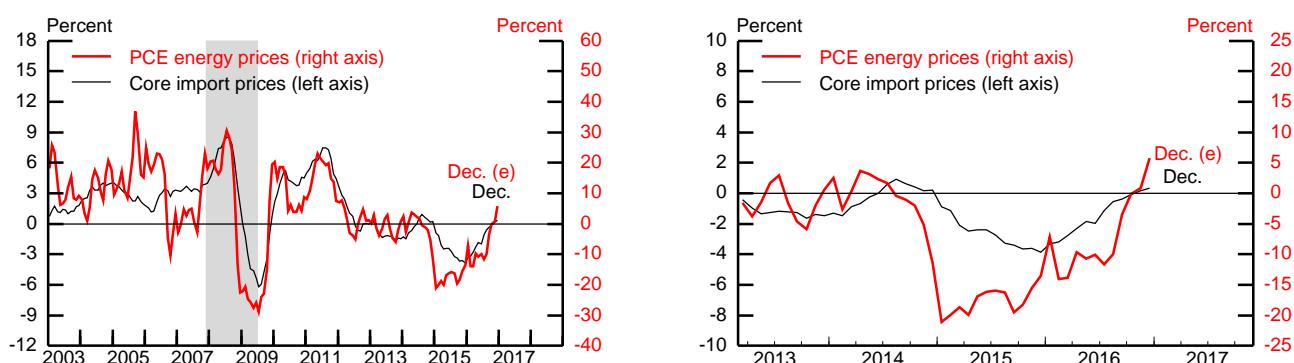
## Inflation Developments and Outlook (2)

(Percent change from year-earlier period, except as noted)

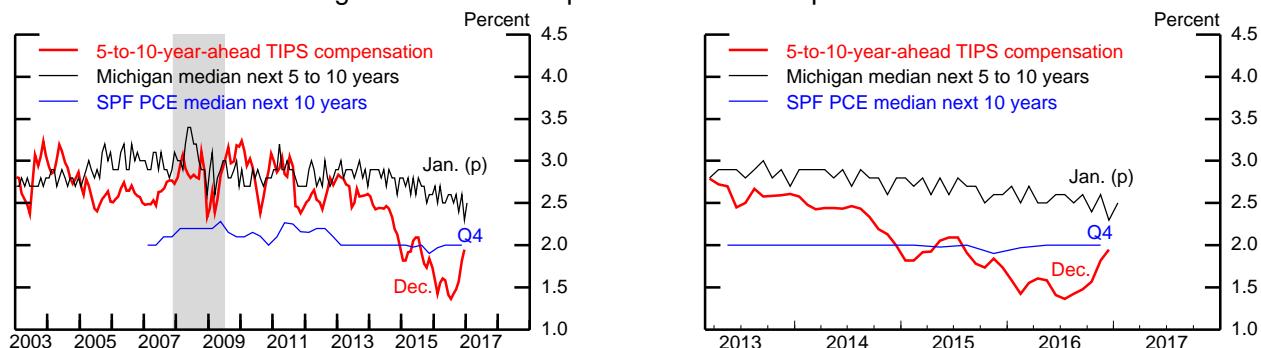
### Commodity and Oil Price Levels



### Energy and Import Price Inflation



### Long-Term Inflation Expectations and Compensation



Note: Based on a comparison of an estimated TIPS (Treasury Inflation-Protected Securities) yield curve with an estimated nominal off-the-run Treasury yield curve, with an adjustment for the indexation-lag effect.

(p) Preliminary.

SPF Survey of Professional Forecasters.

Source: For Michigan, University of Michigan Surveys of Consumers; for SPF, Federal Reserve Bank of Philadelphia; for TIPS, Federal Reserve Board staff calculations.

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

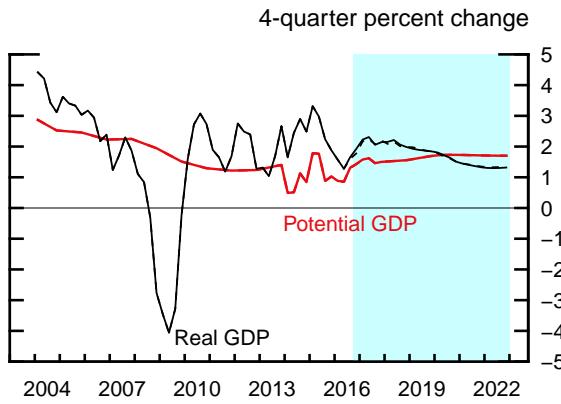
**The Long-Term Outlook**

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

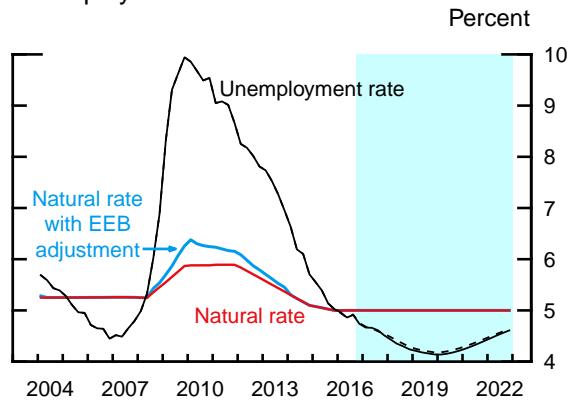
Measure	2016	2017	2018	2019	2020	2021	Longer run
Real GDP Previous Tealbook	1.9 1.8	2.1 2.2	2.0 2.0	1.8 1.8	1.5 1.5	1.3 1.3	1.7 1.7
Civilian unemployment rate <sup>1</sup> Previous Tealbook	4.7 4.8	4.5 4.5	4.2 4.3	4.1 4.2	4.2 4.3	4.4 4.4	5.0 5.0
PCE prices, total Previous Tealbook	1.5 1.5	1.7 1.7	1.8 1.8	1.9 1.9	2.1 2.1	2.1 2.1	2.0 2.0
Core PCE prices Previous Tealbook	1.7 1.7	1.7 1.7	1.9 1.8	2.0 1.9	2.0 2.0	2.1 2.1	2.0 2.0
Federal funds rate <sup>1</sup> Previous Tealbook	.45 .47	1.46 1.49	2.51 2.47	3.37 3.30	3.87 3.77	4.01 3.91	3.00 3.00
10-year Treasury yield <sup>1</sup> Previous Tealbook	2.2 2.1	3.1 3.1	3.5 3.5	3.9 3.9	3.9 3.9	3.9 3.9	3.5 3.5

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

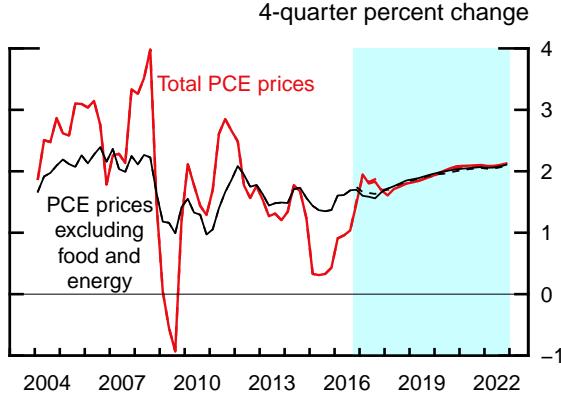
Real GDP



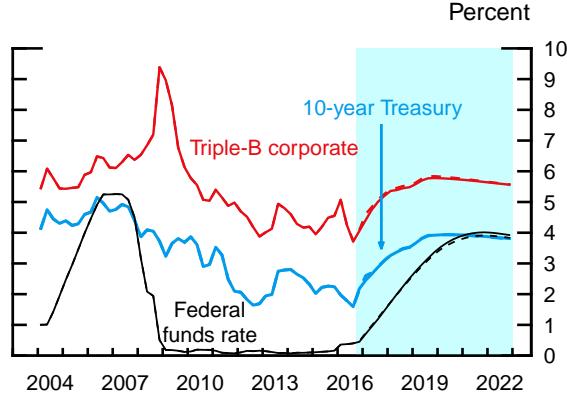
Unemployment Rate



PCE Prices



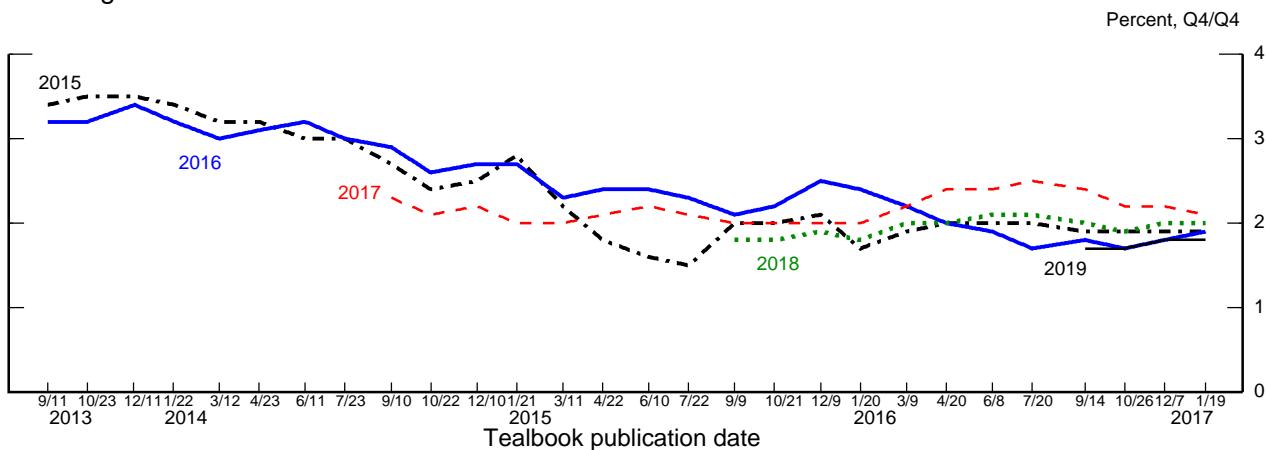
Interest Rates



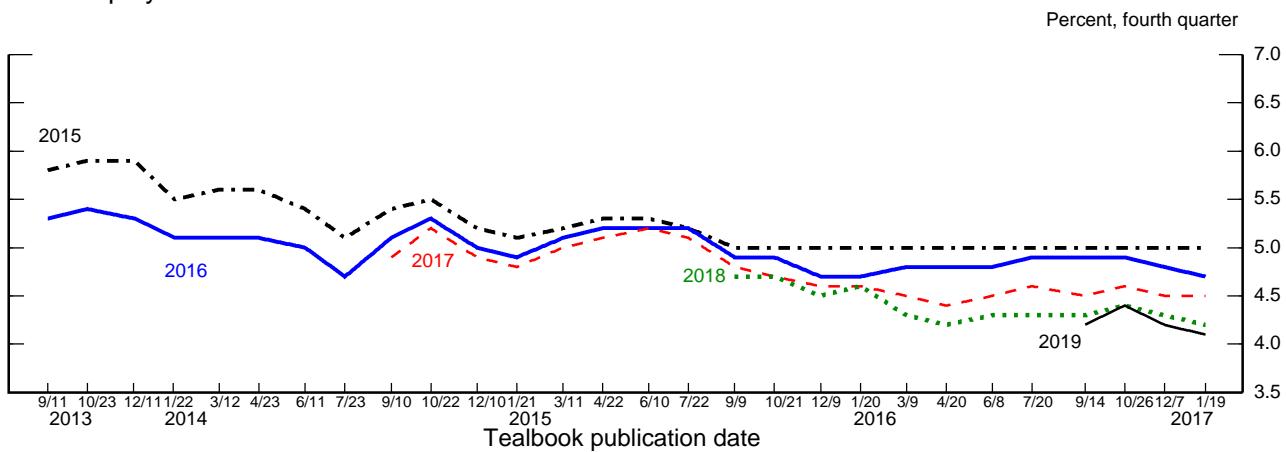
Note: In each panel, shading represents the projection period, and dashed lines are the previous Tealbook.

## Evolution of the Staff Forecast

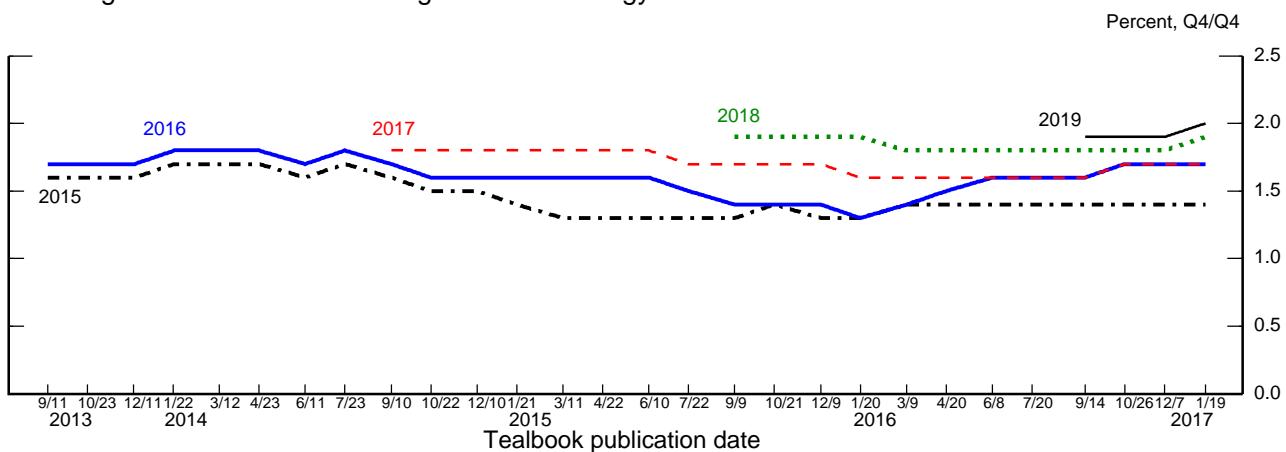
Change in Real GDP



Unemployment Rate



Change in PCE Prices excluding Food and Energy



## The Foreign GDP Outlook

### Real GDP\*

Percent change, annual rate

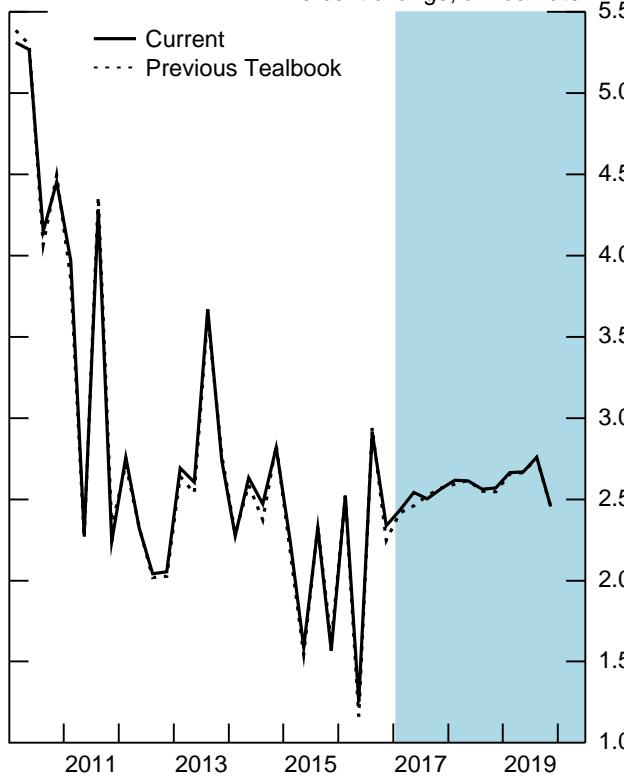
	H1	Q3	Q4	Q1	Q2	H2	2018	2019
<b>1. Total Foreign</b>	<b>1.9</b>	<b>2.9</b>	<b>2.3</b>	<b>2.4</b>	<b>2.5</b>	<b>2.5</b>	<b>2.6</b>	<b>2.6</b>
<i>Previous Tealbook</i>	1.8	2.9	2.2	2.4	2.5	2.5	2.6	2.6
<b>2. Advanced Foreign Economies</b>	<b>1.4</b>	<b>2.2</b>	<b>1.9</b>	<b>1.9</b>	<b>1.8</b>	<b>1.8</b>	<b>1.7</b>	<b>1.7</b>
<i>Previous Tealbook</i>	1.3	2.4	1.8	1.8	1.8	1.8	1.7	1.7
3. Canada	0.7	3.5	2.0	2.2	2.1	1.9	1.8	1.9
4. Euro Area	1.6	1.4	1.9	1.7	1.7	1.8	1.8	1.9
5. Japan	2.3	1.3	1.1	1.2	1.2	0.9	0.9	0.1
6. United Kingdom	2.0	2.3	1.9	1.6	1.6	1.6	1.6	1.7
<b>7. Emerging Market Economies</b>	<b>2.4</b>	<b>3.6</b>	<b>2.8</b>	<b>2.9</b>	<b>3.2</b>	<b>3.3</b>	<b>3.4</b>	<b>3.5</b>
<i>Previous Tealbook</i>	2.4	3.5	2.7	3.0	3.1	3.3	3.4	3.5
8. China	6.8	6.8	6.7	6.4	6.2	6.0	5.8	5.7
9. Emerging Asia ex. China	3.3	3.7	3.3	3.5	3.8	3.7	3.6	3.5
10. Mexico	1.1	4.0	2.0	1.6	2.0	2.1	2.5	2.8
11. Brazil	-1.8	-3.3	-1.0	0.8	1.6	2.0	2.1	2.2

\* GDP aggregates weighted by shares of U.S. merchandise exports.

Int'l Econ Devel & Outlook

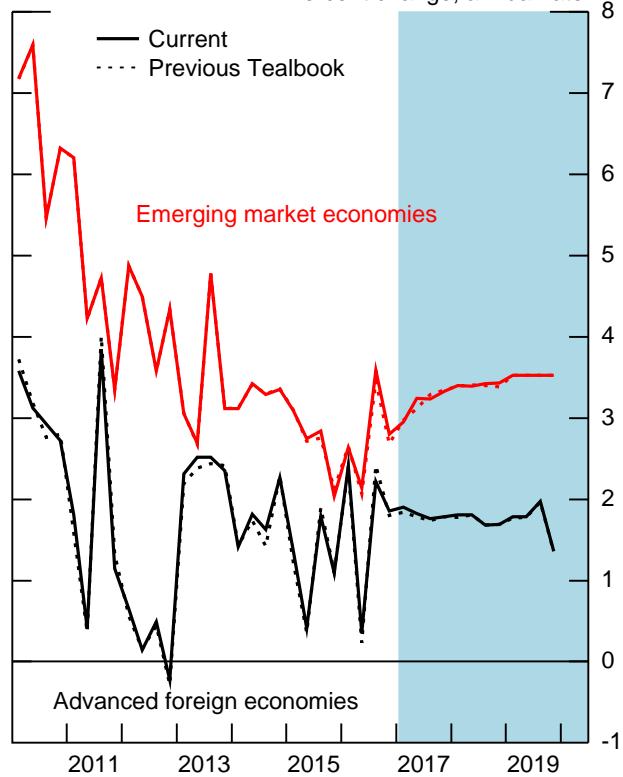
### Total Foreign GDP

Percent change, annual rate



### Foreign GDP

Percent change, annual rate



## The Foreign Inflation Outlook

### Consumer Prices\*

Percent change, annual rate

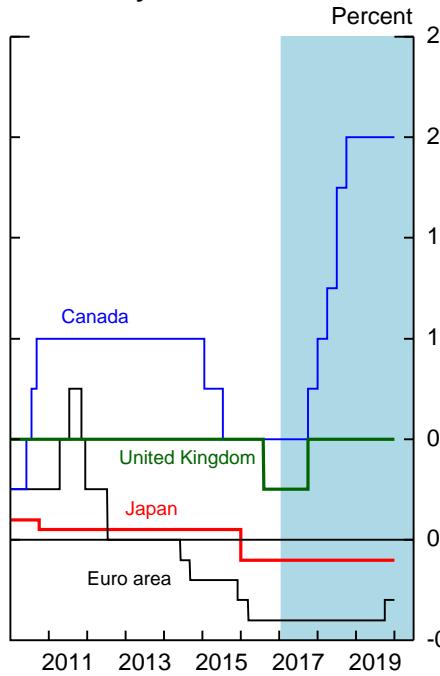
	2016			2017			2018	2019
	H1	Q3	Q4	Q1	Q2	H2		
<b>1. Total Foreign</b>	<b>1.7</b>	<b>1.6</b>	<b>2.4</b>	<b>2.8</b>	<b>2.6</b>	<b>2.5</b>	<b>2.5</b>	<b>2.6</b>
<i>Previous Tealbook</i>	1.8	1.7	2.2	2.4	2.4	2.5	2.5	2.6
<b>2. Advanced Foreign Economies</b>	<b>0.4</b>	<b>0.7</b>	<b>1.4</b>	<b>1.7</b>	<b>1.6</b>	<b>1.5</b>	<b>1.6</b>	<b>1.9</b>
<i>Previous Tealbook</i>	0.5	0.7	1.4	1.6	1.6	1.5	1.6	1.8
3. Canada	1.6	0.9	1.5	2.1	2.1	1.8	1.9	2.0
4. Euro Area	-0.0	1.1	1.9	1.6	1.3	1.4	1.5	1.6
5. Japan	-0.5	-0.9	0.2	0.6	0.9	1.0	1.2	2.5
6. United Kingdom	0.5	1.9	2.0	3.6	3.0	2.4	2.0	1.9
<b>7. Emerging Market Economies</b>	<b>2.7</b>	<b>2.2</b>	<b>3.1</b>	<b>3.6</b>	<b>3.3</b>	<b>3.2</b>	<b>3.1</b>	<b>3.1</b>
<i>Previous Tealbook</i>	2.8	2.3	2.7	3.0	3.1	3.1	3.1	3.1
8. China	2.4	1.3	2.6	2.2	2.5	2.5	2.5	2.5
9. Emerging Asia ex. China	1.7	1.1	2.8	2.4	2.8	3.0	3.2	3.4
10. Mexico	2.6	3.6	4.1	6.5	4.2	3.5	3.2	3.2
11. Brazil	9.6	6.5	2.6	4.4	5.4	5.2	4.9	4.5

\* CPI aggregates weighted by shares of U.S. non-oil imports.

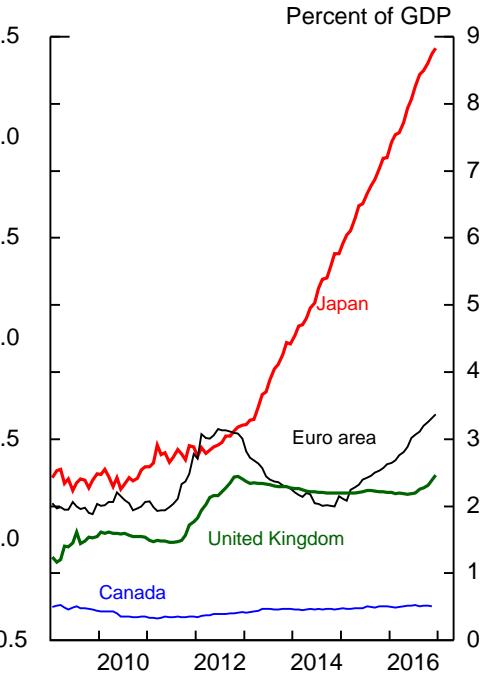
Int'l Econ Devel & Outlook

## Foreign Monetary Policy

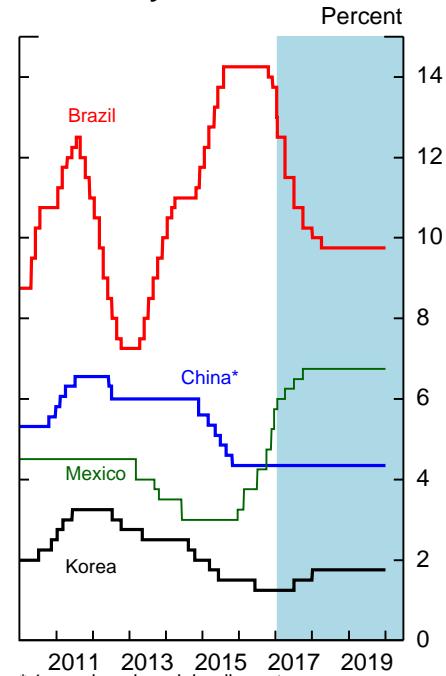
### AFE Policy Rates



### AFE Central Bank Balance Sheets



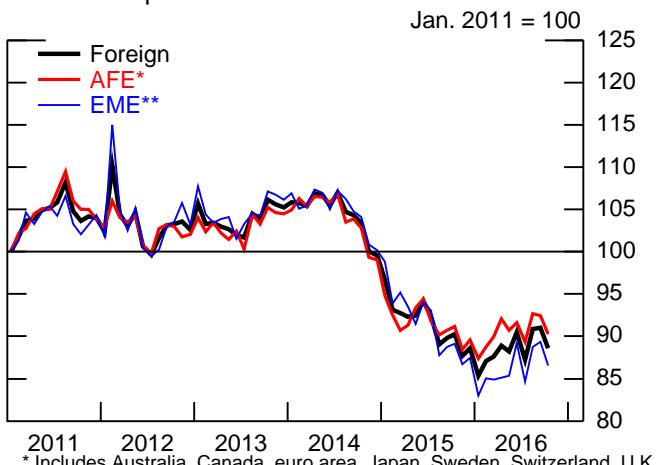
### EME Policy Rates



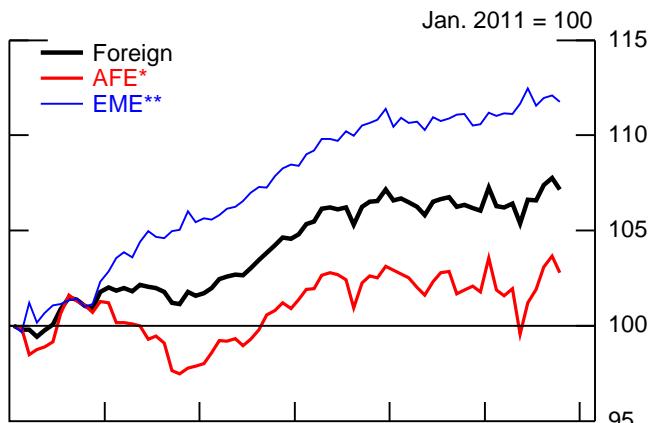
\* 1-year benchmark lending rate.

## Recent Foreign Indicators

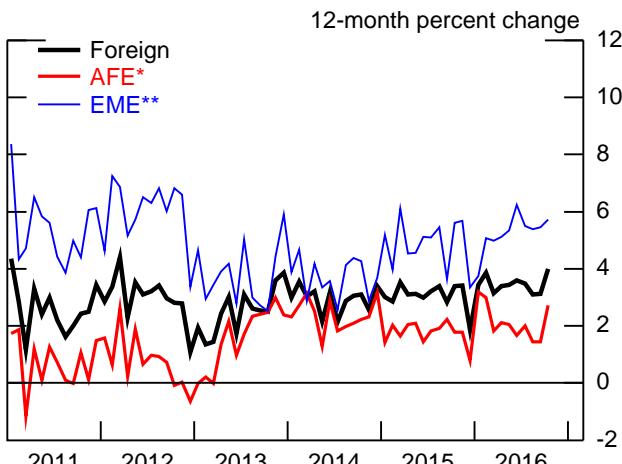
### Nominal Exports



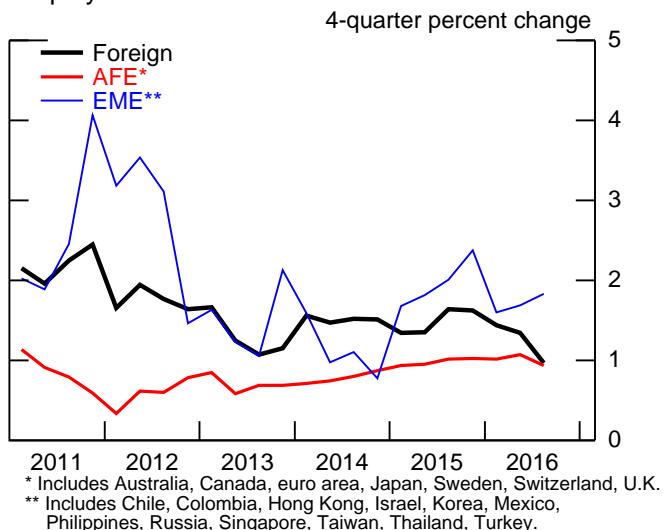
### Industrial Production



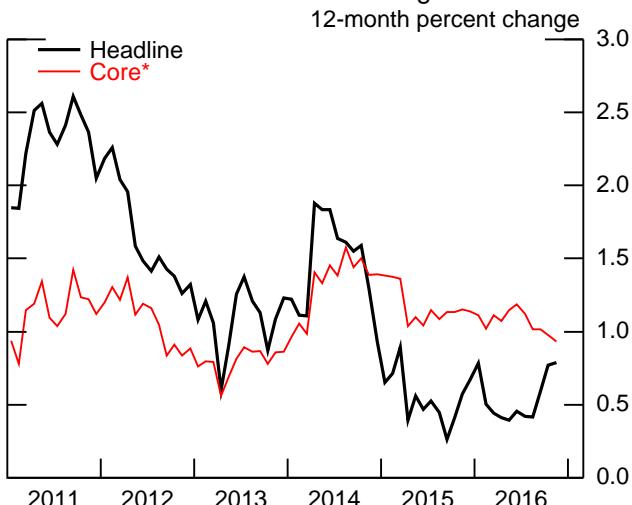
### Retail Sales



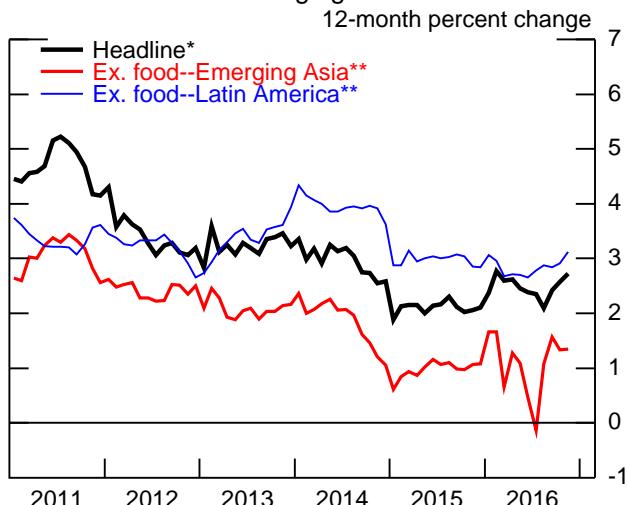
### Employment



### Consumer Prices: Advanced Foreign Economies

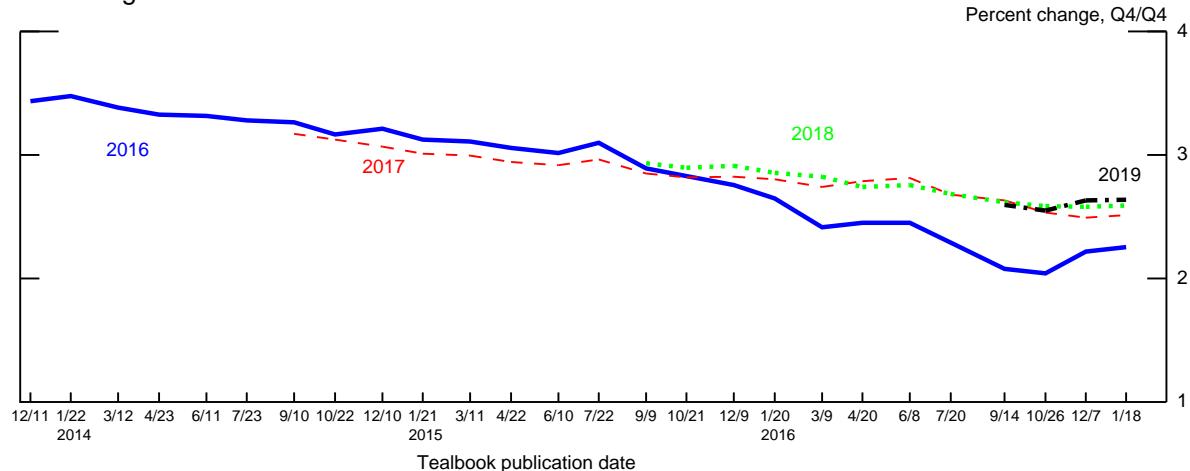


### Consumer Prices: Emerging Market Economies

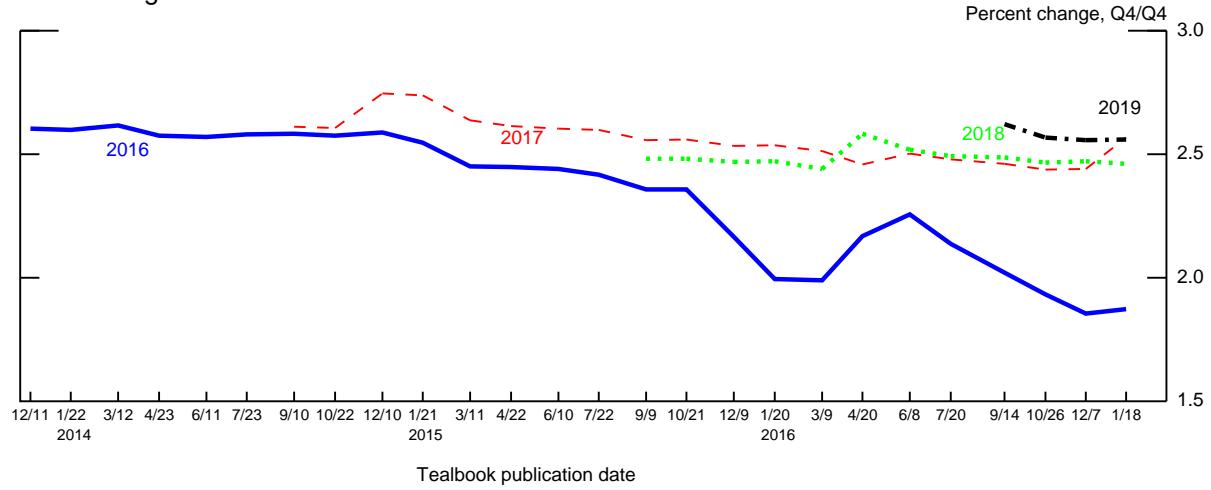


## Evolution of Staff's International Forecast

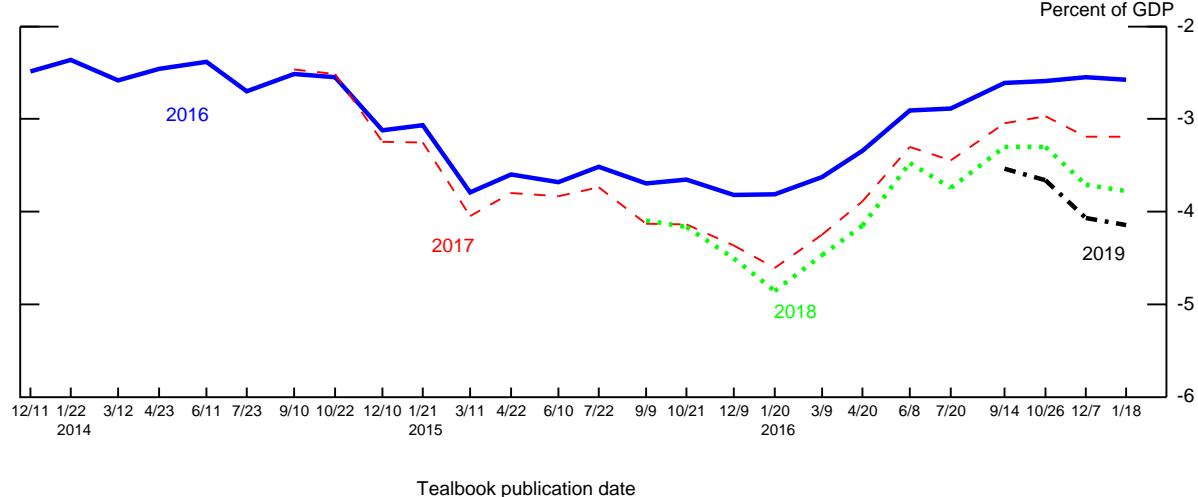
Total Foreign GDP



Total Foreign CPI

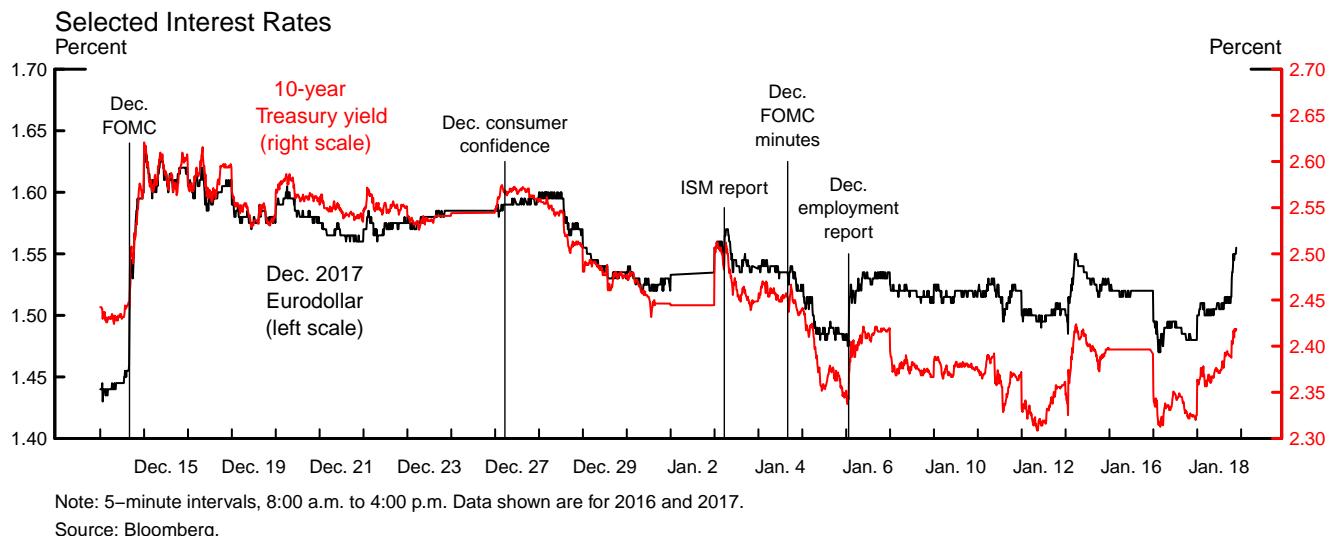


U.S. Current Account Balance

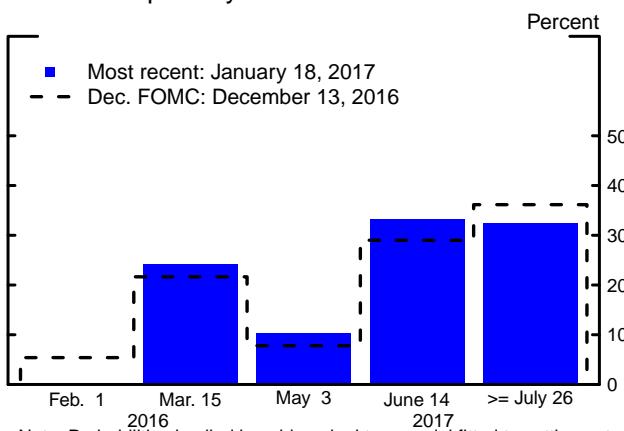


Int'l Econ Devel &amp; Outlook

## Policy Expectations and Treasury Yields



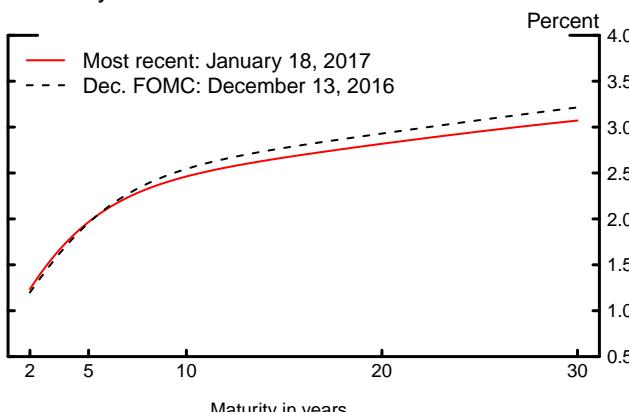
### Probability Distribution of the Timing of Next Rate Increase Implied by Federal Funds Futures



Note: Probabilities implied by a binomial tree model fitted to settlement prices on federal funds futures contracts taken at 2 p.m. CST under the assumption that the effective federal funds rate before the next FOMC meeting is equal to its 30-day moving average.

Source: CME Group; Federal Reserve Board staff estimates.

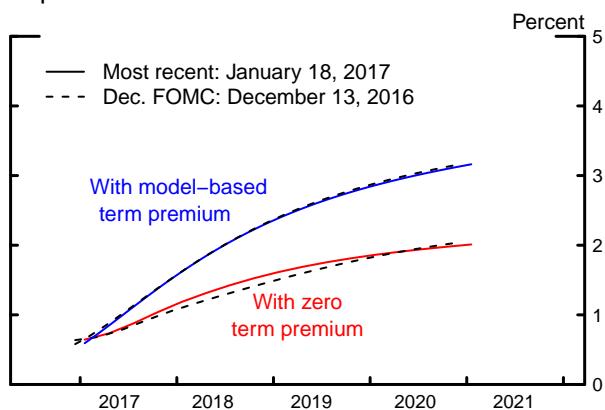
### Treasury Yield Curve



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 Bank of New York; Federal Reserve Board staff estimates.

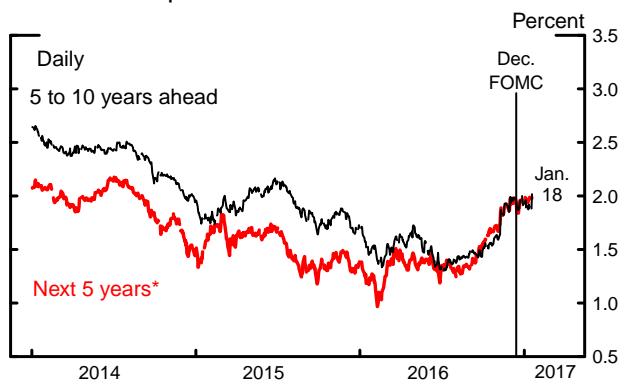
### Implied Federal Funds Rate



Note: Zero term premium path is estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points. Model-based term premium path is estimated using a term structure model maintained by Board staff and corrects for term premium.

Source: Bloomberg; 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.

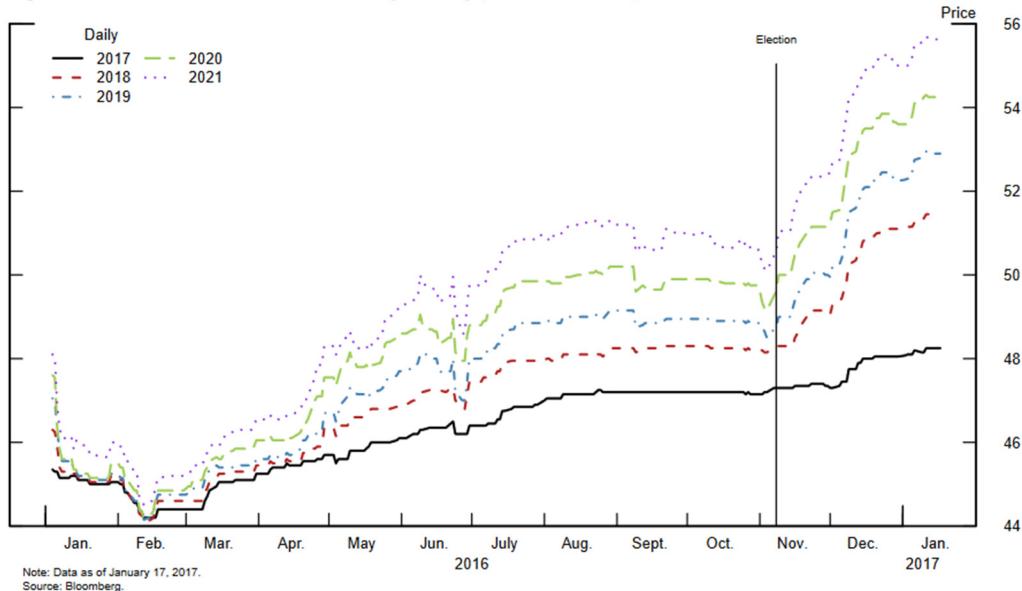
## Expected Dividend Growth since the Election

Since the U.S. presidential election, broad measures of equity prices have increased significantly. In this discussion, we use prices of equity derivatives—specifically, dividend futures contracts based on dividends paid by firms in the S&P 500 stock price index—to interpret this move. They suggest that the recent increase in equity valuations appears to have been largely driven by a change in market participants' expectations regarding the growth rate of dividends over the next two years and, to a lesser extent, by an increase in the expected growth rate of dividends further out.

The holder of a long position in a dividend futures contract receives at maturity the difference between the dividends paid out by the companies in the S&P 500 over the year before expiration and the futures quote at the initiation of the long position.<sup>1</sup> Figure 1 plots the time series of the market quotes for contracts expiring during the period from 2017 through 2021. Market quotes fluctuated in a narrow range in the second half of 2016 and then increased markedly after the U.S. election; quotes for longer-dated contracts rose the most.<sup>2</sup>

Given the nature of these futures contracts, we can extract information from their prices about investors' views of future equity dividends.<sup>3</sup> In particular, using contracts with

Figure 1: S&P 500 Dividend Futures Prices by Maturity (Annual Contracts)



<sup>1</sup> Dividend futures contracts are expressed in S&P 500 index points. For example, on December 15, 2016, the 2017 dividend futures contract was trading at 48 while the S&P 500 index closed at 2,262, which implies an expected dividend yield of 2.1 percent at the end of 2017.

<sup>2</sup> Market quotes for contracts maturing in 2016 were also available during 2016, but as dividends are announced much earlier than they are paid out to equity holders, they do not incur much uncertainty and are excluded from this analysis.

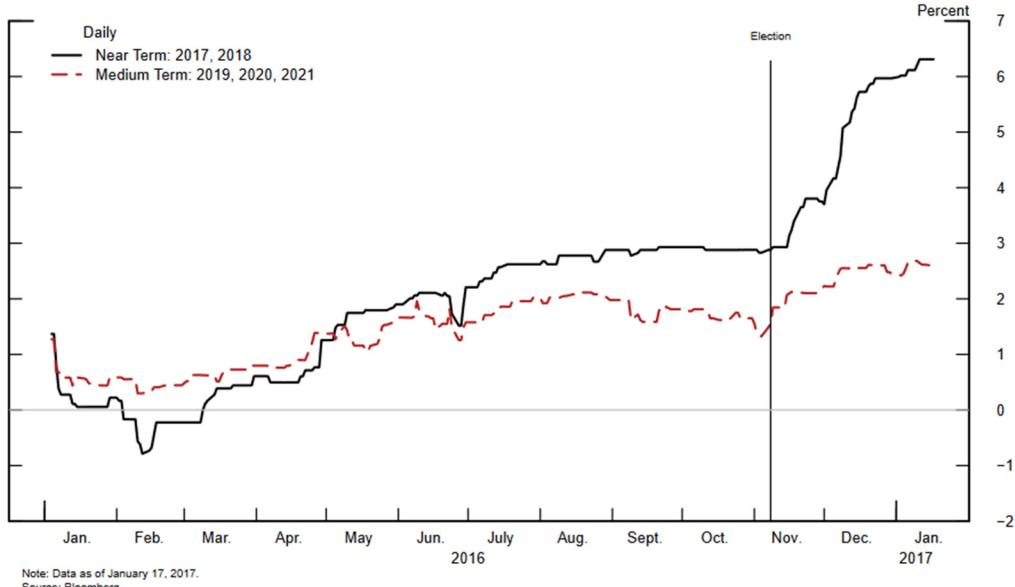
<sup>3</sup> The analysis assumes that dividend futures quotes do not reflect margin requirements, short-sale constraints, or any other form of limits to arbitrage.

different maturities, we can construct two measures of expected dividend growth: a “near term” expected average dividend growth measure for the years 2017 and 2018 and a “medium term” forward expected average dividend growth measure for the years 2019, 2020, and 2021.

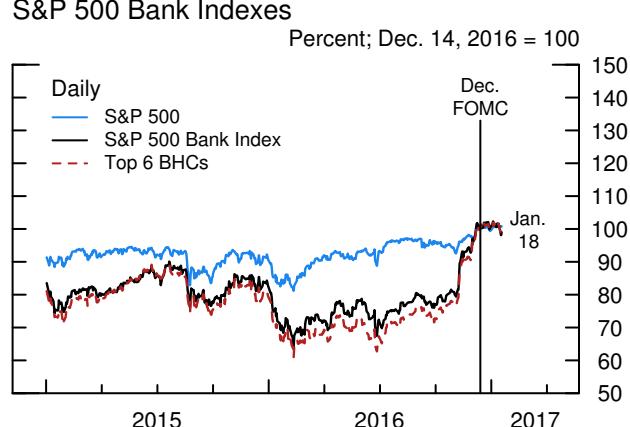
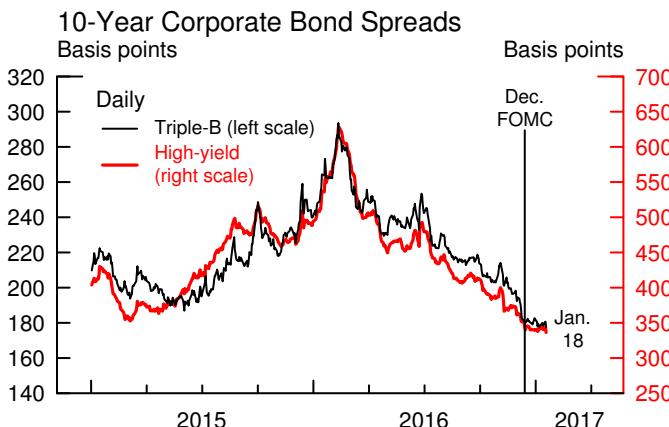
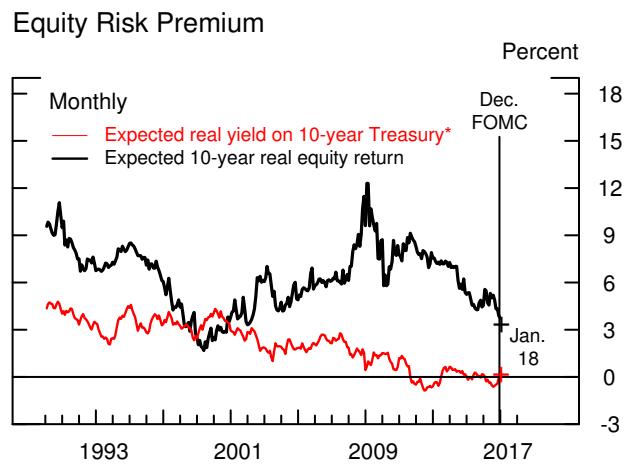
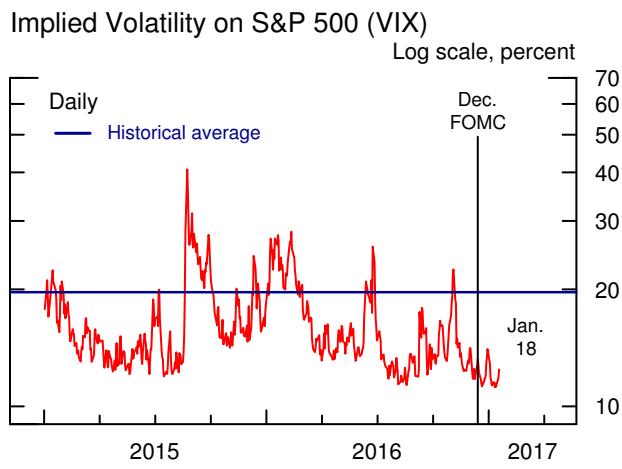
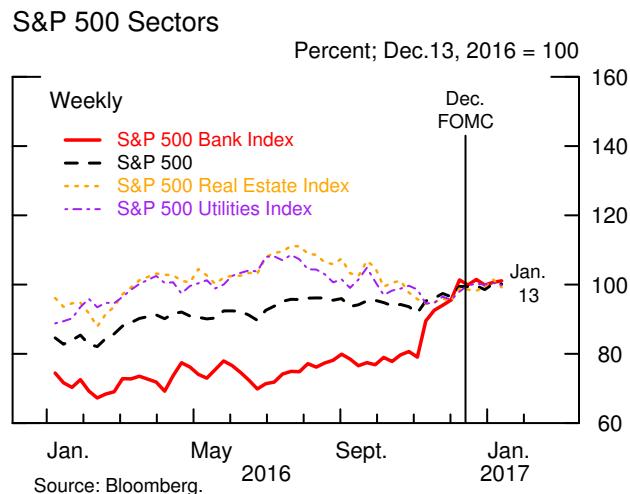
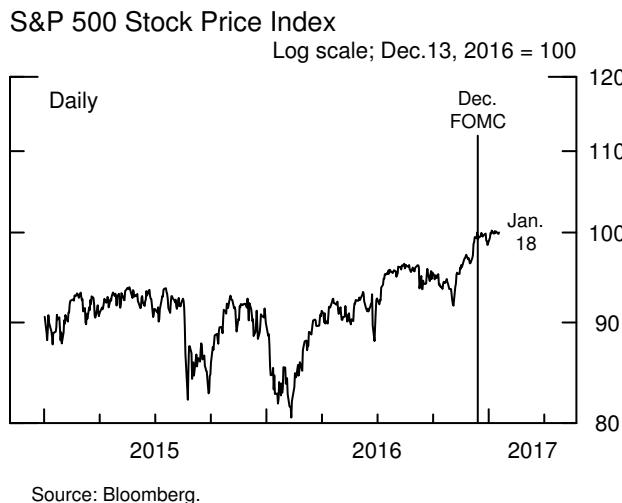
As shown in figure 2, the near-term measure of expected dividend growth rose gradually but significantly between mid-February and early November of last year. In contrast, the medium-term measure increased appreciably less, on balance, over the same period. Since the U.S. election, implied near-term dividend growth has jumped more than 3 percentage points, while medium-term growth has stepped up more moderately.

The increase in the medium-term measure could potentially reflect both a decline in the premium required by investors to hold equity risk and a revision in their forecasts for medium-term dividend growth. The fact that the near-term measure increased substantially more than the medium-term measure suggests that the run-up in the S&P 500 since the election mostly reflects investors’ expectations of appreciably higher dividend growth over the next two years, perhaps reflecting a potential decrease in corporate taxes that would increase the level of after-tax profits and therefore dividends paid out. To put this revision in investors’ expectations into historical perspective, the increase in the expected dividend growth rate would correspond to a movement in the two-year dividend growth rate for the S&P 500 from the 20th percentile to the 67th percentile of its historical distribution since 1985. Of course, a great deal of uncertainty remains about the eventual effect of potential changes in fiscal policy on corporate earnings and dividends.

Figure 2: Forward Expected Dividend Growth Rates

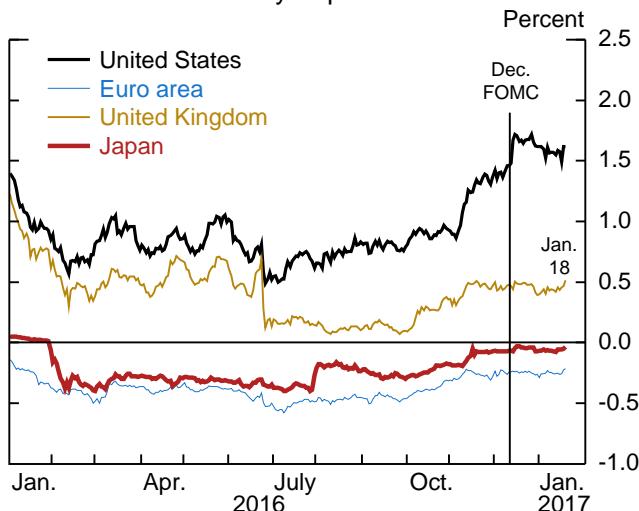


## Corporate Asset Markets



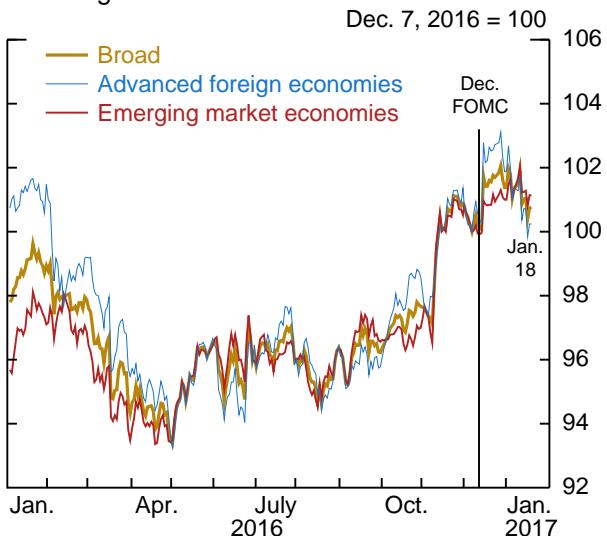
## Foreign Developments

### 24-Month-Ahead Policy Expectations



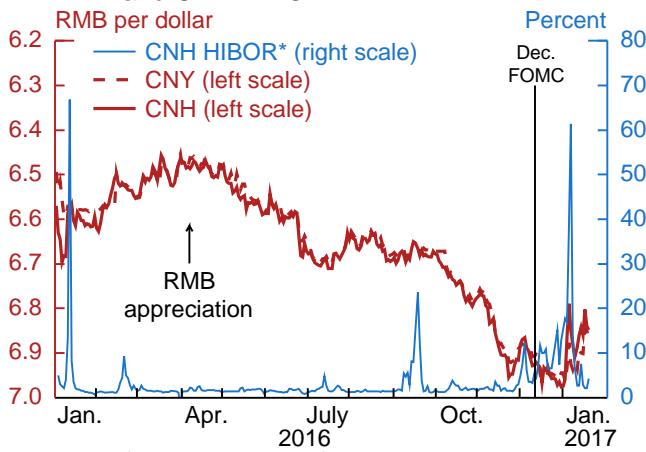
Note: Based on overnight index swaps.  
Source: Bloomberg; staff calculations.

### Exchange Rates



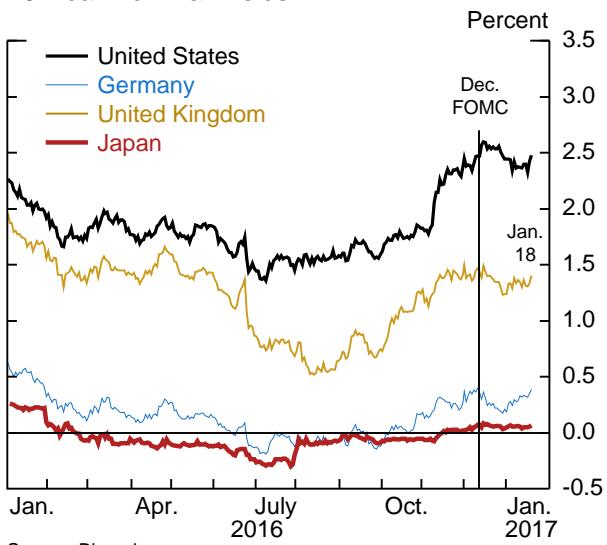
Source: Bloomberg.

### RMB and CNH HIBOR



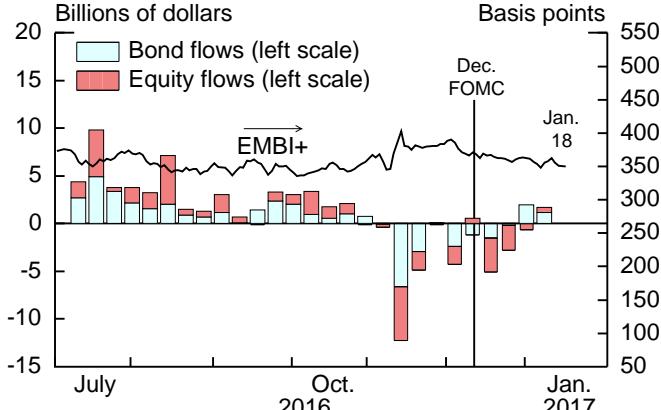
Note: CNH is offshore RMB. CNY is onshore RMB.  
Last data point is Jan. 18.  
\* Offshore RMB (CNH) overnight Hong Kong interbank offered rate (HIBOR).  
Source: Bloomberg.

### 10-Year Nominal Yields



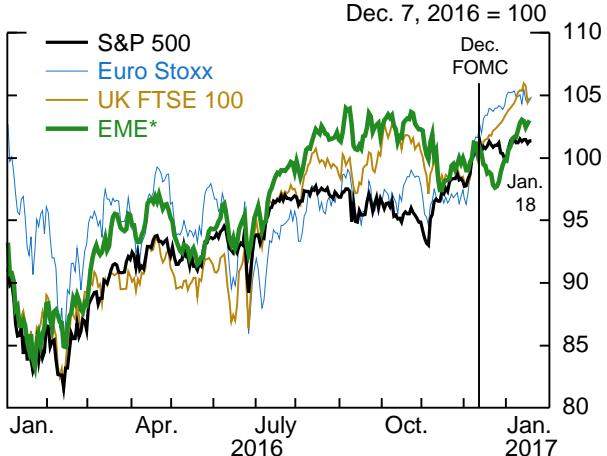
Source: Bloomberg.

### Emerging Market Flows and Spreads



Note: Emerging market bond spreads over zero-coupon Treasury securities. Excludes intra-China flows. EMBI+ is the J.P. Morgan Emerging Markets Bond Index Plus.  
Source: Bloomberg; Emerging Portfolio Fund Research.

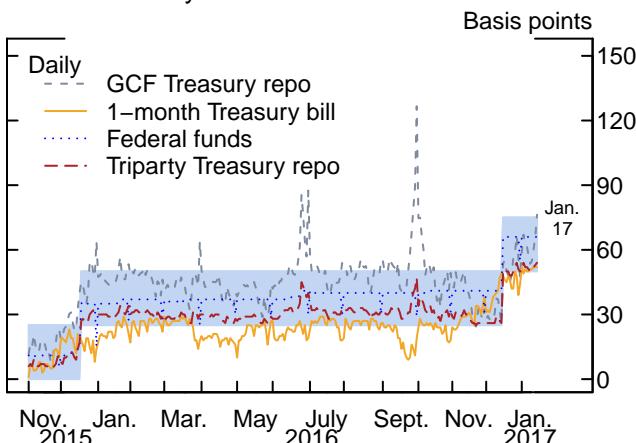
### Equity Market Indexes



\* Emerging market economies. MSCI local-currency index.  
Source: Bloomberg; Datastream.

## Monetary Policy Implementation and Short Term Funding Markets

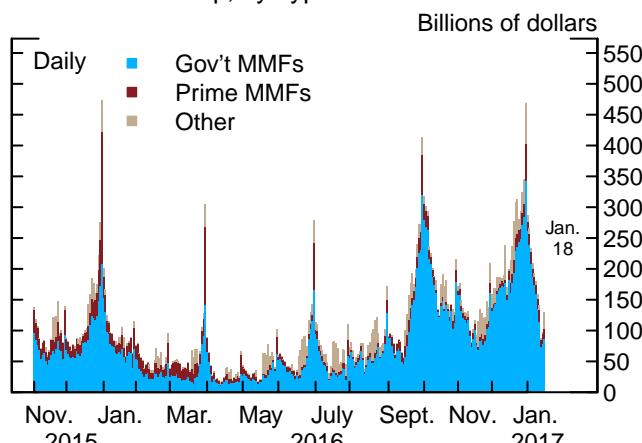
### Selected Money Market Rates



Note: Shaded area is the target range for the federal funds rate.  
Federal funds rate is a weighted median. Triparty repurchase agreement (repo) rate is a weighted median. GCF is General Collateral Finance.

Source: Federal Reserve Bank of New York; Federal Reserve Board, Form FR 2420, Report of Selected Money Market Rates.

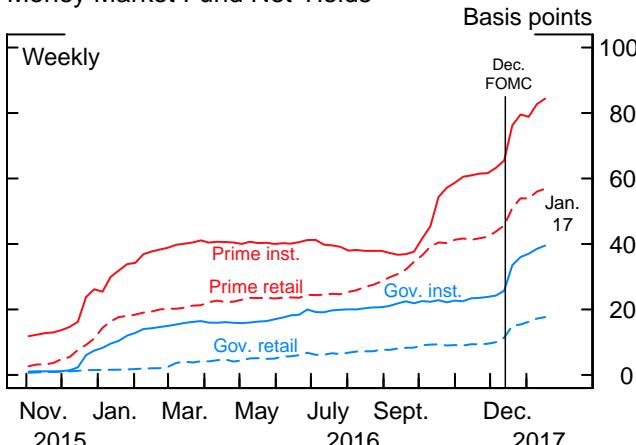
### ON RRP Take-Up, by Type



Note: ON RRP is overnight reverse repurchase agreement; MMFs are money market funds.

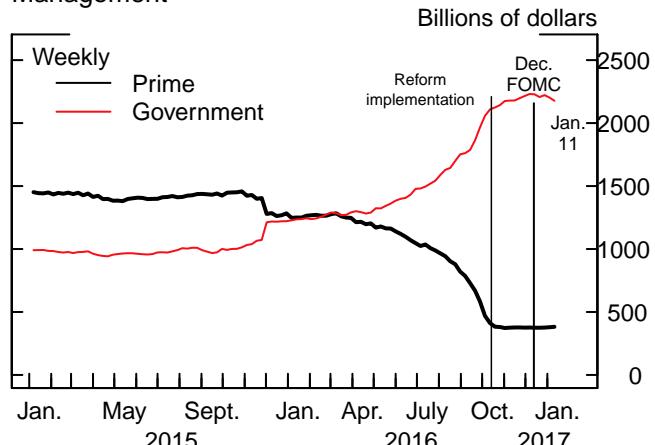
Source: Federal Reserve Bank of New York.

### Money Market Fund Net Yields



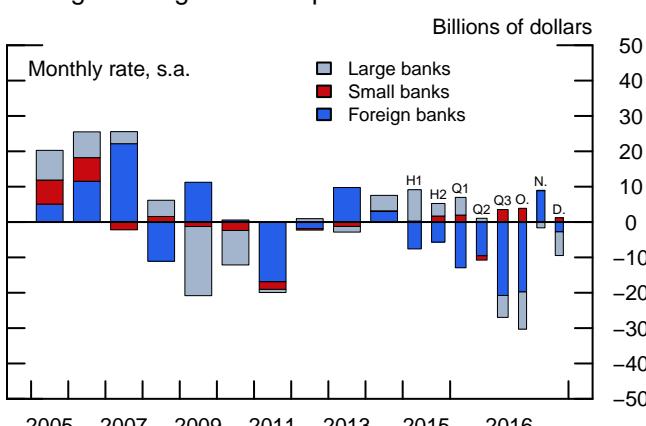
Note: Net yields are the annualized average yield, net of expense ratio, earned over the past 7 days without reinvesting dividends.  
Source: iMoneyNet.

### Prime and Government MMF Assets under Management



Source: Calculations by the Federal Reserve Board based on data from the Investment Company Institute.

### Change in Large Time Deposits

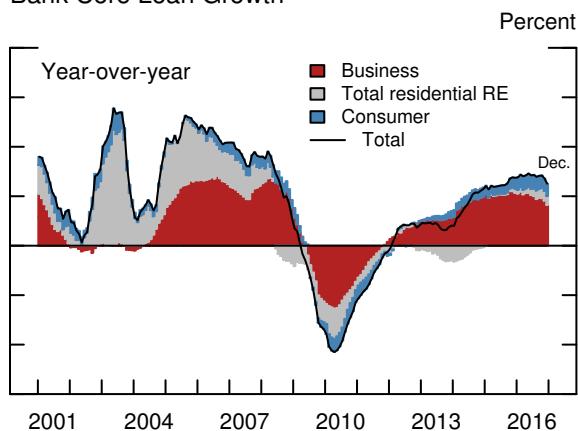


Note: Yearly rates are Q4 to Q4; half years are based on Q4 and Q2 average levels; quarterly and monthly annual rates use corresponding average levels.  
Large banks are defined as the largest 25 banks by assets.

Source: Federal Reserve Board, Form FR 2644, Weekly Report of Selected Assets and Liabilities of Domestically Chartered Commercial Banks and U.S. Branches and Agencies of Foreign Banks.

## Business Finance

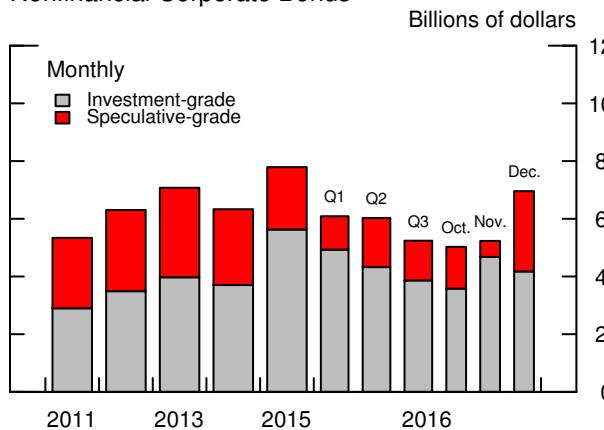
### Bank Core Loan Growth



Note: RE is real estate. Business loans include C&I (commercial and industrial) and CRE (commercial real estate).

Source: Federal Reserve Board, Form FR 2644, Weekly Report of Selected Assets and Liabilities of Domestically Chartered Commercial Banks and U.S. Branches and Agencies of Foreign Banks.

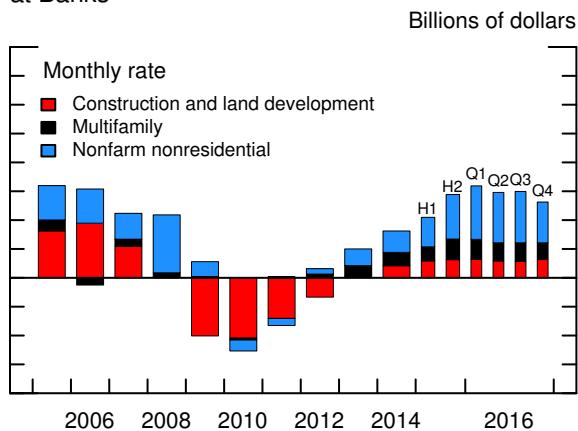
### Gross Issuance of Nonfinancial Corporate Bonds



Note: Bonds are categorized by Moody's, Standard & Poor's, and Fitch.

Source: Mergent Fixed Income Securities Database.

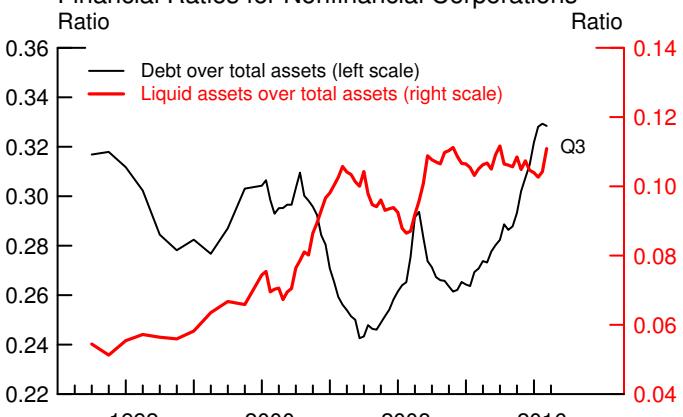
### Commercial Real Estate Loans at Banks



Note: Data are seasonally adjusted.

Source: Federal Reserve Board, Form FR 2644, Weekly Report of Selected Assets and Liabilities of Domestically Chartered Commercial Banks and U.S. Branches and Agencies of Foreign Banks.

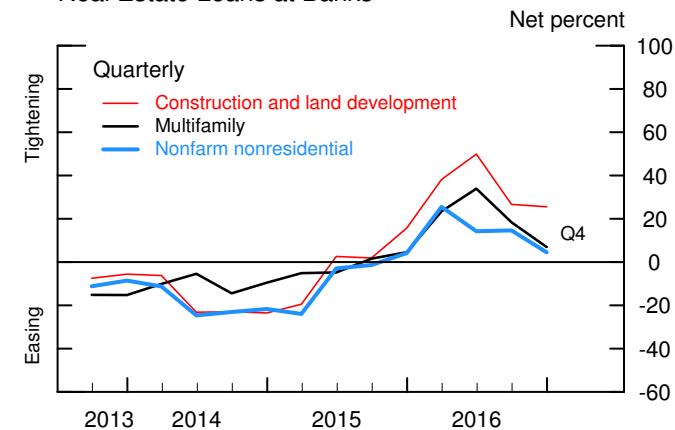
### Financial Ratios for Nonfinancial Corporations



Note: Data are annual through 1999 and quarterly thereafter.

Source: Compustat.

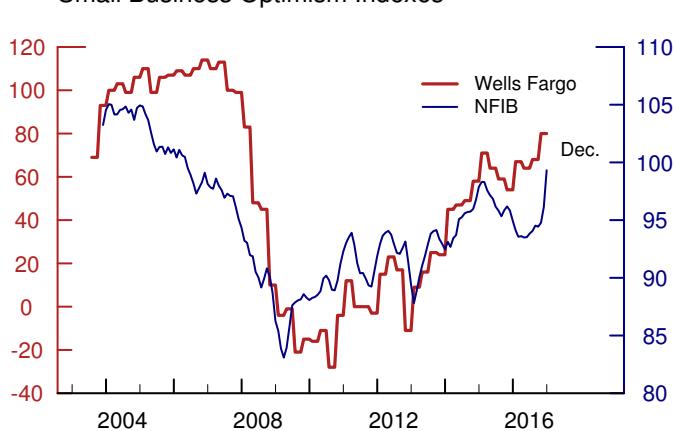
### Changes in Standards for Commercial Real Estate Loans at Banks



Note: Net percent is the fraction of loans accounted for by banks that reported having tightened standards minus the fraction of loans accounted for by banks that reported having eased standards.

Source: Federal Reserve Board, Senior Loan Officer Opinion Survey on Bank Lending Practices.

### Small Business Optimism Indexes

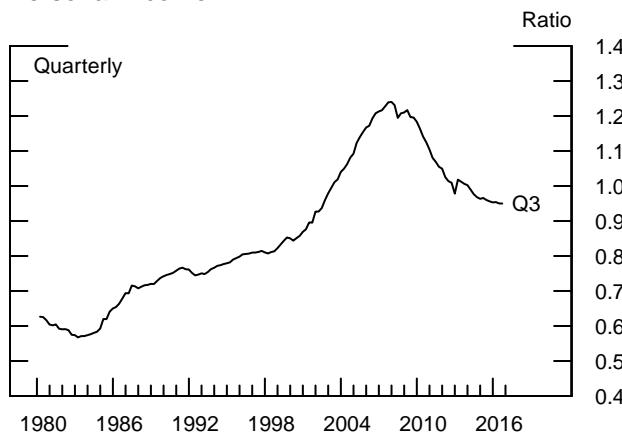


Note: Wells Fargo data are monthly and not seasonally adjusted. NFIB (National Federation of Independent Business) data are monthly and seasonally adjusted; a 3-month moving average is reported.

Source: Wells Fargo Small Business Survey; Small Business Economic Trends Data.

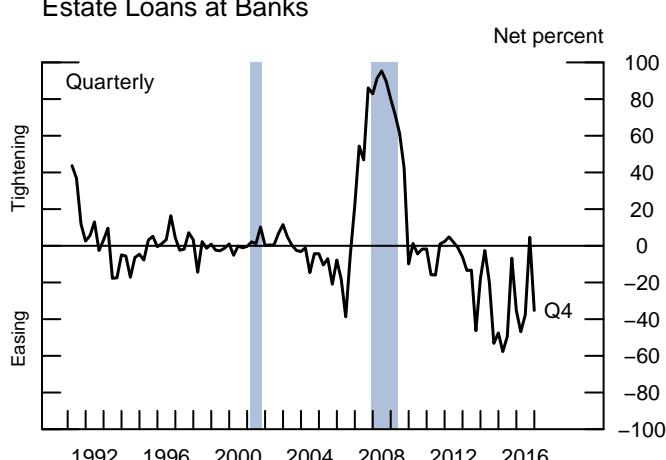
## Household Finance

### Household Debt relative to Disposable Personal Income



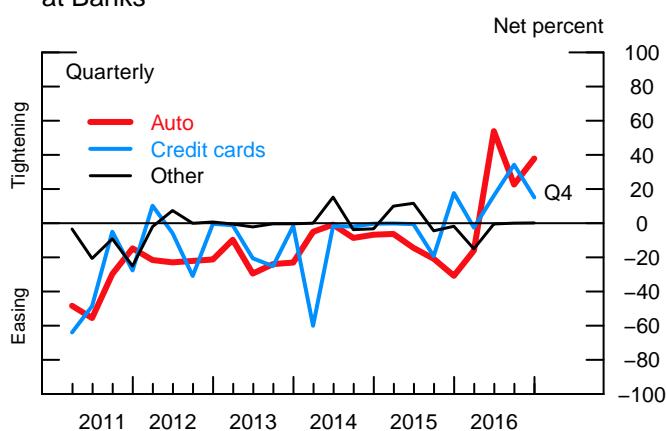
Source: Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States."

### Changes in Standards for Residential Real Estate Loans at Banks

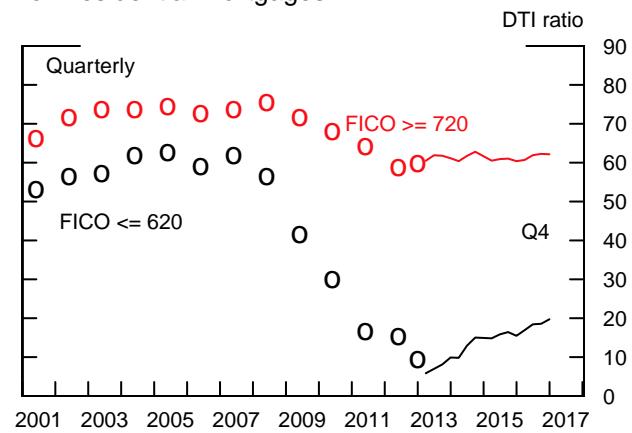


Source: Federal Reserve Board, Senior Loan Officer Opinion Survey on Bank Lending Practices.

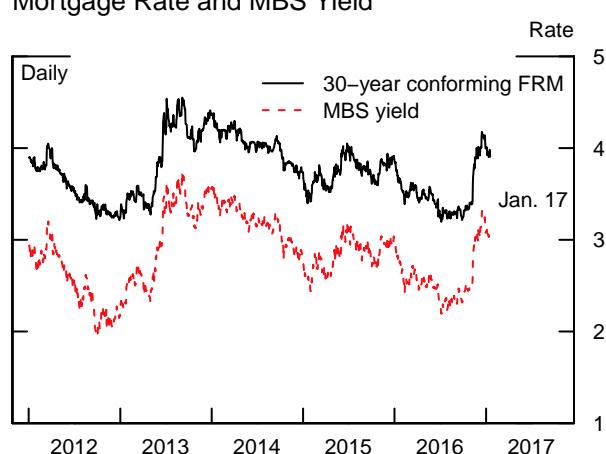
### Changes in Standards for Consumer Loans at Banks



### Maximum Allowed Debt–Service-to–Income Ratio for Residential Mortgages



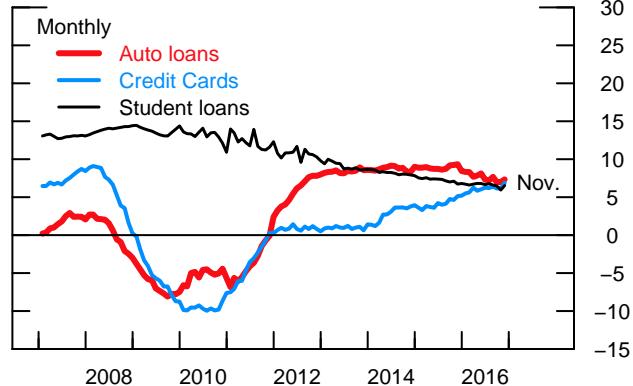
### Mortgage Rate and MBS Yield



Source: For mortgage rate, Loansifter. For MBS yield, Barclays.

### Change in Consumer Credit Outstanding

Percentage change from prior year

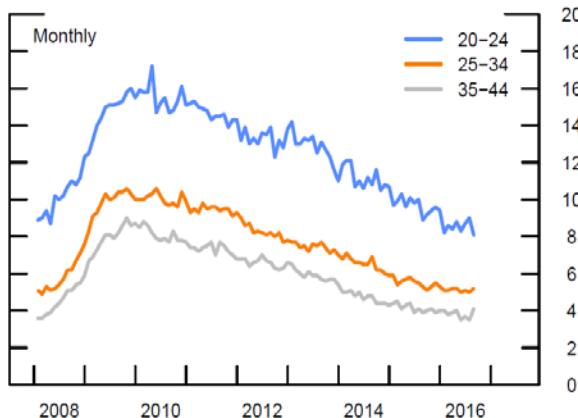


Source: Federal Reserve Board.

cohort enrolled in higher education in the latter 2000s leaving school and entering the repayment period for their student debt. Specifically, we estimate that the fraction of total student loan balances in the repayment period climbed from about 55 percent at the end of 2010 to 80 percent in 2016:Q2.

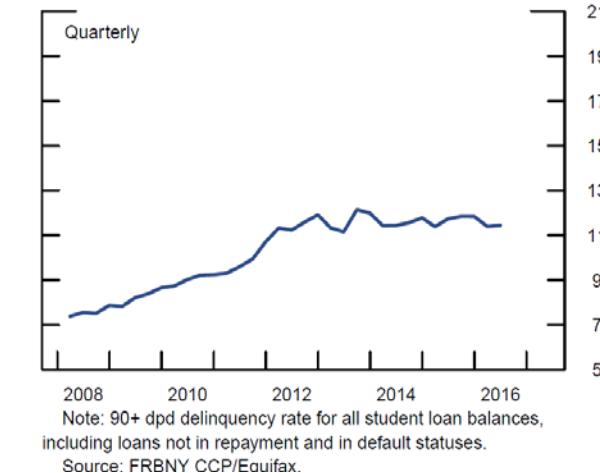
Thus, as shown in figure 4, focusing only on student debt in the repayment period in the CCP, the delinquency rate has been decreasing gradually, but steadily, for almost four years—a pattern more consistent with the improvements seen in the labor market. In particular, the delinquency rate for student loans in the repayment period—the solid blue line—decreased from 18.6 percent in 2012:Q2 to 14.6 percent in 2016:Q2. (The dashed line represents the delinquency rate when all loans are considered, including those in school deferment or in a grace period, already shown in figure 2.) This decrease suggests that much-improved job prospects, increased take-up in IDR plans, and perhaps other factors have contributed to better student loan performance in recent years.

Figure 1: Unemployment Rate for Young Individuals



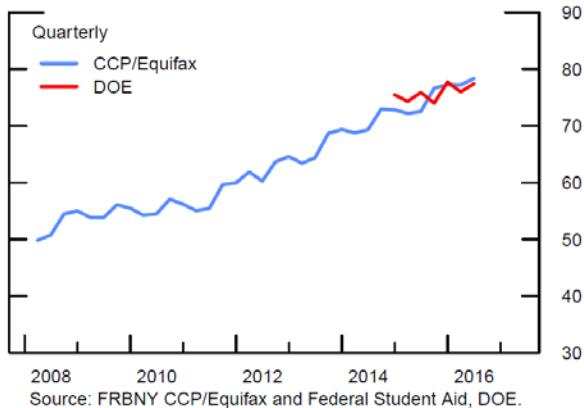
Note: Series are seasonally adjusted by BLS.  
Source: Current Population Survey, BLS Data Series.

Figure 2: Percentage of Balances in Delinquency



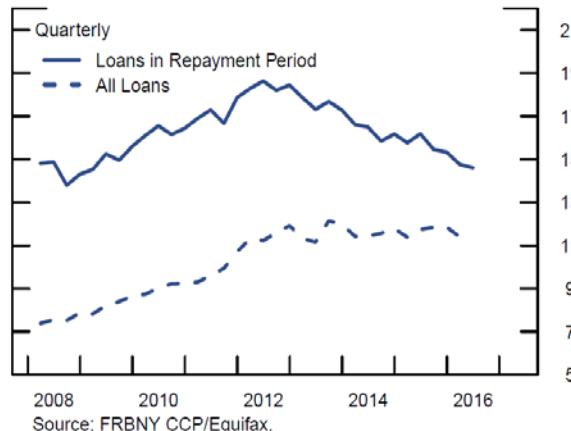
Note: 90+ dpd delinquency rate for all student loan balances, including loans not in repayment and in default statuses.  
Source: FRBNY CCP/Equifax.

Figure 3: Percentage of Balances in the Repayment Period



Source: FRBNY CCP/Equifax and Federal Student Aid, DOE.

Figure 4: Percentage of Balances in Delinquency



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

Measure and scenario	2017		2018	2019	2020-21
	H1	H2			
<i>Real GDP</i>					
Extended Tealbook baseline	1.9	2.4	2.0	1.8	1.4
Larger fiscal expansion	1.9	2.8	2.4	2.1	1.5
No fiscal expansion	1.9	1.9	1.9	1.8	1.4
Stronger aggregate demand	3.3	2.7	1.8	1.6	1.3
Lower inflation expectations	1.9	2.4	2.0	1.9	1.5
Weaker productivity and faster wage growth	1.7	1.9	1.3	1.2	1.3
Stronger dollar and EME turbulence	1.5	1.5	1.4	1.9	1.6
Stronger foreign growth and weaker dollar	2.1	2.9	2.5	2.0	1.2
<i>Unemployment rate<sup>1</sup></i>					
Extended Tealbook baseline	4.7	4.5	4.2	4.1	4.4
Larger fiscal expansion	4.7	4.4	3.9	3.7	3.7
No fiscal expansion	4.7	4.6	4.4	4.4	4.7
Stronger aggregate demand	4.3	4.1	4.0	4.0	4.4
Lower inflation expectations	4.7	4.5	4.3	4.1	4.3
Weaker productivity and faster wage growth	4.7	4.5	4.4	4.5	4.8
Stronger dollar and EME turbulence	4.7	4.7	4.7	4.7	4.8
Stronger foreign growth and weaker dollar	4.6	4.4	3.9	3.7	4.0
<i>Total PCE prices</i>					
Extended Tealbook baseline	1.8	1.6	1.8	1.9	2.1
Larger fiscal expansion	1.8	1.7	2.1	2.2	2.5
No fiscal expansion	1.8	1.5	1.7	1.8	2.0
Stronger aggregate demand	1.9	1.6	1.8	1.9	2.1
Lower inflation expectations	1.6	1.3	1.5	1.7	1.9
Weaker productivity and faster wage growth	2.2	2.2	2.6	2.8	2.9
Stronger dollar and EME turbulence	1.2	.7	1.3	1.8	2.0
Stronger foreign growth and weaker dollar	2.2	2.1	2.3	2.2	2.2
<i>Core PCE prices</i>					
Extended Tealbook baseline	1.7	1.6	1.9	2.0	2.1
Larger fiscal expansion	1.7	1.8	2.1	2.3	2.4
No fiscal expansion	1.7	1.6	1.8	1.8	1.9
Stronger aggregate demand	1.8	1.7	1.9	2.0	2.1
Lower inflation expectations	1.5	1.3	1.6	1.7	1.9
Weaker productivity and faster wage growth	2.1	2.2	2.6	2.8	2.8
Stronger dollar and EME turbulence	1.3	1.0	1.4	1.8	1.9
Stronger foreign growth and weaker dollar	1.9	2.0	2.3	2.2	2.2
<i>Federal funds rate<sup>1</sup></i>					
Extended Tealbook baseline	.9	1.5	2.5	3.4	4.0
Larger fiscal expansion	.9	1.5	2.9	4.1	5.4
No fiscal expansion	.9	1.4	2.3	3.0	3.3
Stronger aggregate demand	1.1	1.8	3.0	3.7	4.2
Lower inflation expectations	.9	1.4	2.2	3.1	3.8
Weaker productivity and faster wage growth	1.0	1.7	3.1	4.0	4.5
Stronger dollar and EME turbulence	1.0	1.2	1.7	2.5	3.4
Stronger foreign growth and weaker dollar	1.0	1.8	3.2	4.2	4.6

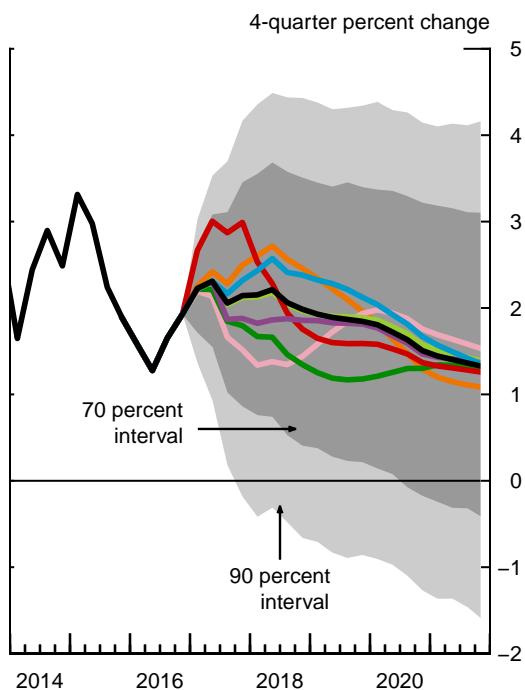
1. Percent, average for the final quarter of the period.

## Forecast Confidence Intervals and Alternative Scenarios

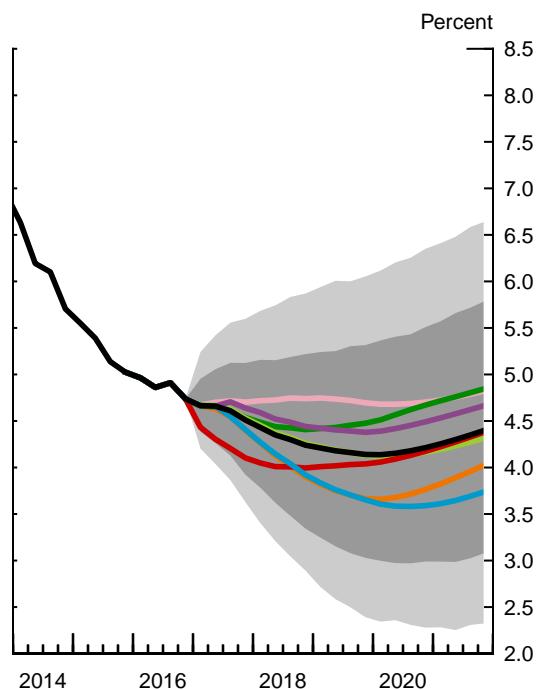
Confidence Intervals Based on FRB/US Stochastic Simulations

- |                              |  |   |
|------------------------------|--|---|
| ■ Extended Tealbook baseline | ■ Stronger aggregate demand                  | ■ Stronger dollar and EME turbulence        |
| ■ Larger fiscal expansion    | ■ Lower inflation expectations               | ■ Stronger foreign growth and weaker dollar |
| ■ No fiscal expansion        | ■ Weaker productivity and faster wage growth |   |

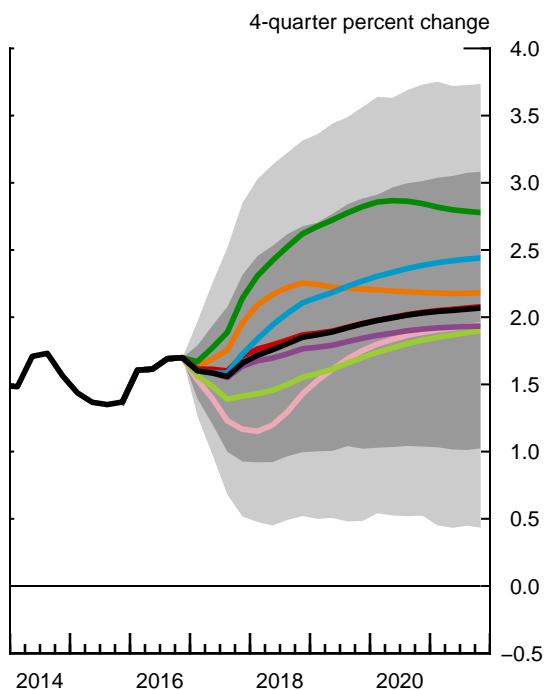
Real GDP



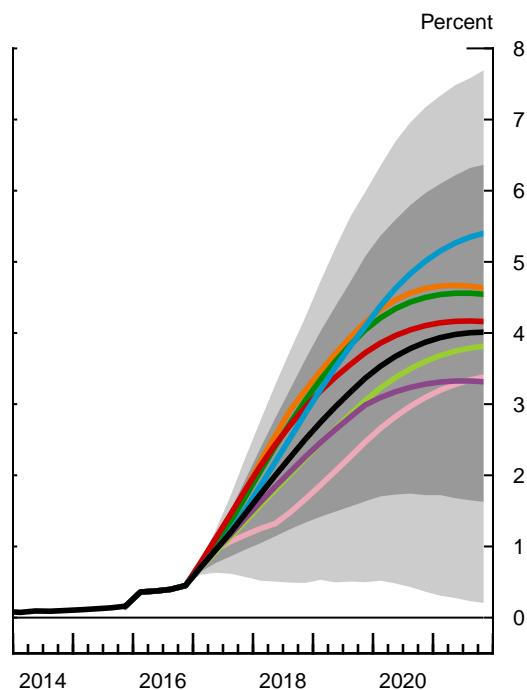
Unemployment Rate



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**

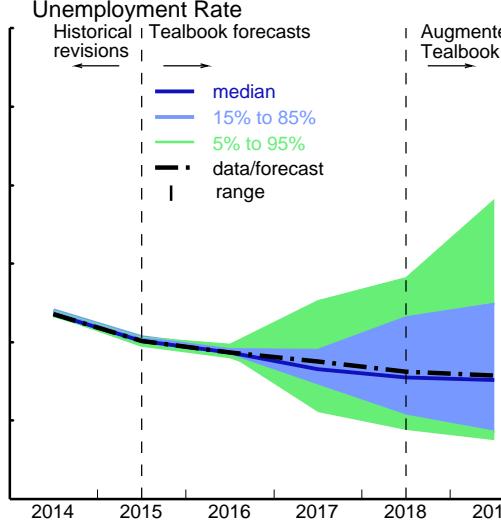
Measure	2016	2017	2018	2019	2020	2021
<i>Real GDP</i> <i>(percent change, Q4 to Q4)</i>						
Projection	1.9	2.1	2.0	1.8	1.5	1.3
Confidence interval						
Tealbook forecast errors	1.3–2.8	.6–3.8	-.4–3.6	-.8–3.3	...	...
FRB/US stochastic simulations	1.8–2.1	.9–3.5	.4–3.5	.2–3.4	-.2–3.2	-.4–3.1
<i>Civilian unemployment rate</i> <i>(percent, Q4)</i>						
Projection	4.7	4.5	4.2	4.1	4.2	4.4
Confidence interval						
Tealbook forecast errors	4.6–4.8	3.9–4.8	3.1–5.6	2.7–6.0	...	...
FRB/US stochastic simulations	4.7–4.7	3.9–5.1	3.3–5.2	3.0–5.3	3.0–5.5	3.1–5.8
<i>PCE prices, total</i> <i>(percent change, Q4 to Q4)</i>						
Projection	1.5	1.7	1.8	1.9	2.1	2.1
Confidence interval						
Tealbook forecast errors	1.4–1.8	1.1–3.1	1.0–3.4	1.1–3.3	...	...
FRB/US stochastic simulations	1.4–1.5	.9–2.4	.9–2.7	.9–2.9	1.0–3.2	1.0–3.2
<i>PCE prices excluding food and energy</i> <i>(percent change, Q4 to Q4)</i>						
Projection	1.7	1.7	1.9	2.0	2.0	2.1
Confidence interval						
Tealbook forecast errors	1.5–2.1	1.4–2.3	1.3–2.6	...	...	...
FRB/US stochastic simulations	1.6–1.7	.9–2.3	1.0–2.7	1.0–2.9	1.0–3.0	1.0–3.1
<i>Federal funds rate</i> <i>(percent, Q4)</i>						
Projection	.4	1.5	2.5	3.4	3.9	4.0
Confidence interval						
FRB/US stochastic simulations	.4–.4	1.0–1.9	1.3–3.6	1.6–5.1	1.7–6.0	1.6–6.4

Note: Shocks underlying FRB/US stochastic simulations are randomly drawn from the 1969–2015 set of model equation residuals. Intervals derived from Tealbook forecast errors are based on projections made from 1980 to 2015 for real GDP and unemployment and from 1998 to 2015 for PCE prices. The intervals for real GDP, unemployment, and total PCE prices are extended into 2019 using information from the Blue Chip survey and forecasts from the CBO and CEA.

... Not applicable.

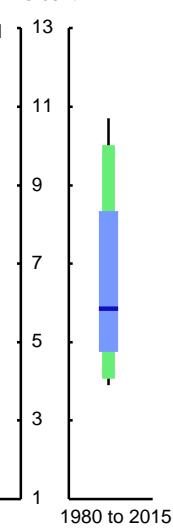
## Prediction Intervals Derived from Historical Tealbook Forecast Errors

### Forecast Error Percentiles

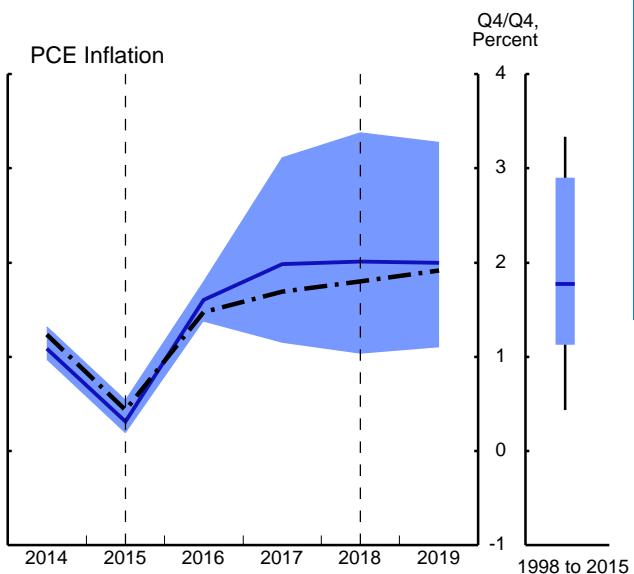


### Historical Distributions

Q4 Level, Percent  
1980 to 2015

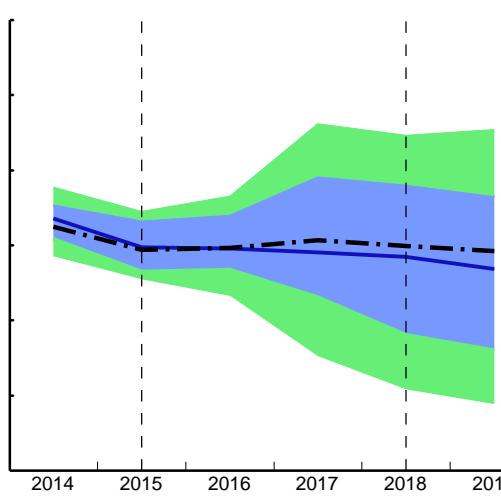


### PCE Inflation

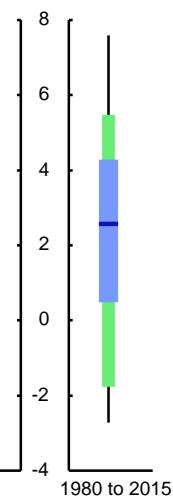


Risks & Uncertainty

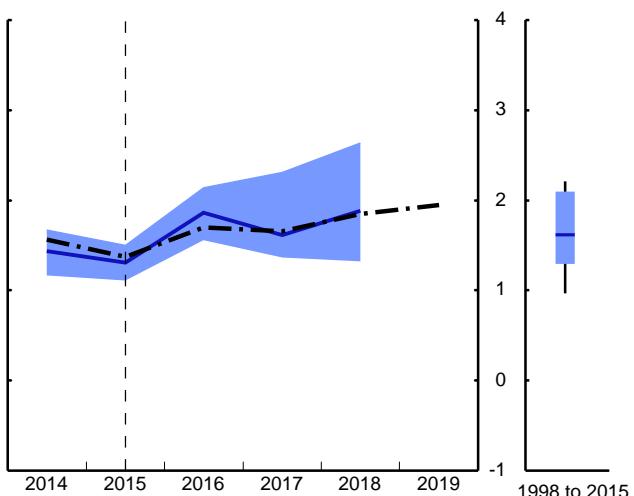
### Real GDP Growth



Q4/Q4, Percent  
1980 to 2015

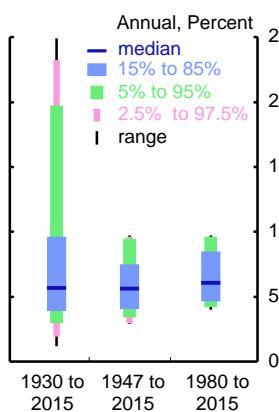


### Core PCE Inflation

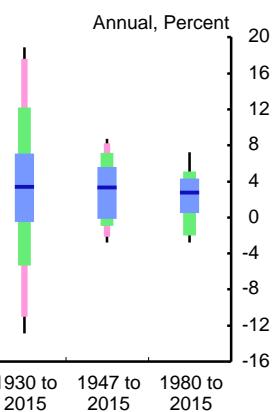


### Historical Distributions

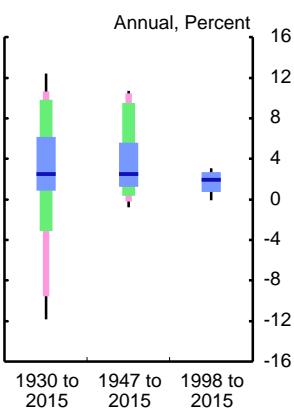
#### Unemployment Rate



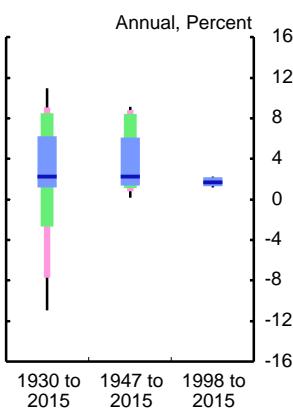
#### Real GDP Growth



#### PCE Inflation



#### Core PCE Inflation



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

1. Augmented Tealbook prediction intervals use 1- and 2-year-ahead forecast errors from Blue Chip, CBO, and CEA to extend the Tealbook prediction intervals through 2019.

## 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	.06	.06	.03	.05
Previous Tealbook	.06	.08	.06	.06
<i>Less than 1 percent</i>				
Current Tealbook	.18	.18	.08	.19
Previous Tealbook	.18	.14	.04	.18

### 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	.03	.03	.15	.02
Previous Tealbook	.03	.03	.18	.02
<i>Decrease by 1 percentage point</i>				
Current Tealbook	.08	.08	.11	.12
Previous Tealbook	.07	.08	.10	.12

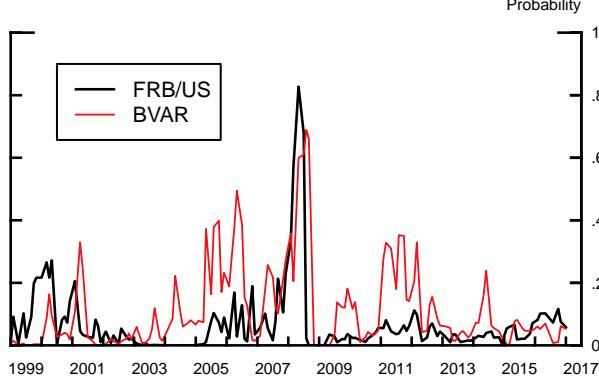
### Probability of Near-Term Recession

Probability that real GDP declines in the next two quarters	Staff	FRB/US	EDO	BVAR	Factor Model
Current Tealbook	.03	.01	.04	.04	.02
Previous Tealbook	.02	.02	.06	.06	.00

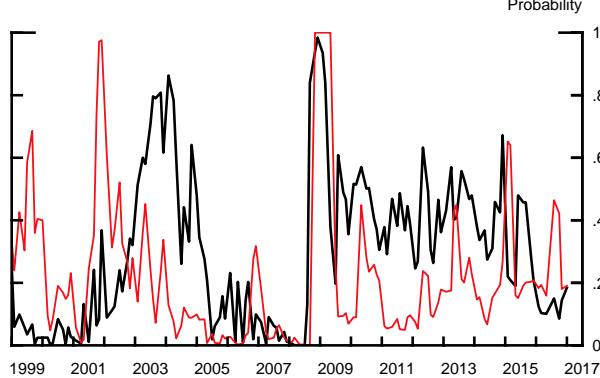
Note: "Staff" represents stochastic simulations in FRB/US around the staff baseline; baselines for FRB/US, BVAR, EDO, and the factor model are generated by those models themselves, up to the current-quarter estimate. Data for the current quarter are taken from the staff estimate for the second Tealbook 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.

## Assessment of Key Macroeconomic Risks (2)

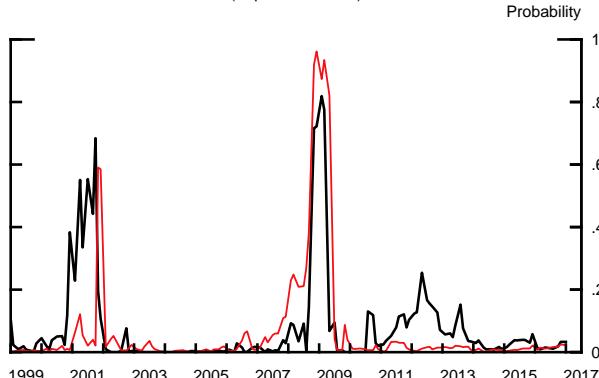
Probability that Total PCE Inflation Is above 3 Percent  
(4 quarters ahead)



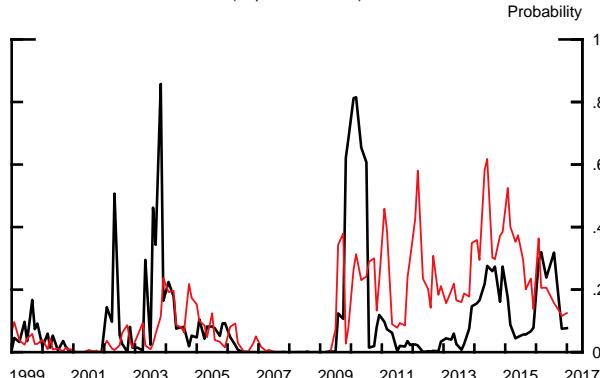
Probability that Total PCE Inflation Is below 1 Percent  
(4 quarters ahead)



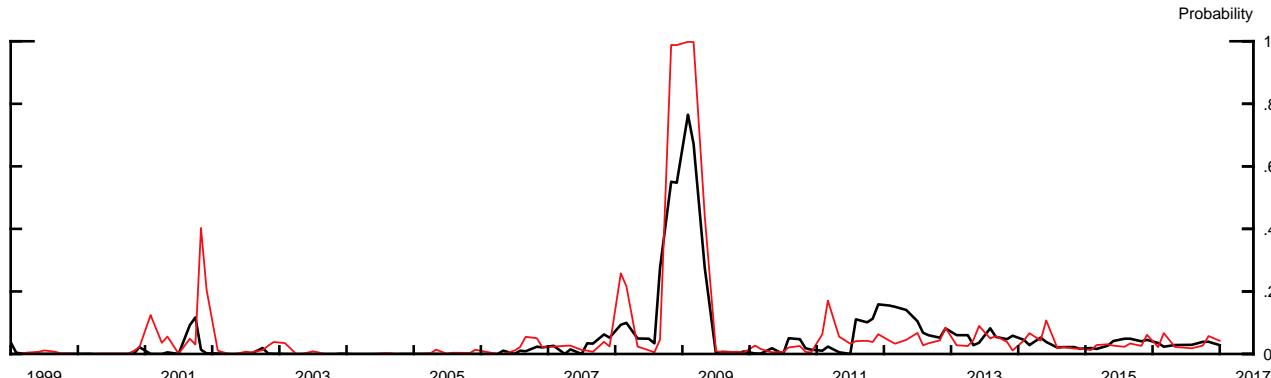
Probability that the Unemployment Rate Increases 1 ppt  
(4 quarters ahead)



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.

## Policy Rules and the Staff Projection

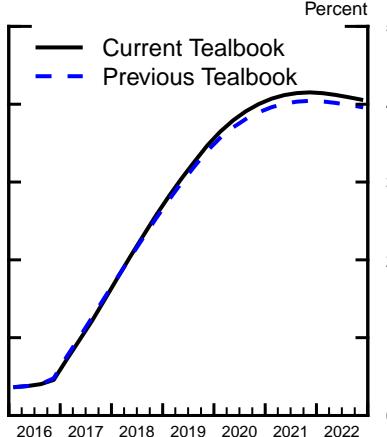
### Near-Term Prescriptions of Selected Simple Policy Rules<sup>1</sup>

(Percent)

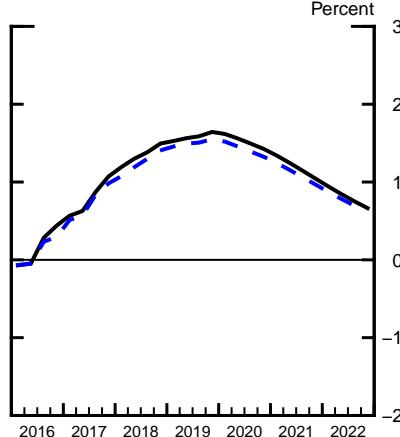
	<u>2017:Q1</u>	<u>2017:Q2</u>
Taylor (1993) rule	<b>2.69</b>	<b>2.70</b>
<i>Previous Tealbook</i>	2.76	2.77
Taylor (1999) rule	<b>2.97</b>	<b>3.00</b>
<i>Previous Tealbook</i>	3.01	3.04
Inertial Taylor (1999) rule	<b>0.83</b>	<b>1.16</b>
<i>Previous Tealbook projection</i>	0.84	1.17
First-difference rule	<b>0.59</b>	<b>0.76</b>
<i>Previous Tealbook projection</i>	0.63	0.77
<i>Addendum:</i>		
Tealbook baseline	<b>0.70</b>	<b>0.95</b>

### Key Elements of the Staff Projection

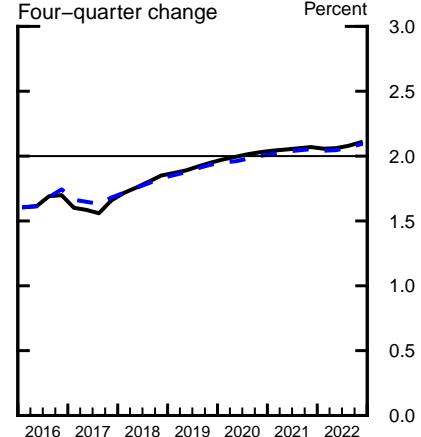
Federal Funds Rate



GDP Gap



PCE Prices Excluding Food and Energy



### A Medium-Term Equilibrium Real Federal Funds Rate<sup>2</sup>

(Percent)

	Current Tealbook	Current-Quarter Estimate Based on Previous Tealbook	Previous Tealbook
Tealbook-consistent FRB/US $r^*$	1.54	1.43	1.16
Average projected real federal funds rate	0.34	0.32	0.10

1. For rules that have a lagged policy rate as a right-hand-side variable, the lines denoted "Previous Tealbook projection" report prescriptions based on the previous Tealbook's staff outlook for inflation and the output gap, but conditional on the current-Tealbook value of the lagged policy rate.

2. The "Tealbook-consistent FRB/US  $r^*$ " is the level of the real federal funds rate that, if maintained over a 12-quarter period (beginning in the current quarter) in the FRB/US model, sets the output gap equal to zero in the final quarter of that period. The "average projected real federal funds rate" is calculated under the Tealbook baseline projection over the same 12-quarter period as the Tealbook-consistent FRB/US  $r^*$ . When the current-Tealbook and previous-Tealbook reference periods differ, the column "Current-Quarter Estimate Based on Previous Tealbook" reports values for the current reference period had the previous-Tealbook projection materialized.

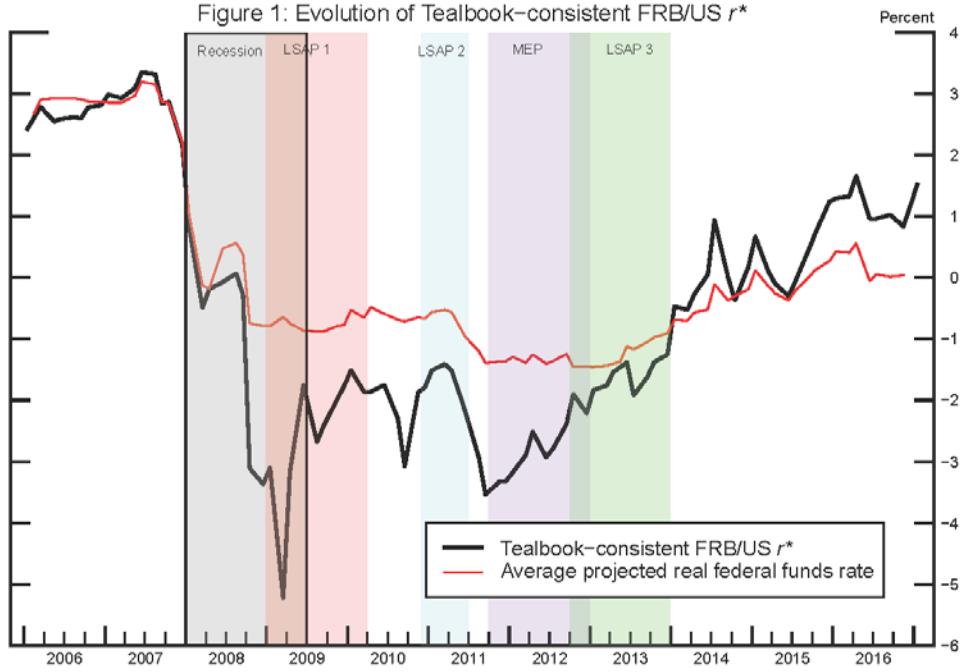
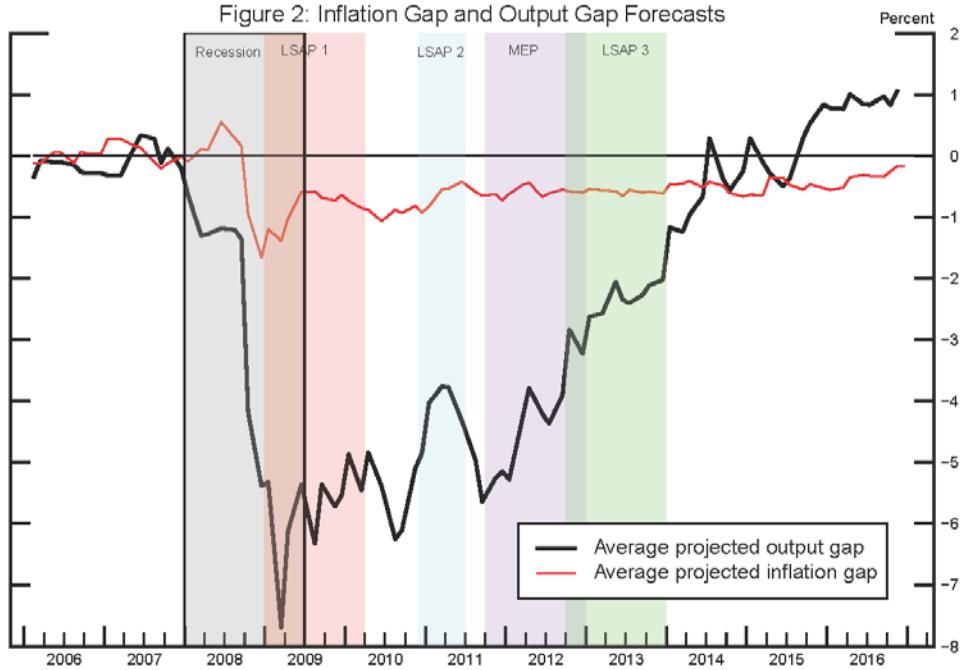
Figure 1: Evolution of Tealbook-consistent FRB/US  $r^*$ 

Figure 2: Inflation Gap and Output Gap Forecasts

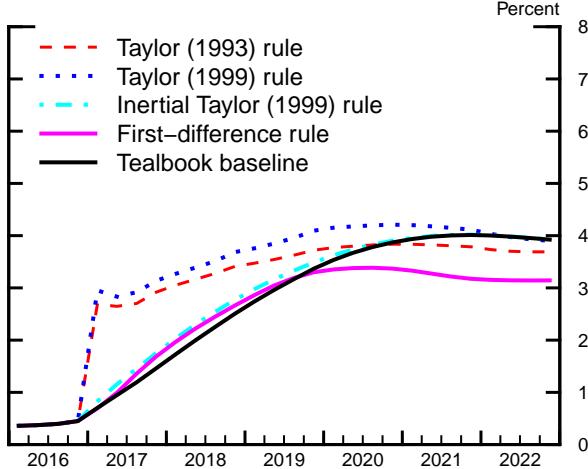


Note: The color-shaded areas in both figures indicate the recession and periods over which the Federal Reserve conducted its large-scale asset purchase programs (LSAPs) and its maturity extension program (MEP). The decision to reinvest the maturing principal in August 2010 is not highlighted in the figures.

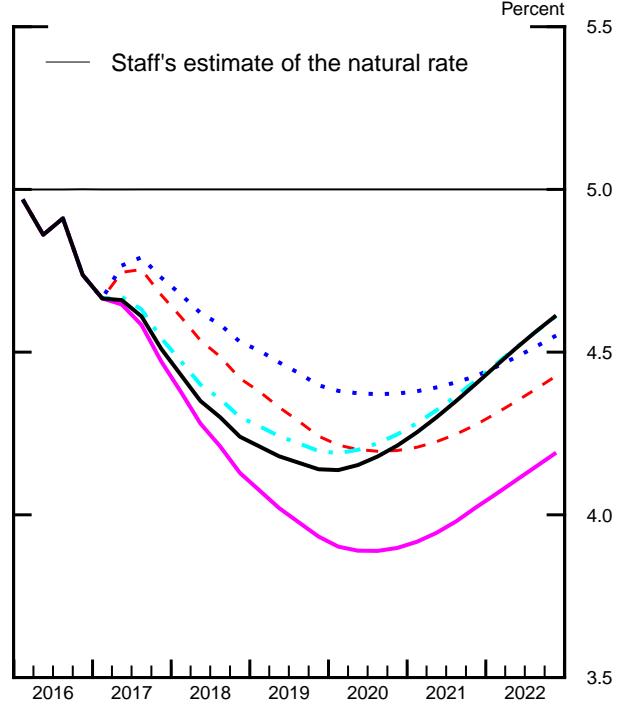
Source: Federal Reserve Board staff calculations based on data from various Tealbooks.

## Simple Policy Rule Simulations

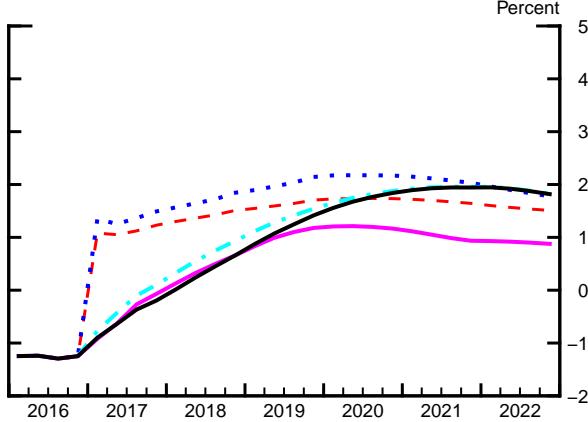
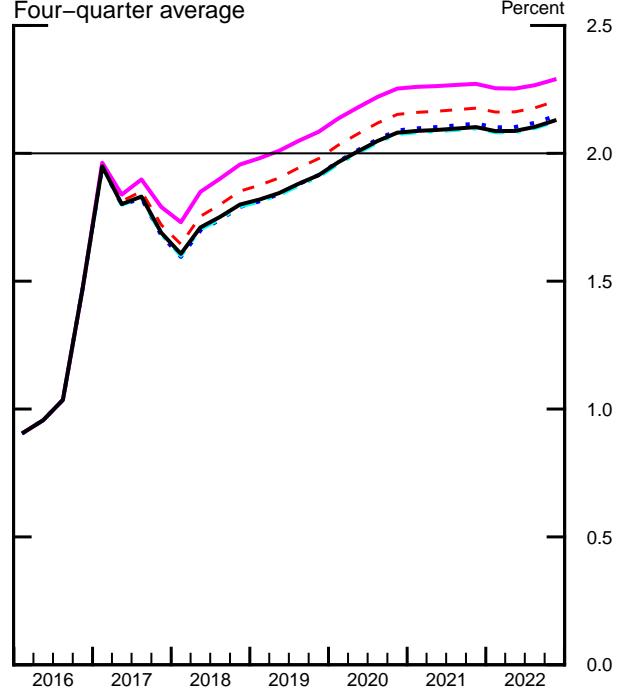
Nominal Federal Funds Rate



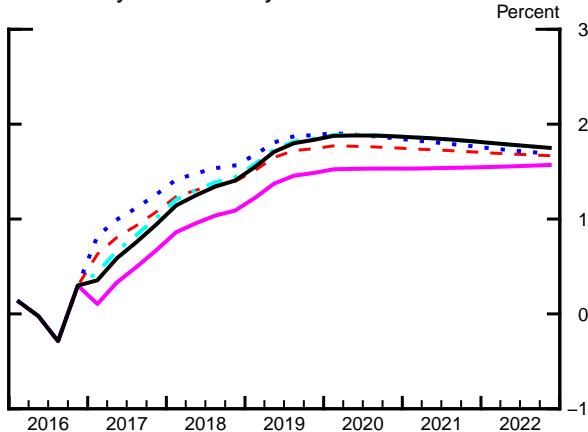
Unemployment Rate



Real Federal Funds Rate

PCE Inflation  
Four-quarter average

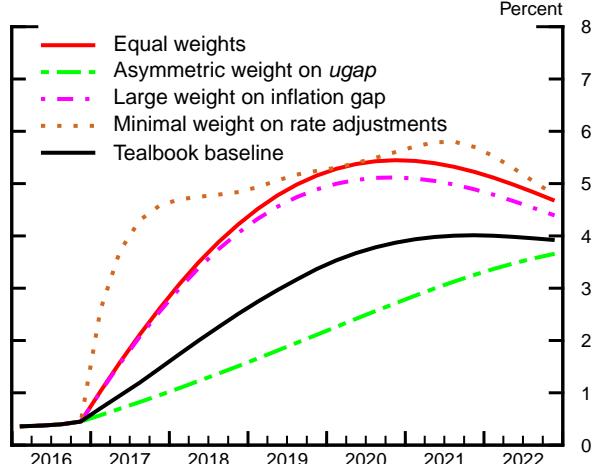
Real 10-year Treasury Yield



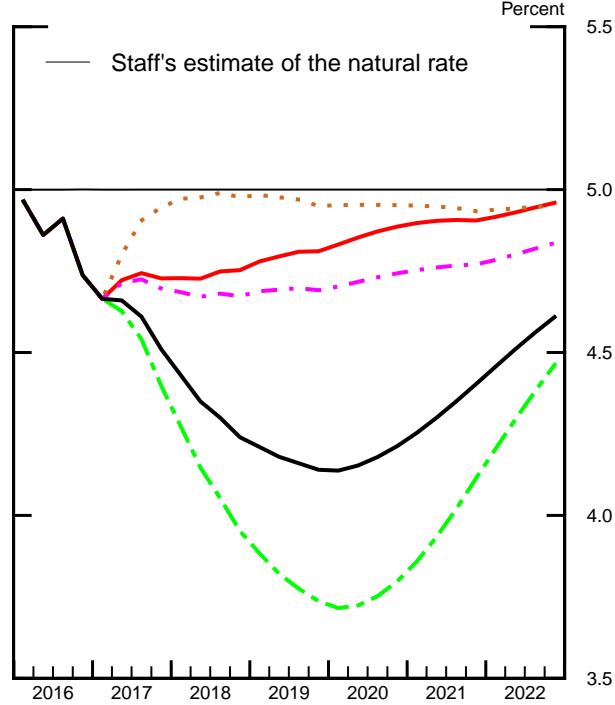
Note: The policy rule simulations in this exhibit are based on rules that respond to core inflation. This choice of rule specification was made in light of a tendency for current and near-term core inflation rates to outperform headline inflation rates as predictors of the medium-term behavior of headline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

## Optimal Control Simulations under Commitment

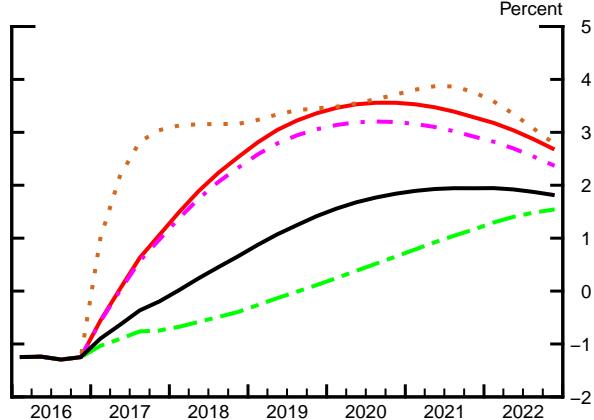
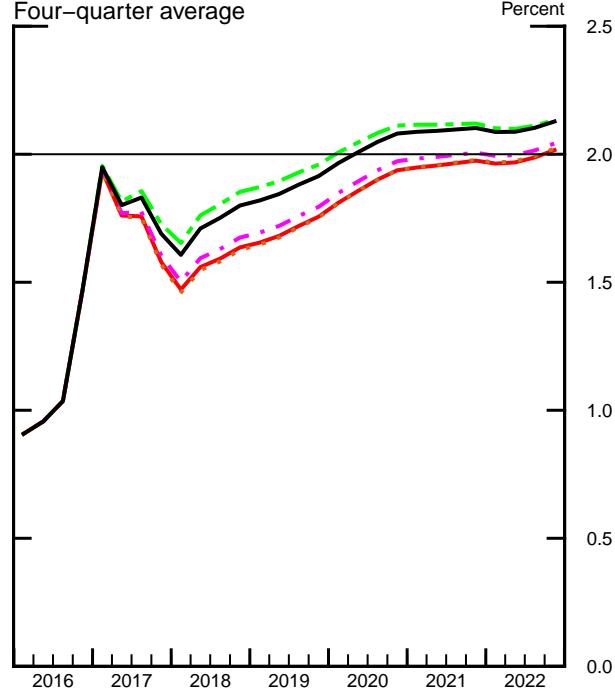
Nominal Federal Funds Rate



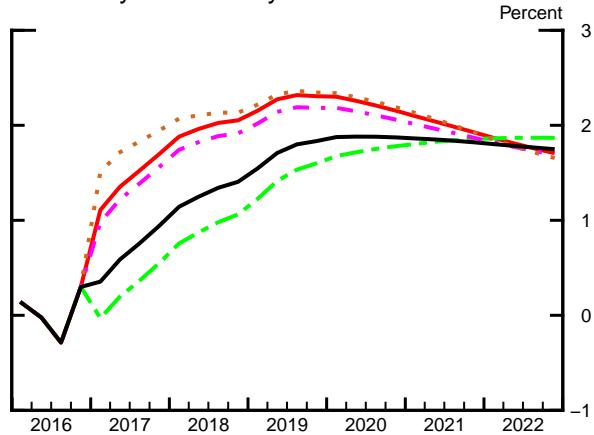
Unemployment Rate



Real Federal Funds Rate

PCE Inflation  
Four-quarter average

Real 10-year Treasury Yield



Note: Each set of lines corresponds to an optimal control policy under commitment in which policymakers minimize a discounted weighted sum of squared deviations of four-quarter headline PCE inflation from the Committee's 2 percent objective, of squared deviations of the unemployment rate from the staff's estimate of the natural rate, and of squared changes in the federal funds rate. The weights vary across simulations. See the appendix for technical details and the box "Optimal Control and the Loss Function" in the June 2016 Tealbook B for a motivation.

**Outcomes of Simple Policy Rule Simulations**  
 (Percent change, annual rate, from end of preceding period except as noted)

Measure and policy	2016	2017	2018	2019	2020
	H2				
<i>Nominal federal funds rate<sup>1</sup></i>					
Taylor (1993)	0.4	2.9	3.4	3.7	3.8
Taylor (1999)	0.4	3.1	3.7	4.1	4.2
Inertial Taylor (1999)	0.4	1.8	2.8	3.5	3.9
First-difference	0.4	1.7	2.7	3.3	3.4
Extended Tealbook baseline	0.4	1.5	2.5	3.4	3.9
<i>Real GDP</i>					
Taylor (1993)	2.7	1.9	1.9	2.0	1.7
Taylor (1999)	2.7	1.7	1.8	1.9	1.7
Inertial Taylor (1999)	2.7	2.1	1.9	1.9	1.5
First-difference	2.7	2.3	2.2	2.0	1.7
Extended Tealbook baseline	2.7	2.1	2.0	1.8	1.5
<i>Unemployment rate<sup>1</sup></i>					
Taylor (1993)	4.7	4.7	4.4	4.2	4.2
Taylor (1999)	4.7	4.7	4.5	4.4	4.4
Inertial Taylor (1999)	4.7	4.5	4.3	4.2	4.2
First-difference	4.7	4.5	4.1	3.9	3.9
Extended Tealbook baseline	4.7	4.5	4.2	4.1	4.2
<i>Total PCE prices</i>					
Taylor (1993)	1.8	1.7	1.9	2.0	2.2
Taylor (1999)	1.8	1.7	1.8	1.9	2.1
Inertial Taylor (1999)	1.8	1.7	1.8	1.9	2.1
First-difference	1.8	1.8	2.0	2.1	2.3
Extended Tealbook baseline	1.8	1.7	1.8	1.9	2.1
<i>Core PCE prices</i>					
Taylor (1993)	1.5	1.7	1.9	2.0	2.1
Taylor (1999)	1.5	1.6	1.8	2.0	2.0
Inertial Taylor (1999)	1.5	1.7	1.8	1.9	2.0
First-difference	1.5	1.8	2.0	2.1	2.2
Extended Tealbook baseline	1.5	1.7	1.9	2.0	2.0

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

**Outcomes of Simple Policy Rule Simulations, Quarterly**  
 (Four-quarter percent change, except as noted)

Measure and policy	2017				2018			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<i>Nominal federal funds rate<sup>1</sup></i>								
Taylor (1993)	2.7	2.6	2.7	2.9	3.1	3.2	3.3	3.4
Taylor (1999)	3.0	2.8	2.9	3.1	3.3	3.4	3.5	3.7
Inertial Taylor (1999)	0.8	1.2	1.5	1.8	2.0	2.3	2.5	2.8
First-difference	0.7	1.0	1.4	1.7	2.0	2.2	2.5	2.7
Extended Tealbook baseline	0.7	0.9	1.2	1.5	1.7	2.0	2.3	2.5
<i>Real GDP</i>								
Taylor (1993)	2.2	2.2	1.9	1.9	1.8	2.0	1.9	1.9
Taylor (1999)	2.2	2.1	1.8	1.7	1.7	1.8	1.8	1.8
Inertial Taylor (1999)	2.2	2.3	2.0	2.1	2.1	2.1	2.0	1.9
First-difference	2.2	2.3	2.1	2.3	2.3	2.4	2.2	2.2
Extended Tealbook baseline	2.2	2.3	2.1	2.1	2.2	2.2	2.1	2.0
<i>Unemployment rate<sup>1</sup></i>								
Taylor (1993)	4.7	4.7	4.8	4.7	4.6	4.5	4.5	4.4
Taylor (1999)	4.7	4.8	4.8	4.7	4.7	4.6	4.6	4.5
Inertial Taylor (1999)	4.7	4.7	4.6	4.5	4.5	4.4	4.4	4.3
First-difference	4.7	4.6	4.6	4.5	4.4	4.3	4.2	4.1
Extended Tealbook baseline	4.7	4.7	4.6	4.5	4.4	4.3	4.3	4.2
<i>Total PCE prices</i>								
Taylor (1993)	2.0	1.8	1.9	1.7	1.6	1.8	1.8	1.9
Taylor (1999)	1.9	1.8	1.8	1.7	1.6	1.7	1.7	1.8
Inertial Taylor (1999)	1.9	1.8	1.8	1.7	1.6	1.7	1.7	1.8
First-difference	2.0	1.8	1.9	1.8	1.7	1.8	1.9	2.0
Extended Tealbook baseline	1.9	1.8	1.8	1.7	1.6	1.7	1.8	1.8
<i>Core PCE prices</i>								
Taylor (1993)	1.6	1.6	1.6	1.7	1.8	1.8	1.9	1.9
Taylor (1999)	1.6	1.6	1.6	1.6	1.7	1.7	1.8	1.8
Inertial Taylor (1999)	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.8
First-difference	1.6	1.6	1.6	1.8	1.8	1.9	2.0	2.0
Extended Tealbook baseline	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.9

1. Percent, average for the quarter.

## Outcomes of Optimal Control Simulations under Commitment

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

Measure and policy	2016	2017	2018	2019	2020
	H2				
<i>Nominal federal funds rate<sup>1</sup></i>					
Equal weights	0.4	2.6	4.2	5.2	5.4
Aymmetric weight on <i>ugap</i>	0.4	1.0	1.5	2.1	2.7
Large weight on inflation gap	0.4	2.5	4.1	4.9	5.1
Minimal weight on rate adjustments	0.4	4.6	4.8	5.2	5.6
Extended Tealbook baseline	0.4	1.5	2.5	3.4	3.9
<i>Real GDP</i>					
Equal weights	2.7	1.7	1.4	1.6	1.5
Aymmetric weight on <i>ugap</i>	2.7	2.4	2.3	2.0	1.5
Large weight on inflation gap	2.7	1.7	1.5	1.6	1.6
Minimal weight on rate adjustments	2.7	1.3	1.3	1.7	1.7
Extended Tealbook baseline	2.7	2.1	2.0	1.8	1.5
<i>Unemployment rate<sup>1</sup></i>					
Equal weights	4.7	4.7	4.8	4.8	4.9
Aymmetric weight on <i>ugap</i>	4.7	4.4	4.0	3.7	3.8
Large weight on inflation gap	4.7	4.7	4.7	4.7	4.7
Minimal weight on rate adjustments	4.7	4.9	5.0	4.9	5.0
Extended Tealbook baseline	4.7	4.5	4.2	4.1	4.2
<i>Total PCE prices</i>					
Equal weights	1.8	1.6	1.6	1.8	1.9
Aymmetric weight on <i>ugap</i>	1.8	1.7	1.9	2.0	2.1
Large weight on inflation gap	1.8	1.6	1.7	1.8	2.0
Minimal weight on rate adjustments	1.8	1.6	1.6	1.8	1.9
Extended Tealbook baseline	1.8	1.7	1.8	1.9	2.1
<i>Core PCE prices</i>					
Equal weights	1.5	1.5	1.7	1.8	1.9
Aymmetric weight on <i>ugap</i>	1.5	1.7	1.9	2.0	2.1
Large weight on inflation gap	1.5	1.6	1.7	1.8	1.9
Minimal weight on rate adjustments	1.5	1.5	1.7	1.8	1.9
Extended Tealbook baseline	1.5	1.7	1.9	2.0	2.0

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

**Outcomes of Optimal Control Simulations under Commitment, Quarterly**  
 (Four-quarter percent change, except as noted)

Measure and policy	2017				2018			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<i>Nominal federal funds rate<sup>1</sup></i>								
Equal weights	1.0	1.6	2.1	2.6	3.1	3.5	3.9	4.2
Asymmetric weight on <i>ugap</i>	0.6	0.7	0.8	1.0	1.1	1.2	1.4	1.5
Large weight on inflation gap	1.0	1.6	2.1	2.5	3.0	3.4	3.7	4.1
Minimal weight on rate adjustments	2.6	3.7	4.3	4.6	4.7	4.7	4.8	4.8
Extended Tealbook baseline	0.7	0.9	1.2	1.5	1.7	2.0	2.3	2.5
<i>Real GDP</i>								
Equal weights	2.2	2.2	1.8	1.7	1.5	1.5	1.4	1.4
Asymmetric weight on <i>ugap</i>	2.2	2.4	2.2	2.4	2.5	2.6	2.4	2.3
Large weight on inflation gap	2.2	2.2	1.8	1.7	1.6	1.6	1.5	1.5
Minimal weight on rate adjustments	2.2	2.0	1.5	1.3	1.1	1.2	1.2	1.3
Extended Tealbook baseline	2.2	2.3	2.1	2.1	2.2	2.2	2.1	2.0
<i>Unemployment rate<sup>1</sup></i>								
Equal weights	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.8
Asymmetric weight on <i>ugap</i>	4.7	4.6	4.5	4.4	4.3	4.1	4.1	4.0
Large weight on inflation gap	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
Minimal weight on rate adjustments	4.7	4.8	4.9	4.9	5.0	5.0	5.0	5.0
Extended Tealbook baseline	4.7	4.7	4.6	4.5	4.4	4.3	4.3	4.2
<i>Total PCE prices</i>								
Equal weights	1.9	1.8	1.8	1.6	1.5	1.6	1.6	1.6
Asymmetric weight on <i>ugap</i>	2.0	1.8	1.9	1.7	1.7	1.8	1.8	1.9
Large weight on inflation gap	1.9	1.8	1.8	1.6	1.5	1.6	1.6	1.7
Minimal weight on rate adjustments	1.9	1.8	1.8	1.6	1.5	1.5	1.6	1.6
Extended Tealbook baseline	1.9	1.8	1.8	1.7	1.6	1.7	1.8	1.8
<i>Core PCE prices</i>								
Equal weights	1.6	1.5	1.5	1.5	1.6	1.6	1.6	1.7
Asymmetric weight on <i>ugap</i>	1.6	1.6	1.6	1.7	1.8	1.8	1.9	1.9
Large weight on inflation gap	1.6	1.6	1.5	1.6	1.6	1.6	1.7	1.7
Minimal weight on rate adjustments	1.6	1.5	1.5	1.5	1.6	1.6	1.6	1.7
Extended Tealbook baseline	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.9

1. Percent, average for the quarter.

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

	Nominal GDP		Real GDP		PCE price index		Core PCE price index		Unemployment rate <sup>1</sup>	
Interval	12/07/16	01/18/17	12/07/16	01/18/17	12/07/16	01/18/17	12/07/16	01/18/17	12/07/16	01/18/17
<i>Quarterly</i>										
2016:Q1	1.3	1.3	.8	.8	.3	.3	2.1	2.1	4.9	5.0
Q2	3.7	3.7	1.4	1.4	2.0	2.0	1.8	1.8	4.9	4.9
Q3	4.8	5.0	3.3	3.5	1.4	1.5	1.7	1.7	4.9	4.9
Q4	4.3	4.6	1.6	2.0	2.3	2.1	1.4	1.2	4.8	4.7
2017:Q1	4.4	4.5	2.4	2.0	1.8	2.2	1.7	1.7	4.7	4.7
Q2	3.7	3.4	1.7	1.7	1.7	1.4	1.7	1.7	4.7	4.7
Q3	4.4	4.2	2.6	2.5	1.6	1.6	1.6	1.6	4.6	4.6
Q4	3.9	4.1	2.1	2.3	1.6	1.6	1.6	1.6	4.5	4.5
2018:Q1	4.0	4.1	1.9	2.0	1.9	1.8	1.9	1.9	4.5	4.4
Q2	4.1	4.0	2.0	2.0	1.8	1.8	1.9	1.9	4.4	4.4
Q3	3.9	3.8	2.0	1.9	1.7	1.7	1.8	1.8	4.4	4.3
Q4	3.9	3.9	2.0	2.0	1.8	1.8	1.8	1.8	4.3	4.2
<i>Two-quarter<sup>2</sup></i>										
2016:Q2	2.5	2.5	1.1	1.1	1.1	1.1	1.9	1.9	-1	-1
Q4	4.5	4.8	2.4	2.7	1.9	1.8	1.6	1.5	-1	-2
2017:Q2	4.1	4.0	2.1	1.9	1.8	1.8	1.7	1.7	-1	0
Q4	4.2	4.1	2.3	2.4	1.6	1.6	1.6	1.6	-2	-2
2018:Q2	4.0	4.1	2.0	2.0	1.9	1.8	1.9	1.9	-1	-1
Q4	3.9	3.9	2.0	2.0	1.7	1.8	1.8	1.8	-1	-2
<i>Four-quarter<sup>3</sup></i>										
2015:Q4	3.0	3.0	1.9	1.9	.4	.4	1.4	1.4	-7	-7
2016:Q4	3.5	3.6	1.8	1.9	1.5	1.5	1.7	1.7	-2	-3
2017:Q4	4.1	4.0	2.2	2.1	1.7	1.7	1.7	1.7	-3	-2
2018:Q4	4.0	4.0	2.0	2.0	1.8	1.8	1.9	1.9	-2	-3
2019:Q4	3.9	3.9	1.8	1.8	1.9	1.9	2.0	2.0	-1	-1
<i>Annual</i>										
2015	3.7	3.7	2.6	2.6	.3	.3	1.4	1.4	5.3	5.3
2016	2.9	3.0	1.6	1.6	1.1	1.1	1.7	1.7	4.9	4.9
2017	4.2	4.3	2.2	2.2	1.8	1.8	1.7	1.7	4.6	4.6
2018	4.0	4.0	2.1	2.1	1.7	1.7	1.8	1.8	4.4	4.3
2019	3.9	3.9	1.9	1.9	1.9	1.9	1.9	1.9	4.2	4.2

- 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.

**Greensheets**  
**Changes in Real Gross Domestic Product and Related Items**  
(Percent, annual rate except as noted)

Item	2016				2017				2018				2019 <sup>1</sup>			
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2016 <sup>1</sup>	2017 <sup>1</sup>	2018 <sup>1</sup>	2019 <sup>1</sup>	
Real GDP <i>Previous Tealbook</i>	1.4	3.5	2.0	2.0	1.7	2.5	2.3	2.0	2.0	1.9	2.0	1.9	2.1	2.0	1.8	1.8
Final sales <i>Previous Tealbook</i>	2.6	3.0	1.8	1.9	1.8	2.5	2.5	2.0	1.9	1.9	2.0	2.0	2.2	2.2	2.0	1.8
Priv. dom. final purch. <i>Previous Tealbook</i>	3.2	2.4	2.9	1.9	1.7	2.6	2.3	1.9	2.0	2.0	2.0	2.1	2.2	1.9	2.0	1.9
Personal cons. expend. <i>Previous Tealbook</i>	4.3	3.0	2.8	2.2	2.2	2.6	3.7	3.0	2.8	2.8	2.7	2.6	2.6	2.7	2.7	2.5
Durables	9.8	11.6	10.1	-1.1	2.6	2.6	3.7	3.0	2.8	2.7	2.6	2.6	2.7	3.0	2.7	2.5
Nondurables	5.7	-.5	3.1	3.4	3.5	5.8	5.8	5.0	4.8	4.4	4.0	7.6	7.6	3.7	4.6	2.0
Services	3.0	2.7	1.5	2.2	2.1	3.5	3.3	3.0	2.9	2.9	2.9	2.6	3.3	3.3	2.9	2.6
Residential investment <i>Previous Tealbook</i>	-7.7	-4.1	10.7	1.6	-2.4	-9	5.0	4.0	3.9	4.0	3.6	1.4	.8	3.9	5.6	5.2
Nonres. priv. fixed invest. <i>Previous Tealbook</i>	1.0	1.4	1.4	4.5	4.1	3.6	3.7	2.9	2.8	2.4	1.7	.1	4.0	2.4	1.6	1.6
Equipment & intangibles <i>Previous Tealbook</i>	1.8	-1.3	3.4	4.4	4.1	3.6	4.1	3.4	3.5	3.6	3.1	2.0	-.2	4.1	3.0	2.2
Nonres. structures <i>Previous Tealbook</i>	1.8	-2.5	4.0	4.4	2.7	3.7	3.9	3.5	3.4	2.8	2.2	-.3	3.7	3.0	3.0	2.2
Net exports <sup>2</sup> <i>Previous Tealbook</i> <sup>2</sup>	-558	-522	-570	-593	-623	-652	-672	-702	-730	-756	-768	-554	-635	-739	-799	
Exports	1.8	10.0	-3.9	.3	.4	.8	1.4	1.8	2.0	2.2	2.3	1.7	.7	2.1	2.8	
Imports	.2	2.2	4.0	3.7	4.8	4.9	3.9	5.8	5.4	5.3	3.4	1.4	4.3	5.0	3.8	
Gov't. cons. & invest. <i>Previous Tealbook</i>	-1.7	.8	2.4	1.8	1.6	1.3	1.2	.9	.6	.5	.2	.8	1.5	.5	.6	.6
Federal	-1.7	.8	2.3	1.8	1.6	1.3	1.2	.9	.6	.5	.2	.7	.7	1.5	.5	.6
Defense	-.4	2.4	2.4	2.3	2.0	1.3	.9	.4	-.4	-.6	-1.3	.7	.7	1.6	-.5	-.4
Nonddefense	-3.2	2.0	2.0	1.9	1.0	.8	.2	.7	-.5	-.7	-1.1	-.6	1.4	1.4	-.5	-.3
State & local	3.8	3.0	3.0	2.8	2.1	1.8	1.0	.9	.7	.7	1.2	1.2	.8	1.4	1.2	1.2
Change in priv. inventories <sup>2</sup> <i>Previous Tealbook</i> <sup>2</sup>	-9	7	10	15	12	9	1	4	6	7	7	12	9	6	-9	
	-9	8	-4	14	15	14	7	8	9	9	9	9	9	13	9	2

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	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Real GDP <i>Previous Tealbook</i>	2.7	1.7	1.3	2.7	2.5	1.9	1.9	2.1	2.0	1.8
Final sales <i>Previous Tealbook</i>	2.0	1.5	1.7	2.0	2.7	2.0	2.2	2.2	1.9	2.0
Priv. dom. final purch. <i>Previous Tealbook</i>	3.5	2.6	2.3	2.6	3.8	2.7	2.4	2.1	2.0	1.9
Personal cons. expend. <i>Previous Tealbook</i>	3.1	1.5	1.3	2.0	3.5	2.6	2.9	2.9	2.7	2.5
Durables	3.1	1.5	1.3	2.0	3.5	2.6	2.7	3.0	2.7	2.5
Nondurables	9.3	4.8	7.2	5.2	8.6	5.5	7.6	3.7	4.6	2.0
Services	3.3	.4	.8	2.6	2.8	2.3	2.6	3.3	2.9	2.6
Residential investment <i>Previous Tealbook</i>	-5.2	6.0	15.7	6.8	6.2	13.1	1.4	.8	3.9	5.2
Nonres. priv. fixed invest. <i>Previous Tealbook</i>	8.1	9.0	5.2	4.8	5.0	.8	.1	4.0	2.4	1.6
Equipment & intangibles <i>Previous Tealbook</i>	12.0	9.2	5.5	4.5	4.1	3.8	-2	3.3	2.3	1.6
Nonres. structures <i>Previous Tealbook</i>	-4.0	8.0	4.1	5.8	8.0	-8.8	.9	3.6	2	1.2
Net exports <sup>1</sup> <i>Previous Tealbook</i>	-459	-459	-447	-405	-426	-540	-554	-635	-739	-799
Exports	10.1	4.2	2.2	5.9	3.1	-2.2	1.7	.7	2.1	2.8
Imports	12.0	3.5	.3	2.5	6.1	2.5	1.4	4.3	5.0	3.8
Gov't. cons. & invest. <i>Previous Tealbook</i>	-1.1	-3.0	-2.2	-2.8	.3	2.2	.8	1.5	5	.6
Federal	-1.1	-3.0	-2.2	-2.8	.3	2.2	.7	1.5	5	.6
Defense	3.2	-4.0	-2.1	-6.7	-1.3	1.7	.7	1.6	-5	-4
Nondefense	2.0	-4.1	-3.9	-7.1	-4.1	.6	-6	1.4	-5	-3
State & local	5.5	-3.9	1.0	-6.0	3.4	3.4	2.7	1.9	-4	-6
Change in priv. inventories <sup>1</sup> <i>Previous Tealbook</i>	58	38	55	79	58	84	12	9	6	-9
	58	38	55	79	58	84	9	13	9	2

1. Billions of chained (2009) dollars.

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

Item	2016			2017			2018			2016 <sup>1</sup>			2017 <sup>1</sup>			2018 <sup>1</sup>		
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2016 <sup>1</sup>	2017 <sup>1</sup>	2018 <sup>1</sup>	2017 <sup>1</sup>	2018 <sup>1</sup>	2019 <sup>1</sup>	
Real GDP <i>Previous Tealbook</i>	1.4	3.5	2.0	2.0	1.7	2.5	2.3	2.0	2.0	1.9	2.0	1.9	2.1	2.0	2.0	2.0	1.8	
Final sales <i>Previous Tealbook</i>	2.6	3.0	1.8	1.9	1.8	2.5	2.5	2.0	1.9	1.9	2.0	2.0	2.2	2.2	2.2	2.0	1.8	
Priv. dom. final purch. <i>Previous Tealbook</i>	2.7	2.1	2.5	2.1	2.2	2.9	2.7	2.5	2.4	2.3	2.2	2.0	2.1	2.1	2.0	1.9	2.0	
Personal cons. expend. <i>Previous Tealbook</i>	2.9	2.0	1.9	1.5	1.8	2.5	2.1	1.9	1.9	1.9	1.8	1.8	2.0	2.0	1.9	2.0	1.7	
Durables Nondurables Services	.7	.8	.7	.0	.3	.4	.4	.4	.4	.4	.3	.6	.3	.3	.3	.1	.1	
Residential investment <i>Previous Tealbook</i>	-3	-2	.4	.1	-.1	0	.2	.1	.2	.2	.1	.1	.1	.0	.1	.2	.1	
Nonres. priv. fixed invest. <i>Previous Tealbook</i>	.1	.2	.2	.5	.5	.4	.5	.4	.4	.3	.3	.2	.0	.5	.3	.3	.2	
Equipment & intangibles <i>Previous Tealbook</i>	.1	.0	.2	.5	.3	.4	.3	.4	.3	.3	.3	.2	.0	.4	.3	.3	.2	
Nonres. structures <i>Previous Tealbook</i>	.2	-.1	.3	.4	.4	.3	.4	.3	.3	.3	.3	.2	.0	.4	.3	.3	.2	
Net exports <i>Previous Tealbook</i>	.2	-.2	.4	.4	.3	.4	.3	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	
Exports Imports	.0	-.3	.3	-.2	.1	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
Gov't. cons. & invest. <i>Previous Tealbook</i>	.2	.9	-1.1	-.5	-.6	-.4	-.4	-.6	-.6	-.6	-.5	-.2	0	-.5	-.5	-.3	-.3	
Federal Defense Nondefense State & local	.2	.8	-.6	-.7	-.7	-.4	-.6	-.5	-.5	-.4	-.2	-.1	-.6	-.6	-.5	-.5	-.3	
Change in priv. inventories <i>Previous Tealbook</i>	-1.2	.5	.2	.4	.1	-.1	-.2	.1	.1	.0	.0	.0	-.2	-.1	0	-.1	-.1	

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)

Class II FOMC – Restricted (FR)

Authorized for Public Release

January 23, 2017

Item	2016				2017				2018				2019 <sup>1</sup>			
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2016 <sup>1</sup>	2017 <sup>1</sup>	2018 <sup>1</sup>	2019 <sup>1</sup>	
GDP chain-wt. price index	2.3	1.4	2.5	2.4	1.7	1.7	2.0	2.0	1.9	1.9	1.7	1.9	1.9	1.9	2.0	2.0
<i>Previous Tealbook</i>	2.3	1.4	2.6	2.0	2.0	1.8	2.0	2.0	1.9	1.9	1.7	1.9	1.9	1.9	2.0	2.0
PCE chain-wt. price index	2.0	1.5	2.1	2.2	1.4	1.6	1.6	1.8	1.8	1.7	1.8	1.5	1.7	1.8	1.8	1.9
<i>Previous Tealbook</i>	2.0	1.4	2.3	1.8	1.7	1.6	1.9	1.8	1.7	1.8	1.5	1.5	1.7	1.8	1.8	1.9
Energy	15.5	2.1	32.8	15.8	-6.0	-.5	-.1	.3	-.1	-.2	.1	2.1	2.0	.1	.6	.6
<i>Previous Tealbook</i>	15.5	2.1	30.9	5.6	1.4	.8	.7	.9	.4	.2	.3	1.7	2.1	.4	.8	.8
Food	-1.8	-2.1	-1.2	1.1	2.1	2.3	2.0	2.2	2.2	2.2	2.2	-1.7	1.9	2.2	2.2	2.2
<i>Previous Tealbook</i>	-1.8	-2.1	-.5	1.2	1.4	1.9	2.1	2.2	2.2	2.2	2.2	-1.5	1.7	2.2	2.2	2.2
Ex. food & energy	1.8	1.7	1.2	1.7	1.7	1.6	1.6	1.9	1.9	1.8	1.8	1.7	1.7	1.9	2.0	2.0
<i>Previous Tealbook</i>	1.8	1.7	1.4	1.7	1.7	1.6	1.6	1.9	1.9	1.8	1.8	1.7	1.7	1.8	1.9	1.9
Ex. food & energy, market based	1.6	1.1	1.5	1.6	1.5	1.5	1.5	1.8	1.8	1.8	1.8	1.5	1.6	1.8	1.9	1.9
<i>Previous Tealbook</i>	1.6	1.6	1.3	1.6	1.6	1.5	1.5	1.8	1.8	1.7	1.7	1.5	1.6	1.8	1.9	1.9
CPI	2.5	1.6	3.4	3.2	1.9	2.2	2.2	2.3	2.2	2.2	2.2	1.8	2.4	2.2	2.3	2.3
<i>Previous Tealbook</i>	2.5	1.6	3.4	2.5	2.2	2.2	2.2	2.3	2.2	2.2	2.2	1.8	2.4	2.2	2.3	2.3
Ex. food & energy	2.1	1.9	2.0	2.6	2.4	2.3	2.3	2.4	2.4	2.4	2.4	2.2	2.4	2.4	2.5	2.5
<i>Previous Tealbook</i>	2.1	1.9	1.9	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.4
ECI, hourly compensation <sup>2</sup>	2.3	1.9	2.2	2.5	2.3	2.3	2.3	2.4	2.4	2.5	2.5	2.2	2.3	2.4	2.5	2.5
<i>Previous Tealbook</i>	2.3	1.9	2.2	2.3	2.3	2.3	2.3	2.4	2.4	2.5	2.5	2.2	2.3	2.4	2.4	2.5
Business sector																
Output per hour																
<i>Previous Tealbook</i>																
Compensation per hour																
<i>Previous Tealbook</i>																
Unit labor costs																
<i>Previous Tealbook</i>																
Core goods imports chain-wt. price index <sup>3</sup>	.5	2.0	-.5	-.3	1.0	1.4	.9	.8	.7	.7	.7	-.1	.8	.7	.7	.7
<i>Previous Tealbook</i>	.5	2.1	-.1	-.4	.5	1.0	.8	.7	.7	.7	.7	.1	.5	.7	.7	.7

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	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
GDP chain-wt. price index <i>Previous Tealbook</i>	1.8	1.9	1.9	1.6	1.5	1.1	1.7	1.9	1.9	2.0
PCE chain-wt. price index <i>Previous Tealbook</i>	1.3	2.7	1.8	1.2	1.2	.4	1.5	1.7	1.8	1.9
Energy <i>Previous Tealbook</i>	6.4	12.0	2.3	-2.5	-6.2	-15.8	2.1	2.0	.1	.6
Food <i>Previous Tealbook</i>	1.3	5.1	1.2	.7	2.7	.3	-1.7	1.9	2.2	2.2
Ex. food & energy <i>Previous Tealbook</i>	1.0	1.9	1.8	1.5	1.6	1.4	1.7	1.7	1.9	2.0
Ex. food & energy; market based <i>Previous Tealbook</i>	.7	1.9	1.5	1.1	1.2	1.1	1.5	1.6	1.8	1.9
CPI <i>Previous Tealbook</i>	1.2	3.3	1.9	1.2	1.2	.4	1.8	2.4	2.2	2.3
Ex. food & energy <i>Previous Tealbook</i>	.6	2.2	1.9	1.7	1.7	2.0	2.2	2.4	2.4	2.5
ECI, hourly compensation <sup>1</sup> <i>Previous Tealbook</i>	2.1	2.2	1.8	2.0	2.3	1.9	2.2	2.3	2.4	2.5
Business sector										
Output per hour <i>Previous Tealbook</i>	1.6	.0	-2	2.0	-.1	.5	.9	1.0	.9	1.0
Compensation per hour <i>Previous Tealbook</i>	1.2	.5	5.8	.0	2.7	3.1	2.5	3.0	3.2	3.4
Unit labor costs <i>Previous Tealbook</i>	-4	.6	6.0	-2.0	2.8	2.6	1.6	2.0	2.3	2.4
Core goods imports chain-wt. price index <sup>2</sup> <i>Previous Tealbook</i>	2.3	4.3	.1	-1.5	.5	-3.3	-1	.8	.7	.7

1. Private-industry workers.

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

## Other Macroeconomic Indicators

Item	2016				2017				2018				2016 <sup>l</sup>	2017 <sup>l</sup>	2018 <sup>l</sup>	2019 <sup>l</sup>
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1				
<i>Employment and production</i>																
Nonfarm payroll employment <sup>2</sup>	.5	.6	.5	.5	.6	.6	.6	.6	.5	.5	.5	.5	2.3	2.2	2.0	1.5
Unemployment rate <sup>3</sup>	4.9	4.9	4.7	4.7	4.6	4.6	4.5	4.4	4.3	4.2	4.2	4.1	4.2	4.3	4.3	4.2
<i>Previous Tealbook</i> <sup>3</sup>	4.9	4.9	4.8	4.7	4.6	4.5	4.5	4.4	4.3	4.2	4.2	4.1	4.3	4.3	4.3	4.2
Natural rate of unemployment <sup>3</sup>	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
<i>Previous Tealbook</i> <sup>3</sup>	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Employment-to-Population Ratio <sup>3</sup>	59.7	59.8	59.7	59.8	59.7	59.8	59.7	59.7	59.7	59.7	59.7	59.7	59.7	59.7	59.7	59.4
Employment-to-Population Trend <sup>3</sup>	59.7	59.6	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>	.0	.3	.4	.6	.6	.9	1.1	1.2	1.3	1.4	1.5	1.4	1.1	1.5	1.7	1.7
<i>Previous Tealbook</i> <sup>4</sup>	.0	.2	.3	.5	.6	.8	1.0	1.1	1.2	1.3	1.4	1.3	.3	1.0	1.4	1.6
Industrial production <sup>5</sup>	-.8	1.8	-.6	1.5	1.1	.3	.6	.9	.7	.5	1.1	1.1	-.3	.9	.8	1.0
<i>Previous Tealbook</i> <sup>5</sup>	-.8	2.0	-.2	1.4	.5	.5	.6	.9	.9	.7	.7	.7	-.4	.8	1.0	1.1
Manufacturing industr. prod. <sup>5</sup>	-1.1	.2	.7	.2	1.1	.3	.3	.4	.6	.7	.7	.7	.0	.5	.6	.9
<i>Previous Tealbook</i> <sup>5</sup>	-1.1	.5	.7	.3	.1	.4	.3	.6	.8	1.0	1.0	1.0	.1	.3	.8	1.0
Capacity utilization rate - mfg. <sup>3</sup>	74.9	74.8	74.8	74.7	74.7	74.6	74.5	74.4	74.4	74.4	74.4	74.4	74.8	74.5	74.4	74.6
<i>Previous Tealbook</i> <sup>3</sup>	74.9	74.9	74.9	74.8	74.7	74.6	74.5	74.4	74.4	74.4	74.4	74.4	74.9	74.5	74.5	74.8
Housing starts <sup>6</sup>	1.2	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.3	1.3
Light motor vehicle sales <sup>6</sup>	17.1	17.5	18.0	17.4	17.2	17.0	16.9	16.9	16.9	16.8	16.8	16.8	17.5	17.1	16.8	16.6
<i>Income and saving</i>																
Nominal GDP <sup>5</sup>	3.7	5.0	4.6	4.5	3.4	4.2	4.1	4.1	4.0	3.8	3.9	3.6	4.0	4.0	3.9	3.9
Real disposable pers. income <sup>5</sup>	2.9	2.6	.9	3.2	2.5	7.6	1.7	2.8	2.2	1.9	2.5	2.1	3.7	2.4	2.5	2.5
<i>Previous Tealbook</i> <sup>5</sup>	2.9	2.7	1.8	2.9	2.3	7.9	2.2	2.8	2.1	2.7	2.4	2.4	3.8	2.4	2.4	2.4
Personal saving rate <sup>3</sup>	5.9	5.8	5.4	5.6	5.6	6.5	6.2	6.1	6.0	5.8	5.8	5.4	6.2	5.8	5.7	5.7
<i>Previous Tealbook</i> <sup>3</sup>	5.9	5.9	5.8	5.9	5.9	6.8	6.6	6.5	6.4	6.3	6.3	6.3	6.6	6.3	6.3	6.2
Corporate profits <sup>7</sup>	-2.4	25.4	15.0	4.2	1.9	.9	.8	1.4	2.3	1.5	1.7	12.6	2.0	1.7	1.8	1.8
Profit share of GNP <sup>3</sup>	10.8	11.3	11.6	11.6	11.6	11.6	11.5	11.4	11.3	11.3	11.2	11.2	11.6	11.4	11.2	11.0
Gross national saving rate <sup>3</sup>	18.2	18.5	18.6	18.6	18.7	18.4	18.3	18.1	18.1	17.9	17.9	18.6	18.3	17.9	17.5	17.5
Net national saving rate <sup>3</sup>	3.1	3.6	3.9	3.9	4.0	3.7	3.5	3.3	3.3	3.1	3.0	3.0	3.9	3.5	3.0	2.4

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	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Employment and production</i>										
Nonfarm payroll employment <sup>1</sup>	.8	2.0	2.1	2.4	2.8	2.8	2.3	2.2	2.0	1.5
Unemployment rate <sup>2</sup>	9.5	8.7	7.8	7.0	5.7	5.0	4.7	4.5	4.2	4.1
<i>Previous Tealbook</i> <sup>2</sup>	9.5	8.7	7.8	7.0	5.7	5.0	4.8	4.5	4.3	4.2
Natural rate of unemployment <sup>2</sup>	5.9	5.9	5.6	5.4	5.1	5.0	5.0	5.0	5.0	5.0
<i>Previous Tealbook</i> <sup>2</sup>	5.9	5.9	5.6	5.4	5.1	5.0	5.0	5.0	5.0	5.0
Employment-to-Population Ratio <sup>2</sup>	58.3	58.5	58.7	58.5	59.2	59.4	59.7	59.8	59.7	59.4
Employment-to-Population Trend <sup>2</sup>	61.1	60.7	60.3	60.2	60.1	59.9	59.6	59.3	59.0	58.7
GDP gap <sup>3</sup>	-4.2	-3.7	-3.7	-2.5	-2.5	-9	0	4	1.1	1.5
<i>Previous Tealbook</i> <sup>3</sup>	-4.2	-3.7	-3.7	-2.5	-2.5	-9	0	3	1.0	1.4
Industrial production <sup>4</sup>	5.9	2.6	2.3	2.0	3.5	-1.6	-3	.9	.8	1.0
<i>Previous Tealbook</i> <sup>4</sup>	5.9	2.6	2.3	2.0	3.5	-1.6	-4	.8	1.0	1.1
Manufacturing industr. prod. <sup>4</sup>	5.9	2.5	1.7	.8	2.0	0	0	.5	.6	.9
<i>Previous Tealbook</i> <sup>4</sup>	5.9	2.5	1.7	.8	2.0	0	1	.3	.8	1.0
Capacity utilization rate - mfg. <sup>2</sup>	72.4	74.4	74.3	74.6	76.0	75.4	74.8	74.5	74.4	74.6
<i>Previous Tealbook</i> <sup>2</sup>	72.4	74.4	74.3	74.6	76.0	75.4	74.9	74.5	74.5	74.8
Housing starts <sup>5</sup>	.6	12.7	14.4	.8	.9	1.0	1.1	1.2	1.3	1.3
Light motor vehicle sales <sup>5</sup>	11.6	12.7	14.4	15.5	16.5	17.4	17.5	17.1	16.8	16.6
<i>Income and saving</i>										
Nominal GDP <sup>4</sup>	4.6	3.6	3.2	4.3	4.1	3.0	3.6	4.0	4.0	3.9
Real disposable pers. income <sup>4</sup>	2.6	1.7	5.1	-2.8	4.5	3.0	2.1	3.7	2.4	2.5
<i>Previous Tealbook</i> <sup>4</sup>	2.6	1.7	5.1	-2.8	4.5	3.0	2.4	3.8	2.4	2.4
Personal saving rate <sup>2</sup>	5.5	5.8	9.2	4.7	5.6	6.0	5.4	6.2	5.8	5.7
<i>Previous Tealbook</i> <sup>2</sup>	5.5	5.8	9.2	4.7	5.6	6.0	5.8	6.6	6.3	6.2
Corporate profits <sup>6</sup>	18.0	6.8	.6	4.7	6.6	-11.2	12.6	2.0	1.7	1.8
Profit share of GNP <sup>2</sup>	12.0	12.3	12.0	12.0	12.4	10.7	11.6	11.4	11.2	11.0
Gross national saving rate <sup>2</sup>	15.2	16.1	18.0	18.2	19.2	18.8	18.6	18.3	17.9	17.5
Net national saving rate <sup>2</sup>	-.3	.8	2.9	3.1	4.3	3.9	3.9	3.5	3.0	2.4

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.

4. 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)

Class II FOMC – Restricted (FR)

Authorized for Public Release

January 23, 2017

Item	Fiscal year				2016				2017				2018			
	2016	2017	2018	2019	Q1 <sup>a</sup>	Q2 <sup>a</sup>	Q3 <sup>a</sup>	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Unified budget</b>																
Receipts	3,267	3,353	3,429	3,592	711	993	798	741	737	1,078	797	758	741	1,091	839	813
Outlays	3,854	3,975	4,148	4,441	956	932	984	949	1,058	991	977	1,024	1,103	1,050	972	1,125
Surplus/deficit	-587	-622	-720	-849	-245	61	-186	-208	-322	88	-180	-266	-362	41	-133	-313
<i>Previous Tealbook</i>	-587	-591	-716	-832	-245	61	-186	-187	-317	87	-175	-261	-367	38	-127	-306
Means of financing:																
Borrowing	1,052	398	865	970	251	8	241	259	-128	30	236	310	398	-8	165	343
Cash decrease	-155	180	-25	-2	20	-50	10	-46	314	-62	-27	-13	-7	-3	-2	-1
Other <sup>1</sup>	-310	44	-120	-120	-25	-18	-65	-113	135	-56	-30	-30	-30	-30	-30	-30
Cash operating balance, end of period	353	173	198	200	314	364	353	399	85	147	173	187	193	197	198	199
<b>NIPA federal sector</b>																
Receipts	3,495	3,560	3,597	3,762	3,442	3,485	3,536	3,557	3,593	3,624	3,467	3,508	3,586	3,629	3,665	3,707
Expenditures	4,124	4,291	4,502	4,763	4,111	4,137	4,189	4,201	4,293	4,311	4,360	4,386	4,498	4,540	4,585	4,640
Consumption expenditures	974	1,011	1,036	1,043	969	975	985	994	1,010	1,017	1,023	1,029	1,036	1,038	1,040	1,040
Defense	589	603	613	615	587	586	591	596	602	605	607	609	614	614	615	614
Nondefense	386	408	423	428	382	389	394	398	407	412	416	420	422	424	426	426
Other spending	3,150	3,280	3,466	3,720	3,142	3,163	3,204	3,284	3,293	3,337	3,357	3,462	3,502	3,545	3,600	3,600
Current account surplus	-629	-731	-905	-1,001	-668	-652	-653	-644	-701	-687	-893	-878	-912	-911	-920	-933
Gross investment	266	275	282	285	265	265	267	270	274	277	279	280	282	282	283	283
Gross saving less gross investment <sup>2</sup>	-624	-734	-913	-1,011	-662	-646	-648	-642	-702	-691	-899	-885	-920	-920	-929	-941
<b>Fiscal indicators</b>																
High-employment (HEB) surplus/deficit <sup>3</sup>	-637.4	-782.7	-1,005.4	-1,132.7	-670.3	-658.2	-673.5	-680.4	-744.6	-744.0	-961.7	-961.8	-1,006.0	-1,017.7	-1,036.3	-1,058.1
Change in HEB, percent of potential GDP	.4	.6	1.0	.4	.7	-.1	.1	.0	.3	.0	.1	.0	.2	.0	.0	.1
Fiscal impetus (FI), percent of GDP <sup>4</sup>	.3	.5	.3	.3	.5	-.1	.3	.6	.4	.4	.9	.5	.4	.3	.3	.3
<i>Previous Tealbook</i>	.3	.5	.3	.3	.5	-.1	.3	.6	.4	.4	.9	.5	.4	.3	.3	.3
Federal purchases	.0	.1	.2	.1	.0	-.1	.0	.2	.2	.2	.1	.1	.0	.0	-.1	-.1
State and local purchases	.1	.2	.3	.2	.1	.4	-.3	.0	.3	.2	.1	.1	.1	.1	.1	.1
Taxes and transfers	.2	.3	.2	.3	.2	.2	.2	.2	.1	.1	.7	.3	.2	.2	.2	.2

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	2016				2017				Projected 2018			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Real GDP<sup>1</sup></b>												
Total foreign	2.5	1.3	2.9	2.3	2.4	2.5	2.5	2.6	2.6	2.6	2.6	2.6
<i>Previous Tealbook</i>												
Advanced foreign economies	2.4	.3	2.2	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.7
Canada	2.7	-1.3	3.5	2.0	2.2	2.1	1.9	1.9	1.9	1.9	1.9	1.7
Japan	2.8	1.8	1.3	1.1	1.2	1.2	.9	.9	.9	.9	.8	.8
United Kingdom	1.4	2.6	2.3	1.9	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7
Euro area	2.0	1.2	1.4	1.9	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8
Germany	2.9	1.7	.8	2.9	2.1	1.9	1.8	1.8	1.7	1.6	1.6	1.6
Emerging market economies	2.6	2.1	3.6	2.8	2.9	3.2	3.2	3.3	3.4	3.4	3.4	3.4
Asia	4.2	5.1	4.9	4.6	4.6	4.7	4.6	4.6	4.5	4.5	4.5	4.4
Korea	2.1	3.2	2.5	2.4	2.7	3.0	3.1	3.0	3.0	3.0	3.0	3.0
China	6.5	7.1	6.8	6.7	6.4	6.2	6.1	6.0	5.9	5.9	5.8	5.8
Latin America	.9	-6	2.6	1.4	1.5	2.0	2.0	2.3	2.5	2.4	2.5	2.5
Mexico	1.9	.2	4.0	2.0	1.6	1.9	2.2	2.4	2.4	2.4	2.5	2.5
Brazil	-1.8	-1.7	-3.3	-1.0	.8	1.6	2.0	2.0	2.1	2.1	2.1	2.1
<i>Consumer prices<sup>2</sup></i>												
Total foreign	1.4	2.1	1.6	2.4	2.8	2.6	2.6	2.5	2.5	2.5	2.4	2.5
<i>Previous Tealbook</i>												
Advanced foreign economies	1.6	2.0	1.7	2.2	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5
Canada	-.3	1.2	.7	1.4	1.7	1.6	1.5	1.5	1.5	1.5	1.6	1.6
Japan	.9	2.3	.9	1.5	2.1	2.1	1.9	1.8	1.9	1.9	1.9	1.9
United Kingdom	-.5	-.5	-.9	.2	.6	.9	1.0	1.1	1.1	1.1	1.2	1.3
Euro area	.1	.9	1.9	2.0	3.6	3.0	2.6	2.3	2.1	2.0	2.0	2.0
Germany	-1.2	1.2	1.1	1.9	1.6	1.3	1.3	1.4	1.4	1.4	1.5	1.5
Emerging market economies	-1.0	1.3	1.2	1.9	1.6	1.6	1.6	1.7	1.8	1.8	1.9	1.9
Asia	2.7	2.7	2.2	3.1	3.6	3.3	3.2	3.2	3.1	3.1	3.1	3.1
Korea	2.1	2.3	1.2	2.7	2.3	2.6	2.7	2.7	2.8	2.8	2.8	2.8
China	.5	1.0	.4	4.0	1.7	2.5	2.4	2.4	2.8	3.0	3.0	3.0
Latin America	2.5	2.3	1.3	2.6	2.2	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Mexico	4.3	3.9	4.5	4.5	6.9	4.3	4.1	4.0	3.9	3.8	3.8	3.8
Brazil	2.8	2.4	3.6	4.1	6.5	4.2	3.5	3.4	3.2	3.2	3.2	3.2
	11.8	7.5	6.5	2.6	4.4	5.4	5.2	5.2	5.0	4.9	4.9	4.7

<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)

Class II FOMC – Restricted (FR)

Authorized for Public Release

January 23, 2017

Measure and country	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Real GDP<sup>1</sup></b>									
Total foreign	3.2	2.3	2.9	2.5	1.9	2.3	2.5	2.6	2.6
<i>Previous Tealbook</i>	3.2	2.3	2.9	2.5	1.9	2.2	2.5	2.6	2.6
Advanced foreign economies	1.8	.3	2.4	1.8	1.2	1.7	1.8	1.7	1.7
Canada	3.1	.7	3.6	2.2	.4	1.7	2.0	1.8	1.9
Japan	.1	.3	2.7	-.3	1.2	1.8	1.1	.9	.1
United Kingdom	1.3	1.3	2.4	3.5	1.7	2.0	1.6	1.6	1.7
Euro area	.5	-1.1	.7	1.3	2.0	1.6	1.7	1.8	1.9
Germany	2.4	.2	1.6	1.6	1.3	2.0	1.9	1.6	1.6
Emerging market economies	4.6	4.3	3.4	3.3	2.7	2.8	3.2	3.4	3.5
Asia	5.1	5.7	5.3	5.0	4.4	4.7	4.6	4.5	4.4
Korea	2.9	2.1	3.5	2.7	3.1	2.5	2.9	3.0	2.9
China	8.7	8.0	7.6	7.1	6.8	6.8	6.2	5.8	5.7
Latin America	4.1	3.3	1.6	1.9	1.3	1.1	2.0	2.5	2.7
Mexico	4.2	3.4	1.1	2.7	2.5	2.0	1.9	2.5	2.8
Brazil	2.6	2.5	2.6	-.3	-5.8	-2.0	1.6	2.1	2.2
<i>Consumer prices<sup>2</sup></i>									
Total foreign	3.4	2.3	2.4	2.0	1.4	1.9	2.6	2.5	2.6
<i>Previous Tealbook</i>	3.4	2.3	2.4	2.0	1.4	1.9	2.4	2.5	2.6
Advanced foreign economies	2.2	1.3	1.0	1.1	.5	.8	1.6	1.6	1.9
Canada	2.7	1.0	1.0	1.9	1.3	1.4	1.9	1.9	2.0
Japan	-.3	-.2	1.4	2.5	.3	-.5	.9	1.2	2.5
United Kingdom	4.6	2.6	2.1	.9	.1	1.2	2.9	2.0	1.9
Euro area	2.9	2.3	.8	.1	.2	.7	1.4	1.5	1.6
Germany	2.6	1.9	1.4	.4	.2	.8	1.6	1.8	1.9
Emerging market economies	4.3	3.1	3.4	2.7	2.1	2.7	3.3	3.1	3.1
Asia	4.4	2.6	3.1	1.8	1.5	2.1	2.6	2.8	2.9
Korea	3.9	1.7	1.1	1.0	.9	1.5	2.3	3.0	3.0
China	4.6	2.1	2.9	1.5	1.5	2.2	2.5	2.5	2.5
Latin America	4.1	4.4	4.1	4.8	3.4	4.3	5.0	3.9	3.6
Mexico	3.5	4.1	3.6	4.2	2.3	3.2	4.4	3.2	3.2
Brazil	6.7	5.6	5.8	6.5	10.4	7.1	5.0	4.9	4.5

<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**

	<i>Billions of dollars, s.a.a.r.</i>								<i>Projected</i>			
	2016				2017				2018			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>U.S. current account balance</b>												
<i>Previous Tealbook</i>	<b>-527.4</b>	<b>-473.1</b>	<b>-451.8</b>	<b>-486.3</b>	<b>-537.9</b>	<b>-540.7</b>	<b>-582.9</b>	<b>-626.6</b>	<b>-687.4</b>	<b>-702.3</b>	<b>-739.9</b>	<b>-771.6</b>
Current account as percent of GDP	-2.9	-2.6	-2.4	-2.6	-2.8	-2.8	-3.0	-3.2	-3.5	-3.5	-3.7	-3.8
<i>Previous Tealbook</i>	<b>-527.4</b>	<b>-477.5</b>	<b>-452.2</b>	<b>-480.9</b>	<b>-543.8</b>	<b>-545.4</b>	<b>-589.1</b>	<b>-626.1</b>	<b>-688.0</b>	<b>-698.7</b>	<b>-728.8</b>	<b>-758.1</b>
Net goods & services	-2.9	-2.6	-2.4	-2.5	-2.9	-2.8	-3.0	-3.2	-3.5	-3.5	-3.6	-3.7
Investment income, net	-500.9	-499.0	-465.7	-506.6	-544.0	-559.3	-590.3	-619.5	-657.9	-671.4	-693.9	-713.0
Direct, net	147.0	188.2	184.9	186.6	181.3	182.7	177.7	159.2	145.7	133.2	124.3	107.6
Portfolio, net	219.6	256.3	260.6	250.3	255.4	271.8	284.5	285.8	292.6	300.8	313.7	318.8
Other income and transfers, net	-72.6	-68.1	-75.7	-63.8	-74.1	-89.1	-106.8	-126.6	-146.9	-167.6	-189.4	-211.2
<i>Annual Data</i>												
<b>U.S. current account balance</b>	<b>-460.4</b>	<b>-446.5</b>	<b>-366.4</b>	<b>-392.1</b>	<b>-463.0</b>	<b>-484.6</b>	<b>-572.0</b>	<b>-725.3</b>	<b>-839.8</b>	<b>-818.4</b>	<b>-718.4</b>	<b>-825.3</b>
<i>Previous Tealbook</i>	<b>-460.4</b>	<b>-446.5</b>	<b>-366.4</b>	<b>-392.1</b>	<b>-463.0</b>	<b>-484.5</b>	<b>-576.1</b>	<b>-725.3</b>	<b>-839.8</b>	<b>-818.4</b>	<b>-718.4</b>	<b>-825.3</b>
Current account as percent of GDP	-3.0	-2.8	-2.2	-2.3	-2.6	-2.6	-2.6	-3.0	-3.6	-3.6	-4.0	-4.0
<i>Previous Tealbook</i>	<b>-460.4</b>	<b>-446.5</b>	<b>-366.4</b>	<b>-392.1</b>	<b>-463.0</b>	<b>-484.6</b>	<b>-572.0</b>	<b>-725.3</b>	<b>-839.8</b>	<b>-818.4</b>	<b>-718.4</b>	<b>-825.3</b>
Net goods & services	-3.0	-2.8	-2.2	-2.3	-2.6	-2.6	-2.6	-3.0	-3.6	-3.6	-3.9	-3.9
Investment income, net	-548.6	-536.8	-461.9	-490.2	-500.4	-493.0	-578.3	-684.1	-740.6	-740.6	-740.6	-740.6
Direct, net	229.0	224.4	228.4	234.3	193.4	176.7	175.2	127.7	69.7	69.7	336.1	336.1
Portfolio, net	298.6	293.8	296.3	289.0	265.4	246.7	274.4	306.5	-266.4	-266.4	-266.4	-266.4
Other income and transfers, net	-69.5	-69.4	-67.9	-54.8	-72.0	-70.0	-99.2	-178.8	-169.0	-169.0	-169.0	-169.0

## Abbreviations

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AFE	advanced foreign economy
BHC	bank holding company
BOE	Bank of England
CDS	credit default swap
C&I	commercial and industrial
CMBS	commercial mortgage-backed securities
CPI	consumer price index
CRE	commercial real estate
DGSE	dynamic stochastic general equilibrium
ECB	European Central Bank
E&I	equipment and intangibles
EME	emerging market economy
EU	European Union
FOMC	Federal Open Market Committee; also, the Committee
FX	foreign exchange
GDP	gross domestic product
JOLTS	Job Openings and Labor Turnover Survey
LFPR	labor force participation rate
LMCI	labor market conditions index
MBS	mortgage-backed securities
MMF	money market fund
Michigan survey	University of Michigan Surveys of Consumers
OIS	overnight index swap
ON RRP	overnight reverse repurchase agreement
OPEC	Organization of the Petroleum Exporting Countries

PCE	personal consumption expenditures
PMI	purchasing managers index
PPI	producer price index
repo	repurchase agreement
RMB	renminbi
SLOOS	Senior Loan Officer Opinion Survey on Bank Lending Practices
SOMA	System Open Market Account
S&P	Standard & Poor's
TIPS	Treasury Inflation-Protected Securities

**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 Alternatives

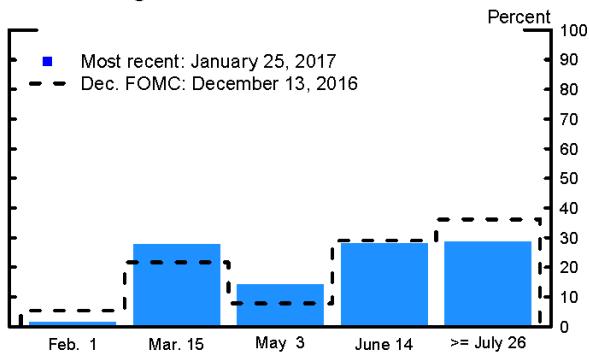
January 26, 2017

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

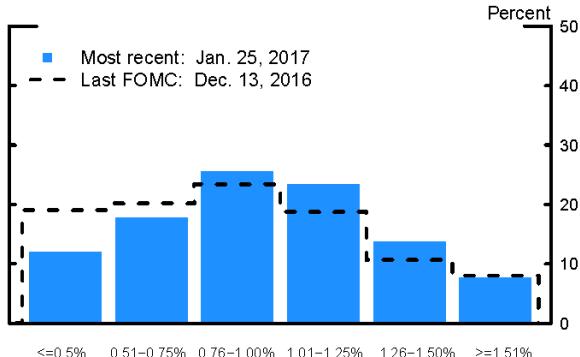
Figure 1: Market-Implied Probability Distribution of the Timing of Next Rate Increase



Note: Probabilities implied by a binomial tree model fitted to settlement prices on fed funds futures contracts, conditional on the next policy action being either no change or an increase in rates. The bar showing the probabilities before the Dec. FOMC statement release assumes the effective federal funds rate before the statement release is equal to the observed rate in the previous business day. The bar showing the probabilities after the FOMC statement release uses one-week OIS quotes to obtain the effective federal funds rate before the next FOMC meeting.

Source: CME Group; Federal Reserve Board staff estimates.

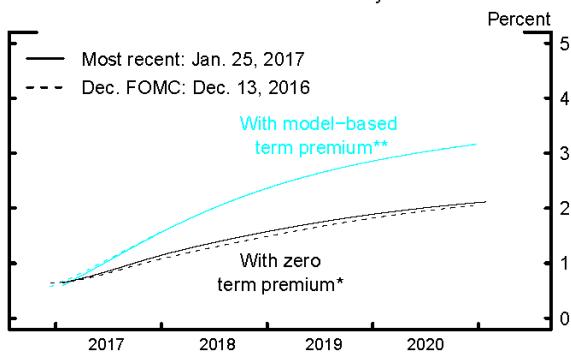
Figure 3: Market-Implied Probability Distribution of the Federal Funds Rate, Year-End 2017



Note: Estimated from Eurodollar futures options, accounting for the differences in the levels and option-implied volatilities of LIBOR and the federal funds rate, but not adjusted for risk premiums.

Source: CME Group; Federal Reserve Board staff estimates.

Figure 5: Market-Implied Rate Expectations with and without Term Premium Adjustment

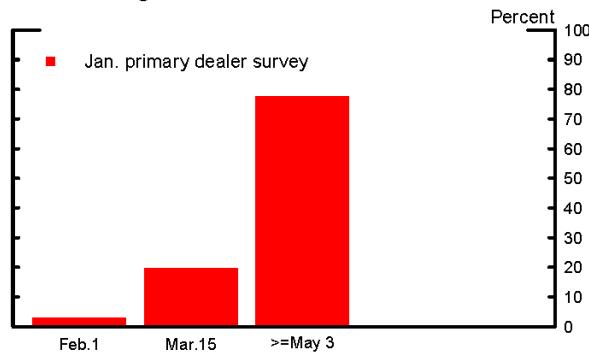


\* Zero term premium path is estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points.

\*\* Model-based term premium path is estimated using a term structure model maintained by Board staff and corrects for term premium.

Source: Bloomberg; Blue Chip Financial Forecasts; Federal Reserve Board staff estimates.

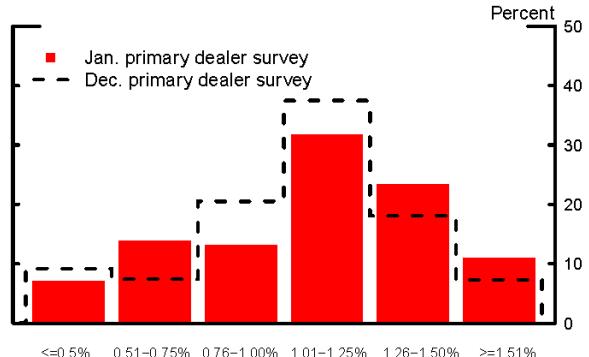
Figure 2: Dealer Survey Probability Distribution of the Timing of Next Rate Increase



Note: Average probabilities across primary dealers, conditional on the next policy action being an increase in rates.

Source: FRBNY.

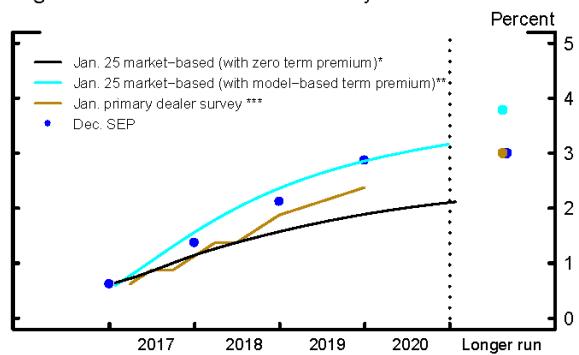
Figure 4: Dealer Survey Probability Distribution of the Federal Funds Rate, Year-End 2017



Note: Average unconditional probabilities across primary dealers for different ranges of the federal funds rate at the end of 2017.

Source: FRBNY.

Figure 6: Federal Funds Rate Projections



\* Zero term premium path is estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points.

\*\* Model-based term premium path is estimated using a term structure model maintained by Board staff and corrects for term premium.

\*\*\* The primary dealer survey path is the median of the dealers' modal paths for the federal funds rate.

Note: The longer-run model-implied forecast is for the expected federal funds rate 5 to 10 years ahead.

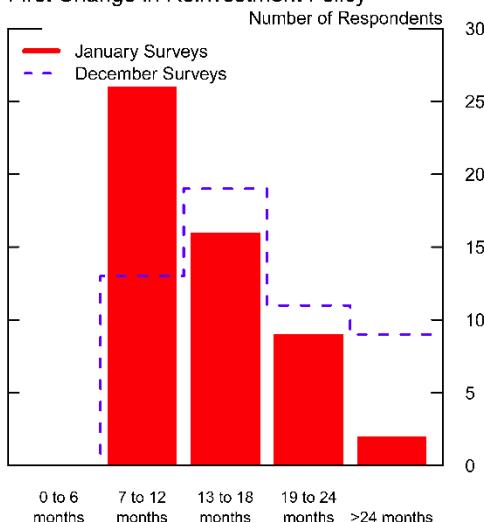
Source: Bloomberg; Blue Chip Financial Forecasts; Federal Reserve Board staff estimates; FRBNY.

## Market Interpretations of the Committee's Reinvestment Policy

The Committee has indicated that it will continue reinvestments until normalization of the level of the federal funds rate is “well under way.” This box provides information on the range of views among market participants about when the Committee will choose to taper or cease reinvestments.

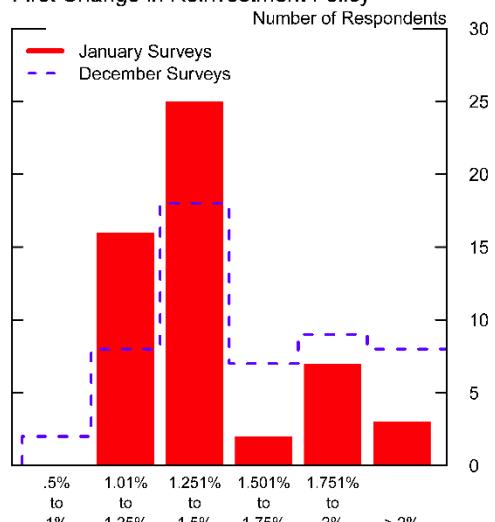
The Desk's Surveys of Primary Dealers and Market Participants include questions that ask for respondents' views about the most likely timing of the first change in the Committee's reinvestment policy. Figure 1 presents a histogram of respondents' expectations for the number of months after the date of the surveys this change will take place.<sup>1</sup> The red bars in the figure indicate that, in the January surveys, nearly half of respondents expect reinvestment policy to be changed within the next 7 to 12 months, and another 30 percent expect the first change in 13 to 18 months. Relative to the December surveys (the dashed blue line), many respondents now expect reinvestment policy to be changed sooner. This shift appears to reflect a reevaluation after the release of the minutes of the December 2016 FOMC meeting, which noted that several FOMC participants had indicated that circumstances that might warrant changes to the path for the federal funds rate could also have implications for reinvestment policy. Subsequent speeches on this topic by policymakers also garnered significant market attention.<sup>2</sup>

Figure 1: Most Likely Months Forward of First Change in Reinvestment Policy



Note: Two (three) respondents in the January (December) surveys who expect reinvestments to continue indefinitely are placed in the >24 months bin. Source: Surveys of Primary Dealer and Market Participants, FRBNY.

Figure 2: Most Likely FFR at Time of First Change in Reinvestment Policy



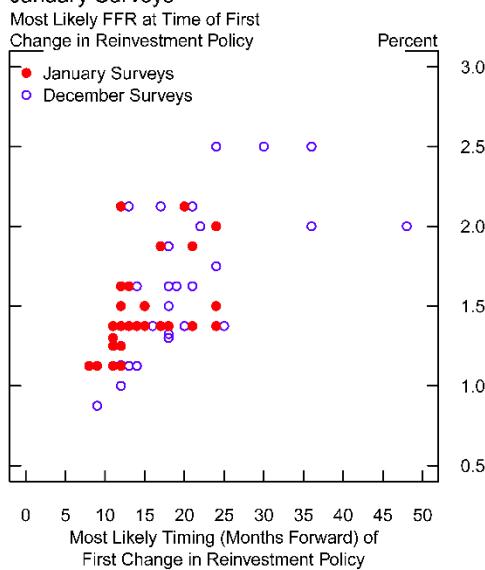
Note: One (one) respondent in the January (December) surveys who expects reinvestments to continue indefinitely is placed in the >2% bin. Source: Surveys of Primary Dealer and Market Participants, FRBNY.

<sup>1</sup> We report the earliest date that respondents indicate a change in either Treasury or MBS reinvestment.

<sup>2</sup> Several respondents cited increased discussion of reinvestment policy in recent Federal Reserve communication as informing the change in their expectations.

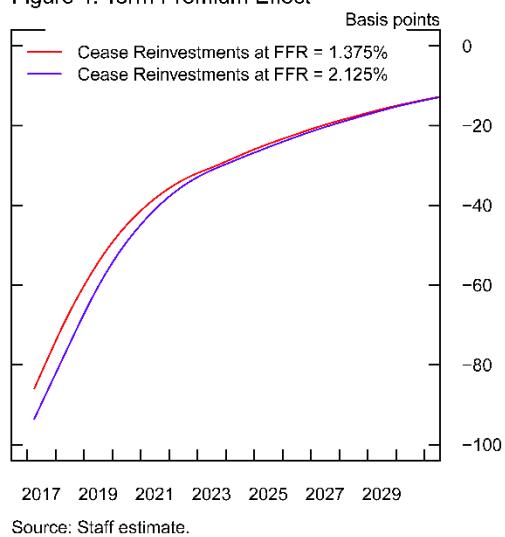
Figure 2 presents a histogram of respondent's expectations for the most likely level of either the target federal funds rate or the midpoint of the target range when reinvestment policy is first changed. In the January surveys, the majority of respondents expect a federal funds rate within the 1 to 1.5 percent range and the median respondent expects a midpoint level of 1.375 percent, in line with the staff's assumptions in the January Tealbook. Relative to the December surveys, most respondents now expect a lower level of the policy rate when reinvestment policy is first changed.

Figure 3: Comparison of December and January Surveys



Note: Respondents who expect reinvestments to continue indefinitely or who participated in only one of the survey months are not included in the chart. Source: Surveys of Primary Dealer and Market Participants, FRBNY.

Figure 4: Term Premium Effect



Source: Staff estimate.

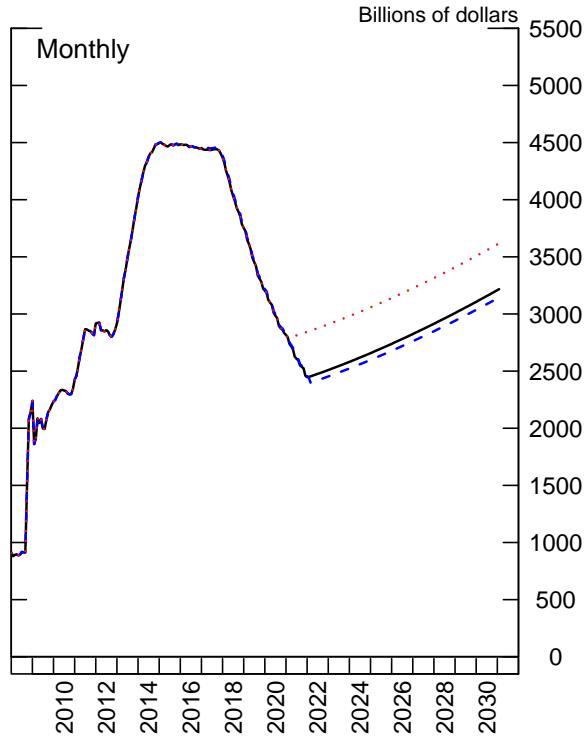
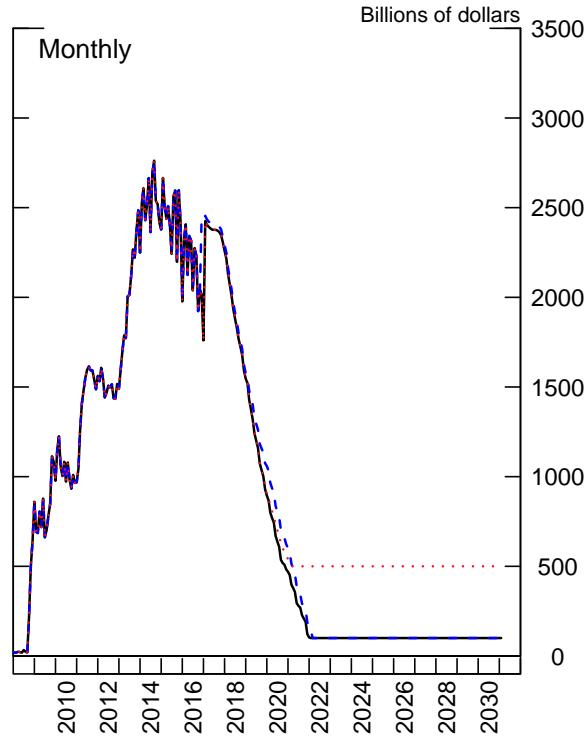
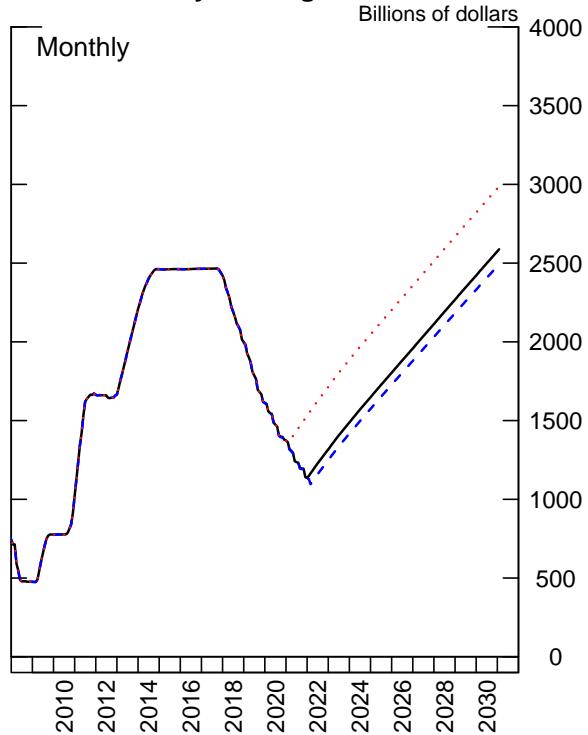
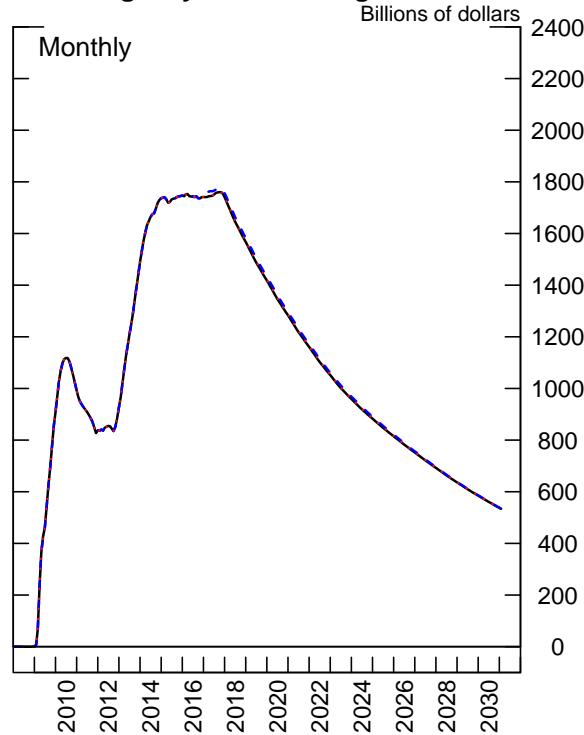
Figure 3 combines respondents' expected number of months until the time of a change in reinvestment policy (horizontal axis) and the most likely level of the target federal fund rate (vertical axis) into a scatterplot. The solid red and hollow blue dots capture the responses from the January and the December surveys, respectively. Overall, the responses suggest that market participants' expectations have started to coalesce in recent weeks, pointing to a lower degree of dispersion in expectations about the timing of the first change in the Committee's reinvestment policy and the concurrent level of the federal funds rate.<sup>3</sup>

Figure 4 illustrates that, based on our usual methodology, there would be at most a modest effect on the staff's estimate for the term premium effect (TPE) if we

<sup>3</sup> The inward shifts of the distributions primarily reflect revisions from the Survey of Market Participants.

## Total Assets and Selected Balance Sheet Items

— \$100 billion reserve     ··· ··· \$500 billion reserve  
 - - - December Tealbook Baseline

**Total Assets****Reserve Balances****SOMA Treasury Holdings****SOMA Agency MBS Holdings**

**Federal Reserve Balance Sheet**  
**End-of-Year Projections -- \$100 billion reserve**  
(Billions of dollars)

	Dec 31, 2016	2017	2019	2021	2023	2025	2030
Total assets	4,453	4,369	3,205	2,446	2,580	2,738	3,208
Selected assets							
Loans and other credit extensions*	7	0	0	0	0	0	0
Securities held outright	4,221	4,167	3,034	2,299	2,450	2,621	3,115
U.S. Treasury securities	2,464	2,421	1,614	1,136	1,488	1,803	2,574
Agency debt securities	16	4	2	2	2	2	2
Agency mortgage-backed securities	1,741	1,741	1,418	1,161	960	815	538
Unamortized premiums	173	160	124	99	81	67	41
Unamortized discounts	-15	-13	-10	-8	-7	-6	-4
Total other assets	47	49	49	49	49	49	49
Total liabilities	4,413	4,328	3,160	2,398	2,528	2,681	3,136
Selected liabilities							
Federal Reserve notes in circulation	1,463	1,551	1,748	1,878	2,011	2,164	2,619
Reverse repurchase agreements	725	357	357	257	257	257	257
Deposits with Federal Reserve Banks	2,217	2,415	1,050	258	255	255	255
Reserve balances held by depository institutions	1,760	2,259	895	103	100	100	100
U.S. Treasury, General Account	399	150	150	150	150	150	150
Other deposits	58	5	5	5	5	5	5
Earnings remittances due to the U.S. Treasury	2	0	0	0	0	0	0
Total capital**	40	41	44	48	53	57	72

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.

**Federal Reserve Balance Sheet**  
**End-of-Year Projections -- \$500 billion reserve**  
(Billions of dollars)

	Dec 31, 2016	2017	2019	2021	2023	2025	2030
Total assets	4,453	4,371	3,209	2,843	2,981	3,139	3,609
Selected assets							
Loans and other credit extensions*	7	0	0	0	0	0	0
Securities held outright	4,221	4,168	3,038	2,696	2,850	3,021	3,516
U.S. Treasury securities	2,464	2,421	1,614	1,529	1,886	2,202	2,975
Agency debt securities	16	4	2	2	2	2	2
Agency mortgage-backed securities	1,741	1,742	1,422	1,164	962	817	539
Unamortized premiums	173	161	125	100	82	68	42
Unamortized discounts	-15	-13	-10	-8	-7	-6	-4
Total other assets	47	49	49	49	49	49	49
Total liabilities	4,413	4,330	3,164	2,795	2,928	3,081	3,537
Selected liabilities							
Federal Reserve notes in circulation	1,463	1,551	1,748	1,878	2,011	2,164	2,620
Reverse repurchase agreements	725	357	349	257	257	257	257
Deposits with Federal Reserve Banks	2,217	2,416	1,062	655	655	655	655
Reserve balances held by depository institutions	1,760	2,261	907	500	500	500	500
U.S. Treasury, General Account	399	150	150	150	150	150	150
Other deposits	58	5	5	5	5	5	5
Earnings remittances due to the U.S. Treasury	2	0	0	0	0	0	0
Total capital**	40	41	44	48	53	57	72

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

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

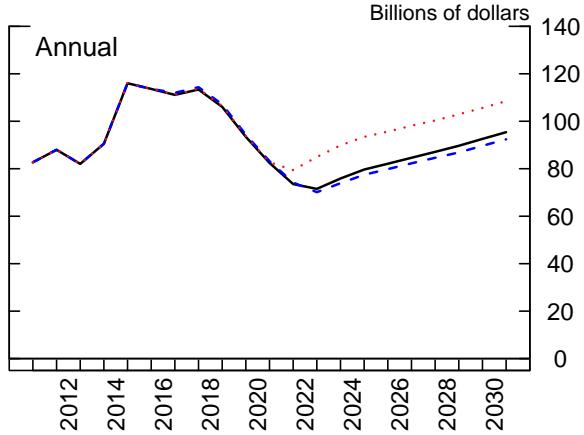
\*Loans and other credit extensions includes primary, secondary, and seasonal credit; central bank liquidity swaps; and net portfolio holdings of Maiden Lane LLC.

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

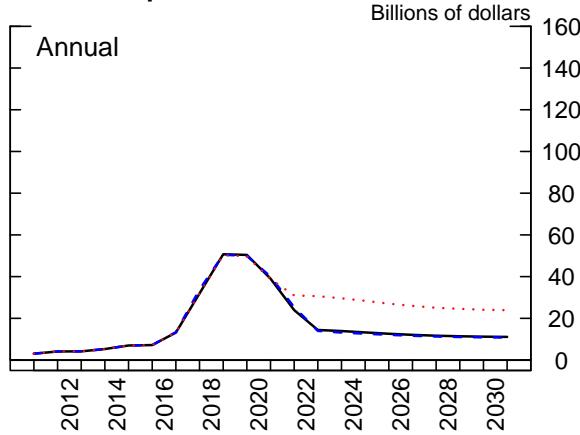
## Income Projections

— \$100 billion reserve      • \$500 billion reserve  
— December Tealbook Baseline

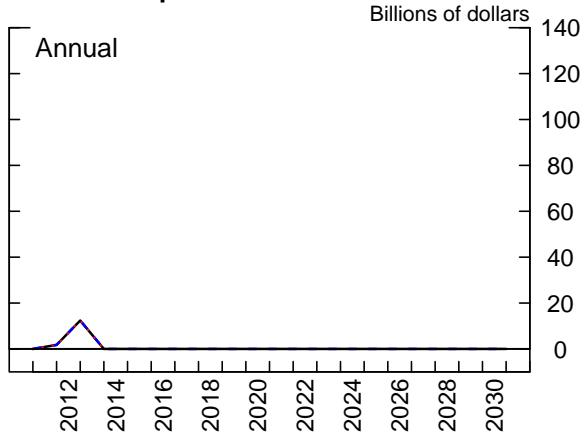
### Interest Income



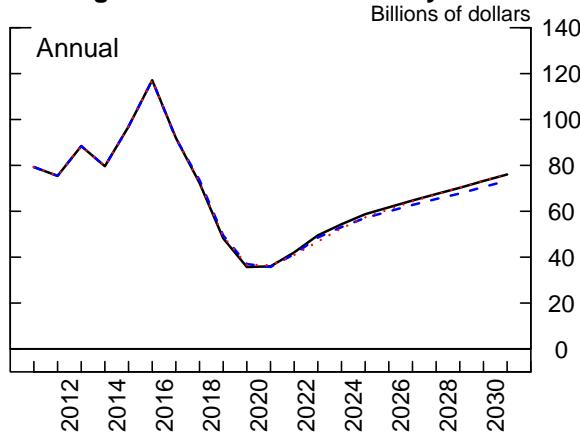
### Interest Expense



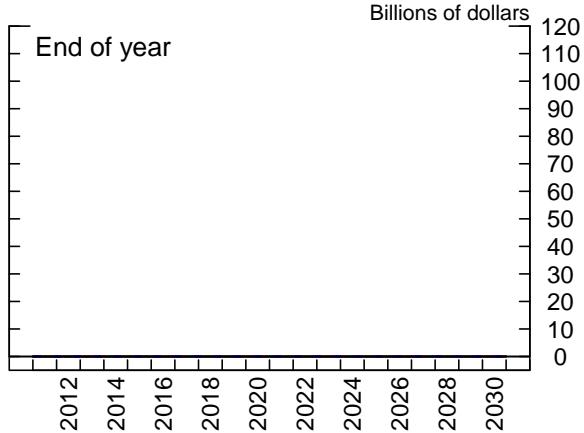
### Realized Capital Gains



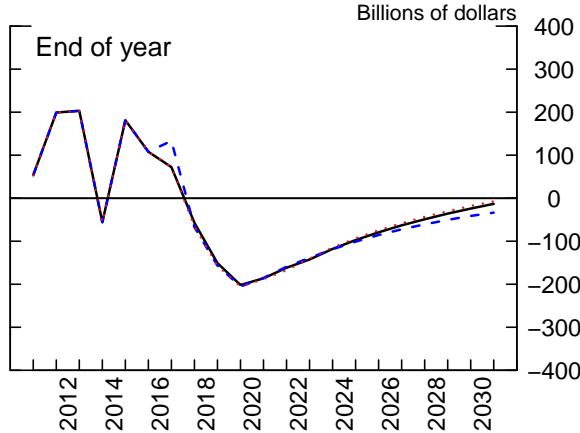
### Earnings Remittances to Treasury



### Deferred Asset



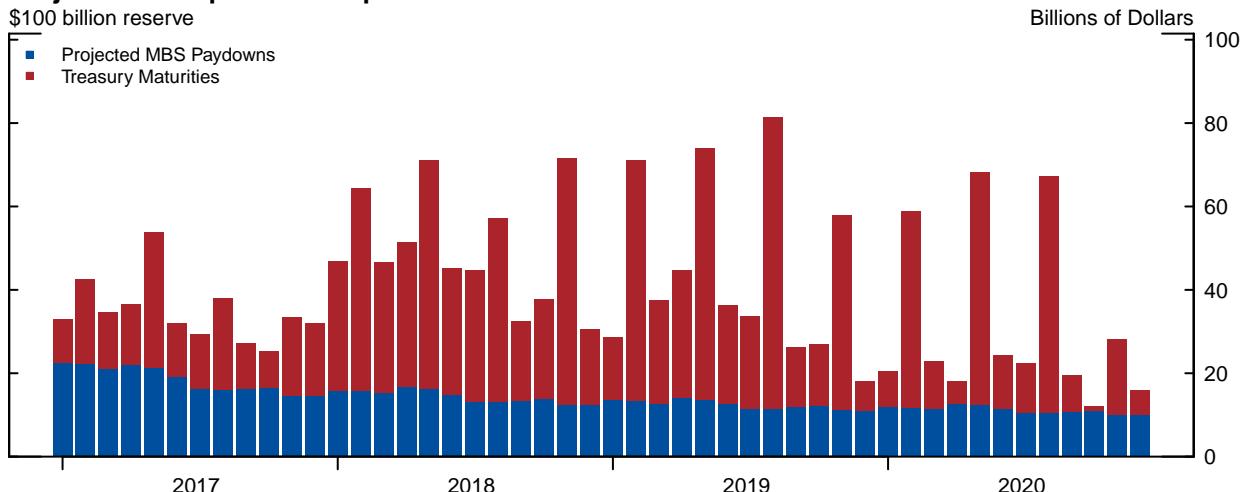
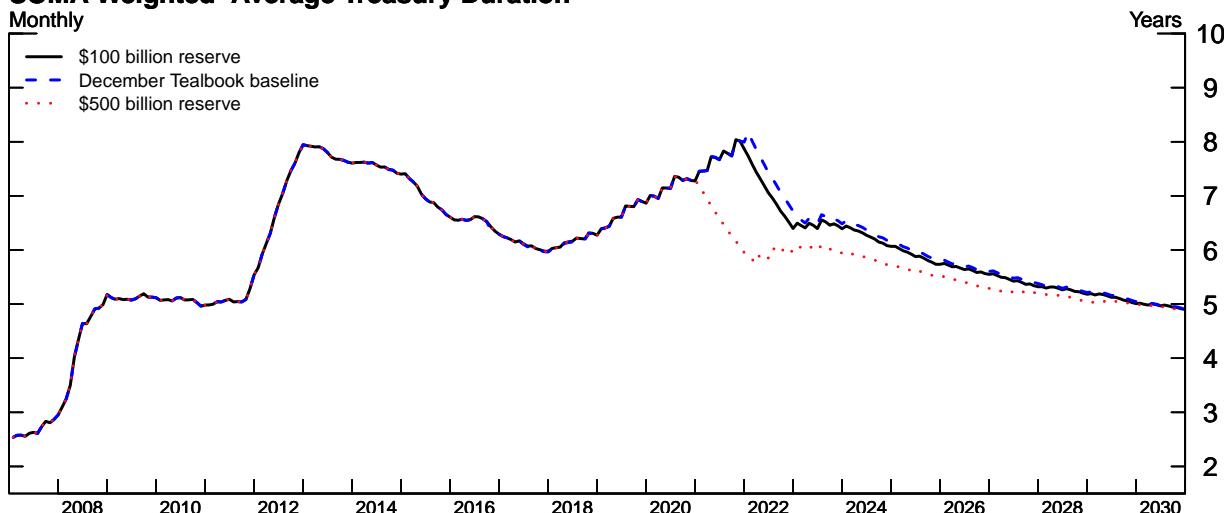
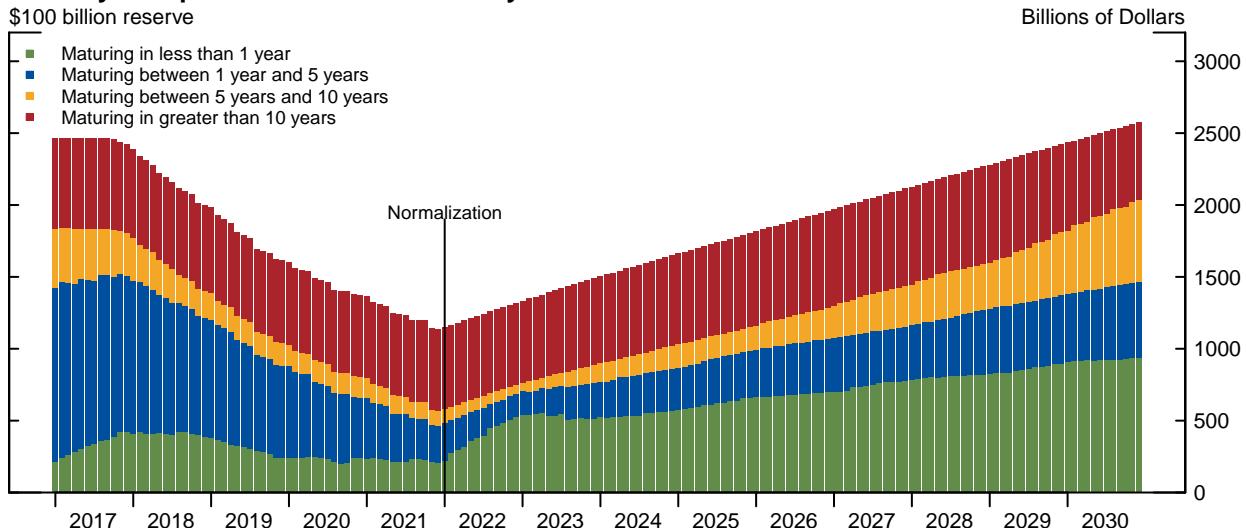
### Memo: Unrealized Gains/Losses



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

Date	\$100 billion reserve	December Tealbook baseline	\$500 billion reserve
Quarterly Averages			
2017:Q1	-86	-87	-76
Q2	-82	-82	-73
Q3	-78	-78	-69
Q4	-74	-74	-65
2018:Q4	-60	-60	-53
2019:Q4	-49	-49	-43
2020:Q4	-41	-41	-37
2021:Q4	-36	-35	-33
2022:Q4	-32	-31	-31
2023:Q4	-29	-28	-28
2024:Q4	-26	-24	-25
2025:Q4	-23	-22	-23
2026:Q4	-21	-19	-21
2027:Q4	-19	-17	-19
2028:Q4	-17	-15	-17
2029:Q4	-15	-13	-16
2030:Q4	-14	-12	-15

## Projections for the Characteristics of SOMA Holdings

**Projected Receipts of Principal on SOMA Securities****SOMA Weighted-Average Treasury Duration****Maturity Composition of SOMA Treasury Portfolio**

## 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
DEDO	section in Tealbook A, “Domestic Economic Developments and Outlook”
Desk	Open Market Desk
ECB	European Central Bank
ELB	effective lower bound
EME	emerging market economy
EU	European Union
FAST Act	Fixing America’s Surface Transportation Act
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
IOER	interest on excess reserves
ISM	Institute for Supply Management
LIBOR	London interbank offered rate

MBS	mortgage-backed securities
MMFs	money market funds
NBER	National Bureau of Economic Research
NI	nominal income
NIPA	national income and product accounts
OIS	overnight index swap
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