Prefatory Note

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

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

Content last modified 1/12/2024.

Report to the FOMC on Economic Conditions and Monetary Policy

Book A

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

December 7, 2018

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

Authorized for Public Release

Comparing the Staff Projection with Other Forecasts

The December Tealbook projection for real GDP growth lies close to both the Blue Chip consensus forecast and the Survey of Professional Forecasters (SPF) median forecast for 2018; all three forecasts step down in 2019 and are within a narrow range. The staff's unemployment rate forecast is in line with the others in 2018 and a touch below in 2019. The staff projection for measures of price inflation are also a bit below the Blue Chip consensus and SPF median forecasts in both 2018 and 2019.

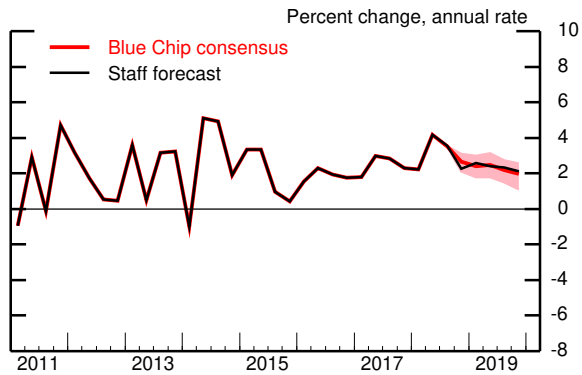### Comparison of Tealbook and Outside Forecasts

	2018	2019
GDP (Q4/Q4 percent change)		
Staff forecast (12/7/18)	3.0	2.4
Blue Chip (11/13/18)	3.1	2.3
SPF median (11/13/18)	3.1	2.4
Unemployment rate (Q4 level)		
Staff forecast (12/7/18)	3.7	3.4
Blue Chip (11/13/18)	3.7	3.5
SPF median (11/13/18)	3.7	3.6
CPI inflation (Q4/Q4 percent change)		
Staff forecast (12/7/18)	2.2	2.0
Blue Chip (11/13/18)	2.4	2.3
SPF median (11/13/18)	2.4	2.3
PCE price inflation (Q4/Q4 percent change)		
Staff forecast (12/7/18)	1.8	1.8
SPF median (11/13/18)	2.1	2.1
Core PCE price inflation (Q4/Q4 percent change)		
Staff forecast (12/7/18)	1.8	2.0
SPF median (11/13/18)	2.0	2.1

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 overall and core 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.
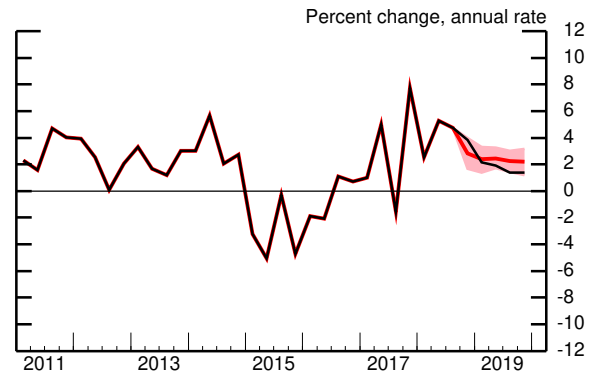Source: Blue Chip Economic Indicators; Federal Reserve Bank of Philadelphia.
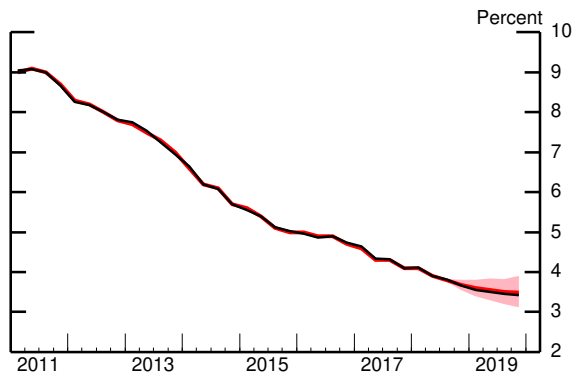
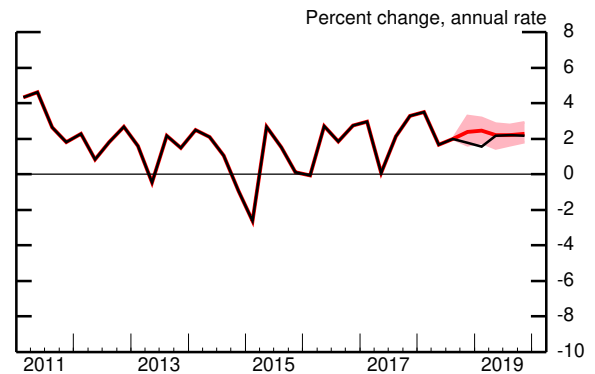# Tealbook Forecast Compared with Blue Chip

Real GDP

Percent change, annual rate

— Blue Chip consensus
— Staff forecast

Industrial Production

Percent change, annual rate

Unemployment Rate

Percent

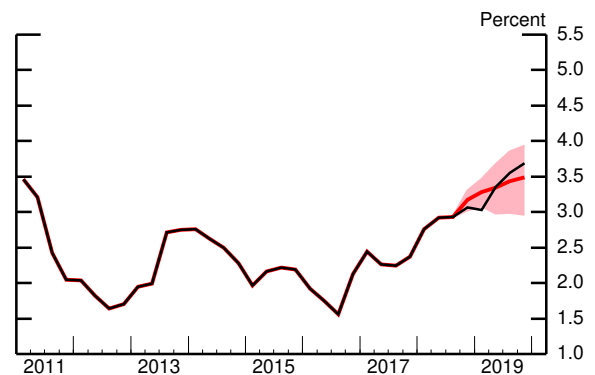## Consumer Price Index

Percent change, annual rate

Treasury Bill Rate

Percent

10-Year Treasury Yield

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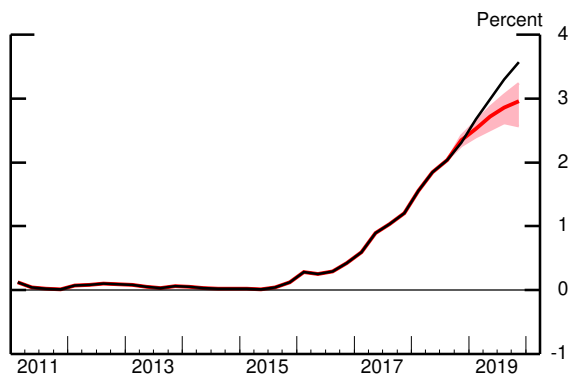
Note: The yield is for on-the-run Treasury securities. Over the forecast period, the staff's projected yield is assumed to be 15 basis points below the off-the-run yield.

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

Authorized for Public Release

Revisions to the Staff Projection since the Previous SEP

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

Incoming data for real GDP growth and the labor market have come in close to our expectations in the September Tealbook. Our projection for real GDP over the medium term has been revised down slightly, on net, reflecting somewhat less favorable trajectories for overall financial conditions (lower equity prices and house prices), and the medium-term forecast for the unemployment rate has revised up a little. All told, resource utilization, as measured by the output gap or the unemployment rate gap, is somewhat less tight than in the September Tealbook.

Our forecast for core inflation in 2018 and over the medium term is a little below our projection in the September Tealbook, based on slightly softer incoming data and a modestly higher unemployment rate. Nonetheless, we continue to expect core inflation to be close to 2 percent over the next few years. Total inflation has revised down more noticeably in the second half of this year and is also down next year, based on declining crude oil prices. In 2020 and 2021, total inflation is forecast to come back in line with core inflation and run at 2 percent.

The path for the federal funds rate derived from the inertial version of the Taylor (1999) rule used in our baseline forecast is lower than its trajectory in September, reflecting the narrower output gap and lower inflation in this projection.

Staff Economic Projections Compared with the September Tealbook

Variable	2018		2018	2019	2020	2021	Longer run
	H1	H2					
Real GDP[1]	3.2	2.9	3.0	2.4	2.0	1.4	1.7
September Tealbook	3.4	2.8	3.1	2.5	1.9	1.5	1.7
Unemployment rate[2]	3.9	3.7	3.7	3.4	3.4	3.5	4.6
September Tealbook	3.9	3.7	3.7	3.3	3.2	3.4	4.6
PCE inflation[1]	2.2	1.4	1.8	1.8	2.0	2.0	2.0
September Tealbook	2.2	1.8	2.0	1.9	2.0	2.0	2.0
Core PCE inflation[1]	2.1	1.5	1.8	2.0	2.0	2.0	n.a.
September Tealbook	2.1	1.6	1.9	2.0	2.1	2.1	n.a.
Federal funds rate[2]	1.74	2.22	2.22	3.49	4.30	4.66	2.50
September Tealbook	1.74	2.35	2.35	3.71	4.63	5.00	2.50
Memo: Federal funds rate, end of period	1.88	2.24	2.24	3.51	4.31	4.66	2.50
September Tealbook	1.88	2.38	2.38	3.73	4.64	5.00	2.50
Output gap[2,3]	1.6	2.2	2.2	2.8	2.9	2.4	n.a.
September Tealbook	1.8	2.4	2.4	3.2	3.2	2.7	n.a.

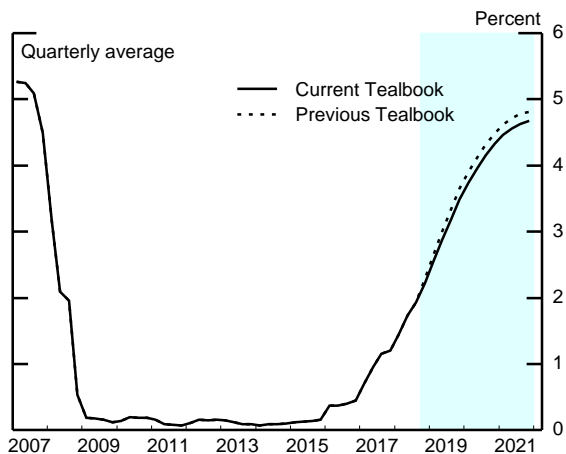1. Percent change from final quarter of preceding period to final quarter of period indicated.
2. Percent, final quarter of period indicated.
3. Percent difference between actual and potential. A negative number indicates that the economy is operating below potential.
n.a. Not available.

Domestic Econ Devel & Outlook

Key Background Factors underlying the Baseline Staff Projection

Federal Funds Rate

Percent

Quarterly average

Current Tealbook
Previous Tealbook

Long-Term Interest Rates

Percent

Quarterly average

Conforming
mortgage rate

Triple-B
corporate yield

10-year
Treasury yield

Equity Prices

Ratio scale, 2007:Q1 = 100

Quarter-end

Dow Jones
U.S. Total Stock Market
Index

House Prices

Ratio scale, 2007:Q1 = 100

Quarterly

CoreLogic
Index

Crude Oil Prices

Dollars per barrel

Quarterly average

Imported oil

West Texas
Intermediate

Broad Real Dollar

2007:Q1 = 100

Quarterly average
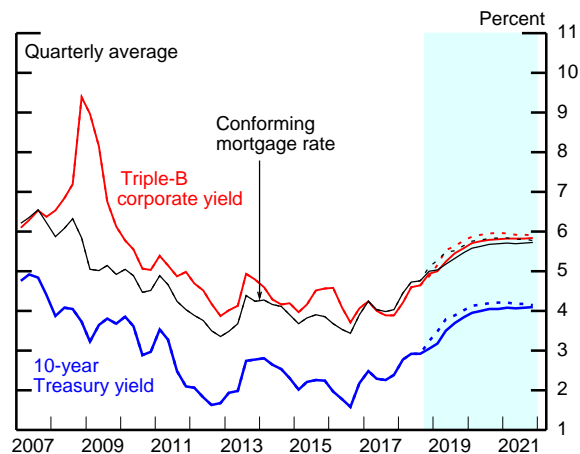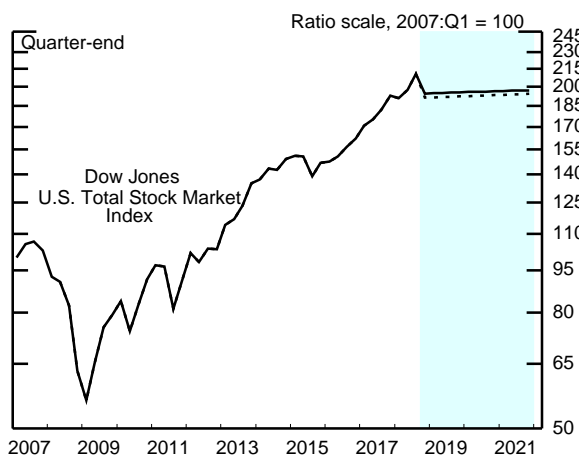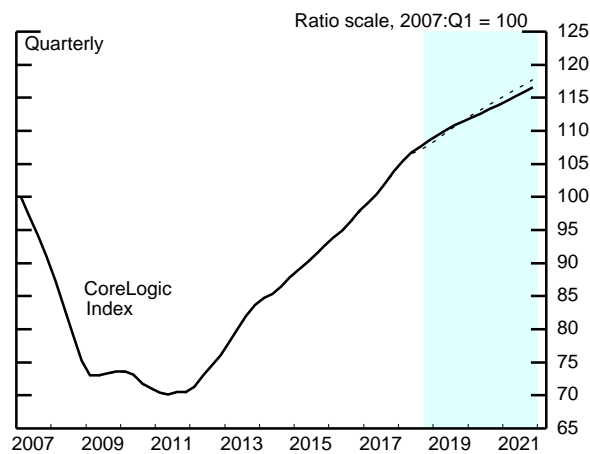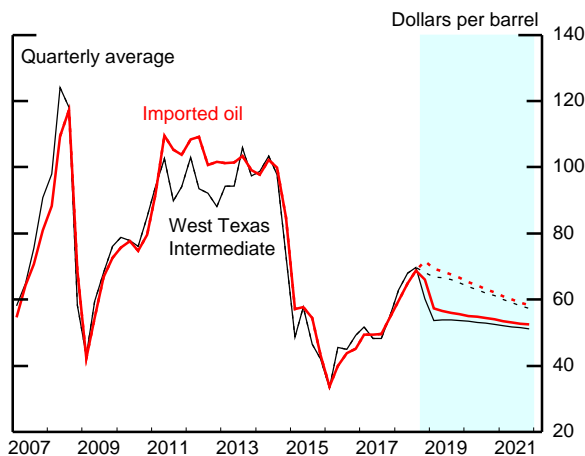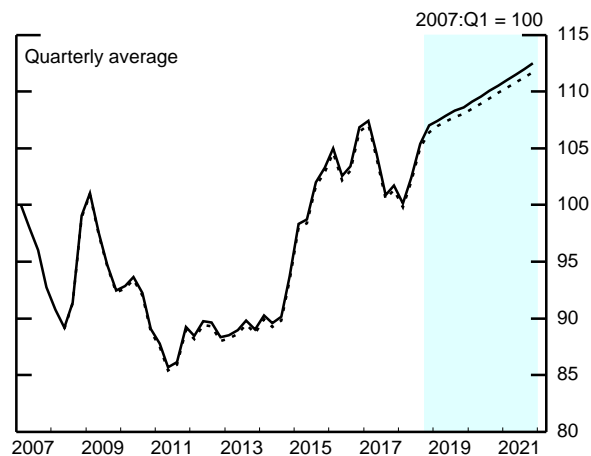
The Recent Fall in Oil Prices

Oil prices have dropped by about one-third since early October, with the spot price of Brent crude oil falling from just over $86 per barrel to about $62 per barrel at the close of trading on December 4 (figure 1). About $14 of the decline has occurred since the October Tealbook. Futures prices have also fallen, though by a lesser amount, such that the futures curve over the next three years is now flat. Given recent markdowns in forecasts of global growth and oil consumption, concerns over the strength of global demand have likely played some role in the price change. However, partly because metals prices—which are often correlated with global demand—have been relatively stable, staff models attribute most of the decline to a stronger outlook for oil supply.

The decline in prices partly reflects an easing of some of the factors that pushed up oil prices by almost $15 per barrel in late summer. In particular, prices rose in September as the United States moved to reimpose sanctions on Iranian oil exports starting in November, potentially removing a large quantity of oil from the global market. However, once it became clear in early October that increases in Russian and OPEC production—both now at record levels—would be enough to cover the expected loss of Iranian exports, prices started falling. Additionally, when the Iranian sanctions took effect in early November, the United States unexpectedly granted temporary sanctions waivers to major buyers of Iranian oil (including China and India), leading short-term oil prices to fall even further.

Robust U.S. oil production and inventory accumulation also have been pushing oil prices down. Despite infrastructure bottlenecks and rising costs, the U.S. shale boom has continued apace, and the United States recently became the largest crude oil producer in the world (figure 2). In recent months, U.S. production rose to close to 12 million barrels per day (mb/d), up nearly 2 mb/d from a year ago and 1 mb/d above U.S. Department of Energy (DOE) projections from a year ago.

**Brent Spot and Futures Prices**

Source: Bloomberg.

Moreover, the DOE has repeatedly revised up its forecasts of U.S. production for 2019, including significant upward revisions in October and November. Finally, U.S. inventories have risen for 10 straight weeks as of late November and are at their highest level of 2018.

We expect oil prices to remain around current levels through 2021, in part supported by a December 7 agreement between OPEC and Russia to address the growing supply glut by cutting production. Relative to the October Tealbook, we have revised down our forecast for the price of imported oil at the end of 2021 by about $6 per barrel, about half of the decline in spot prices.

The recent decline in oil prices is expected to have only a modest net effect on aggregate demand in the United States. To begin with, lower oil prices redistribute real income from oil producers to oil consumers. Given that the United States consumes more than it produces—though by much less than even in the recent past—lower oil prices provide a boost to aggregate spending: Lower prices increase households' purchasing power and boost consumption and, if large and persistent enough, could boost potential output in the non-energy-producing sectors of the economy by reducing the cost of a key input. However, the effect on consumption will likely be offset somewhat by a drag on capital spending in the large and growing U.S. oil sector. Additionally, lower prices will lead to lower domestic oil production and, thus, a higher volume of imports.

Overall, taking these different factors into account, the decline in oil prices since the October Tealbook has raised our forecast of the level of GDP three years from now by only about 5 basis points.[1] As for consumer prices, as a result of changes in energy prices, our forecast for the level of total PCE prices is lower by 0.2 percent by the end of 2019 and about 0.1 percent by the end of 2021.

Crude Oil Production, Leading Producers

---
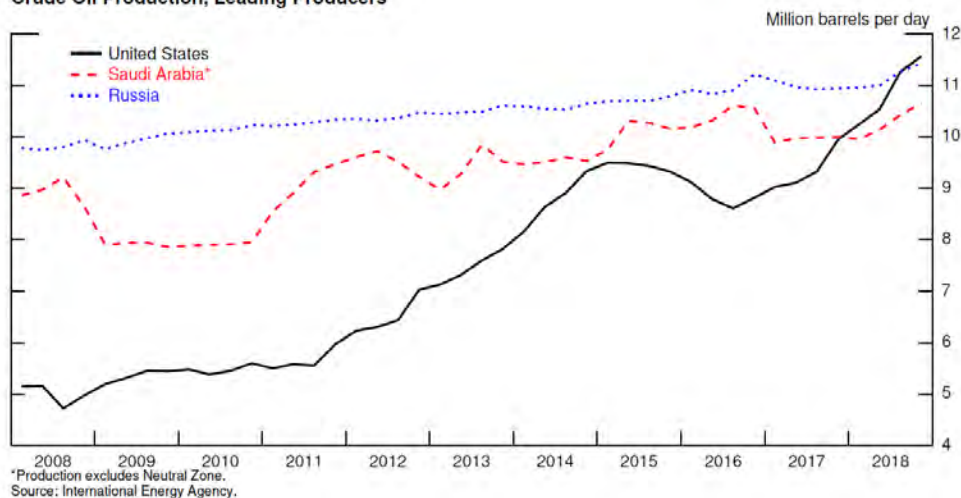
[1] The "Lower Oil Prices" scenario in the Risks and Uncertainty section of the Tealbook considers the effects of a more permanent oil price decline on the U.S. economy.

Domestic Econ Devel & Outlook

## Cyclical Position of the U.S. Economy: Near-Term Perspective
(Percent change at annual rate from final quarter
of preceding period except as noted)

Measure	2016	2017	2018	2018 Q2	2018 Q3	2018 Q4
Output gap[1]	**.3**	**1.1**	**2.2**	**1.6**	**2.0**	**2.2**
Previous Tealbook	.4	1.2	2.4	1.8	2.2	2.4
Real GDP	1.9	2.5	3.0	4.2	3.5	2.3
Previous Tealbook	1.9	2.5	3.0	4.2	2.9	2.6
Measurement error in GDP	-.3	.0	.2	.9	.2	-.3
Previous Tealbook	-.3	.0	.1	.9	-.4	.0
Potential output	1.6	1.7	1.8	1.8	1.8	1.8
Previous Tealbook	1.6	1.6	1.7	1.7	1.7	1.7

Note: The output gap is the percent difference between actual and potential output; a negative number indicates that the economy is operating below potential. The change in the output gap is equal to real GDP growth less the contribution of measurement error less the growth rate of potential output. For quarterly figures, the growth rates are at an annual rate, and this calculation needs to be multiplied by 1/4 to obtain the quarterly change in the output gap.
   1. Percent, average for the final quarter in the period.

Judgmental Output Gap
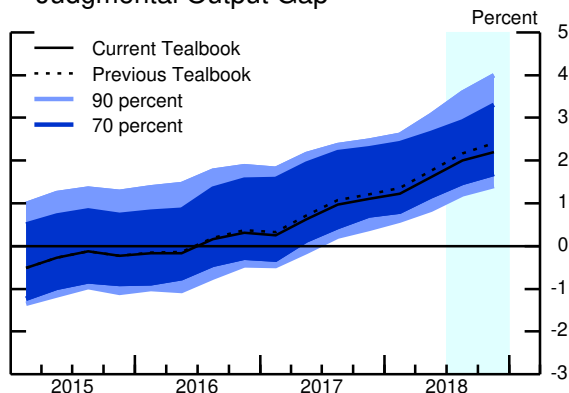
Note: Shaded regions show the distribution of historical revisions to the staff's estimates of the output gap.
   Source: Various macroeconomic data; staff assumptions.

Model-Based Output Gap
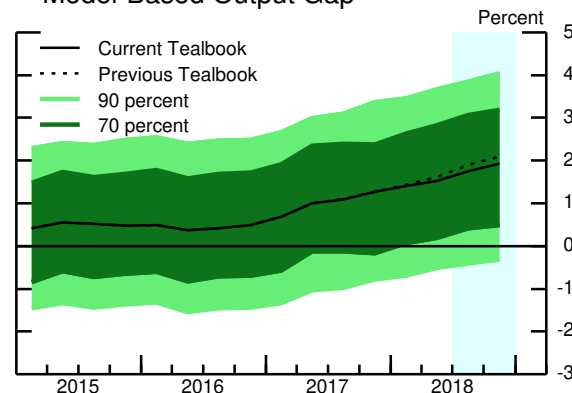
Note: Shaded regions denote model-computed uncertainty bands.
   Source: Various macroeconomic data; staff assumptions.
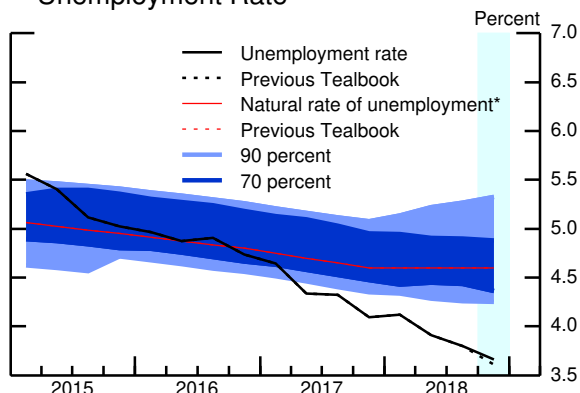
Unemployment Rate

Note: Shaded regions show the distribution of historical revisions to the staff's estimates of the natural rate.
*Staff estimate including the effect of extended and emergency unemployment insurance benefits.
   Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

Core PCE Price Inflation

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

Summary of the Near-Term Outlook for GDP
(Percent change at annual rate except as noted)

Measure	2018:Q3		2018:Q4		2019:Q1	
	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook
Real GDP	**2.9**	**3.5**	**2.6**	**2.3**	**2.6**	**2.6**
Private domestic final purchases	3.0	3.2	3.3	2.9	2.9	2.6
Personal consumption expenditures	3.2	3.7	2.7	3.0	2.7	2.5
Residential investment	-5.2	-2.9	-1.3	-5.4	-.3	-2.6
Nonres. private fixed investment	4.0	2.1	7.6	5.1	4.8	4.8
Government purchases	2.1	2.5	1.8	1.5	1.8	1.9
Contributions to change in real GDP						
Inventory investment[1]	1.8	2.3	-.4	-.6	-.3	.0
Net exports[1]	-1.8	-1.9	-.1	.1	.0	.0

1. Percentage points.

Recent Nonfinancial Developments (1)

Real GDP and GDI

Source: U.S. Dept. of Commerce, Bureau of Economic Analysis.
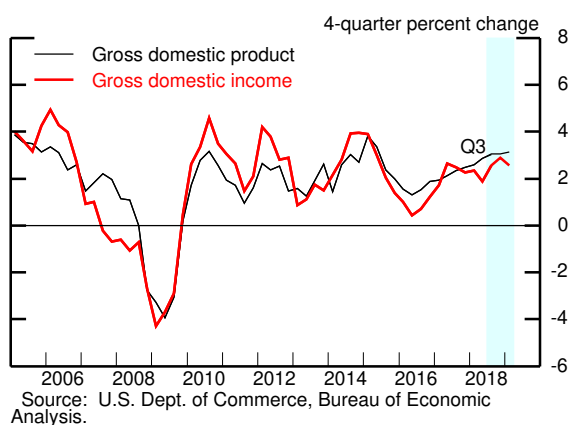
Manufacturing IP ex. Motor Vehicles and Parts

Source: Federal Reserve Board, G.17 Statistical Release, "Industrial Production and Capacity Utilization."
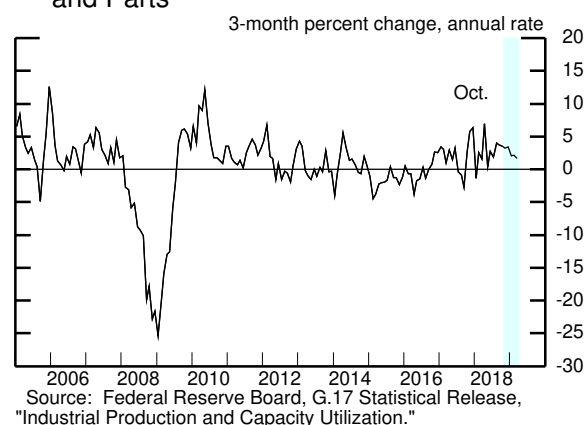
Sales and Production of Light Motor Vehicles

Source: Ward's Communications; Chrysler; General Motors; FRB seasonal adjustments.

Real PCE Growth

Source: U.S. Dept. of Commerce, Bureau of Economic Analysis.
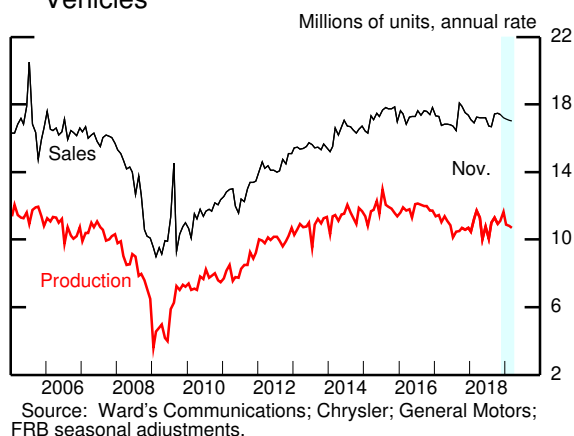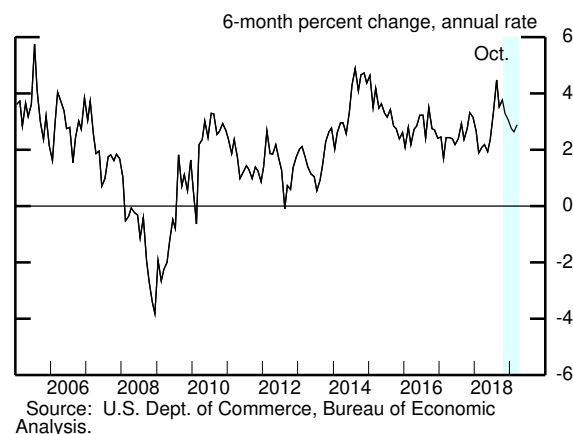
Recent Nonfinancial Developments (2)

Single-Family Housing Starts and Permits

Millions of units (annual rate)

— Adjusted permits
— Starts

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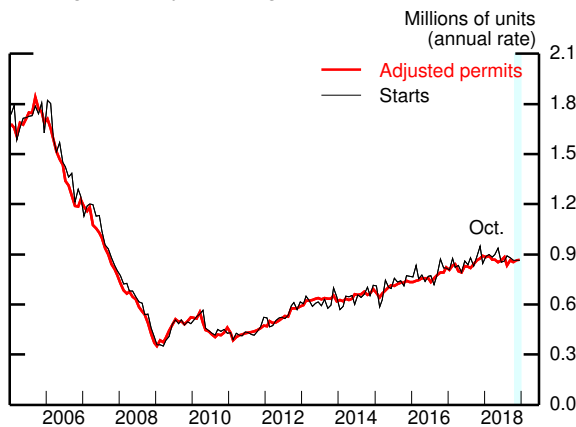
Note: Adjusted permits equal permit issuance plus starts outside of permit-issuing areas.
Source: U.S. Census Bureau.

Home Sales

Millions of units (annual rate)

Millions of units (annual rate)

Existing homes (left scale)

Oct.

New single-family homes (right scale)
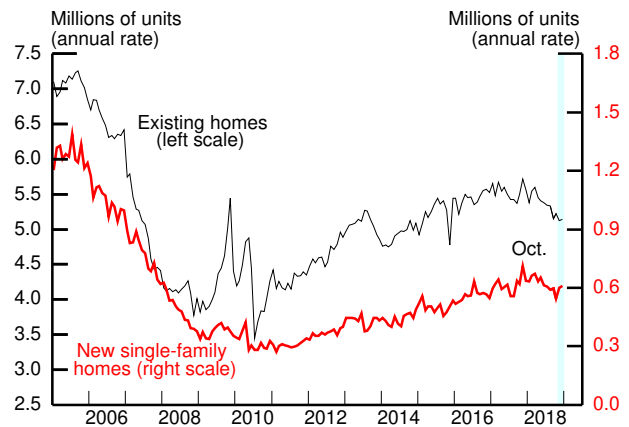
Source: For existing, National Association of Realtors; for new, U.S. Census Bureau.

Nondefense Capital Goods ex. Aircraft

Ratio scale, billions of dollars

Oct.

Orders

Shipments
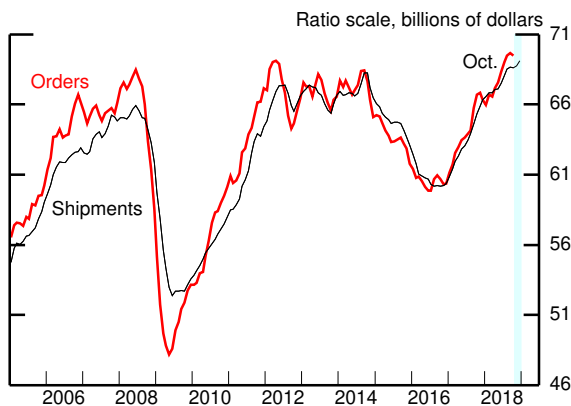
Note: Data are 3-month moving averages.
Source: U.S. Census Bureau.

Nonresidential Construction Put in Place

Billions of chained (2012) dollars

Oct.
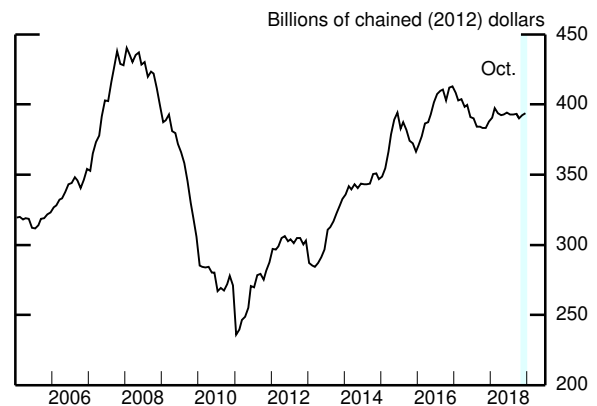
Note: Nominal CPIP deflated by BEA prices through 2018:Q2 and by the staff's estimated deflator thereafter.
Source: U.S. Census Bureau.

Inventory Ratios

Months

Staff flow-of-goods system

Oct.

Census book-value data

Oct.
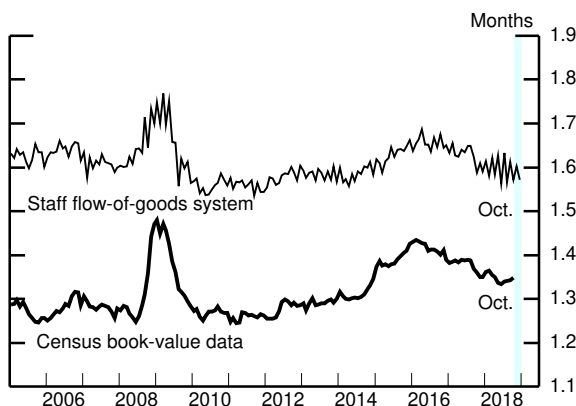
Note: Flow-of-goods system inventories include manufacturing and mining industries and are relative to consumption. Census data cover manufacturing and trade, and inventories are relative to sales.
Source: U.S. Census Bureau; staff calculations.

Exports and Non-oil Imports

Billions of dollars

Oct.

Non-oil imports

Exports
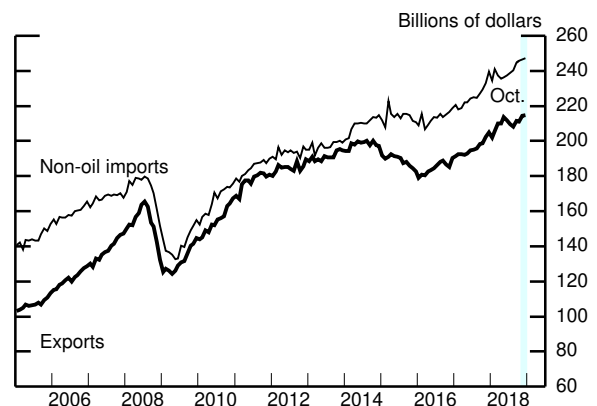
Note: Forecasts are linear interpolations of quarterly values.
Source: U.S. Dept. of Commerce, Bureau of Economic Analysis; U.S. Census Bureau.

Federal Reserve System Nowcasts of 2018:Q4 Real GDP Growth
(Percent change at annual rate from previous quarter)

Federal Reserve Entity	Type of model	Nowcast as of Dec. 5, 2018
Federal Reserve Bank		
Boston	• Mixed-frequency BVAR	1.2
New York	• Factor-augmented autoregressive model combination	2.2
	• Factor-augmented autoregressive model combination, financial factors only	2.0
	• Dynamic factor model	2.6
Cleveland	• Bayesian regressions with stochastic volatility	2.6
	• Tracking model	1.4
Atlanta	• Tracking model combined with Bayesian vector autoregressions (VARs), dynamic factor models, and factor-augmented autoregressions (known as GDPNow)	2.7
Chicago	• Dynamic factor models	2.0
	• Bayesian VARs	2.4
St. Louis	• Dynamic factor models	2.8
	• News index model	2.4
	• Let-the-data-decide regressions	2.4
Kansas City	• Accounting-based tracking estimate	1.6
Board of Governors	• Tealbook estimate (judgmental)	2.3
	• Monthly dynamic factor models (DFM-45)	3.0
	• Mixed-frequency dynamic factor model (DFM-BM)	2.1
Memo: Median of Federal Reserve System nowcasts		2.4

Alternative Measures of Slack

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

Output Gaps
Percentage points   Percentage points

FRB/US
EDO** production function gap
FRBNY
PRISM
FRBCHICAGO

Q3

Nov.
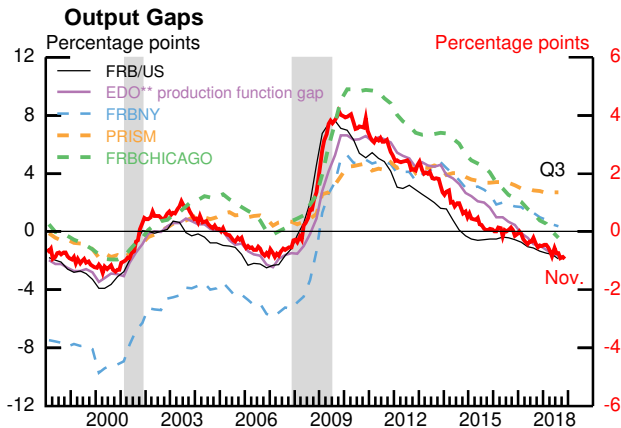
** EDO is Estimated, Dynamic, Optimization-based model.
  Source: Federal Reserve Board; PRISM: Federal Reserve
Board Bank of Chicago; Federal Reserve Board Bank of
Philadelphia, PRISM Model Documentation (June 2011);
FRBNY: Federal Reserve Bank of New York Staff
Report 618 (May 2013, revised April 2014).

Manufacturing Capacity Utilization Gap*
Percentage points   Percentage points

Oct.

Nov.

Source: Federal Reserve Board.

Jobs Hard to Fill Gap*
Percentage points   Percentage points

Nov.
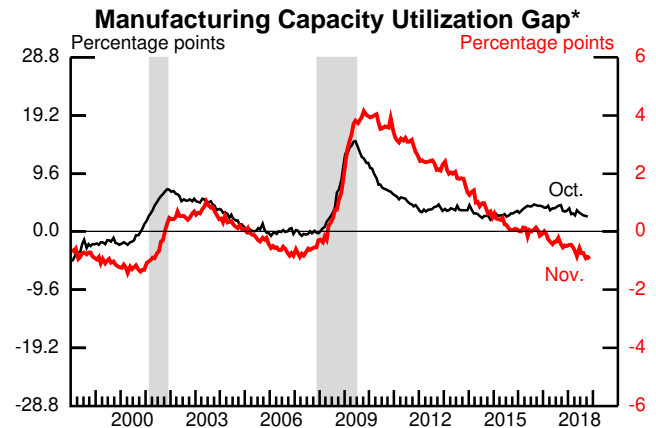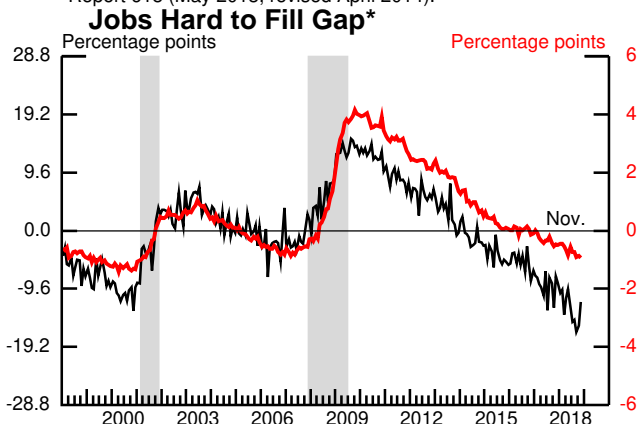
Note: Percent of small businesses surveyed with at least one
"hard to fill" job opening. Seasonally adjusted by Federal Reserve
Board Staff.
  Source: National Federation of Independent Business,
Small Business Economic Trends Survey.

Job Openings Gap*
Percentage points   Percentage points

Unemployment rate gap
Private job openings rate

Nov.

Sept.
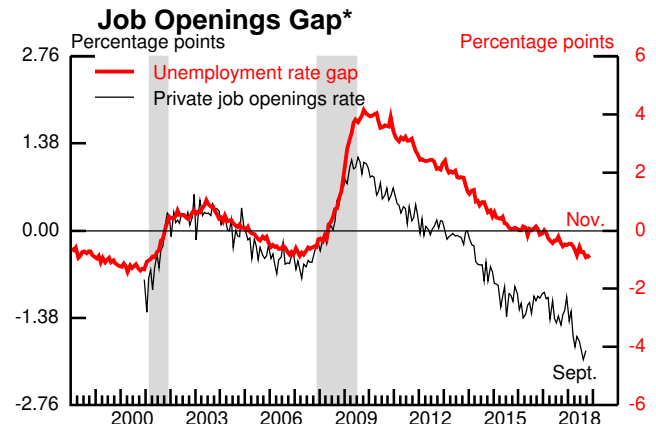
Note: Job openings rate is the number of job openings divided
by employment plus job openings.
  Source: Job Openings and Labor Turnover Survey; U.S.
Department of Labor, Bureau of Labor Statistics, Current
Employment Statistics; Conference Board, Help Wanted OnLine.

Job Availability Gap*
Percentage points   Percentage points

Nov.
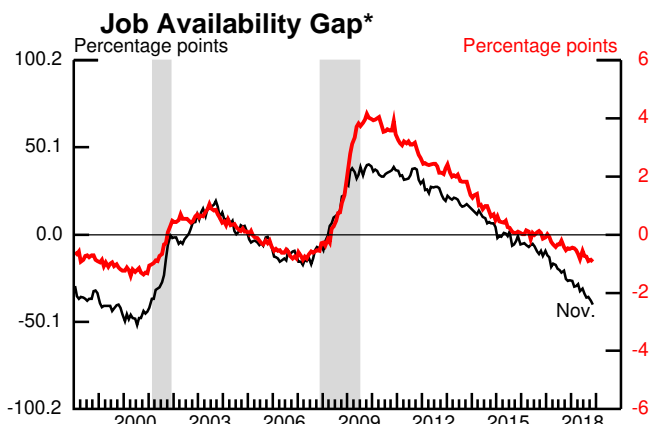
Note: Percent of households believing jobs are plentiful minus
the percent believing jobs are hard to get.
  Source: Conference Board.

Involuntary Part-Time Employment Gap
Percentage points   Percentage points

Nov.
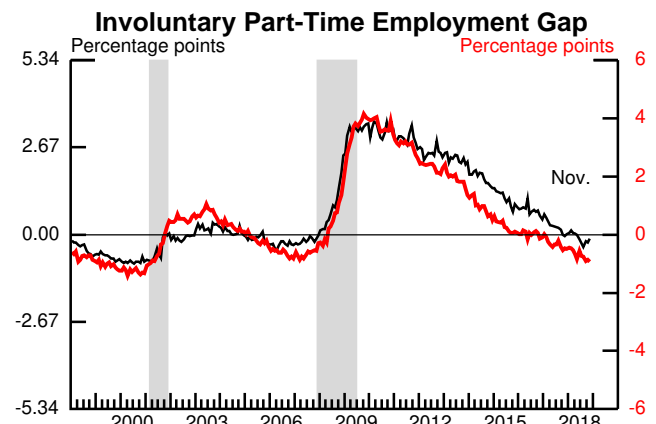
Note: Percent of employment.
  Source: U.S. Department of Labor, Bureau of Labor Statistics,
Current Population Survey.

* 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 0.52 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.

Domestic Econ Devel & Outlook

Survey Measures of Longer-Term Inflation Expectations

CPI Next 10 Years

June

Q4

SPF median

Livingston Survey median

Percent

2008 2010 2012 2014 2016 2018

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

CPI Forward Expectations

Oct.

Q4

Oct.

Nov.

SPF median, 6 to 10 years ahead
Blue Chip mean, 7 to 11 years ahead
Primary dealers median, 5 to 10 years ahead
Consensus Economics mean, 6 to 10 years ahead

Percent

2008 2010 2012 2014 2016 2018

Source: Federal Reserve Bank of Philadelphia; Blue Chip
Economic Indicators; Federal Reserve Bank of New York;
Consensus Economics.

PCE Next 10 Years

SPF median

Q4

Percent

2008 2010 2012 2014 2016 2018

Source: Federal Reserve Bank of Philadelphia.

PCE Forward Expectations

SPF median, 6 to 10 years ahead
Primary dealers median, longer run

Q4

Nov.

Percent

2008 2010 2012 2014 2016 2018

Note: Primary dealers data begin in August 2012.
Source: Federal Reserve Bank of Philadelphia; Federal
Reserve Bank of New York.

Surveys of Consumers

Nov.

Dec. (p)

FRBNY median increase in prices, 3 years ahead
Michigan median increase in prices, next 5 to 10 years

Percent

2008 2010 2012 2014 2016 2018

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

Survey of Business Inflation Expectations

Mean increase in unit costs, next 5 to 10 years

Q4

Percent

2008 2010 2012 2014 2016 2018

Note: Survey of businesses in the Sixth Federal Reserve
District. Data begin in February 2012.
Source: Federal Reserve Bank of Atlanta.

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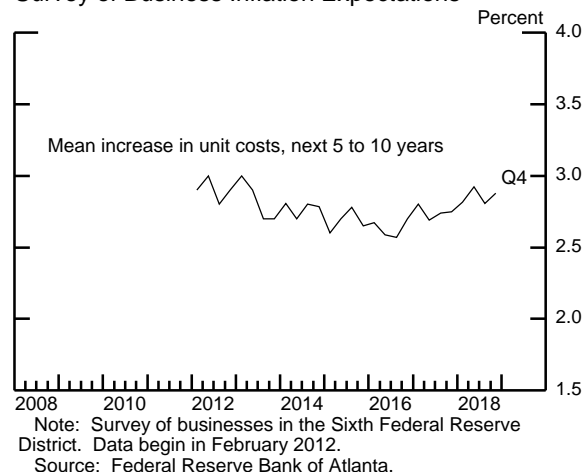
Projections of Real GDP and Related Components
(Percent change at annual rate from final quarter
of preceding period except as noted)

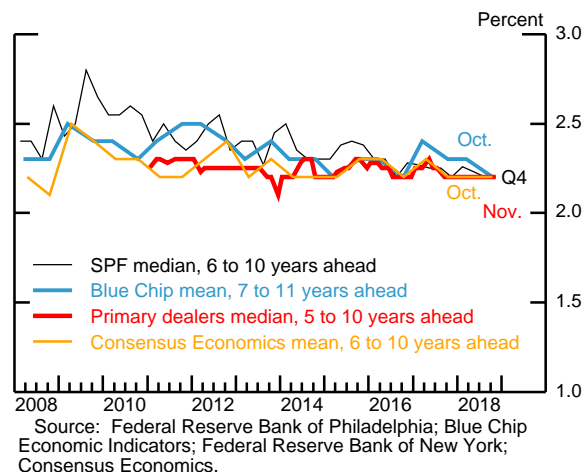| Measure	2017	2018		2018	2019	2020	2021
		H1	H2				
Real GDP	**2.5**	**3.2**	**2.9**	**3.0**	**2.4**	**2.0**	**1.4**
Previous Tealbook	2.5	3.2	2.8	3.0	2.4	1.9	1.4
Final sales	2.6	3.7	2.0	2.8	2.3	2.0	1.6
Previous Tealbook	2.6	3.7	2.1	2.9	2.4	1.9	1.6
Personal consumption expenditures	2.7	2.1	3.4	2.8	2.5	2.3	1.9
Previous Tealbook	2.7	2.1	3.0	2.5	2.4	2.2	1.9
Residential investment	3.8	-2.4	-4.2	-3.3	.0	.2	.2
Previous Tealbook	3.8	-2.4	-3.3	-2.8	.5	.4	1.6
Nonresidential structures	2.9	14.2	-2.3	5.6	2.4	-.7	-1.7
Previous Tealbook	2.9	14.2	-.7	6.5	2.6	-.3	-2.1
Equipment and intangibles	7.3	8.9	5.4	7.2	3.9	2.2	1.6
Previous Tealbook	7.3	8.9	7.8	8.4	3.9	2.0	1.7
Federal purchases	1.3	3.1	3.2	3.2	3.2	2.9	1.0
Previous Tealbook	1.3	3.1	2.5	2.8	3.1	2.9	1.2
State and local purchases	-.5	1.4	1.3	1.3	1.2	1.0	1.0
Previous Tealbook	-.5	1.4	1.6	1.5	1.2	1.0	1.0
Exports	4.7	6.4	.2	3.2	2.3	3.0	3.2
Previous Tealbook	4.7	6.4	.3	3.3	2.5	2.9	3.2
Imports	5.4	1.2	6.4	3.7	3.1	3.2	2.8
Previous Tealbook	5.4	1.2	6.5	3.8	2.6	3.0	2.8
Contributions to change in real GDP (percentage points)							
Inventory change	-.1	-.5	.9	.2	.0	.0	-.2
Previous Tealbook	-.1	-.5	.7	.1	.0	.0	-.2
Net exports	-.2	.6	-.9	-.2	-.2	-.1	.0
Previous Tealbook	-.2	.6	-.9	-.2	-.1	-.1	.0

Real GDP
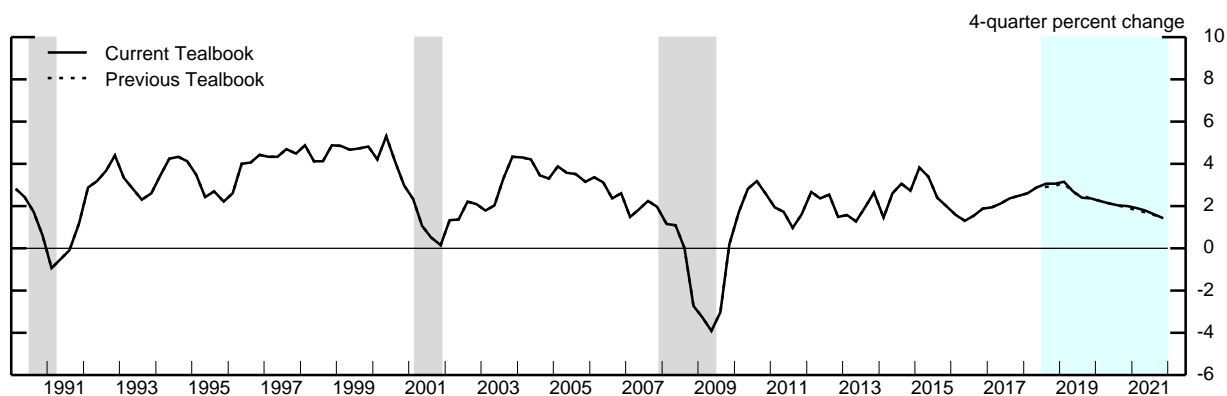
Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Domestic Econ Devel & Outlook

Components of Final Demand

Personal Consumption Expenditures

4-quarter percent change

— Current Tealbook
····· Previous Tealbook

Residential Investment

4-quarter percent change

Equipment and Intangibles

4-quarter percent change

Nonresidential Structures

4-quarter percent change
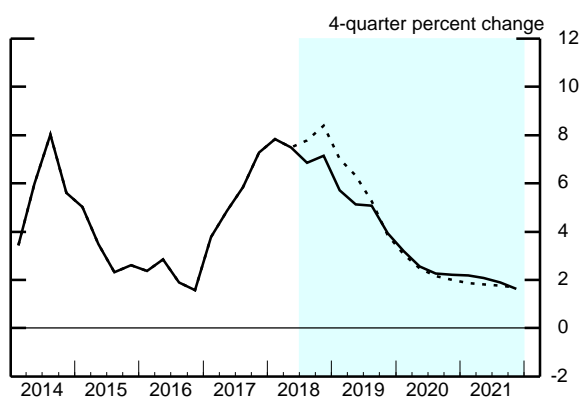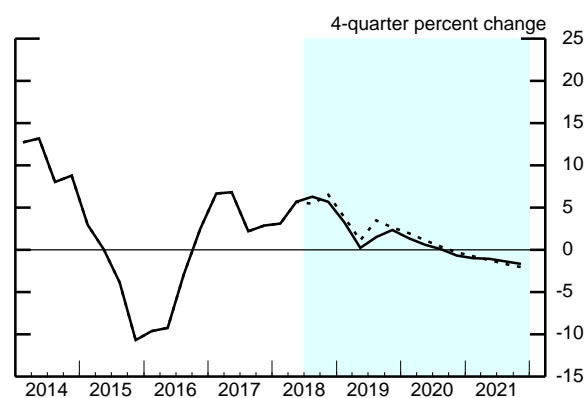
Government Consumption and Investment

4-quarter percent change

Exports and Imports

4-quarter percent change
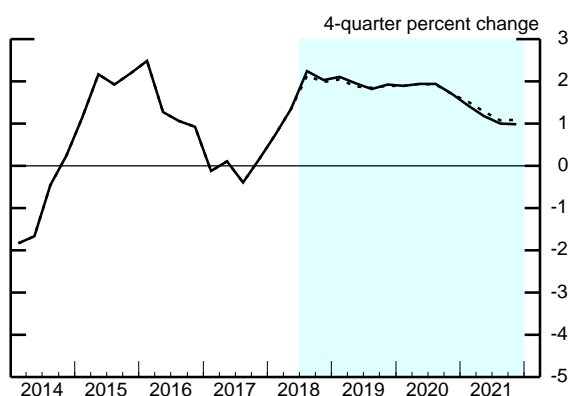
Imports

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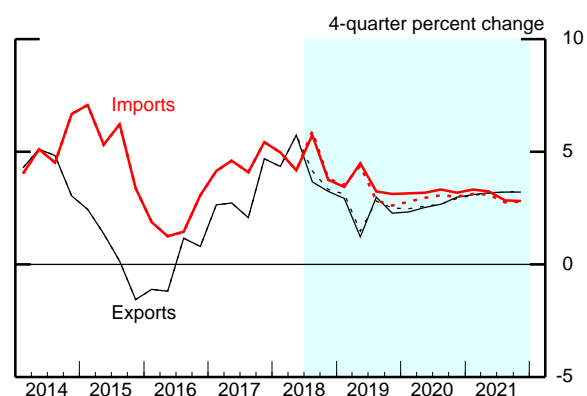
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Aspects of the Medium-Term Projection

Personal Saving Rate

Percent

Legend:
— Current Tealbook
···· Previous Tealbook
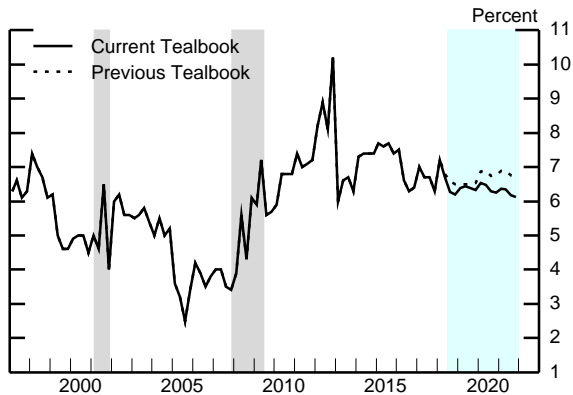
Source: U.S. Dept. of Commerce, Bureau of Economic Analysis.

Wealth-to-Income Ratio
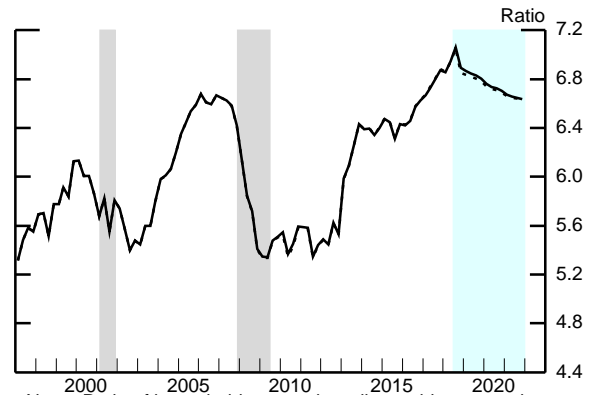
Ratio

Note: Ratio of household net worth to disposable personal income.
Source: For net worth, Federal Reserve Board, Financial Accounts of the United States; for income, U.S. Dept. of Commerce, Bureau of Economic Analysis.

Single-Family Housing Starts

Millions of units
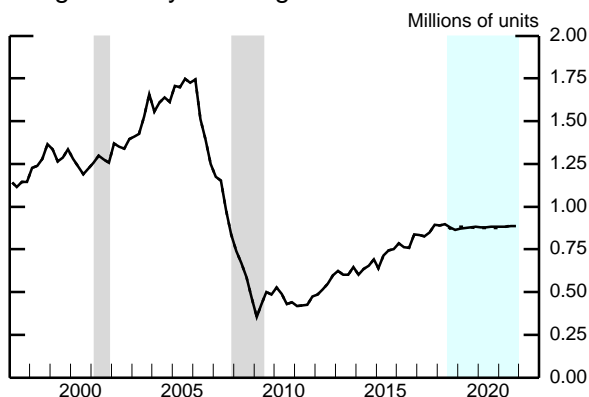
Source: U.S. Census Bureau.

Equipment and Intangibles Spending

Share of nominal GDP
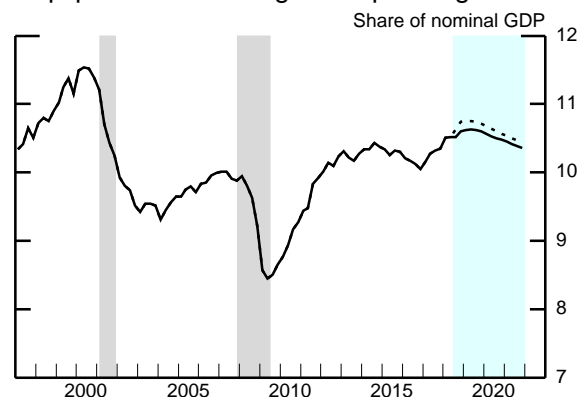
Source: U.S. Dept. of Commerce, Bureau of Economic Analysis.

Federal Surplus/Deficit

4-quarter moving average

Share of nominal GDP

Legend:
— Current
···· Previous Tealbook
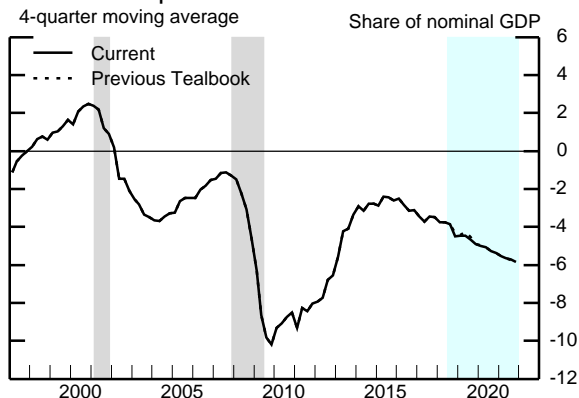
Source: *Monthly Treasury Statement.*

Current Account Surplus/Deficit

Share of nominal GDP
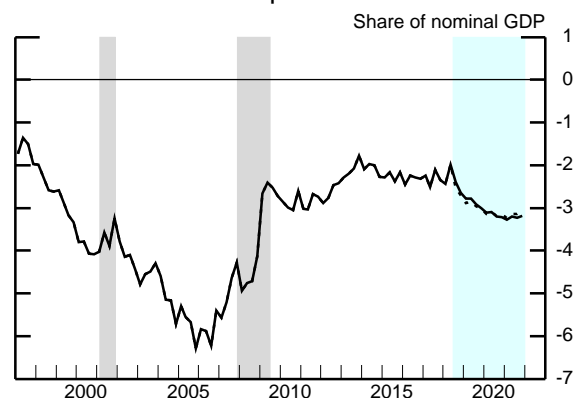
Source: U.S. Dept. of Commerce, Bureau of Economic Analysis.
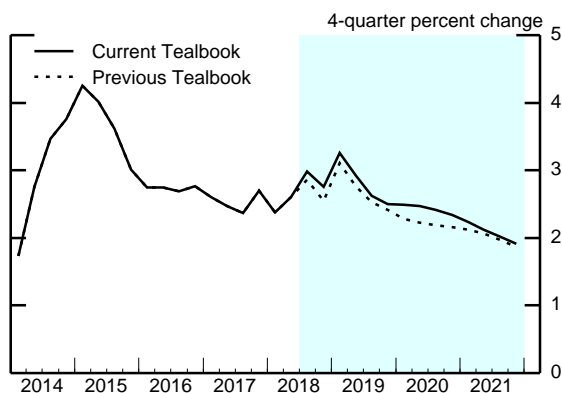
Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

Cyclical Position of the U.S. Economy: Longer-Term Perspective

Output Gap
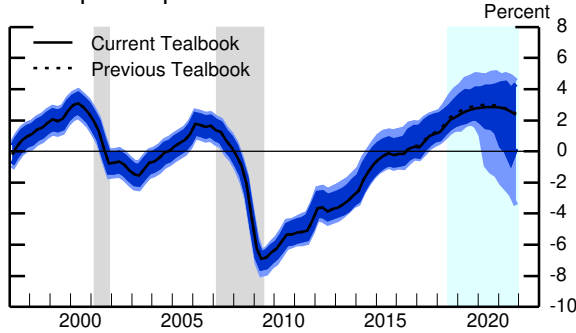
Percent

- Current Tealbook
- ⋯ Previous Tealbook

Note: Shaded regions show the 70 percent and 90 percent confidence intervals of the distribution of historical revisions to the staff's estimates of the output gap.

Source: Various macroeconomic data; staff assumptions.

Unemployment Rate

Percent

- Unemployment rate
- Natural rate of unemployment*
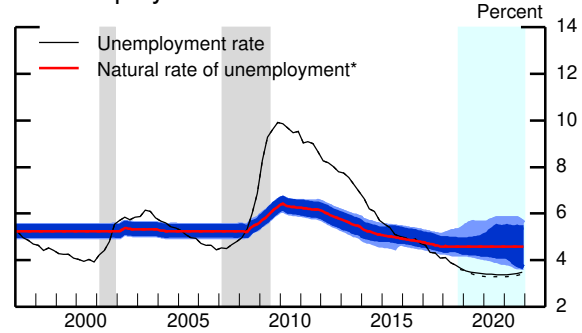
Note: Shaded regions show the 70 percent and 90 percent confidence intervals of the distribution of historical revisions to the staff's estimates of the natural rate.
*Staff estimate including the effect of extended and emergency unemployment insurance benefits.
Source: Various macroeconomic data; staff assumptions.

Manufacturing Capacity Utilization Rate
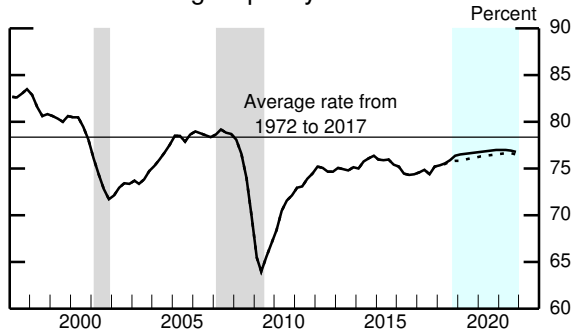
Percent

Average rate from 1972 to 2017

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

Actual and Structural Labor Productivity
(Business sector)

Chained (2012) dollars per hour

- Actual
- Structural

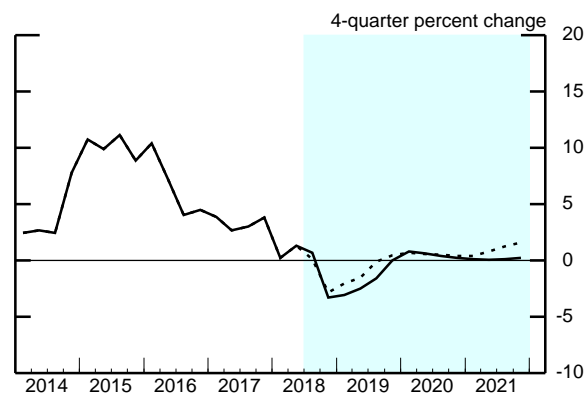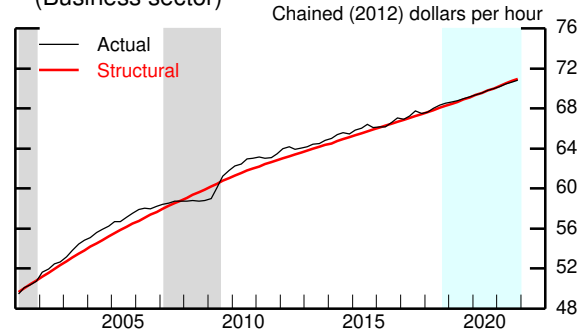Source: U.S. Department of Labor, Bureau of Labor Statistics; U.S. Department of Commerce, Bureau of Economic Analysis; staff assumptions.

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

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

Measure	1974-95	1996-2000	2001-07	2008-10	2011-16	2017	2018	2019	2020	2021
Potential output	3.1	3.6	2.7	1.9	1.4	1.7	1.8	1.8	1.9	1.9
Previous Tealbook	3.1	3.6	2.7	1.9	1.4	1.6	1.7	1.8	1.9	1.9
Selected contributions[1]										
Structural labor productivity[2]	1.7	2.9	2.7	1.8	1.2	1.2	1.2	1.3	1.3	1.4
Previous Tealbook	1.7	2.9	2.7	1.8	1.2	1.2	1.2	1.3	1.4	1.4
Capital deepening	.7	1.4	1.0	.5	.8	.6	.7	.7	.7	.6
Multifactor productivity	.8	1.1	1.4	1.1	.2	.3	.3	.3	.5	.6
Structural hours	1.5	1.3	.8	.4	.4	.3	.7	.6	.6	.5
Previous Tealbook	1.5	1.3	.8	.4	.4	.3	.7	.6	.6	.5
Labor force participation	.4	-.1	-.2	-.5	-.5	-.3	-.2	-.2	-.2	-.2
Previous Tealbook	.4	-.1	-.2	-.5	-.5	-.3	-.3	-.2	-.2	-.2
Memo:										
Output gap[3]	-1.2	2.5	.3	-5.3	.3	1.1	2.2	2.8	2.9	2.4
Previous Tealbook	-1.2	2.5	.3	-5.3	.4	1.2	2.4	3.0	2.9	2.4

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 output in the final quarter of the period indicated. A negative number indicates that the economy is operating below potential.

The Outlook for the Labor Market

Measure	2017	2018		2018	2019	2020	2021
		H1	H2				
Nonfarm payroll employment[1]	183	218	191	204	167	128	87
Previous Tealbook	183	218	196	207	168	121	82
Private employment[1]	180	215	185	200	156	118	77
Previous Tealbook	180	215	182	198	157	111	72
Labor force participation rate[2]	62.7	62.8	62.9	62.9	62.9	62.8	62.6
Previous Tealbook	62.7	62.8	62.8	62.8	62.8	62.8	62.5
Civilian unemployment rate[2]	4.1	3.9	3.7	3.7	3.4	3.4	3.5
Previous Tealbook	4.1	3.9	3.6	3.6	3.3	3.3	3.4
Employment to population ratio[2]	60.1	60.4	60.6	60.6	60.8	60.7	60.4
Previous Tealbook	60.1	60.4	60.5	60.5	60.7	60.7	60.4

1. Thousands, average monthly changes.
2. Percent, average for the final quarter in the period.
Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

Inflation Projections

Measure	2017	2018		2018	2019	2020	2021
		H1	H2				
Percent change at annual rate from final quarter of preceding period							
PCE chain-weighted price index	1.8	2.2	1.4	1.8	1.8	2.0	2.0
Previous Tealbook	1.8	2.2	1.7	2.0	2.0	1.9	1.9
Food and beverages	.7	.7	.3	.5	2.3	2.3	2.3
Previous Tealbook	.7	.7	.9	.8	2.5	2.6	2.3
Energy	8.1	6.5	1.5	4.0	-3.5	-.2	.5
Previous Tealbook	8.1	6.5	4.4	5.4	-.2	-1.1	-1.0
Excluding food and energy	1.6	2.1	1.5	1.8	2.0	2.0	2.0
Previous Tealbook	1.6	2.1	1.7	1.9	2.0	2.0	2.0
Prices of core goods imports[1]	1.1	1.6	-.1	.7	.8	1.0	.9
Previous Tealbook	1.1	1.6	-1.6	.0	.6	.8	.7

	Sept. 2018	Oct. 2018	Nov. 2018[2]	Dec. 2018[2]	Jan. 2019[2]	Feb. 2019[2]	Mar. 2019[2]
12-month percent change							
PCE chain-weighted price index	2.0	2.0	1.8	1.7	1.6	1.6	1.7
Previous Tealbook	2.0	2.0	1.9	1.9	1.8	1.8	2.0
Excluding food and energy	1.9	1.8	1.9	1.9	1.9	1.9	1.9
Previous Tealbook	1.9	1.9	1.9	1.9	1.9	1.9	1.9

1. Core goods imports exclude computers, semiconductors, oil, and natural gas.
2. Staff forecast.
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Labor Market Developments and Outlook (1)

Measures of Labor Underutilization

Percent

- U-5*
- Unemployment rate
- Part time for economic reasons**

Nov.

Percent

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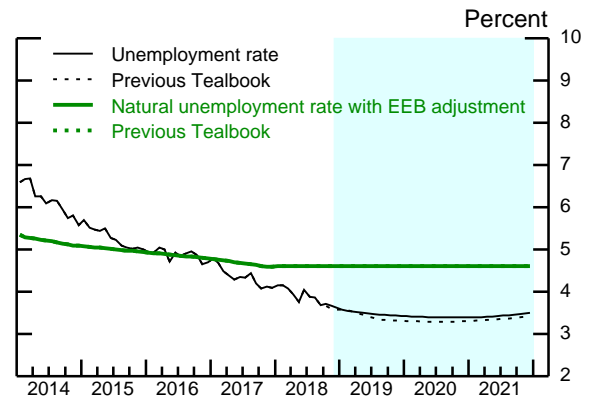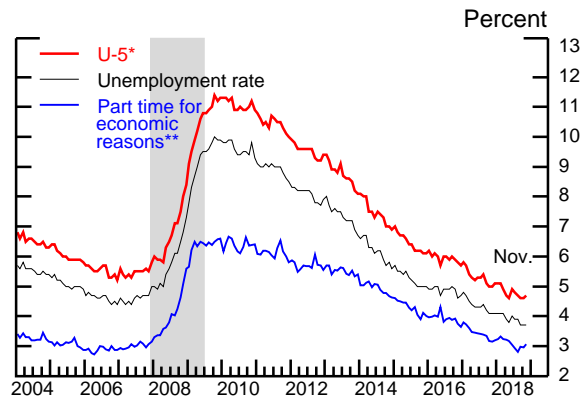
* U-5 measures total unemployed persons plus all marginally attached to the labor force as a percent of the labor force plus persons marginally attached to the labor force.
** Percent of Current Population Survey employment.
EEB Extended and emergency unemployment benefits.
Source: U.S. Department of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

Level of Payroll Employment

Millions

Millions

- Total (right axis)
- Previous Tealbook
- Private (left axis)
- Previous Tealbook

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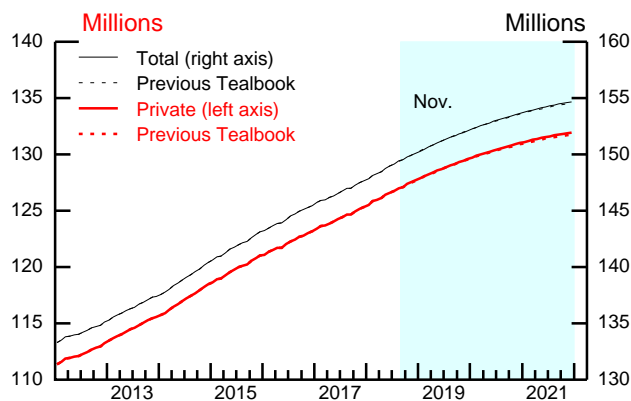
Source: U.S. Department of Labor, Bureau of Labor Statistics.

Change in Total Payroll Employment

Thousands

- Total
- Previous Tealbook
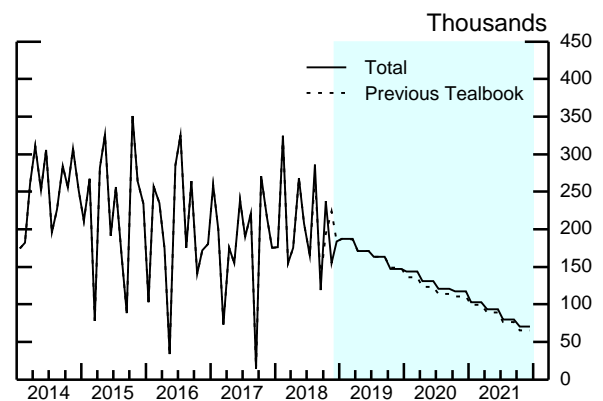
Source: U.S. Department of Labor, Bureau of Labor Statistics.

Change in Private Payroll Employment

Thousands

- BLS CES/staff estimate
- Previous Tealbook
- ADP/FRB
- Pooled estimate

Nov.
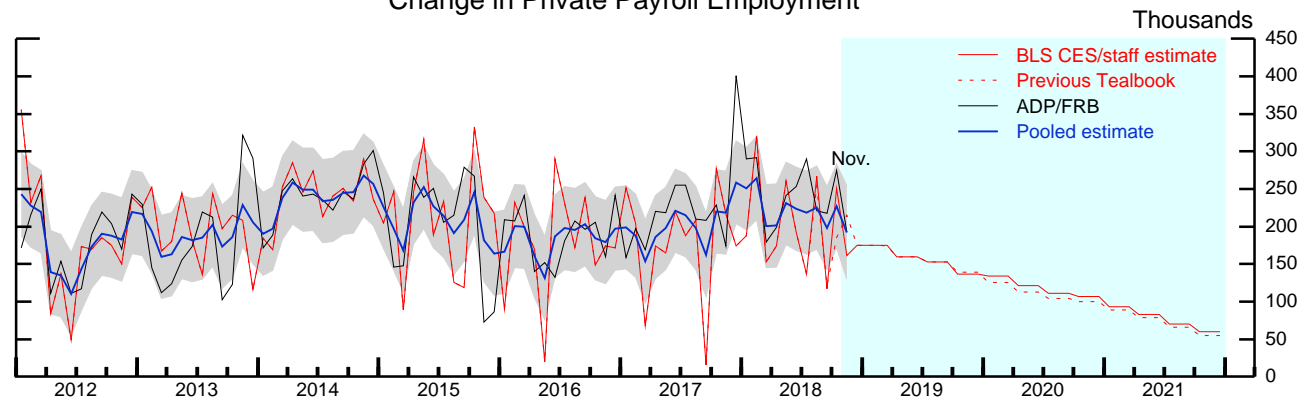
Note: Gray shaded area around blue line is 90 percent confidence interval around pooled estimate.
Source: U.S. Department of Labor, Bureau of Labor Statistics; staff calculations using microdata from ADP.

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*
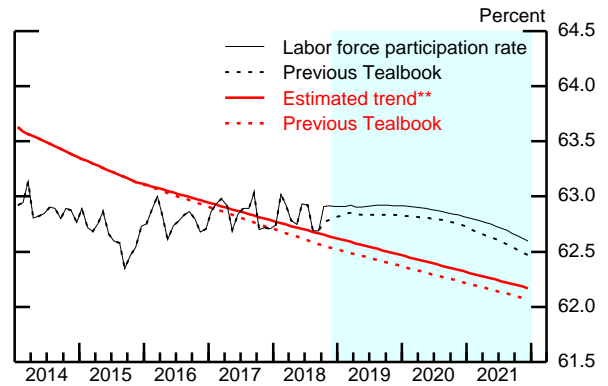
* Published data adjusted by staff to account for changes in population weights.
** Includes staff estimate of the effect of extended and emergency unemployment benefits.
Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

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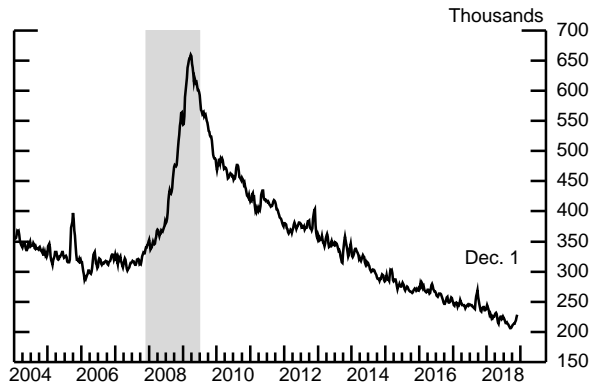
* 4-week moving average.
Source: U.S. Department of Labor, Employment and Training Administration.

Hires, Quits, and Job Openings
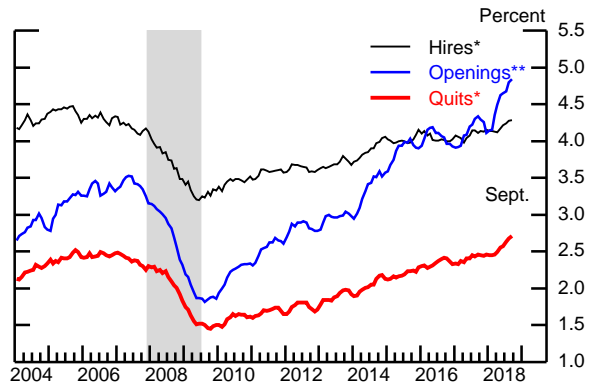
* Percent of private nonfarm payroll employment, 3-month moving average.
** Percent of private nonfarm payroll employment plus unfilled jobs, 3-month moving average.
Source: Job Openings and Labor Turnover Survey.

Unemployment Rate by Racial/Ethnic Group
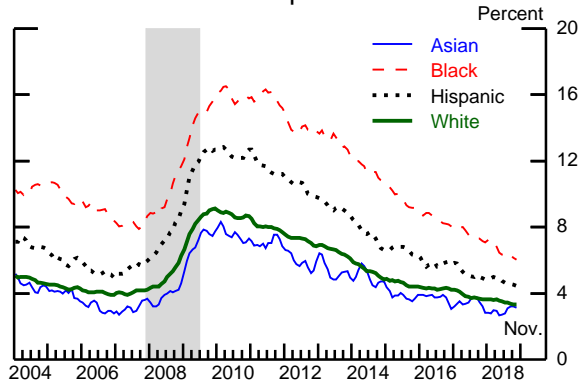
Note: These categories are not mutually exclusive, as the ethnicity Hispanic may include people of any race. The Current Population Survey defines Hispanic ethnicity as those who report their origin is Mexican, Puerto Rican, Cuban, Central American, or South American (and some others). 3-month moving averages.
Source: U.S. Department of Labor, Bureau of Labor Statistics, Current Population Survey.

Labor Force Participation Rate by Racial/Ethnic Group, 25 to 54 years old
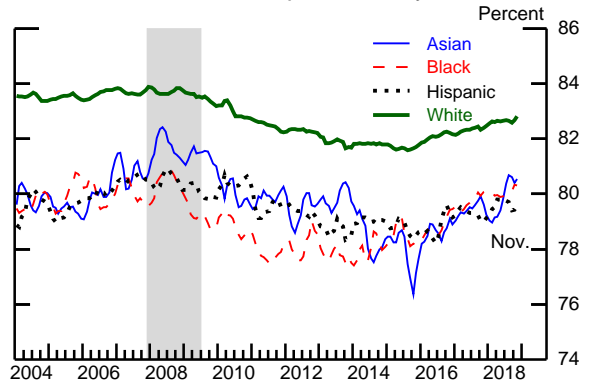
Note: These categories are not mutually exclusive, as the ethnicity Hispanic may include people of any race. The Current Population Survey defines Hispanic ethnicity as those who report their origin is Mexican, Puerto Rican, Cuban, Central American, or South American (and some others). 3-month moving averages.
Source: U.S. Department of Labor, Bureau of Labor Statistics, Current Population Survey.

Authorized for Public Release

Domestic Econ Devel & Outlook

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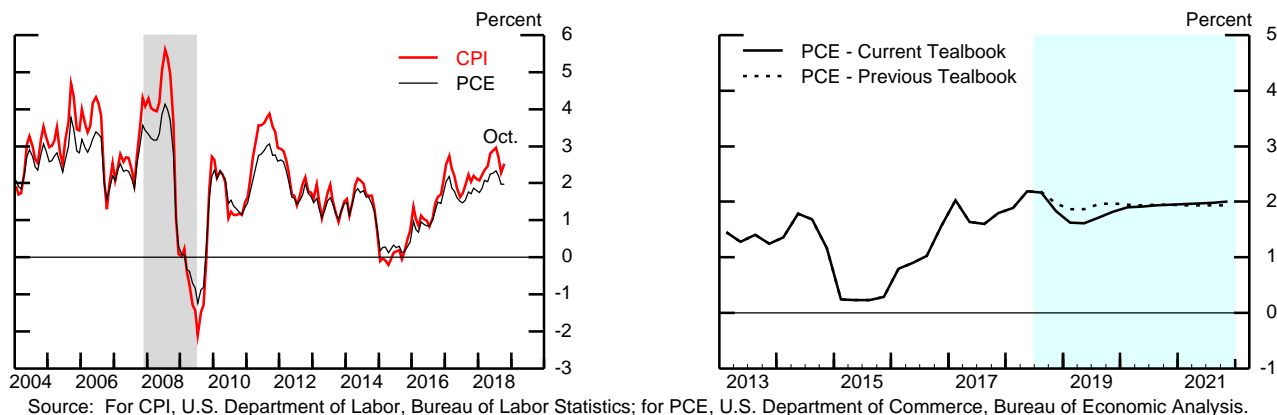
Measures of Underlying PCE Price Inflation
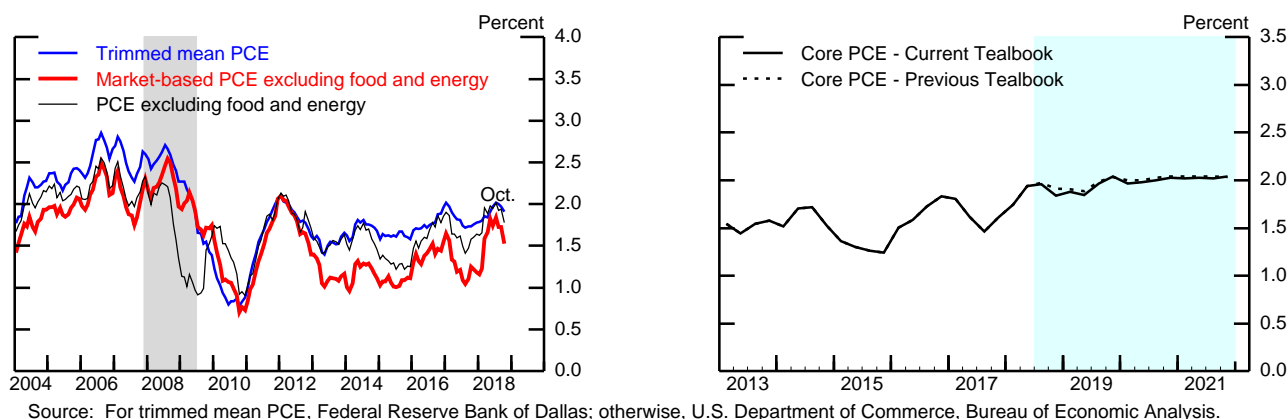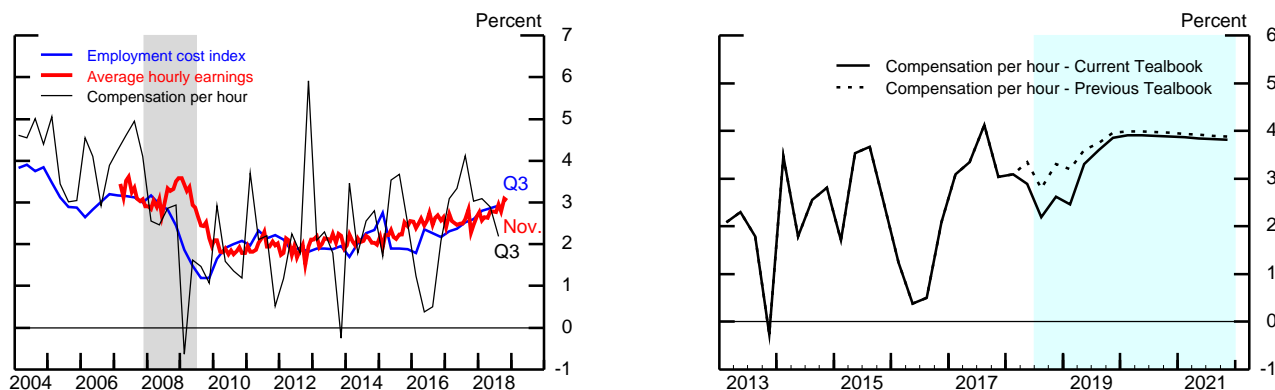
Source: For trimmed mean PCE, Federal Reserve Bank of Dallas; otherwise, U.S. Department of Commerce, Bureau of Economic Analysis.

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

1967 = 100 / Dollars per barrel

- Brent crude oil history/futures (right axis)
- CRB spot commodity price index (left axis)

Dec. 4

1967 = 100 / Dollars per barrel

- Brent crude oil history/futures (right axis)
- CRB spot commodity price index (left axis)

Dec. 4

Note: Futures prices (dotted lines) are the latest observations on monthly futures contracts.
Source: For oil prices, U.S. Department of Energy, Energy Information Agency; for commodity prices, Commodity Research Bureau (CRB).

Energy and Import Price Inflation

Percent / Percent

- PCE energy prices (right axis)
- Core import prices (left axis)

Oct.

Percent / Percent

- PCE energy prices (right axis)
- Core import prices (left axis)

Oct.

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.
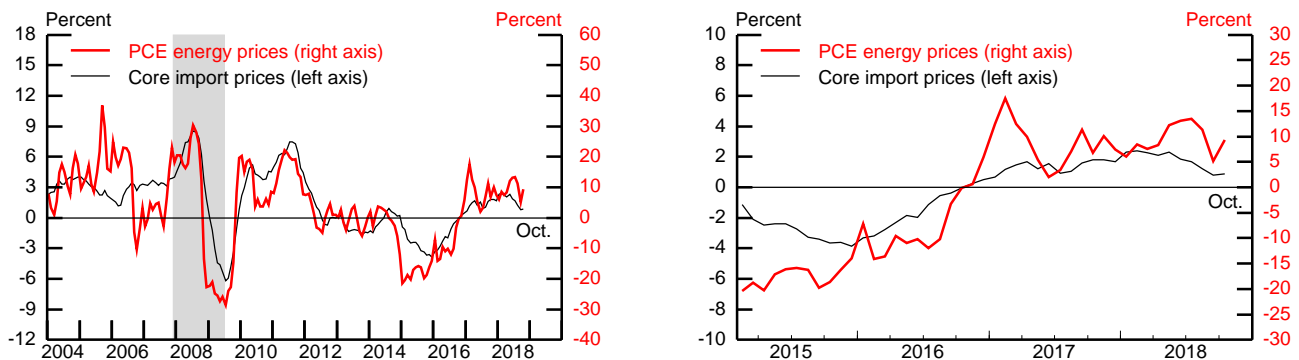
Long-Term Inflation Expectations and Compensation

Percent

- 5-to-10-year-ahead TIPS compensation
- Michigan median next 5 to 10 years
- SPF PCE median next 10 years

Dec. (p)
Nov.
Q4

Percent

- 5-to-10-year-ahead TIPS compensation
- Michigan median next 5 to 10 years
- SPF PCE median next 10 years

Dec. (p)
Nov.
Q4
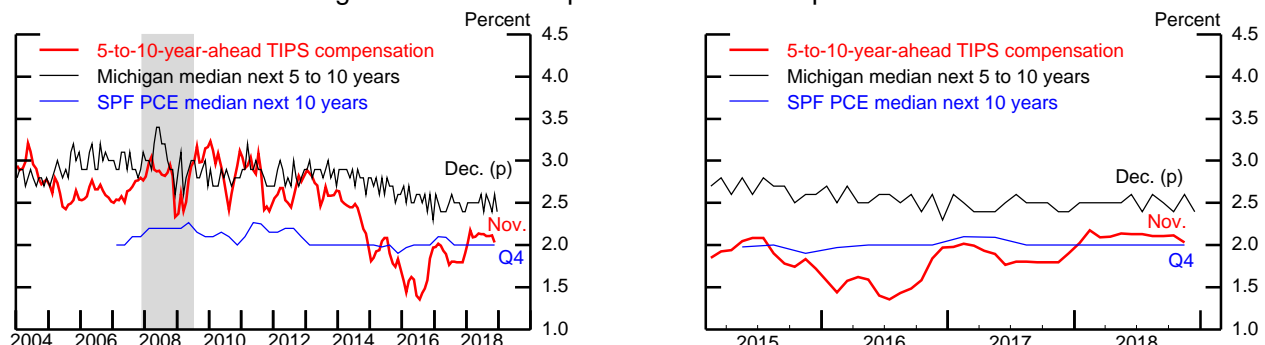
Note: Based on a comparison of an estimated TIPS (Treasury Inflation-Protected Securities) yield curve with an estimated nominal off-the-run Treasury yield curve, with an adjustment for the indexation-lag effect.
(p) Preliminary
SPF Survey of Professional Forecasters.
Source: For Michigan, University of Michigan Surveys of Consumers; for SPF, Federal Reserve Bank of Philadelphia; for TIPS, Federal Reserve Board staff calculations.

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

Authorized for Public Release

The Long–Term Outlook

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

Domestic Econ Devel & Outlook

Measure	2018	2019	2020	2021	2022	2023	2024	Longer run
Real GDP	3.0	2.4	2.0	1.4	1.1	1.2	1.3	1.7
Previous Tealbook	3.0	2.4	1.9	1.4	1.2	1.2	1.3	1.7
Civilian unemployment rate[1]	3.7	3.4	3.4	3.5	3.8	4.0	4.2	4.6
Previous Tealbook	3.6	3.3	3.3	3.4	3.7	4.0	4.2	4.6
PCE prices, total	1.8	1.8	2.0	2.0	2.0	2.1	2.1	2.0
Previous Tealbook	2.0	2.0	1.9	1.9	2.0	2.1	2.1	2.0
Core PCE prices	1.8	2.0	2.0	2.0	2.1	2.1	2.1	2.0
Previous Tealbook	1.9	2.0	2.0	2.0	2.1	2.1	2.1	2.0
Federal funds rate[1]	2.22	3.49	4.30	4.66	4.55	4.24	3.87	2.50
Previous Tealbook	2.29	3.65	4.49	4.81	4.67	4.34	3.96	2.50
10-year Treasury yield[1]	3.1	3.8	4.1	4.1	4.0	3.8	3.7	3.4
Previous Tealbook	3.2	4.0	4.2	4.2	4.0	3.9	3.8	3.4

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

Real GDP
4–quarter percent change

Unemployment Rate
Percent
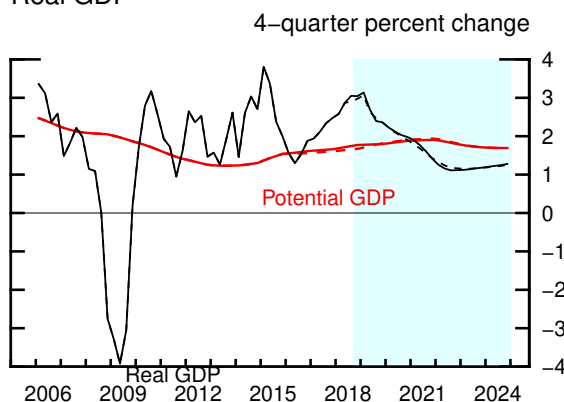
PCE Prices
4–quarter percent change
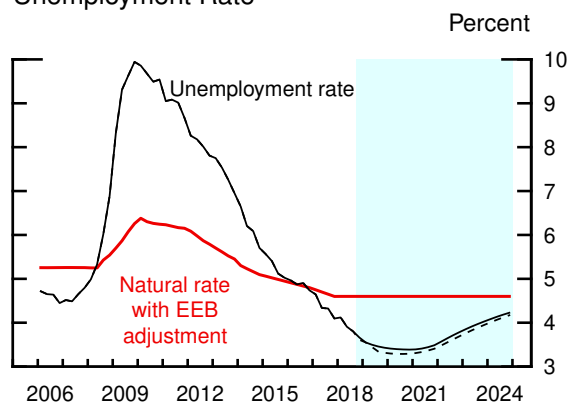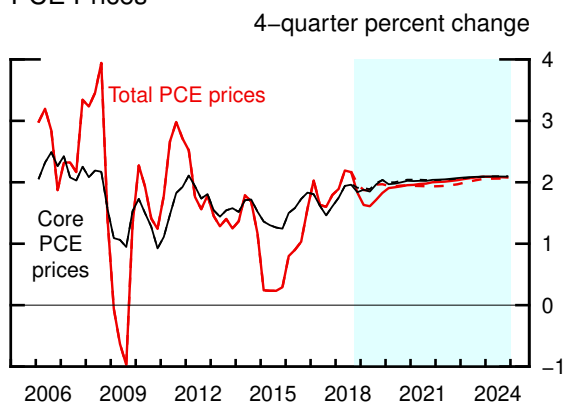
Interest Rates
Percent
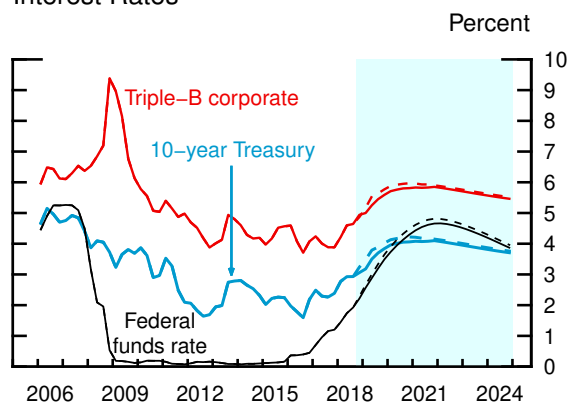
Note: In each panel, shading represents the projection period, and dashed lines are the previous Tealbook.

Domestic Econ Devel & Outlook

Evolution of the Staff Forecast

Change in Real GDP

Percent, Q4/Q4

Unemployment Rate

Percent, fourth quarter
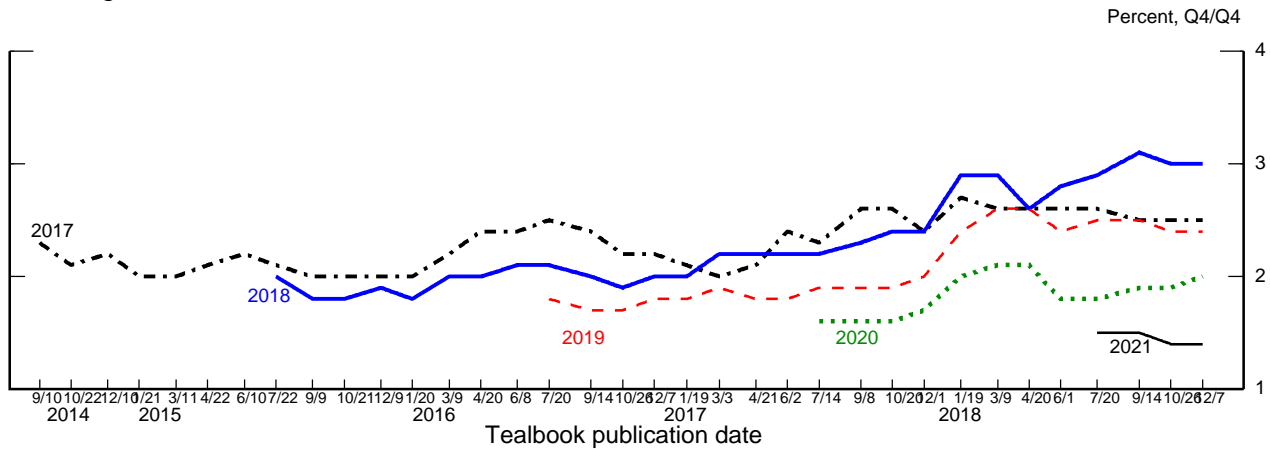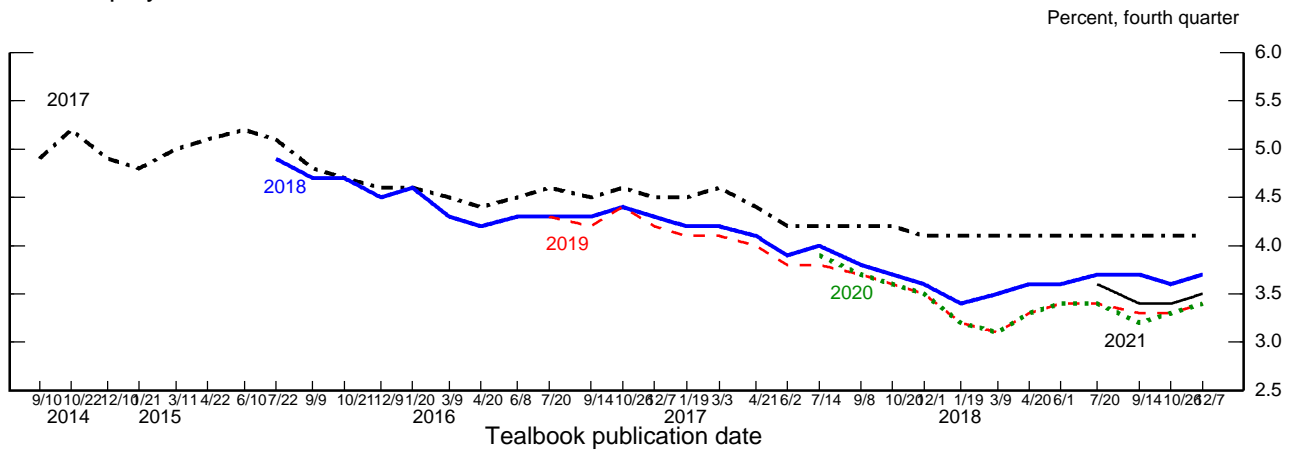
Change in PCE Prices excluding Food and Energy

Percent, Q4/Q4
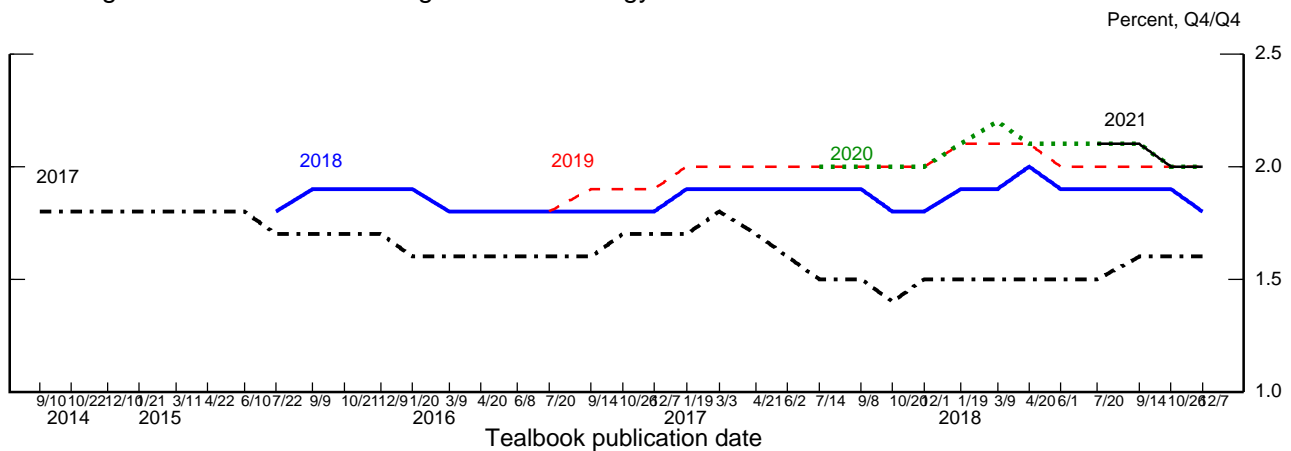
Are Foreign Economies Heading for Recession?

Economic data from abroad have continued to come in weaker than expected, prompting analysts to mark down their growth forecasts. The prospect of slower growth, together with a heightened focus on downside risks, raises concerns that foreign economies might be heading for recession. Here we examine the likelihood that a steep downturn abroad is in the offing.

The staff outlook for foreign growth is fairly similar to that of outside forecasters, though for some key economies such as the euro area, it noticeably less optimistic (table 1). Aggregate growth in the advanced foreign economies (AFEs) is estimated to have slowed significantly in 2018. We, along with outside analysts, see AFE growth remaining near its estimated potential pace next year, but only with the support of highly accommodative monetary policy. In the emerging market economies (EMEs), growth has barely slowed; emerging Asia has continued to expand at a solid pace, offsetting Latin America's continued underperformance.

More worrisome is the fact that both Board staff and other forecasters have been revising down their outlooks repeatedly over the course of 2018. However, these revisions appear more likely to be an artifact of the temporary surge in growth in 2017 rather than a harbinger of a further slide downward. Figure 1 shows the evolution of the staff forecast for foreign growth in 2018. The surprising strength of 2017 led us to revise up our growth forecasts, while the subsequent weakness of data releases pushed our forecast back down. Overall, our forecast for foreign growth in 2018 has returned to the neighborhood of where it was a year ago.

Incoming data have been consistent with the moderation of foreign growth that we have been anticipating but have not signaled a more pronounced downturn. Figure 2 plots two summary measures of the health of the foreign economies. The FCI (in black) is a foreign conditions index, which is constructed using data on foreign industrial production, foreign retail sales, the new export orders component of foreign PMIs, and foreign GDP growth.[1] The FSI (in blue) is a foreign financial stress index constructed from the first principal component of country-specific financial

Table 1: Forecast Comparison of Real GDP Growth[1]
(Percent change, annual average over annual average)

	2017 Data	2018 Consensus	2018 FRB	2018 IMF	2019 Consensus	2019 FRB	2019 IMF
Total Foreign	3.0	2.6	2.6	2.6	2.5	2.3	2.6
AFE	2.5	1.9	1.9	2.0	1.8	1.7	1.9
Euro area	2.5	2.0	1.9	2.0	1.7	1.4	1.9
EME	3.4	3.3	3.2	3.3	3.1	3.0	3.4
China	6.9	6.6	6.6	6.6	6.3	6.1	6.2

[1] Aggregates are weighted by shares of U.S. mechandise exports.
Source: Consensus forecasts are from the November 2018 Consensus Economics surveys. FRB forecasts are from the December Tealbook. IMF forecasts are from the October 2018 *World Economic Outlook*.

Figure 1: Evolution of the Staff 2018 GDP Forecast

Percent change, Q4/Q4

---
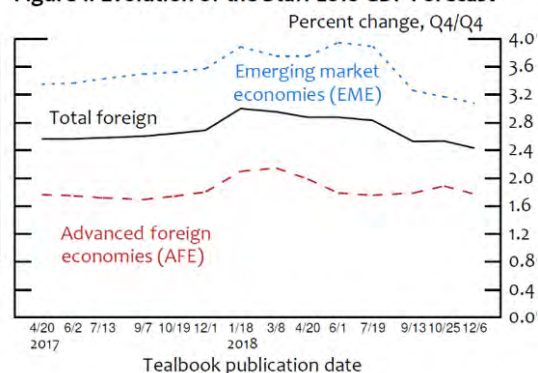
[1] For a detailed description of the methodology, see Pablo Cuba-Borda, Alexander Mechanick, and Andrea Raffo (2018), "Monitoring the World Economy: A Global Conditions Index," IFDP Notes (Washington: Board of Governors of the Federal Reserve System, June 15), https://dx.doi.org/10.17016/2573-2129.45.

Authorized for Public Release

variables, such as interest rate spreads as well as equity and bond volatilities. Both series are highly correlated with the business cycle, with the FCI dropping markedly in foreign recessions and the FSI rising notably. In recent months, the FCI edged down slightly and the FSI rose a bit, but neither index showed the large movements that typically precede recessions.

To quantify the risk of a sharp downturn in the foreign economies, we estimate a probit model that computes the probability of a foreign recession based on the evolution of the FCI and the FSI indexes. As shown in figure 3, current estimates point to only a small increase in the recession probability since the October Tealbook. Of course, uncertainty around these estimates is large, reflecting the difficulty in predicting cyclical turning points, given that recessions are infrequent episodes. In addition, these estimates sometimes turn upward only shortly before the oncoming recession, as was the case on the eve of the Global Financial Crisis.

Summing up, we do not see much evidence that a foreign recession is imminent. The weakening of foreign growth appears to reflect a reversal of last year's unsustainable surge rather than a more sustained deterioration, and our baseline has the foreign economies expanding near potential over the medium run. That said, our ability to predict recessions is admittedly poor, and we recognize that downside risks have become more prominent.

Int'l Econ Devel & Outlook

Figure 2: Global Macroeconomic and Financial Conditions

Note: The FCI is constructed following a similar methodology to that described in Cuba-Borda, Mechanick, and Raffo (2018). The foreign FSI is an index of financial stress normalized so that the response to the Global Financial Crisis is equal to 1. Shading indicates that countries representing 55% of foreign GDP are classified as in recession.

Figure 3: Estimated Probability of Recession in the Foreign Economies within 12 Months

Note: Shading indicates that countries representing 55% of foreign GDP are classified as in recession.
Source: Staff calculations using a probit model similar to that described in the box "Estimates of World Recession Probabilities" of the March 2016 Tealbook.

Output in the Asian EMEs (figure 3) rises relative to baseline as stronger net exports—because of higher U.S. activity and a depreciation of their currencies—more than offset a slight tightening of financial conditions in these economies. While Latin American net exports also rise, financial conditions in those economies tighten enough that their GDP contracts modestly relative to baseline (figure 4). In particular, currency depreciation weakens corporate balance sheets by boosting the local currency value of foreign debt and induces Latin American central banks to tighten aggressively to mitigate inflationary pressures.

The second scenario assumes that the stronger demand in the first scenario is accompanied by a steepening of the Phillips curve, which pushes U.S. inflation to 2¾ percent by early 2022 (not shown) and the funds rate to over 5 percent (green line in figure 1). While EME net exports still improve relative to baseline, EME financial conditions tighten substantially and cause a pronounced slowing in EME GDP, especially in the more vulnerable Latin American economies.

All told, these simulations support our view that most EMEs will likely weather the further increases in U.S. interest rates assumed in the staff outlook, which are driven by continued solid growth of the U.S. economy. Even in the growth-driven scenario, however, we cannot rule out the possibility of disruptive effects, especially on more vulnerable EMEs. Moreover, if U.S. inflation surprises on the upside and leads to even more monetary tightening than assumed in our forecast, the probability of more widespread financial distress and economic downturns in the EMEs would rise significantly.

Int'l Econ Devel & Outlook

Figure 1. Policy Rate

Percent, annual rate

Blue Chip baseline
Stronger U.S. demand
Stronger U.S. demand with higher inflation
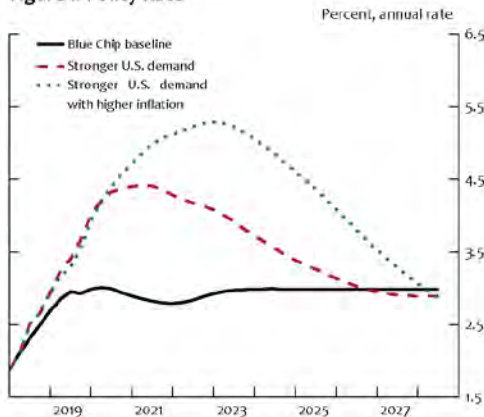
Figure 2. Unemployment Rate

Percent

Figure 3. EME Asia GDP

Percent deviation from baseline
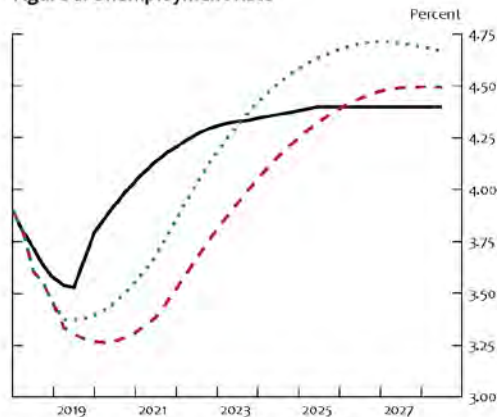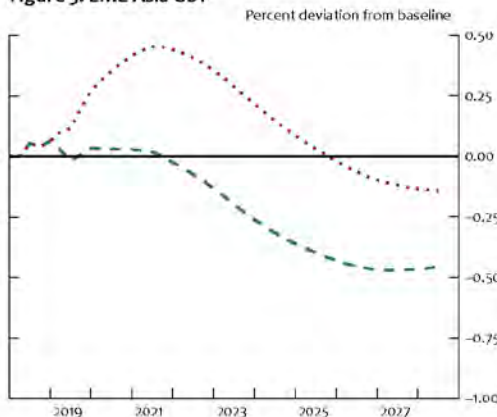
Figure 4. EME Latin America

Percent deviation from baseline
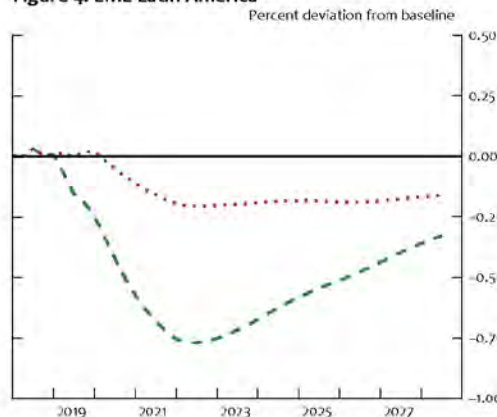
The Foreign GDP Outlook

Real GDP*   Percent change, annual rate

	2017	2018				2019	2020	2021
		Q1	Q2	Q3	Q4			
1. Total Foreign	2.9	3.1	2.0	2.2	2.4	2.4	2.7	2.6
Previous Tealbook	2.9	3.0	2.0	2.5	2.6	2.7	2.7	2.6
2. Advanced Foreign Economies	2.6	1.4	2.5	1.2	2.0	1.6	1.8	1.7
Previous Tealbook	2.6	1.3	2.5	1.9	1.9	1.7	1.7	1.7
3. Canada	2.9	1.7	2.9	2.0	2.5	1.7	1.9	1.7
4. Euro Area	2.7	1.6	1.8	.7	1.5	1.5	1.7	1.6
5. Japan	2.0	-1.1	3.0	-1.2	2.0	.3	.9	.8
6. United Kingdom	1.4	.4	1.6	2.5	1.5	1.9	1.8	1.7
7. Emerging Market Economies	3.2	4.9	1.5	3.1	2.8	3.3	3.7	3.6
Previous Tealbook	3.2	4.7	1.5	3.1	3.4	3.7	3.7	3.6
8. China	6.8	7.2	6.5	5.9	6.2	6.1	5.9	5.7
9. Emerging Asia ex. China	4.2	5.7	2.5	2.4	3.6	3.6	3.6	3.5
10. Mexico	1.5	4.3	-.4	3.4	1.5	2.1	2.8	2.9
11. Brazil	2.2	.6	.7	3.1	2.0	2.6	2.8	2.8

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

Total Foreign GDP
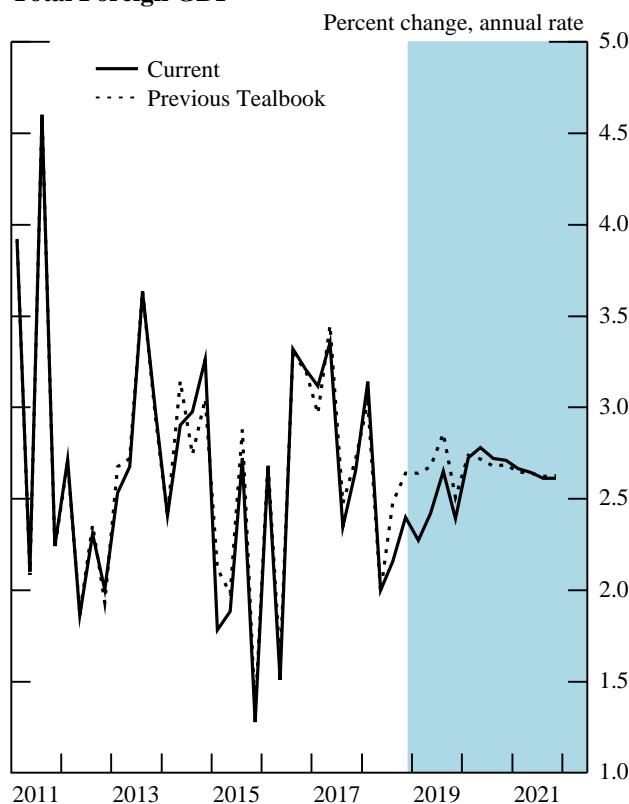
Foreign GDP
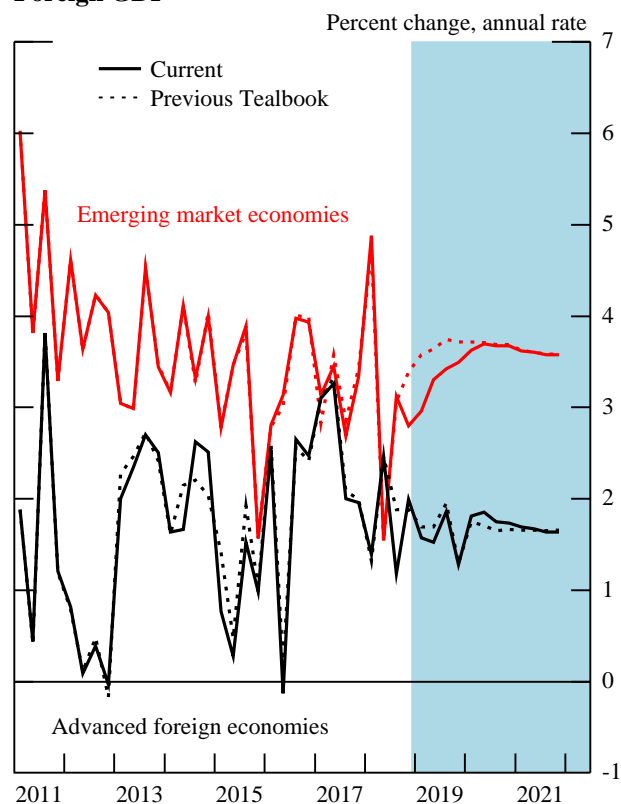
The Foreign Inflation Outlook

Consumer Prices* Percent change, annual rate

		2017	2018 Q1	2018 Q2	2018 Q3	2018 Q4	2019	2020	2021
1.	Total Foreign	2.6	2.6	1.7	3.7	2.8	2.3	2.4	2.4
	Previous Tealbook	2.6	2.6	1.7	3.7	2.9	2.6	2.4	2.4
2.	Advanced Foreign Economies	1.5	2.5	1.0	2.5	1.6	1.5	1.6	1.7
	Previous Tealbook	1.5	2.6	1.0	2.5	2.1	1.9	1.7	1.7
3.	Canada	1.8	3.6	1.1	2.6	2.5	1.7	2.0	2.0
4.	Euro Area	1.4	2.0	2.1	2.5	1.1	1.1	1.5	1.7
5.	Japan	.6	2.5	-2.3	2.7	.9	2.0	.9	1.1
6.	United Kingdom	3.0	2.3	2.0	2.9	2.0	2.0	2.2	2.1
7.	Emerging Market Economies	3.4	2.7	2.2	4.6	3.7	2.9	2.9	2.9
	Previous Tealbook	3.4	2.7	2.2	4.6	3.5	3.1	2.9	2.9
8.	China	1.8	1.5	.7	4.1	3.8	2.1	2.5	2.5
9.	Emerging Asia ex. China	2.3	2.1	1.5	1.7	1.6	2.6	2.8	2.8
10.	Mexico	6.6	4.1	3.8	6.8	4.0	3.4	3.2	3.2
11.	Brazil	2.8	3.1	4.3	6.6	3.9	4.1	4.3	4.3

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

Int'l Econ Devel & Outlook

Foreign Monetary Policy

AFE Policy Rates
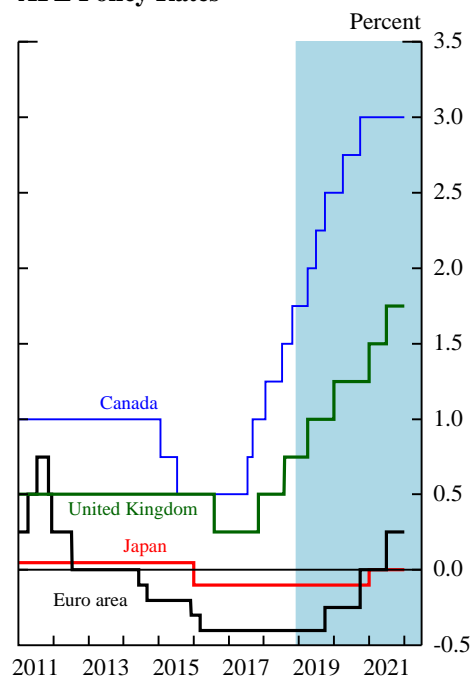
AFE Central Bank Balance Sheets

EME Policy Rates

* 1-year benchmark lending rate.

Recent Foreign Indicators

Nominal Exports

Jan. 2011 = 100

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

Industrial Production

Jan. 2011 = 100

* 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

12-month percent change

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

Employment

4-quarter percent change

* 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

12-month percent change

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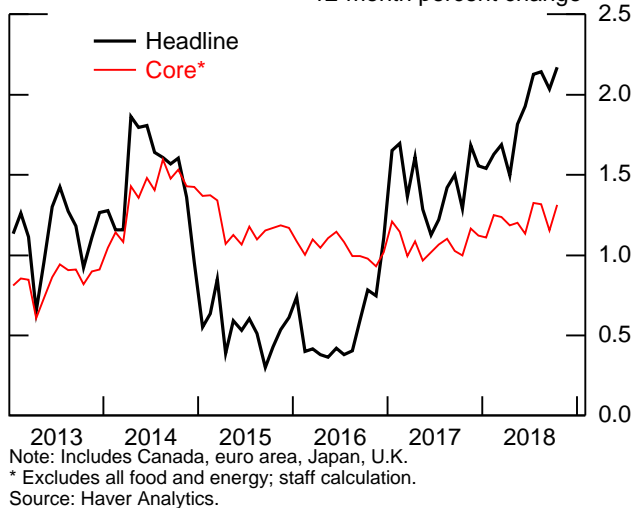
Consumer Prices: Emerging Market Economies

12-month percent change

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

Int'l Econ Devel & Outlook
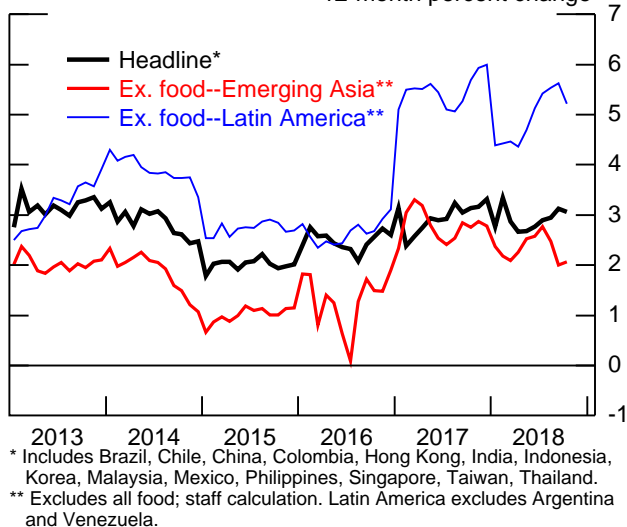
Evolution of Staff's International Forecast

Total Foreign GDP

Percent change, Q4/Q4

Tealbook publication date

Total Foreign CPI

Percent change, Q4/Q4

Tealbook publication date

U.S. Current Account Balance

Percent of GDP

Tealbook publication date

Int'l Econ Devel & Outlook
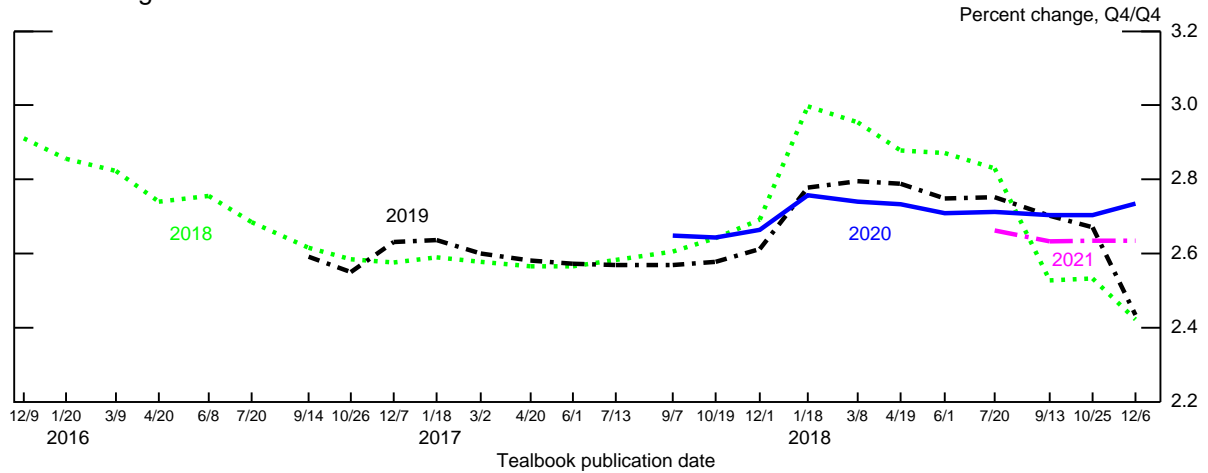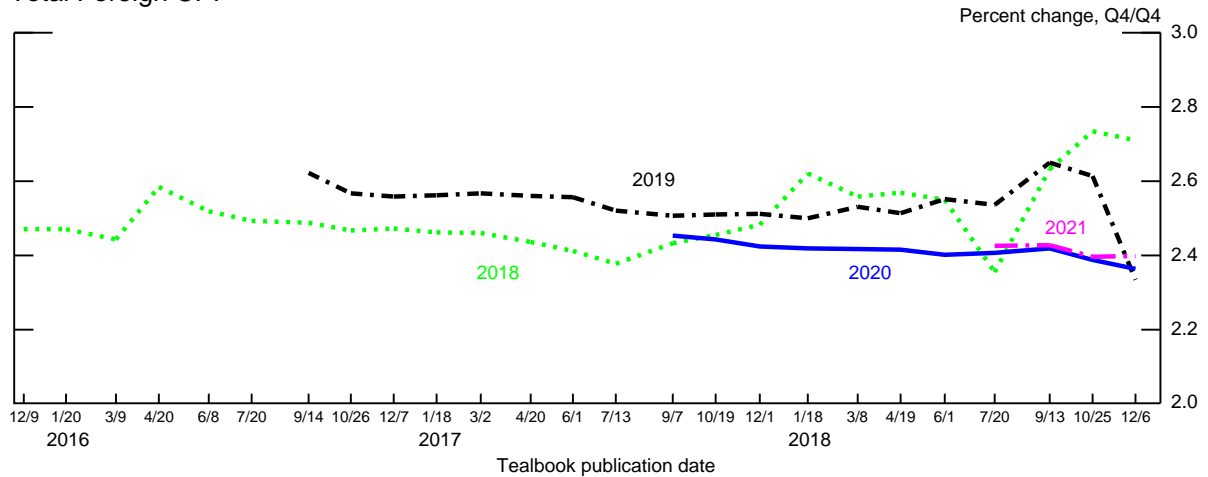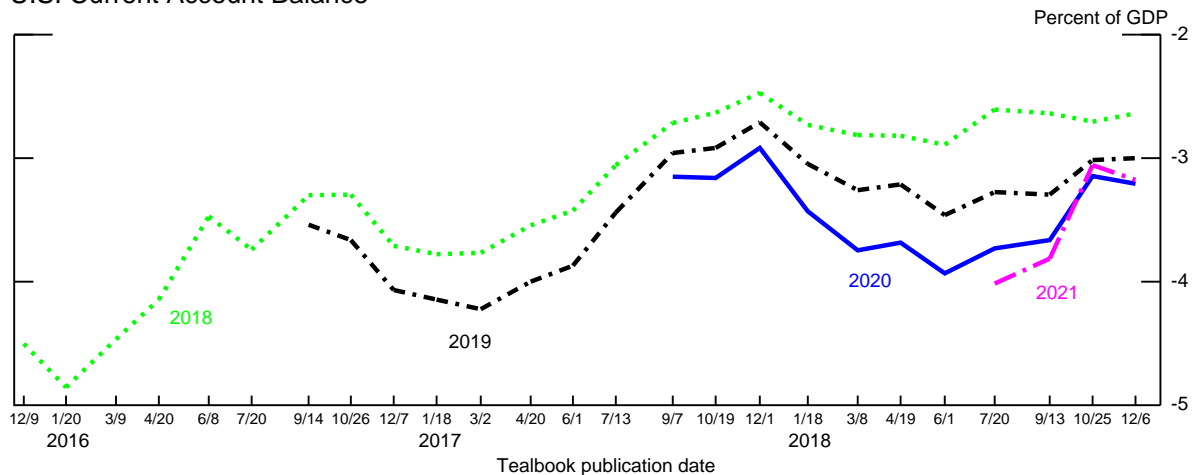
Policy Expectations and Treasury Yields

Selected Interest Rates

Percent — Percent

- Nov. FOMC
- CPI release
- Chairman Powell's comments
- Vice Chairman Clarida's interview
- 10–year Treasury yield (right scale)
- 2–year Treasury yield (left scale)
- Chairman Powell's speech
- Nov. FOMC minutes
- G–20 summit
- December 6 4:00 p.m.

Nov. 8 · Nov. 12 · Nov. 14 · Nov. 16 · Nov. 20 · Nov. 22 · Nov. 26 · Nov. 28 · Nov. 30 · Dec. 4 · Dec. 6
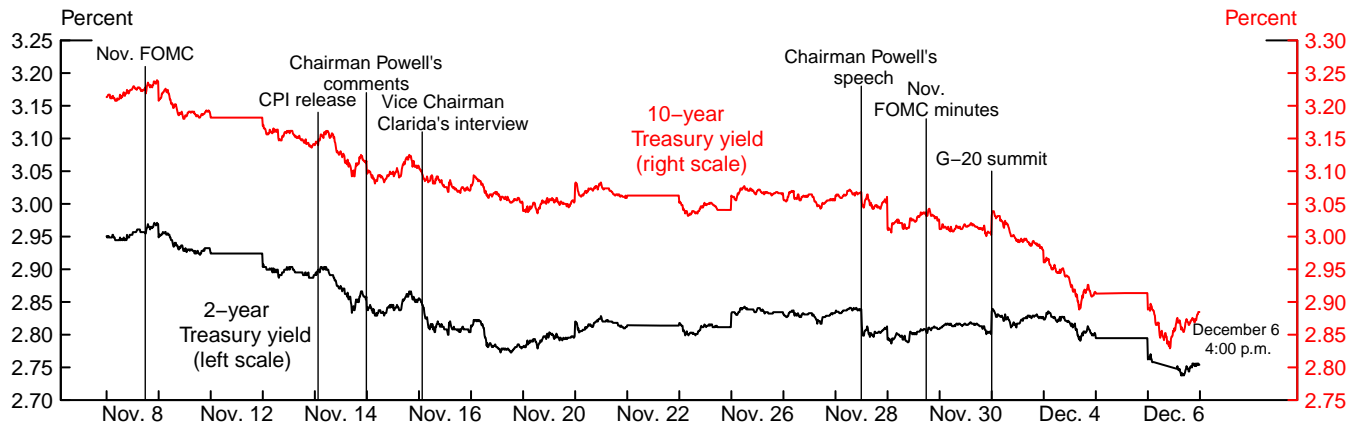
Note: Data are for 2018 and spaced at 5–minute intervals from 8:00 a.m. to 4:00 p.m.
Source: Bloomberg.

Long–Term Yield Spread and Near–Term Forward Spread

Monthly — Percent

- 0–to–6–quarter forward spread
- 2–to–10–year yield spread
- Dec. 6

1971 · 1980 · 1991 · 2000 · 2011 · 2018
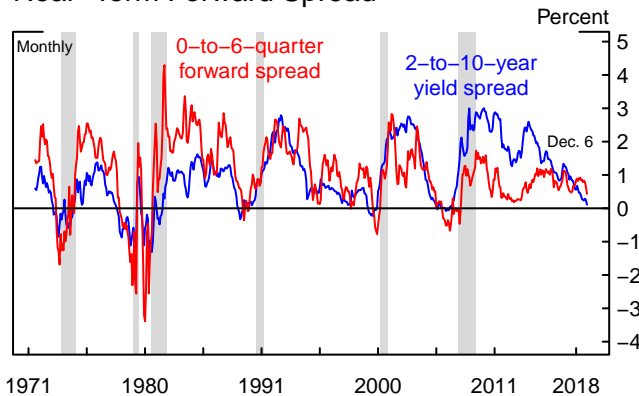
Note: The 0–to–6–quarter forward spread is the difference between the 3–month yield and the implied forward rate between 6 and 7 quarters ahead based on a smoothed Treasury yield curve. Data through November 2018 are monthly averages. Data for December 2018 based on values for December 6. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.
Source: Federal Reserve Bank of New York; Federal Reserve Board staff estimates.

TIPS–Based Inflation Compensation

Daily — Percent

- 5 to 10 years ahead
- Nov. FOMC
- Next 5 years*
- Dec. 6

Dec. 2016 · Apr. · Aug. · Dec. 2017 · Apr. · Aug. · Dec. 2018
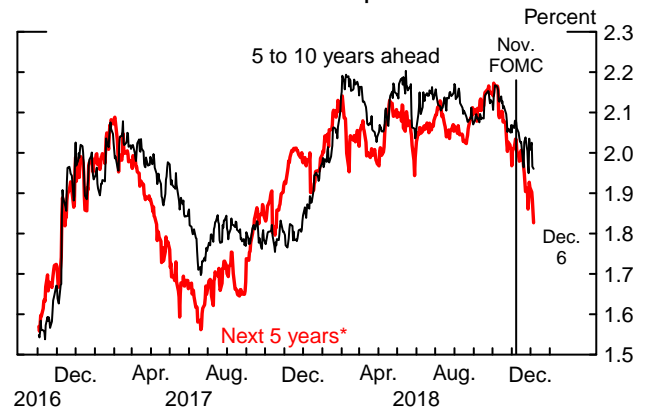
Note: Estimates based on smoothed nominal and inflation-indexed Treasury yield curves.
 * Adjusted for lagged indexation of Treasury Inflation-Protected Securities (carry effect).
 Source: Federal Reserve Bank of New York; Federal Reserve Board staff estimates.

Market–Implied Probability of a Rate Increase at Each of the Next 4 FOMC Meetings
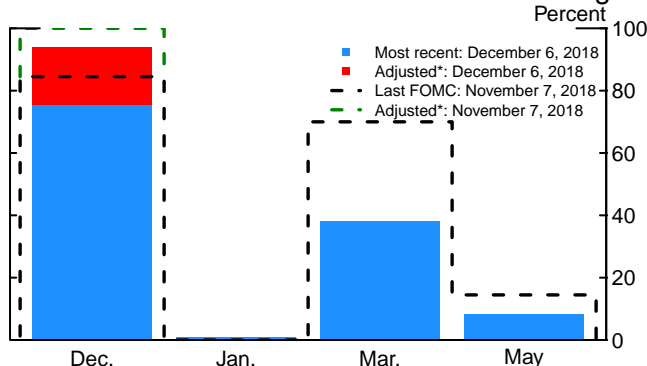
Percent

- Most recent: December 6, 2018
- Adjusted*: December 6, 2018
- Last FOMC: November 7, 2018
- Adjusted*: November 7, 2018

Dec. · Jan. · Mar. · May

Note: Probabilities implied by a binomial tree fitted to settlement prices on federal funds futures contracts, assuming the policy action at each meeting is either no change or a 25 basis point increase in rates and no intermeeting moves.
 *Adjusted under the assumption that the policy action for the December 2018 meeting is either no change or a 20 basis point increase in rates.
 Source: CME Group; Federal Reserve Board staff estimates.

Implied Federal Funds Rate
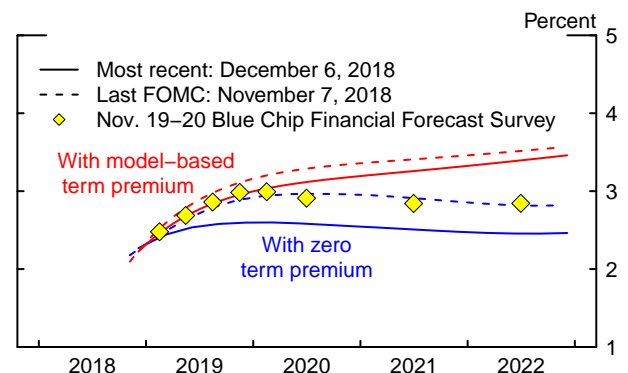
Percent

- Most recent: December 6, 2018
- Last FOMC: November 7, 2018
- Nov. 19–20 Blue Chip Financial Forecast Survey
- With model–based term premium
- With zero term premium

2018 · 2019 · 2020 · 2021 · 2022

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. The Blue Chip path is the average of respondents' expectations for the federal funds rate in the survey taken November 19 and 20.
 Source: Bloomberg; Wolters Kluwer Legal and Regulatory Solutions U.S., Blue Chip Financial Forecasts; Federal Reserve Board staff estimates.

Financial Markets

Authorized for Public Release

Corporate Asset Market Developments

Intraday S&P 500 Index

Nov. 7, 2018, 4:00 p.m. = 100
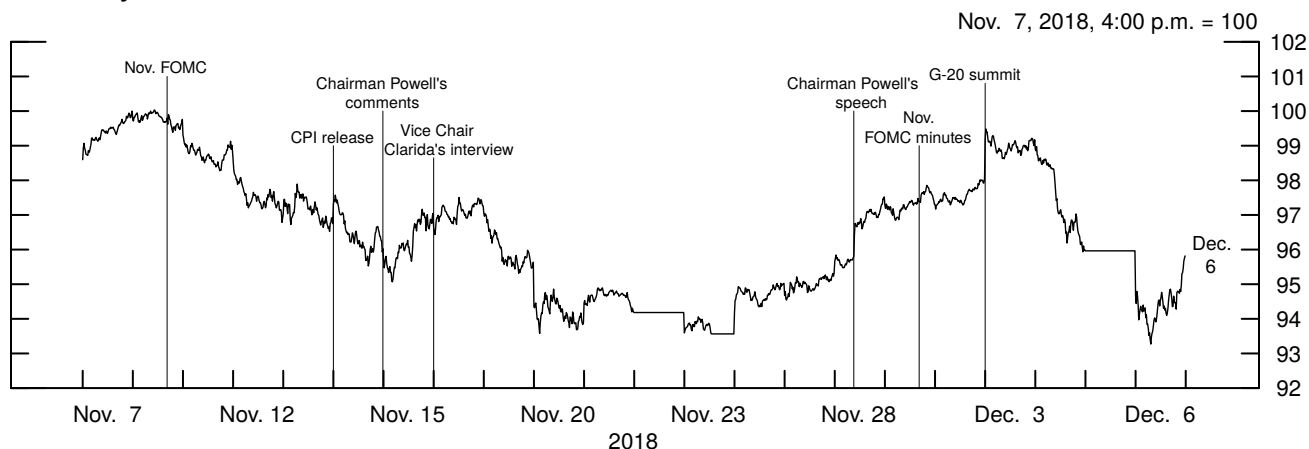
Note: Data are for 2018 and spaced at 5-minute intervals from 9:30 a.m. to 4:10 p.m.
Source: Bloomberg.

Selected Stock Indexes

Nov 7, 2018 = 100
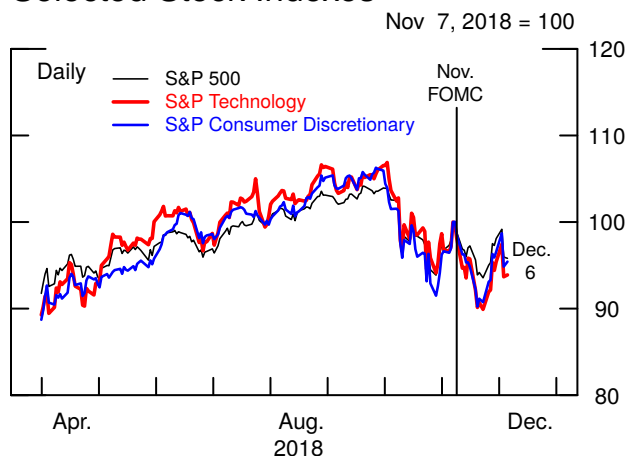
Source: Bloomberg.

Implied and Realized Volatilities on S&P 500

Log scale, percent
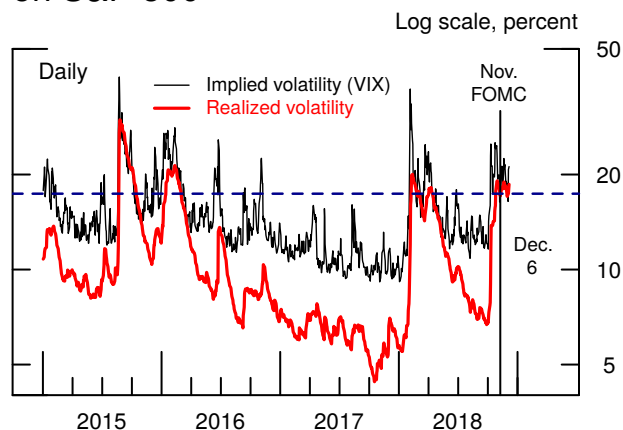
Note: Dashed line represents the historical median of VIX.
Source: Chicago Board Options Exchange; Bloomberg.

10-Year Corporate Bond Yields

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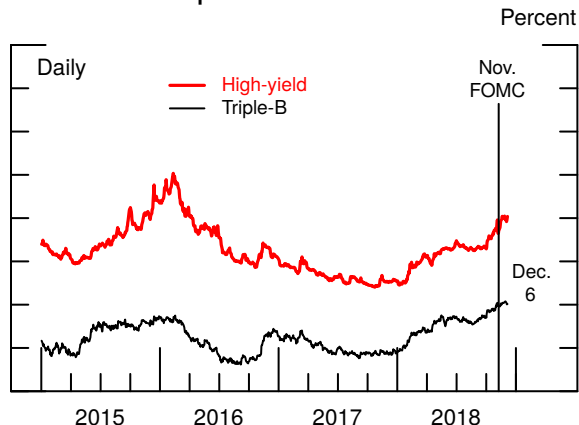
Source: Staff estimates of smoothed yield curves based on Merrill Lynch bond data.

10-Year Corporate Bond Spreads

Basis points — Basis points
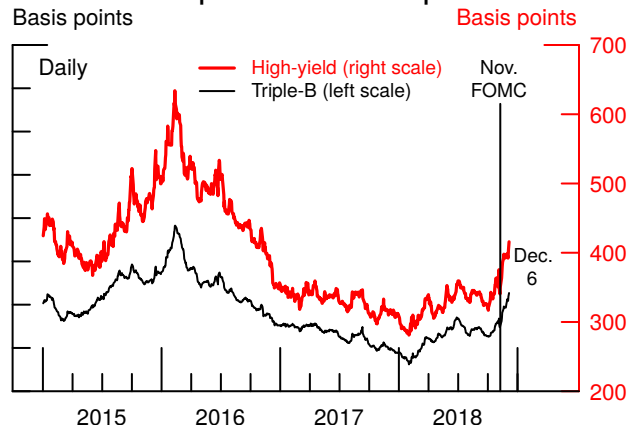
Note: Spreads over 10-year Treasury yield.
Source: Staff estimates of smoothed yield curves based on Merrill Lynch bond data and smoothed Treasury yield curve.

Financial Markets

Foreign Developments

Equity Indexes

Daily

Nov. 7, 2018 = 100

— S&P 500
— DJ Euro Stoxx
— Mexico
— Shanghai

Nov. FOMC

Dec. 6
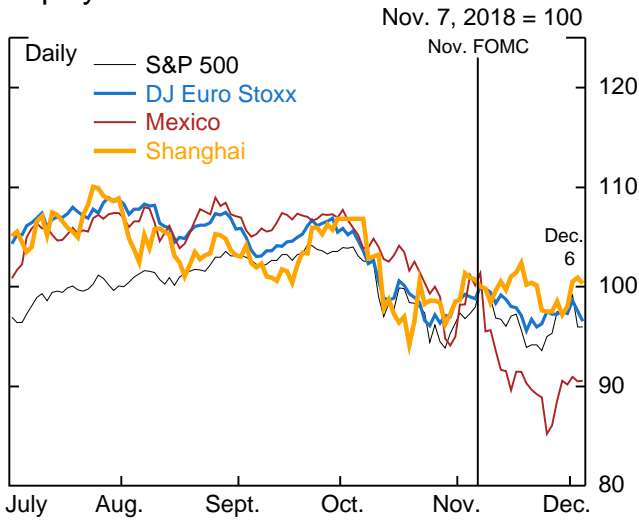
Note: Indexes denominated in local currency.
Source: Bloomberg.

Implied Volatilities

Daily

Percent

— VIX
— VDAX

Nov. FOMC

Dec. 6
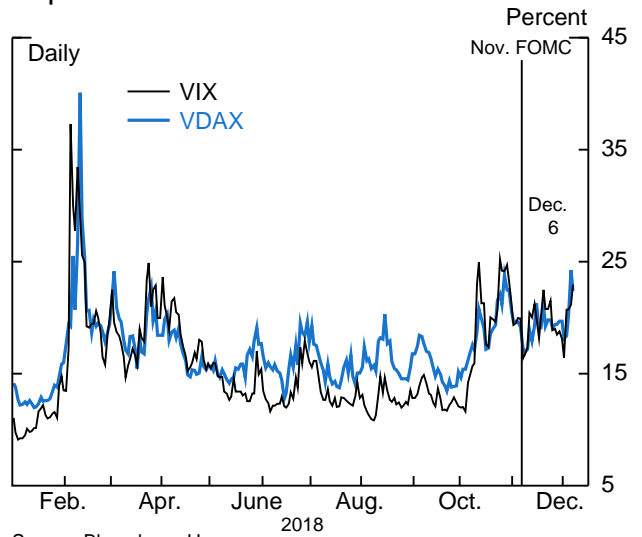
Source: Bloomberg; Haver.

10-Year AFE Sovereign Yields

Daily

Percent

United States
Canada
United Kingdom
Germany

Nov. FOMC

Dec. 6
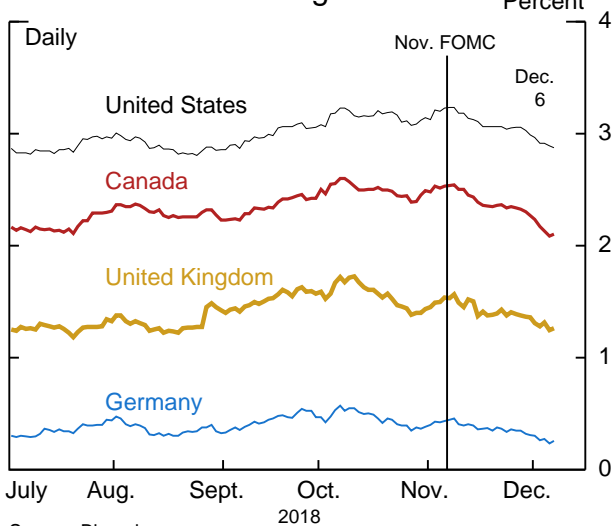
Source: Bloomberg.

Euro-Area Peripheral Spreads

Daily

Percentage points

Italian elections
Formation of new govt.
Nov. FOMC

Italy
Portugal
Spain

Dec. 6
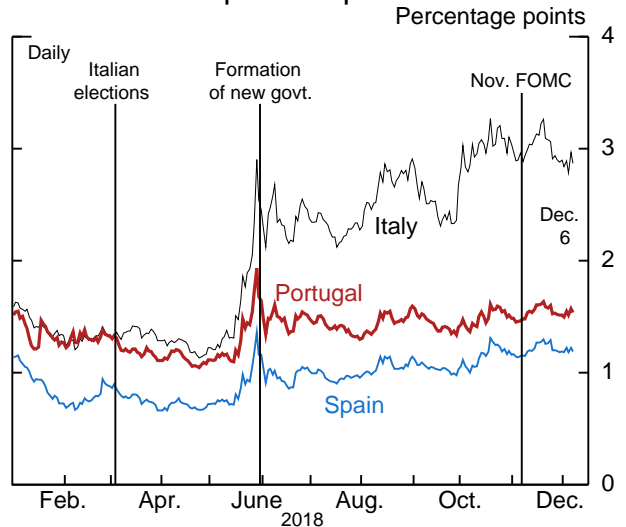
Note: Spread over 10-year German bonds.
Source: Bloomberg.

Exchange Rates

Daily

Nov. 7, 2018 = 100

— Broad
— AFE
— EME

Nov. FOMC

Dec. 6

Dollar appreciation
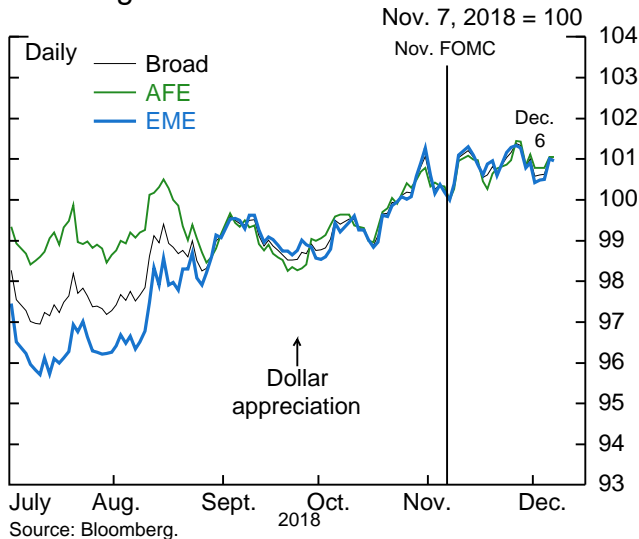
Source: Bloomberg.

Oil and Metals Prices

January 2, 2018 = 100

Dollars/barrel

Daily

Nov. FOMC

Brent

GSCI Metals

Dec. 6
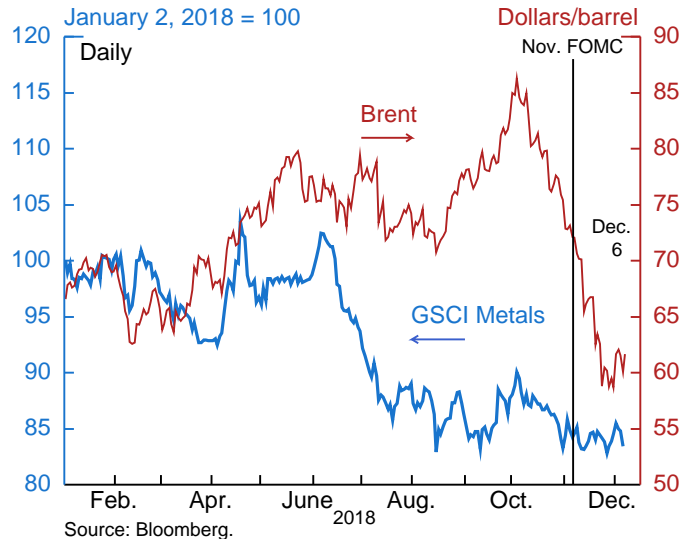
Source: Bloomberg.

Financial Markets

Short–Term Funding Markets

Selected Money Market Rates

Daily

Basis points
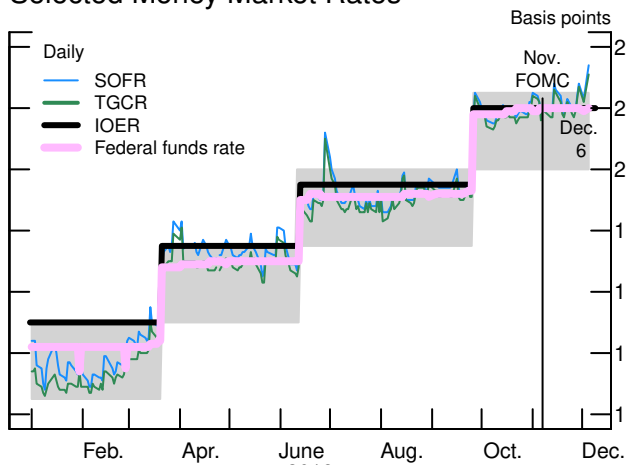
Note: Federal funds rate is a weighted median. Shaded area is the target range for the federal funds rate. SOFR is secured overnight financing rate. IOER is interest on excess reserves. TGCR is triparty general collateral rate.
Source: Federal Reserve Board, Form FR 2420, Report of Selected Money Market Rates.

Selected Money Market Volumes

Daily

Billions of dollars
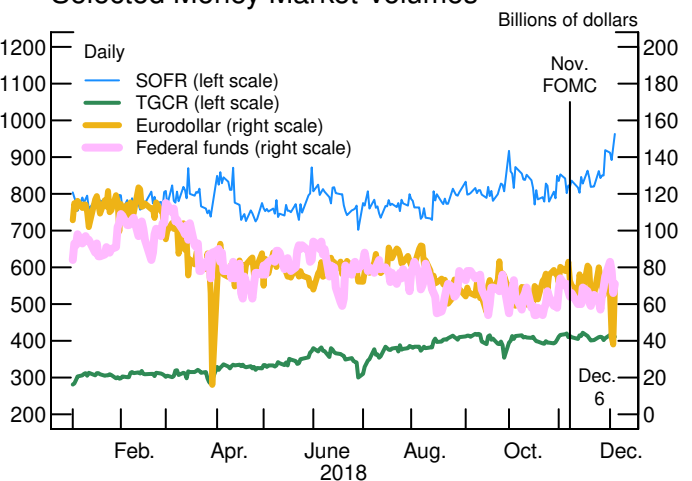
Note: SOFR is secured overnight financing rate. TGCR is triparty general collateral rate.
Source: Federal Reserve Bank of New York; Federal Reserve Board, Form FR 2420, Report of Selected Money Market Rates.

ON RRP, Take–Up by Type

Daily

Billions of dollars
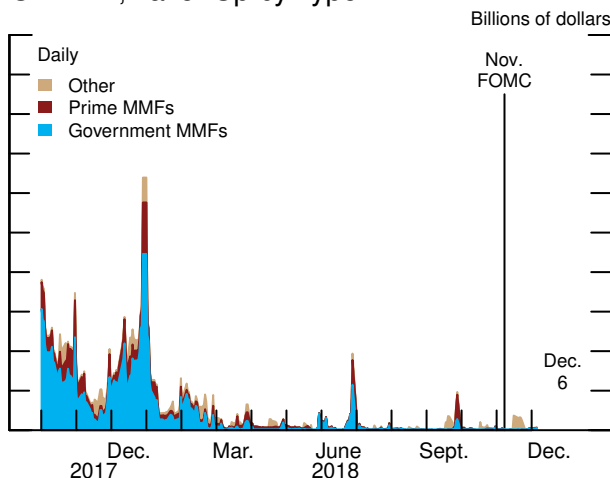
Note: ON RRP is overnight reverse repurchase agreement; MMF is money market fund.
Source: Federal Reserve Bank of New York.

Implied Basis Spreads from 1–Month FX Swaps

Daily

Basis points
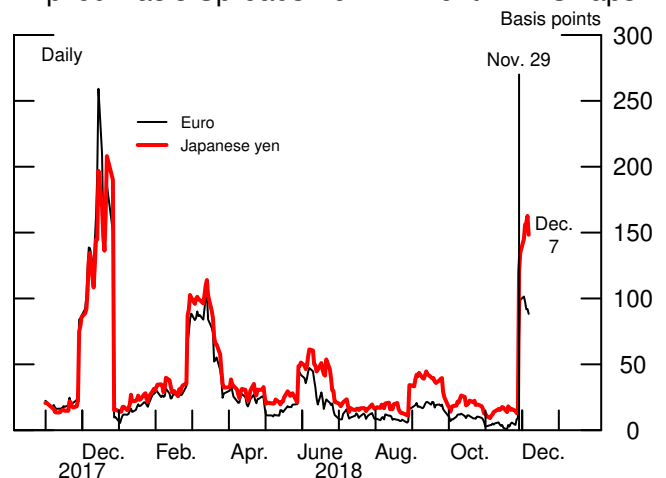
Note: FX is foreign exchange.
Source: Bloomberg and staff calculations.

Negotiable Certificate of Deposit Spreads

Daily

Basis points
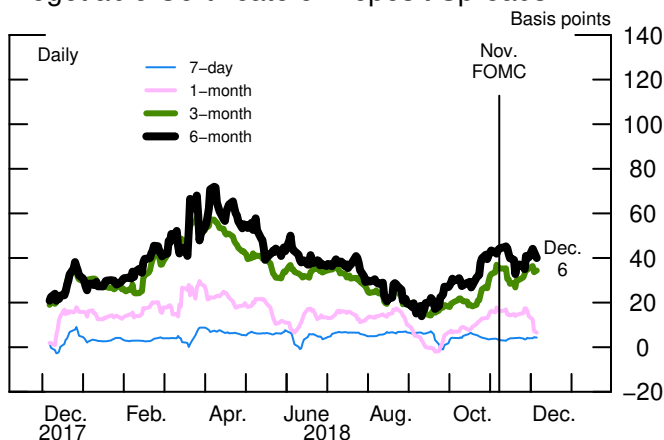
Note: Spreads are relative to overnight index swap rates and are computed as a 5–day moving average.
Source: Depository Trust & Clearing Corporation.

Commercial Paper Spreads

Daily

Basis points
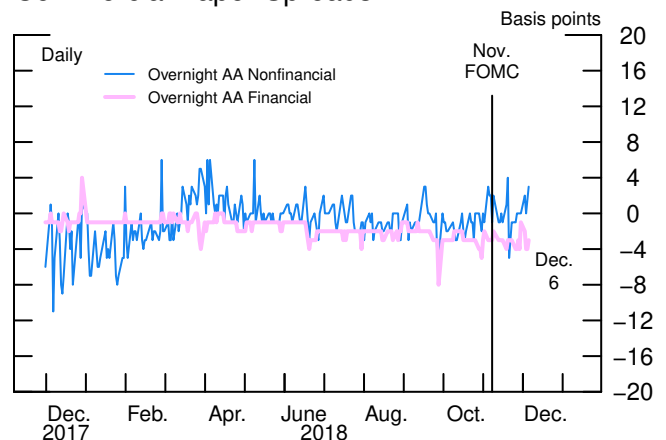
Note: Overnight spreads are to the effective federal funds rate.
Source: Depository Trust & Clearing Corporation.

Financial Markets

Business Finance

Gross Issuance of Nonfinancial Corporate Bonds

Billions of dollars

Monthly rate

- ■ Speculative-grade (red)
- ■ Investment-grade (gray)

Q1 Q2 Q3 Oct. Nov.

2006 2010 2014 2018
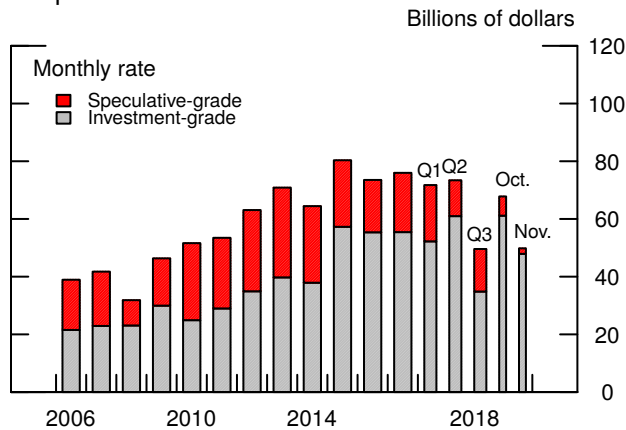
Note: Bonds are categorized by Moody's, Standard & Poor's, and Fitch.
Source: Mergent Fixed Income Securities Database.

Institutional Leveraged Loan Issuance, by Purpose

Billions of dollars

Monthly rate

- ■ Refinancings (dark red)
- ■ New money (blue)

Q1 Q2 Q3 Oct. Nov. (e)

2006 2010 2014 2018
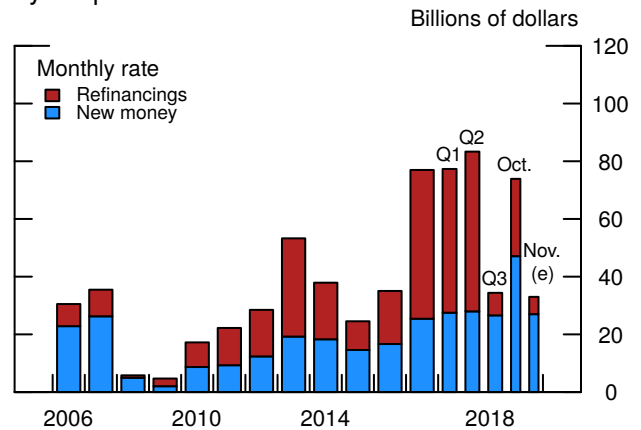
(e) Estimate.
Source: Thomson Reuters LPC.

Commercial and Industrial Loans

Billions of dollars

Monthly rate, s.a.

Nov.(e)
Q1 Q2 Q3 Oct.

- □ Large banks
- ■ Small banks
- ■ Foreign banks

2006 2010 2014 2018
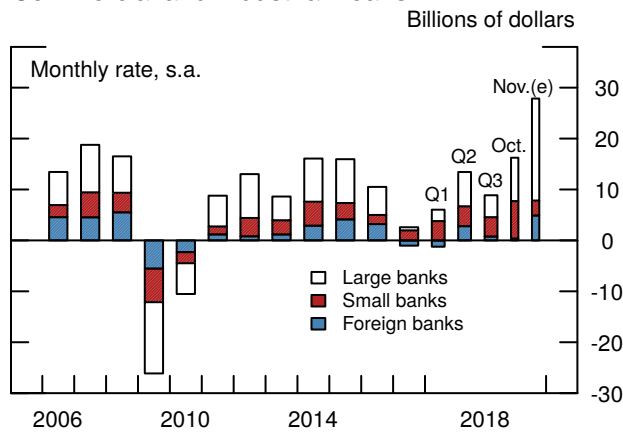
Note: Large banks are defined as the largest 25 banks by assets.
(e) Estimate.
Source: Staff calculations, Federal Reserve Board, Form FR 2644, Weekly Report of Selected Assets and Liabilities of Domestically Chartered Commercial Banks and U.S. Branches and Agencies of Foreign Banks.

Nonfinancial Rating Changes, by Sector

Percent of outstanding*

Annual rate

- ■ Energy
- ■ Ex. energy

Upgrades

Q1 Q2 Q3 Oct. Nov.

Downgrades

- ■ Ex. energy
- ■ Energy

2006 2010 2014 2018
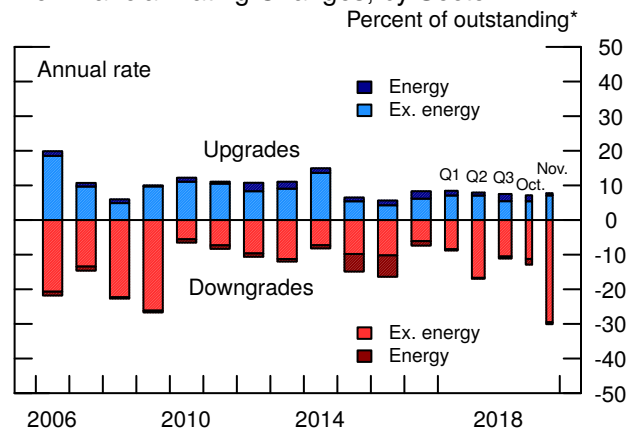
* Computed as a percent of nonfinancial bonds outstanding.
Source: Staff calculations using Moody's ratings from Mergent Fixed Income Securities Database.

Revisions to S&P 500 Year-Ahead Earnings per Share

Percent

Monthly

—— S&P 500
—— S&P 500 Ex-Energy

Nov.

2010 2012 2014 2016 2018
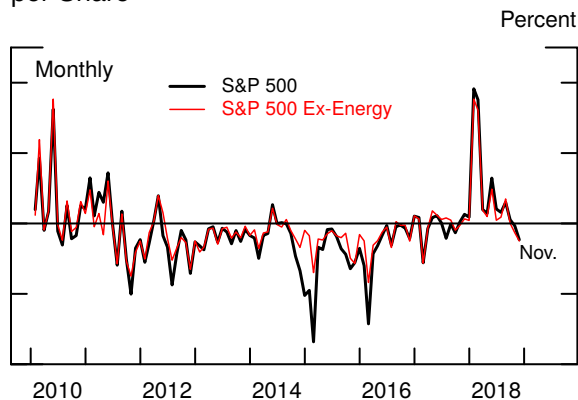
Note: Weighted average of the percent change in the consensus forecasts of current-year and following-year earnings per share.
Source: Thomson Reuters Financial.

Non-agency CMBS Issuance

Billions of dollars

- ■ Multifamily
- ■ Nonresidential

Q1 Q2 Q3 Oct. Nov.*

2006 2009 2012 2015 2018
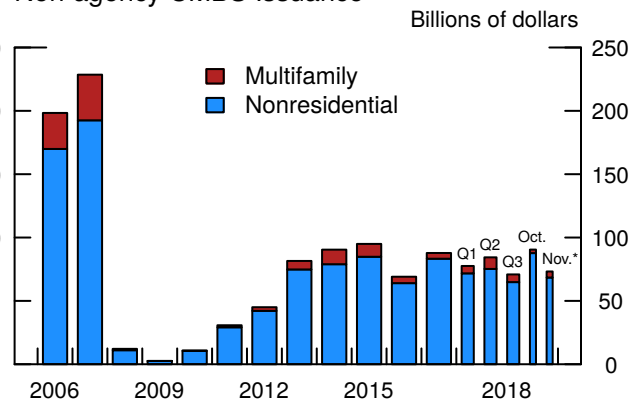
* Month to date.
Source: Commercial Mortgage Alert.

Financing Conditions

Authorized for Public Release
Household Finance

Mortgage Rate and MBS Yield

Percent

Daily

30-year conforming
fixed mortgage rate

Dec. 5

MBS yield

Dec. 4
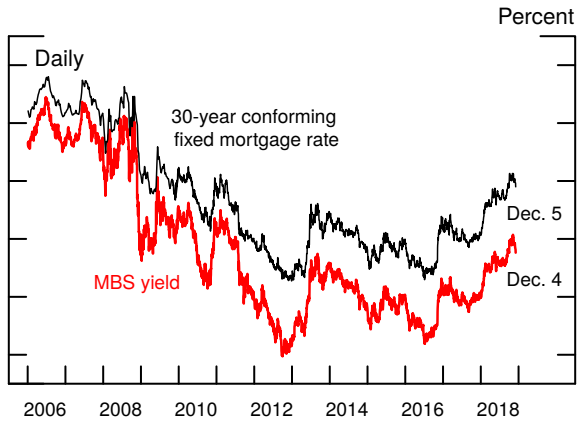
Note: The mortgage-backed securities (MBS) yield is the Fannie Mae 30-year
current-coupon rate.
Source: For mortgage rate before 2010, Freddie Mac, after 2010, Loansifter;
for MBS yield, Barclays.

Purchase and Refinance Activity

Thousands of originations   Thousands of originations

Monthly

Refinance
(right scale)

Home purchase
(left scale)

Oct.
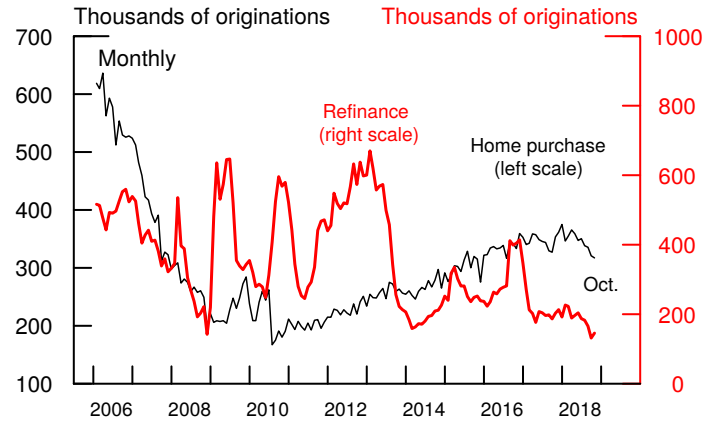
Note: The data are seasonally adjusted by Federal Reserve Board staff.
Source: For values before 2017, data reported under the Home Mortgage
Disclosure Act of 1975; for values in 2018, staff estimates.

Consumer Credit

Percentage change from previous year

Monthly   Student loans

Auto loans

Sept.
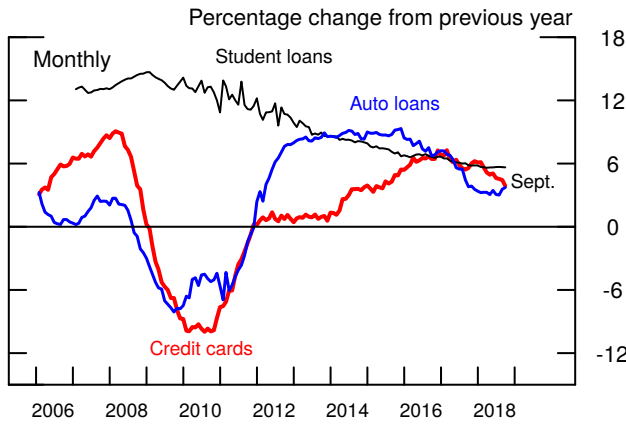
Credit cards

Source: Federal Reserve Board.

Consumer Interest Rates

Percent   Percent

Credit cards (left scale)
New auto loans (right scale)

Q3

Nov.18
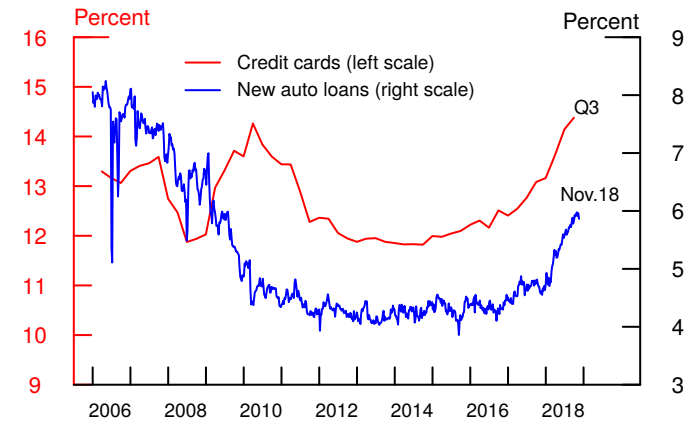
Note: Credit card data reflect rates at commercial banks on all credit card
plans; data are reported quarterly and not seasonally adjusted. Auto loans data
are reported weekly and seasonally adjusted.
Source: For credit cards, Federal Reserve Board; for auto loans, J.D. Power.

Selected ABS Spreads (3-Year Triple-A)

Basis points

Weekly

— FFELP student loans
— Fixed credit card
— Fixed prime auto

Nov. 22
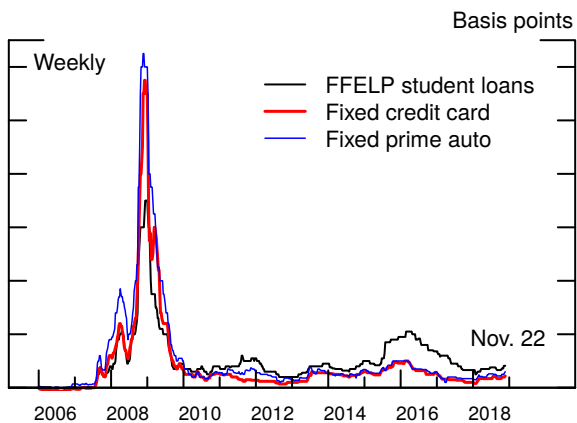
Note: Spreads are to swap rate for credit card and auto asset-backed
securities (ABS) and to 3-month LIBOR for student loans. Student loans are
from the Federal Family Education Loan Program.
Source: J.P. Morgan.

Gross Consumer ABS Issuance

Billions of dollars

Monthly rate   ■ Student loan
               ■ Credit card
               ■ Prime auto
               ■ Subprime auto

Q1 Q2 Q3   Oct.

Nov.*
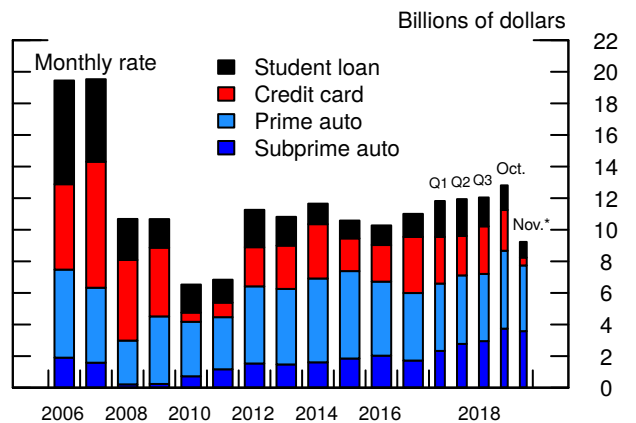
* Month to date.
Source: Merrill Lynch; Bloomberg.

Financing Conditions

Selected Financial Conditions Indexes

Staff FCI for Nonfinancial Corporations
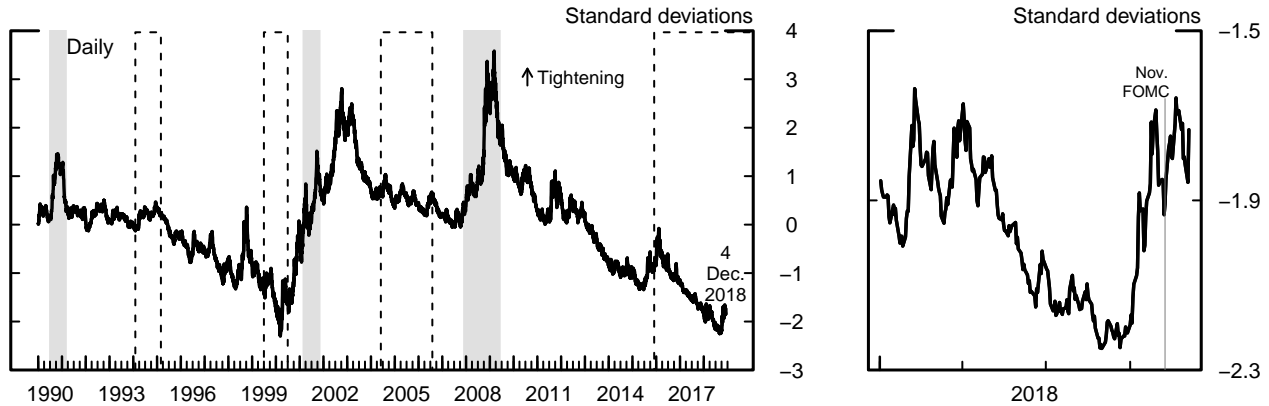
Note: The index is the deviation from the long–run relation between the systematic components of the cumulative log returns of 2 portfolios of firms with credit ratings above and just below investment grade. The systematic components are derived from the 5–factor Fama–French asset pricing model, augmented with the momentum and quality minus junk factors.

Source: CRSP; Yahoo Finance; Moody's Bond Ratings; Ken French website; AQR Capital Management website.

Mean and Range of External FCIs
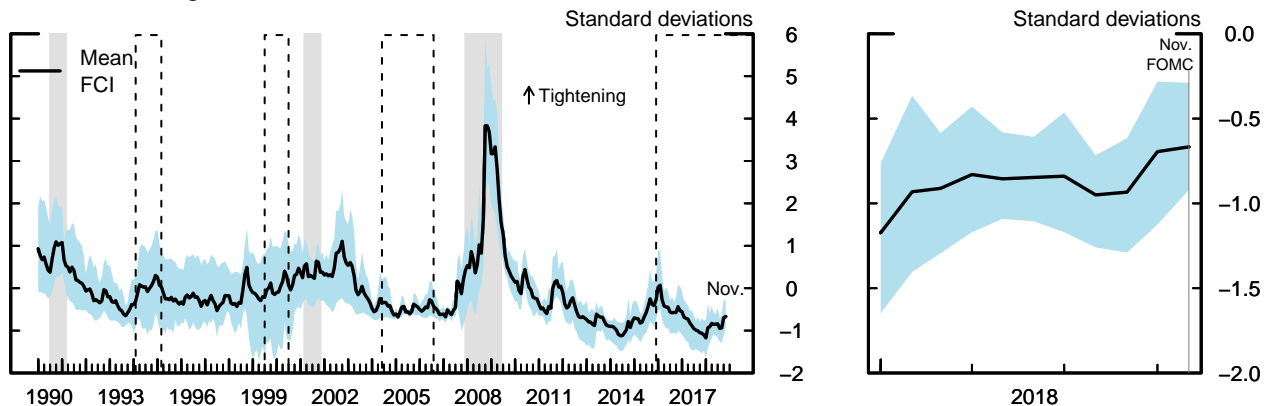
Note: Mean FCI represents the mean of FCIs developed by Goldman Sachs and the Federal Reserve Banks of Chicago, St. Louis, and Kansas City. The blue shaded region represents the range of these 4 standardized FCIs.

Source: Bloomberg; The Federal Reserve Banks of Chicago, St. Louis, and Kansas City.

Goldman Sachs FCI
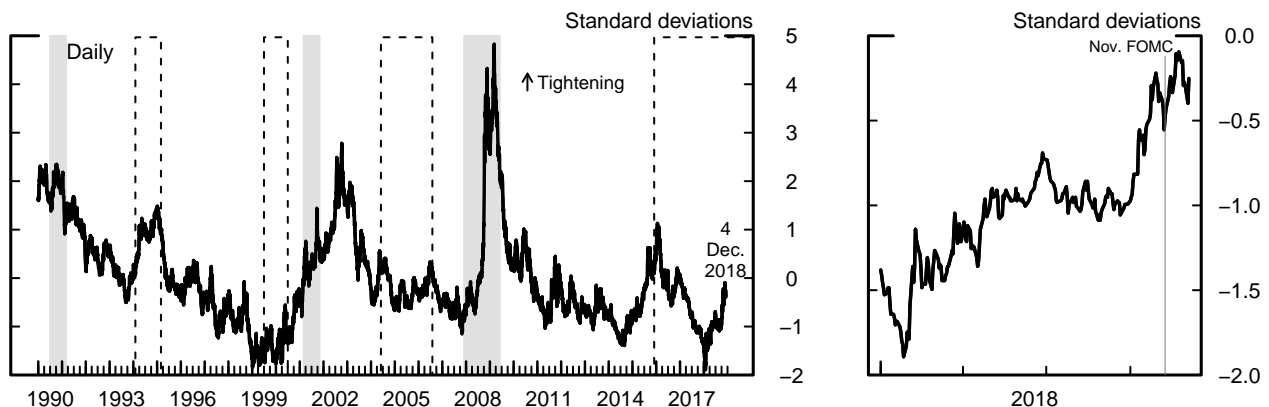
Note: The index is a weighted average of 5 financial variables: the federal funds rate, the 10–year Treasury yield, the triple–B yields spreads to Treasury, the S&P price–to–earnings ratio, the broad value of the U.S. dollar. Weights are pinned down by the contribution of each financial variable on real gross domestic product growth over the following year using a vector auto–regression model.

Source: Bloomberg.

For all panels: Indexes are standardized. Values above (below) zero represent tighter (easier) than average financial conditions. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research. The dashed boxes denote monetary policy tightening cycles.

Financing Conditions

Selected Financial Conditions Indexes

Chicago Fed NFCI
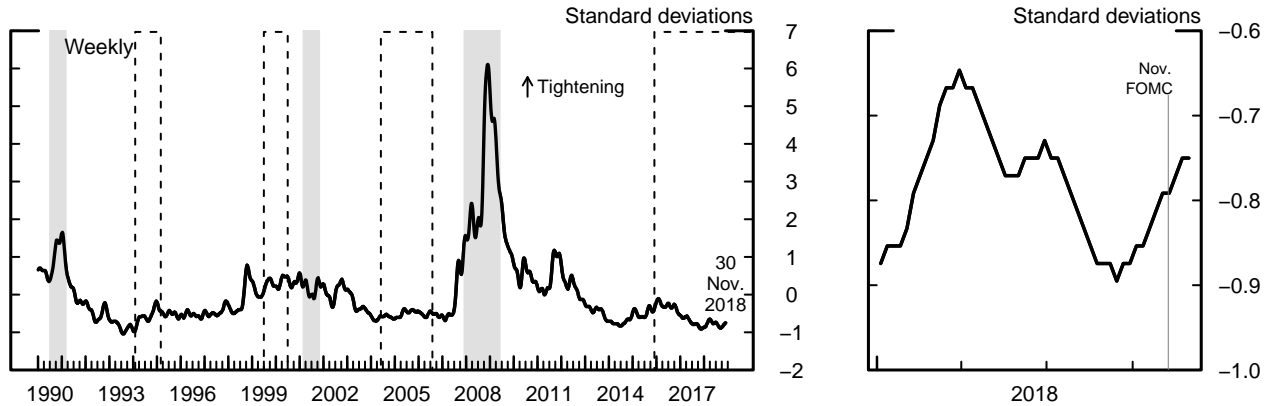
Note: The index is based on 100 financial variables related to money markets (28 indicators), debt and equity markets (27 indicators), and the banking system (45 indicators). The index is weekly and is derived using a dynamic factor model.
Source: Federal Reserve Bank of Chicago.

St. Louis Fed Financial Stress Index
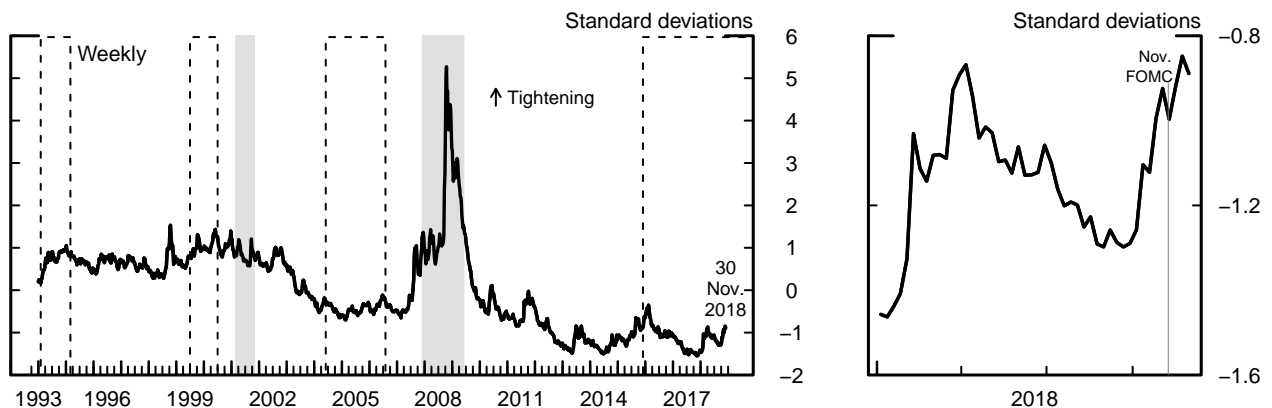
Note: The index is the principal component of 18 variables including short– and long–term Treasury yields, corporate yields, money market and corporate bond spreads, bond and stock market volatility indicators, breakeven inflation rate, and the S&P 500 index.
Source: Federal Reserve Bank of St. Louis.

Kansas City Fed Financial Stress Index
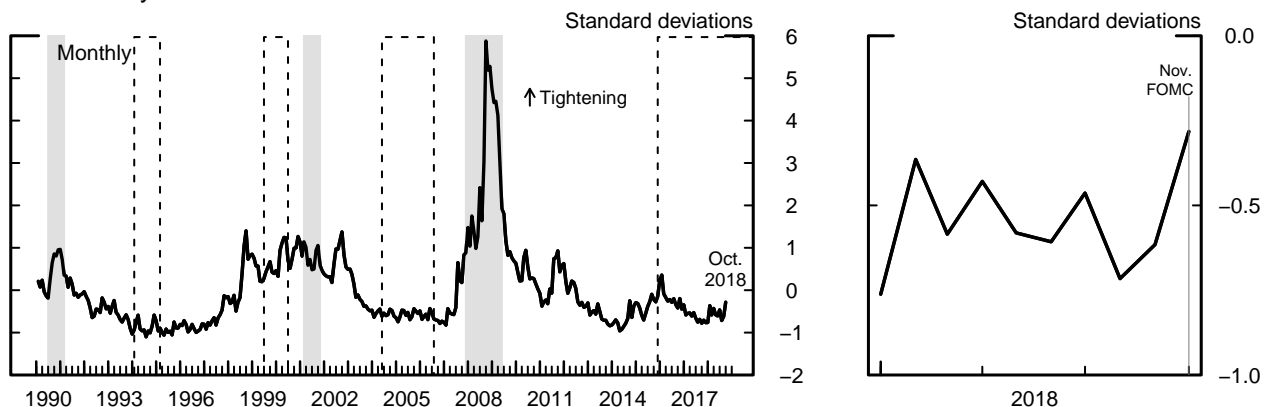
Note: The index is the principal component of 11 financial variables including short– and long–term interest rates, corporate and consumer yield spreads, the VIX, and the volatility of bank stock prices.
Source: Federal Reserve Bank of Kansas City.

For all panels: Indexes are standardized. Values above (below) zero represent tighter (easier) than average financial conditions. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research. The dashed boxes denote monetary policy tightening cycles.

Financing Conditions

Authorized for Public Release

Risks & Uncertainty

Time-Varying Macroeconomic Risk

Unemployment Rate

Percentage points

Legend	
90%	
70%	
50%	
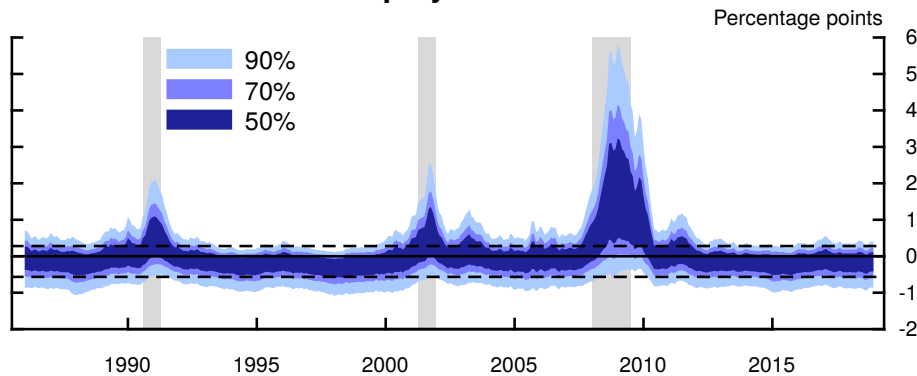
December 2018

95th	0.4
85th	0.2
50th	-0.1
15th	-0.6
5th	-0.9

GDP Growth

Percentage points
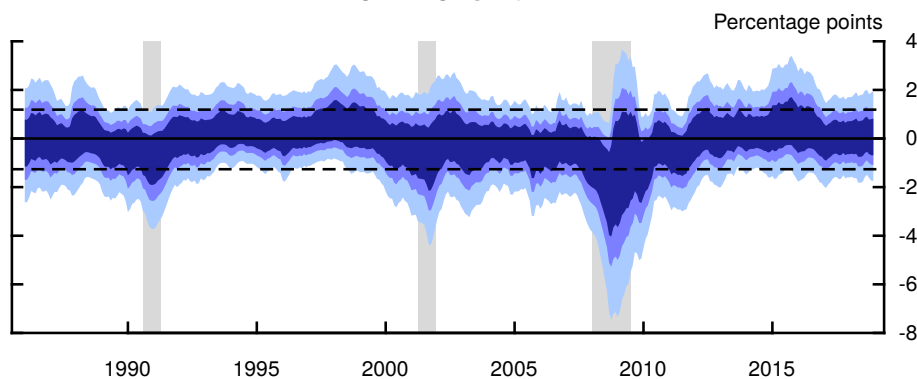
December 2018

95th	1.9
85th	1.2
50th	0.1
15th	-1.1
5th	-1.7

CPI Inflation

Percentage points
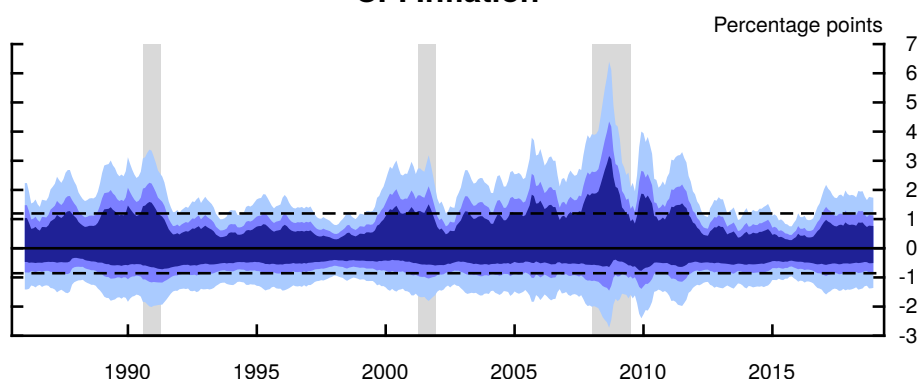
December 2018

95th	1.7
85th	1.1
50th	0.1
15th	-0.8
5th	-1.4

Note: The exhibit shows estimates of quantiles of the distribution of errors for four-quarter-ahead staff forecasts. The estimates are conditioned on indicators of real activity, inflation, financial market strain, and the volatility of high-frequency macroeconomic indicators. The tables show selected quantiles of the predictive distributions for the respective variables as of the current Tealbook. Dashed lines denote the median 15th and 85th percentiles. Gray shaded bars indicate recession periods as defined by the National Bureau of Economic Research.

Effective Lower Bound Risk Estimate

ELB Risk since Liftoff

Percent

Current-quarter ELB risk = 8%

June 2016   Dec. 2016   June 2017   Dec. 2017   June 2018   Dec. 2018
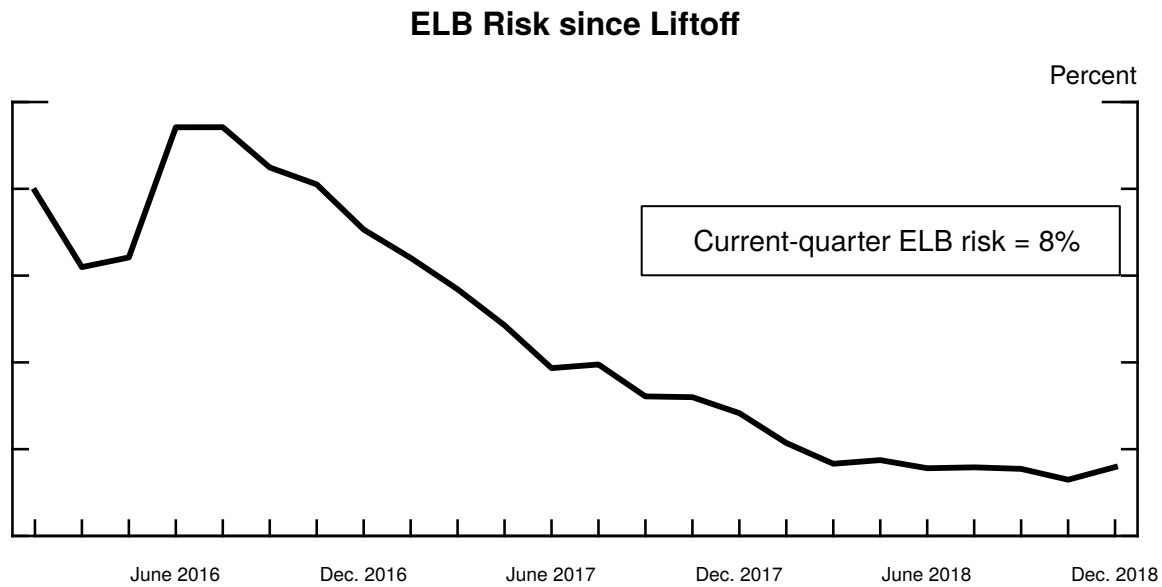
ELB Risk over the Projection Period

Percent

2018:Q4   2019:Q2   2019:Q4   2020:Q2   2020:Q4   2021:Q2   2021:Q4
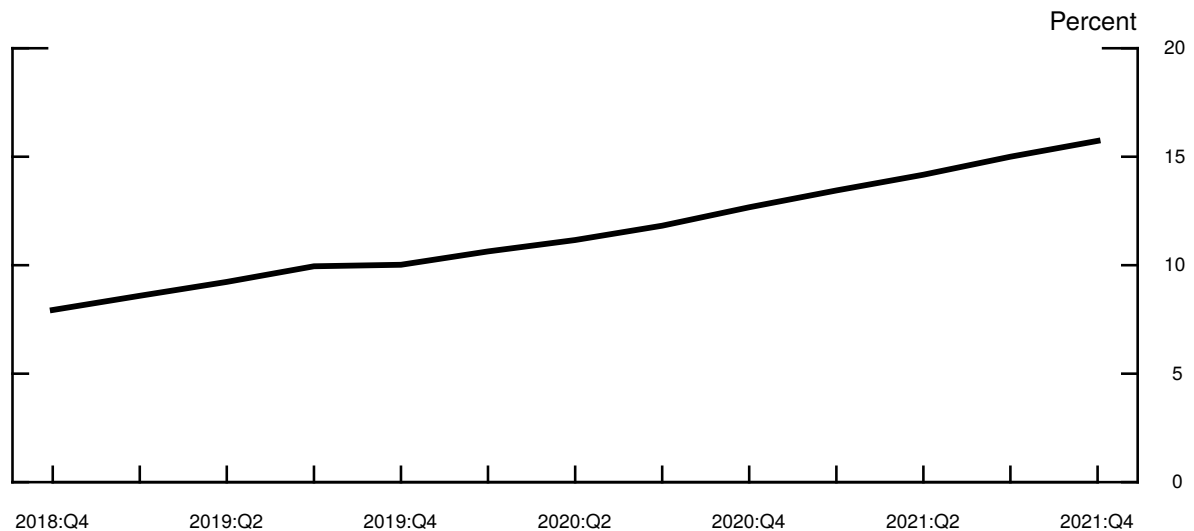
Note: The figures show the probability that the federal funds rate reaches the effective lower bound (ELB) over the next 3 years starting in the given quarter. Details behind the computation of the ELB risk measure are provided in the box "A Guidepost for Dropping the Effective Lower Bound Risk from the Assessment of Risks" in the Risks and Uncertainty section of the April 2017 Tealbook A. The lower panel computes ELB risk over a forward-looking moving 3-year window using stochastic simulations in FRB/US beginning in the current quarter. The simulations are computed around the Tealbook baseline.

Risks & Uncertainty

Authorized for Public Release

Risks & Uncertainty

Alternative Scenarios

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

Measure and scenario	2018 H2	2019	2020	2021	2022	2023-24
Real GDP						
Tealbook baseline and extension	2.9	2.4	2.0	1.4	1.1	1.2
Financial-based recession	2.9	-.7	1.8	1.9	1.0	1.1
Stronger supply side	2.9	3.1	3.0	2.6	1.8	1.8
Supply constraints	2.9	2.4	1.9	1.3	1.1	1.2
Greater interest rate sensitivity	2.9	1.5	1.0	1.1	1.3	1.8
Foreign slowdown	2.9	1.6	1.5	1.4	1.3	1.4
Lower oil prices	2.9	2.4	2.1	1.4	1.1	1.2
Unemployment rate[1]						
Tealbook baseline and extension	3.7	3.4	3.4	3.5	3.8	4.2
Financial-based recession	3.7	4.9	6.4	4.8	4.5	4.8
Stronger supply side	3.7	3.2	3.0	2.9	3.1	3.6
Supply constraints	3.7	3.6	3.6	3.7	4.0	4.4
Greater interest rate sensitivity	3.7	3.7	4.0	4.2	4.4	4.4
Foreign slowdown	3.7	3.7	3.9	4.0	4.2	4.5
Lower oil prices	3.7	3.4	3.3	3.4	3.7	4.2
Total PCE prices						
Tealbook baseline and extension	1.4	1.8	2.0	2.0	2.0	2.1
Financial-based recession	1.4	1.7	1.8	1.9	1.9	2.0
Stronger supply side	1.4	1.8	1.9	1.9	1.9	2.0
Supply constraints	1.4	2.4	2.6	2.5	2.3	2.2
Greater interest rate sensitivity	1.4	1.8	1.9	2.0	2.0	2.0
Foreign slowdown	1.4	1.3	1.6	1.8	2.0	2.1
Lower oil prices	1.4	1.4	1.9	2.0	2.0	2.1
Core PCE prices						
Tealbook baseline and extension	1.5	2.0	2.0	2.0	2.1	2.1
Financial-based recession	1.5	1.9	1.9	2.0	1.9	2.0
Stronger supply side	1.5	2.0	1.9	1.9	1.9	2.0
Supply constraints	1.5	2.6	2.7	2.5	2.3	2.2
Greater interest rate sensitivity	1.5	2.0	2.0	2.0	2.0	2.0
Foreign slowdown	1.5	1.7	1.7	1.9	2.0	2.0
Lower oil prices	1.5	1.9	2.0	2.0	2.0	2.1
Federal funds rate[1]						
Tealbook baseline and extension	2.2	3.5	4.3	4.7	4.5	3.9
Financial-based recession	2.2	2.8	.6	1.0	1.7	2.1
Stronger supply side	2.2	2.7	3.4	3.9	4.1	3.6
Supply constraints	2.2	3.6	4.5	4.9	4.8	4.0
Greater interest rate sensitivity	2.2	3.3	3.6	3.5	3.3	3.1
Foreign slowdown	2.2	2.9	3.2	3.7	3.7	3.4
Lower oil prices	2.2	3.4	4.2	4.6	4.5	3.9

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

Risks & Uncertainty

Forecast Confidence Intervals and Alternative Scenarios

Confidence Intervals Based on FRB/US Stochastic Simulations

- ■ Tealbook baseline and extension
- ■ Financial–based recession
- ■ Stronger supply side
- ■ Supply constraints
- ■ Greater interest rate sensitivity
- ■ Foreign slowdown
- ■ Lower oil prices

Real GDP
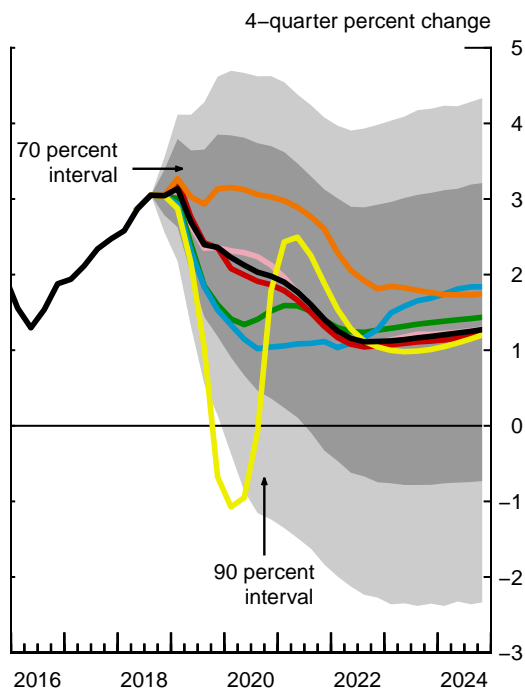
4–quarter percent change

70 percent interval

90 percent interval

Unemployment Rate

Percent

PCE Prices excluding Food and Energy

4–quarter percent change
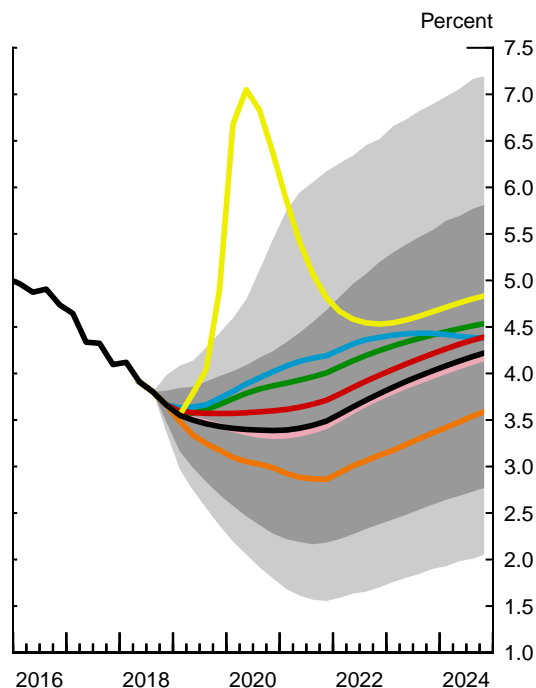
Federal Funds Rate

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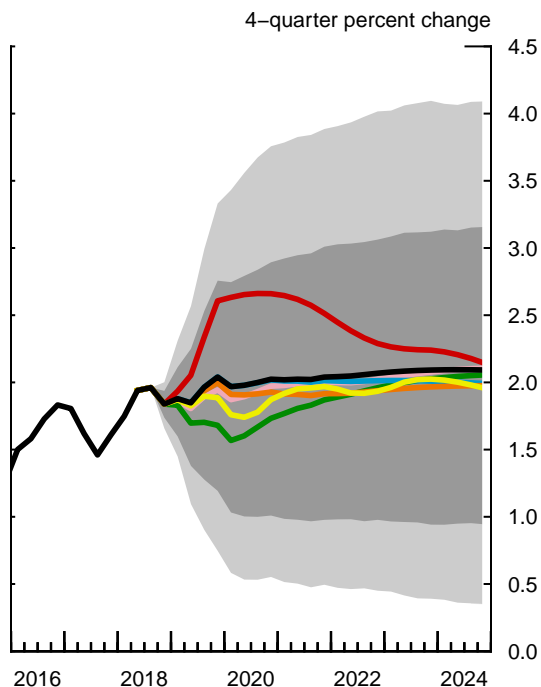
Authorized for Public Release
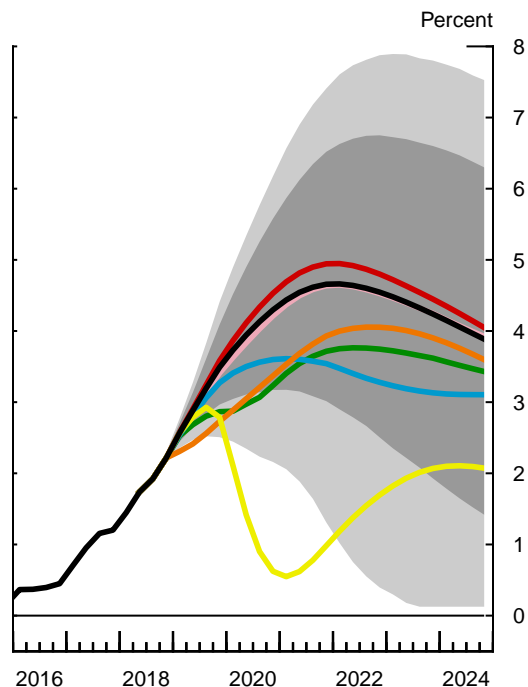
**Selected Tealbook Projections and 70 Percent Confidence Intervals Derived
from Historical Tealbook Forecast Errors and FRB/US Simulations**

Measure	2018	2019	2020	2021	2022	2023	2024
Real GDP							
(percent change, Q4 to Q4)							
Projection	3.0	2.4	2.0	1.4	1.1	1.2	1.3
Confidence interval							
Tealbook forecast errors	2.4–3.9	1.1–4.2	-.2–3.8	-1.0–2.9	. . .	. . .	. . .
FRB/US stochastic simulations	2.8–3.4	1.2–3.9	.4–3.7	-.3–3.1	-.7–2.9	-.8–3.1	-.7–3.2
Civilian unemployment rate							
(percent, Q4)							
Projection	3.7	3.4	3.4	3.5	3.8	4.0	4.2
Confidence interval							
Tealbook forecast errors	3.5–3.8	2.6–3.8	2.3–4.4	2.2–5.1	. . .	. . .	. . .
FRB/US stochastic simulations	3.5–3.8	2.7–4.0	2.3–4.2	2.2–4.7	2.4–5.2	2.6–5.5	2.8–5.8
PCE prices, total							
(percent change, Q4 to Q4)							
Projection	1.8	1.8	2.0	2.0	2.0	2.1	2.1
Confidence interval							
Tealbook forecast errors	1.7–2.1	1.2–3.3	1.1–3.5	1.1–3.3	. . .	. . .	. . .
FRB/US stochastic simulations	1.7–2.0	.9–2.7	.8–3.0	.8–3.1	.9–3.1	.9–3.2	.8–3.2
PCE prices excluding							
food and energy							
(percent change, Q4 to Q4)							
Projection	1.8	2.0	2.0	2.0	2.1	2.1	2.1
Confidence interval							
Tealbook forecast errors	1.7–2.1	1.7–2.6	1.4–2.9	. . .	. . .	. . .	. . .
FRB/US stochastic simulations	1.7–1.9	1.2–2.8	1.0–2.9	1.0–3.0	1.0–3.1	.9–3.1	.9–3.2
Federal funds rate							
(percent, Q4)							
Projection	2.2	3.5	4.3	4.7	4.5	4.2	3.9
Confidence interval							
FRB/US stochastic simulations	2.2–2.3	3.0–4.1	3.2–5.6	3.0–6.5	2.5–6.8	1.9–6.6	1.4–6.3

  Note: Shocks underlying FRB/US stochastic simulations are randomly drawn from the 1969–2017 set of model equation residuals.
Intervals derived from Tealbook forecast errors are based on projections made from 1980 to 2017 for real GDP and unemployment
and from 1998 to 2017 for PCE prices. The intervals for real GDP, unemployment, and total PCE prices are extended into 2021
using information from the Blue Chip survey and forecasts from the CBO and CEA.
  . . . Not applicable.

Risks & Uncertainty

Prediction Intervals Derived from Historical Tealbook Forecast Errors

Risks & Uncertainty

Forecast Error Percentiles

Historical Distributions

Unemployment Rate

Historical revisions | Tealbook forecasts | Augmented Tealbook[1]

— median
— 15% to 85%
— 5% to 95%
- · - data/forecast
I range

Q4 level, percent

1980 to 2017

PCE Inflation

Q4/Q4, percent

1998 to 2017

Real GDP Growth

Q4/Q4, percent

1980 to 2017

Core PCE Inflation

Q4/Q4, percent

1998 to 2017

Historical Distributions

Unemployment Rate

Annual, percent

— median
■ 15% to 85%
■ 5% to 95%
■ 2.5% to 97.5%
I range

1930 to 2017 | 1947 to 2017 | 1980 to 2017

Real GDP Growth

Annual, percent

1930 to 2017 | 1947 to 2017 | 1980 to 2017

PCE Inflation

Annual, percent

1930 to 2017 | 1947 to 2017 | 1998 to 2017

Core PCE Inflation

Annual, percent

1930 to 2017 | 1947 to 2017 | 1998 to 2017

Note: See the technical note in the appendix for more information on this exhibit.
1. Augmented Tealbook prediction intervals use 2- and 3-year-ahead forecast errors from Blue Chip, CBO, and CEA to extend the Tealbook prediction intervals through 2021.

Risks & Uncertainty

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

Measure and projection	2018		2019		2020	
	September Tealbook	Current Tealbook	September Tealbook	Current Tealbook	September Tealbook	Current Tealbook
Real GDP						
Staff	3.1	3.0	2.5	2.4	1.9	2.0
FRB/US	3.2	3.0	1.3	1.1	1.1	1.0
EDO	3.2	3.0	2.2	2.1	2.1	1.8
Unemployment rate[1]						
Staff	3.7	3.7	3.3	3.4	3.2	3.4
FRB/US	3.8	3.7	4.3	4.2	4.7	4.7
EDO	4.0	3.9	4.2	4.1	4.6	4.5
Total PCE prices						
Staff	2.0	1.8	1.9	1.8	2.0	2.0
FRB/US	1.9	1.8	1.8	1.7	1.9	1.9
EDO	1.9	1.8	1.8	1.8	2.1	2.1
Core PCE prices						
Staff	1.9	1.8	2.0	2.0	2.1	2.0
FRB/US	1.8	1.8	1.9	1.9	2.1	2.0
EDO	1.8	1.8	1.8	1.8	2.1	2.1
Federal funds rate[1]						
Staff	2.4	2.2	3.7	3.5	4.6	4.3
FRB/US	2.3	2.2	3.1	2.9	3.3	3.0
EDO	2.2	2.2	3.0	3.1	3.5	3.5

1. Percent, average for Q4.

Estimates of the Short-Run Real Natural Rate of Interest

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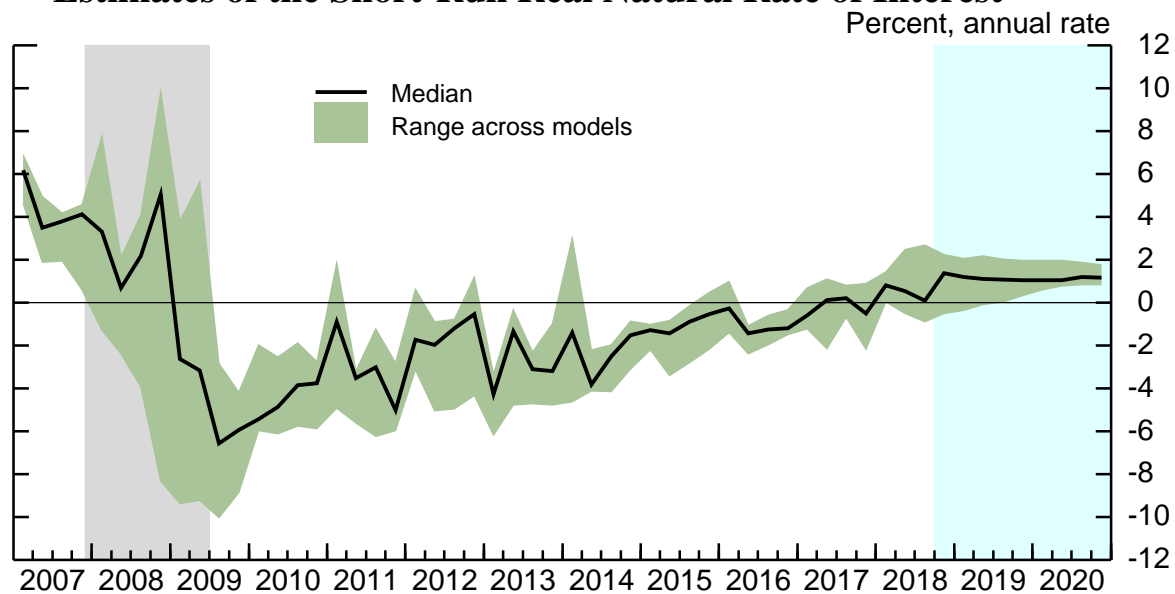
Note: Estimates are based on the four models from the System DSGE project; for more information, see the box "Estimates of the Short-Run Real Natural Rate of Interest" in the March 2016 Tealbook. The gray shaded bar indicates a period of recession as defined by the National Bureau of Economic Research.

Authorized for Public Release

Assessment of Key Macroeconomic Risks

Probability of Inflation Events
(4 quarters ahead)

Probability that the 4-quarter change in total PCE prices will be . . .	Staff	FRB/US	EDO	BVAR
Greater than 3 percent				
Current Tealbook	.08	.05	.04	.05
Previous Tealbook	.10	.08	.03	.04
Less than 1 percent				
Current Tealbook	.16	.22	.09	.20
Previous Tealbook	.13	.17	.10	.23

Probability of Unemployment Events
(4 quarters ahead)

Probability that the unemployment rate will . . .	Staff	FRB/US	EDO	BVAR
Increase by 1 percentage point				
Current Tealbook	.02	.18	.22	.03
Previous Tealbook	.00	.09	.19	.03
Decrease by 1 percentage point				
Current Tealbook	.12	.00	.01	.10
Previous Tealbook	.23	.01	.02	.09

Probability of Near-Term Recession

Probability that real GDP declines in the next two quarters	Staff	FRB/US	EDO	BVAR	Factor Model
Current Tealbook	.01	.02	.06	.02	.00
Previous Tealbook	.01	.02	.05	.02	.03

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.

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

Interval	Nominal GDP		Real GDP		PCE price index		Core PCE price index		Unemployment rate[1]	
	10/25/18	12/07/18	10/25/18	12/07/18	10/25/18	12/07/18	10/25/18	12/07/18	10/25/18	12/07/18
Quarterly										
2018:Q1	4.3	4.3	2.2	2.2	2.5	2.5	2.2	2.2	4.1	4.1
Q2	7.6	7.6	4.2	4.2	2.0	2.0	2.1	2.1	3.9	3.9
Q3	4.3	5.0	2.9	3.5	1.5	1.5	1.5	1.5	3.8	3.8
Q4	4.6	3.9	2.6	2.3	1.9	1.4	1.8	1.6	3.6	3.7
2019:Q1	4.7	4.6	2.6	2.6	2.1	1.7	2.2	2.3	3.6	3.6
Q2	4.9	4.7	2.4	2.4	2.0	1.9	2.0	2.0	3.4	3.5
Q3	4.4	4.4	2.3	2.3	1.9	1.9	2.0	2.0	3.3	3.5
Q4	4.2	4.1	2.2	2.1	1.9	1.8	2.0	1.9	3.3	3.4
2020:Q1	4.1	4.1	2.0	2.1	2.0	2.0	2.0	2.1	3.3	3.4
Q2	4.3	4.2	1.9	2.0	1.9	2.0	2.0	2.0	3.3	3.4
Q3	4.1	4.1	1.9	2.0	1.9	2.0	2.1	2.0	3.3	3.4
Q4	3.8	3.9	1.8	1.9	1.9	1.9	2.1	2.0	3.3	3.4
Two-quarter[2]										
2018:Q2	5.9	5.9	3.2	3.2	2.2	2.2	2.1	2.1	-.2	-.2
Q4	4.5	4.4	2.8	2.9	1.7	1.4	1.7	1.5	-.3	-.2
2019:Q2	4.8	4.7	2.5	2.5	2.0	1.8	2.1	2.1	-.2	-.2
Q4	4.3	4.2	2.2	2.2	1.9	1.9	2.0	1.9	-.1	-.1
2020:Q2	4.2	4.2	2.0	2.0	1.9	2.0	2.0	2.0	.0	.0
Q4	4.0	4.0	1.8	1.9	1.9	1.9	2.1	2.0	.0	.0
Four-quarter[3]										
2017:Q4	4.5	4.5	2.5	2.5	1.8	1.8	1.6	1.6	-.6	-.6
2018:Q4	5.2	5.2	3.0	3.0	2.0	1.8	1.9	1.8	-.5	-.4
2019:Q4	4.6	4.4	2.4	2.4	2.0	1.8	2.0	2.0	-.3	-.3
2020:Q4	4.1	4.1	1.9	2.0	1.9	2.0	2.0	2.0	.0	.0
2021:Q4	3.5	3.6	1.4	1.4	1.9	2.0	2.0	2.0	.1	.1
Annual										
2017	4.2	4.2	2.2	2.2	1.8	1.8	1.6	1.6	4.4	4.4
2018	5.1	5.2	2.8	2.9	2.1	2.0	1.9	1.9	3.9	3.9
2019	4.8	4.7	2.6	2.6	1.9	1.7	2.0	1.9	3.4	3.5
2020	4.2	4.2	2.1	2.1	1.9	1.9	2.0	2.0	3.3	3.4
2021	3.7	3.8	1.6	1.7	1.9	2.0	2.0	2.0	3.4	3.4

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

Class II FOMC – Restricted (FR) December 7, 2018

Greensheets

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

Item	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2018[1]	2019[1]	2020[1]	2021[1]
Real GDP	4.2	3.5	2.3	2.6	2.4	2.3	2.1	2.1	2.0	2.0	1.9	3.0	2.4	2.0	1.4
Previous Tealbook	4.2	2.9	2.6	2.6	2.4	2.3	2.2	2.0	1.9	1.9	1.8	3.0	2.4	1.9	1.4
Final sales	5.4	1.2	2.8	2.6	2.4	2.2	2.2	2.2	2.0	1.8	1.9	2.8	2.3	2.0	1.6
Previous Tealbook	5.4	1.1	3.0	2.8	2.5	2.1	2.1	2.0	1.9	1.7	1.9	2.9	2.4	1.9	1.6
Priv. dom. final purch.	4.3	3.2	2.9	2.6	2.7	2.5	2.4	2.2	2.1	2.1	2.0	3.1	2.6	2.1	1.7
Previous Tealbook	4.3	3.0	3.3	2.9	2.6	2.3	2.2	2.1	2.0	1.9	1.9	3.1	2.5	2.0	1.7
Personal cons. expend.	3.8	3.7	3.0	2.5	2.5	2.5	2.5	2.5	2.4	2.3	2.2	2.8	2.5	2.3	1.9
Previous Tealbook	3.8	3.2	2.7	2.7	2.4	2.3	2.2	2.2	2.2	2.1	2.1	2.5	2.4	2.2	1.9
Durables	8.6	3.9	4.0	3.9	2.0	2.0	2.0	1.9	1.8	1.7	1.6	3.6	2.5	1.8	1.3
Nondurables	4.0	5.3	2.6	3.4	2.6	2.6	2.6	2.6	2.5	2.4	2.3	3.0	2.8	2.4	2.0
Services	3.0	3.3	3.0	2.0	2.6	2.5	2.6	2.5	2.5	2.4	2.3	2.6	2.4	2.4	2.0
Residential investment	-1.3	-2.9	-5.4	-2.6	1.0	1.0	.8	.4	.3	.2	.1	-3.3	.0	.2	.2
Previous Tealbook	-1.3	-5.2	-1.3	-.3	.7	.5	1.0	.6	.2	.3	.5	-2.8	.5	.4	1.6
Nonres. priv. fixed invest.	8.7	2.1	5.1	4.8	4.0	3.1	2.5	1.5	1.4	1.7	1.6	6.8	3.6	1.5	.9
Previous Tealbook	8.7	4.0	7.6	4.8	4.0	3.0	2.4	1.7	1.5	1.4	1.3	7.9	3.6	1.5	.8
Equipment & intangibles	7.1	3.8	7.1	5.0	4.7	3.5	2.5	2.1	2.1	2.3	2.4	7.2	3.9	2.2	1.6
Previous Tealbook	7.1	7.4	8.3	5.3	4.3	3.2	2.6	2.1	2.0	1.9	1.9	8.4	3.9	2.0	1.7
Nonres. structures	14.5	-3.4	-1.2	3.8	1.7	1.7	2.3	-.3	-1.3	-.5	-.7	5.6	2.4	-.7	-1.7
Previous Tealbook	14.5	-6.5	5.4	3.1	3.1	2.4	1.9	.3	-.2	-.5	-.8	6.5	2.6	-.3	-2.1
Net exports[2]	-841	-946	-946	-946	-963	-983	-997	-998	-1010	-1032	-1034	-909	-972	-1018	-1046
Previous Tealbook[2]	-841	-939	-945	-944	-952	-967	-973	-979	-990	-1007	-1004	-907	-959	-995	-1018
Exports	9.3	-4.4	4.9	2.4	2.2	2.5	2.0	2.6	3.0	3.1	3.2	3.2	2.3	3.0	3.2
Imports	-.6	9.2	3.6	1.8	3.5	4.1	3.1	2.0	3.6	4.6	2.5	3.7	3.1	3.2	2.8
Gov't. cons. & invest.	2.5	2.5	1.5	1.9	1.9	1.9	2.0	1.7	2.1	1.9	1.1	2.0	1.9	1.7	1.0
Previous Tealbook	2.5	2.1	1.8	1.8	1.8	1.9	2.0	1.7	2.0	1.9	1.1	2.0	1.9	1.7	1.1
Federal	3.7	3.5	3.0	3.1	2.9	3.3	3.5	3.0	3.8	3.5	1.2	3.2	3.2	2.9	1.0
Defense	6.0	4.9	4.0	3.6	3.1	3.9	4.1	3.3	4.4	3.3	1.0	4.5	3.7	3.0	1.0
Nondefense	.5	1.5	1.5	2.4	2.7	2.5	2.6	2.6	3.0	3.7	1.6	1.4	2.5	2.7	1.0
State & local	1.8	1.9	.7	1.2	1.3	1.1	1.1	1.0	1.0	1.0	1.0	1.3	1.2	1.0	1.0
Change in priv. inventories[2]	-37	89	52	53	56	64	60	51	51	59	58	34	58	55	47
Previous Tealbook[2]	-37	56	33	20	19	27	29	30	32	41	33	21	24	34	15

1. Change from fourth quarter of previous year to fourth quarter of year indicated.
2. Billions of chained (2012) dollars; annual values show annual averages.

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	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Real GDP	1.5	2.6	2.7	2.0	1.9	2.5	3.0	2.4	2.0	1.4
Previous Tealbook	1.5	2.6	2.7	2.0	1.9	2.5	3.0	2.4	1.9	1.4
Final sales	1.9	2.0	3.0	1.9	2.1	2.6	2.8	2.3	2.0	1.6
Previous Tealbook	1.9	2.0	3.0	1.9	2.1	2.6	2.9	2.4	1.9	1.6
Priv. dom. final purch.	2.6	2.6	4.3	2.7	2.7	3.3	3.1	2.6	2.1	1.7
Previous Tealbook	2.6	2.6	4.3	2.7	2.7	3.3	3.1	2.5	2.0	1.7
Personal cons. expend.	1.6	1.9	3.8	3.0	2.8	2.7	2.8	2.5	2.3	1.9
Previous Tealbook	1.6	1.9	3.8	3.0	2.8	2.7	2.5	2.4	2.2	1.9
Durables	6.3	5.0	9.2	6.0	6.8	7.7	3.6	2.5	1.8	1.3
Nondurables	.7	2.8	3.0	3.0	2.0	3.0	3.0	2.8	2.4	2.0
Services	1.2	1.1	3.2	2.6	2.4	1.8	2.6	2.4	2.4	2.0
Residential investment	15.4	7.1	7.8	8.9	4.5	3.8	-3.3	.0	.2	.2
Previous Tealbook	15.4	7.1	7.8	8.9	4.5	3.8	-2.8	.5	.4	1.6
Nonres. priv. fixed invest.	5.6	5.4	6.4	-.7	1.8	6.3	6.8	3.6	1.5	.9
Previous Tealbook	5.6	5.4	6.4	-.7	1.8	6.3	7.9	3.6	1.5	.8
Equipment & intangibles	6.1	5.1	5.6	2.6	1.6	7.3	7.2	3.9	2.2	1.6
Previous Tealbook	6.1	5.1	5.6	2.6	1.6	7.3	8.4	3.9	2.0	1.7
Nonres. structures	4.0	6.7	8.8	-10.7	2.5	2.9	5.6	2.4	-.7	-1.7
Previous Tealbook	4.0	6.7	8.8	-10.7	2.5	2.9	6.5	2.6	-.3	-2.1
Net exports[1]	-569	-533	-578	-725	-786	-859	-909	-972	-1018	-1046
Previous Tealbook[1]	-569	-533	-578	-725	-786	-859	-907	-959	-995	-1018
Exports	2.1	6.0	3.0	-1.6	.8	4.7	3.2	2.3	3.0	3.2
Imports	.6	3.0	6.7	3.4	3.1	5.4	3.7	3.1	3.2	2.8
Gov't. cons. & invest.	-2.1	-2.4	.2	2.2	.9	.1	2.0	1.9	1.7	1.0
Previous Tealbook	-2.1	-2.4	.2	2.2	.9	.1	2.0	1.9	1.7	1.1
Federal	-2.6	-6.1	-1.2	1.2	.2	1.3	3.2	3.2	2.9	1.0
Defense	-4.7	-6.5	-3.6	-.2	-.7	1.3	4.5	3.7	3.0	1.0
Nondefense	1.2	-5.5	2.7	3.4	1.5	1.3	1.4	2.5	2.7	1.0
State & local	-1.7	.2	1.1	2.8	1.4	-.5	1.3	1.2	1.0	1.0
Change in priv. inventories[1]	71	109	87	129	23	23	34	58	55	47
Previous Tealbook[1]	71	109	87	129	23	23	21	24	34	15

1. Billions of chained (2012) dollars; annual values show annual averages.

Greensheets

Greensheets

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

Item	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2018[1]	2019[1]	2020[1]	2021[1]
Real GDP	4.2	3.5	2.3	2.6	2.4	2.3	2.1	2.1	2.0	2.0	1.9	3.0	2.4	2.0	1.4
Previous Tealbook	4.2	2.9	2.6	2.6	2.4	2.3	2.2	2.0	1.9	1.9	1.8	3.0	2.4	1.9	1.4
Final sales	5.3	1.2	2.8	2.6	2.3	2.2	2.2	2.2	2.0	1.8	1.9	2.8	2.3	2.0	1.6
Previous Tealbook	5.3	1.1	3.0	2.8	2.5	2.1	2.1	2.0	1.9	1.7	1.9	2.9	2.4	1.9	1.6
Priv. dom. final purch.	3.7	2.7	2.5	2.2	2.3	2.2	2.1	1.9	1.8	1.8	1.7	2.7	2.2	1.8	1.4
Previous Tealbook	3.7	2.5	2.8	2.5	2.2	2.0	1.9	1.8	1.7	1.7	1.6	2.7	2.2	1.7	1.4
Personal cons. expend.	2.6	2.5	2.0	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.5	1.9	1.7	1.6	1.3
Previous Tealbook	2.6	2.2	1.8	1.8	1.7	1.6	1.5	1.5	1.5	1.5	1.4	1.7	1.6	1.5	1.3
Durables	.6	.3	.3	.3	.1	.1	.1	.1	.1	.1	.1	.3	.2	.1	.1
Nondurables	.6	.7	.4	.5	.4	.4	.4	.4	.3	.3	.3	.4	.4	.3	.3
Services	1.4	1.5	1.4	.9	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.2	1.1	1.1	.9
Residential investment	-.1	-.1	-.2	-.1	.0	.0	.0	.0	.0	.0	.0	-.1	.0	.0	.0
Previous Tealbook	-.1	-.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	-.1	.0	.0	.1
Nonres. priv. fixed invest.	1.2	.3	.7	.6	.5	.4	.3	.2	.2	.2	.2	.9	.5	.2	.1
Previous Tealbook	1.2	.5	1.0	.7	.6	.4	.3	.2	.2	.2	.2	1.1	.5	.2	.1
Equipment & intangibles	.7	.4	.7	.5	.5	.4	.3	.2	.2	.2	.2	.7	.4	.2	.2
Previous Tealbook	.7	.8	.9	.6	.5	.3	.3	.2	.2	.2	.2	.9	.4	.2	.2
Nonres. structures	.4	-.1	.0	.1	.1	.1	.1	.0	.0	.0	.0	.2	.1	.0	-.1
Previous Tealbook	.4	-.2	.2	.1	.1	.1	.1	.0	.0	.0	.0	.2	.1	.0	-.1
Net exports	1.2	-1.9	.1	.0	-.3	-.3	-.2	.0	-.2	-.3	.0	-.2	-.2	-.1	.0
Previous Tealbook	1.2	-1.8	-.1	.0	-.1	-.2	-.1	-.1	-.2	-.3	.1	-.2	-.1	-.1	.0
Exports	1.1	-.6	.6	.3	.3	.3	.2	.3	.4	.4	.4	.4	.3	.4	.4
Imports	.1	-1.4	-.5	-.3	-.5	-.6	-.5	-.3	-.5	-.7	-.4	-.6	-.5	-.5	-.4
Gov't. cons. & invest.	.4	.4	.3	.3	.3	.3	.3	.3	.4	.3	.2	.3	.3	.3	.2
Previous Tealbook	.4	.4	.3	.3	.3	.3	.3	.3	.4	.3	.2	.3	.3	.3	.2
Federal	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.1	.2	.2	.2	.1
Defense	.2	.2	.1	.1	.1	.1	.2	.1	.2	.1	.0	.2	.1	.1	.0
Nondefense	.0	.0	.0	.1	.1	.1	.1	.1	.1	.1	.0	.0	.1	.1	.0
State & local	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
Change in priv. inventories	-1.2	2.3	-.6	.0	.1	.1	-.1	-.2	.0	.1	.0	.2	.0	.0	-.2
Previous Tealbook	-1.2	1.8	-.4	-.3	.0	.2	.0	.0	.0	.2	-.1	.1	.0	.0	-.2

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

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

Item	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2018[1]	2019[1]	2020[1]	2021[1]
GDP chain-wt. price index	3.0	1.7	1.8	2.0	2.2	2.1	1.9	2.0	2.2	2.1	2.0	2.1	2.0	2.1	2.1
Previous Tealbook	3.0	1.9	2.0	2.1	2.4	2.1	2.0	2.1	2.3	2.1	2.0	2.2	2.1	2.1	2.1
PCE chain-wt. price index	2.0	1.5	1.4	1.7	1.9	1.9	1.8	2.0	2.0	2.0	1.9	1.8	1.8	2.0	2.0
Previous Tealbook	2.0	1.5	1.9	2.1	2.0	1.9	1.9	2.0	1.9	1.9	1.9	2.0	2.0	1.9	1.9
Energy	.7	3.4	-.4	-12.9	-.8	.0	.2	-.4	-.4	-.1	.0	4.0	-3.5	-.2	.5
Previous Tealbook	.7	3.5	5.3	-.4	.4	-.2	-.8	-1.0	-1.1	-1.2	-1.1	5.4	-.2	-1.1	-1.0
Food	1.2	.4	.2	2.1	2.3	2.4	2.4	2.3	2.3	2.3	2.3	.5	2.3	2.3	2.3
Previous Tealbook	1.2	.4	1.3	2.1	2.2	2.6	3.0	2.8	2.6	2.5	2.4	.8	2.5	2.6	2.3
Ex. food & energy	2.1	1.5	1.6	2.3	2.0	2.0	1.9	2.1	2.0	2.0	2.0	1.8	2.0	2.0	2.0
Previous Tealbook	2.1	1.5	1.8	2.2	2.0	2.0	2.0	2.0	2.0	2.1	2.1	1.9	2.0	2.0	2.0
Ex. food & energy, market based	2.2	1.2	1.2	2.3	1.8	1.8	1.7	1.9	1.9	1.9	1.8	1.6	1.9	1.9	1.9
Previous Tealbook	2.2	1.2	1.6	2.1	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.7	1.9	1.9	1.9
CPI	1.7	2.0	1.8	1.6	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.0	2.3	2.4
Previous Tealbook	1.7	2.0	2.2	2.4	2.3	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Ex. food & energy	1.8	2.0	2.1	2.8	2.4	2.4	2.3	2.5	2.5	2.5	2.5	2.2	2.5	2.5	2.5
Previous Tealbook	1.8	2.0	2.0	2.6	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.2	2.5	2.5	2.5
ECI, hourly compensation[2]	2.4	3.0	2.6	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9	3.0	2.9	2.9	2.9
Previous Tealbook[2]	2.4	2.3	2.3	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.8	2.8	2.9	2.9
Business sector															
Output per hour	3.6	2.0	.9	.7	.6	1.1	1.1	1.1	1.2	1.3	1.3	1.8	.9	1.2	1.2
Previous Tealbook	3.4	1.4	1.1	.7	1.2	1.0	1.1	1.1	1.2	1.3	1.2	1.6	1.0	1.2	1.1
Compensation per hour	.5	2.8	2.9	3.7	3.9	3.9	3.9	3.9	3.9	3.9	3.9	2.6	3.9	3.9	3.8
Previous Tealbook	2.3	3.4	3.2	3.9	3.9	4.0	4.1	4.0	4.0	4.0	4.0	3.3	4.0	4.0	3.9
Unit labor costs	-2.9	.8	1.9	2.9	3.3	2.8	2.8	2.7	2.6	2.6	2.6	.8	3.0	2.6	2.6
Previous Tealbook	-1.1	2.0	2.1	3.1	2.7	3.0	2.9	2.8	2.7	2.7	2.7	1.7	2.9	2.7	2.7
Core goods imports chain-wt. price index[3]	.6	-1.2	1.0	.3	.8	.9	1.0	1.1	1.1	1.0	1.0	.7	.8	1.0	.9
Previous Tealbook[3]	.6	-2.2	-1.1	.1	.6	1.0	.9	.9	.8	.8	.7	.0	.6	.8	.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

Authorized for Public Release

Greensheets

Changes in Prices and Costs

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

Item	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
GDP chain-wt. price index	2.1	1.8	1.6	.9	1.5	2.0	2.1	2.0	2.1	2.1
Previous Tealbook	2.1	1.8	1.6	.9	1.5	2.0	2.2	2.1	2.1	2.1
PCE chain-wt. price index	1.8	1.2	1.2	.3	1.6	1.8	1.8	1.8	2.0	2.0
Previous Tealbook	1.8	1.2	1.2	.3	1.6	1.8	2.0	2.0	1.9	1.9
Energy	2.1	-2.9	-6.9	-16.4	2.1	8.1	4.0	-3.5	-.2	.5
Previous Tealbook	2.1	-2.9	-6.9	-16.4	2.1	8.1	5.4	-.2	-1.1	-1.0
Food	1.3	.7	2.8	.3	-1.8	.7	.5	2.3	2.3	2.3
Previous Tealbook	1.3	.7	2.8	.3	-1.8	.7	.8	2.5	2.6	2.3
Ex. food & energy	1.8	1.6	1.5	1.2	1.8	1.6	1.8	2.0	2.0	2.0
Previous Tealbook	1.8	1.6	1.5	1.2	1.8	1.6	1.9	2.0	2.0	2.0
Ex. food & energy, market based	1.5	1.1	1.2	1.1	1.5	1.2	1.6	1.9	1.9	1.9
Previous Tealbook	1.5	1.1	1.2	1.1	1.5	1.2	1.7	1.9	1.9	1.9
CPI	1.9	1.2	1.2	.4	1.8	2.1	2.2	2.0	2.3	2.4
Previous Tealbook	1.9	1.2	1.2	.4	1.8	2.1	2.3	2.3	2.3	2.3
Ex. food & energy	1.9	1.7	1.7	2.0	2.2	1.7	2.2	2.5	2.5	2.5
Previous Tealbook	1.9	1.7	1.7	2.0	2.2	1.7	2.2	2.5	2.5	2.5
ECI, hourly compensation[1]	1.8	2.0	2.3	1.9	2.2	2.6	3.0	2.9	2.9	2.9
Previous Tealbook[1]	1.8	2.0	2.3	1.9	2.2	2.6	2.8	2.8	2.9	2.9
Business sector										
Output per hour	.2	1.8	.1	.7	1.1	.8	1.8	.9	1.2	1.2
Previous Tealbook	.2	1.8	.1	.7	1.1	.8	1.6	1.0	1.2	1.1
Compensation per hour	5.9	-.3	2.8	2.5	2.1	3.0	2.6	3.9	3.9	3.8
Previous Tealbook	5.9	-.3	2.8	2.5	2.1	3.0	3.3	4.0	4.0	3.9
Unit labor costs	5.7	-2.0	2.7	1.8	1.0	2.3	.8	3.0	2.6	2.6
Previous Tealbook	5.7	-2.0	2.7	1.8	1.0	2.3	1.7	2.9	2.7	2.7
Core goods imports chain-wt. price index[2]	-.4	-2.2	-.4	-4.4	-.7	1.1	.7	.8	1.0	.9
Previous Tealbook[2]	-.4	-2.2	-.4	-4.4	-.7	1.1	.0	.6	.8	.7

1. Private-industry workers.
2. Core goods imports exclude computers, semiconductors, oil, and natural gas.

Other Macroeconomic Indicators

Item	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2018[1]	2019[1]	2020[1]	2021[1]
Employment and production															
Nonfarm payroll employment[2]	217	190	192	187	171	163	147	144	131	121	117	204	167	128	87
Unemployment rate[3]	3.9	3.8	3.7	3.6	3.5	3.5	3.4	3.4	3.4	3.4	3.4	3.7	3.4	3.4	3.5
Previous Tealbook[3]	3.9	3.8	3.6	3.6	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.6	3.3	3.3	3.4
Natural rate of unemployment[3]	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Previous Tealbook[3]	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Employment-to-Population Ratio[3]	60.4	60.4	60.6	60.7	60.7	60.7	60.8	60.8	60.8	60.7	60.7	60.6	60.8	60.7	60.4
Employment-to-Population Trend[3]	59.8	59.8	59.8	59.7	59.7	59.6	59.6	59.6	59.5	59.5	59.5	59.8	59.6	59.5	59.3
Output gap[4]	1.6	2.0	2.2	2.4	2.5	2.7	2.8	2.8	2.8	2.9	2.9	2.2	2.8	2.9	2.4
Previous Tealbook[4]	1.8	2.2	2.4	2.6	2.7	2.9	3.0	3.0	3.0	3.0	2.9	2.4	3.0	2.9	2.4
Industrial production[5]	5.3	4.7	3.8	2.2	1.9	1.4	1.4	1.5	1.1	1.0	.9	4.1	1.7	1.1	.4
Previous Tealbook[5]	5.3	3.3	2.0	1.5	2.2	2.0	1.8	1.7	1.1	1.1	.9	3.3	1.9	1.2	.5
Manufacturing industr. prod.[5]	2.3	3.5	3.8	1.6	1.3	1.3	1.3	1.0	1.0	1.0	.7	2.9	1.4	.9	.2
Previous Tealbook[5]	2.3	2.8	1.9	.8	1.8	1.9	1.3	1.1	1.1	1.2	.8	2.2	1.5	1.1	.4
Capacity utilization rate - mfg.[3]	75.5	75.9	76.3	76.5	76.6	76.6	76.7	76.8	76.9	77.0	77.0	76.3	76.7	77.0	76.8
Previous Tealbook[3]	75.5	75.8	75.9	75.8	76.0	76.1	76.2	76.3	76.4	76.5	76.5	75.9	76.2	76.5	76.5
Housing starts[6]	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.2	1.2	1.2
Light motor vehicle sales[6]	17.2	16.9	17.4	17.1	17.0	17.0	16.9	16.9	16.8	16.8	16.7	17.2	17.0	16.8	16.7
Income and saving															
Nominal GDP[5]	7.6	5.0	3.9	4.6	4.7	4.4	4.1	4.1	4.2	4.1	3.9	5.2	4.4	4.1	3.6
Real disposable pers. income[5]	1.8	2.4	2.8	3.4	2.8	2.2	2.3	3.4	2.1	1.4	2.1	2.8	2.7	2.2	1.8
Previous Tealbook[5]	2.5	2.3	2.3	2.7	2.4	2.3	2.4	3.7	2.3	1.6	2.1	2.9	2.4	2.4	1.9
Personal saving rate[3]	6.7	6.3	6.2	6.4	6.4	6.4	6.3	6.5	6.5	6.3	6.3	6.2	6.3	6.3	6.1
Previous Tealbook[3]	6.8	6.6	6.5	6.5	6.5	6.5	6.5	6.9	6.9	6.7	6.8	6.5	6.5	6.8	6.7
Corporate profits[7]	12.5	13.8	.7	-.7	1.8	.4	-2.3	-1.1	1.6	1.5	.7	7.9	-.2	.7	-.4
Profit share of GNP[3]	10.8	11.1	11.0	10.9	10.8	10.7	10.6	10.4	10.4	10.3	10.3	11.0	10.6	10.3	9.9
Gross national saving rate[3]	18.5	18.6	18.4	18.4	18.4	18.3	18.3	18.1	18.1	18.0	18.0	18.4	18.3	18.0	17.7
Net national saving rate[3]	3.3	3.9	3.4	3.2	3.2	3.1	2.9	2.7	2.6	2.5	2.4	3.4	2.9	2.4	1.9

1. Change from fourth quarter of previous year to fourth quarter of year indicated, unless otherwise indicated.
2. Average monthly change, thousands.
3. Percent; annual values are for the fourth quarter of the year indicated.
4. Percent difference between actual and potential output; 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

Greensheets

Other Macroeconomic Indicators

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

Item	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Employment and production										
Nonfarm payroll employment[1]	179	192	250	226	195	182	204	167	128	87
Unemployment rate[2]	7.8	7.0	5.7	5.0	4.7	4.1	3.7	3.4	3.4	3.5
Previous Tealbook[2]	7.8	7.0	5.7	5.0	4.7	4.1	3.6	3.3	3.3	3.4
Natural rate of unemployment[2]	5.6	5.4	5.1	4.9	4.8	4.6	4.6	4.6	4.6	4.6
Previous Tealbook[2]	5.6	5.4	5.1	4.9	4.8	4.6	4.6	4.6	4.6	4.6
Employment-to-Population Ratio[2]	58.7	58.5	59.3	59.4	59.8	60.1	60.6	60.8	60.7	60.4
Employment-to-Population Trend[2]	60.3	60.2	60.1	60.0	59.9	59.9	59.8	59.6	59.5	59.3
Output gap[3]	-3.7	-2.8	-.8	-.2	.3	1.1	2.2	2.8	2.9	2.4
Previous Tealbook[3]	-3.7	-2.8	-.8	-.2	.4	1.2	2.4	3.0	2.9	2.4
Industrial production	2.2	2.3	3.4	-3.3	-.5	3.0	4.1	1.7	1.1	.4
Previous Tealbook	2.2	2.3	3.4	-3.3	-.5	3.0	3.3	1.9	1.2	.5
Manufacturing industr. prod.	1.4	1.1	1.4	-1.6	-.1	1.9	2.9	1.4	.9	.2
Previous Tealbook	1.4	1.1	1.4	-1.6	-.1	1.9	2.2	1.5	1.1	.4
Capacity utilization rate - mfg.[2]	74.7	75.1	76.3	75.4	74.4	75.2	76.3	76.7	77.0	76.8
Previous Tealbook[2]	74.7	75.1	76.3	75.4	74.4	75.2	75.9	76.2	76.5	76.5
Housing starts[4]	.8	.9	1.0	1.1	1.2	1.2	1.3	1.2	1.2	1.2
Light motor vehicle sales[4]	14.4	15.5	16.5	17.4	17.5	17.1	17.2	17.0	16.8	16.7
Income and saving										
Nominal GDP	3.6	4.4	4.4	2.9	3.4	4.5	5.2	4.4	4.1	3.6
Real disposable pers. income	4.9	-2.5	5.2	3.1	1.6	2.8	2.8	2.7	2.2	1.8
Previous Tealbook	4.9	-2.5	5.2	3.1	1.6	2.8	2.9	2.4	2.4	1.9
Personal saving rate[2]	10.2	6.3	7.4	7.4	6.4	6.3	6.2	6.3	6.3	6.1
Previous Tealbook[2]	10.2	6.3	7.4	7.4	6.4	6.3	6.5	6.5	6.8	6.7
Corporate profits[5]	.7	3.9	5.9	-10.7	7.6	3.3	7.9	-.2	.7	-.4
Profit share of GNP[2]	11.9	11.8	12.0	10.4	10.8	10.7	11.0	10.6	10.3	9.9
Gross national saving rate[2]	18.8	19.2	20.2	19.4	18.3	18.3	18.4	18.3	18.0	17.7
Net national saving rate[2]	3.7	4.0	5.1	4.3	3.0	3.1	3.4	2.9	2.4	1.9

1. Average monthly change, thousands.
2. Percent; values are for the fourth quarter of the year indicated.
3. Percent difference between actual and potential output; a negative number indicates that the economy is operating below potential. Values are for the fourth quarter of the year indicated.
4. Level, millions; values are annual averages.
5. Percent change, with inventory valuation and capital consumption adjustments.

Authorized for Public Release

Staff Projections of Government-Sector Accounts and Related Items

Item	2016	2017	2018	2019	2020	2021	2018 Q3	2018 Q4	2019 Q1	2019 Q2
Unified federal budget[1]					Nominal dollars, billions					
Receipts	3,268	3,316	3,329	3,413	3,576	3,707	788	763	711	1,103
Outlays	3,853	3,982	4,108	4,403	4,743	5,022	960	1,132	1,089	1,121
Surplus/deficit	-585	-665	-779	-991	-1,167	-1,315	-172	-369	-378	-18
					Percent of GDP					
Surplus/deficit	-3.2	-3.5	-3.8	-4.7	-5.3	-5.7	-3.4	-7.2	-7.3	-.3
Previous Tealbook	-3.2	-3.5	-3.9	-4.5	-5.3	-5.7	-3.4	-6.5	-7.8	.3
Primary surplus/deficit	-1.9	-2.1	-2.2	-2.9	-3.1	-3.3	-2.2	-4.7	-5.8	2.1
Net interest	1.3	1.4	1.6	1.8	2.2	2.4	1.2	2.5	1.5	2.4
Cyclically adjusted surplus/deficit	-3.1	-3.7	-4.5	-5.7	-6.5	-7.0	-4.2	-8.1	-8.3	-1.5
Federal debt held by public	76.4	76.1	77.8	78.8	80.9	83.8	77.8	78.9	78.6	78.8
Government in the NIPA[2]					Real percent change, annual rate					
Purchases	.9	.1	2.0	1.9	1.7	1.0	2.5	1.5	1.9	1.9
Consumption	.9	-.1	1.6	1.3	1.2	.7	2.2	.7	1.2	1.2
Investment	.7	1.4	3.9	4.4	3.4	2.1	3.9	5.1	4.4	4.4
State and local construction	1.8	-2.9	4.2	2.5	1.0	1.0	4.5	3.0	3.0	3.0
Real disposable personal income	1.6	2.8	2.8	2.7	2.2	1.8	2.3	2.8	3.4	2.8
Contribution from transfers[3]	.3	.2	.5	.8	.5	.6	.5	.4	1.9	.6
Contribution from taxes[3]	-.1	-.6	.0	-.8	-.6	-.7	-.7	-.2	-.7	-.7
Government employment					Average net change in monthly payrolls, thousands					
Federal	3	-1	1	2	1	1	1	2	3	2
State and local	14	3	4	9	9	9	15	-6	9	9
Fiscal indicators[2]					Percentage point contribution to change in real GDP, annual rate					
Fiscal effect (FE)[4]	.4	.1	.5	.8	.6	.4	.6	.6	.9	.9
Discretionary policy actions (FI)	.3	.2	.7	.6	.5	.2	.8	.6	.7	.6
Previous Tealbook	.3	.2	.7	.6	.5	.2	.7	.7	.7	.6
Federal purchases	.0	.1	.2	.2	.2	.1	.2	.2	.2	.2
State and local purchases	.1	-.1	.1	.1	.1	.1	.2	.1	.1	.1
Taxes and transfers	.1	.1	.3	.3	.2	.0	.3	.3	.4	.3
Cyclical	-.1	-.1	-.2	-.2	-.1	.0	-.2	-.2	-.2	-.2
Other	.2	.1	.0	.3	.2	.2	.1	.2	.4	.4

1. Annual values stated on a fiscal year basis. Quarterly values not seasonally adjusted.
2. Annual values refer to the change from fourth quarter of previous year to fourth quarter of year indicated.
3. Percentage point contribution to change in real disposable personal income, annual basis.
4. The FE measure captures the total contribution of the government sector to the growth of aggregate demand (excluding any multiplier effects and financial offsets). It equals the sum of the direct contributions to aggregate demand growth from all changes in federal purchases and state and local purchases, plus the estimated contribution to real household consumption and business investment that is induced by changes in transfer and tax policies. FI (fiscal impetus) is the portion of FE attributable to discretionary fiscal policy actions (for example, a legislated change in tax revenues).

Greensheets

Greensheets

Foreign Real GDP and Consumer Prices: Selected Countries
(Quarterly percent changes at an annual rate)

| | 2018 | | | | 2019 (Projected) | | | | 2020 | | | |
Measure and country	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Real GDP¹												
Total foreign	3.1	2.0	2.1	2.4	2.3	2.4	2.7	2.4	2.7	2.8	2.7	2.7
Previous Tealbook	3.0	2.0	2.5	2.6	2.6	2.7	2.9	2.5	2.7	2.7	2.7	2.7
Advanced foreign economies	1.4	2.4	1.1	2.0	1.6	1.5	1.9	1.3	1.8	1.9	1.7	1.7
Canada	1.7	2.9	2.0	2.5	1.7	1.5	1.7	1.9	2.0	2.0	1.9	1.9
Japan	-1.1	3.0	-1.2	2.0	1.0	.9	3.2	-3.9	.8	1.0	1.0	.9
United Kingdom	.4	1.6	2.5	1.5	1.8	1.9	1.9	1.8	1.8	1.8	1.8	1.8
Euro area	1.5	1.7	.6	1.5	1.4	1.4	1.5	1.7	1.8	1.7	1.6	1.6
Germany	1.5	1.8	-.8	2.2	1.9	1.6	1.6	1.8	1.7	1.6	1.4	1.4
Emerging market economies	4.9	1.5	3.1	2.8	3.0	3.3	3.4	3.5	3.6	3.7	3.7	3.7
Asia	6.3	4.0	3.7	4.6	4.5	4.6	4.6	4.6	4.6	4.6	4.5	4.5
Korea	4.1	2.4	2.3	3.1	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
China	7.2	6.5	5.9	6.2	5.9	6.2	6.2	6.1	6.0	6.0	5.9	5.9
Latin America	3.6	-1.0	2.7	1.0	1.5	2.1	2.4	2.5	2.8	2.9	2.9	2.9
Mexico	4.3	-.4	3.4	1.5	1.5	2.0	2.3	2.5	2.7	2.9	2.9	2.9
Brazil	.6	.7	3.1	2.0	2.5	2.5	2.8	2.8	2.8	2.8	2.8	2.8
Consumer prices²												
Total foreign	2.6	1.7	2.8	2.8	2.0	2.3	2.3	2.7	2.3	2.4	2.4	2.4
Previous Tealbook	2.6	1.7	3.7	2.9	2.6	2.5	2.5	2.9	2.4	2.4	2.4	2.4
Advanced foreign economies	2.5	1.0	2.5	1.6	.7	1.3	1.5	2.5	1.6	1.6	1.7	1.7
Canada	3.6	1.1	2.6	2.5	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Japan	2.5	-2.3	2.7	.9	.0	.7	1.0	6.3	.9	.9	1.0	1.0
United Kingdom	2.3	2.0	2.9	2.0	1.4	2.0	2.1	2.3	2.2	2.2	2.2	2.2
Euro area	2.0	2.1	2.5	1.1	.6	.9	1.3	1.4	1.4	1.5	1.6	1.6
Germany	1.2	2.5	2.4	1.6	1.5	1.7	2.0	2.3	2.3	2.3	2.2	2.2
Emerging market economies	2.7	2.2	4.6	3.7	3.0	3.0	2.9	2.9	2.9	2.9	2.9	2.9
Asia	1.7	1.0	3.2	3.0	2.2	2.3	2.3	2.3	2.5	2.6	2.6	2.6
Korea	1.6	2.1	2.3	1.6	1.5	1.9	1.9	1.9	2.0	2.1	2.1	2.1
China	1.5	.7	4.1	3.8	2.1	2.1	2.1	2.1	2.4	2.5	2.5	2.5
Latin America	4.8	4.9	8.1	5.6	4.8	4.5	4.3	4.2	3.7	3.6	3.5	3.5
Mexico	4.1	3.8	6.8	4.0	3.7	3.5	3.3	3.3	3.2	3.2	3.2	3.2
Brazil	3.1	4.3	6.6	3.9	3.7	4.3	4.3	4.3	4.3	4.3	4.3	4.3

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

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

Measure and country	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
							-----	Projected	-----	
Real GDP[1]										
Total foreign	2.2	3.0	2.9	1.9	2.7	2.9	2.4	2.4	2.7	2.6
Previous Tealbook	2.2	3.0	2.8	2.1	2.7	2.9	2.5	2.7	2.7	2.6
Advanced foreign economies	.3	2.4	2.1	.9	1.9	2.6	1.7	1.6	1.8	1.7
Canada	.7	3.4	2.8	-.4	1.8	2.9	2.3	1.7	1.9	1.7
Japan	.3	2.8	-.3	1.2	1.5	2.0	.7	.3	.9	.8
United Kingdom	1.6	2.6	3.1	2.2	1.7	1.4	1.5	1.9	1.8	1.7
Euro area	-1.1	.7	1.6	2.0	2.1	2.7	1.3	1.5	1.7	1.6
Germany	.2	1.6	2.3	1.3	1.9	2.8	1.2	1.7	1.5	1.4
Emerging market economies	4.1	3.5	3.6	2.9	3.5	3.2	3.1	3.3	3.7	3.6
Asia	5.8	5.4	5.0	4.5	4.9	5.2	4.7	4.6	4.5	4.3
Korea	2.1	3.5	2.8	3.2	2.6	2.8	3.0	2.9	2.9	2.8
China	8.0	7.6	7.1	6.8	6.8	6.8	6.4	6.1	5.9	5.7
Latin America	2.9	1.7	2.5	1.6	2.2	1.5	1.6	2.1	2.9	2.9
Mexico	3.0	1.2	3.4	2.8	3.3	1.5	2.2	2.1	2.8	2.9
Brazil	2.2	2.6	-.1	-5.5	-1.9	2.2	1.6	2.6	2.8	2.8
Consumer prices[2]										
Total foreign	2.3	2.4	2.0	1.4	1.9	2.6	2.7	2.3	2.4	2.4
Previous Tealbook	2.3	2.4	2.0	1.4	1.9	2.6	2.7	2.6	2.4	2.4
Advanced foreign economies	1.3	1.0	1.2	.4	.9	1.5	1.9	1.5	1.6	1.7
Canada	1.0	1.0	2.0	1.3	1.4	1.8	2.5	1.7	2.0	2.0
Japan	-.2	1.4	2.6	.1	.3	.6	.9	2.0	.9	1.1
United Kingdom	2.6	2.1	.9	.1	1.2	3.0	2.3	2.0	2.2	2.1
Euro area	2.3	.8	.2	.2	.7	1.4	1.9	1.1	1.5	1.7
Germany	1.9	1.4	.4	.2	1.0	1.6	1.9	1.9	2.2	2.0
Emerging market economies	3.1	3.4	2.7	2.1	2.7	3.4	3.3	2.9	2.9	2.9
Asia	2.6	3.1	1.8	1.5	2.0	2.0	2.2	2.3	2.6	2.6
Korea	1.7	1.1	1.0	.9	1.4	1.5	1.9	1.8	2.0	2.1
China	2.1	2.9	1.5	1.5	2.1	1.8	2.5	2.1	2.5	2.5
Latin America	4.3	4.2	4.9	3.4	4.3	6.7	5.8	4.4	3.6	3.5
Mexico	4.1	3.6	4.2	2.3	3.3	6.6	4.7	3.4	3.2	3.2
Brazil	5.6	5.8	6.5	10.4	7.1	2.8	4.4	4.1	4.3	4.3

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

Greensheets

Authorized for Public Release

Greensheets

U.S. Current Account

Quarterly Data

Billions of dollars, s.a.a.r.

| | 2018 | | | | 2019 ---------Projected--------- | | | | 2020 | | | |
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
U.S. current account balance	**-486.8**	**-405.8**	**-495.1**	**-550.5**	**-585.0**	**-593.0**	**-628.5**	**-654.5**	**-683.3**	**-687.4**	**-719.9**	**-727.6**
Previous Tealbook	*-486.8*	*-405.8*	*-519.8*	*-564.7*	*-608.6*	*-608.9*	*-638.3*	*-658.3*	*-691.5*	*-689.9*	*-715.2*	*-714.9*
Current account as percent of GDP	-2.4	-2.0	-2.4	-2.6	-2.8	-2.8	-2.9	-3.0	-3.1	-3.1	-3.2	-3.2
Previous Tealbook	*-2.4*	*-2.0*	*-2.5*	*-2.7*	*-2.9*	*-2.9*	*-3.0*	*-3.0*	*-3.1*	*-3.1*	*-3.2*	*-3.1*
Net goods & services	-616.0	-535.2	-629.5	-622.1	-609.2	-606.1	-617.5	-630.8	-636.3	-635.6	-650.3	-652.3
Investment income, net	258.2	256.9	258.4	190.5	152.1	129.8	111.9	95.2	80.7	64.9	53.3	43.6
Direct, net	310.4	309.9	325.6	299.4	279.9	277.4	281.7	287.2	293.9	300.3	310.9	322.1
Portfolio, net	-52.2	-53.0	-67.2	-108.9	-127.8	-147.6	-169.8	-192.1	-213.2	-235.4	-257.6	-278.5
Other income and transfers, net	-129.1	-127.5	-124.0	-118.9	-127.8	-116.8	-122.9	-118.9	-127.8	-116.8	-122.9	-118.9

Annual Data

Billions of dollars

	2012	2013	2014	2015	2016	2017	2018	--Projected-- 2019	2020	2021
U.S. current account balance	**-426.2**	**-349.5**	**-365.1**	**-409.7**	**-434.3**	**-449.1**	**-484.6**	**-615.3**	**-704.6**	**-747.0**
Previous Tealbook	*-426.2*	*-349.5*	*-365.1*	*-409.7*	*-434.3*	*-449.1*	*-494.3*	*-628.5*	*-702.9*	*-729.1*
Current account as percent of GDP	-2.6	-2.1	-2.1	-2.2	-2.3	-2.3	-2.4	-2.9	-3.2	-3.2
Previous Tealbook	*-2.6*	*-2.1*	*-2.1*	*-2.2*	*-2.3*	*-2.3*	*-2.4*	*-2.9*	*-3.1*	*-3.1*
Net goods & services	-536.8	-461.9	-489.5	-500.4	-503.5	-552.3	-600.7	-615.9	-643.6	-655.4
Investment income, net	216.1	215.4	229.0	214.7	205.7	235.1	241.0	122.2	60.7	30.0
Direct, net	285.5	283.3	284.2	284.6	272.6	298.4	311.3	281.6	306.8	352.6
Portfolio, net	-69.4	-67.9	-55.3	-70.0	-66.9	-63.3	-70.3	-159.3	-246.2	-322.6
Other income and transfers, net	-105.5	-103.1	-104.6	-123.9	-136.6	-132.0	-124.9	-121.6	-121.6	-121.6

Abbreviations

AFE	advanced foreign economy
BLS	Bureau of Labor Statistics
BOC	Bank of Canada
BOE	Bank of England
BOJ	Bank of Japan
BOM	Bank of Mexico
CCAR	Comprehensive Capital Analysis and Review
C&I	commercial and industrial
CMBS	commercial mortgage-backed securities
CPH	compensation per hour
CPI	consumer price index
DB	Deutsche Bank
DOE	U.S. Department of Energy
DSGE	dynamic stochastic general equilibrium
EBA	European Banking Authority
ECB	European Central Bank
ECI	employment cost index
EFFR	effective federal funds rate
EME	emerging market economy
EU	European Union
FCI	financial conditions index
FOMC	Federal Open Market Committee; also, the Committee
FPLT	flexible price-level targeting
FRB/US	A large-scale macroeconometric model of the U.S. economy
FSI	financial services institution

FX	foreign exchange
GDP	gross domestic product
GNP	gross national product
G-SIB	global systemically important bank
IMF	International Monetary Fund
IOER	interest on excess reserves
LFPR	labor force participation rate
MBS	mortgage-backed securities
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	quantitative surveillance
SEP	Summary of Economic Projections
SIGMA	A calibrated multicountry DSGE model
SOMA	System Open Market Account
S&P	Standard & Poor's
SPF	Survey of Professional Forecasters
TIPS	Treasury Inflation-Protected Securities
VAR	vector autoregression
VIX	one-month-ahead option-implied volatility on the S&P 500 index

Prefatory Note

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

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

Content last modified 1/12/2024.

Report to the FOMC
on Economic Conditions
and Monetary Policy

Book B
Monetary Policy Alternatives

December 13, 2018

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

Alternatives

Figure 1: Market-Implied Probability of a Rate Increase at Each of the Next Four FOMC Meetings
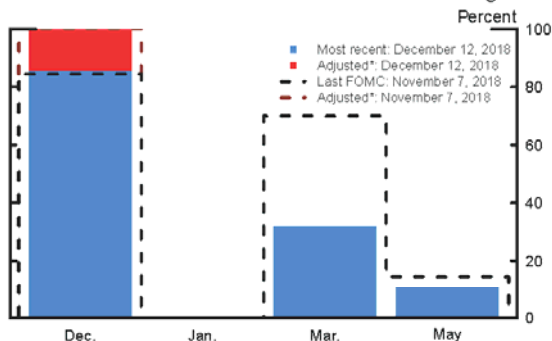
Note: Probabilities implied by a binomial tree fitted to settlement prices on federal funds futures contracts, assuming the policy action at each meeting is either no change or a 25-basis point increase in rates and no intermeeting moves.
*Adjusted under the assumption that the policy action for the December 2018 meeting is either no change or a 20-basis point increase in rates.
Source: CME Group; Federal Reserve Board staff estimates.

Figure 2: Market-Implied Probability Distribution of the Federal Funds Rate, Year-End 2019
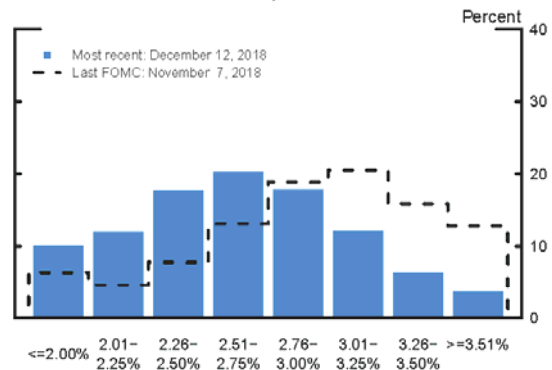
Note: Estimated from Eurodollar futures options, accounting for the differences in the levels and option-implied volatilities of LIBOR and the federal funds rate, but not adjusted for risk premiums.
Source: CME Group; Federal Reserve Board staff estimates.

Figure 3: Desk Survey Average Probability Distribution of the Federal Funds Rate, Year-End 2019
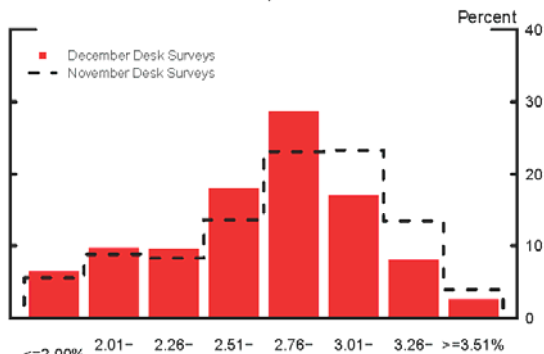
Note: Probabilities are averages of the probabilities assigned by respondents to different ranges of the federal funds rate at the end of 2019.
Source: FRBNY.

## Figure 4: Market-Implied Federal Funds Rate Expectations
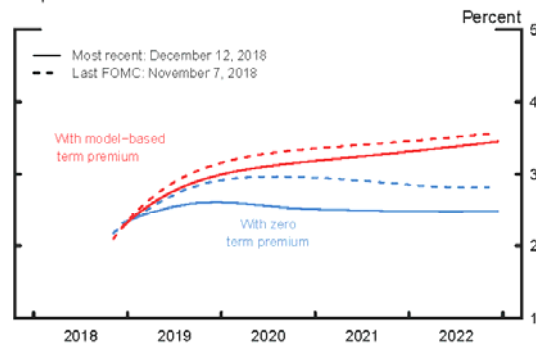
Note: Zero term premium path is estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points. Model-based term premium path is estimated using a term structure model maintained by Board staff and corrects for term premium.
Source: Bloomberg; Federal Reserve Board staff estimates.

Figure 5: Federal Funds Rate Projections
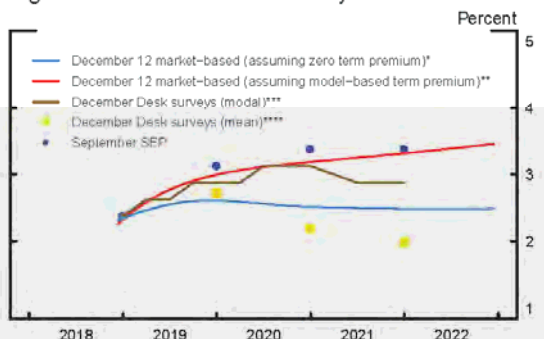
* Estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points.
** Adjusting for premiums using a term structure model maintained by Board staff.
*** Median of respondents' modal paths for the federal funds rate.
**** Calculated by averaging over individual respondents' year-end probability distributions.
Source: Bloomberg, Federal Reserve Board staff estimates; FRBNY, Summary of Economic Projections.

Figure 6: Measures of Longer-Run Federal Funds Rate Expectations
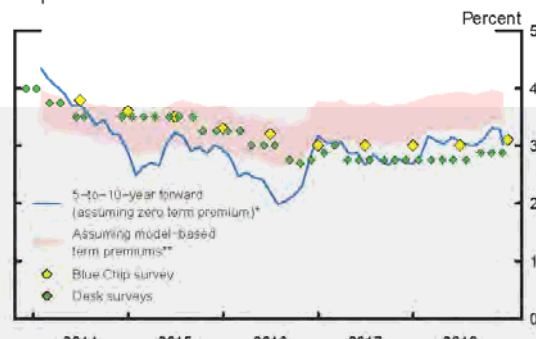
* Monthly average 5-to-10-year forward rate derived from prices of Treasury securities.
** Monthly average 5-to-10-year forward rate adjusted for three alternative model-based term premium estimates using Kim and Wright (2005), D'Amico, Kim, and Wei (2018), and Priebsch (2017).
Source: Blue Chip, FRBNY, Board staff estimates.

Redemptions and Reinvestments of SOMA Principal Payments

Projections for Treasury Securities
(Billions of dollars)

	Redemptions		Reinvestments	
	Period	Since Oct. 2017	Period	Since Oct. 2017
2017: Oct - 2018: Oct	198.9	198.9	195.0	195.0
2018: Nov - 2019: Oct	278.5	477.4	125.3	320.3
2018	229.1	247.1	197.1	224.2
2019	270.8	517.9	114.2	338.4
2020*	75.8	593.6	23.6	362.0

*Until projected normalization in May 2020.

Projections for Agency Securities
(Billions of dollars)

	Redemptions		Reinvestments	
	Period	Since Oct. 2017	Period	Since Oct. 2017
2017: Oct - 2018: Oct	138.5	138.5	152.3	152.3
2018: Nov - 2019: Oct	170.3	308.8	0.0	152.3
2018	156.5	168.5	87.6	152.3
2019	164.7	333.2	0.0	152.3
2020*	46.7	380.0	0.0	152.3

*Until projected normalization in May 2020.

SOMA Treasury Securities Principal Payments

Note: Projection dependent on assumed distribution of future Treasury issuance.
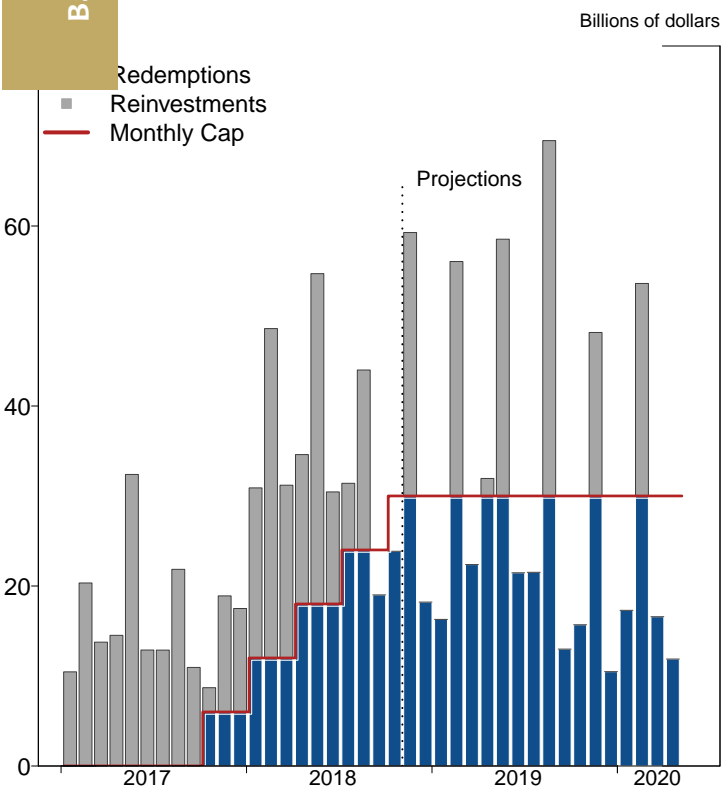
SOMA Agency Debt and MBS Principal Payments

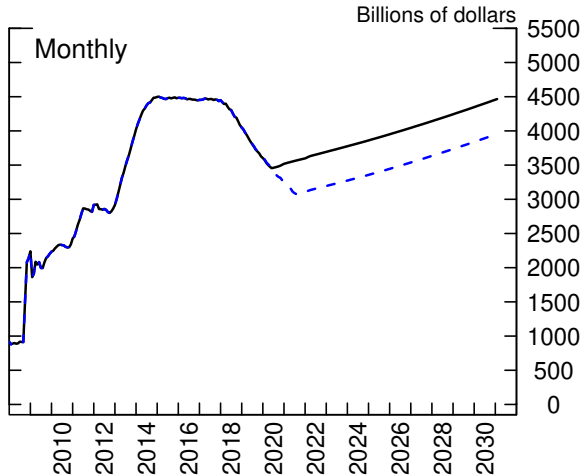Note: Projection dependent on future interest rates and housing market developments.
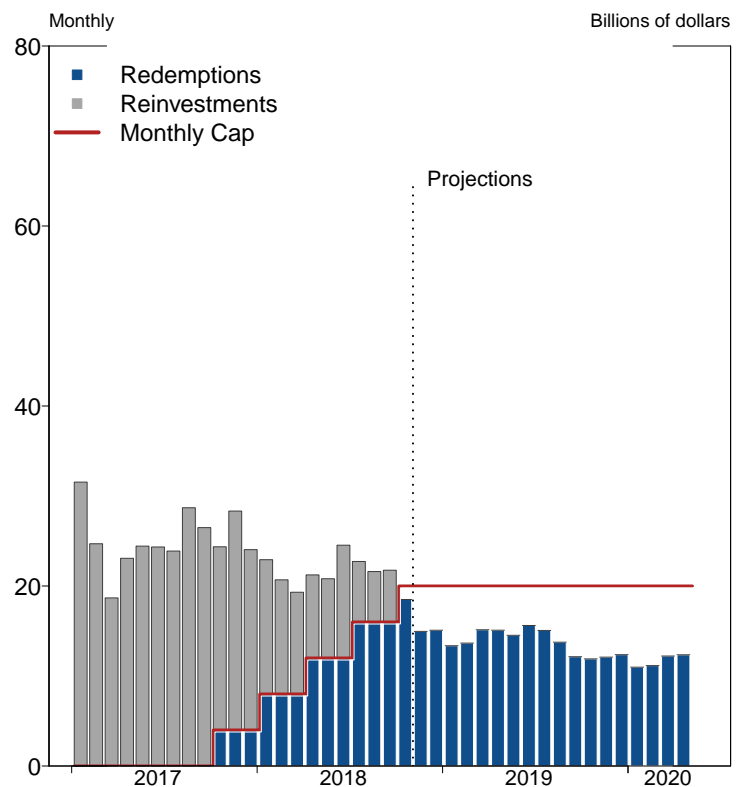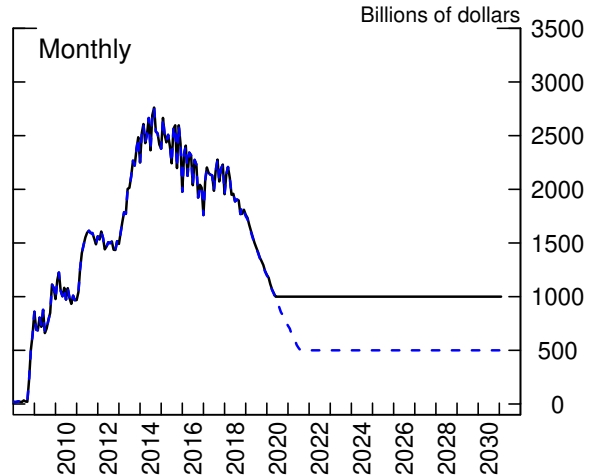
Total Assets and Selected Balance Sheet Items

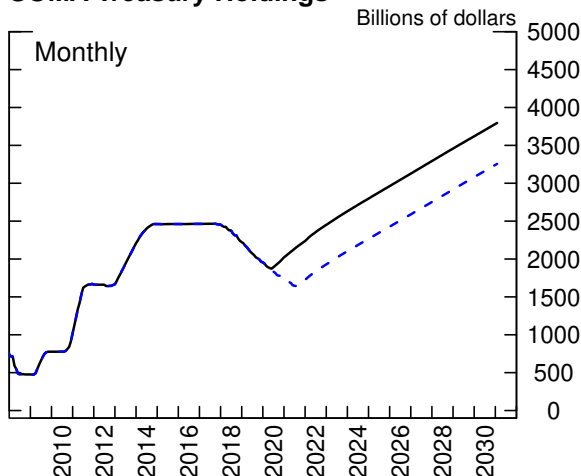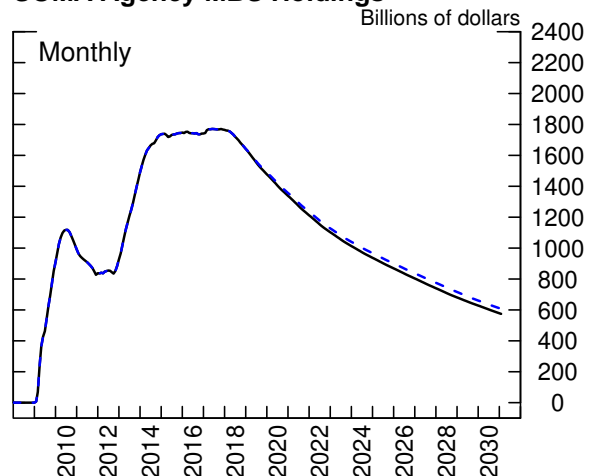—— December Tealbook, $1 trillion reserves   – – – November Tealbook, $500 billion reserves

Balance Sheet & Income

Total Assets

Reserve Balances

SOMA Treasury Holdings

SOMA Agency MBS Holdings

Assets as a Share of GDP

December TB, $1 trillion reserves   Percent

- Treasury Securities
- Agency Securities
- Other Assets
- Loans
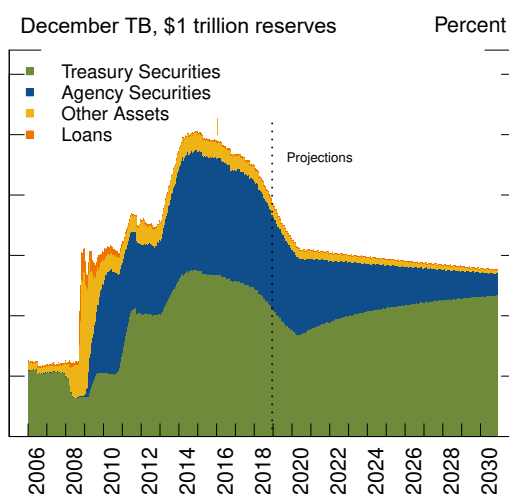
Projections

Liabilities as a Share of GDP

December TB, $1 trillion reserves   Percent

- Federal Reserve notes in circulation
- Treasury General Account
- Other Liabilities
- Total Reserves
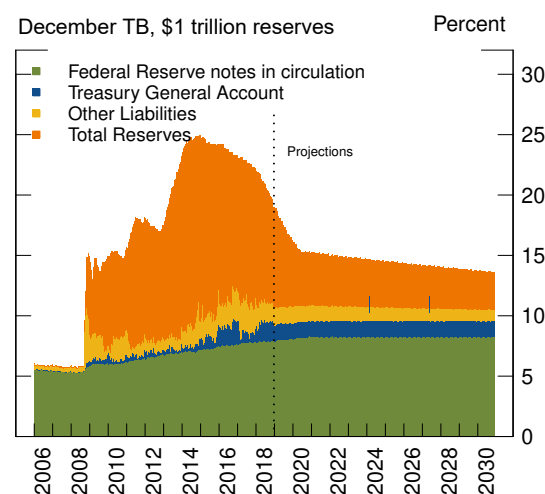
Projections

Federal Reserve Balance Sheet
Month-end Projections -- December Tealbook
(Billions of dollars)

	Historical*			Projections				
	Aug 2014	Sep 2017	Oct 2018	Dec 2018	Dec 2020	Dec 2022	Dec 2025	Dec 2030
Total assets	4,416	4,460	4,140	4,050	3,519	3,693	3,951	4,456
Selected assets								
Loans and other credit extensions**	2	6	0	0	0	0	0	0
Securities held outright	4,157	4,240	3,942	3,867	3,363	3,555	3,833	4,363
U.S. Treasury securities	2,437	2,465	2,270	2,223	2,022	2,451	2,962	3,782
Agency debt securities	42	7	2	2	2	2	2	2
Agency mortgage-backed securities	1,678	1,768	1,669	1,642	1,338	1,103	869	578
Unamortized premiums	209	162	143	140	110	89	68	42
Unamortized discounts	-19	-14	-14	-13	-10	-8	-7	-5
Total other assets	66	66	68	56	56	56	56	56
Total liabilities	4,360	4,419	4,101	4,011	3,479	3,650	3,901	4,394
Selected liabilities								
Federal Reserve notes in circulation	1,249	1,532	1,648	1,669	1,881	2,028	2,244	2,669
Reverse repurchase agreements	277	557	237	230	225	225	225	225
Deposits with Federal Reserve Banks	2,825	2,323	2,210	2,107	1,368	1,392	1,427	1,495
Reserve balances held by depository institutions	2,762	2,073	1,772	1,763	1000	1000	1000	1000
U.S. Treasury, General Account	49	159	367	279	303	327	362	430
Other deposits	15	91	72	65	65	65	65	65
Earnings remittances due to the U.S. Treasury	3	2	1	0	0	0	0	0
Total Federal Reserve Bank capital***	56	41	39	39	39	43	49	62

Source: Federal Reserve H.4.l daily data and staff calculations.
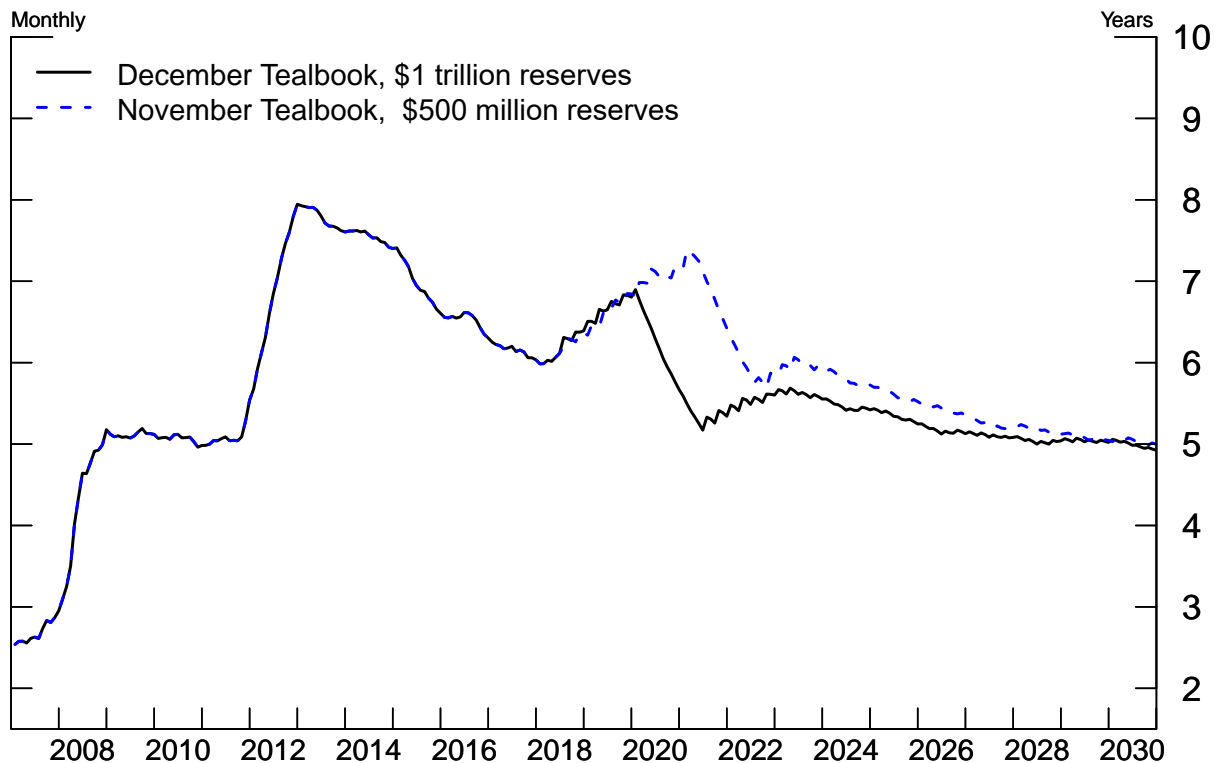Note: Components may not sum to totals due to rounding.
*August 2014 corresponds to the peak month-end value of reserve balances; September 2017 corresponds to the last month-end before the initiation of the normalization program; October 2018 is the most recent historical value.
**Loans and other credit extensions includes discount window credit; central bank liquidity swaps; and net portfolio holdings of Maiden Lane LLC.
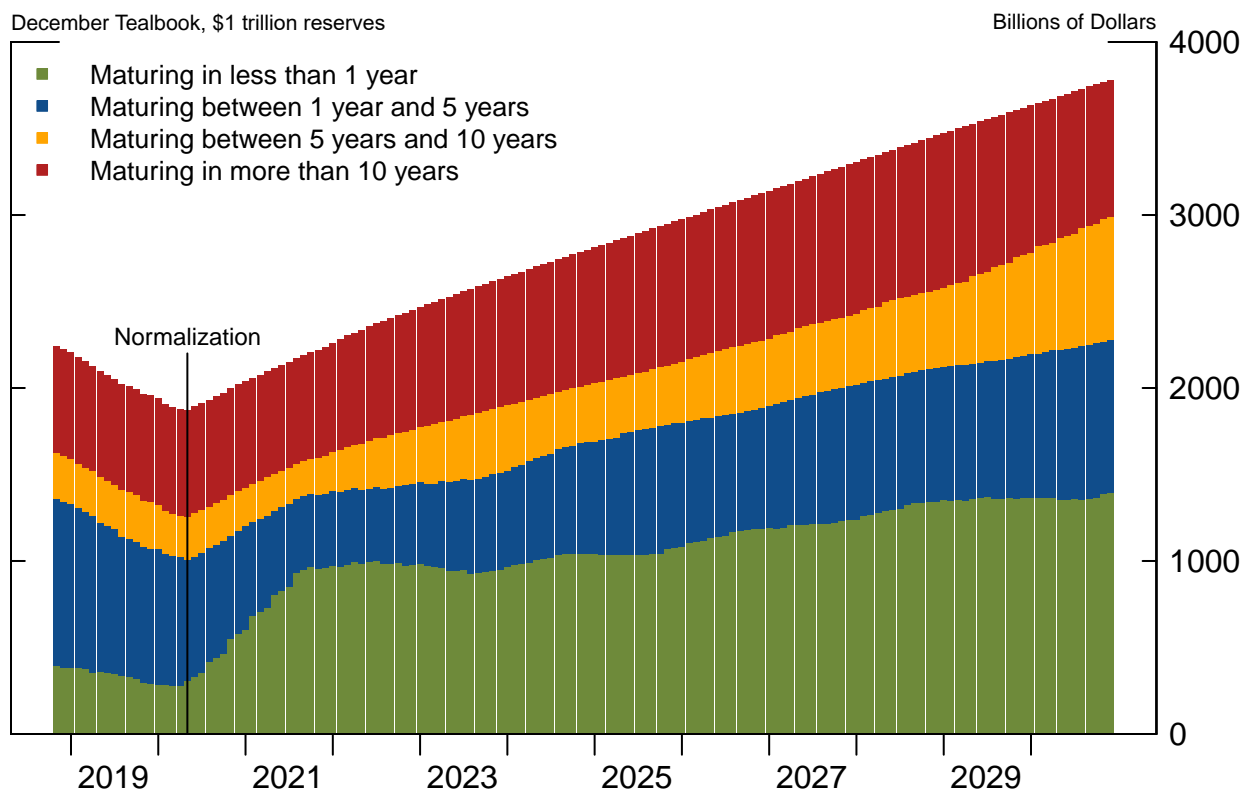***Total capital includes capital paid-in and capital surplus accounts.

Balance Sheet & Income

Projections for the Characteristics of SOMA Treasury Securities Holdings

SOMA Weighted–Average Treasury Duration

Monthly   Years


Legend:
- December Tealbook, $1 trillion reserves (black solid line)
- November Tealbook, $500 million reserves (blue dashed line)

Maturity Composition of SOMA Treasury Portfolio

December Tealbook, $1 trillion reserves   Billions of Dollars

Legend:
- Maturing in less than 1 year
- Maturing between 1 year and 5 years
- Maturing between 5 years and 10 years
- Maturing in more than 10 years

Normalization

Balance Sheet & Income

Income Projections

―――― December Tealbook, $1 trillion reserves   – – – November Tealbook, $500 billion reserves

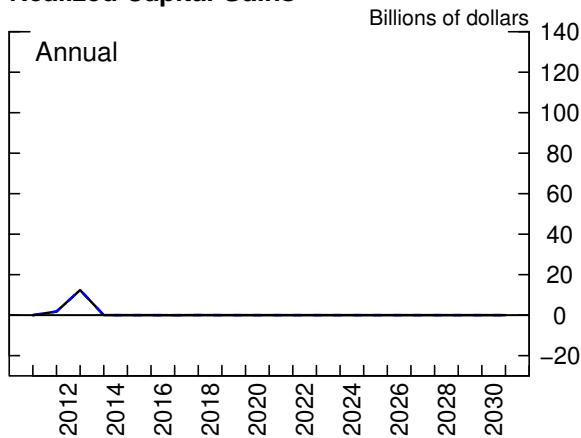**Balance Sheet & Income**

Interest Income
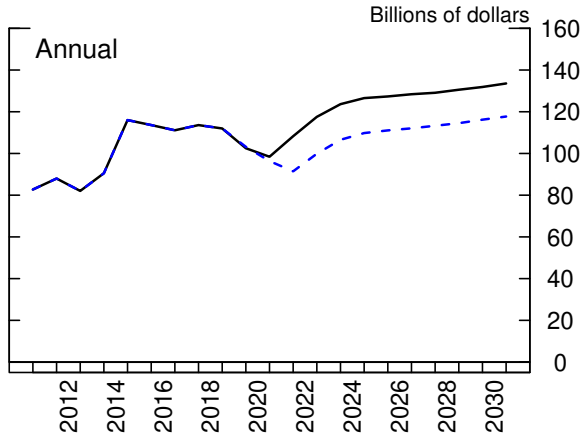
Interest Expense
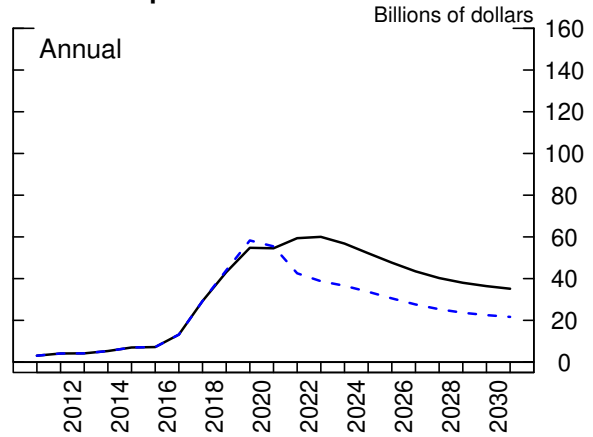
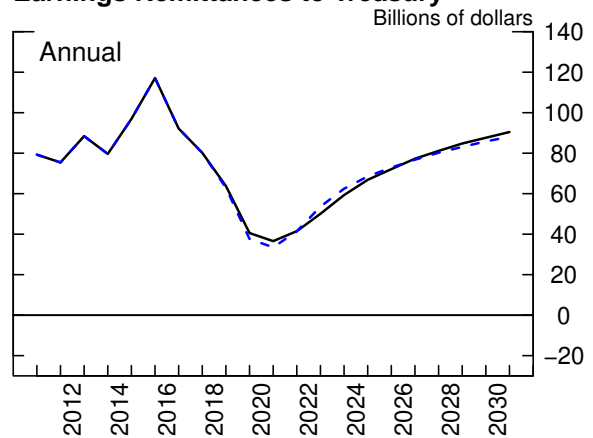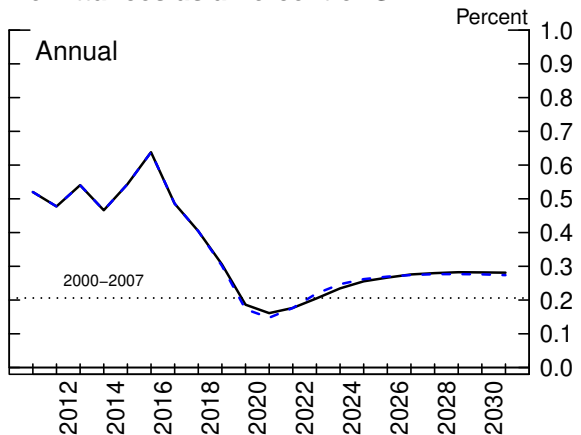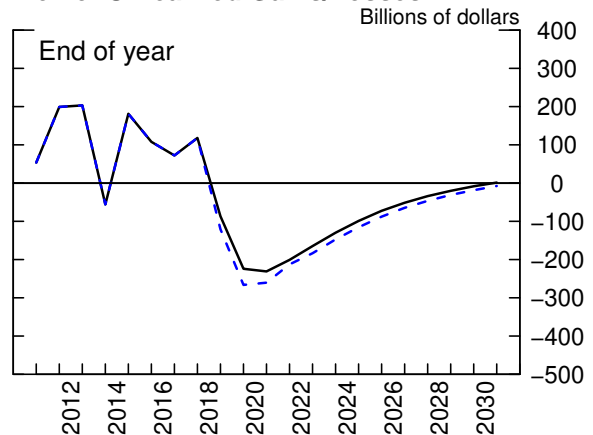### Realized Capital Gains

Earnings Remittances to Treasury

Remittances as a Percent of GDP

Memo: Unrealized Gains/Losses

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

Date	December Tealbook, $1 trillion reserves	November Tealbook, $500 million reserves
	Quarterly Averages	
2018:Q4	-78	-75
2019:Q4	-70	-65
2020:Q4	-64	-57
2021:Q4	-61	-52
2022:Q4	-58	-48
2023:Q4	-55	-45
2024:Q4	-51	-42
2025:Q4	-49	-39
2026:Q4	-46	-37
2027:Q4	-44	-35
2028:Q4	-42	-33
2029:Q4	-40	-31
2030:Q4	-39	-30

* The figures show the estimated effects on the 10-year Treasury term premium
  resulting from the Federal Reserve's large-scale asset purchases.

Balance Sheet & Income

Abbreviations

ABS	asset-backed securities
AFE	advanced foreign economy
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
DFMU	Designated Financial Market Utilities
ECB	European Central Bank
EFFR	effective federal funds rate
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
LSAPs	large-scale asset purchases
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
QS	Quantitative Surveillance
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)
TCJA	Tax Cuts and Jobs Act of 2017
TGA	U.S. Treasury's General Account
TIPS	Treasury inflation-protected securities
TPE	Term premium effects
ZLB	zero lower bound