

Prefatory Note

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Class II FOMC – Restricted (FR)

Report to the FOMC on Economic Conditions and Monetary Policy



Book A Economic and Financial Conditions: Outlook, Risks, and Policy Strategies

March 3, 2017

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 is below the projections from the Survey of Professional Forecasters (SPF) and the Blue Chip consensus forecast and slightly lower than the Blue Chip in 2018. The staff's forecast for the unemployment rate is a bit above both the Blue Chip and SPF surveys in 2017 and a little below the Blue Chip in 2018. The staff's inflation projection is the same as that of outside forecasters for the CPI but below the SPF forecasts for both overall and core PCE price inflation in 2017 and 2018.

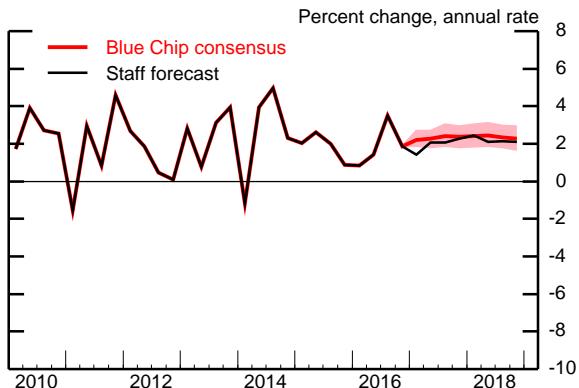
Comparison of Tealbook and Outside Forecasts

	2016	2017	2018
GDP (Q4/Q4 percent change)			
March Tealbook	1.9	2.0	2.2
Blue Chip (2/10/17)	1.9	2.3	2.4
SPF median (2/10/17)	1.9	2.3	n.a.
Unemployment rate (Q4 level)			
March Tealbook	4.7	4.6	4.2
Blue Chip (2/10/17)	4.7	4.5	4.4
SPF median (2/10/17)	4.7	4.5	n.a.
CPI inflation (Q4/Q4 percent change)			
March Tealbook	1.8	2.4	2.3
Blue Chip (2/10/17)	1.8	2.4	2.3
SPF median (2/10/17)	1.8	2.4	2.3
PCE price inflation (Q4/Q4 percent change)			
March Tealbook	1.4	1.7	1.8
SPF median (2/10/17)	1.5	2.0	2.0
Core PCE price inflation (Q4/Q4 percent change)			
March Tealbook	1.7	1.8	1.9
SPF median (2/10/17)	1.7	1.9	2.0

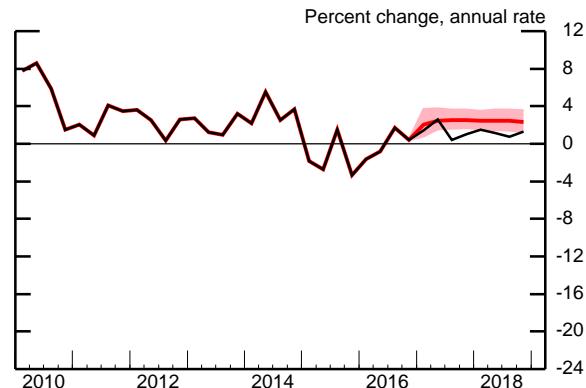
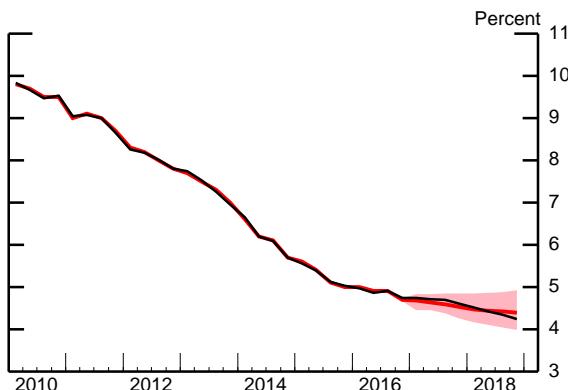
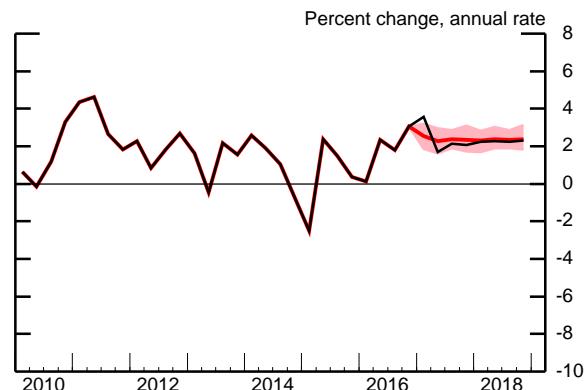
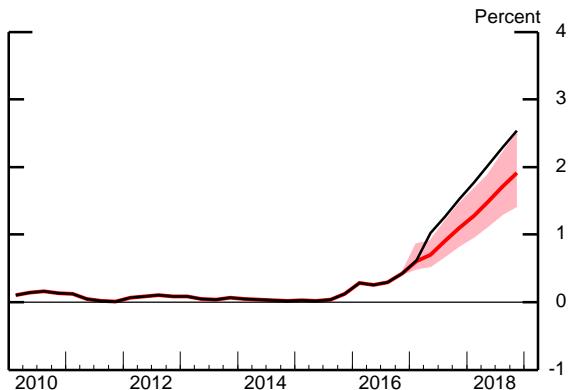
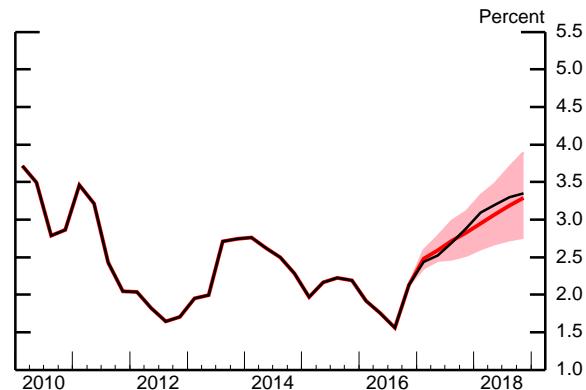
Note: SPF is the Survey of Professional Forecasters, CPI is the consumer price index, and PCE is personal consumption expenditures. Blue Chip does not provide results for PCE price inflation. The Blue Chip consensus forecast includes input from about 50 panelists, and the SPF about 40. Roughly 20 panelists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

Revisions to the Staff Projection since the Previous SEP

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

Since December, we have revised down our projection for real economic activity in 2017 by about the same amount as we have strengthened it in 2018. The downward revision this year reflects our assumption that the fiscal policy expansion that we had been expecting this year will instead materialize next year. In 2018, we have revised up the projection because of a higher stock price path and a weaker dollar as well as the assumed onset of the fiscal expansion. On net, the GDP projection is only a touch stronger since December, and the unemployment rate reaches 4.1 percent at the end of 2019, 0.1 percentage point below our projection in December.

Reflecting the core PCE price data for January, we have revised up our projection for this year to 1.8 percent. Our projection for core PCE inflation has also been revised up slightly in 2018 and 2019, but the forecast for total PCE inflation is little changed: We continue to project that total PCE inflation will move up modestly and reach 1.9 percent by 2019.

With both the outlook for total PCE inflation and the output gap little changed, the funds rate path from the intercept-adjusted inertial Taylor (1999) rule that we use in our baseline forecast is about the same as in December through most of the projection period.

Staff Economic Projections Compared with the December Tealbook

Variable	2016	2017		2017	2018	2019	Longer run
		H1	H2				
Real GDP ¹ December Tealbook	1.9 1.8	1.7 2.1	2.2 2.3	2.0 2.2	2.2 2.0	1.9 1.8	1.7 1.7
Unemployment rate ² December Tealbook	4.7 4.8	4.7 4.7	4.6 4.5	4.6 4.5	4.2 4.3	4.1 4.2	5.0 5.0
PCE inflation ¹ December Tealbook	1.4 1.5	2.0 1.8	1.5 1.6	1.7 1.7	1.8 1.8	1.9 1.9	2.0 2.0
Core PCE inflation ¹ December Tealbook	1.7 1.7	2.0 1.7	1.5 1.6	1.8 1.7	1.9 1.8	2.0 1.9	n.a. n.a.
Federal funds rate ² December Tealbook	.45 .47	.94 .98	1.45 1.49	1.45 1.49	2.46 2.47	3.36 3.30	3.00 3.00
Memo: Federal funds rate, end of period December Tealbook	.63 .54	1.02 1.06	1.53 1.57	1.53 1.57	2.54 2.55	3.42 3.36	3.00 3.00
GDP gap ^{2,3} December Tealbook	.4 .3	.5 .6	.9 1.0	.9 1.0	1.5 1.4	1.7 1.6	n.a. n.a.

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

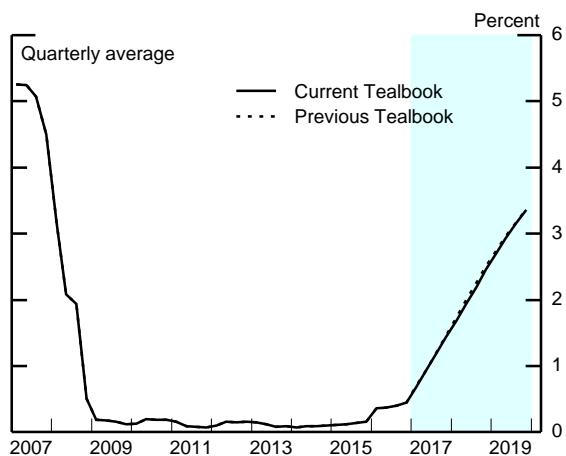
2. Percent, final quarter of period indicated.

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

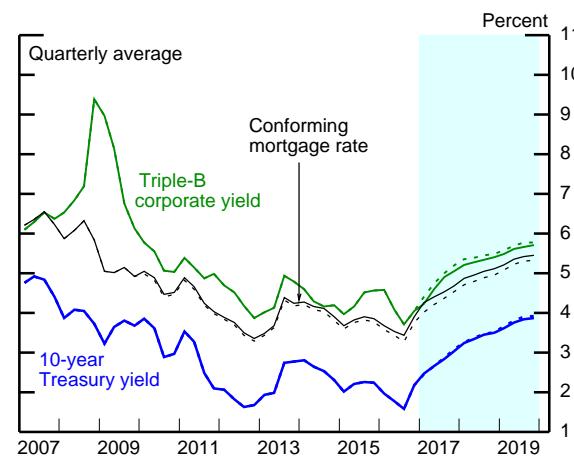
n.a. Not available.

Key Background Factors underlying the Baseline Staff Projection

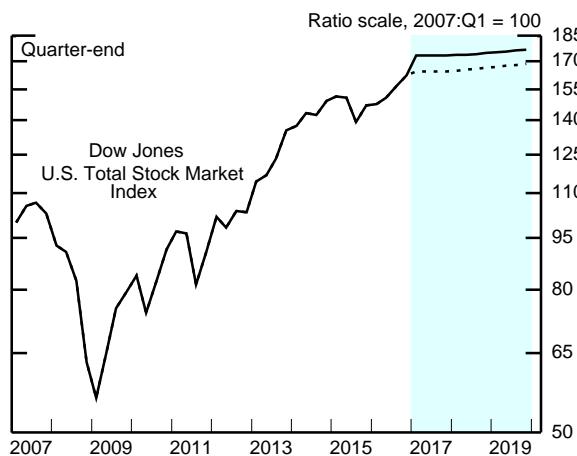
Federal Funds Rate



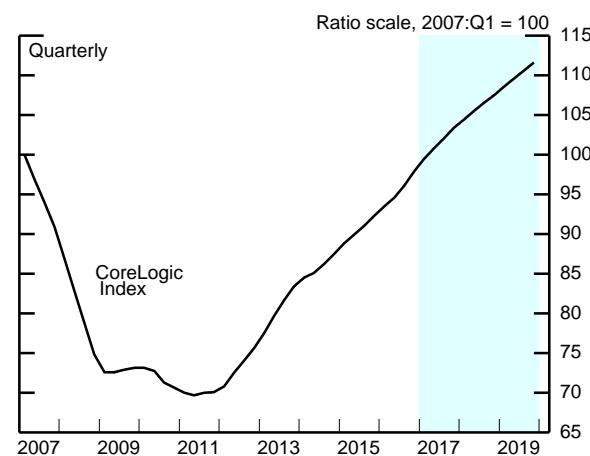
Long-Term Interest Rates



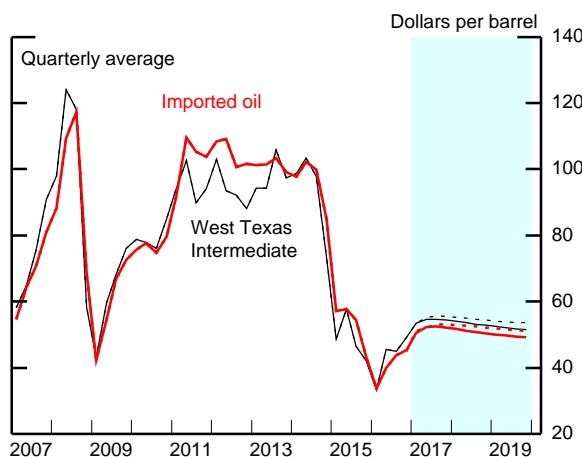
Equity Prices



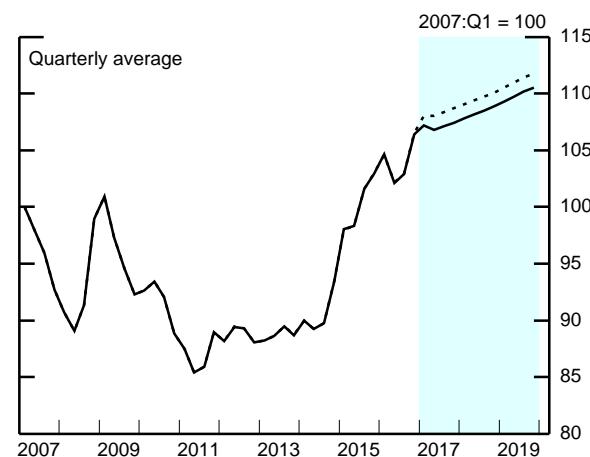
House Prices



Crude Oil Prices



Broad Real Dollar



Federal Reserve System Nowcasts of 2017:Q1 Real GDP Growth
(Percent change at annual rate from previous quarter)

Federal Reserve entity	Type of model	Nowcast as of Mar. 2, 2017
Federal Reserve Bank		
Boston	• Mixed-frequency BVAR	2.2
New York	• Factor-augmented autoregressive model combination • Factor-augmented autoregressive model combination, financial factors only • Dynamic factor model	1.6 1.7 3.1
Cleveland	• Bayesian regressions with stochastic volatility • Tracking model	2.6 -1.6
Atlanta	• Tracking model combined with Bayesian vector autoregressions (VARs), dynamic factor models, and factor-augmented autoregressions (known as GDPNow)	1.5
Chicago	• Dynamic factor models • Bayesian VARs	2.2 2.0
St. Louis	• Dynamic factor models • News index model • Let-the-data-decide regressions	3.7 2.8 2.6
Kansas City	• Accounting-based tracking estimate	1.4
Board of Governors	• Board staff's forecast (judgmental tracking model) • Monthly dynamic factor models (DFM-45) • Mixed-frequency dynamic factor model (DFM-BM)	1.4 2.9 4.0
Memo: Median of Federal Reserve System nowcasts		2.2

Summary of the Near-Term Outlook

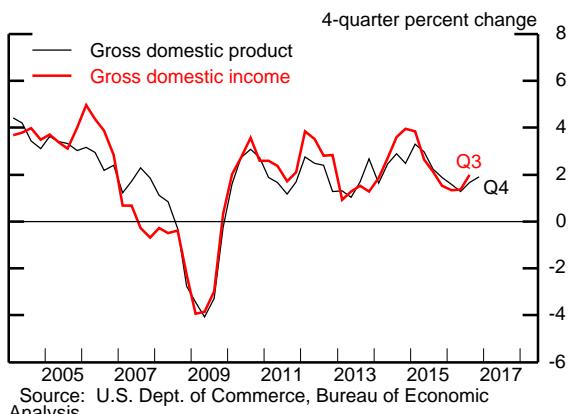
(Percent change at annual rate except as noted)

Measure	2016:Q4		2017:Q1		2017:Q2	
	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook
Real GDP	2.0	1.9	2.0	1.4	1.7	2.1
Private domestic final purchases	2.9	3.1	2.5	2.4	2.6	2.8
Personal consumption expenditures	2.8	3.0	2.2	1.5	2.6	3.0
Residential investment	10.7	9.4	1.6	8.0	-2.4	-2.5
Nonres. private fixed investment	1.4	1.9	4.5	5.7	4.1	3.7
Government purchases	2.4	.0	1.8	-.4	1.6	1.8
<i>Contributions to change in real GDP</i>						
Inventory investment ¹	.2	.9	.1	.0	-.1	.0
Net exports ¹	-1.1	-1.7	-.5	-.6	-.6	-.6
Unemployment rate	4.7	4.7	4.7	4.7	4.7	4.7
PCE chain price index	2.1	1.9	2.2	2.6	1.4	1.4
Ex. food and energy	1.2	1.2	1.7	2.3	1.7	1.7

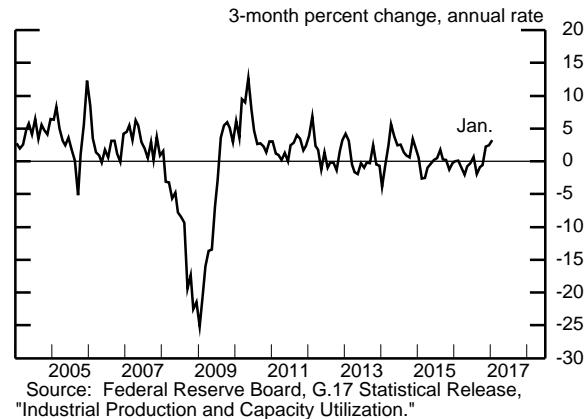
1. Percentage points.

Recent Nonfinancial Developments (1)

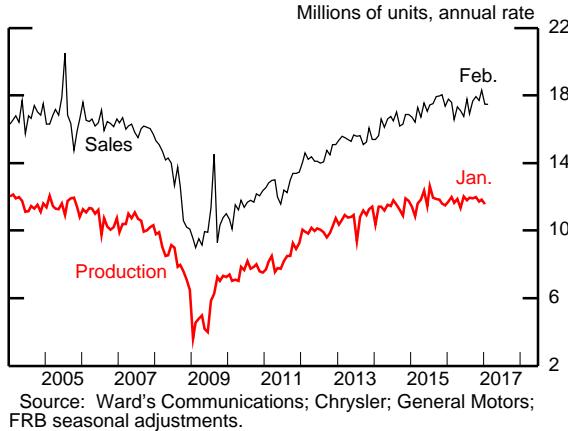
Real GDP and GDI



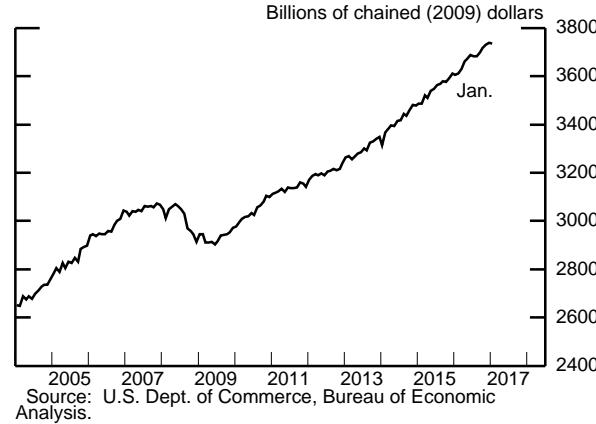
Manufacturing IP ex. Motor Vehicles and Parts



Sales and Production of Light Motor Vehicles

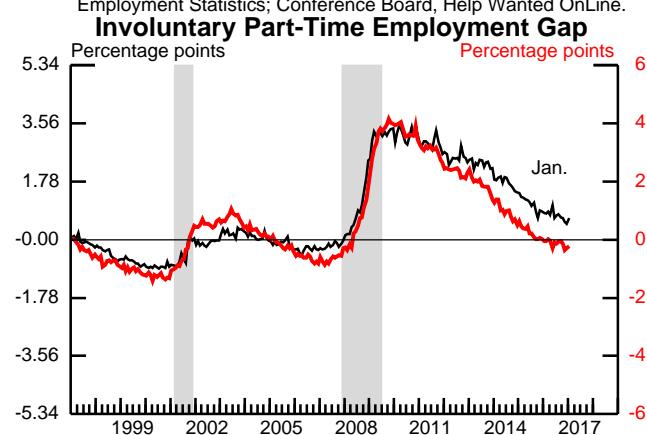
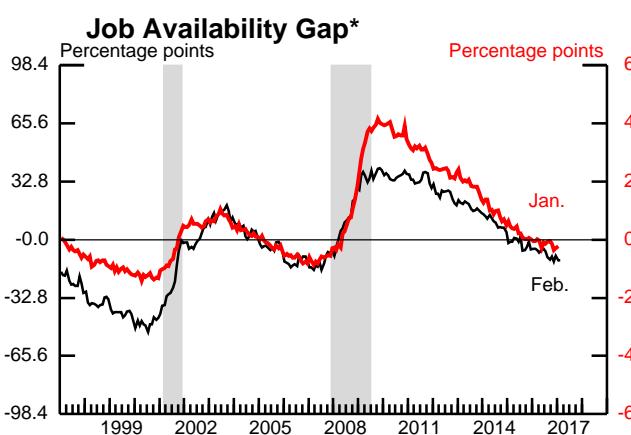
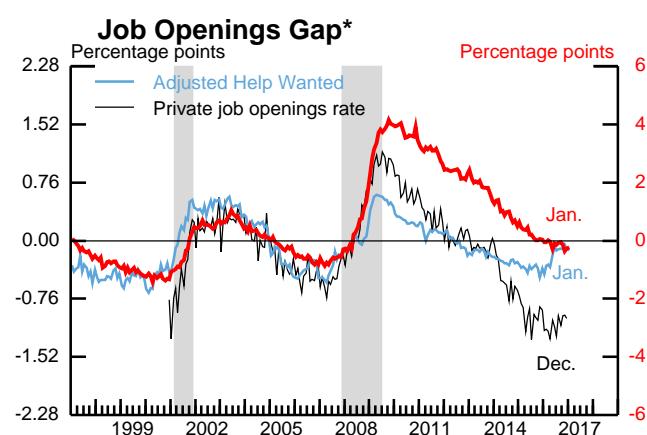
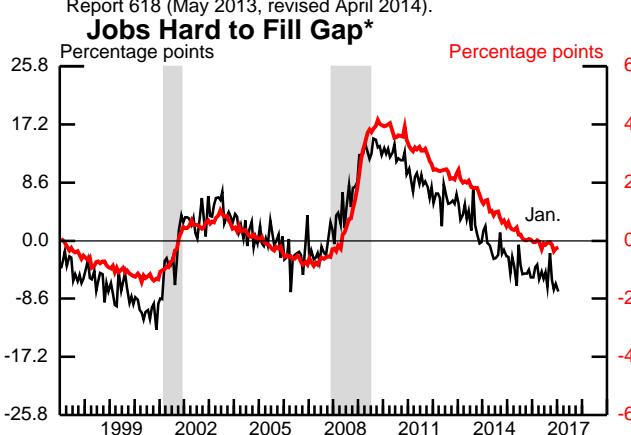
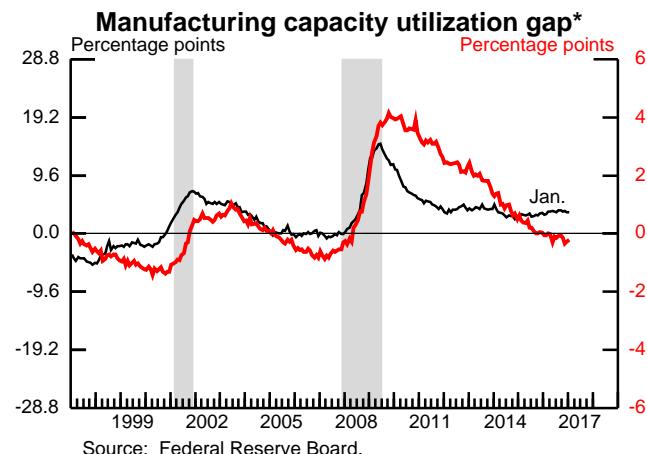
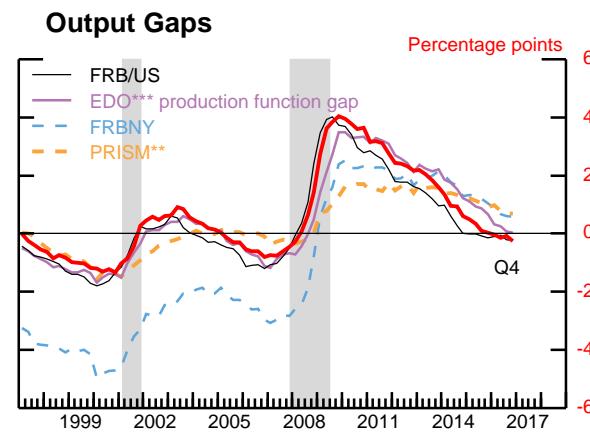


Real PCE Goods ex. Motor Vehicles



Alternative Measures of Slack

The red line in each panel is the staff's measure of the unemployment rate gap (right axis).

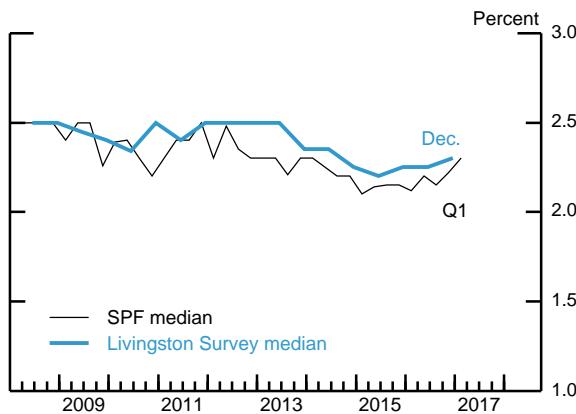


* Plots the negative of the gap to have the same sign as the unemployment rate gap.

Note: The shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research. Output gaps are multiplied by negative 0.54 to facilitate comparison with the unemployment rate gap. Manufacturing capacity utilization gap is constructed by subtracting its average rate from 1972 to 2013. Other gaps were constructed by subtracting each series' average in 2004:Q4 and 2005:Q1.

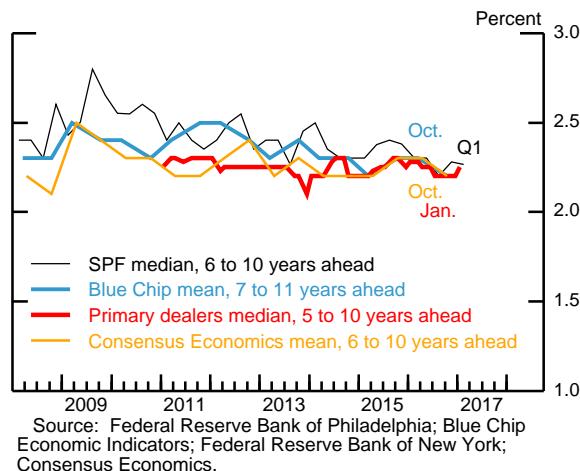
Survey Measures of Longer-Term Inflation Expectations

CPI Next 10 Years

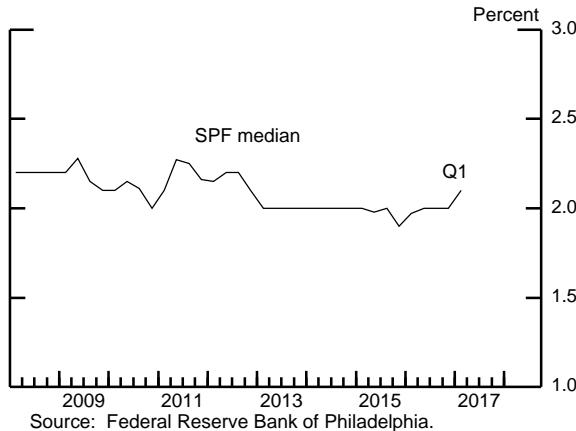


Note: SPF is Survey of Professional Forecasters.
Source: Federal Reserve Bank of Philadelphia.

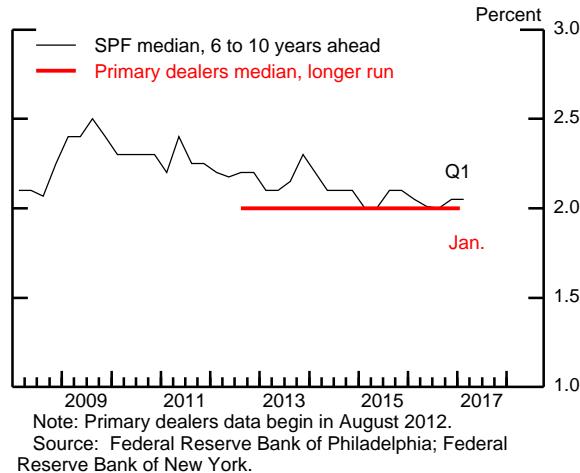
CPI Forward Expectations



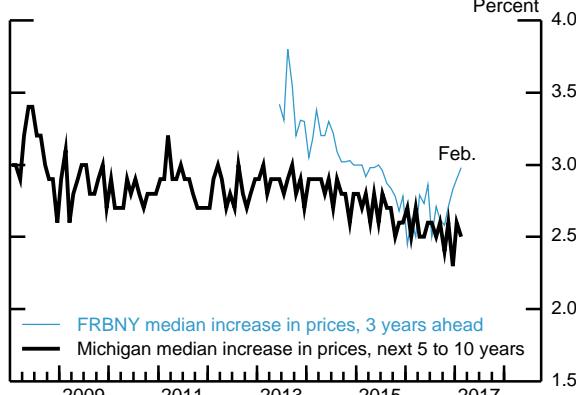
PCE Next 10 Years



PCE Forward Expectations



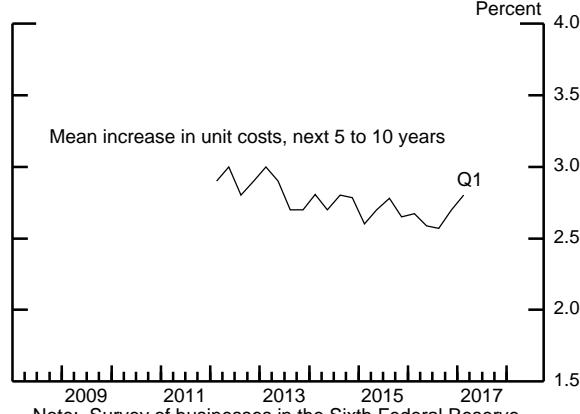
Surveys of Consumers



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

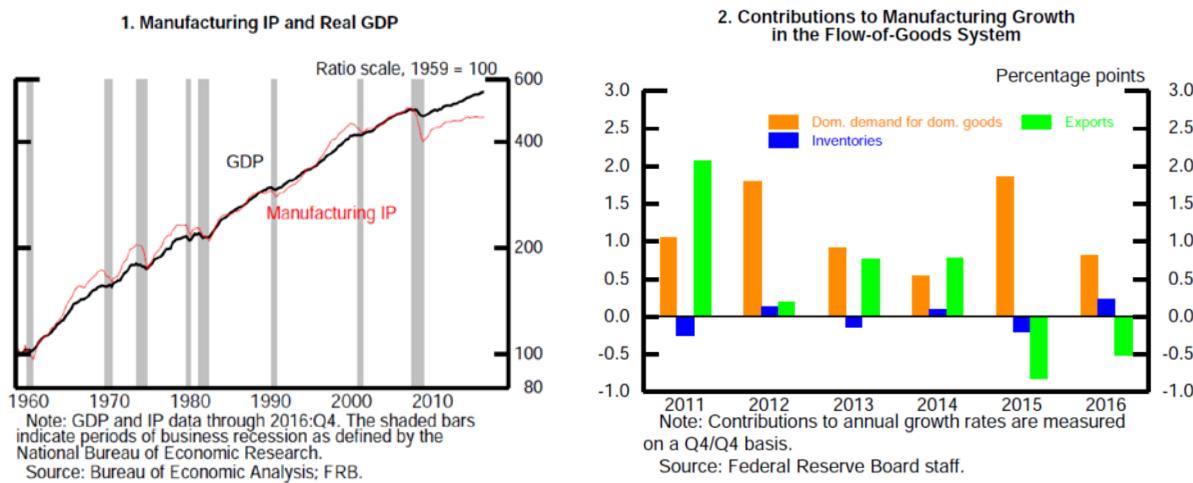


Recent Developments in the Manufacturing Sector

Manufacturing output contracted sharply during the Great Recession, and its subsequent recovery has been historically weak. Since mid-2014, both industrial production (IP) and productivity growth in manufacturing have stagnated. This prolonged softness is highly atypical and stands in contrast to the slow but steady improvement in the broader economy. Although some very recent indicators suggest that manufacturing may be on the verge of escaping its recent stagnation, the pickup in activity has not been sustained for long enough to be conclusive.

Industrial Production. For the 50 years prior to the most recent recession, manufacturing IP and real gross domestic product (GDP) rose at the same average rate, with manufacturing being considerably more cyclically sensitive (figure 1). Thereafter, the trends seem to have diverged. Although both real GDP and manufacturing output bottomed out in the second quarter of 2009, GDP in the fourth quarter of 2016 was 12 percent above its pre-recession peak, while manufacturing production was still nearly 6 percent below its previous peak, marking its slowest recovery on record.¹ In particular, the recovery for manufacturing has been stalled for the past two years, with factory output essentially flat over this period.

The recent sluggish performance of manufacturing can be partly explained by weakness in exports. According to the staff's flow-of-goods system, negative contributions from exports (the green bars in figure 2) reduced manufacturing growth in both 2015 and 2016, reflecting in part the sharp appreciation of the dollar since mid-2014.² This drag from exports is highly unusual; from 1980 to 2016, exports contributed, on average, about 1 percentage point to annual manufacturing output growth. Since mid-2014, manufacturing IP has also been restrained by lower demand for manufactured goods used in oil and gas drilling and, more broadly, by weak domestic demand for capital goods.



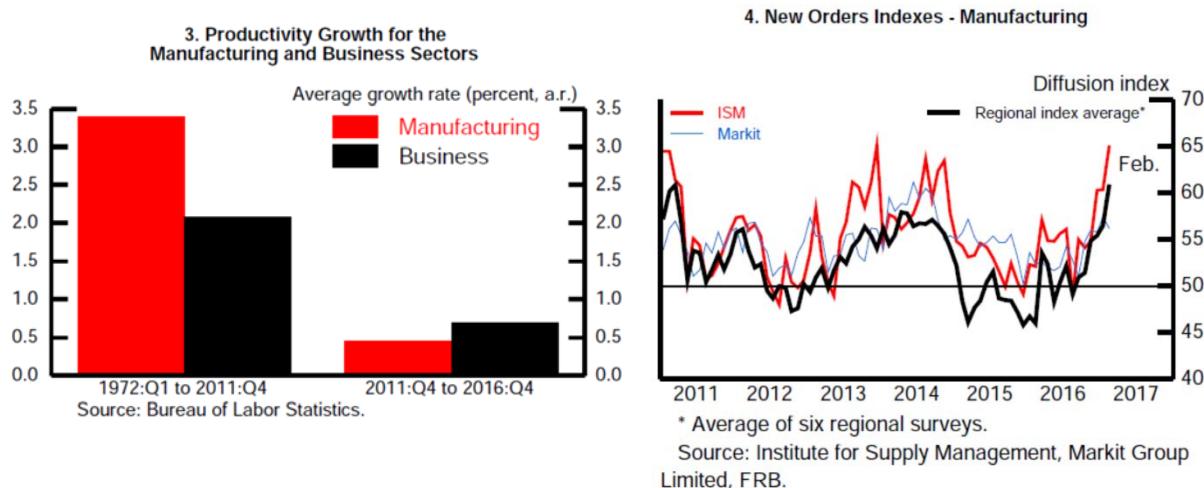
¹ Notably, because the data for IP extend back to 1919, this assertion indicates that the most recent recovery has been even slower than the recoveries following the Great Depression and the end of World War II.

² With data on industrial production, imports, exports, and demand indicators, the flow-of-goods system produces model-based estimates of domestic purchases and inventory changes.

Productivity. The recent weakness in IP is also reflected in the slowdown in manufacturing labor productivity growth. Figure 3 plots average labor productivity growth for the manufacturing sector (the red bars) and the broader business sector (the black bars) from 1972 to 2011 and from 2012 to 2016. As shown by the first set of bars, between 1972 and 2011, the average annual growth rate for manufacturing productivity was nearly 3½ percent, about 1½ percentage points faster than the growth rate for business-sector productivity. Although the pace of productivity growth for both the manufacturing and business sectors has decreased in recent years, the second set of bars indicates that manufacturing productivity growth has slowed to an average of less than ½ percent since 2012, a much greater slowdown than in the overall business sector.³ Furthermore, the fact that productivity growth for the manufacturing sector has been slower than that for the business sector is highly atypical for an expansionary period.

Industry-level measures of labor productivity based on the Federal Reserve's IP data (not shown) indicate that the slowing in manufacturing productivity growth has been widespread. Of the 263 individual industries that comprise manufacturing IP, more than 80 percent exhibited rates of labor productivity growth since 2012 that were below their long-run (1972 to 2011) averages, and nearly 40 percent experienced labor productivity declines over this period. Notably, productivity growth in high-technology manufacturing industries—which has long been a driver of manufacturing productivity growth—has been only half its long-run average over the most recent four years.

Looking forward. Some very recent signs suggest that manufacturing output may be beginning to turn up. Manufacturing IP has recorded gains (albeit modest) in four of the most recent five months, the new orders indexes in national and regional manufacturing surveys have risen markedly to solid levels (figure 4), oil and gas drilling has begun to pick up, and domestic capital expenditures have begun to show gains. Nonetheless, it is still too soon to determine whether this modest pickup in the manufacturing sector will be sustained.



³ Measured since the most recent business cycle peak in late 2007—business cycles are common timeframes for analyzing productivity statistics—manufacturing productivity growth exceeds that for the business sector, though manufacturing continues to record a sharper slowdown in productivity growth relative to earlier years.

The real federal funds rate (line 3) exceeds its long-run value (of 1 percent) by an even wider margin.

The tax cuts assumed in the staff forecast are one identifiable factor boosting the neutral rate in coming years: The tax cuts will support spending and raise the interest rates needed to keep the unemployment rate near its natural rate. To illustrate the effect of the tax cuts, lines 4, 5, and 6 of the table show the results of a similar calculation that excludes the tax cut.² Once again, by the end of this year, unemployment is very close to its natural rate. As expected, the interest rates in this case—which are a reasonable approximation to the neutral rate of interest from 2018 onward—are lower. Even so, in this simulation, the real 10-year Treasury yield—again, a reasonable estimate of the neutral rate—exceeds the estimate of its longer-run value, which is 1¼ percent in this case. It edges up through 2019 before moving down toward its longer-run value.

An interpretation of this analysis is that in the staff forecast, the “headwinds” that have restrained growth in recent years (and require a low interest rate to maintain full employment) shift very rapidly to strong “tailwinds” (which require more restrictive rates to maintain full employment) that go beyond the readily identifiable factor of the tax cuts. Without a compelling explanation for these additional tailwinds, a less aggressive staff forecast would seem appropriate. Separate calculations suggest that a downward adjustment to the increase in real GDP of around ½ percentage point per year over the medium term—along with the lower interest rate path that our mechanical rule for the federal funds rate would imply in that case—would be sufficient to eliminate the overshooting in the neutral rate of interest implicit in the staff outlook. The 10-year Treasury yield in this case would be about 40 basis points lower, and the federal funds rate would rise less steeply, reaching only about 2½ percent by the end of 2019.

Using Optimal Control (OC) to Infer the Neutral Rate of Interest

(Percent; assuming optimal control with a minimal penalty
on federal funds rate changes)

	2017:Q4	2018:Q4	2019:Q4	2020:Q4	Longer run
<i>Baseline OC results</i>					
1. Unemployment	4.9	5.0	5.0	5.0	5.0
2. Real 10-year Treasury	2.2	2.3	2.4	2.2	1.5
3. Real federal funds rate	2.9	3.6	3.4	3.4	1.0
<i>OC results with no tax cut</i>					
4. Unemployment	4.9	5.0	5.0	5.0	5.0
5. Real 10-year Treasury	2.0	2.0	2.0	1.8	1.2
6. Real federal funds rate	2.5	3.0	2.7	2.2	.75

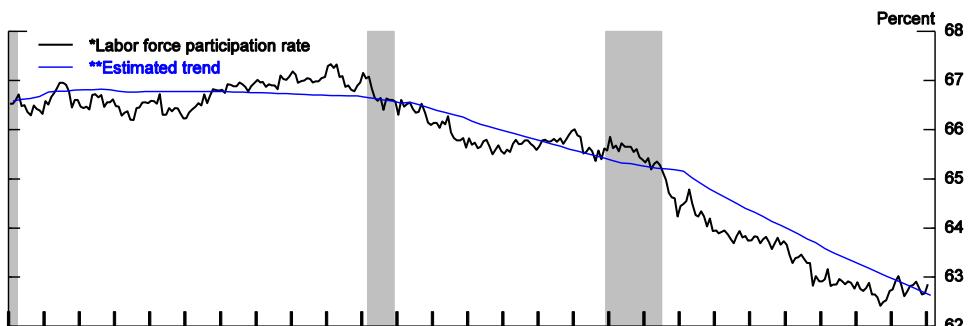
² This alternative is consistent with the “No Fiscal Expansion” alternative scenario in the Risks and Uncertainty (R&U) section of the Tealbook, though in contrast to the R&U simulation, monetary policy is assumed here to be set according to optimal control rather than the staff’s baseline policy rule.

Labor Force Participation and Labor Market Flows

Since the end of 2013, the labor force participation rate has moved sideways on net (figure 1). Given its declining trend of about 0.3 percentage point per year as currently estimated by the staff, the flat participation rate over the past three years represents a cyclical improvement of nearly 1 percentage point. However, the recent behavior of the underlying labor market flows—in particular, the decline in labor force entry to a low level—raises the question of whether the participation rate recovery is over.¹ The discussion in the box argues that, historically, there is no strong link between labor force entry flows and cyclical movements in the participation rate.

Figure 2 plots gross labor force entry flows (flows of individuals who move from being out of the labor force to either employment or unemployment) and gross labor force exit flows (flows in the opposite direction), normalized by the size of the population. Intuitively, economic forces that induce an increase in labor force participation—for example, greater employment opportunities and rising wages—should lead to more people being pulled into the labor force. However, this behavioral response is difficult to identify in the data. Indeed, in contrast to the intuition described above, gross labor force entry flows appear to have been countercyclical during the latest cyclical episode: They rose during the Great Recession and early in the recovery—a time when the participation rate was falling—and declined more recently, a period in which the participation rate has stabilized. Moreover, during the second half of the 1990s, the participation rate moved well above its estimated trend, as shown in figure 1, despite gross labor force entry that fell to a very low level by 2000, as shown in figure 2.

Figure 1: Labor Force Participation Rate and Its Trend



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

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

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

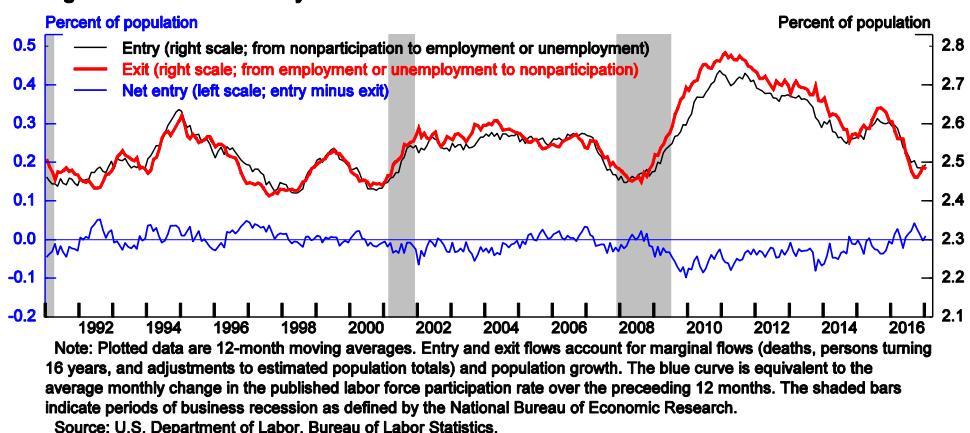
Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

¹ For example, Krueger (2016) argued that the continued decline in the rate of transition of those who are out of the labor force back into the labor force suggests that the recovery in participation is likely to be a short-lived phenomenon. See Alan B. Krueger (2016), “Where Have All the Workers Gone?” paper presented at the 60th Economic Conference held at the Federal Reserve Bank of Boston, Boston, Mass., October 14, <https://www.bostonfed.org/-/media/Documents/economic/conf/great-recovery-2016/Alan-B-Krueger.pdf>.

Two factors can help account for the fact that gross labor force entry and exit flows typically move very closely together over time, rather than in opposite directions as intuition would suggest. First, the unemployed are substantially more likely to transition between being in and out of the labor force than are the employed, which can be due to either real transitions or reporting errors of their labor force status in the Current Population Survey.² Because the level of unemployment increases during a cyclical downturn, both gross entry and exit flows rise, reflecting the churn associated with the relatively weaker labor force attachment of the unemployed. Then, as the recovery proceeds and many unemployed individuals find jobs, their probability of temporarily dropping out of the labor force (and later rejoining) declines. Second, secular changes in the labor market can affect gross entry and exit flows. For example, older individuals (retirees) have an appreciably lower probability of moving into and out of the labor force than the rest of population—thus, population aging leads to a trend decline in both gross labor force entry and exit flows. Indeed, population aging can account for about one-fifth of the decline in gross flows since 2010.

In an accounting sense, movements in the participation rate are determined by the net flow into the labor force (that is, gross entry flows minus gross exit flows). However, the factors mentioned in the previous paragraph make it difficult to infer from the flows data how many people are actually reentering (and staying in) the labor force. For example, if an individual previously on the sidelines of the labor market—sometimes unemployed, sometimes out of the labor force—finds a stable job, she will push up the participation rate but also reduce subsequent gross entry and exit flows. Without longitudinal data that would track the same individuals over long periods, it is challenging to conclude how much persistent reentry is actually taking place in the labor market and how much the flows data merely reflect changes in excess churn between unemployment and out of the labor force. As a result, observations about gross labor force entry flows alone are insufficient to pin down the remaining potential for cyclical improvement in labor force participation.

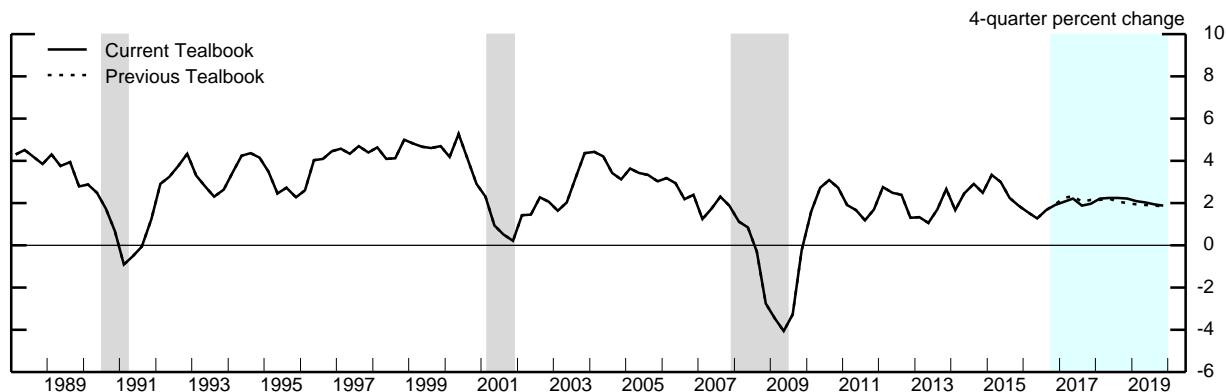
Figure 2: Labor Force Entry and Exit



² Reporting errors are more prevalent for the unemployed; see James M. Poterba and Lawrence H. Summers (1986), “Reporting Errors and Labor Market Dynamics,” *Econometrica*, vol. 54 (November), pp. 1319–38.

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			
Real GDP	1.9	1.7	2.2	2.0	2.2	1.9
Previous Tealbook	1.9	1.9	2.4	2.1	2.0	1.8
Final sales	1.9	1.7	2.3	2.0	2.2	2.0
Previous Tealbook	2.2	1.9	2.5	2.2	1.9	2.0
Personal consumption expenditures	3.0	2.2	2.8	2.5	3.0	2.5
Previous Tealbook	2.9	2.4	3.4	2.9	2.7	2.5
Residential investment	1.1	2.6	1.1	1.9	4.6	5.5
Previous Tealbook	1.4	-.4	2.0	.8	3.9	5.2
Nonresidential structures	1.8	5.2	2.0	3.6	.3	.0
Previous Tealbook	.9	4.5	2.6	3.6	.2	-.4
Equipment and intangibles	-.3	4.5	4.3	4.4	3.7	2.3
Previous Tealbook	-.2	4.2	3.9	4.1	3.0	2.2
Federal purchases	-.2	1.1	.9	1.0	.0	-.1
Previous Tealbook	.7	2.1	1.1	1.6	-.5	-.4
State and local purchases	.4	.5	1.8	1.1	1.1	1.1
Previous Tealbook	.8	1.5	1.3	1.4	1.2	1.2
Exports	1.6	1.2	1.3	1.3	2.3	2.8
Previous Tealbook	1.7	.3	1.1	.7	2.1	2.8
Imports	2.5	5.0	4.0	4.5	5.0	4.4
Previous Tealbook	1.4	4.2	4.4	4.3	5.0	3.8
Contributions to change in real GDP (percentage points)						
Inventory change	.0	.0	-.1	-.1	.0	-.1
Previous Tealbook	-.2	.0	-.1	-.1	.0	-.1
Net exports	-.2	-.6	-.4	-.5	-.5	-.3
Previous Tealbook	.0	-.6	-.5	-.5	-.5	-.3

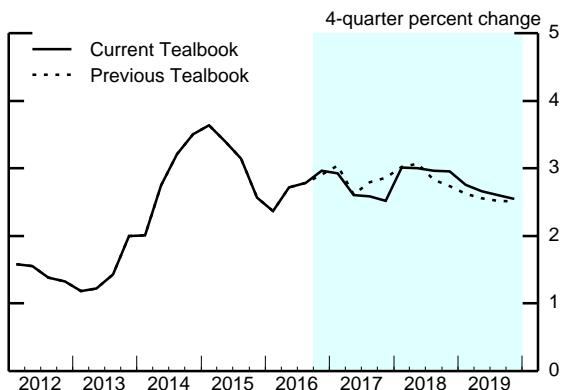
Real GDP

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

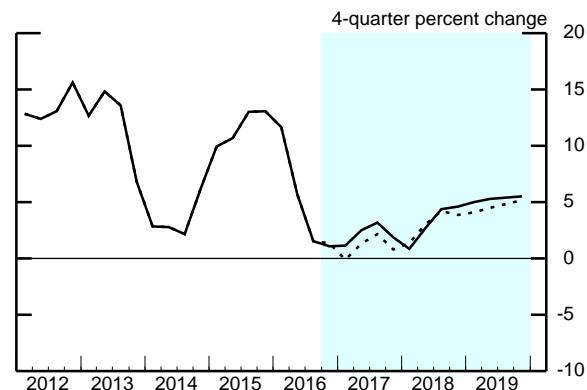
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Components of Final Demand

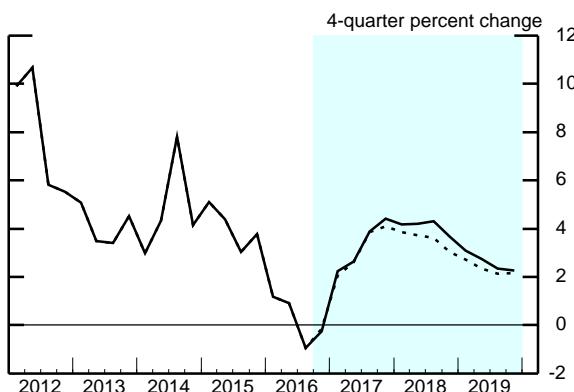
Personal Consumption Expenditures



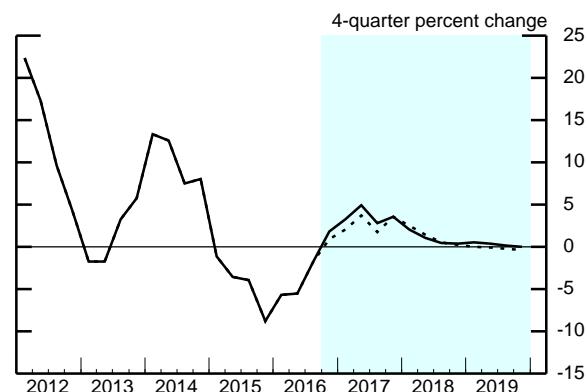
Residential Investment



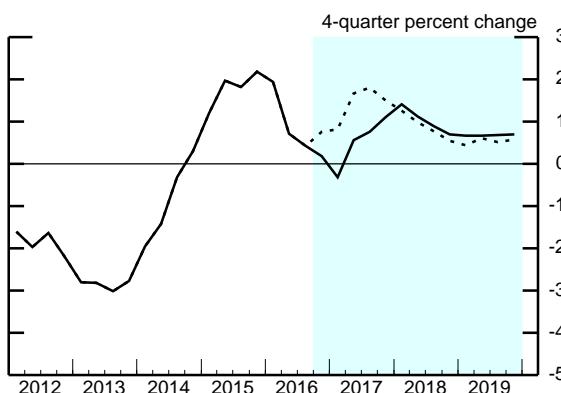
Equipment and Intangibles



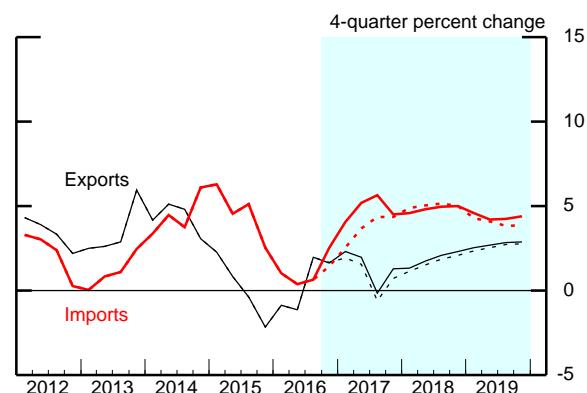
Nonresidential Structures



Government Consumption and Investment



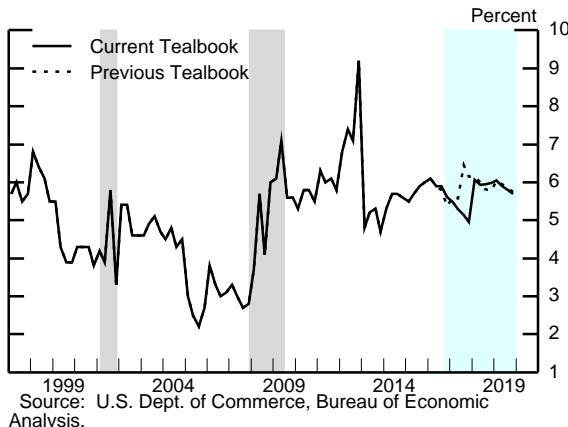
Exports and Imports



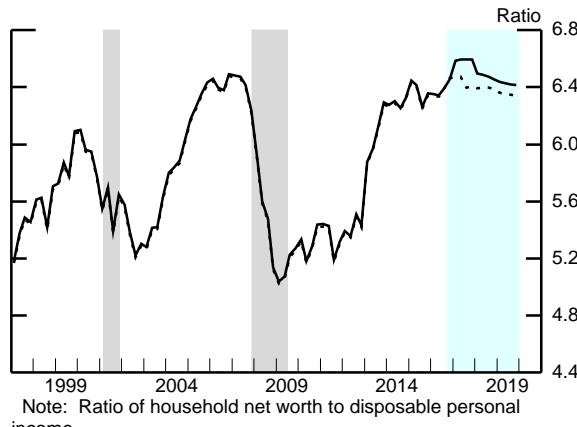
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Aspects of the Medium-Term Projection

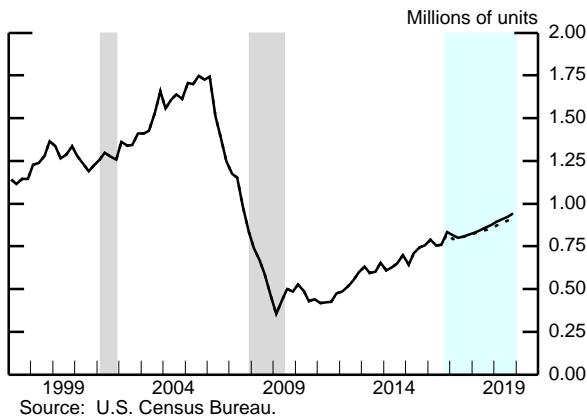
Personal Saving Rate



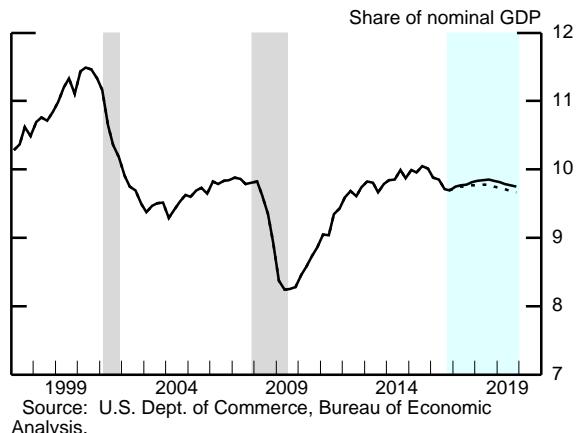
Wealth-to-Income Ratio



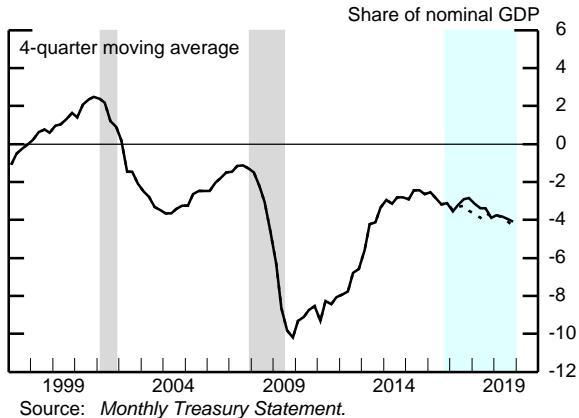
Single-Family Housing Starts



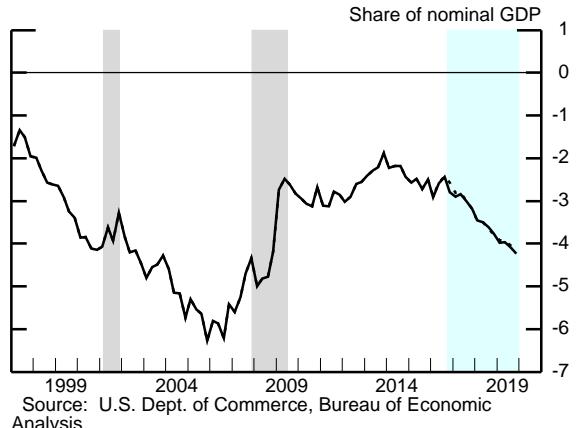
Equipment and Intangibles Spending



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 contributions¹</i>									
Structural labor productivity ²	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	.5	.5	.5	.4
Multifactor productivity	.7	1.0	1.5	.9	.0	.2	.4	.5	.6
Structural hours	1.6	1.2	.8	.1	.6	.6	.0	.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 ³	-1.9	2.4	.8	-4.2	.0	.4	.9	1.5	1.7
Previous Tealbook	-1.9	2.4	.8	-4.2	.0	.4	1.1	1.5	1.7

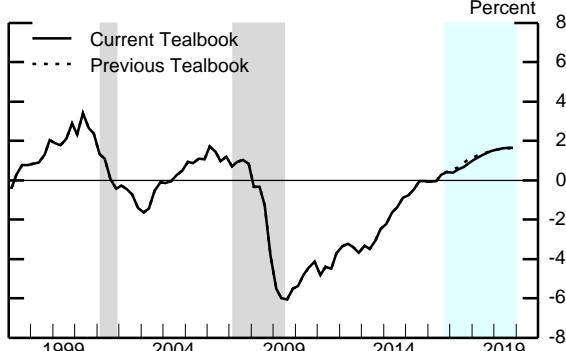
Note: For multiyear periods, the percent change is the annual average from Q4 of the year preceding the first year shown to Q4 of the last year shown.

1. Percentage points.

2. Total business sector.

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

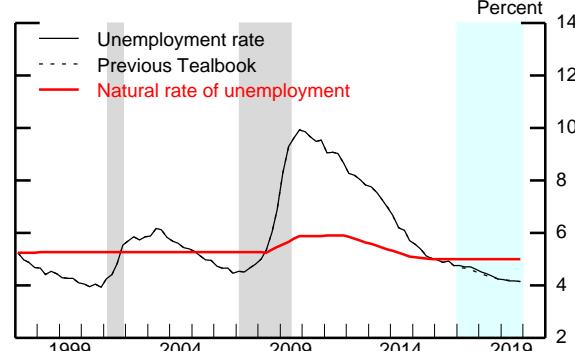
GDP Gap



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

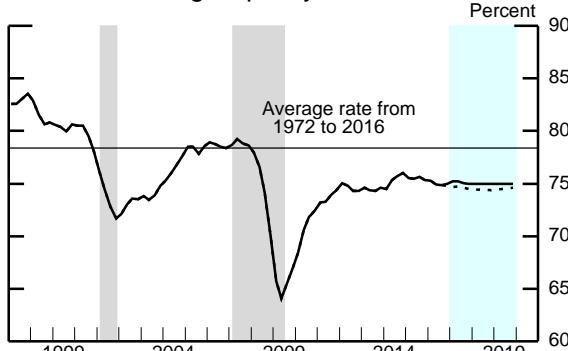
Source: U.S. Department of Commerce, Bureau of Economic Analysis; staff assumptions.

Unemployment Rate



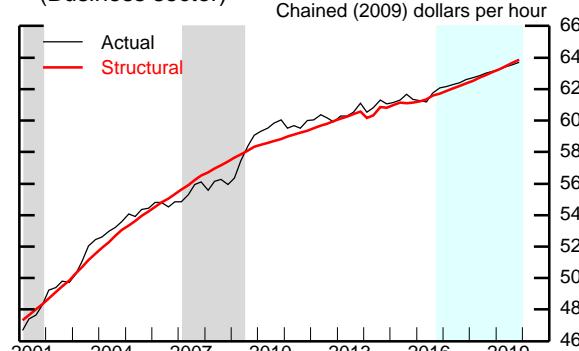
Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

Manufacturing Capacity Utilization Rate



Average rate from 1972 to 2016
Source: Federal Reserve Board, G.17 Statistical Release, "Industrial Production and Capacity Utilization."

Structural and Actual Labor Productivity (Business sector)



Source: U.S. Department of Labor, Bureau of Labor Statistics; U.S. Department of Commerce, Bureau of Economic Analysis; staff estimates (2015:Q2-2016:Q3) and staff forecast.

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 ¹ Previous Tealbook		1.3 .9	.6 .7	1.1 1.3	.9 1.0	.9 .9
Nonfarm payroll employment ² Previous Tealbook		187 180	187 183	157 185	172 184	157 162
Private employment ² Previous Tealbook		171 165	187 172	153 173	170 173	150 150
Labor force participation rate ³ Previous Tealbook		62.7 62.7	62.7 62.7	62.6 62.6	62.6 62.6	62.3 62.3
Civilian unemployment rate ³ Previous Tealbook		4.7 4.7	4.7 4.7	4.6 4.5	4.6 4.5	4.2 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

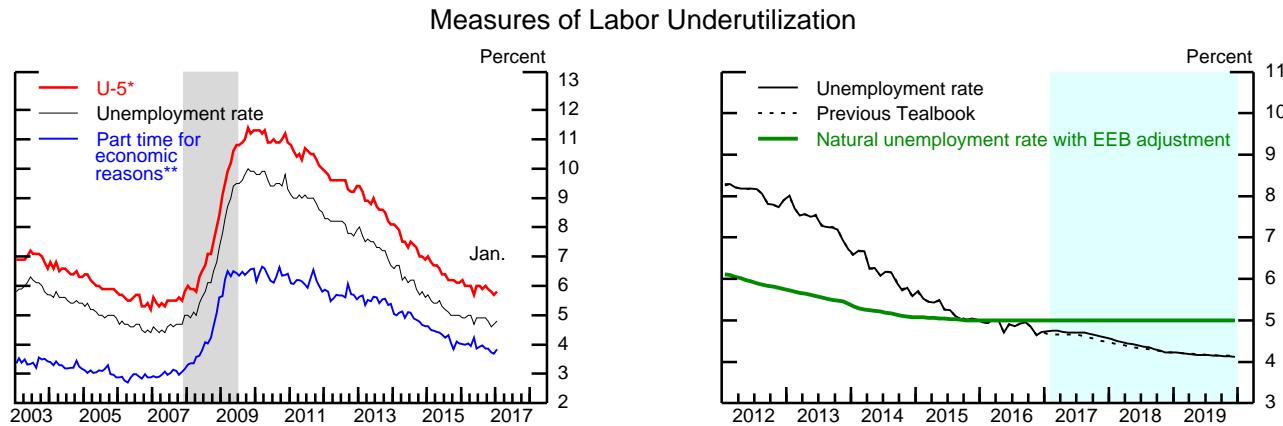
Measure	2016	2017		2017	2018	2019
		H1	H2			
<i>Percent change at annual rate from final quarter of preceding period</i>						
PCE chain-weighted price index Previous Tealbook		1.4 1.5	2.0 1.8	1.5 1.6	1.7 1.7	1.8 1.8
Food and beverages Previous Tealbook		-1.7 -1.7	1.0 1.6	2.2 2.2	1.6 1.9	2.1 2.2
Energy Previous Tealbook		.8 2.1	3.8 4.3	-.7 -.3	1.5 2.0	.2 .1
Excluding food and energy Previous Tealbook		1.7 1.7	2.0 1.7	1.5 1.6	1.8 1.7	1.9 1.9
Prices of core goods imports ¹ Previous Tealbook		.0 -.1	.9 .4	1.4 1.2	1.2 .8	.8 .7
	Dec. 2016	Jan. 2017	Feb. 2017 ²	Mar. 2017 ²	Apr. 2017 ²	May 2017 ²
<i>12-month percent change</i>						
PCE chain-weighted price index Previous Tealbook		1.6 1.6	1.9 1.8	2.1 2.0	2.1 2.0	1.9 1.8
Excluding food and energy Previous Tealbook		1.7 1.7	1.7 1.6	1.7 1.6	1.8 1.6	1.7 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)

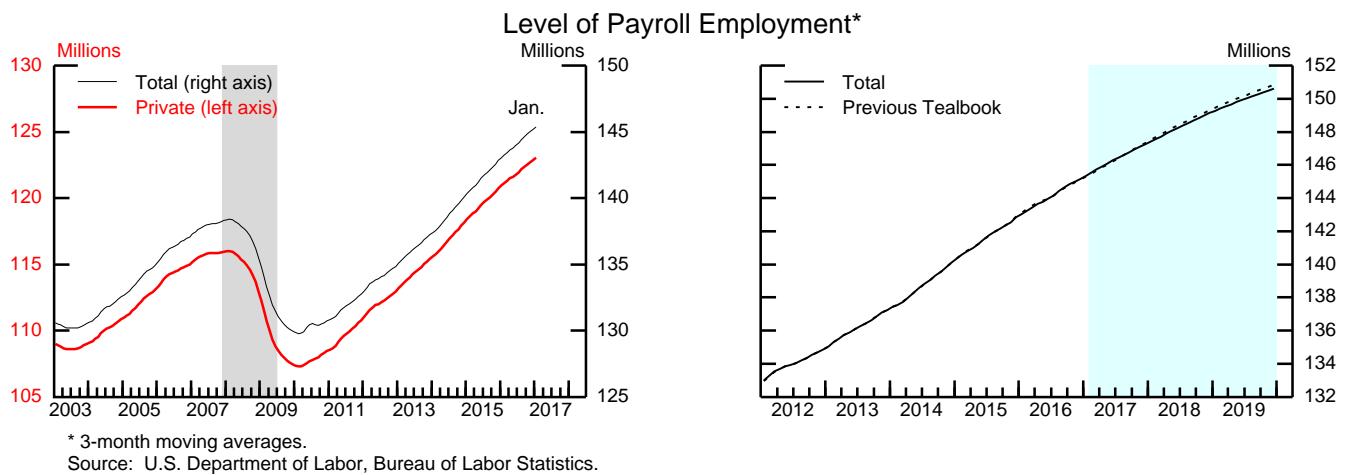


* U-5 measures total unemployed persons plus all marginally attached to the labor force, as a percent of the labor force plus persons marginally attached to the labor force.

** Percent of Current Population Survey employment.

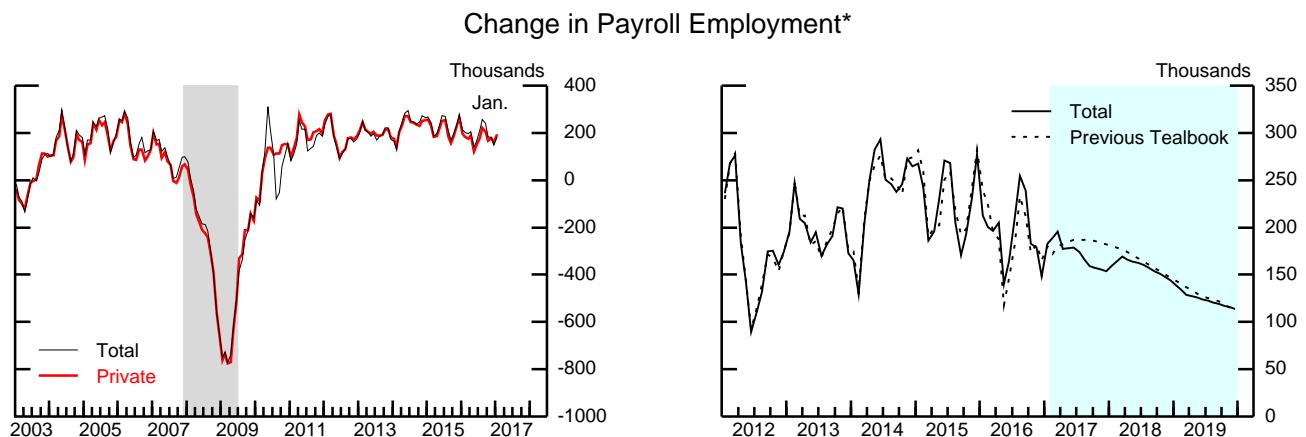
EEB Extended and emergency unemployment benefits.

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



* 3-month moving averages.

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



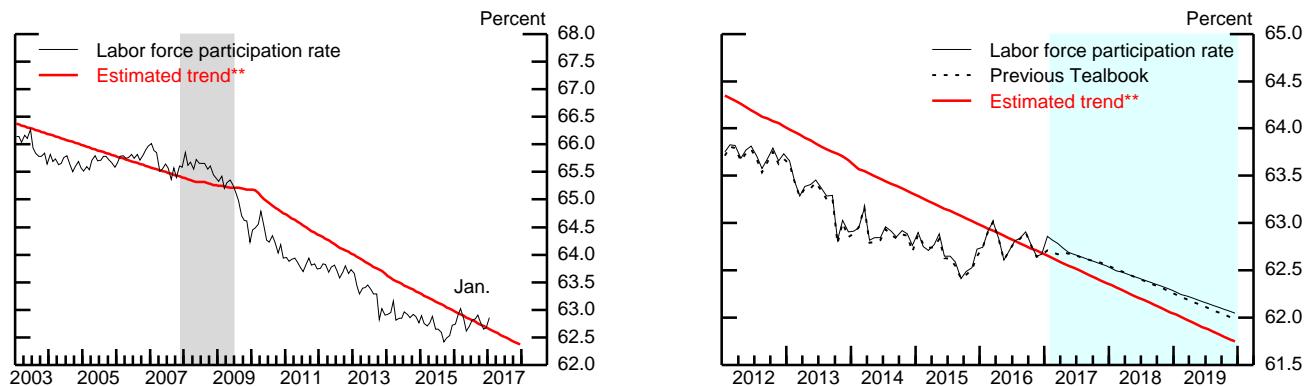
* 3-month moving averages.

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*

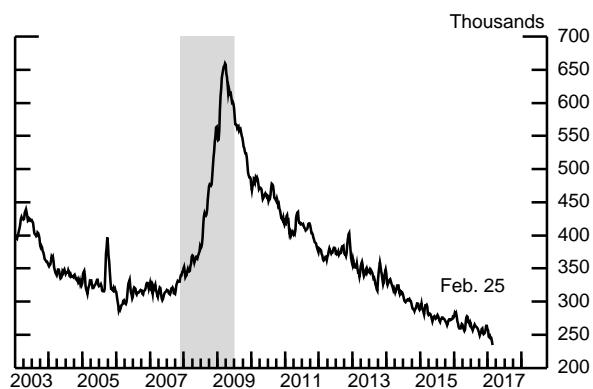


* Published data adjusted by staff to account for changes in population weights.

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

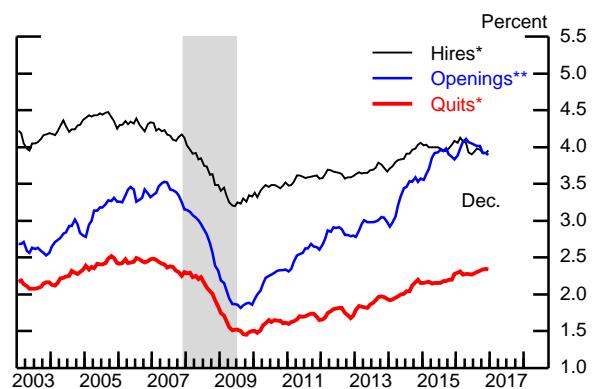
Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

Initial Unemployment Insurance Claims*



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

Hires, Quits, and Job Openings

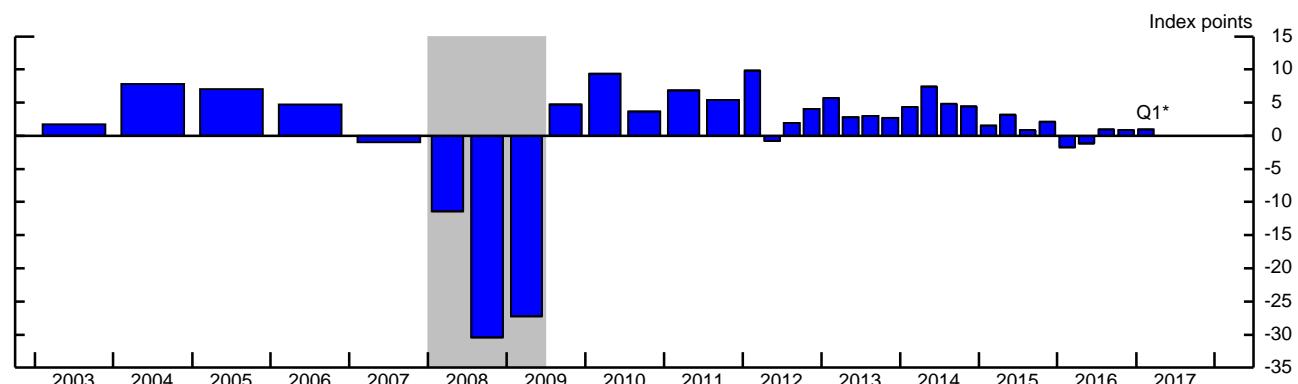


* Percent of private nonfarm payroll employment, 3-month moving average.

** 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



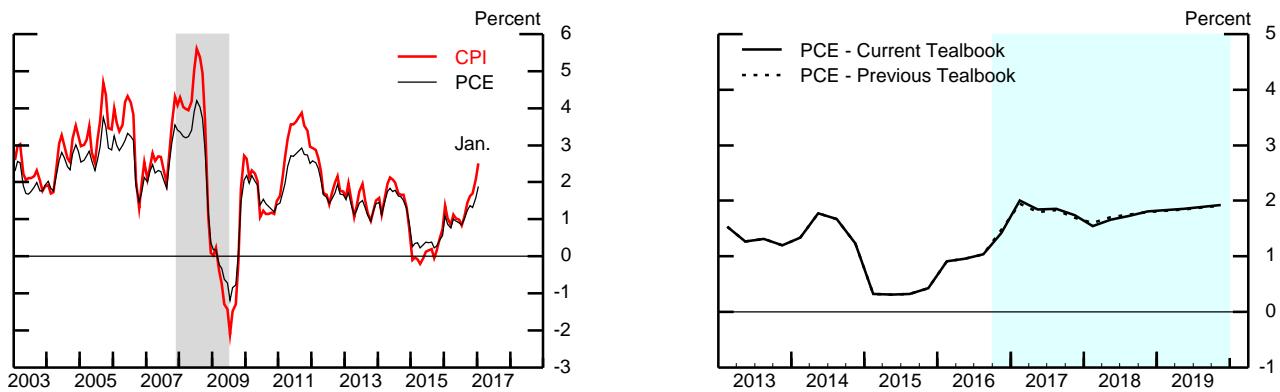
* Value shown for Q1 is for January data.
Source: Labor market conditions index estimated by staff.

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

Inflation Developments and Outlook (1)

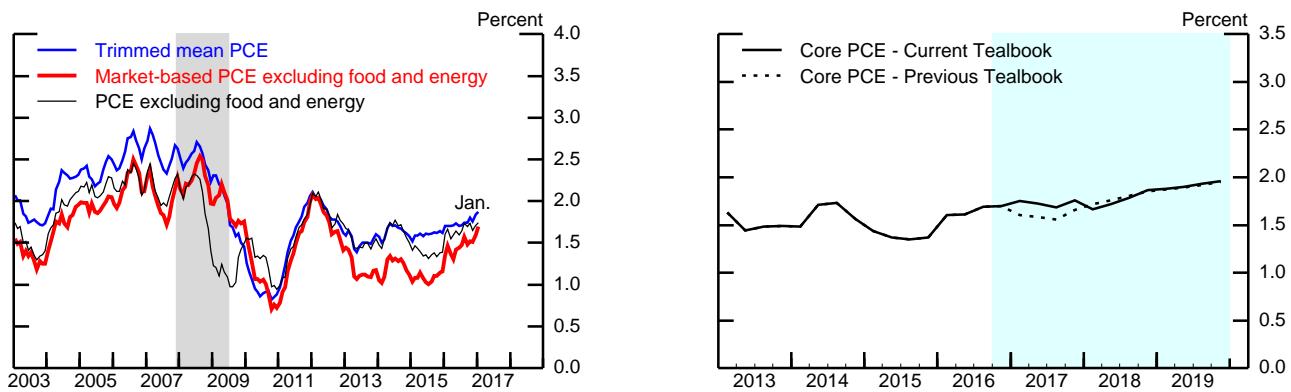
(Percent change from year-earlier period)

Headline Consumer Price Inflation



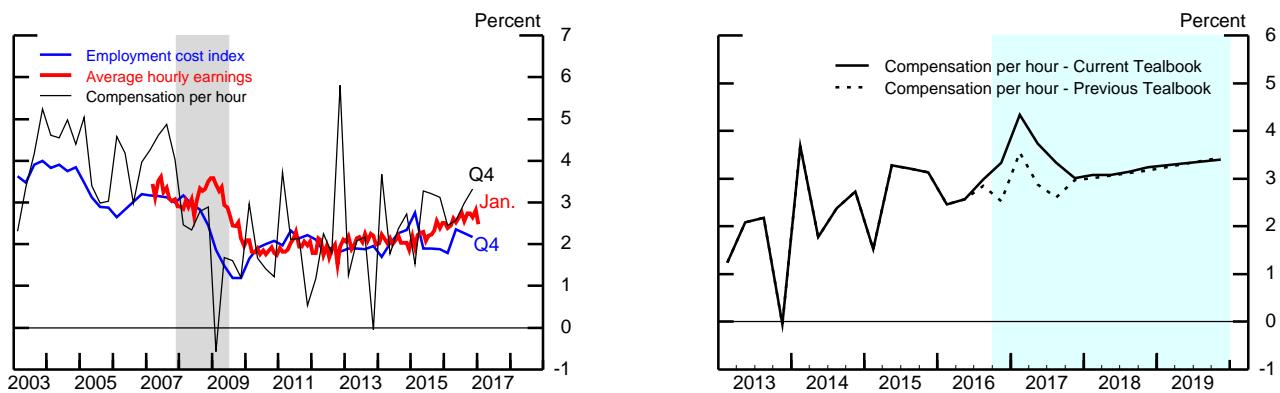
Source: For CPI, U.S. Department of Labor, Bureau of Labor Statistics; for PCE, U.S. Department of Commerce, Bureau of Economic Analysis.

Measures of Underlying PCE Price Inflation



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.

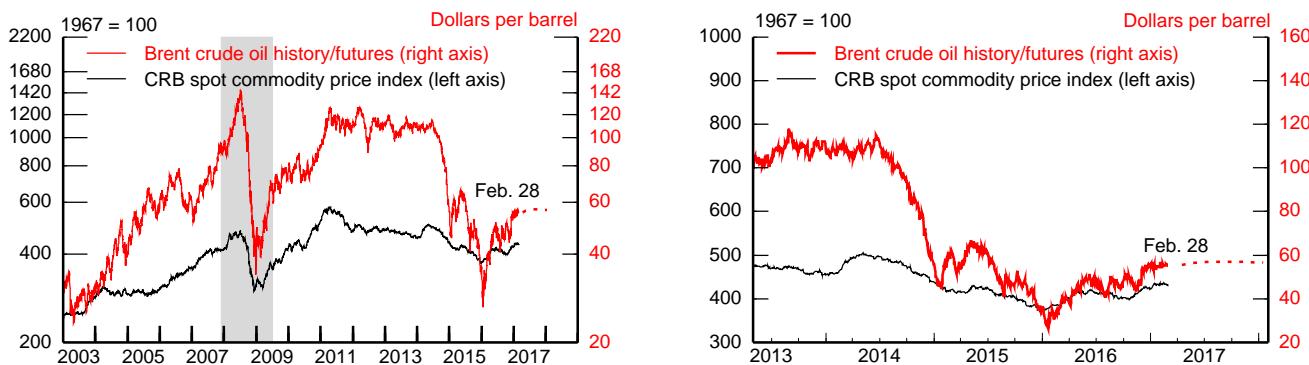
Source: U.S. Department of Labor, Bureau of Labor Statistics.

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

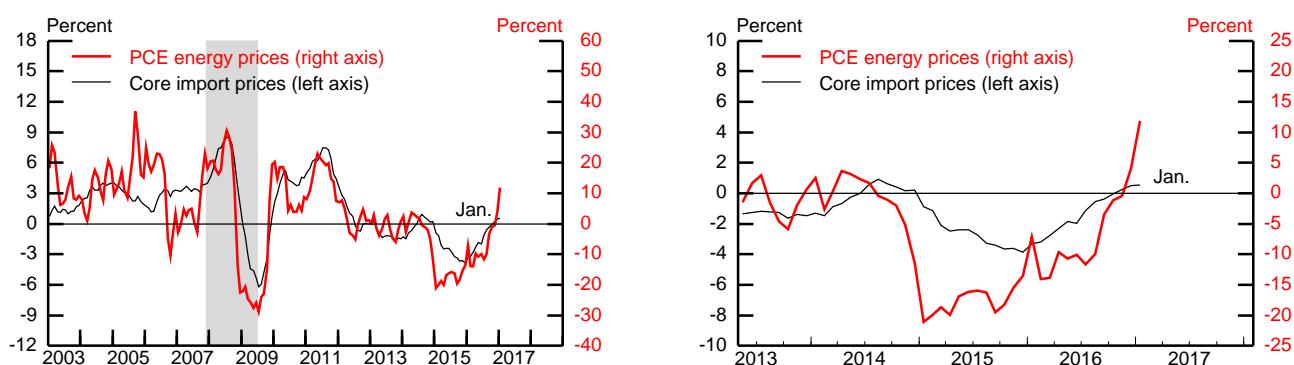
Inflation Developments and Outlook (2)

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

Commodity and Oil Price Levels

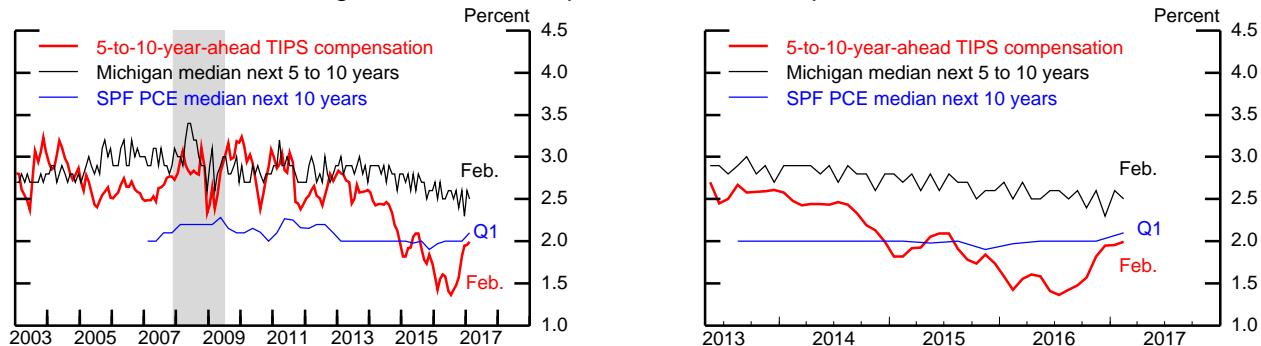


Energy and Import Price Inflation



Source: For core import prices, U.S. Dept. of Labor, Bureau of Labor Statistics; for PCE, U.S. Dept. of Commerce, Bureau of Economic Analysis.

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.

SPF Survey of Professional Forecasters.

Source: For Michigan, University of Michigan Surveys of Consumers; for SPF, the 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.

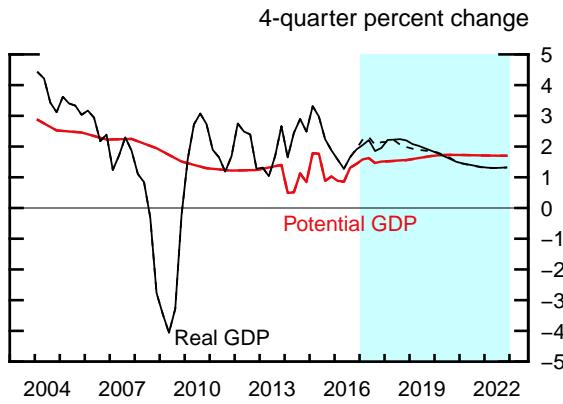
The Long-Term Outlook

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

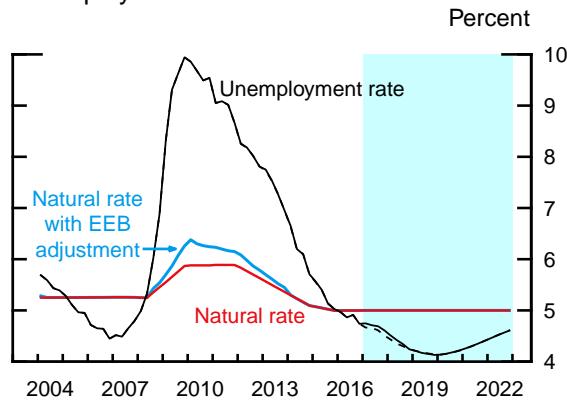
Measure	2017	2018	2019	2020	2021	2022	Longer run
Real GDP Previous Tealbook	2.0 2.1	2.2 2.0	1.9 1.8	1.5 1.5	1.3 1.3	1.3 1.3	1.7 1.7
Civilian unemployment rate ¹ Previous Tealbook	4.6 4.5	4.2 4.2	4.1 4.1	4.2 4.2	4.4 4.4	4.6 4.6	5.0 5.0
PCE prices, total Previous Tealbook	1.7 1.7	1.8 1.8	1.9 1.9	2.0 2.1	2.1 2.1	2.1 2.1	2.0 2.0
Core PCE prices Previous Tealbook	1.8 1.7	1.9 1.9	2.0 2.0	2.0 2.0	2.1 2.1	2.1 2.1	2.0 2.0
Federal funds rate ¹ Previous Tealbook	1.45 1.46	2.46 2.51	3.36 3.37	3.87 3.87	4.02 4.01	3.95 3.92	3.00 3.00
10-year Treasury yield ¹ Previous Tealbook	3.0 3.1	3.5 3.5	3.9 3.9	3.9 3.9	3.9 3.9	3.8 3.8	3.5 3.5

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

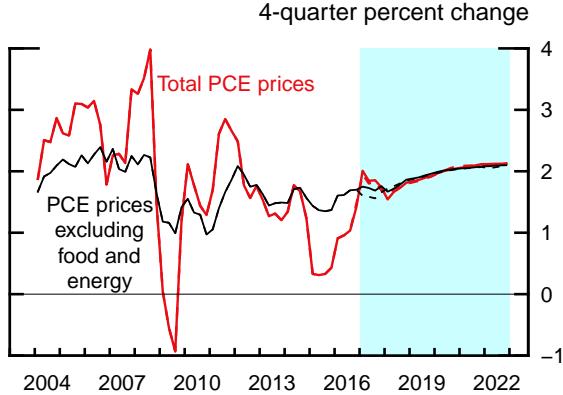
Real GDP



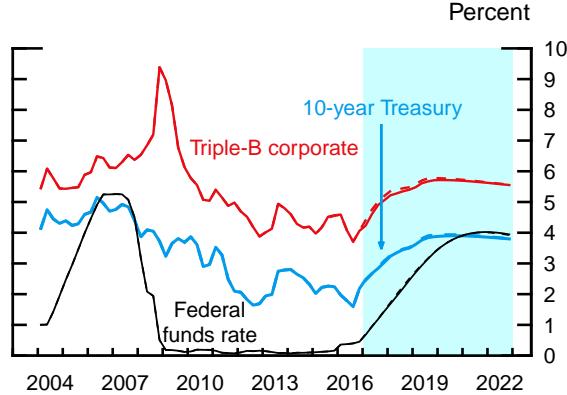
Unemployment Rate



PCE Prices



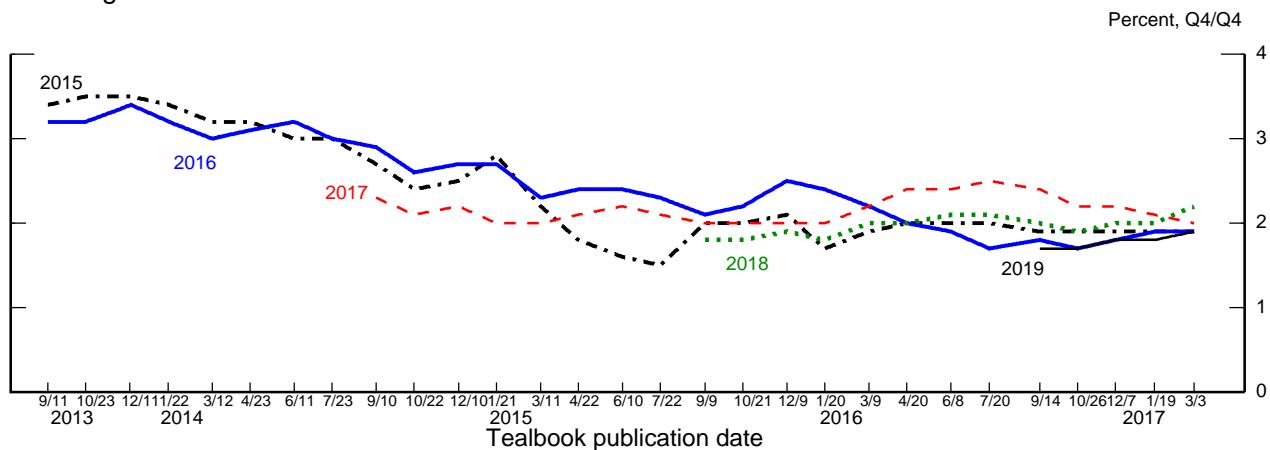
Interest Rates



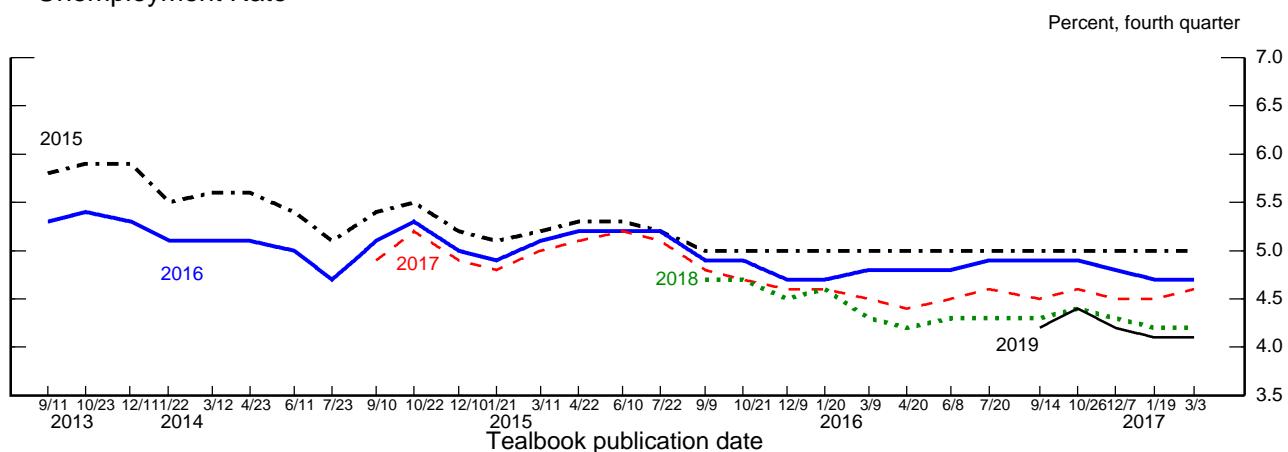
Note: In each panel, shading represents the projection period, and dashed lines are the previous Tealbook.

Evolution of the Staff Forecast

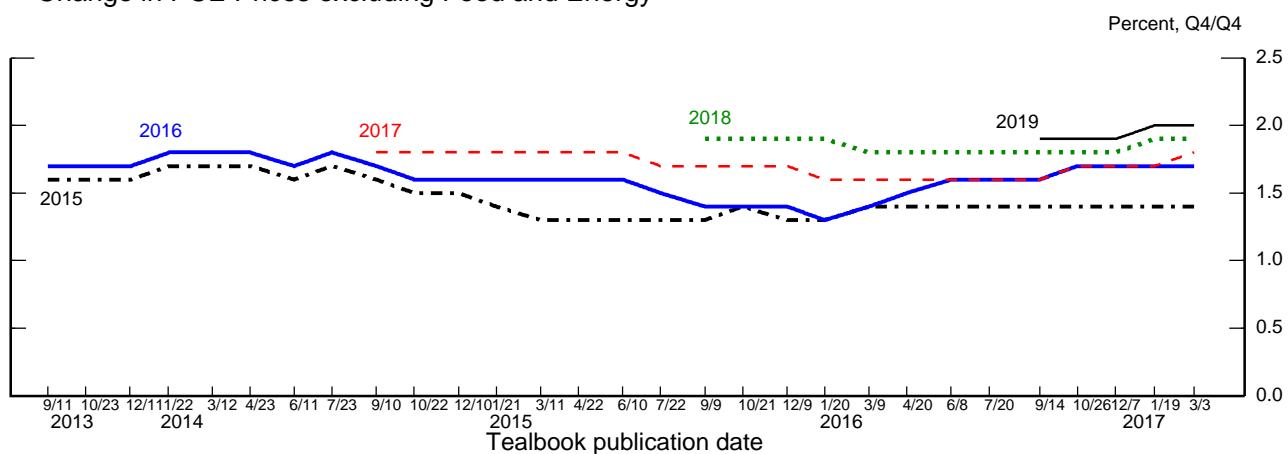
Change in Real GDP



Unemployment Rate



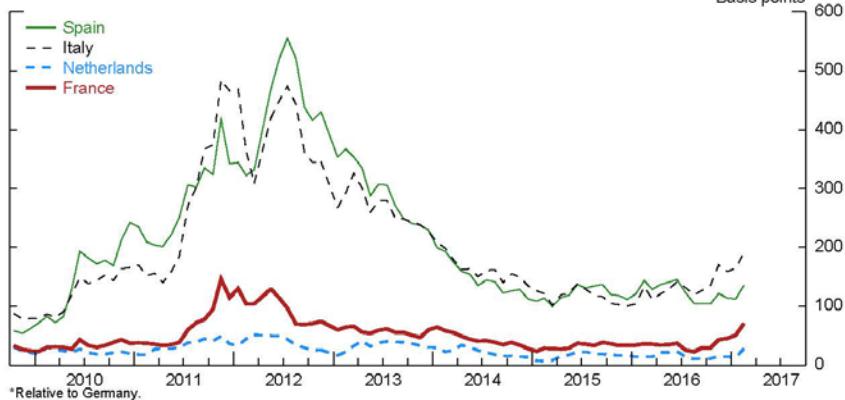
Change in PCE Prices excluding Food and Energy



Polls are subject to considerable uncertainty, however, especially in light of French survey evidence that many voters are unsure about their voting intentions. Anti-EU parties could strongly outperform recent polls, which could substantially pressure other parties to support their policies.

If a referendum on the EU is held in a euro-area country and substantial momentum builds toward an EU exit, fears of a breakup of the euro area could intensify significantly. In such a scenario, financial stresses would escalate across the region, weighing heavily on euro-area economic activity and perhaps generating significant spillovers to the United States. Even if the referendum was ultimately voted down, consistent with surveys indicating that a majority of euro-area citizens wish to remain in the currency union, there could be significant financial and economic disruptions in the meantime. An adverse scenario along these lines is examined in more depth in the “Heightened Risk of EU Breakup” scenario in the Risks and Uncertainty section.

1. 10-year Sovereign Bond Spreads*

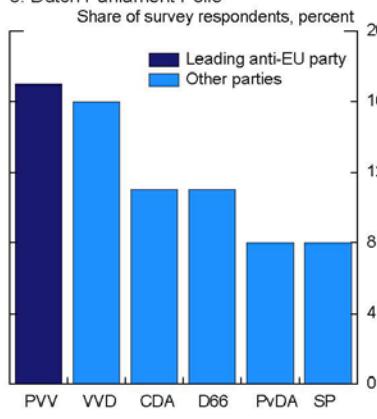


*Relative to Germany.
Source: Bloomberg.

2. European Election Schedule

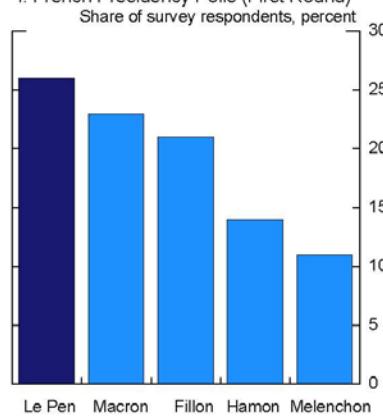
3/15	Netherlands: Parliament
4/23	France: President, first round
5/07	France: President, second round
6/11	France: Parliament, first round
6/18	France: Parliament, second round
9/24	Germany: Parliament
Unknown	Italy: Parliament

3. Dutch Parliament Polls



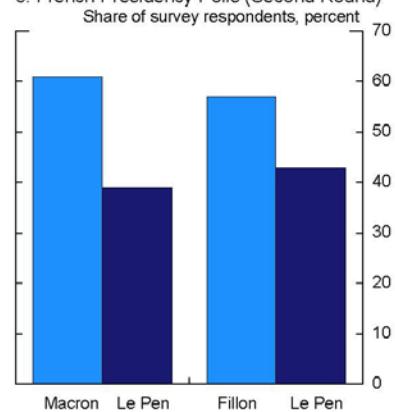
Source: Bearing Pointer, Tom Louwerse, Leiden University.

4. French Presidency Polls (First Round)



Source: Average of recent polls from Harris, Ifop-Fiducial, Kantar-Sofres, Odaxa, and Opinion Way.

5. French Presidency Polls (Second Round)



Source: Average of recent polls from Harris, Ifop-Fiducial, Kantar-Sofres, Odaxa, and Opinion Way.

The Foreign GDP Outlook

Real GDP*

Percent change, annual rate

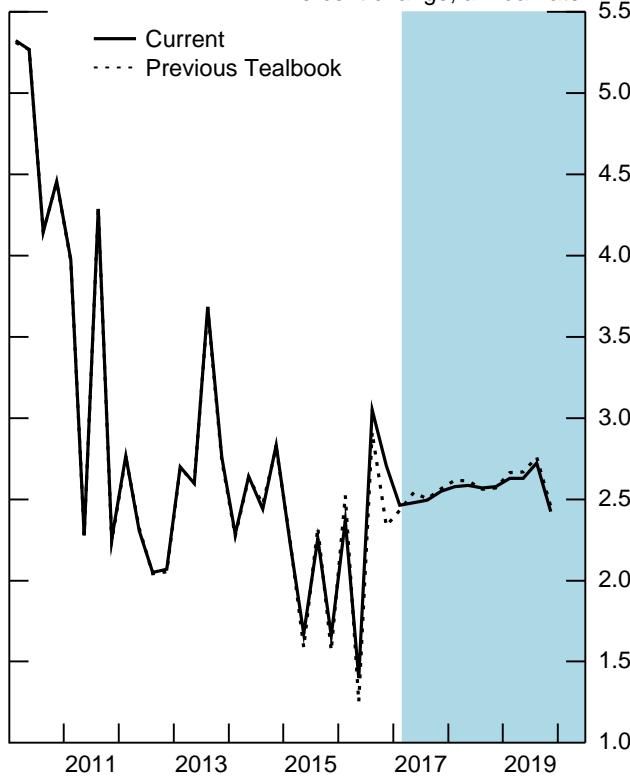
	H1	Q3	Q4	Q1	Q2	H2	2018	2019
1. Total Foreign	1.9	3.1	2.7	2.5	2.5	2.5	2.6	2.6
<i>Previous Tealbook</i>	1.9	2.9	2.3	2.4	2.5	2.5	2.6	2.6
2. Advanced Foreign Economies	1.3	2.5	2.2	2.1	1.9	1.8	1.8	1.7
<i>Previous Tealbook</i>	1.4	2.2	1.9	1.9	1.8	1.8	1.7	1.7
3. Canada	0.7	3.8	2.6	2.3	2.1	1.9	1.8	1.8
4. Euro Area	1.6	1.8	1.6	2.1	1.7	1.7	1.8	1.9
5. Japan	2.1	1.4	1.0	1.1	1.2	1.1	0.9	0.1
6. United Kingdom	1.5	2.3	2.9	2.1	2.0	1.8	1.7	1.7
7. Emerging Market Economies	2.4	3.6	3.2	2.8	3.1	3.3	3.4	3.5
<i>Previous Tealbook</i>	2.4	3.6	2.8	2.9	3.2	3.3	3.4	3.5
8. China	6.8	6.8	6.6	6.4	6.2	6.0	5.8	5.7
9. Emerging Asia ex. China	3.5	3.8	3.4	3.7	3.8	3.6	3.6	3.5
10. Mexico	1.2	4.3	2.9	1.2	1.5	2.0	2.3	2.6
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

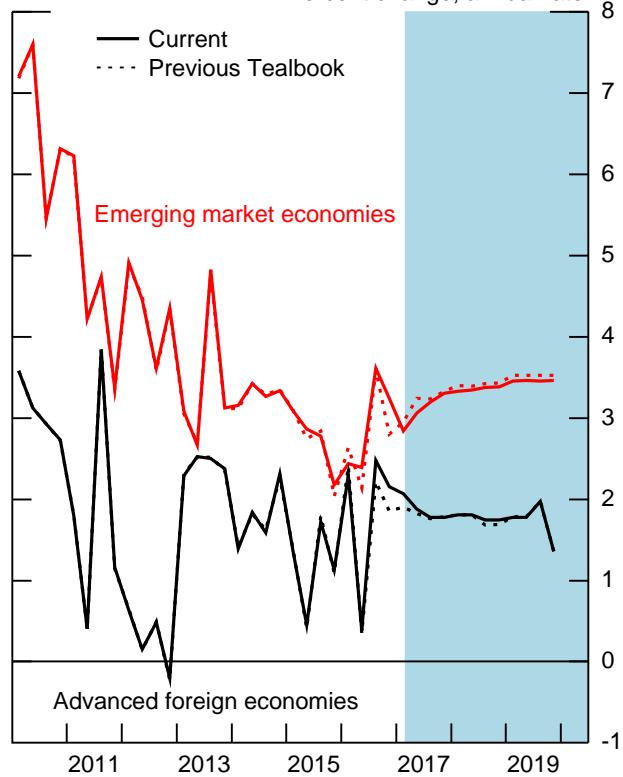
Total Foreign GDP

Percent change, annual rate



Foreign GDP

Percent change, annual rate



The Foreign Inflation Outlook

Consumer Prices*

Percent change, annual rate

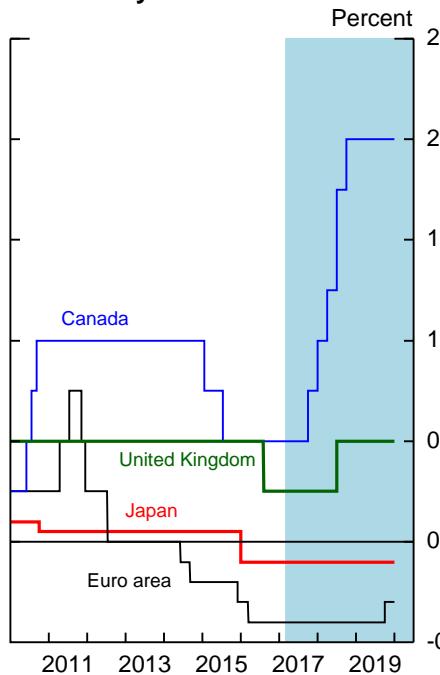
	2016			2017			2018	2019
	H1	Q3	Q4	Q1	Q2	H2		
1. Total Foreign	1.7	1.6	2.6	3.6	2.6	2.4	2.5	2.6
<i>Previous Tealbook</i>	1.7	1.6	2.4	2.8	2.6	2.5	2.5	2.6
2. Advanced Foreign Economies	0.4	0.8	1.8	2.4	1.5	1.4	1.6	1.9
<i>Previous Tealbook</i>	0.4	0.7	1.4	1.7	1.6	1.5	1.6	1.9
3. Canada	1.4	1.0	1.7	2.0	2.0	1.7	1.9	2.0
4. Euro Area	-0.0	1.1	1.9	3.5	1.3	1.4	1.5	1.6
5. Japan	-0.3	-0.5	2.4	0.5	0.8	0.8	1.1	2.5
6. United Kingdom	0.4	2.0	2.0	3.5	2.7	2.4	2.2	2.1
7. Emerging Market Economies	2.7	2.2	3.1	4.4	3.4	3.2	3.1	3.1
<i>Previous Tealbook</i>	2.7	2.2	3.1	3.6	3.3	3.2	3.1	3.1
8. China	2.4	1.3	2.6	2.2	2.6	2.5	2.5	2.5
9. Emerging Asia ex. China	1.7	1.1	2.7	3.1	2.8	3.0	3.2	3.4
10. Mexico	2.6	3.6	4.1	9.3	4.3	3.5	3.2	3.2
11. Brazil	9.6	6.5	2.6	3.7	5.2	5.0	4.8	4.5

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

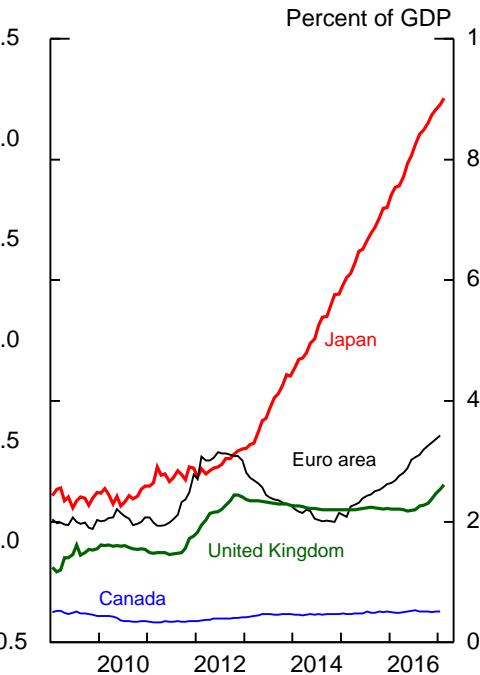
Int'l Econ Devel & Outlook

Foreign Monetary Policy

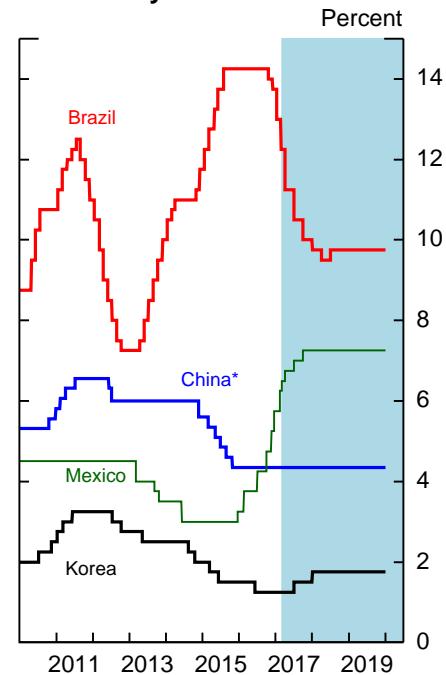
AFE Policy Rates



AFE Central Bank Balance Sheets



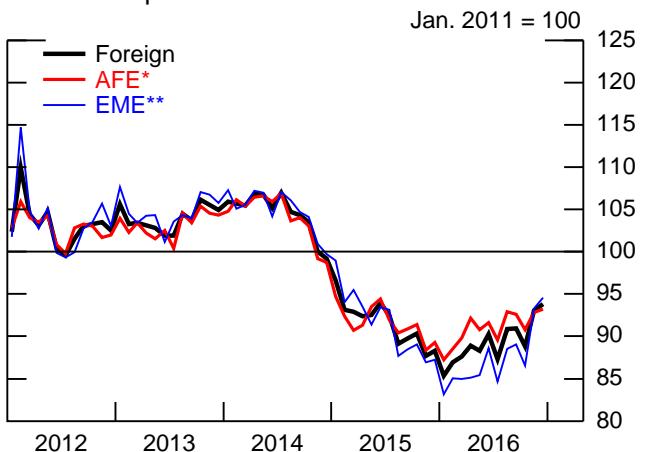
EME Policy Rates



* 1-year benchmark lending rate.

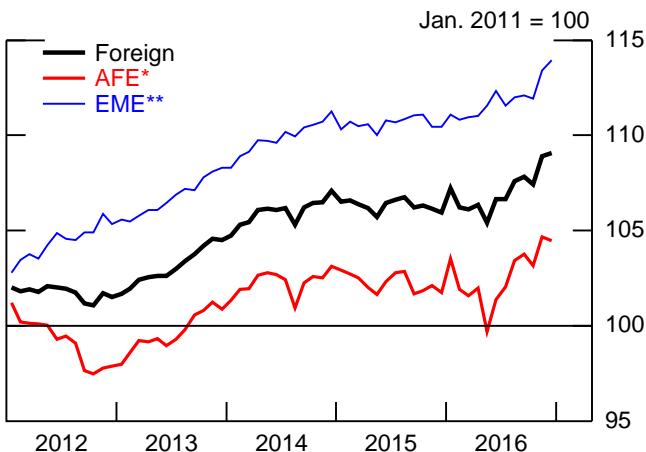
Recent Foreign Indicators

Nominal Exports



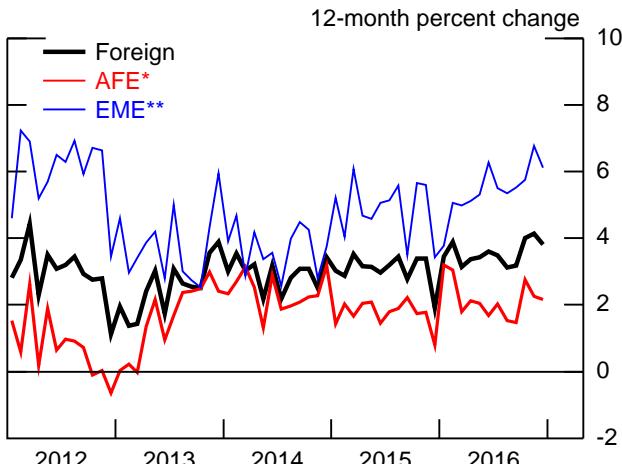
* Includes Australia, Canada, euro area, Japan, Sweden, Switzerland, U.K.
** Includes Argentina, Brazil, Chile, Colombia, Hong Kong, India, Indonesia, Israel, Korea, Malaysia, Mexico, Philippines, Russia, Singapore, Taiwan, Thailand.

Industrial Production



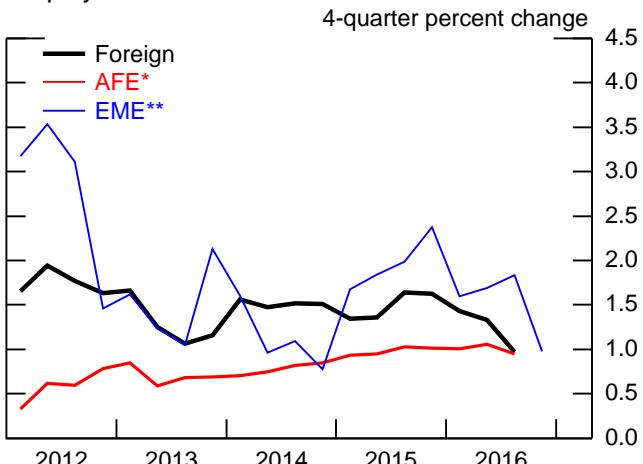
* Includes Canada, euro area, Japan, Sweden, U.K.
** Includes Argentina, Brazil, Chile, China, Colombia, India, Indonesia, Israel, Korea, Malaysia, Mexico, Philippines, Russia, Singapore, Taiwan, Thailand.

Retail Sales



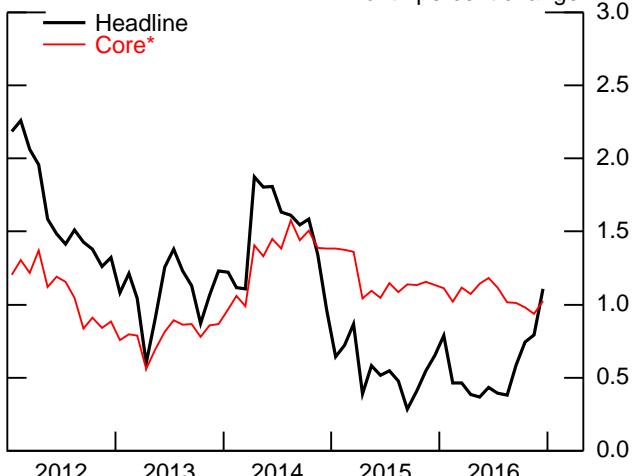
* Includes Canada, euro area, Japan, Sweden, Switzerland, U.K.
** Includes Brazil, Chile, China, Korea, Mexico, Taiwan.

Employment



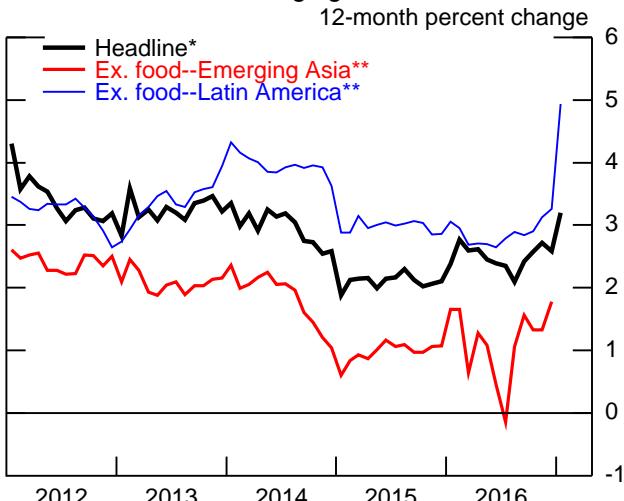
* Includes Australia, Canada, euro area, Japan, Sweden, Switzerland, U.K.
** Includes Chile, Colombia, Hong Kong, Israel, Korea, Mexico, Philippines, Russia, Singapore, Taiwan, Thailand, Turkey.

Consumer Prices: Advanced Foreign Economies



Note: Includes Canada, euro area, Japan, U.K.
* Excludes all food and energy; staff calculation.
Source: Haver Analytics.

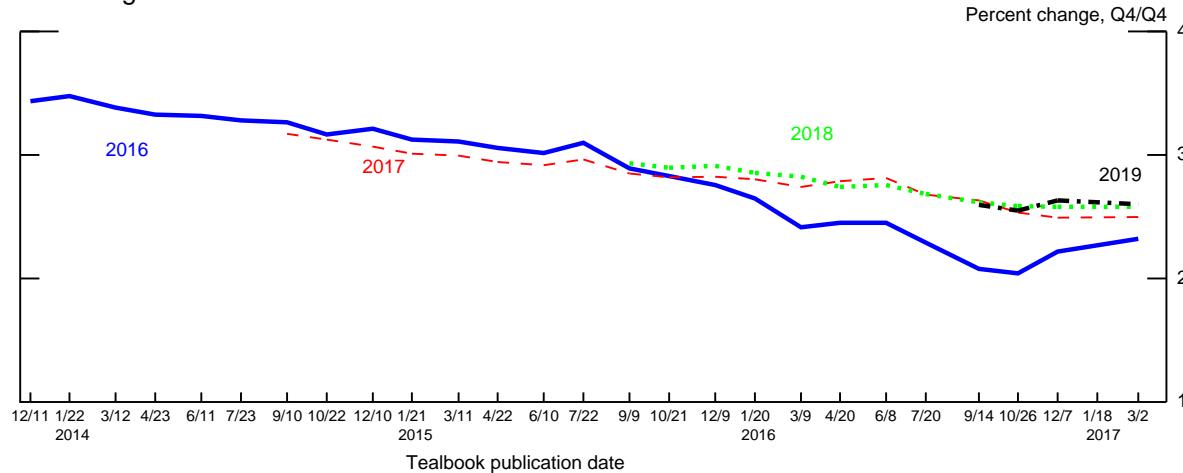
Consumer Prices: Emerging Market Economies



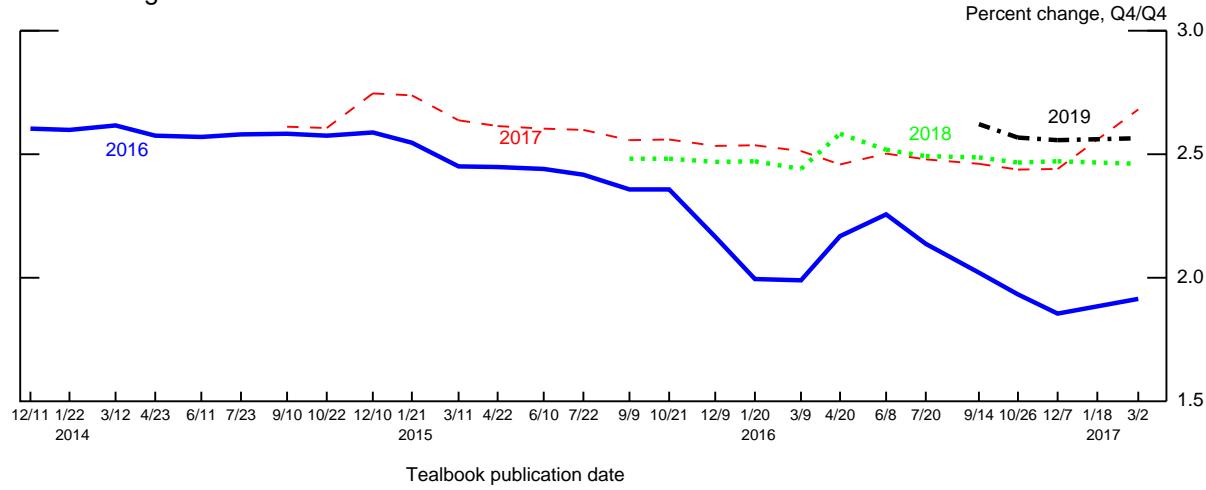
* Includes Brazil, Chile, China, Colombia, Hong Kong, India, Indonesia, Korea, Malaysia, Mexico, Philippines, Singapore, Taiwan, Thailand.
** Excludes all food; staff calculation. Excludes Argentina and Venezuela.

Evolution of Staff's International Forecast

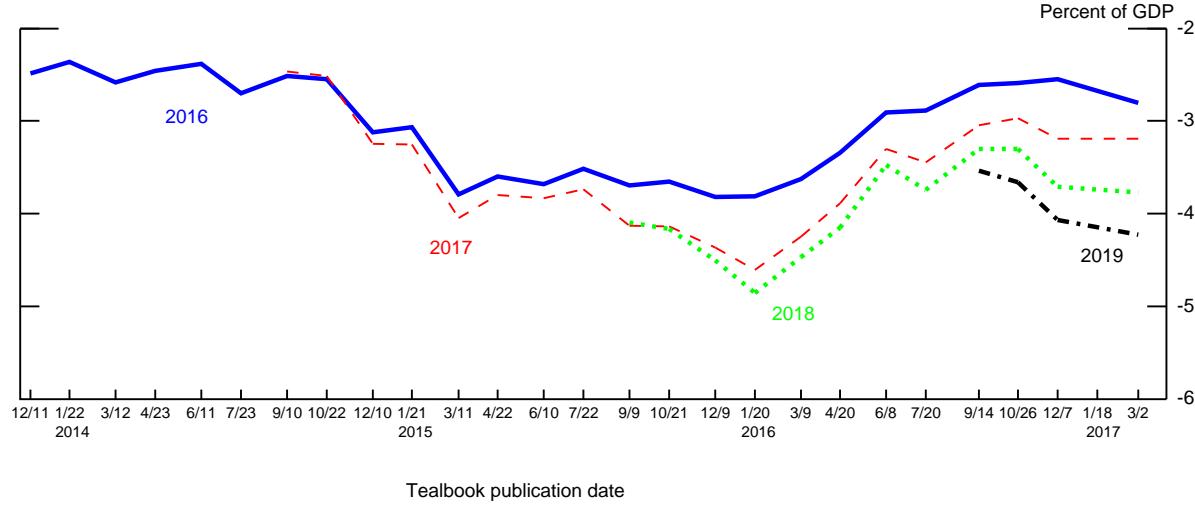
Total Foreign GDP



Total Foreign CPI

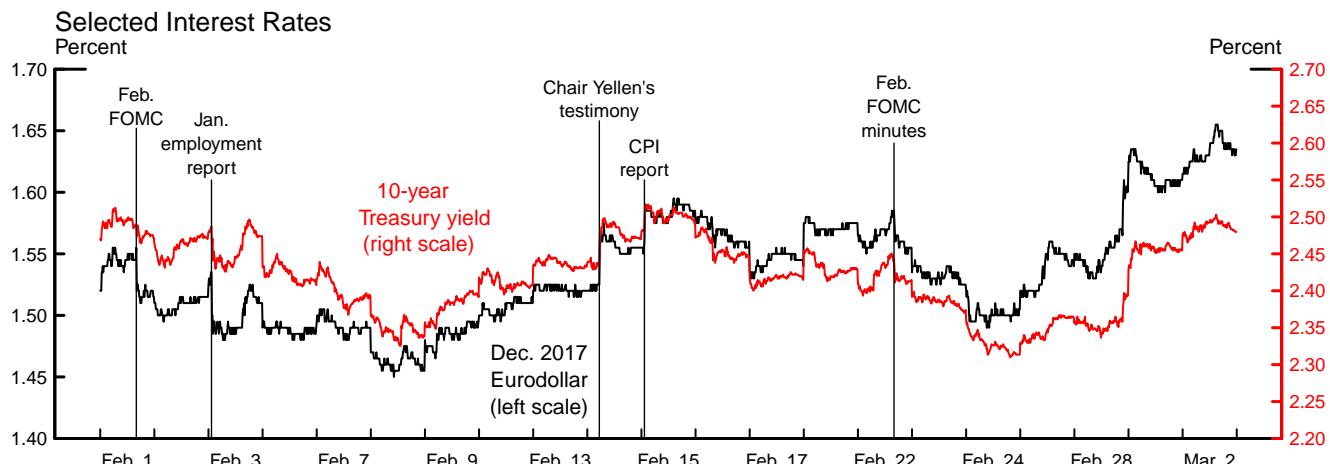


U.S. Current Account Balance



Int'l Econ Devel & Outlook

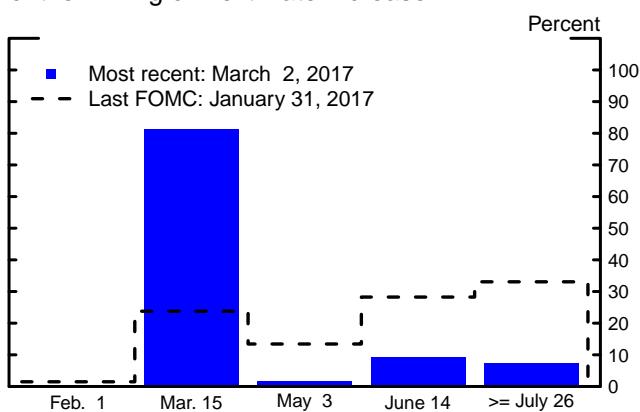
Policy Expectations and Treasury Yields



Note: 5-minute intervals, 8:00 a.m. to 4:00 p.m. Data shown are for 2017.

Source: Bloomberg.

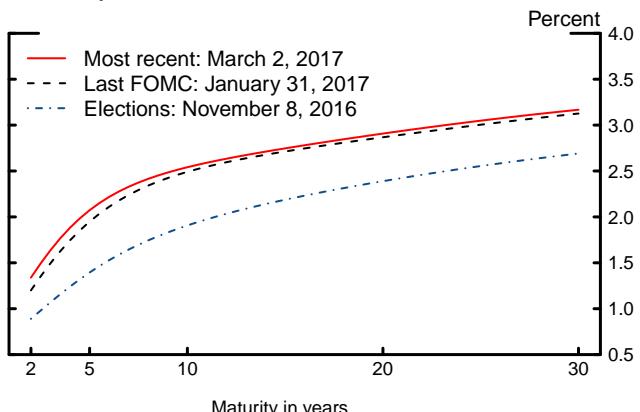
Market-Implied Probability Distribution of the Timing of Next Rate Increase



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 effective federal funds rate before the next FOMC meeting is assumed to be equal to the observed rate on the previous business day.

Source: CME Group; Federal Reserve Board staff estimates.

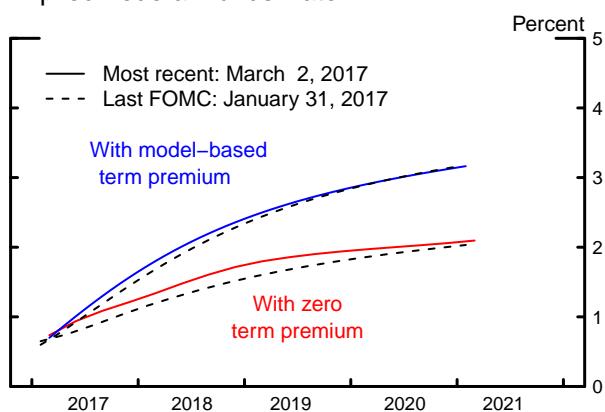
Treasury Yield Curve



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.

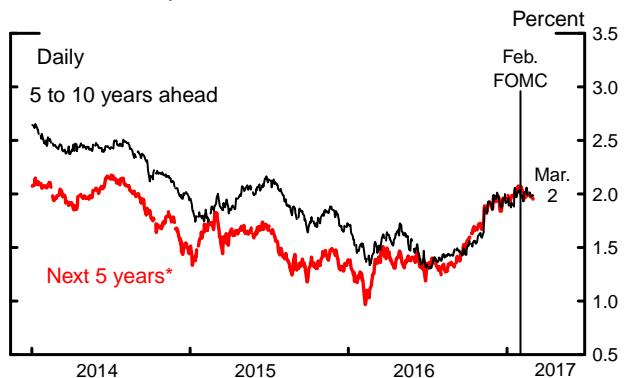
Implied Federal Funds Rate



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

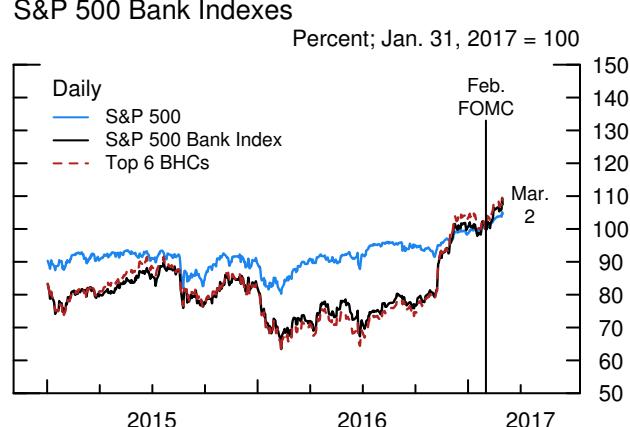
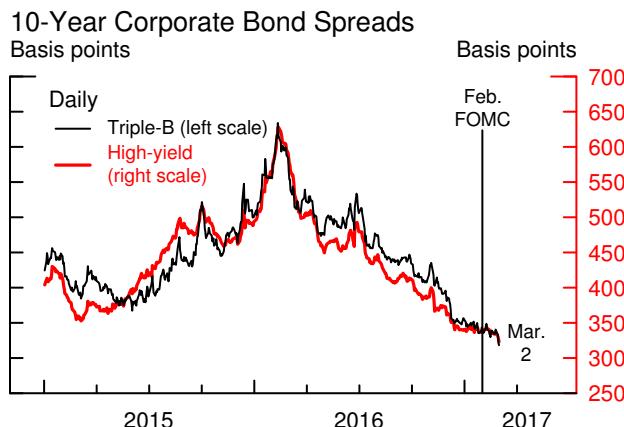
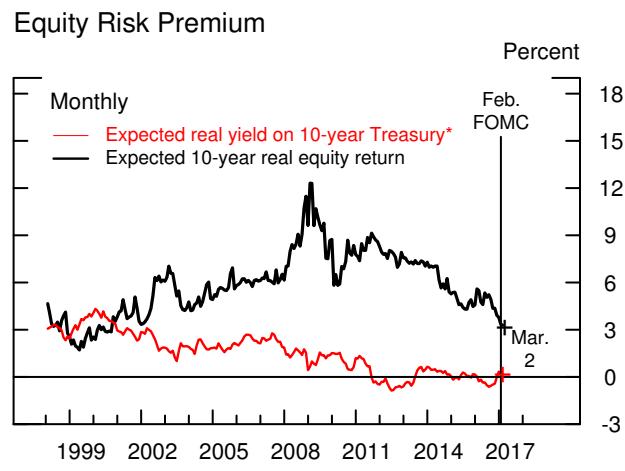
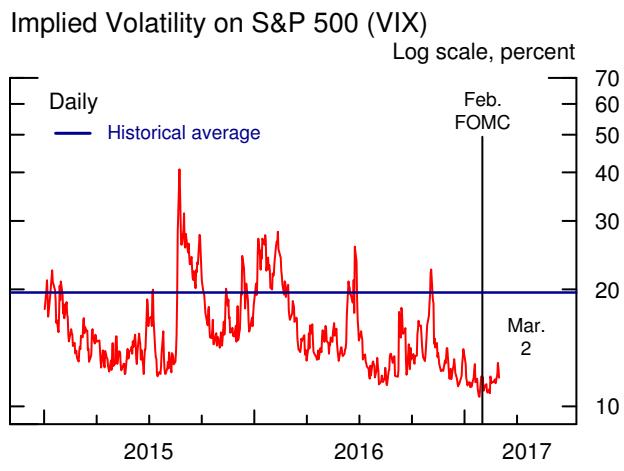
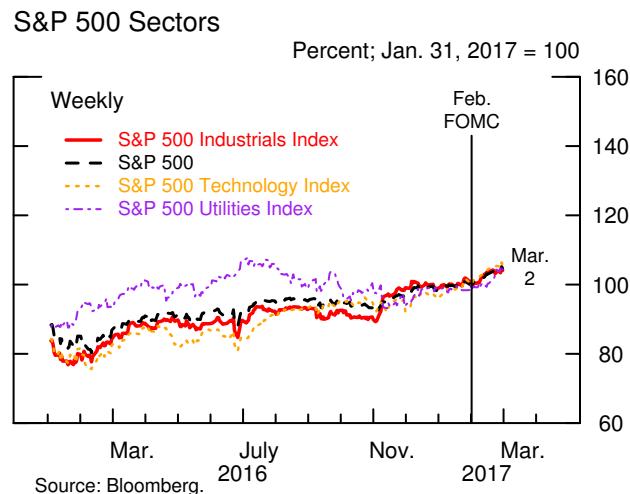
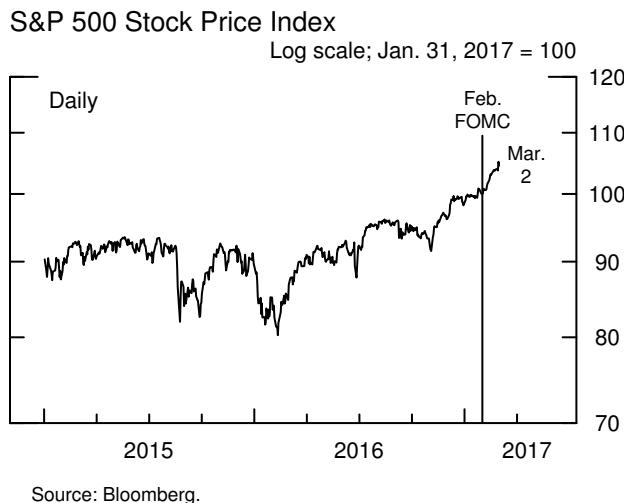


Note: Estimates based on smoothed nominal and inflation-indexed Treasury yield curves.

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

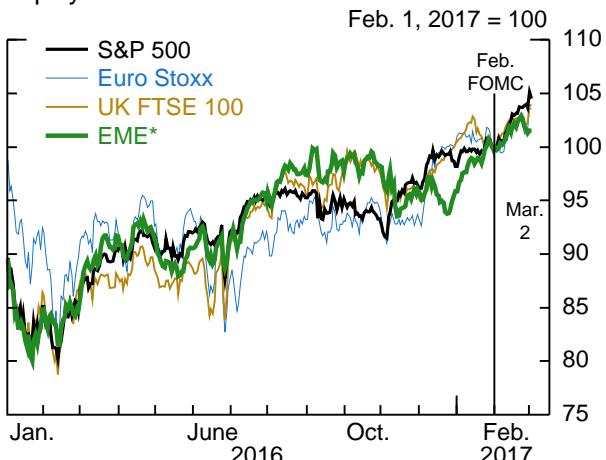
Source: Federal Reserve Bank of New York; Federal Reserve Board staff estimates.

Corporate Asset Markets



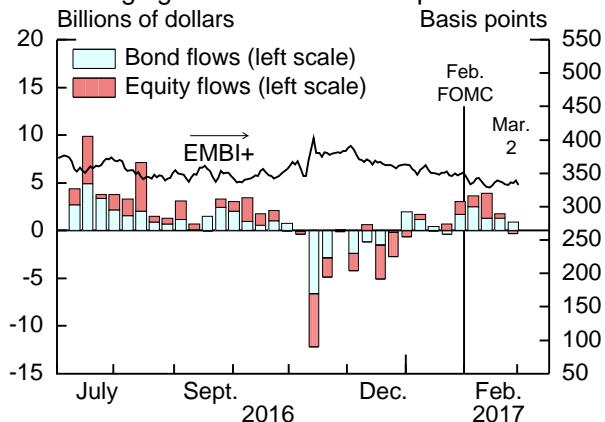
Foreign Developments

Equity Market Indexes



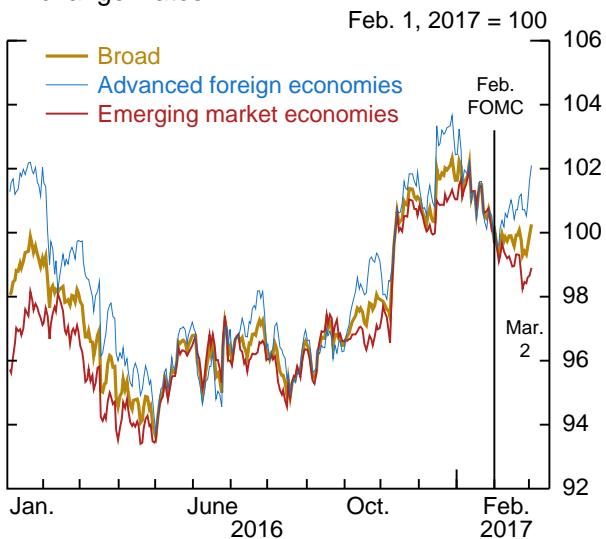
* Emerging market economies. MSCI local currency index.
Source: Bloomberg; Datastream.

Emerging Market Flows and Spreads



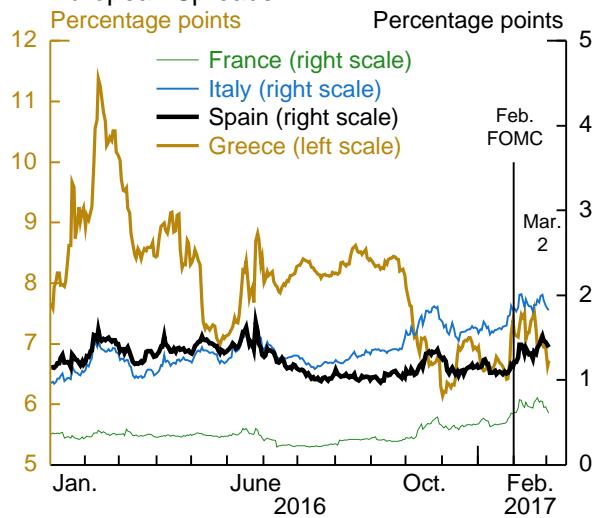
Note: Emerging market bond spreads over zero-coupon Treasury securities. Excludes intra-China flows. EMBI+ is the J.P. Morgan Emerging Markets Bond Index Plus.
Source: Bloomberg; Emerging Portfolio Fund Research.

Exchange Rates



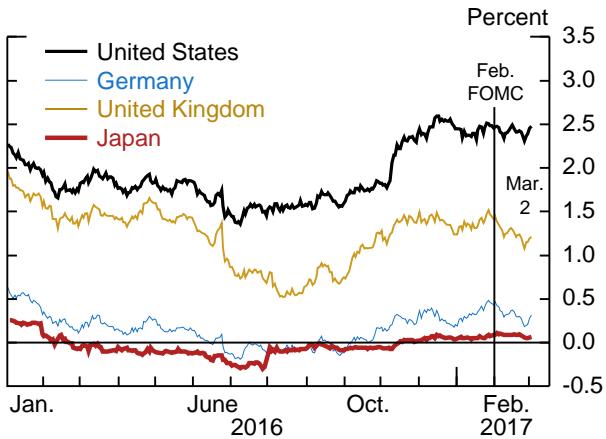
Source: Bloomberg.

European Spreads



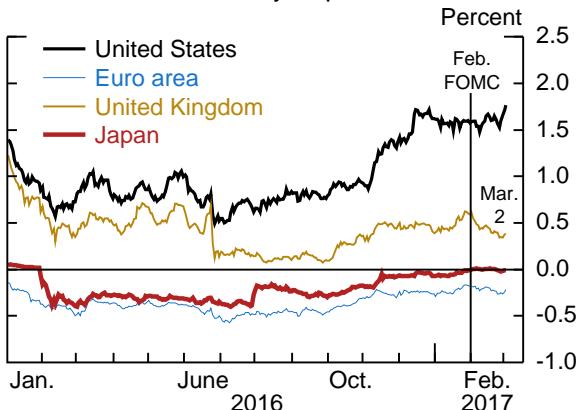
Note: European bond spreads over German yields.
Source: Bloomberg.

10-Year Nominal Yields



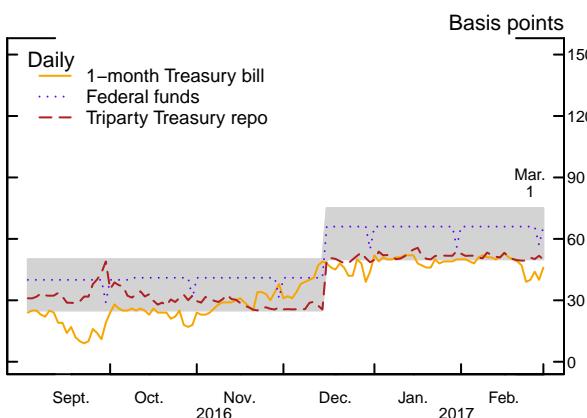
Source: Bloomberg.

24-Month-Ahead Policy Expectations



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

Selected Money Market Rates

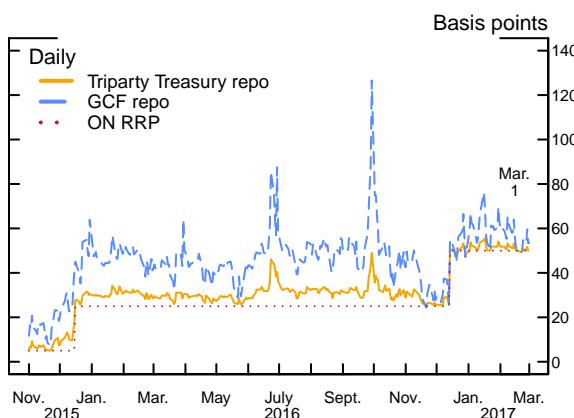


Note: Shaded area is the target range for the federal funds rate. Federal funds rate is a weighted median. Triparty repurchase agreement (repo) rate is a weighted mean.

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

Monetary Policy Implementation

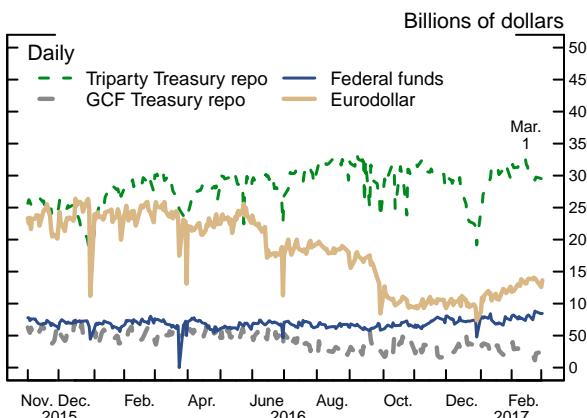
Triparty Repo and GCF Repo Rates



Note: GCF is General Collateral Finance; ON RRP is overnight reverse repurchase agreement; repo is repurchase agreement.

Source: Depository Trust & Clearing Corporation; Federal Reserve Bank of New York; Federal Reserve Board.

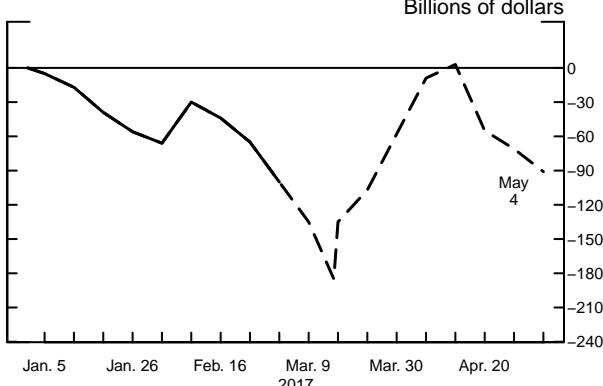
Selected Money Market Volumes



Note: GCF is General Collateral Finance; repo is repurchase agreement.

Source: For federal funds and Eurodollar, Federal Reserve Board, Form FR 2420, Report of Selected Money Market Rates; for triparty Treasury repo and GCF Treasury repo, Federal Reserve Bank of New York.

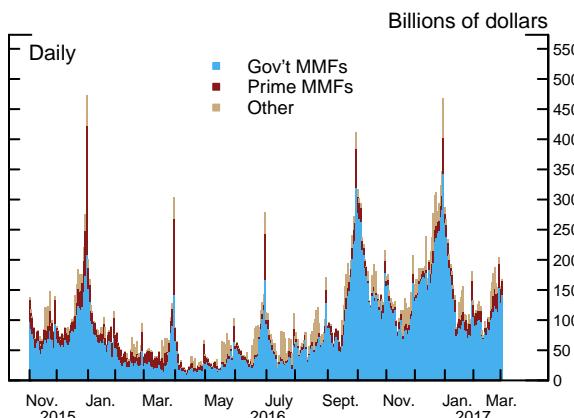
Cumulative Net Bill Issuance



Note: Data are weekly with one exception: For the week of March 13, the data consist of two observations—one on March 15 and the other on March 16. Dashed line represents forecast values.

Source: Wrightson.

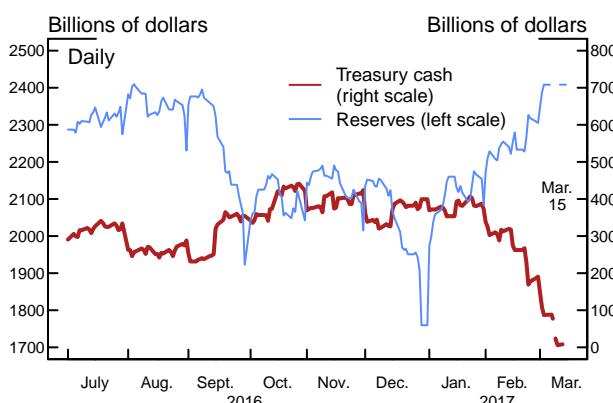
ON RRP Take-Up, by Type



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

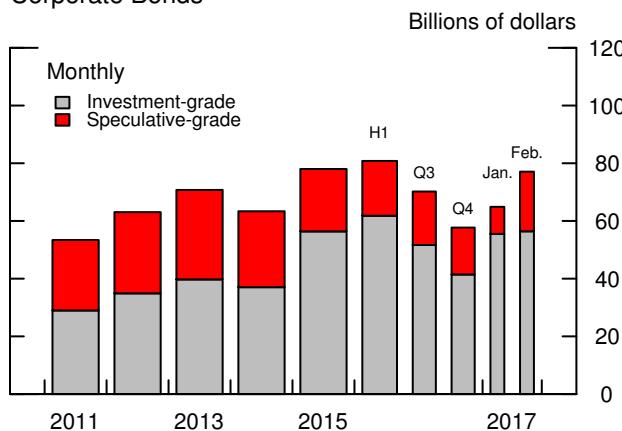
Source: Federal Reserve Bank of New York.

Treasury Cash Balances and Reserves

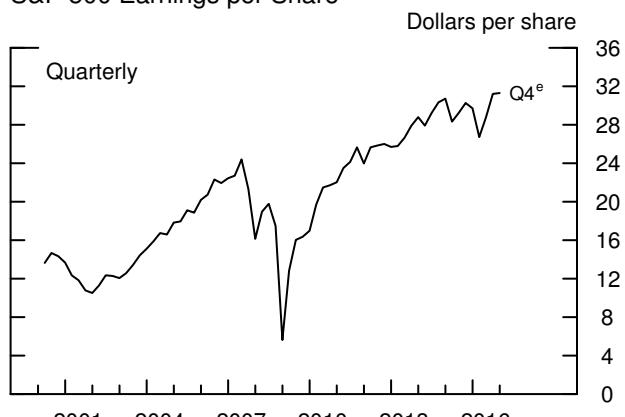


Note: Dashed line represents forecast values.

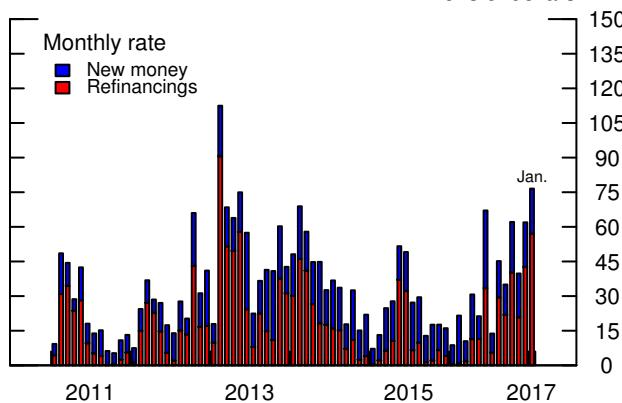
Source: U.S. Department of the Treasury; staff estimates.

Business Finance**Gross Issuance of Nonfinancial Corporate Bonds**

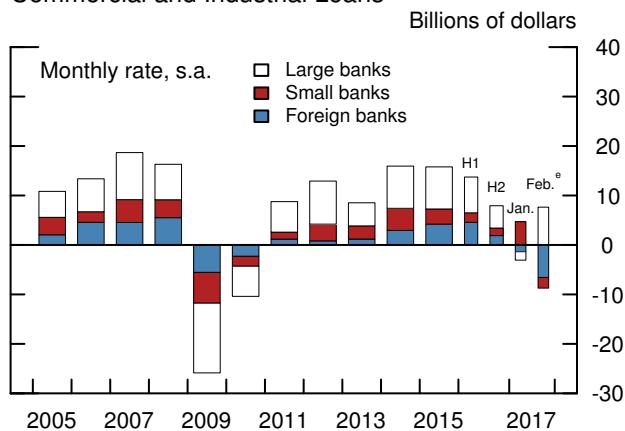
Note: Bonds are categorized by Moody's, Standard & Poor's, and Fitch.
Source: Mergent Fixed Income Securities Database.

S&P 500 Earnings per Share

e Estimate.
Source: Thomson Reuters Financial.

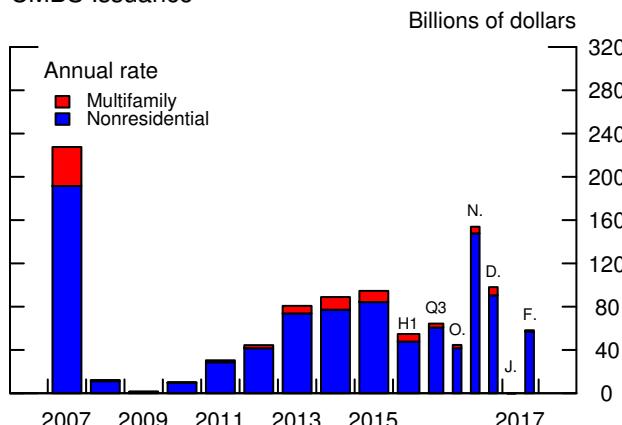
Institutional Leveraged Loan Issuance, by Purpose

Source: Thomson Reuters LPC LoanConnector.

Commercial and Industrial Loans

Note: Average monthly rates are calculated using differences between average levels. Annual rates are calculated from Q4 to Q4 levels, semiannual rates from Q4 to Q2 levels, and quarterly and monthly rates from corresponding levels. Large banks are defined as the largest 25 banks by assets.

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

CMBS Issuance

Note: Multifamily excludes agency issuance.
Source: Consumer Mortgage Alert.

NFIB Small Business Optimism Index

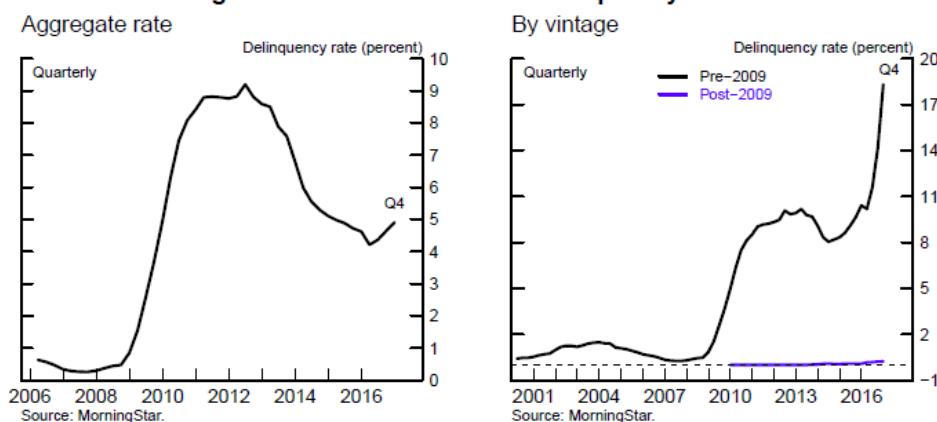
Note: The 3-month moving average is reported.
Source: National Federation of Independent Business (NFIB), Small Business Economic Trends Data.

What Are the Implications of the Sharp Rise in the Delinquency Rate for Commercial Mortgage-Backed Securities in This Market?

The delinquency rate for commercial mortgages in corporate mortgage-backed securities (CMBS) pools has increased since the spring of 2016, raising concerns about whether signs of distress in CMBS financing conditions are emerging (the left panel of figure 1). In this discussion, we show that the increase in delinquencies is confined to loans from the 2006–07 CMBS pools, we project the evolution of the delinquency rate, and we describe why the projected increase is unlikely to indicate an adverse change in CMBS financing conditions.

As shown in the right panel of figure 1, the key driver of the increase in the aggregate CMBS delinquency rate is the set of loans from the 2006–07 legacy vintage.¹ These loans were originated at a time when CMBS underwriting was very loose; such standards have since tightened substantially. Loans in CMBS pools typically have a 10-year term and are generally not fully amortizing—generally, the large maturing balloon balances need to be refinanced to avoid default. As of 2016:Q4, of the original \$394 billion of loans from the 2006–07 vintage, about \$227 billion had been refinanced and \$70 billion had been charged off, leaving roughly \$96 billion of loans outstanding, most of which are expected to mature by the end of 2017. Out of this outstanding volume, roughly \$16 billion of loans were delinquent in the fourth quarter, and we estimate that an additional \$12 billion will likely default in 2017 because of their inability to refinance their maturing balances in the CMBS market, given today's more stringent underwriting.²

Figure 1: Historical CMBS Delinquency Rate



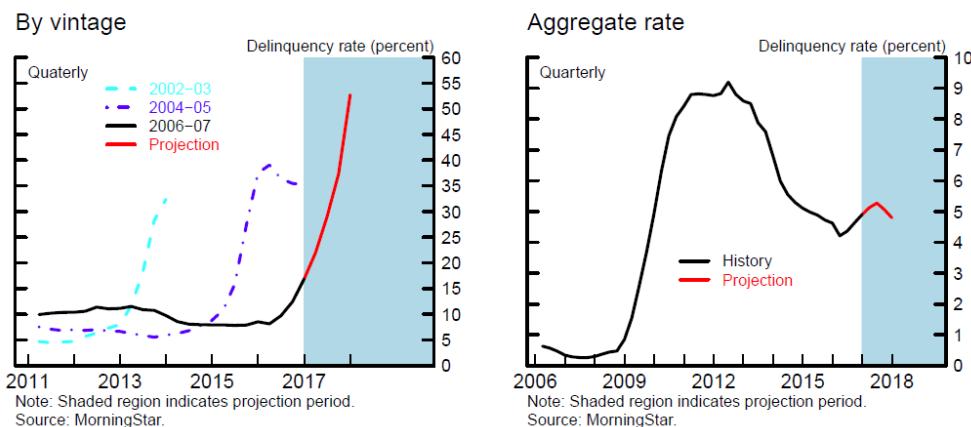
¹ The delinquency rate of the post-crisis CMBS loans remains low, although some of the loans used to finance retail properties in regional markets have shown some signs of distress in recent months.

² The volume of loans expected to default would be even higher had we used loan characteristics at origination—the strong rebound of commercial real estate property prices and decrease in interest rates since the crisis have produced significant improvements in the updated credit profiles of these loans. In contrast, the volume of expected defaults would be lower if some of loans manage to refinance outside of the CMBS market. Staff analysis indicates that since 2015, roughly half of the loans originally financed in the CMBS market have been refinancing their loan balances post-crisis using non-CMBS funding. This share appears to have picked up somewhat since 2015.

We expect these future defaults to cause the delinquency rate on the 2006–07 vintage to continue to rise significantly over the course of this year (the red line in the left panel of figure 2).³ The defaulting loans will boost the delinquency rate of the 2006–07 vintage for some time, as defaults continue to affect the numerator of the delinquency rate until they are resolved. In addition, loans on fundamentally solid properties that are able to refinance at the end of their original terms drop out of the 2006–07 CMBS vintage, causing the denominator of the delinquency rate to contract quickly and the rate itself to spike. By the end of 2017, most remaining loans in the 2006–07 vintage should be resolved one way or another. Overall, the projected increase in the delinquency rate of the 2006–07 vintage will drive up the aggregate delinquency rate in the first half of 2017, as shown in the right panel of figure 2, even if the delinquency rate for the post-crisis vintages remains near zero. As the volume of outstanding 2006–07 loans is projected to dwindle over time, the contribution of these loans to the aggregate delinquency rate will decline, and the aggregate delinquency rate should start to fall again in the second half of this year.

We believe that the projected rise in the aggregate CMBS delinquency rate is unlikely to portend an adverse change in CMBS financing conditions for three reasons. First, the projected delinquency rate remains well below the levels seen during the financial crisis. Second, unlike during the financial crisis, the projected increase in the delinquency rate is not caused by broader market distress or a shock to property values or rents. Third, the increase has been long anticipated by market participants. According to market sources, the increased credit risk associated with the 2006–07 vintage is already priced in by the markets. Indeed, combining our projected default rate for outstanding 2006–07 loans with a reasonable assumption on loss severity, our estimate of cumulative losses for this vintage appears to be fairly well aligned with reported estimates of investors' current expectations of these losses.

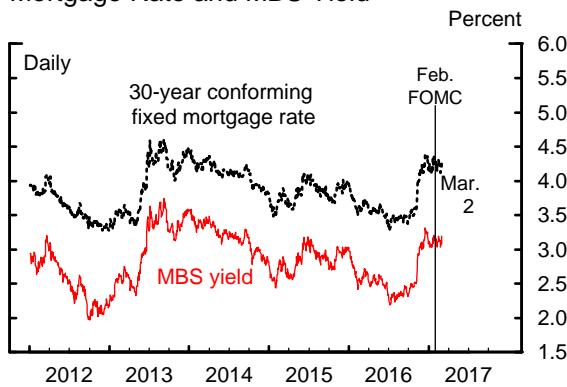
Figure 2: CMBS Delinquency Rate Projections



³ Our projection for the evolution of the delinquency rate for the 2006–07 vintage is based on our projection of the volume of loans defaulting at maturity in a given quarter in 2017. To project the future path of the aggregate delinquency rate, we combine the projection for the 2006–07 vintage with an assumption of a constant, near-zero delinquency rate for loans in the post-crisis vintage as well as an assumption that the 2006–07 vintage will continue to decline as a share of total CMBS outstanding at the average rate observed over the past year.

Household Finance

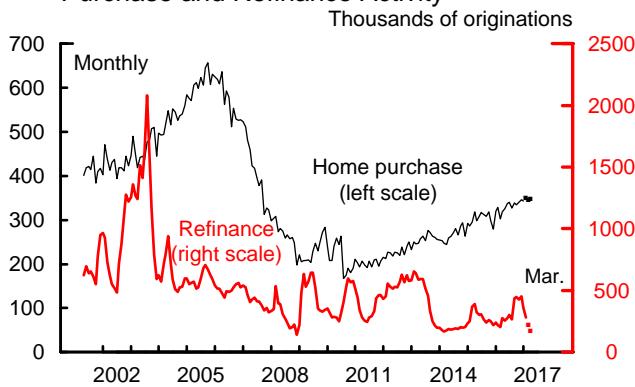
Mortgage Rate and MBS Yield



Note: The MBS yield is the Fannie Mae 30-year current-coupon rate.

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

Purchase and Refinance Activity

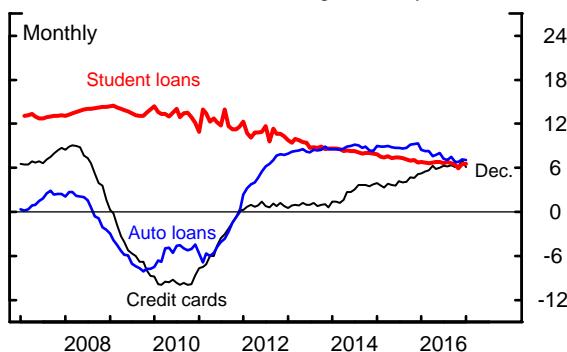


Note: The data are seasonally adjusted by Federal Reserve Board staff. Points represent staff projections.

Source: For values prior to 2016, data reported under the Home Mortgage Disclosure Act of 1975; for values in 2016 and 2017, staff estimates.

Consumer Credit

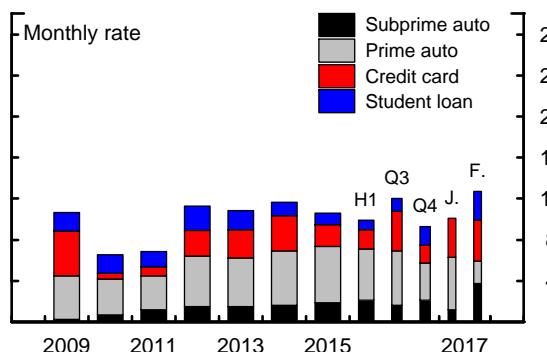
Percent change from a year earlier



Note: The data are not seasonally adjusted.
Source: Federal Reserve Board.

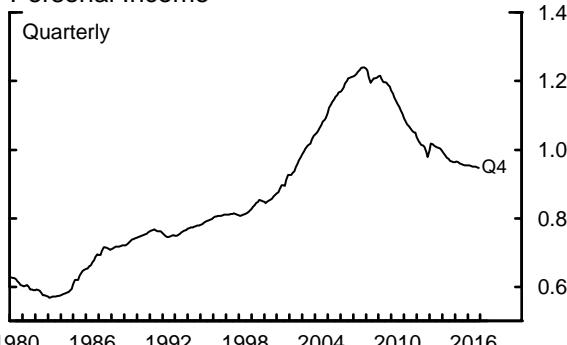
Gross Consumer ABS Issuance

Billions of dollars



Source: Inside MBS & ABS; Merrill Lynch; Bloomberg.

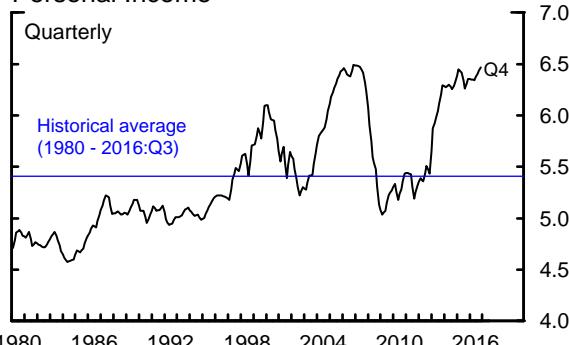
Debt Relative to Disposable Personal Income



Note: Includes only home mortgage debt and consumer credit.

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

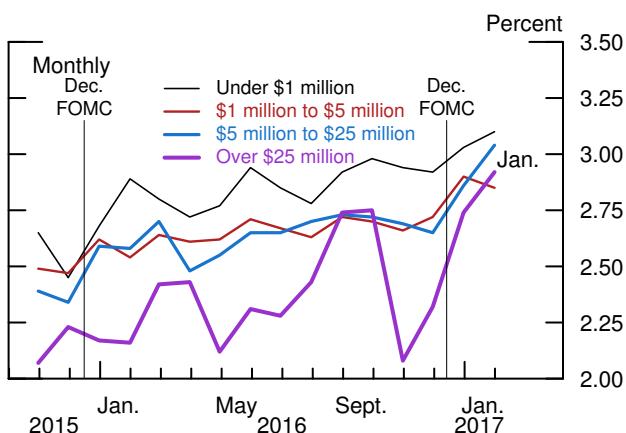
Net Worth Relative to Disposable Personal Income



Note: The value for 2016:Q4 is preliminary.

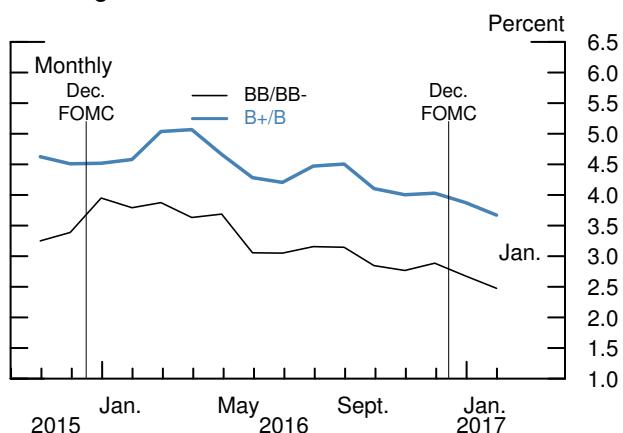
Source: Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States."

Interest Rates on New LIBOR Loans in the Bilateral C&I Market



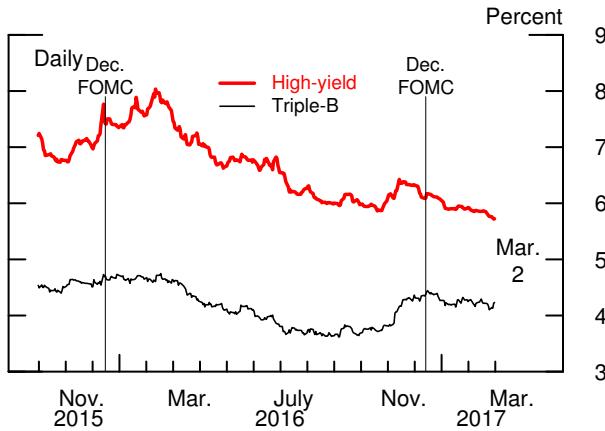
Note: C&I is commercial and industrial.
Source: Automated Financial Systems.

Average New-Issue Spreads on Institutional Leveraged Loans



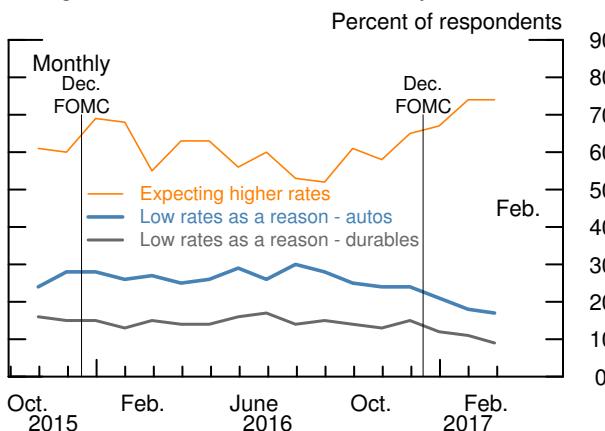
Note: Spreads are calculated against 3-month LIBOR. The spreads do not include upfront fees.
Source: Standard & Poor's Loan Commentary Data.

10-Year Corporate Bond Yields



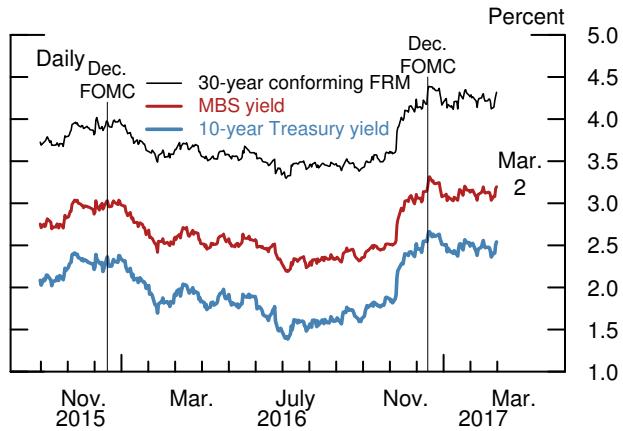
Source: Staff estimates of smoothed yield curves based on Merrill Lynch bond data.

Percent of Consumers Expecting Higher Rates and Citing Low Rates as a Reason to Buy Consumer Goods



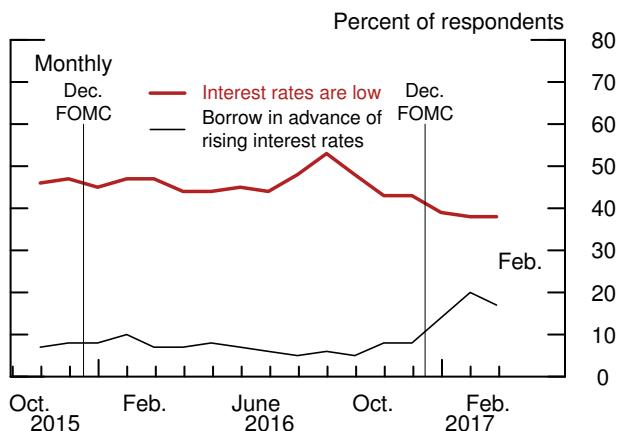
Source: University of Michigan Surveys of Consumers.

Mortgage Rate and MBS Yield



Note: The mortgage-backed securities (MBS) yield is the Fannie Mae 30-year current-coupon rate. FRM is fixed-rate mortgage.
Source: For MBS yield, Barclays; for mortgage rate, Loansifter.

Consumers' Reasons for Why It's a Good Time to Buy a House



Source: University of Michigan Surveys of Consumers.

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

Measure and scenario	2017		2018	2019	2020	2021-22
	H1	H2				
<i>Real GDP</i>						
Extended Tealbook baseline	1.7	2.2	2.2	1.9	1.5	1.3
Steeper wage Phillips curve	1.8	2.1	2.1	1.8	1.4	1.2
Stronger aggregate demand	3.1	2.5	2.0	1.6	1.4	1.3
Domestic financial turbulence	1.7	1.2	.7	1.5	1.8	1.9
No fiscal expansion	1.7	2.2	1.9	1.8	1.4	1.4
Heightened risk of EU breakup	1.7	1.0	1.2	2.0	1.9	1.6
Stronger foreign growth and weaker dollar	2.0	2.7	2.7	2.0	1.3	1.1
<i>Unemployment rate¹</i>						
Extended Tealbook baseline	4.7	4.6	4.2	4.1	4.2	4.6
Steeper wage Phillips curve	4.7	4.6	4.3	4.2	4.4	4.9
Stronger aggregate demand	4.4	4.2	4.0	4.0	4.2	4.6
Domestic financial turbulence	4.7	4.8	5.0	5.1	5.0	4.7
No fiscal expansion	4.7	4.6	4.4	4.4	4.5	4.8
Heightened risk of EU breakup	4.7	4.8	4.9	4.9	4.8	5.0
Stronger foreign growth and weaker dollar	4.7	4.5	3.9	3.7	3.8	4.3
<i>Total PCE prices</i>						
Extended Tealbook baseline	2.0	1.5	1.8	1.9	2.0	2.1
Steeper wage Phillips curve	2.1	1.8	2.2	2.5	2.8	2.9
Stronger aggregate demand	2.0	1.5	1.8	1.9	2.1	2.1
Domestic financial turbulence	2.0	1.5	1.8	1.9	2.0	2.0
No fiscal expansion	2.0	1.5	1.8	1.8	1.9	2.0
Heightened risk of EU breakup	2.0	-.1	1.0	1.6	1.9	2.0
Stronger foreign growth and weaker dollar	2.4	2.0	2.3	2.2	2.1	2.2
<i>Core PCE prices</i>						
Extended Tealbook baseline	2.0	1.5	1.9	2.0	2.0	2.1
Steeper wage Phillips curve	2.1	1.8	2.3	2.5	2.8	2.9
Stronger aggregate demand	2.0	1.6	1.9	2.0	2.0	2.1
Domestic financial turbulence	2.0	1.5	1.9	2.0	2.0	2.0
No fiscal expansion	2.0	1.5	1.8	1.9	1.9	2.0
Heightened risk of EU breakup	2.0	.7	1.2	1.6	1.8	1.9
Stronger foreign growth and weaker dollar	2.2	1.9	2.3	2.2	2.2	2.2
<i>Federal funds rate¹</i>						
Extended Tealbook baseline	.9	1.4	2.5	3.4	3.9	3.9
Steeper wage Phillips curve	1.0	1.5	2.7	3.8	4.4	4.7
Stronger aggregate demand	1.1	1.8	2.9	3.7	4.1	4.0
Domestic financial turbulence	.9	1.4	1.8	2.2	2.6	3.3
No fiscal expansion	.9	1.4	2.3	3.0	3.3	3.2
Heightened risk of EU breakup	.9	1.3	1.6	2.1	2.7	2.9
Stronger foreign growth and weaker dollar	1.0	1.8	3.1	4.1	4.6	4.4

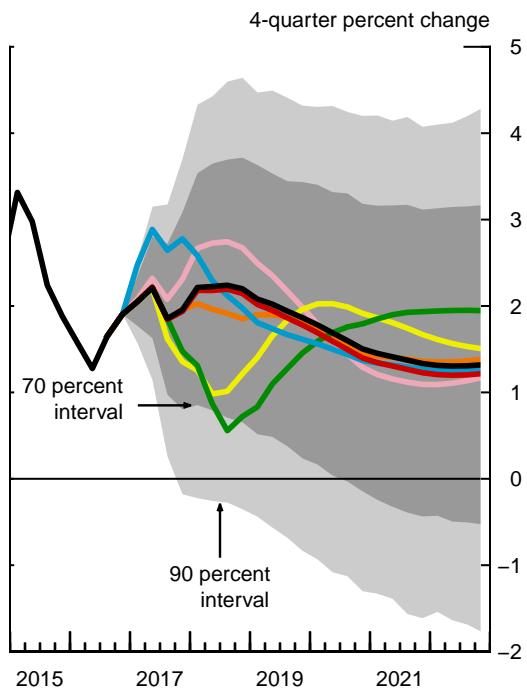
1. Percent, average for the final quarter of the period.

Forecast Confidence Intervals and Alternative Scenarios

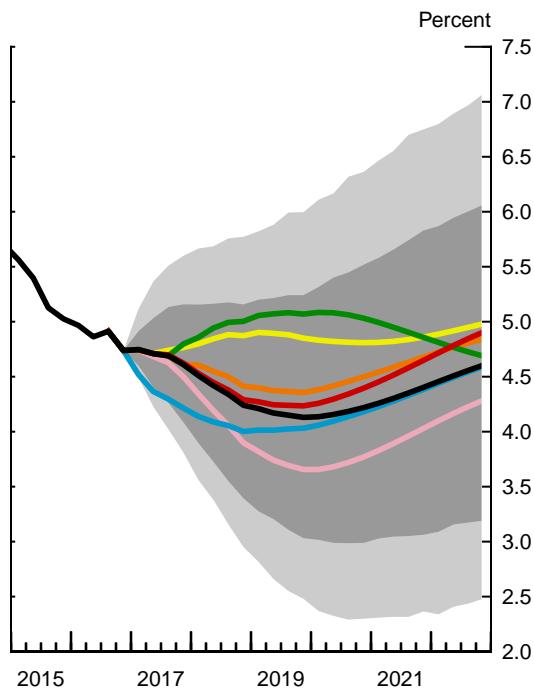
Confidence Intervals Based on FRB/US Stochastic Simulations

- Extended Tealbook baseline
- Domestic financial turbulence
- Heightened risk of EU breakup
- Steeper wage Phillips curve
- No fiscal expansion
- Stronger foreign growth and weaker dollar
- Stronger aggregate demand

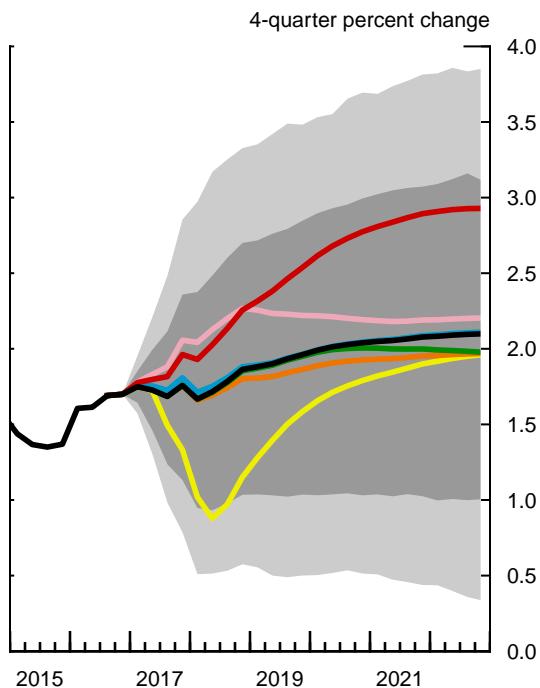
Real GDP



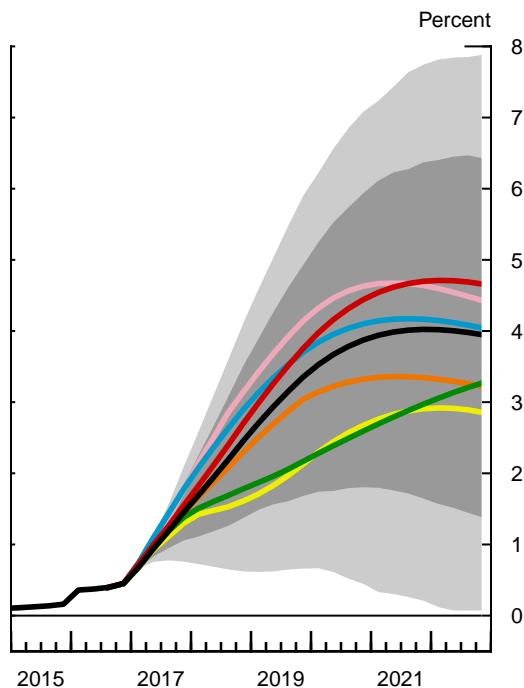
Unemployment Rate



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

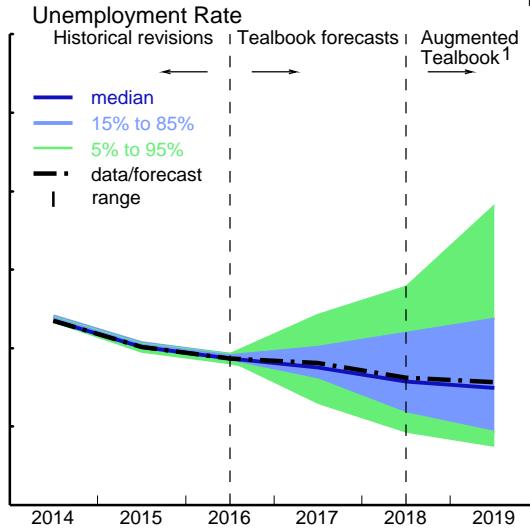
Measure	2017	2018	2019	2020	2021	2022
<i>Real GDP</i> <i>(percent change, Q4 to Q4)</i>						
Projection	2.0	2.2	1.9	1.5	1.3	1.3
Confidence interval						
Tealbook forecast errors	.2–3.5	-.2–3.6	-.9–3.2
FRB/US stochastic simulations	.8–3.1	.7–3.7	.2–3.4	-.1–3.2	-.4–3.1	-.5–3.2
<i>Civilian unemployment rate</i> <i>(percent, Q4)</i>						
Projection	4.6	4.2	4.1	4.2	4.4	4.6
Confidence interval						
Tealbook forecast errors	4.2–5.0	3.3–5.4	2.8–5.8
FRB/US stochastic simulations	4.1–5.2	3.4–5.2	3.0–5.2	3.0–5.5	3.1–5.8	3.2–6.1
<i>PCE prices, total</i> <i>(percent change, Q4 to Q4)</i>						
Projection	1.7	1.8	1.9	2.0	2.1	2.1
Confidence interval						
Tealbook forecast errors	1.2–2.5	1.2–3.5	1.3–3.4
FRB/US stochastic simulations	1.0–2.4	.9–2.7	.9–2.9	.9–3.1	1.0–3.3	.9–3.2
<i>PCE prices excluding</i> <i>food and energy</i> <i>(percent change, Q4 to Q4)</i>						
Projection	1.8	1.9	2.0	2.0	2.1	2.1
Confidence interval						
Tealbook forecast errors	1.5–2.2	1.3–2.7
FRB/US stochastic simulations	1.1–2.4	1.0–2.7	1.0–2.8	1.0–3.0	1.0–3.1	1.0–3.1
<i>Federal funds rate</i> <i>(percent, Q4)</i>						
Projection	1.4	2.5	3.4	3.9	4.0	3.9
Confidence interval						
FRB/US stochastic simulations	1.1–1.8	1.4–3.5	1.7–4.9	1.8–5.9	1.6–6.4	1.4–6.4

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.

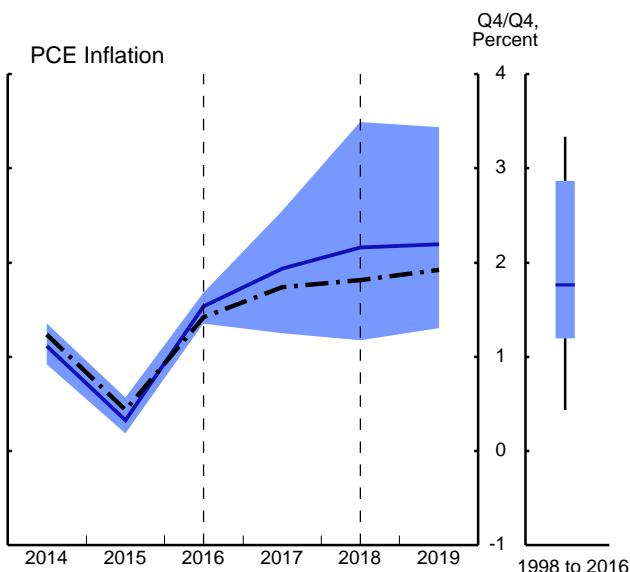
Prediction Intervals Derived from Historical Tealbook Forecast Errors

Forecast Error Percentiles



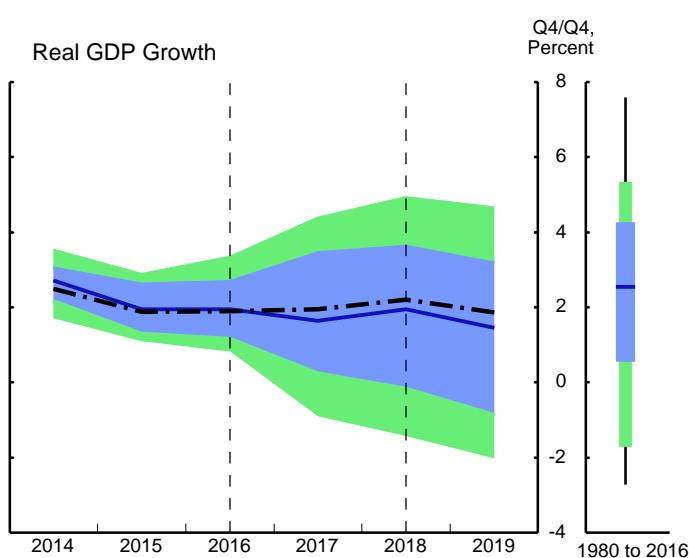
Historical Distributions

PCE Inflation

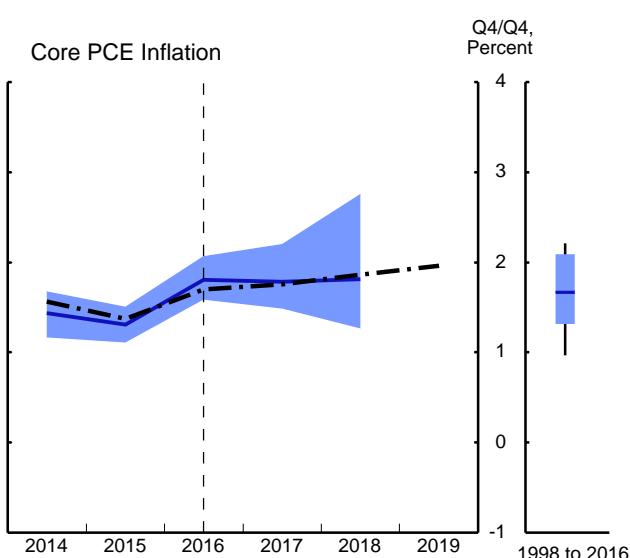


Risks & Uncertainty

Real GDP Growth

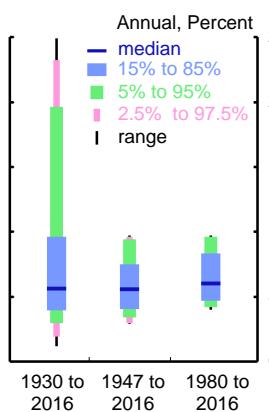


Core PCE Inflation

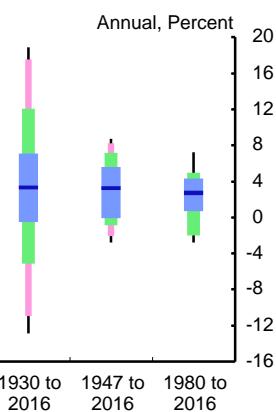


Historical Distributions

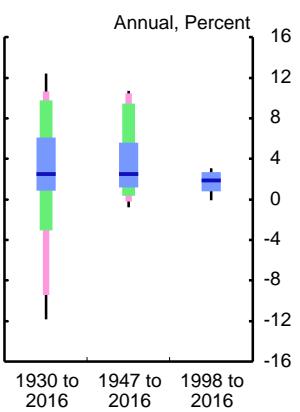
Unemployment Rate



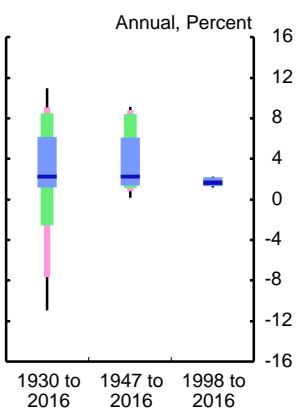
Real GDP Growth



PCE Inflation



Core PCE Inflation



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

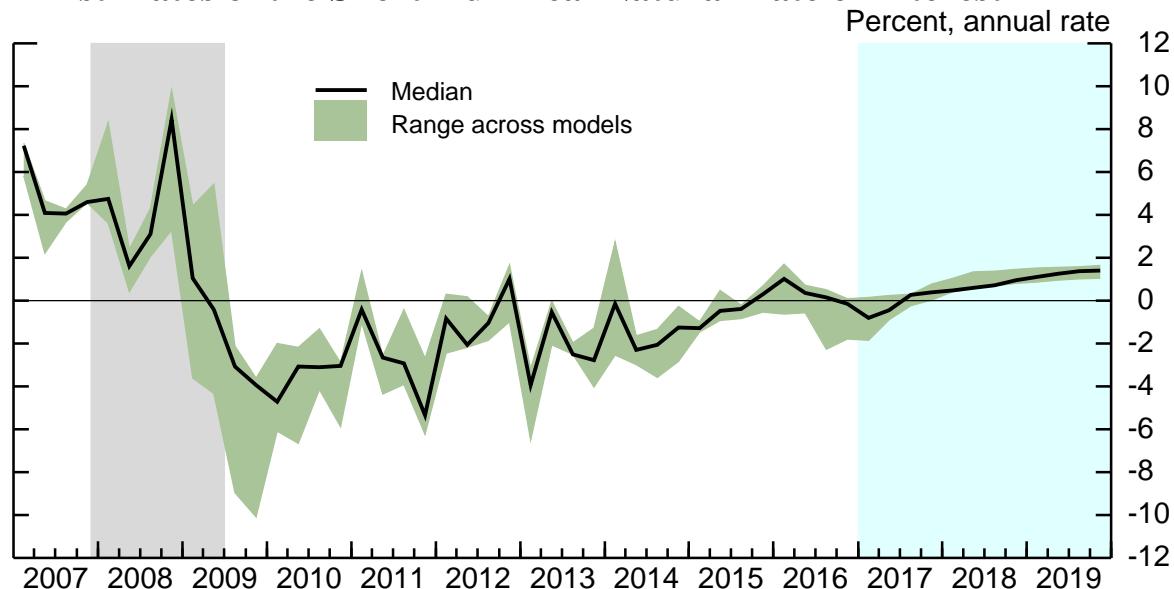
1. Augmented Tealbook prediction intervals use 1- and 2-year-ahead forecast errors from Blue Chip, CBO, and CEA to extend the Tealbook prediction intervals through 2019.

Alternative Model Forecasts
(Percent change, Q4 to Q4, except as noted)

Measure and projection	2017		2018		2019	
	December Tealbook	Current Tealbook	December Tealbook	Current Tealbook	December Tealbook	Current Tealbook
<i>Real GDP</i>						
Staff	2.2	2.0	2.0	2.2	1.8	1.9
FRB/US	2.2	2.0	1.7	2.5	1.6	1.8
EDO	2.3	2.3	2.4	2.2	2.6	2.4
<i>Unemployment rate¹</i>						
Staff	4.5	4.6	4.3	4.2	4.2	4.1
FRB/US	4.5	4.7	4.6	4.5	4.7	4.6
EDO	4.8	4.7	4.9	4.9	5.0	5.0
<i>Total PCE prices</i>						
Staff	1.7	1.7	1.8	1.8	1.9	1.9
FRB/US	1.8	2.1	1.8	1.8	1.7	1.7
EDO	2.1	2.4	2.3	2.4	2.3	2.3
<i>Core PCE prices</i>						
Staff	1.7	1.8	1.8	1.9	1.9	2.0
FRB/US	1.8	2.1	1.9	1.9	1.8	1.8
EDO	2.1	2.3	2.3	2.4	2.3	2.3
<i>Federal funds rate¹</i>						
Staff	1.5	1.4	2.5	2.5	3.3	3.4
FRB/US	1.6	1.5	2.5	2.5	2.9	3.0
EDO	2.0	2.1	3.0	3.0	3.5	3.5

1. Percent, average for Q4.

Estimates of the Short-Run Real Natural Rate of Interest



Note: Estimates are based on the three models from the System DSGE project; for more information, see the box "Estimates of the Short-Run Real Natural Rate of Interest" in the March 2016 Tealbook. The gray shaded bar indicates a period of recession as defined by the National Bureau of Economic Research.

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	.05	.08	.13	.07
Previous Tealbook	.06	.06	.03	.05
<i>Less than 1 percent</i>				
Current Tealbook	.24	.13	.02	.16
Previous Tealbook	.18	.18	.08	.19

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	.04	.14	.06
Previous Tealbook	.03	.03	.15	.02
<i>Decrease by 1 percentage point</i>				
Current Tealbook	.08	.06	.12	.03
Previous Tealbook	.08	.08	.11	.12

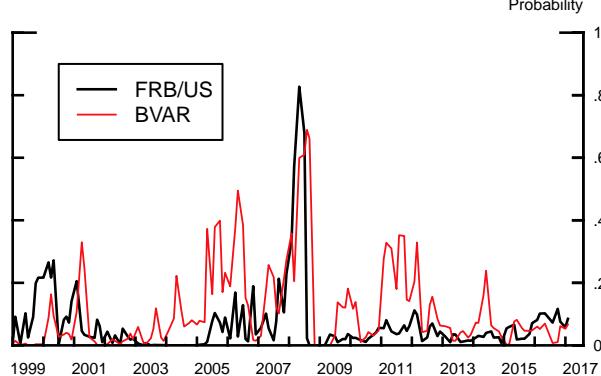
Probability of Near-Term Recession

Probability that real GDP declines in the next two quarters	Staff	FRB/US	EDO	BVAR	Factor Model
Current Tealbook	.02	.03	.04	.10	.00
Previous Tealbook	.03	.01	.04	.04	.02

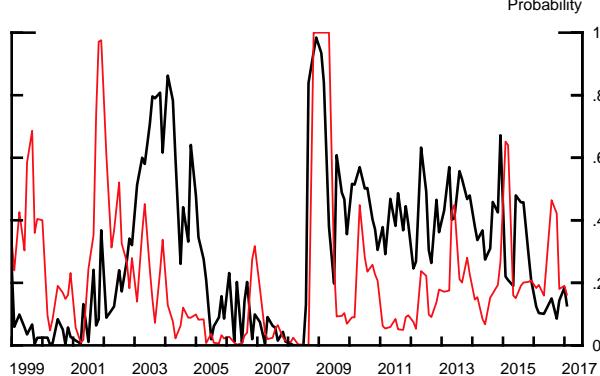
Note: "Staff" represents stochastic simulations in FRB/US around the staff baseline; baselines for FRB/US, BVAR, EDO, and the factor model are generated by those models themselves, up to the current-quarter estimate. Data for the current quarter are taken from the staff estimate for the second Tealbook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

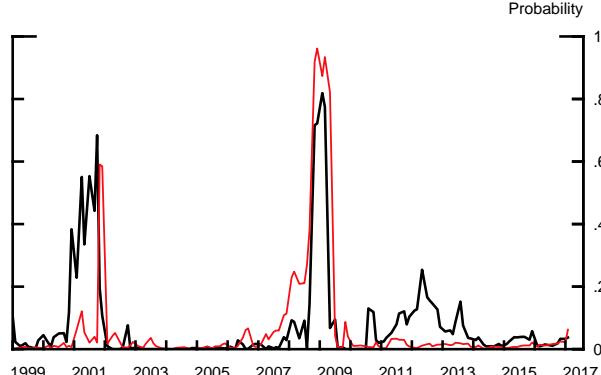
Probability that Total PCE Inflation Is above 3 Percent
(4 quarters ahead)



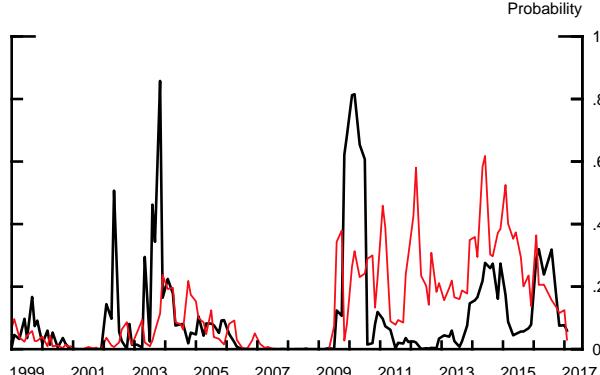
Probability that Total PCE Inflation Is below 1 Percent
(4 quarters ahead)



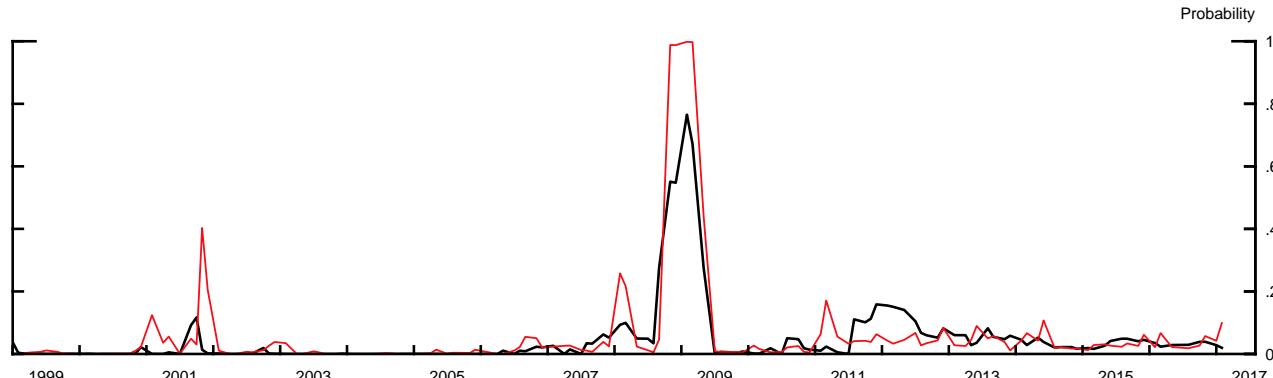
Probability that the Unemployment Rate Increases 1 ppt
(4 quarters ahead)



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

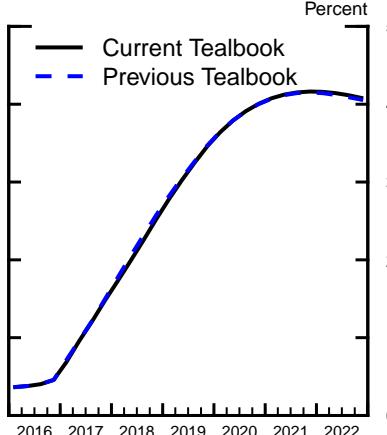
Near-Term Prescriptions of Selected Simple Policy Rules¹

(Percent)

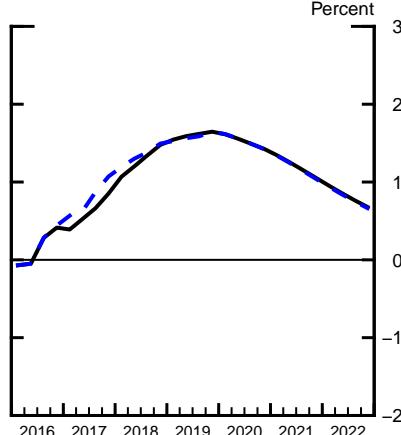
	<u>2017:Q2</u>	<u>2017:Q3</u>
Taylor (1993) rule	2.85	2.87
<i>Previous Tealbook</i>	2.70	2.79
Taylor (1999) rule	3.11	3.19
<i>Previous Tealbook</i>	3.00	3.20
Inertial Taylor (1999) rule	1.04	1.37
<i>Previous Tealbook projection</i>	1.03	1.36
First-difference rule	0.85	1.04
<i>Previous Tealbook projection</i>	0.85	1.06
<i>Addendum:</i>		
Tealbook baseline	0.94	1.18

Key Elements of the Staff Projection

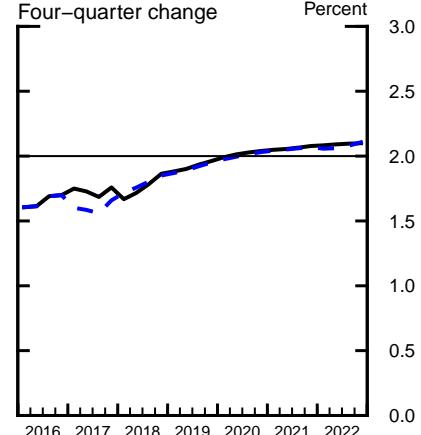
Federal Funds Rate



GDP Gap



PCE Prices Excluding Food and Energy



A Medium-Term Equilibrium Real Federal Funds Rate²

(Percent)

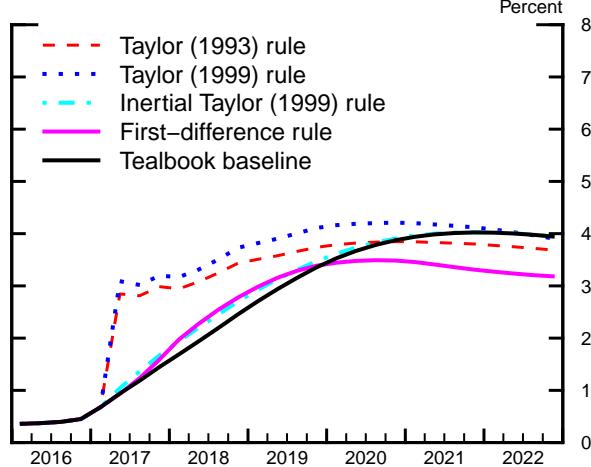
	Current Tealbook	Previous Tealbook
Tealbook-consistent FRB/US r^*	1.42	1.54
Average projected real federal funds rate	0.27	0.34

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.

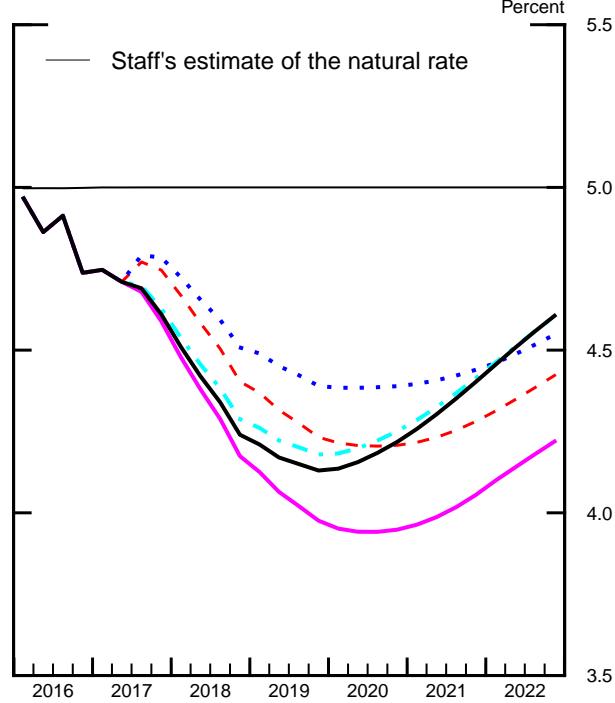
2. The "Tealbook-consistent FRB/US r^* " is the level of the real federal funds rate that, if maintained over a 12-quarter period (beginning in the current quarter) in the FRB/US model, sets the output gap equal to zero in the final quarter of that period. The "average projected real federal funds rate" is calculated under the Tealbook baseline projection over the same 12-quarter period as the Tealbook-consistent FRB/US r^* .

Simple Policy Rule Simulations

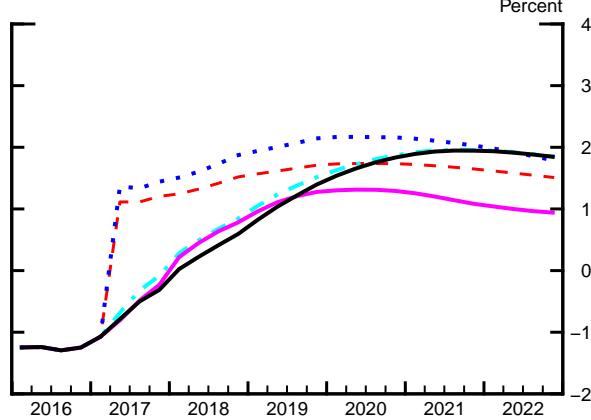
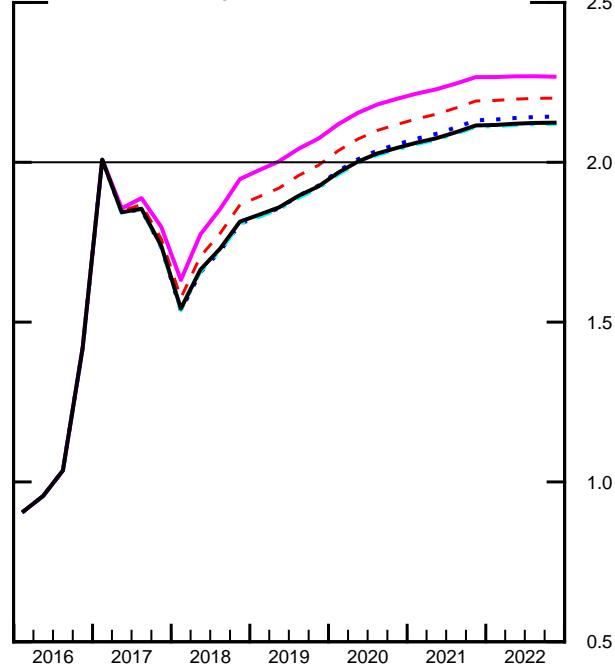
Nominal Federal Funds Rate



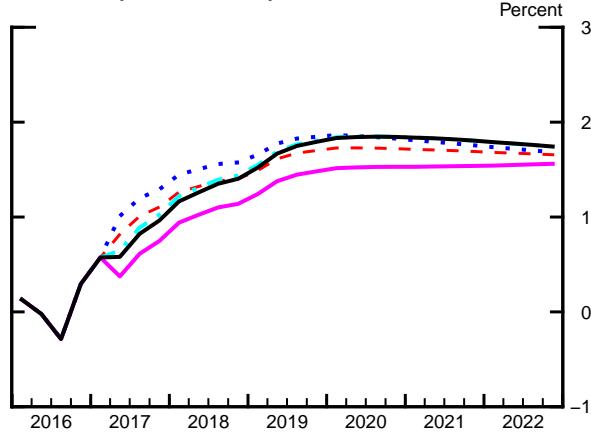
Unemployment Rate



Real Federal Funds Rate

PCE Inflation
Four-quarter average

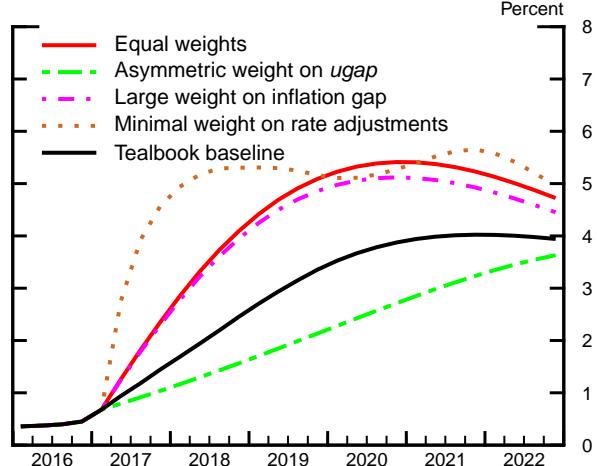
Real 10-year Treasury Yield



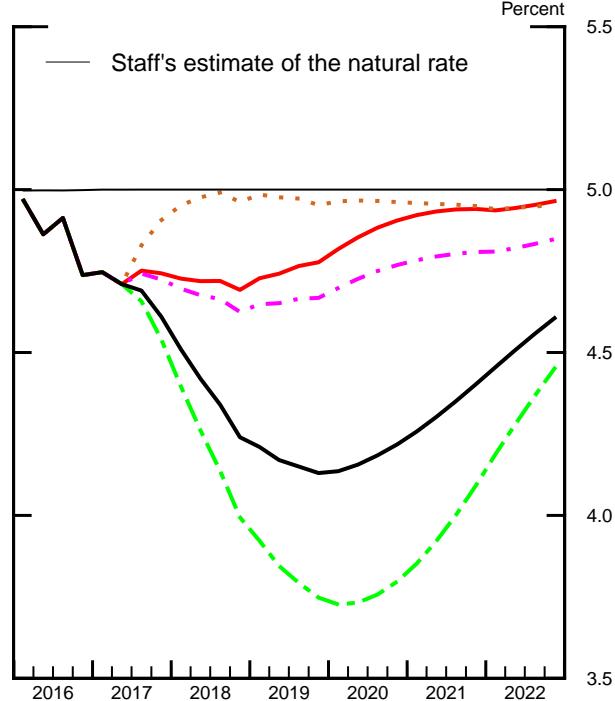
Note: The policy rule simulations in this exhibit are based on rules that respond to core inflation. This choice of rule specification was made in light of a tendency for current and near-term core inflation rates to outperform headline inflation rates as predictors of the medium-term behavior of headline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

Optimal Control Simulations under Commitment

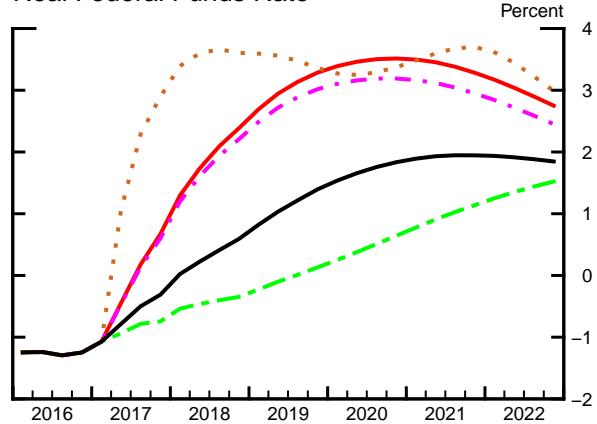
Nominal Federal Funds Rate



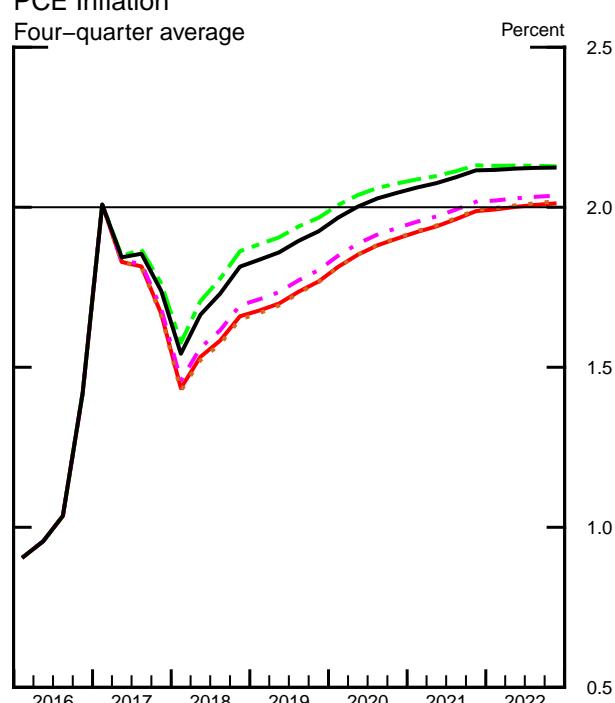
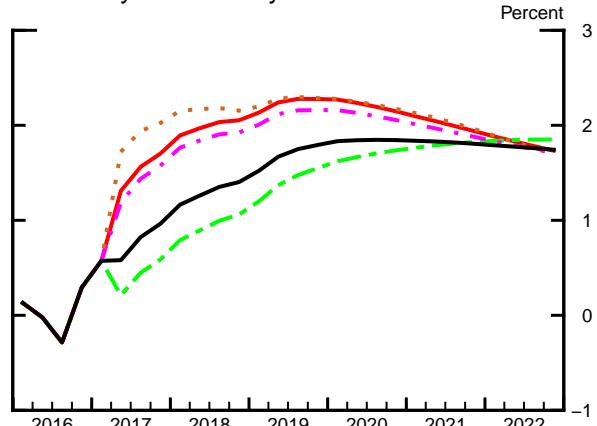
Unemployment Rate



Real Federal Funds Rate

PCE Inflation
Four-quarter average

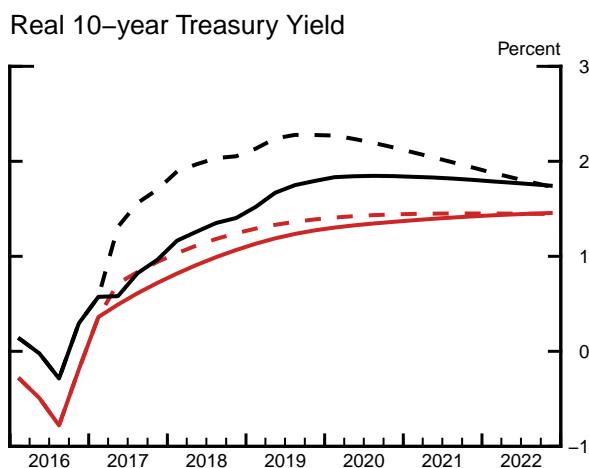
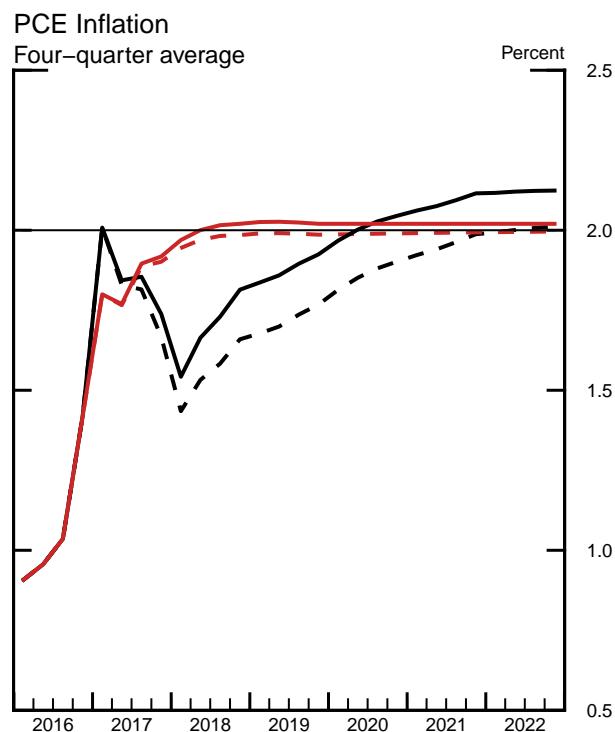
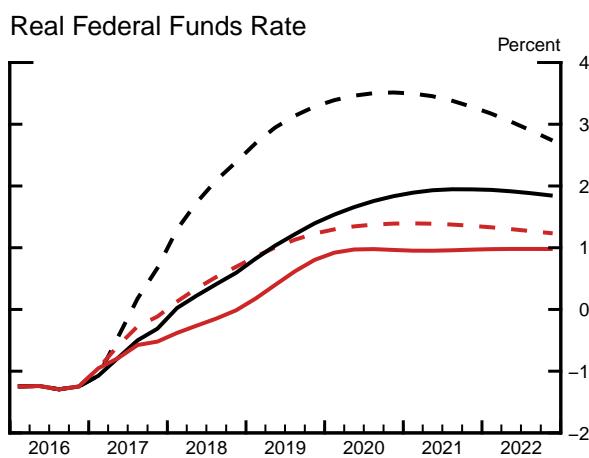
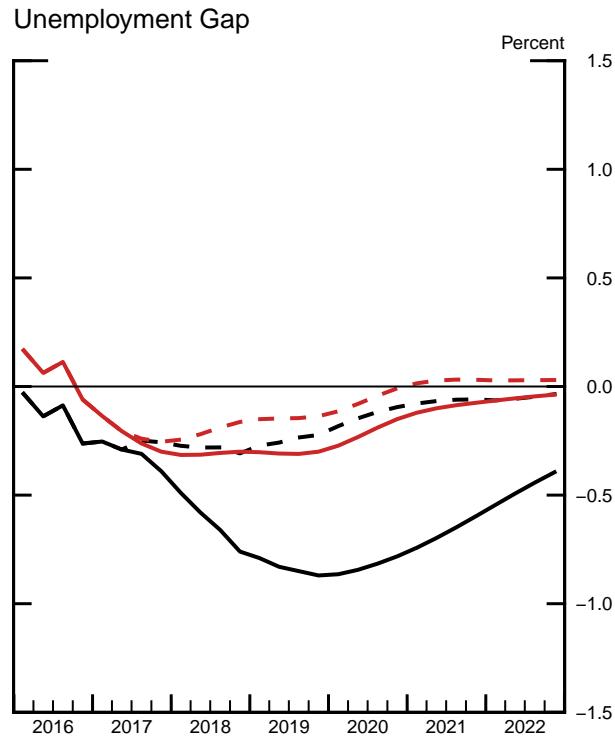
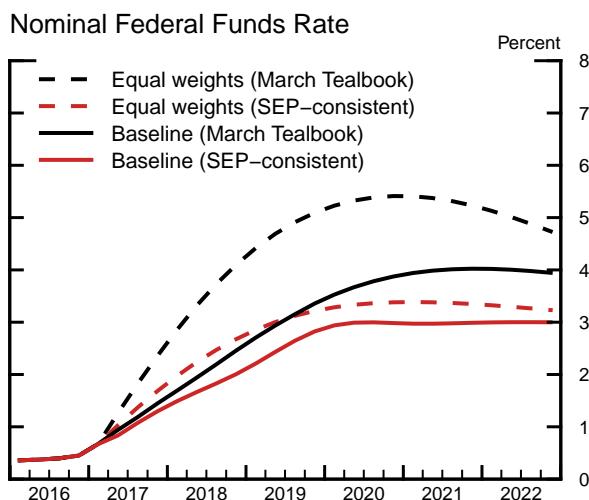
Real 10-year Treasury Yield



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.

Optimal Control Using a Projection Consistent with the SEP

Monetary Policy Strategies



Note: The SEP-consistent projection is constructed to match the median responses to the December 2016 Summary of Economic Projections; for details, see footnote 8 in the main text. It is assumed that the natural rate of unemployment is given by the median longer-run unemployment rate projection of 4.8 percent. In the Tealbook baseline, the natural rate of unemployment is 5 percent. All simulations are performed in the FRB/US model.

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 rate¹</i>					
Taylor (1993)	0.5	3.0	3.4	3.7	3.8
Taylor (1999)	0.5	3.2	3.7	4.1	4.2
Inertial Taylor (1999)	0.5	1.7	2.7	3.5	3.9
First-difference	0.5	1.6	2.8	3.4	3.5
Extended Tealbook baseline	0.5	1.4	2.5	3.4	3.9
<i>Real GDP</i>					
Taylor (1993)	2.7	1.8	2.1	2.0	1.7
Taylor (1999)	2.7	1.7	1.9	1.9	1.7
Inertial Taylor (1999)	2.7	1.9	2.1	1.9	1.5
First-difference	2.7	2.0	2.3	2.0	1.7
Extended Tealbook baseline	2.7	2.0	2.2	1.9	1.5
<i>Unemployment rate¹</i>					
Taylor (1993)	4.7	4.7	4.4	4.2	4.2
Taylor (1999)	4.7	4.8	4.5	4.4	4.4
Inertial Taylor (1999)	4.7	4.6	4.3	4.2	4.3
First-difference	4.7	4.6	4.2	4.0	3.9
Extended Tealbook baseline	4.7	4.6	4.2	4.1	4.2
<i>Total PCE prices</i>					
Taylor (1993)	1.7	1.8	1.9	2.0	2.1
Taylor (1999)	1.7	1.7	1.8	1.9	2.1
Inertial Taylor (1999)	1.7	1.7	1.8	1.9	2.0
First-difference	1.7	1.8	1.9	2.1	2.2
Extended Tealbook baseline	1.7	1.7	1.8	1.9	2.0
<i>Core PCE prices</i>					
Taylor (1993)	1.5	1.8	1.9	2.0	2.1
Taylor (1999)	1.5	1.8	1.9	2.0	2.1
Inertial Taylor (1999)	1.5	1.8	1.9	2.0	2.0
First-difference	1.5	1.8	2.0	2.1	2.2
Extended Tealbook baseline	1.5	1.8	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 rate¹</i>								
Taylor (1993)	0.7	2.8	2.8	3.0	2.9	3.1	3.2	3.4
Taylor (1999)	0.7	3.1	3.0	3.2	3.2	3.3	3.5	3.7
Inertial Taylor (1999)	0.7	1.0	1.4	1.7	1.9	2.2	2.5	2.7
First-difference	0.7	0.9	1.2	1.6	2.0	2.3	2.5	2.8
Extended Tealbook baseline	0.7	0.9	1.2	1.4	1.7	1.9	2.2	2.5
<i>Real GDP</i>								
Taylor (1993)	2.0	2.2	1.7	1.8	2.0	1.9	2.1	2.1
Taylor (1999)	2.0	2.2	1.7	1.7	1.8	1.8	1.9	1.9
Inertial Taylor (1999)	2.0	2.2	1.8	1.9	2.2	2.2	2.2	2.1
First-difference	2.0	2.2	1.9	2.0	2.3	2.4	2.4	2.3
Extended Tealbook baseline	2.0	2.2	1.9	2.0	2.2	2.2	2.2	2.2
<i>Unemployment rate¹</i>								
Taylor (1993)	4.7	4.7	4.8	4.7	4.7	4.6	4.5	4.4
Taylor (1999)	4.7	4.7	4.8	4.8	4.7	4.7	4.6	4.5
Inertial Taylor (1999)	4.7	4.7	4.7	4.6	4.5	4.5	4.4	4.3
First-difference	4.7	4.7	4.7	4.6	4.5	4.4	4.3	4.2
Extended Tealbook baseline	4.7	4.7	4.7	4.6	4.5	4.4	4.3	4.2
<i>Total PCE prices</i>								
Taylor (1993)	2.0	1.8	1.9	1.8	1.6	1.7	1.8	1.9
Taylor (1999)	2.0	1.8	1.9	1.7	1.5	1.7	1.7	1.8
Inertial Taylor (1999)	2.0	1.8	1.9	1.7	1.5	1.7	1.7	1.8
First-difference	2.0	1.9	1.9	1.8	1.6	1.8	1.9	1.9
Extended Tealbook baseline	2.0	1.8	1.9	1.7	1.5	1.7	1.7	1.8
<i>Core PCE prices</i>								
Taylor (1993)	1.7	1.7	1.7	1.8	1.7	1.8	1.8	1.9
Taylor (1999)	1.7	1.7	1.7	1.8	1.7	1.7	1.8	1.9
Inertial Taylor (1999)	1.7	1.7	1.7	1.8	1.7	1.7	1.8	1.9
First-difference	1.7	1.7	1.7	1.8	1.8	1.8	1.9	2.0
Extended Tealbook baseline	1.7	1.7	1.7	1.8	1.7	1.7	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 rate¹</i>					
Equal weights	0.5	2.4	4.1	5.1	5.4
Aymmetric weight on <i>ugap</i>	0.5	1.0	1.6	2.1	2.7
Large weight on inflation gap	0.5	2.3	4.0	4.9	5.1
Minimal weight on rate adjustments	0.5	4.6	5.3	5.2	5.3
Extended Tealbook baseline	0.5	1.4	2.5	3.4	3.9
<i>Real GDP</i>					
Equal weights	2.7	1.7	1.5	1.5	1.5
Aymmetric weight on <i>ugap</i>	2.7	2.1	2.6	2.1	1.5
Large weight on inflation gap	2.7	1.7	1.6	1.6	1.5
Minimal weight on rate adjustments	2.7	1.4	1.3	1.7	1.7
Extended Tealbook baseline	2.7	2.0	2.2	1.9	1.5
<i>Unemployment rate¹</i>					
Equal weights	4.7	4.7	4.7	4.8	4.9
Aymmetric weight on <i>ugap</i>	4.7	4.5	4.0	3.7	3.8
Large weight on inflation gap	4.7	4.7	4.6	4.7	4.8
Minimal weight on rate adjustments	4.7	4.9	5.0	5.0	5.0
Extended Tealbook baseline	4.7	4.6	4.2	4.1	4.2
<i>Total PCE prices</i>					
Equal weights	1.7	1.7	1.7	1.8	1.9
Aymmetric weight on <i>ugap</i>	1.7	1.8	1.9	2.0	2.1
Large weight on inflation gap	1.7	1.7	1.7	1.8	1.9
Minimal weight on rate adjustments	1.7	1.7	1.6	1.8	1.9
Extended Tealbook baseline	1.7	1.7	1.8	1.9	2.0
<i>Core PCE prices</i>					
Equal weights	1.5	1.7	1.7	1.8	1.9
Aymmetric weight on <i>ugap</i>	1.5	1.8	1.9	2.0	2.1
Large weight on inflation gap	1.5	1.7	1.7	1.8	1.9
Minimal weight on rate adjustments	1.5	1.7	1.7	1.8	1.9
Extended Tealbook baseline	1.5	1.8	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 rate¹</i>								
Equal weights	0.7	1.3	1.8	2.4	2.9	3.3	3.7	4.1
Asymmetric weight on <i>ugap</i>	0.7	0.8	0.9	1.0	1.2	1.3	1.4	1.6
Large weight on inflation gap	0.7	1.2	1.8	2.3	2.8	3.2	3.6	4.0
Minimal weight on rate adjustments	0.7	2.8	3.9	4.6	4.9	5.2	5.3	5.3
Extended Tealbook baseline	0.7	0.9	1.2	1.4	1.7	1.9	2.2	2.5
<i>Real GDP</i>								
Equal weights	2.0	2.2	1.7	1.7	1.7	1.6	1.6	1.5
Asymmetric weight on <i>ugap</i>	2.0	2.2	1.9	2.1	2.5	2.6	2.6	2.6
Large weight on inflation gap	2.0	2.2	1.7	1.7	1.8	1.7	1.7	1.6
Minimal weight on rate adjustments	2.0	2.2	1.6	1.4	1.4	1.1	1.2	1.3
Extended Tealbook baseline	2.0	2.2	1.9	2.0	2.2	2.2	2.2	2.2
<i>Unemployment rate¹</i>								
Equal weights	4.7	4.7	4.8	4.7	4.7	4.7	4.7	4.7
Asymmetric weight on <i>ugap</i>	4.7	4.7	4.7	4.5	4.4	4.3	4.1	4.0
Large weight on inflation gap	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.6
Minimal weight on rate adjustments	4.7	4.7	4.8	4.9	5.0	5.0	5.0	5.0
Extended Tealbook baseline	4.7	4.7	4.7	4.6	4.5	4.4	4.3	4.2
<i>Total PCE prices</i>								
Equal weights	2.0	1.8	1.8	1.7	1.4	1.5	1.6	1.7
Asymmetric weight on <i>ugap</i>	2.0	1.8	1.9	1.8	1.6	1.7	1.8	1.9
Large weight on inflation gap	2.0	1.8	1.8	1.7	1.5	1.6	1.6	1.7
Minimal weight on rate adjustments	2.0	1.8	1.8	1.7	1.4	1.5	1.6	1.6
Extended Tealbook baseline	2.0	1.8	1.9	1.7	1.5	1.7	1.7	1.8
<i>Core PCE prices</i>								
Equal weights	1.7	1.7	1.6	1.7	1.6	1.6	1.6	1.7
Asymmetric weight on <i>ugap</i>	1.7	1.7	1.7	1.8	1.7	1.8	1.8	1.9
Large weight on inflation gap	1.7	1.7	1.7	1.7	1.6	1.6	1.7	1.7
Minimal weight on rate adjustments	1.7	1.7	1.6	1.7	1.5	1.6	1.6	1.7
Extended Tealbook baseline	1.7	1.7	1.7	1.8	1.7	1.7	1.8	1.9

1. Percent, average for the quarter.

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

	Nominal GDP 01/19/17	Real GDP 03/02/17	PCE price index 01/19/17	Core PCE price index 03/02/17	Unemployment rate ¹ 01/19/17	Unemployment rate ¹ 03/02/17
<i>Interval</i>						
<i>Quarterly</i>						
2016:Q1	1.3	1.3	.8	.3	2.1	5.0
Q2	3.7	3.7	1.4	2.0	1.8	4.9
Q3	5.0	5.0	3.5	1.5	1.7	4.9
Q4	4.6	4.0	2.0	2.1	1.2	4.7
2017:Q1	4.5	4.3	2.0	1.4	2.6	4.7
Q2	3.4	3.7	1.7	2.1	1.4	4.7
Q3	4.2	3.8	2.5	2.1	1.6	4.6
Q4	4.1	4.0	2.3	2.3	1.6	4.6
2018:Q1	4.1	4.5	2.0	2.4	1.8	4.5
Q2	4.0	4.1	2.0	2.1	1.8	4.4
Q3	3.8	4.1	1.9	2.1	1.7	4.3
Q4	3.9	4.1	2.0	2.1	1.8	4.2
<i>Two-quarter²</i>						
2016:Q2	2.5	2.5	1.1	1.1	1.9	-1
Q4	4.8	4.5	2.7	1.8	1.5	-2
2017:Q2	4.0	4.0	1.9	1.7	2.0	0
Q4	4.1	3.9	2.4	2.2	1.6	-2
2018:Q2	4.1	4.3	2.0	2.3	1.8	-1
Q4	3.9	4.1	2.0	2.1	1.8	-2
<i>Four-quarter³</i>						
2015:Q4	3.0	3.0	1.9	.4	1.4	-7
2016:Q4	3.6	3.5	1.9	1.5	1.7	-3
2017:Q4	4.0	3.9	2.1	2.0	1.7	-2
2018:Q4	4.0	4.2	2.0	2.2	1.8	-3
2019:Q4	3.9	4.0	1.8	1.9	2.0	-1
<i>Annual</i>						
2015	3.7	3.7	2.6	.3	1.4	5.3
2016	3.0	2.9	1.6	1.1	1.7	4.9
2017	4.3	4.1	2.2	2.0	1.8	4.6
2018	4.0	4.1	2.1	2.2	1.7	4.3
2019	3.9	4.0	1.9	2.0	1.9	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 ¹			
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2016 ¹	2017 ¹	2018 ¹	2019 ¹	
Real GDP <i>Previous Tealbook</i>	1.4	3.5	1.9	1.4	2.1	2.1	2.3	2.4	2.1	2.1	1.9	2.0	2.2	1.9	1.8	
Final sales <i>Previous Tealbook</i>	2.6	3.0	.9	1.4	2.1	2.1	2.4	2.5	2.1	2.2	1.9	2.0	2.2	2.0	2.0	
Priv. dom. final purch. <i>Previous Tealbook</i>	3.2	2.4	3.1	1.9	2.5	2.5	2.0	1.9	1.9	2.0	2.2	1.9	2.2	1.9	2.0	
Personal cons. expend. <i>Previous Tealbook</i>	4.3	3.0	3.0	1.5	3.0	2.9	2.7	3.4	3.0	2.7	3.0	2.5	3.0	2.5	2.5	
Durables	9.8	11.6	11.5	2.8	2.2	2.6	3.7	3.0	2.8	2.7	2.7	2.9	2.7	2.7	2.5	
Nondurables	5.7	-.5	2.8	2.5	4.1	5.0	5.5	5.6	5.0	4.4	4.0	7.9	4.0	4.8	2.0	
Services	3.0	2.7	1.8	1.0	2.6	2.7	2.3	3.0	2.6	2.4	2.5	2.9	2.5	3.2	2.6	
Residential investment <i>Previous Tealbook</i>	-7.7	-4.1	9.4	8.0	-2.5	-1.6	3.9	3.8	4.5	5.2	4.9	1.1	1.9	4.6	5.5	
Nonres. priv. fixed invest. <i>Previous Tealbook</i>	1.0	1.4	1.9	5.7	3.7	3.4	4.2	3.5	3.0	3.2	2.1	.2	4.2	2.9	1.8	
Equipment & intangibles <i>Previous Tealbook</i>	1.8	-1.3	3.0	4.5	4.1	3.6	3.7	2.9	2.8	2.4	1.7	.1	4.0	2.4	1.6	
Nonres. structures <i>Previous Tealbook</i>	1.8	-1.3	3.4	5.7	3.4	3.5	5.1	4.6	3.6	3.9	2.6	-.3	4.4	3.7	2.3	
Net exports ² <i>Previous Tealbook</i> ²	-558	-522	-600	-626	-677	-696	-725	-752	-773	-788	-562	-663	-759	-828		
Exports	1.8	10.0	-4.0	1.9	.5	1.1	1.6	2.0	2.2	2.4	2.5	1.6	1.3	2.3	1.6	
Imports	.2	2.2	8.5	5.4	4.6	4.1	3.9	5.7	5.6	4.6	4.0	2.5	4.5	5.0	4.4	
Gov't. cons. & invest. <i>Previous Tealbook</i>	-1.7	.8	.0	-.4	1.8	1.6	1.4	.8	.7	.7	.6	.2	1.1	.7	.7	
Federal	-1.7	.8	2.4	1.8	1.6	1.3	1.2	.9	.6	.5	.2	.8	1.5	.5	.6	
Defense	-.4	2.4	-1.2	1.2	1.1	1.1	.7	.3	-.1	-.1	-.2	-.2	1.0	0	-.1	
Nonddefense	-3.2	2.0	-3.6	.8	1.0	1.1	1.0	.5	.5	.5	-.5	-2.0	1.0	.5	.5	
State & local	3.8	3.0	2.3	1.7	1.2	1.1	.3	.1	-1.0	-.9	-1.3	1.1	1.1	-.8	-.8	
Change in priv. inventories ² <i>Previous Tealbook</i> ²	-9	7	46	48	46	43	37	36	35	33	31	21	44	34	15	
	-9	7	10	15	12	9	1	4	6	7	7	12	9	6	-9	

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	2.0	2.2	1.9
Final sales <i>Previous Tealbook</i>	2.0	1.5	1.7	2.0	2.7	2.0	1.9	2.0	2.2	2.0
Priv. dom. final purch. <i>Previous Tealbook</i>	3.5	2.6	2.3	2.6	3.8	2.7	2.5	2.7	1.9	2.0
Personal cons. expend. <i>Previous Tealbook</i>	3.1	1.5	1.3	2.0	3.5	2.6	3.0	2.5	3.0	2.5
Durables	3.1	1.5	1.3	2.0	3.5	2.6	2.9	2.9	2.7	2.5
Nondurables	9.3	4.8	7.2	5.2	8.6	5.5	7.9	4.0	4.8	2.0
Services	3.3	.4	.8	2.6	2.8	2.3	2.5	2.9	3.2	2.6
Residential investment <i>Previous Tealbook</i>	-5.2	6.0	15.7	6.8	6.2	13.1	1.1	1.9	4.6	5.5
Nonres. priv. fixed invest. <i>Previous Tealbook</i>	8.1	9.0	5.2	4.8	5.0	.8	.2	4.2	2.9	1.8
Equipment & intangibles <i>Previous Tealbook</i>	12.0	9.2	5.5	4.5	4.1	3.8	-.3	4.4	3.7	2.3
Nonres. structures <i>Previous Tealbook</i>	-4.0	8.0	4.1	5.8	8.0	-8.8	1.8	3.6	3	0
Net exports ¹ <i>Previous Tealbook</i>	-459	-459	-447	-405	-426	-540	-562	-663	-759	-828
Exports	10.1	4.2	2.2	5.9	3.1	-2.2	1.6	1.3	2.3	2.8
Imports	12.0	3.5	.3	2.5	6.1	2.5	2.5	4.5	5.0	4.4
Gov't. cons. & invest. <i>Previous Tealbook</i>	-1.1	-3.0	-2.2	-2.8	.3	2.2	.2	1.1	.7	.7
Federal	-1.1	-3.0	-2.2	-2.8	.3	2.2	.8	1.5	.5	.6
Defense	3.2	-4.0	-2.1	-6.7	-1.3	1.7	-.2	1.0	0	-1
Nondefense	2.0	-4.1	-3.9	-7.1	-4.1	.6	-2.0	1.0	.5	.5
State & local	5.5	-3.9	1.0	-6.0	3.4	3.4	2.5	1.1	-.8	-.8
Change in priv. inventories ¹ <i>Previous Tealbook</i>	58	38	55	79	58	84	21	44	34	15
	58	38	55	79	58	84	12	9	6	-9

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 ¹			2017 ¹			2018 ¹			2019 ¹		
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2016 ¹	2017 ¹	2018 ¹	2019 ¹	2016 ¹	2017 ¹	2018 ¹	2019 ¹		
Real GDP <i>Previous Tealbook</i>	1.4	3.5	1.9	1.4	2.1	2.1	2.3	2.4	2.1	2.1	1.9	2.0	1.9	2.0	2.2	2.0	2.2	1.9	1.8		
Final sales <i>Previous Tealbook</i>	2.6	3.0	.9	1.4	2.1	2.1	2.4	2.5	2.1	2.2	2.1	1.9	2.0	1.9	2.0	2.2	2.2	2.0	2.0		
Priv. dom. final purch. <i>Previous Tealbook</i>	2.7	2.1	2.6	1.9	2.4	2.3	2.6	2.9	2.6	2.5	2.3	2.0	2.2	2.1	2.3	2.6	2.3	2.6	2.2		
Personal cons. expend. <i>Previous Tealbook</i>	2.9	2.0	2.1	1.0	2.0	2.0	1.9	2.4	2.0	1.9	1.9	1.8	2.0	2.0	1.7	2.0	2.0	1.8	1.7		
Durables	.7	.8	.8	.2	.2	.4	.4	.4	.4	.3	.3	.6	.3	.4	.4	.4	.5	.4	.1		
Nondurables	.8	-.1	.4	.4	.6	.4	.4	.5	.5	.4	.4	.4	.4	.4	.5	.5	.5	.4	.1		
Services	1.4	1.3	.8	.5	1.2	1.2	1.1	1.4	1.2	1.1	1.2	1.1	1.1	1.0	1.2	1.2	1.2	1.2	1.2		
Residential investment <i>Previous Tealbook</i>	-.3	-.2	.3	.3	-.1	-.1	-.1	.2	.1	.2	.2	.2	.1	.1	.0	.1	.2	.2	.2		
Nonres. priv. fixed invest. <i>Previous Tealbook</i>	.1	.2	.2	.7	.5	.4	.5	.4	.4	.4	.3	.3	.2	.0	.5	.4	.4	.3	.2		
Equipment & intangibles <i>Previous Tealbook</i>	.1	.2	.2	.5	.5	.4	.5	.4	.4	.4	.3	.3	.0	.0	.5	.3	.4	.4	.2		
Nonres. structures <i>Previous Tealbook</i>	-.1	-.1	.3	.5	.3	.3	.5	.4	.4	.4	.3	.3	.2	.0	.4	.3	.3	.3	.2		
Net exports <i>Previous Tealbook</i>	.2	.9	-.1	-.1	-.5	-.6	-.6	-.4	-.6	-.6	-.4	-.6	-.2	-.2	-.5	-.5	-.5	-.5	-.3		
Exports	.2	1.2	-.5	.2	-.1	.1	.2	.1	.2	.3	.3	.3	.2	.2	.2	.2	.2	.3	.3		
Imports	.0	-.3	-1.2	-.8	-.7	-.6	-.6	-.9	-.8	-.7	-.6	-.4	-.7	-.7	-.8	-.7	-.8	-.7	-.7		
Gov't. cons. & invest. <i>Previous Tealbook</i>	-.3	.1	.0	-.1	.3	.3	.2	.2	.1	.1	.1	.1	.0	.0	.0	.0	.0	.1	.1		
Federal Defense	-.3	.1	.4	.3	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0		
Nondefense	-.1	.1	-.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0		
State & local	-.3	.0	.1	-.1	.2	.2	.2	.1	.1	.1	.1	.1	.0	.0	.1	.1	.1	.1	.1		
Change in priv. inventories <i>Previous Tealbook</i>	-1.2	.5	.9	.0	.0	-.1	-.1	.0	.0	-.1	.0	.0	-.1	.0	-.1	.0	-.1	.0	-.1		
	-1.2	.5	.2	.1	-.1	-.1	-.2	.1	-.1	-.2	.0	-.1	.0	-.2	-.1	-.1	-.1	-.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

March 3, 2017

Item	2016				2017				2018				2019 ¹			
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2016 ¹	2017 ¹	2018 ¹	2019 ¹	
GDP chain-wt. price index	2.3	1.4	2.0	2.8	1.6	1.7	1.7	2.0	2.0	1.9	1.9	1.6	1.9	2.0	2.1	
<i>Previous Tealbook</i>	2.3	1.4	2.5	2.4	1.7	1.7	1.7	2.0	2.0	1.9	1.9	1.7	1.9	1.9	2.0	
PCE chain-wt. price index	2.0	1.5	1.9	2.6	1.4	1.5	1.5	1.8	1.8	1.8	1.8	1.4	1.7	1.8	1.9	
<i>Previous Tealbook</i>	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	1.9	
Energy	15.5	2.1	26.1	16.0	-7.1	-.8	-.6	.0	.4	.1	.4	.8	1.5	.2	.6	
<i>Previous Tealbook</i>	15.5	2.1	32.8	15.8	-6.0	-.5	-.1	.3	.1	-.2	.1	2.1	2.0	.1	.6	
Food	-1.8	-2.1	-1.2	0	2.0	2.3	2.0	2.2	2.1	2.1	2.2	-1.7	1.6	2.1	2.2	
<i>Previous Tealbook</i>	-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	
Ex. food & energy	1.8	1.7	1.2	2.3	1.7	1.6	1.5	1.9	1.9	1.8	1.8	1.7	1.8	1.9	2.0	
<i>Previous Tealbook</i>	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	
Ex. food & energy, market based	1.6	1.6	1.2	2.3	1.6	1.5	1.4	1.8	1.8	1.8	1.8	1.5	1.7	1.8	1.9	
<i>Previous Tealbook</i>	1.6	1.6	1.1	1.5	1.6	1.5	1.5	1.8	1.8	1.8	1.8	1.5	1.6	1.8	1.9	
CPI	2.3	1.8	3.0	3.6	1.7	2.1	2.0	2.2	2.3	2.2	2.3	1.8	2.4	2.3	2.4	
<i>Previous Tealbook</i>	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	
Ex. food & energy	2.1	2.1	2.0	2.9	2.3	2.3	2.2	2.4	2.4	2.4	2.4	2.2	2.4	2.4	2.5	
<i>Previous Tealbook</i>	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	
ECI, hourly compensation ²	2.3	1.9	2.5	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.2	2.3	2.4	2.5	
<i>Previous Tealbook</i>	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	
Business sector																
Output per hour	-4	3.9	2.3	.4	.8	1.0	1.2	.9	.7	.9	1.0	1.3	.9	.9	.9	
<i>Previous Tealbook</i>	-4	4.0	.7	.8	.5	1.3	1.2	.6	.9	.8	1.1	.9	1.0	.9	1.0	
Compensation per hour	5.6	4.6	4.3	2.9	3.2	3.0	3.0	3.1	3.2	3.3	3.3	3.3	3.0	3.2	3.4	
<i>Previous Tealbook</i>	5.6	4.1	1.6	3.0	2.9	3.0	3.0	3.1	3.1	3.2	3.2	2.5	3.0	3.2	3.4	
Unit labor costs	6.0	.7	2.0	2.4	2.4	2.0	1.7	2.2	2.4	2.4	2.3	2.0	2.1	2.4	2.5	
<i>Previous Tealbook</i>	6.0	.0	.9	2.1	2.4	1.7	1.8	2.5	2.2	2.4	2.1	1.6	2.0	2.3	2.4	
Core goods imports chain-wt. price index ³	.5	2.0	-.4	-.1	2.0	1.7	1.0	.8	.8	.7	.7	.0	1.2	.8	.7	
<i>Previous Tealbook</i>	.5	2.0	-.5	-.3	1.0	1.4	.9	.8	.7	.7	.7	-.1	.8	.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	1.6	1.9	2.0	2.1
PCE chain-wt. price index <i>Previous Tealbook</i>	1.3	2.7	1.8	1.2	1.2	.4	1.4	1.7	1.8	1.9
Energy <i>Previous Tealbook</i>	6.4	12.0	2.3	-2.5	-6.2	-15.8	.8	1.5	.2	.6
Food <i>Previous Tealbook</i>	1.3	5.1	1.2	.7	2.7	.3	-1.7	1.6	2.1	2.2
Ex. food & energy <i>Previous Tealbook</i>	1.0	1.9	1.8	1.5	1.6	1.4	1.7	1.8	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	1.7	1.8	1.9
CPI <i>Previous Tealbook</i>	1.2	3.3	1.9	1.2	1.2	.4	1.8	2.4	2.3	2.4
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 ¹ <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	1.3	.9	.9	.9
Compensation per hour <i>Previous Tealbook</i>	1.2	.5	5.8	.0	2.7	3.1	3.3	3.0	3.2	3.4
Unit labor costs <i>Previous Tealbook</i>	-4	.6	6.0	-2.0	2.8	2.6	2.0	2.1	2.4	2.5
Core goods imports chain-wt. price index ² <i>Previous Tealbook</i>	2.3	4.3	.1	-1.5	.5	-3.3	.0	1.2	.8	.7

1. Private-industry workers.

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

Other Macroeconomic Indicators

Item	2016				2017				2018				2016 ^l	2017 ^l	2018 ^l	2019 ^l
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1				
<i>Employment and production</i>																
Nonfarm payroll employment ²	.5	.7	.5	.6	.5	.5	.5	.5	.5	.5	.4	.2	2.3	2.1	1.9	1.5
Unemployment rate ³	4.9	4.9	4.7	4.7	4.7	4.6	4.6	4.5	4.4	4.3	4.2	4.7	4.6	4.2	4.1	4.1
<i>Previous Tealbook</i> ³	4.9	4.9	4.7	4.7	4.7	4.6	4.5	4.4	4.4	4.3	4.2	4.7	4.5	4.2	4.1	4.1
Natural rate of unemployment ³	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> ³	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 ³	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	59.7	59.5	59.5
Employment-to-Population Trend ³	59.7	59.6	59.6	59.5	59.4	59.4	59.3	59.2	59.1	59.1	59.0	59.6	59.3	59.0	58.7	58.7
GDP gap ⁴	-1	.3	.4	.4	.5	.5	.7	.9	.1	.1	.1	.1	.4	.9	1.5	1.7
<i>Previous Tealbook</i> ⁴	.0	.3	.4	.6	.6	.6	.9	1.1	1.2	1.3	1.4	1.5	.4	1.1	1.5	1.7
Industrial production ⁵	-.8	1.7	.4	1.4	2.6	.4	1.0	1.5	1.1	.7	1.3	-.1	1.4	1.2	1.0	1.0
<i>Previous Tealbook</i> ⁵	-.8	1.8	-.6	1.5	1.1	.3	.6	.9	.7	.5	1.1	-.3	.9	.8	1.1	1.0
Manufacturing industr. prod. ⁵	-1.1	.4	1.4	2.4	1.2	.2	.6	.8	.9	.8	.8	.2	1.1	.8	.9	.9
<i>Previous Tealbook</i> ⁵	-1.1	.2	.7	.7	1.1	.3	.3	.4	.6	.7	.7	.0	.5	.6	.6	.9
Capacity utilization rate - mfg. ³	74.9	74.9	75.0	75.2	75.2	75.1	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
<i>Previous Tealbook</i> ³	74.9	74.8	74.8	74.7	74.7	74.6	74.5	74.4	74.4	74.4	74.4	74.8	74.5	74.4	74.4	74.6
Housing starts ⁶	1.2	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.3	1.4	1.4
Light motor vehicle sales ⁶	17.1	17.5	18.0	17.4	17.2	17.0	16.9	17.0	16.9	16.8	16.8	17.5	17.1	16.8	16.6	16.6
<i>Income and saving</i>																
Nominal GDP ⁵	3.7	5.0	4.0	4.3	3.7	3.8	4.0	4.5	4.1	4.1	4.1	3.5	3.9	4.2	4.0	4.0
Real disposable pers. income ⁵	2.9	2.9	2.0	.9	2.2	2.3	2.0	8.4	2.4	2.8	2.9	2.5	2.5	1.9	4.1	2.3
<i>Previous Tealbook</i> ⁵	2.9	2.6	.9	3.2	2.5	7.6	1.7	2.8	2.2	1.9	2.5	2.1	2.1	3.7	2.4	2.5
Personal saving rate ³	5.9	5.9	5.6	5.5	5.3	5.1	5.0	6.1	5.9	6.0	6.0	5.6	5.8	6.2	6.0	5.7
<i>Previous Tealbook</i> ³	5.9	5.8	5.4	5.6	5.6	6.5	6.2	6.1	6.0	5.8	5.8	5.4	5.8	5.8	5.7	5.7
Corporate profits ⁷	-2.4	25.4	1.1	1.9	1.6	1.6	1.4	2.3	3.7	3.4	3.6	9.0	1.6	3.3	2.3	2.3
Profit share of GNP ³	10.8	11.3	11.3	11.2	11.1	11.1	11.0	11.0	11.0	10.9	10.9	11.3	11.0	10.9	10.8	10.8
Gross national saving rate ³	18.2	18.6	18.4	18.6	18.7	18.5	18.4	18.2	18.1	18.1	18.1	18.4	18.4	18.1	17.6	17.6
Net national saving rate ³	3.1	3.7	3.7	4.0	4.0	3.8	3.7	3.4	3.4	3.3	3.2	3.7	3.7	3.2	3.2	2.6

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 ¹	.8	2.0	2.1	2.4	2.8	2.7	2.3	2.1	1.9	1.5
Unemployment rate ²	9.5	8.7	7.8	7.0	5.7	5.0	4.7	4.6	4.2	4.1
<i>Previous Tealbook</i> ²	9.5	8.7	7.8	7.0	5.7	5.0	4.7	4.5	4.2	4.1
Natural rate of unemployment ²	5.9	5.9	5.6	5.4	5.1	5.0	5.0	5.0	5.0	5.0
<i>Previous Tealbook</i> ²	5.9	5.9	5.6	5.4	5.1	5.0	5.0	5.0	5.0	5.0
Employment-to-Population Ratio ²	58.3	58.5	58.7	58.5	59.2	59.4	59.7	59.7	59.5	58.7
Employment-to-Population Trend ²	61.1	60.7	60.3	60.2	60.1	59.9	59.6	59.3	59.0	58.7
GDP gap ³	-4.2	-3.7	-3.7	-2.5	-2.5	-9	0	4	9	1.5
<i>Previous Tealbook</i> ³	-4.2	-3.7	-3.7	-2.5	-2.5	-9	0	4	1.1	1.7
Industrial production ⁴	5.9	2.6	2.3	2.0	3.5	-1.6	-1	1.4	1.2	1.0
<i>Previous Tealbook</i> ⁴	5.9	2.6	2.3	2.0	3.5	-1.6	-1.3	9	8	1.0
Manufacturing industr. prod. ⁴	5.9	2.5	1.7	.8	2.0	0	.2	1.1	.8	.9
<i>Previous Tealbook</i> ⁴	5.9	2.5	1.7	.8	2.0	0	.0	.5	.6	.9
Capacity utilization rate - mfg. ²	72.4	74.4	74.3	74.6	76.0	75.4	75.0	75.0	75.0	75.0
<i>Previous Tealbook</i> ²	72.4	74.4	74.3	74.6	76.0	75.4	74.8	74.5	74.4	74.6
Housing starts ⁵	.6	12.7	14.4	.8	.9	1.0	1.1	1.2	1.3	1.4
Light motor vehicle sales ⁵	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 ⁴	4.6	3.6	3.2	4.3	4.1	3.0	3.5	3.9	4.2	4.0
Real disposable pers. income ⁴	2.6	1.7	5.1	-2.8	4.5	3.0	2.5	1.9	4.1	2.3
<i>Previous Tealbook</i> ⁴	2.6	1.7	5.1	-2.8	4.5	3.0	2.1	3.7	2.4	2.5
Personal saving rate ²	5.5	5.8	9.2	4.7	5.6	6.0	5.6	5.0	6.0	5.7
<i>Previous Tealbook</i> ²	5.5	5.8	9.2	4.7	5.6	6.0	5.4	6.2	5.8	5.7
Corporate profits ⁶	18.0	6.8	.6	4.7	6.6	-11.2	9.0	1.6	3.3	2.3
Profit share of GNP ²	12.0	12.3	12.0	12.0	12.4	10.7	11.3	11.0	10.9	10.8
Gross national saving rate ²	15.2	16.1	18.0	18.2	19.2	18.8	18.4	18.4	18.1	17.6
Net national saving rate ²	-.3	.8	2.9	3.1	4.3	3.9	3.7	3.7	3.2	2.6

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. 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

March 3, 2017

Item	Fiscal year				2016				2017				2018			
	2016	2017	2018	2019	Q1 ^a	Q2 ^a	Q3 ^a	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Unified budget																
Receipts	3,267	3,406	3,449	3,590	711	993	798	741	734	1,084	847	798	725	1,092	833	805
Outlays	3,854	3,960	4,121	4,407	956	932	984	949	1,064	972	976	1,000	1,119	1,031	971	1,114
Surplus/deficit	-587	-554	-673	-817	-245	61	-186	-208	-329	112	-129	-202	-393	61	-138	-309
<i>Previous Tealbook</i>	-587	-622	-720	-849	-245	61	-186	-208	-322	88	-180	-266	-362	41	-133	-313
Means of financing:																
Borrowing	1,052	365	824	939	251	8	241	259	-112	26	192	249	431	-27	171	340
Cash decrease	-155	186	-31	-2	20	-50	10	-46	347	-82	-33	-16	-8	-4	-2	-1
Other ¹	-310	3	-120	-120	-25	-18	-65	-5	94	-56	-30	-30	-30	-30	-30	-30
Cash operating balance, end of period	353	167	198	200	314	364	353	399	52	134	167	184	192	196	198	199
NIPA federal sector																
Receipts	3,495	3,613	3,658	3,785	3,442	3,485	3,537	3,550	3,609	3,634	3,660	3,710	3,596	3,645	3,679	3,721
Expenditures	4,124	4,262	4,491	4,781	4,111	4,137	4,189	4,218	4,251	4,260	4,318	4,365	4,472	4,528	4,600	4,670
Consumption expenditures	974	998	1,020	1,033	969	975	985	984	997	1,003	1,008	1,013	1,019	1,022	1,025	1,027
Defense	589	593	604	613	587	586	591	595	595	597	599	604	605	607	608	608
Nondefense	386	405	416	419	382	389	394	398	404	408	411	414	416	418	418	418
Other spending	3,150	3,264	3,472	3,748	3,142	3,163	3,204	3,234	3,253	3,258	3,310	3,352	3,453	3,506	3,576	3,644
Current account surplus	-629	-649	-834	-996	-668	-652	-652	-669	-642	-626	-658	-655	-877	-883	-921	-950
Current account surplus	266	273	281	287	265	265	267	269	272	274	277	278	280	282	283	284
Gross investment																
Gross saving less gross investment ²	-623	-649	-840	-1,007	-662	-646	-647	-666	-641	-628	-661	-659	-883	-890	-929	-959
Fiscal indicators																
High-employment (HEB) surplus/deficit ³	-637.3	-690.4	-922.0	-1,129.7	-670.5	-658.2	-672.8	-701.8	-674.6	-671.7	-713.5	-723.7	-956.9	-977.6	-1,029.8	-1,072.6
Change in HEB, percent of potential GDP	.4	.2	1.1	.9	.7	-1	.0	.1	-2	.0	.2	.0	.2	.1	.1	.2
Fiscal impetus (FI), percent of GDP ⁴	.2	.3	.4	.3	.5	-1	.3	.2	.0	.4	.4	.4	.3	.8	.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	.1	.1	.0	-1	.2	.2	-1	.1	.1	.0	.0	.0	.0	.0
State and local purchases	.2	.1	.3	.2	.2	.2	.2	.2	.1	.1	.2	.1	.1	.1	.1	.1
Taxes and transfers																

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
Real GDP¹												
Total foreign	2.4	1.4	3.1	2.7	2.5	2.5	2.5	2.6	2.6	2.6	2.6	2.6
<i>Previous Tealbook</i>	2.5	1.3	2.9	2.3	2.4	2.5	2.5	2.6	2.6	2.6	2.6	2.6
Advanced foreign economies	2.3	.4	2.5	2.2	2.1	1.9	1.8	1.8	1.8	1.7	1.7	1.7
Canada	2.7	-1.2	3.8	2.6	2.3	2.1	1.9	1.9	1.9	1.8	1.8	1.8
Japan	2.3	1.8	1.4	1.0	1.1	1.2	1.1	1.0	1.0	.9	.9	.9
United Kingdom	.6	2.3	2.3	2.9	2.1	2.0	1.9	1.8	1.7	1.7	1.7	1.7
Euro area	2.0	1.2	1.8	1.6	2.1	1.7	1.7	1.7	1.8	1.8	1.8	1.8
Germany	2.9	1.9	.5	1.7	2.4	1.9	1.8	1.8	1.7	1.6	1.6	1.6
Emerging market economies	2.4	2.4	3.6	3.2	2.8	3.1	3.2	3.3	3.3	3.4	3.4	3.4
Asia	4.3	5.2	5.0	4.7	4.8	4.8	4.6	4.5	4.5	4.5	4.5	4.5
Korea	2.1	3.2	2.5	1.6	2.6	3.0	3.1	3.0	3.0	3.0	3.0	3.0
China	6.6	7.1	6.8	6.6	6.4	6.2	6.1	6.0	5.9	5.9	5.8	5.8
Latin America	.9	-4	2.7	2.1	1.2	1.6	2.0	2.3	2.4	2.4	2.4	2.4
Mexico	1.9	.4	4.3	2.9	1.2	1.5	1.9	2.2	2.3	2.3	2.4	2.4
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 prices²</i>												
Total foreign	1.4	2.1	1.6	2.6	3.6	2.6	2.6	2.5	2.5	2.4	2.5	2.5
<i>Previous Tealbook</i>	1.4	2.1	1.6	2.4	2.8	2.6	2.5	2.5	2.5	2.4	2.5	2.5
Advanced foreign economies	-.3	1.1	.8	1.8	2.4	1.5	1.4	1.5	1.5	1.6	1.6	1.6
Canada	.5	2.2	1.0	1.7	2.0	2.0	1.8	1.7	1.8	1.9	1.9	1.9
Japan	-.3	-.4	-.5	2.4	.5	.8	.8	.9	1.0	1.1	1.2	1.3
United Kingdom	.0	.8	2.0	2.0	3.5	2.7	2.5	2.3	2.2	2.2	2.2	2.2
Euro area	-1.1	1.1	1.1	1.9	3.5	1.3	1.3	1.4	1.4	1.4	1.5	1.5
Germany	-1.3	1.2	1.2	3.1	3.6	1.6	1.6	1.7	1.8	1.8	1.9	1.9
Emerging market economies	2.7	2.7	2.2	3.1	4.4	3.4	3.2	3.1	3.1	3.1	3.1	3.1
Asia	2.0	2.3	1.2	2.6	2.5	2.7	2.7	2.7	2.8	2.8	2.8	2.8
Korea	.5	1.0	.4	4.0	2.5	2.5	2.5	2.4	2.8	3.0	3.0	3.0
China	2.5	2.3	1.3	2.6	2.2	2.6	2.5	2.5	2.5	2.5	2.5	2.5
Latin America	4.3	3.9	4.5	4.5	9.3	5.0	4.4	4.1	4.0	3.9	3.8	3.8
Mexico	2.8	2.4	3.6	4.1	9.3	3.6	3.4	3.2	3.2	3.2	3.2	3.2
Brazil	11.8	7.5	6.5	2.6	3.7	5.2	5.1	4.9	4.9	4.9	4.9	4.7

¹Foreign GDP aggregates calculated using shares of U.S. exports.

²Foreign 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

March 3, 2017

Measure and country	2011	2012	2013	2014	2015	2016	2017	2018	2019
Real GDP¹									
Total foreign	3.2	2.3	2.9	2.5	2.0	2.4	2.5	2.6	2.6
<i>Previous Tealbook</i>	3.2	2.3	2.9	2.5	1.9	2.3	2.5	2.6	2.6
Advanced foreign economies	1.8	.3	2.4	1.8	1.2	1.8	1.9	1.8	1.7
Canada	3.1	.7	3.6	2.2	.4	1.9	2.1	1.8	1.8
Japan	.2	.3	2.7	-.3	1.2	1.6	1.1	.9	.1
United Kingdom	1.3	1.3	2.4	3.5	1.7	2.0	1.9	1.7	1.7
Euro area	.5	-1.1	.7	1.3	2.0	1.7	1.8	1.8	1.9
Germany	2.4	.2	1.6	1.6	1.3	1.8	2.0	1.6	1.6
Emerging market economies	4.6	4.3	3.4	3.3	2.7	2.9	3.1	3.4	3.5
Asia	5.1	5.7	5.4	5.0	4.4	4.8	4.7	4.5	4.4
Korea	2.9	2.1	3.5	2.7	3.1	2.3	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	3.4	1.6	1.9	1.3	1.3	1.8	2.4	2.6
Mexico	4.2	3.4	1.1	2.6	2.4	2.4	1.7	2.3	2.6
Brazil	2.6	2.5	2.6	-.3	-5.8	-2.0	1.6	2.1	2.2
<i>Consumer prices²</i>									
Total foreign	3.4	2.3	2.4	2.0	1.4	1.9	2.8	2.5	2.6
<i>Previous Tealbook</i>	3.4	2.3	2.4	2.0	1.4	1.9	2.6	2.5	2.6
Advanced foreign economies	2.2	1.3	1.0	1.2	.5	.9	1.7	1.6	1.9
Canada	2.7	1.0	1.0	2.0	1.3	1.4	1.9	1.9	2.0
Japan	-.3	-.2	1.4	2.6	.2	.3	.7	1.1	2.5
United Kingdom	4.6	2.6	2.1	.9	.1	1.2	2.8	2.2	2.1
Euro area	2.9	2.3	.8	.1	.2	.7	1.9	1.5	1.6
Germany	2.6	1.9	1.4	.4	.2	1.0	2.1	1.8	1.9
Emerging market economies	4.3	3.1	3.4	2.7	2.1	2.7	3.5	3.1	3.1
Asia	4.4	2.6	3.1	1.8	1.5	2.0	2.6	2.8	2.9
Korea	3.9	1.7	1.1	1.0	.9	1.5	2.5	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	5.7	3.9	3.6
Mexico	3.5	4.1	3.6	4.2	2.3	3.2	5.1	3.2	3.2
Brazil	6.7	5.6	5.8	6.5	10.4	7.1	4.7	4.8	4.5

¹ Foreign GDP aggregates calculated using shares of U.S. exports.

² Foreign CPI aggregates calculated using shares of U.S. non-oil imports.

**U.S. Current Account
Quarterly Data**

	2016				2017				Projected 2018			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<i>Billions of dollars, s.a.a.r.</i>												
U.S. current account balance	-531.6	-477.3	-456.0	-528.2	-551.3	-547.0	-583.2	-625.1	-684.5	-699.6	-732.2	-770.0
<i>Previous Tealbook</i>	-527.4	-473.1	-451.8	-486.3	-537.9	-540.7	-582.9	-626.6	-687.4	-702.3	-739.9	-771.6
Current account as percent of GDP	-2.9	-2.6	-2.4	-2.8	-2.9	-2.8	-3.0	-3.2	-3.5	-3.5	-3.6	-3.8
<i>Previous Tealbook</i>	-2.9	-2.6	-2.4	-2.6	-2.8	-2.8	-3.0	-3.2	-3.5	-3.5	-3.7	-3.8
Net goods & services	-505.1	-503.2	-469.9	-530.8	-573.4	-588.6	-613.7	-640.6	-677.1	-690.3	-706.6	-730.2
Investment income, net	147.0	188.2	184.9	181.0	197.2	205.8	200.7	181.7	167.8	154.9	144.6	126.5
Direct, net	219.6	256.3	260.6	259.7	276.2	295.9	307.3	307.7	313.7	321.3	332.9	336.7
Portfolio, net	-72.6	-68.1	-75.7	-78.6	-79.0	-90.2	-106.6	-126.0	-145.9	-166.4	-188.3	-210.1
Other income and transfers, net	-173.5	-162.3	-171.0	-178.4	-175.2	-164.2	-170.3	-166.3	-175.2	-164.2	-170.3	-166.3
<i>Annual Data</i>												
U.S. current account balance	-460.4	-446.5	-366.4	-392.1	-463.0	-498.3	-576.7	-721.6	-850.5	-725.3	-839.8	
<i>Previous Tealbook</i>	-460.4	-446.5	-366.4	-392.1	-463.0	-484.6	-572.0	-725.3	-850.5	-725.3	-839.8	
Current account as percent of GDP	-3.0	-2.8	-2.2	-2.3	-2.6	-2.7	-3.0	-3.6	-4.1			
<i>Previous Tealbook</i>	-3.0	-2.8	-2.2	-2.3	-2.6	-2.6	-3.0	-3.6	-4.0			
Net goods & services	-548.6	-536.8	-461.9	-490.2	-500.4	-502.3	-604.1	-701.1				
Investment income, net	229.0	224.4	228.4	234.3	193.4	175.3	196.4	148.5	85.2			
Direct, net	298.6	293.8	296.3	289.0	265.4	249.0	296.8	326.1	350.9			
Portfolio, net	-69.5	-69.4	-67.9	-54.8	-72.0	-73.7	-100.4	-177.7	-265.7			
Other income and transfers, net	-140.8	-134.2	-132.9	-136.1	-156.0	-171.3	-169.0	-169.0	-169.0			

Abbreviations

ABS	asset-backed securities
AFE	advanced foreign economy
BHC	bank holding company
BOE	Bank of England
BOJ	Bank of Japan
CDS	credit default swaps
C&I	commercial and industrial
CMBS	commercial mortgage-backed securities
CPH	compensation per hour
CRE	commercial real estate
DSGE	dynamic stochastic general equilibrium
ECB	European Central Bank
ECI	employment cost index
E&I	equipment and intangibles
EME	emerging market economy
EU	European Union
FOMC	Federal Open Market Committee; also, the Committee
GDP	gross domestic product
LIBOR	London interbank offered rate
NFIB	National Federation of Independent Business
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
QS report	QS Assessment of Financial Stability
repo	repurchase agreement
SEP	Summary of Economic Projections

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

Class I FOMC – Restricted Controlled (FR)

Report to the FOMC on Economic Conditions and Monetary Policy

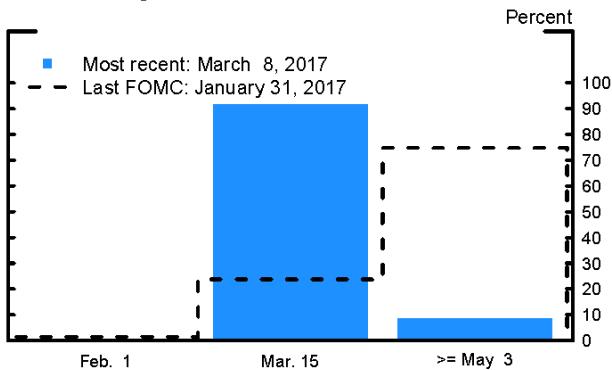


Book B Monetary Policy Alternatives

March 9, 2017

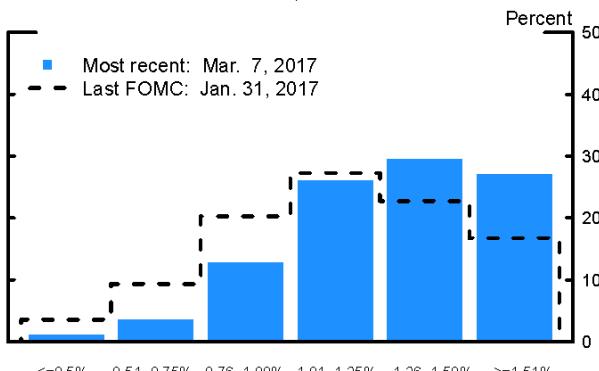
Prepared for the Federal Open Market Committee
by the staff of the Board of Governors of the Federal Reserve System

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



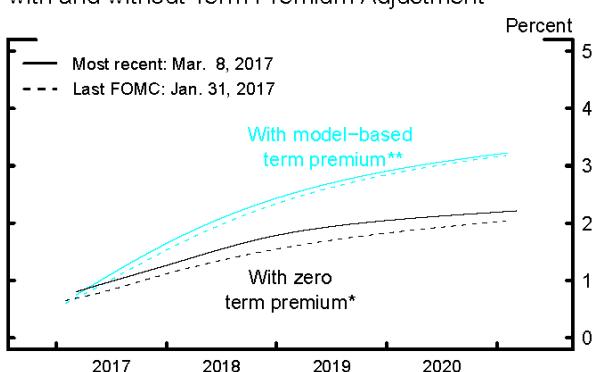
Note: Probabilities implied by a binomial tree model fitted to settlement prices on fed funds futures contracts, conditional on the next policy action being either no change or an increase in rates, no intermeeting moves, 25 basis point hikes, and corrected for month-end effects. The effective federal funds rate before the next FOMC meeting is assumed to be equal to the observed rate on the previous business day.
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

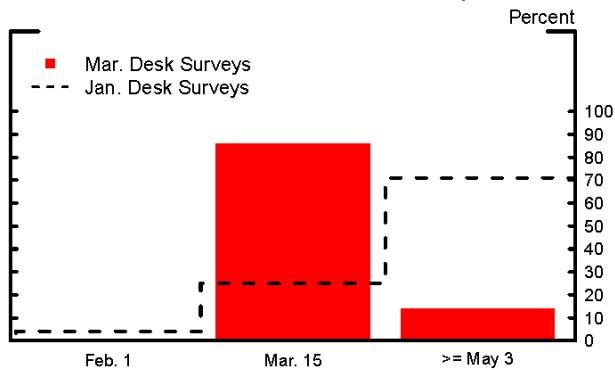


* Estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points.

** Estimated using a term structure model maintained by Board staff and adjusted for term premiums.

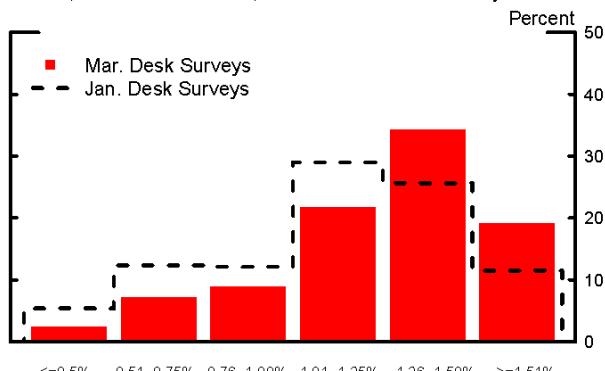
Source: Bloomberg; Blue Chip Financial Forecasts; Federal Reserve Board staff estimates.

Figure 2: Probability Distribution of the Timing of Next Rate Increase from the Desk Surveys



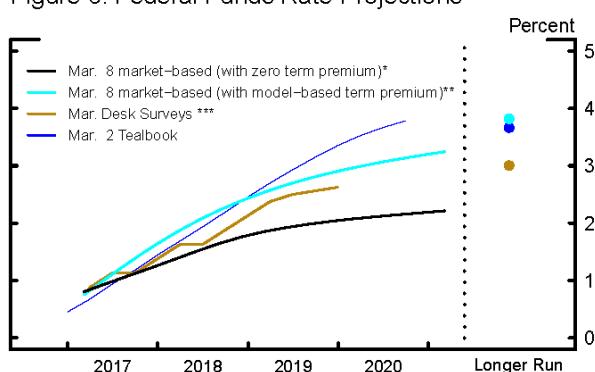
Note: Average probabilities across the surveys of primary dealers and market participants, conditional on the next policy action being an increase in rates.
Source: FRBNY.

Figure 4: Probability Distribution of the Federal Funds Rate, Year-End 2017, from the Desk Surveys



Note: Average unconditional probabilities across the surveys of primary dealers and market participants for different ranges of the federal funds rate at the end of 2017.
Source: FRBNY.

Figure 6: Federal Funds Rate Projections



* Estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points.

** Estimated using a term structure model maintained by Board staff and adjusted for term premiums. The longer-run model-implied forecast is for the expected federal funds rate 5 to 10 years ahead.

*** Median of the respondents' modal paths for the federal funds rate.

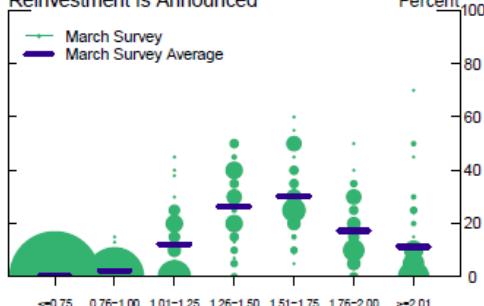
Source: Bloomberg; Blue Chip Financial Forecasts; Federal Reserve Board staff estimates; FRBNY.

Expectations for Changes to Reinvestment Policy

The Desk's latest Surveys of Primary Dealers and Market Participants indicate that respondents hold diffuse views, within certain ranges, of when the Committee will first announce a change in its reinvestment policy and of what the level of the federal funds rate will be at that time.

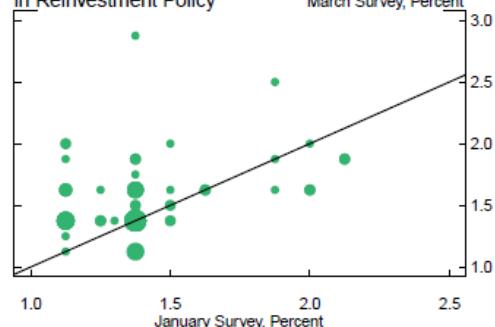
The March survey asked respondents to provide a point estimate and probability distribution for the level of the federal funds rate expected to prevail when the Committee first announces a change to its reinvestment policy.¹ The median point estimate was 1.625 percent, but, as shown in figure 1, respondents on average assigned only a 30 percent probability to the federal funds rate being between 1.51 and 1.75 percent when a change in reinvestment policy is announced.² The reported probabilities of the federal funds rate falling within any particular range varied considerably across respondents, except that nearly all respondents saw a 5 percent or lower probability of an announcement occurring before the federal funds rate exceeds 1 percent.

Figure 1: Distributions of Market Beliefs on Level of Fed Funds Rate When Change to Reinvestment is Announced



Note: Based on all responses from the Survey of Primary Dealers and Survey of Market Participants. Dots scaled by percent of respondents. Source: FRBNY.

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



Note: Based on all responses from the Survey of Primary Dealers and Survey of Market Participants. Dots scaled by percent of respondents. Source: FRBNY.

Figure 2 plots respondents' point estimates of the expected level of the federal funds rate at the time of a change in reinvestment policy, as reported in the March surveys, against their responses to the January surveys.³ A majority of the dots in the scatter plot lie above the 45-degree line, indicating that most respondents now expect a higher level of the federal funds rate to prevail when reinvestment policy is first

¹ The surveys pose these questions only to those participants that assign some positive probability to the Committee making a future change to its reinvestments policy.

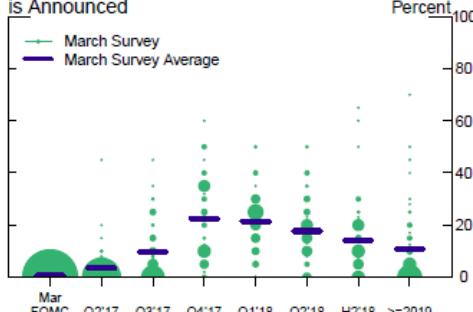
² In figure 1, and similarly in figure 3 below, the size of the green bubbles represents the number of respondents who assigned the probability (as indicated on the vertical axis) to the scenario that a change in reinvestment policy would first be announced when the federal funds rate falls in the target range indicated on the horizontal axis (Figure 1) or in the quarter indicated on the horizontal axis (Figure 3). The blue horizontal dashes show the resulting average probabilities across respondents.

³ Note that in January, respondents were asked to indicate their estimate for the timing and the most likely level of the target federal funds rate or range when the Committee first changes its reinvestment policy, whereas in March they were asked to provide their point estimate for the most likely outcome of the level of the target federal funds rate or range and their distribution of the timing outcome when the Committee first announces a change to its reinvestment policy.

changed. When asked to explain the factors behind changes in their views, two factors commonly cited were an expected earlier start or faster pace of rate hikes in 2017, and recent Federal Reserve communications.

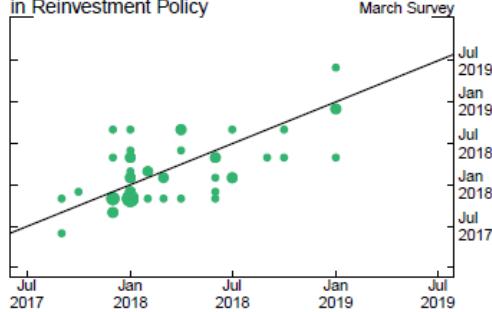
Figure 3 summarizes respondents' probability distributions for the timing of the first announcement of a change in reinvestment policy. Respondents on average assigned a 44 percent probability to an announcement occurring in the fourth quarter of 2017 or the first quarter of 2018, and the vast majority of respondents assigned a 5 percent or lower probability to a policy change announcement occurring before the third quarter of 2017. The reported probabilities of a policy change announcement occurring at any particular time, however, were diverse. Figure 4 plots respondents' expectations for the most likely timing of a policy change announcement derived from their responses to the March and January surveys.⁴ While a majority of respondents revised earlier their modal expectations, the average expectation did not change significantly.⁵

Figure 3: Distributions of Market Beliefs on Timing of When Change to Reinvestment is Announced



Note: Based on all responses from the Survey of Primary Dealers and Survey of Market Participants. Dots scaled by percent of respondents. Source: FRBNY.

Figure 4: Most Likely Time of First Change in Reinvestment Policy



Note: Based on all responses from the Survey of Primary Dealers and Survey of Market Participants. Dots scaled by percent of respondents. Source: FRBNY.

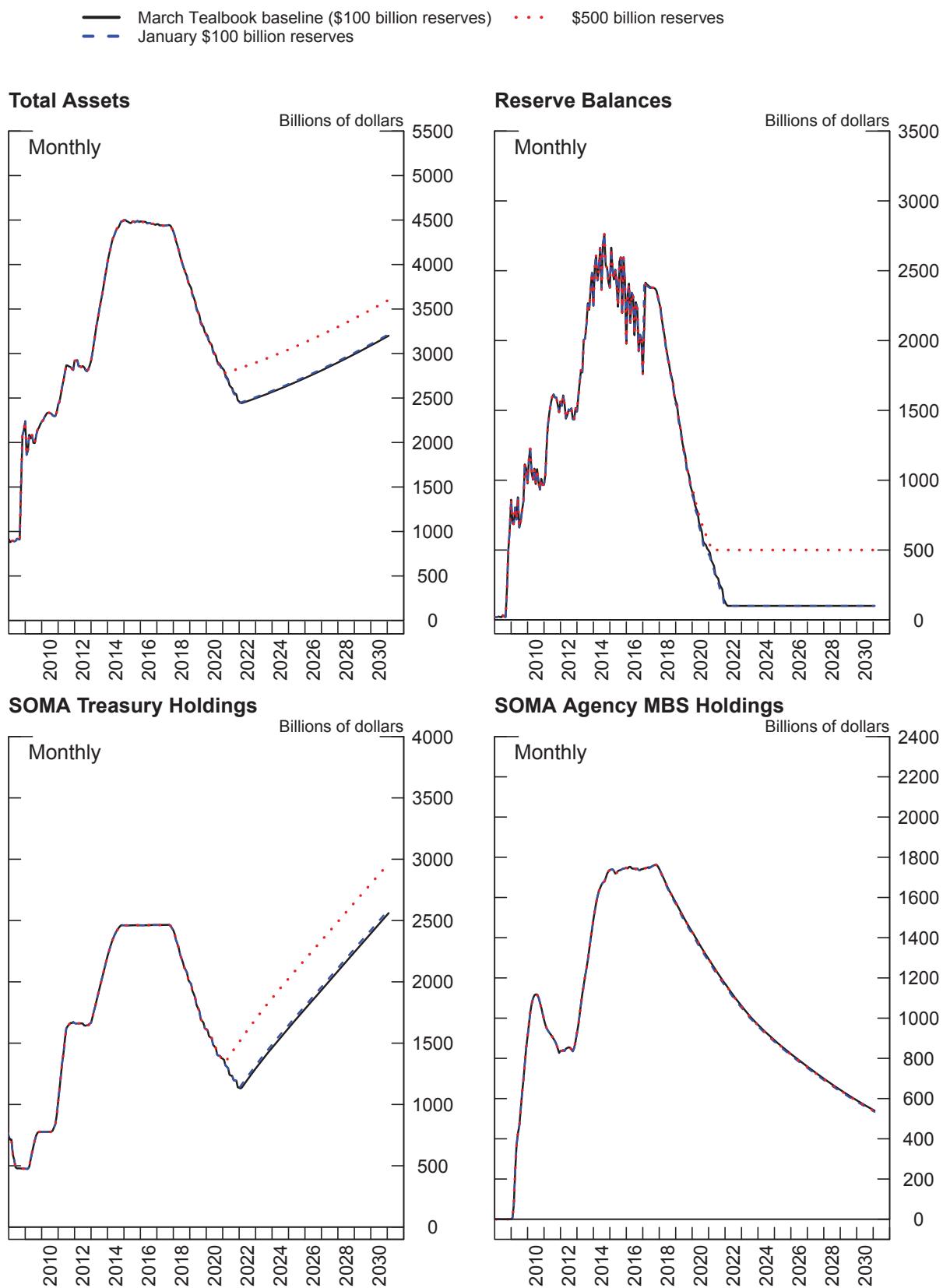
The Desk's surveys also asked for respondents' views on whether the Committee will cease reinvestments all at once, phase out reinvestments over time, or not change its reinvestment policy during the process of policy normalization. The median respondent attached roughly a 75 percent likelihood to the Committee phasing out reinvestments over time, little changed from recent surveys. The median expectation was that reinvestments of Treasury securities and MBS would each be phased out over 12 months, the same as in the December Primary Dealer Survey.⁶

⁴ For each respondent the date plotted for the March surveys is the date or average of dates for which the respondent reported the highest likelihood of a policy change announcement. The date plotted for the January survey is derived from the number of months forward the respondent first expected a change in reinvestment policy for either Treasuries or MBS.

⁵ In the January surveys, the median estimate for the most likely timing of the first change in reinvestment policy, across both asset classes, was about 12 months forward, corresponding to January 2018. In the March surveys, the median of the modes of individual views of this timing derived from their probability distributions of timing outcomes was quite similar—the first quarter of 2018.

⁶ Note that the December Survey of Market Participants did not ask about the number of months over which reinvestments would be phased out.

Total Assets and Selected Balance Sheet Items



Federal Reserve Balance Sheet
End-of-Year Projections -- March Tealbook baseline (\$100 billion reserves)
(Billions of dollars)

	Jan 31, 2017	2017	2019	2021	2023	2025	2030
Total assets	4,454	4,374	3,219	2,461	2,567	2,724	3,191
Selected assets							
Loans and other credit extensions*	2	0	0	0	0	0	0
Securities held outright	4,224	4,168	3,045	2,310	2,432	2,602	3,094
U.S. Treasury securities	2,463	2,421	1,613	1,136	1,462	1,778	2,547
Agency debt securities	16	4	2	2	2	2	2
Agency mortgage-backed securities	1,745	1,743	1,429	1,171	967	822	544
Unamortized premiums	171	160	125	100	82	68	42
Unamortized discounts	-15	-13	-10	-8	-7	-6	-4
Total other assets	51	53	53	53	53	53	53
Total liabilities	4,413	4,333	3,175	2,413	2,515	2,667	3,119
Selected liabilities							
Federal Reserve notes in circulation	1,453	1,537	1,732	1,859	1,990	2,142	2,595
Reverse repurchase agreements	443	363	363	263	263	263	263
Deposits with Federal Reserve Banks	2,509	2,426	1,074	285	255	255	255
Reserve balances held by depository institutions	2,084	2,271	919	130	100	100	100
U.S. Treasury, General Account	373	150	150	150	150	150	150
Other deposits	52	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	52	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 -- March \$500 billion reserves
(Billions of dollars)

	Jan 31, 2017	2017	2019	2021	2023	2025	2030
Total assets	4,454	4,375	3,219	2,832	2,968	3,125	3,593
Selected assets							
Loans and other credit extensions*	2	0	0	0	0	0	0
Securities held outright	4,224	4,167	3,044	2,680	2,833	3,003	3,495
U.S. Treasury securities	2,463	2,421	1,613	1,509	1,866	2,181	2,952
Agency debt securities	16	4	2	2	2	2	2
Agency mortgage-backed securities	1,745	1,742	1,428	1,169	965	820	541
Unamortized premiums	171	161	125	100	82	68	42
Unamortized discounts	-15	-13	-10	-8	-7	-6	-4
Total other assets	51	53	53	53	53	53	53
Total liabilities	4,413	4,333	3,174	2,784	2,916	3,068	3,521
Selected liabilities							
Federal Reserve notes in circulation	1,453	1,537	1,732	1,859	1,991	2,143	2,596
Reverse repurchase agreements	443	363	355	263	263	263	263
Deposits with Federal Reserve Banks	2,509	2,427	1,082	655	655	655	655
Reserve balances held by depository institutions	2,084	2,271	926	500	500	500	500
U.S. Treasury, General Account	373	150	150	150	150	150	150
Other deposits	52	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	52	57	72

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

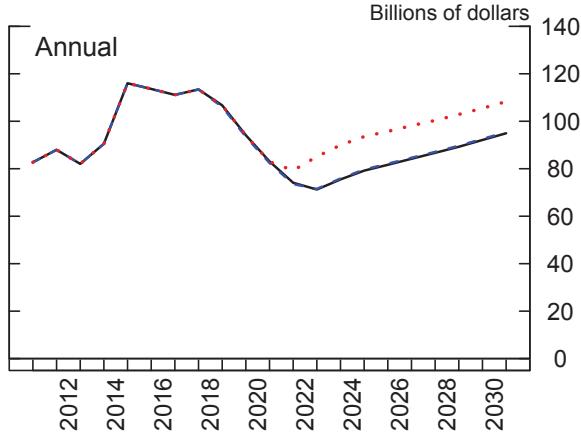
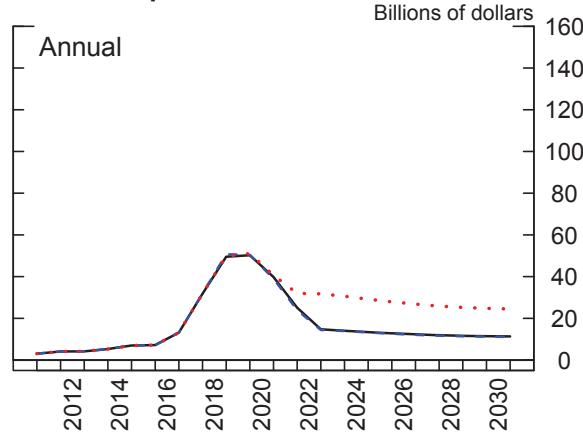
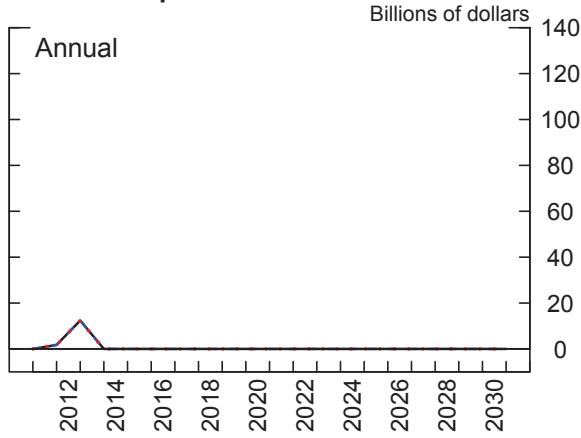
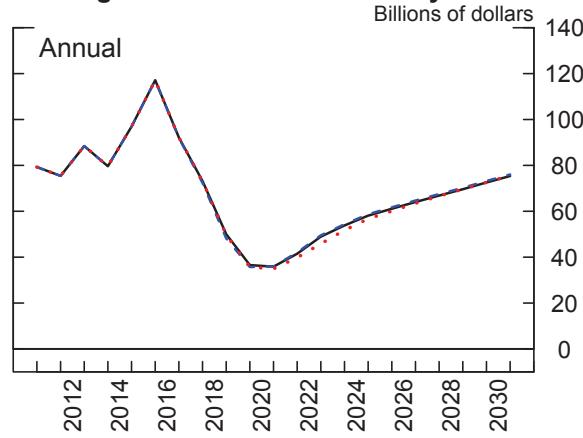
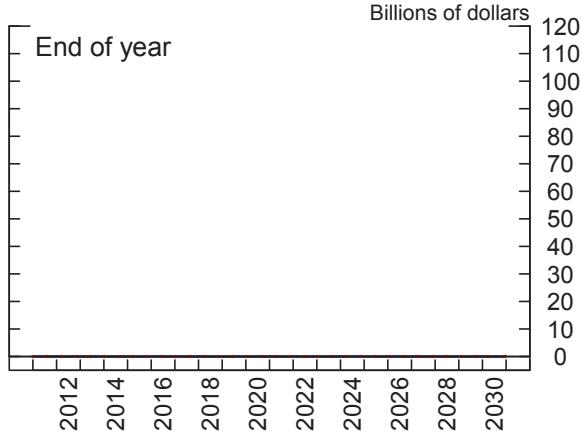
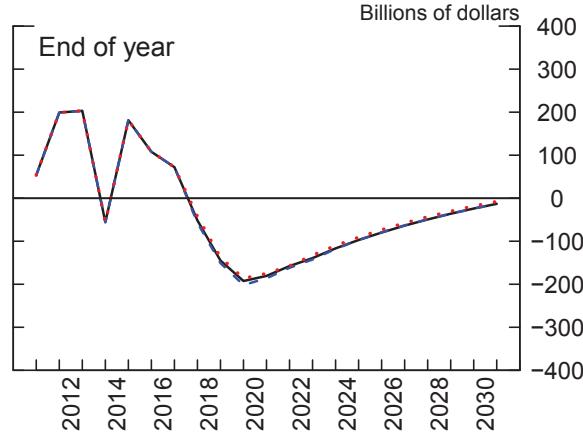
Note: Components may not sum to totals due to rounding.

*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

— March Tealbook baseline (\$100 billion reserves) ··· \$500 billion reserves
 — January \$100 billion reserves

Interest Income**Interest Expense****Realized Capital Gains****Earnings Remittances to Treasury****Deferred Asset****Memo: Unrealized Gains/Losses**

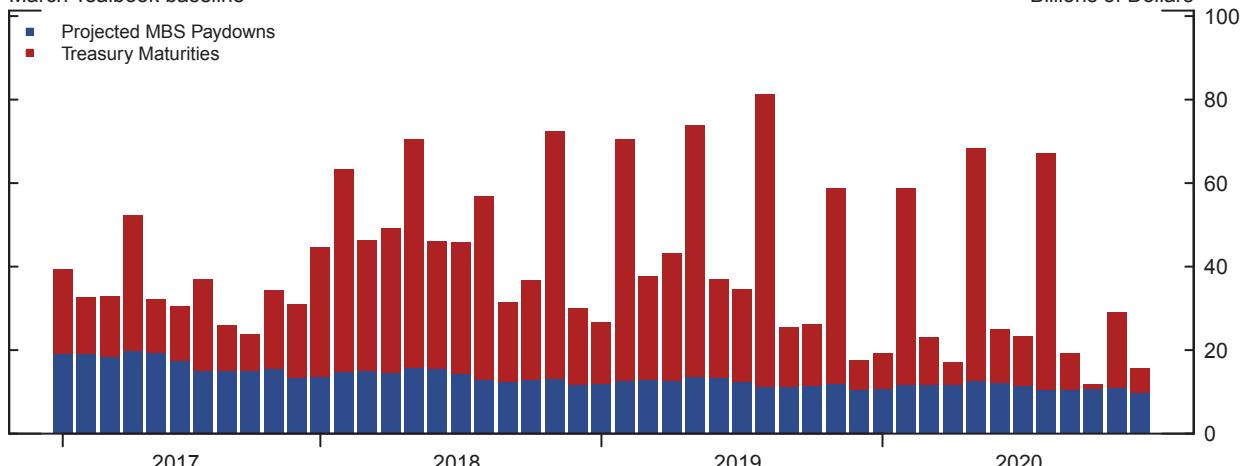
Projections for the 10-Year Treasury Term Premium Effect
(Basis Points)

Date	March Tealbook Baseline	\$500 billion reserve	January \$100 billion reserve
Quarterly Averages			
2017:Q1	-87	-88	-86
Q2	-83	-85	-82
Q3	-79	-81	-78
Q4	-75	-77	-74
2018:Q4	-61	-64	-60
2019:Q4	-50	-55	-49
2020:Q4	-41	-48	-41
2021:Q4	-36	-44	-36
2022:Q4	-32	-40	-32
2023:Q4	-29	-37	-29
2024:Q4	-26	-34	-26
2025:Q4	-23	-31	-23
2026:Q4	-21	-28	-21
2027:Q4	-18	-26	-19
2028:Q4	-16	-24	-17
2029:Q4	-15	-22	-15
2030:Q4	-13	-21	-14

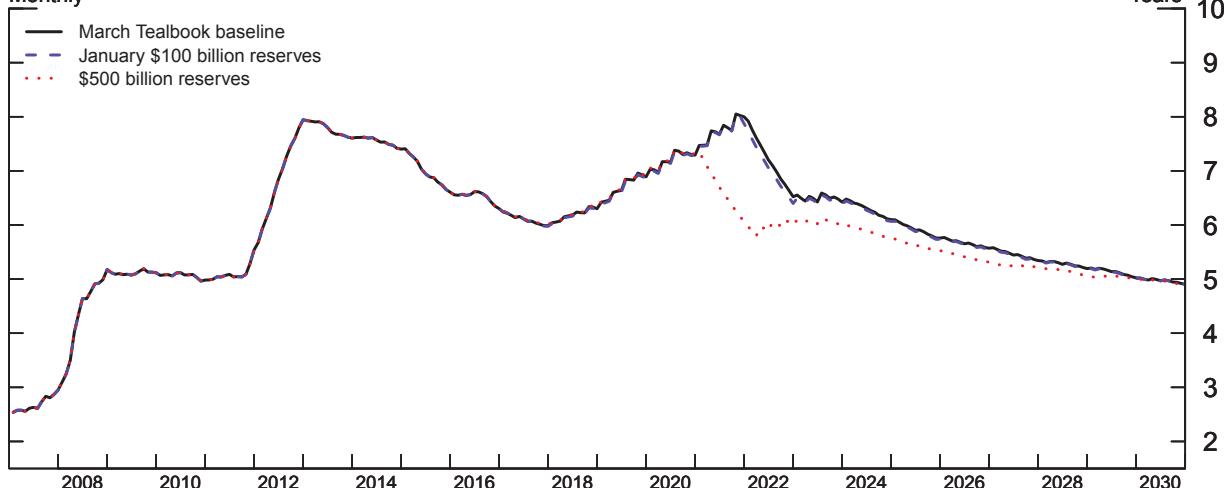
Projections for the Characteristics of SOMA Holdings

Projected Receipts of Principal on SOMA Securities

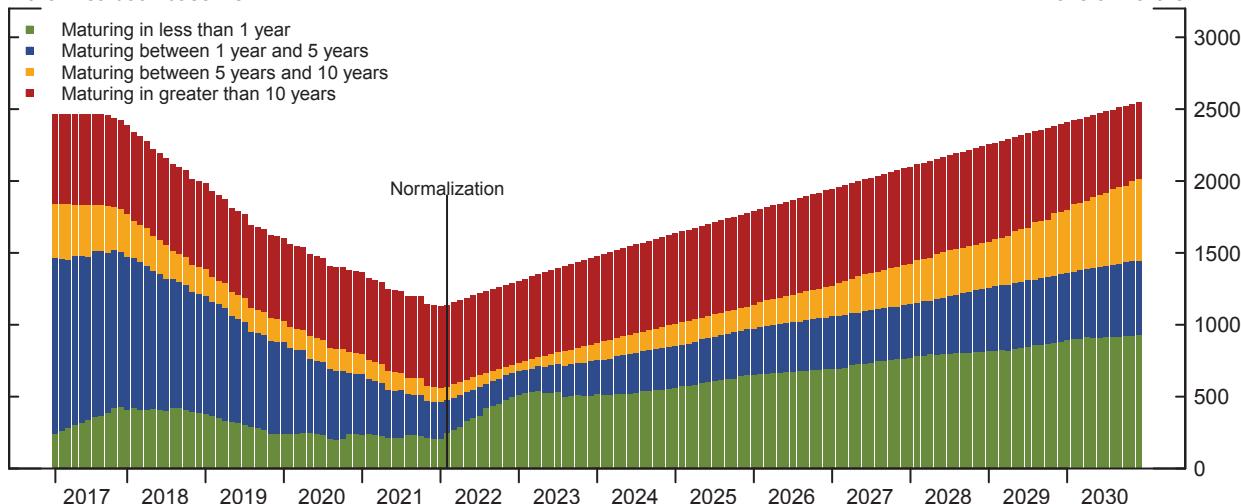
March Tealbook baseline

**SOMA Weighted-Average Treasury Duration**

Monthly

**Maturity Composition of SOMA Treasury Portfolio**

March Tealbook baseline



Abbreviations

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