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# Report to the FOMC on Economic Conditions and Monetary Policy



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

July 19, 2019

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

## Comparing the Staff Projection with Other Forecasts

The staff's projection for GDP growth in 2019 is well aligned with the projections from both the Survey of Professional Forecasters (SPF) and the Blue Chip consensus, but it is about  $\frac{1}{2}$  percentage point higher than the Blue Chip in 2020. Correspondingly, the staff's unemployment rate forecast is close to the SPF and Blue Chip projections in 2019 but below the Blue Chip forecast in 2020.

With regard to core PCE price inflation, the staff projection is 0.2 percentage point above the SPF projection in 2019. Otherwise, the staff's inflation projections are close to those of the Blue Chip and the SPF.

### Comparison of Tealbook and Outside Forecasts

	2019	2020
<b>GDP (Q4/Q4 percent change)</b>		
July Tealbook	2.3	2.1
Blue Chip (7/10/19)	2.2	1.7
SPF median (5/10/19)	2.3	n.a.
<b>Unemployment rate (Q4 level)</b>		
July Tealbook	3.7	3.6
Blue Chip (7/10/19)	3.6	3.8
SPF median (5/10/19)	3.6	n.a.
<b>CPI inflation (Q4/Q4 percent change)</b>		
July Tealbook	1.9	2.1
Blue Chip (7/10/19)	2.0	2.0
SPF median (5/10/19)	1.9	2.1
<b>PCE price inflation (Q4/Q4 percent change)</b>		
July Tealbook	1.7	1.8
SPF median (5/10/19)	1.7	1.9
<b>Core PCE price inflation (Q4/Q4 percent change)</b>		
July Tealbook	1.9	1.9
SPF median (5/10/19)	1.7	2.0

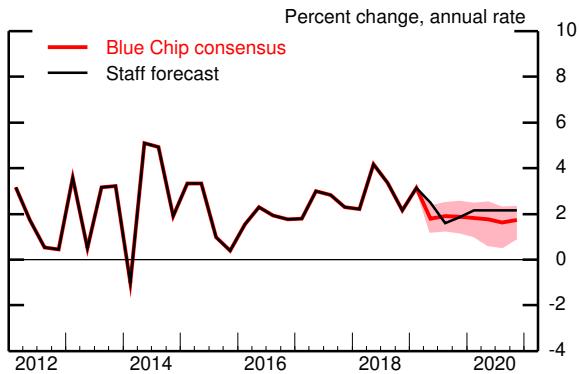
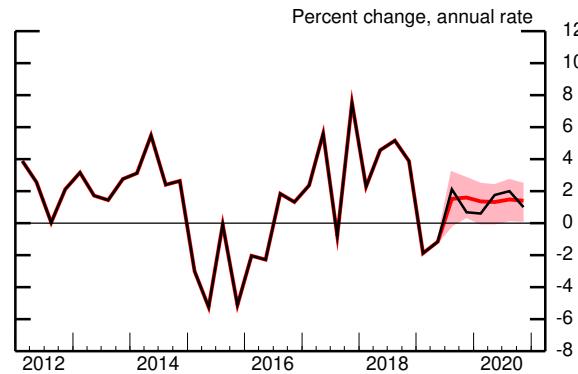
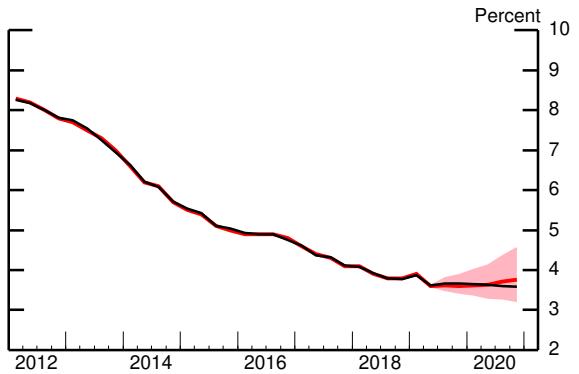
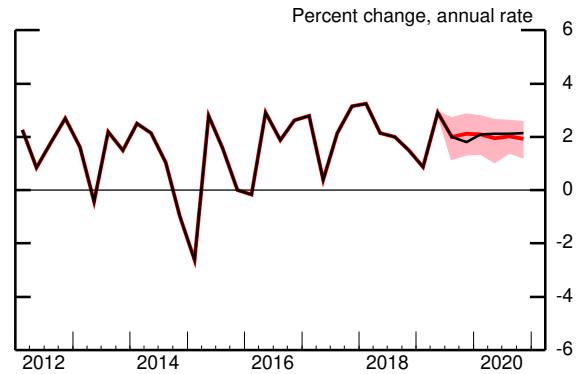
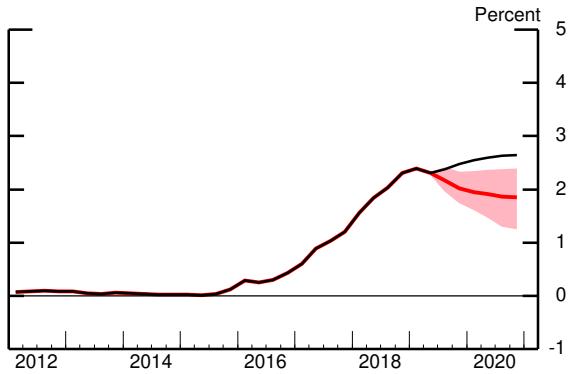
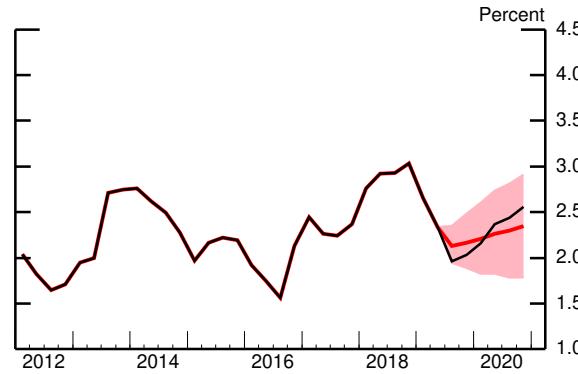
Note: SPF is the Survey of Professional Forecasters, CPI is the consumer price index, and PCE is personal consumption expenditures. Blue Chip does not provide results for overall and core PCE price inflation. The Blue Chip consensus forecast includes input from about 50 panelists, and the SPF about 40.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

n.a. Not available.

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

## Tealbook Forecast Compared with Blue Chip

(Blue Chip survey released July 10, 2019)

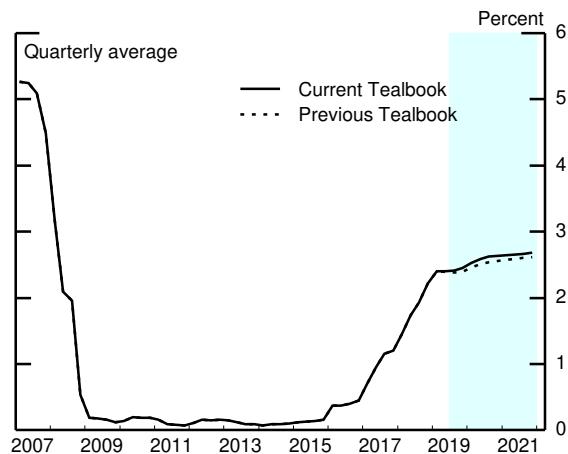
**Real GDP****Industrial Production****Unemployment Rate****Consumer Price Index****Treasury Bill Rate****10-Year Treasury Yield**

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

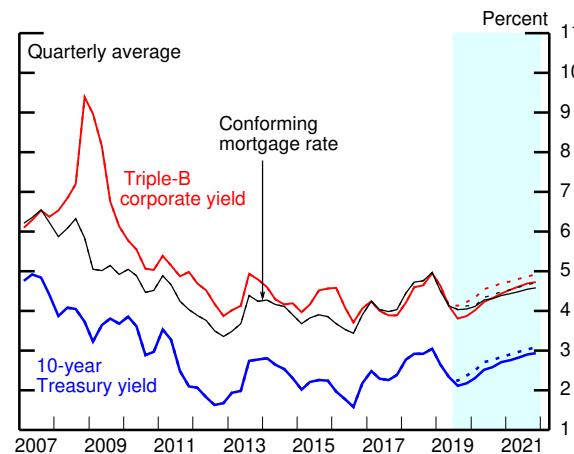
Note: The shaded area represents the area between the Blue Chip top 10 and bottom 10 averages.

## Key Background Factors underlying the Baseline Staff Projection

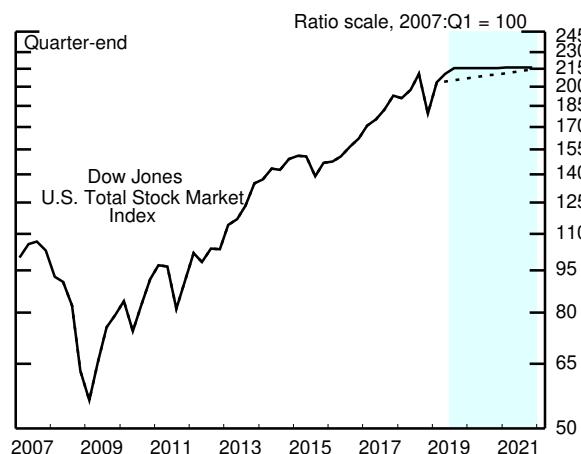
Federal Funds Rate



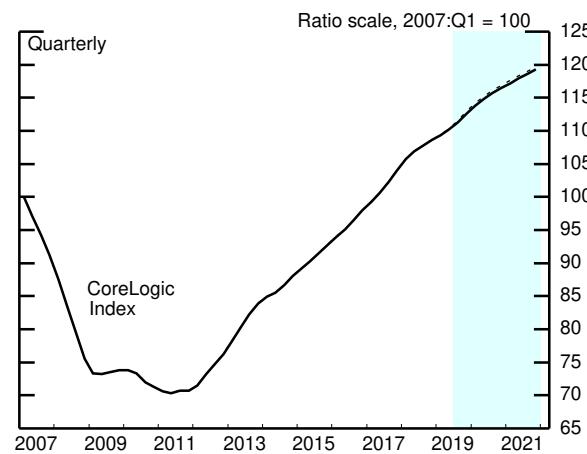
Long-Term Interest Rates



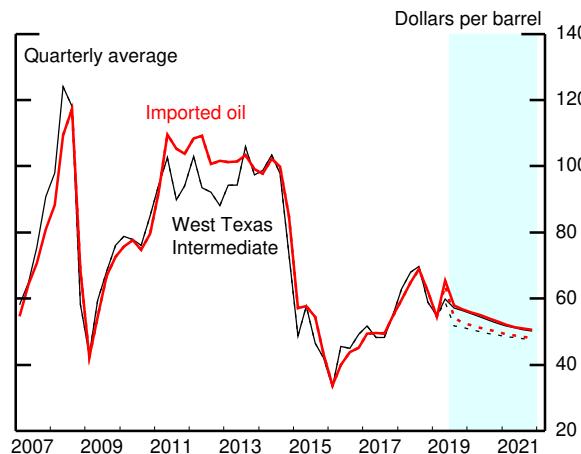
Equity Prices



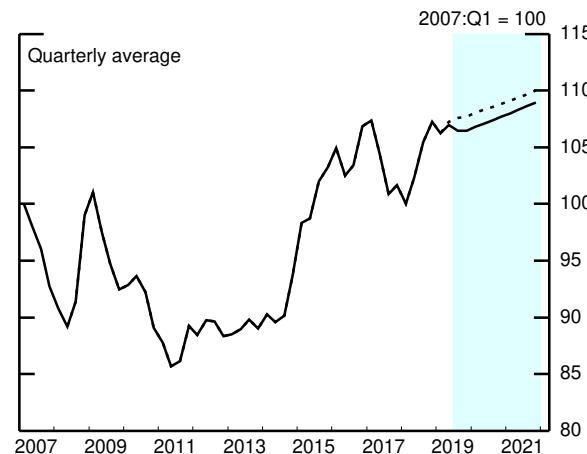
House Prices



Crude Oil Prices



Broad Real Dollar



## The Weak Outlook for Business Fixed Investment

Growth of business fixed investment (BFI) slowed from a brisk 7 percent pace in 2018 to an estimated 2 percent annual rate in the first half of this year. At the same time, the tenor of a wide array of indicators that inform our investment outlook has become decidedly more downbeat, leading us to project no growth in BFI over the second half of the year.

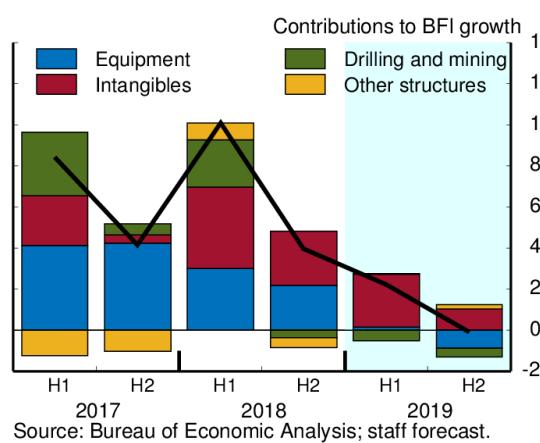
As shown in figure 1, the slowdown in 2019:H1 is centered in equipment investment (blue bars), which appears to have moved sideways over this period: Nominal shipments of nondefense capital goods (excluding aircraft) have been roughly flat since late last year, while capital goods imports have turned down. Moreover, new orders for capital goods have gradually moved down and now stand well below shipments, indicating little impetus to equipment spending in coming months.

Investment in drilling and mining structures (green bars) has declined in response to lower oil prices, and we expect it will decline further, reflecting the staff's projected oil price path. Investment in other nonresidential structures (yellow bars) has also been lackluster, and a recent drop in architectural billings (not shown) points to further weakness ahead. In contrast, investment in intellectual property (red bars) like software and R&D has remained solid.

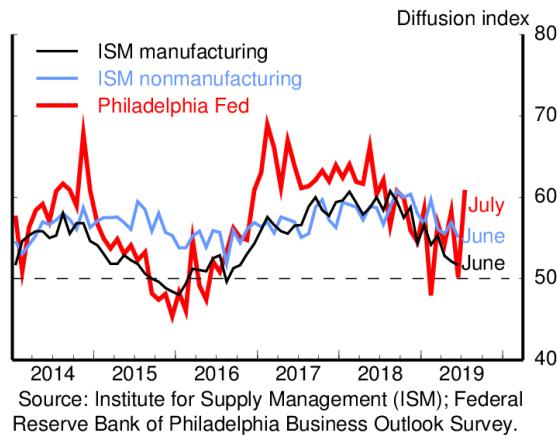
We expect BFI to be little changed in the second half of the year and then to rise modestly over the medium term. Some slowing in BFI growth this year would be consistent with the staff's outlook for output growth and interest rates.<sup>1</sup> However, our forecast is weaker than what is implied by those two forces alone, as it reflects our reaction to a number of additional factors. Two factors that are modest drags on our projection for BFI are the delayed deliveries of the Boeing 737 Max and the direct effect of currently imposed tariffs.

A more significant factor is heightened concern over trade policy, which has likely contributed to softer business sentiment (figure 2) and a pullback in capital spending plans. The ISM

### 1. Real Business Fixed Investment



### 2. Surveys of Business Conditions



<sup>1</sup> The staff currently estimates that the 2017 tax cuts boosted BFI growth about  $\frac{3}{4}$  percentage point in 2018 and will contribute a similar amount in 2019. However, the strength in BFI last year and the slowdown this year could suggest more front-loaded effects from the tax cuts than we assumed.

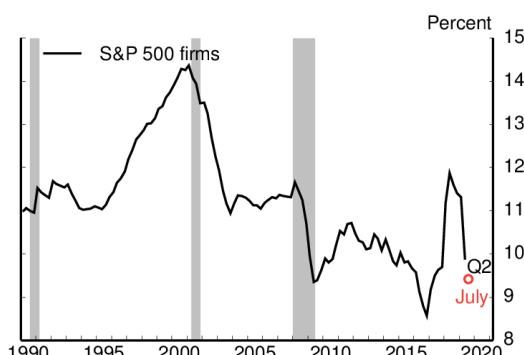
manufacturing (black line) and nonmanufacturing (blue line) composite indexes are down since last year, while the Philadelphia Fed general activity index (red line) has been volatile, dropping in June and popping back up in July. Most other regional Fed manufacturing surveys and indicators from private sources, such as the Markit and Duke CFO surveys, have also weakened somewhat.

Beige Book commentary tying concerns about trade policy to reduced investment plans has become increasingly prevalent. More anecdotes in business surveys have linked a weaker outlook for economic activity and capital expenditures to recent tariff actions and increased trade tensions. And measures of economic policy uncertainty and the staff's trade policy uncertainty index have soared. However, corporate bond spreads and the VIX—which also proxy for business uncertainty—remain historically low, and financing conditions more generally still appear accommodative for businesses.<sup>2</sup>

Finally, analysts' expectations for longer-term profits growth, shown in figure 3, have deteriorated sharply and reversed the run-up that followed the enactment of the 2017 tax cuts. Some of the decline could be related to those tax changes—growth expectations should slow once profits reach a permanently higher level—but we think such a slowing would unfold more gradually. Instead, we think the recent deterioration in profit expectations more likely reflects other factors like the escalation in trade tensions and concerns about the global outlook.

As shown in figure 4, including profit expectations in our workhorse investment model for equipment and intangibles (E&I) improves its fit and implies a more pessimistic investment outlook this year.<sup>3</sup> The model improvement likely reflects the forward-looking nature of profit expectations and their ability to capture unobserved "animal spirits," an influence that is largely absent from our measures of business output and the user cost.<sup>4</sup> All told, the diverse set of factors previously mentioned suggest that BFI will remain anemic this year.

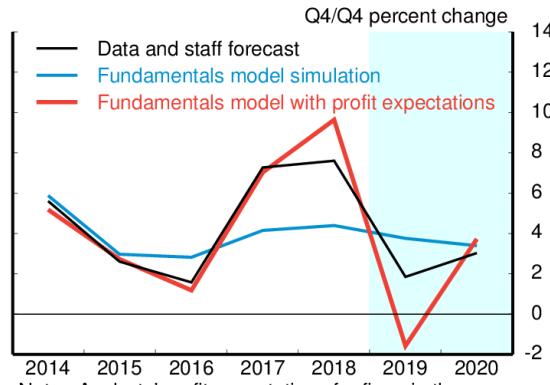
### 3. Expectations of Longer-Term Profits Growth



Note: Analysts' expectations for profits growth of S&P 500 (ex. oil industry) firms over the next 3 to 5 years. The red circle is an estimate based on data through July 11. Shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.

Source: Staff calculations from I/B/E/S.

### 4. E&I: Staff and Model Forecasts



Note: Analysts' profit expectations for firms in the S&P 500 (ex. oil industry). Expectations for profits growth are assumed flat over the forecast period.

Source: Bureau of Economic Analysis; staff forecast and calculations.

<sup>2</sup> The uncertainty measures based on news articles or other text sources are more volatile and appear to have less predictive power for BFI than do the uncertainty proxies based on financial markets.

<sup>3</sup> We project E&I investment growth this year to be between the two models, consistent with the experience in 2018.

<sup>4</sup> Our model takes more signal from changes in this series than from its level. Large changes may capture major shocks to profitability that are not reflected in other investment fundamentals.

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

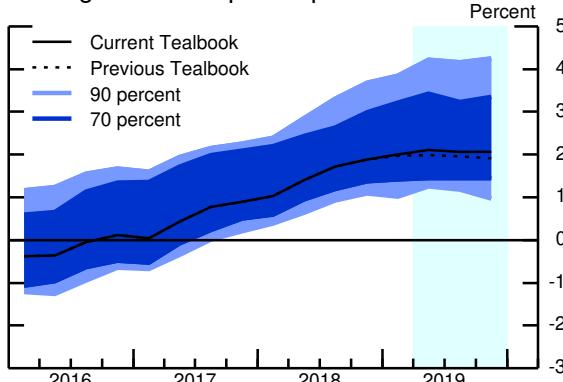
(Percent change at annual rate from final quarter of preceding period except as noted)

Measure	2017	2018	2019	2019 Q1	2019 Q2	2019 Q3
<b>Output gap<sup>1</sup></b>	.9	1.9	2.1	2.0	2.1	2.1
Previous Tealbook	.9	1.9	1.9	2.0	2.0	2.0
Real GDP	2.5	3.0	2.3	3.1	2.5	1.6
Previous Tealbook	2.5	3.0	2.0	3.0	1.8	1.7
Measurement error in GDP	.0	.2	.3	.8	.3	.0
Previous Tealbook	.0	.2	.2	.8	.0	.0
Potential output	1.7	1.8	1.8	1.8	1.8	1.8
Previous Tealbook	1.7	1.8	1.8	1.8	1.8	1.8

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.

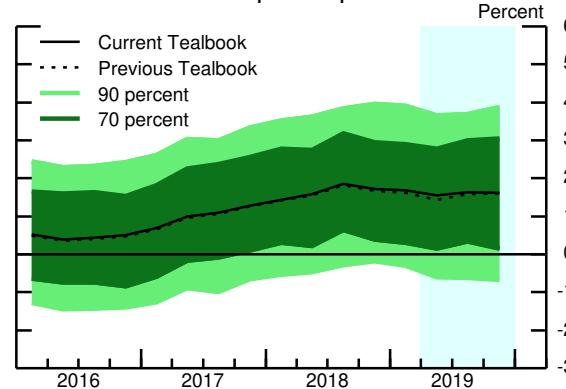
### Judgmental Output Gap



Note: Shaded regions show the distribution of historical revisions to the staff's estimates of the output gap.

Source: Various macroeconomic data; staff assumptions.

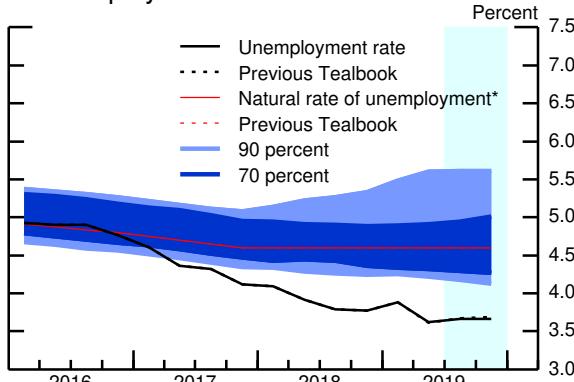
### Model-Based Output Gap



Note: Shaded regions denote model-computed uncertainty bands.

Source: Various macroeconomic data; staff assumptions.

### Unemployment Rate

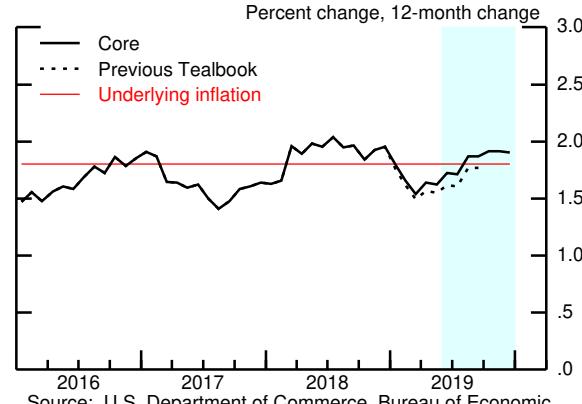


Note: Shaded regions show the distribution of historical revisions to the staff's estimates of the natural rate.

\*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.

**Federal Reserve System Nowcasts of 2019:Q2 Real GDP Growth**  
(Percent change at annual rate from previous quarter)

Federal Reserve entity	Type of model	Nowcast as of July 17, 2019
Federal Reserve Bank		
Boston	• Mixed-frequency BVAR	2.2
New York	• Factor-augmented autoregressive model combination • Factor-augmented autoregressive model combination, financial factors only • Dynamic factor model	2.5 2.3 1.0
Cleveland	• Bayesian regressions with stochastic volatility • Tracking model	1.6 1.1
Atlanta	• Tracking model combined with Bayesian vector autoregressions (VARs), dynamic factor models, and factor-augmented autoregressions (known as GDPNow)	1.6
Chicago	• Dynamic factor models • Bayesian VARs	.6 2.2
St. Louis	• Dynamic factor models • News index model • Let-the-data-decide regressions	1.5 2.7 2.5
Kansas City	• Accounting-based tracking estimate	1.5
Board of Governors	• Tealbook estimate (judgmental) <sup>1</sup> • Monthly dynamic factor models (DFM-45) • Mixed-frequency dynamic factor model (DFM-BM)	2.4 2.3 1.9
Memo: Median of Federal Reserve System nowcasts		2.1

<sup>1</sup> The July Tealbook forecast, finalized on July 18, 2019, is 2.5 percent.

## Summary of the Near-Term Outlook for GDP

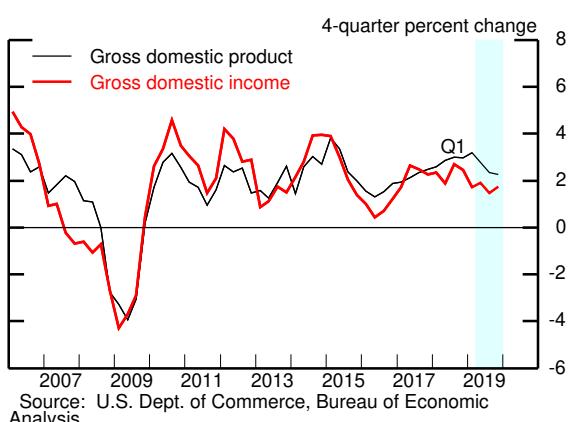
(Percent change at annual rate except as noted)

Measure	2019:Q1		2019:Q2		2019:H2	
	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook
<b>Real GDP</b>	<b>3.0</b>	<b>3.1</b>	<b>1.8</b>	<b>2.5</b>	<b>1.7</b>	<b>1.7</b>
Private domestic final purchases	1.1	1.3	2.2	3.1	2.2	2.2
Personal consumption expenditures	.9	.9	3.0	4.1	2.4	2.5
Residential investment	-3.5	-2.0	-.7	-2.6	5.7	5.8
Nonres. private fixed investment	3.1	4.4	-.7	.0	.0	-.1
Government purchases	2.8	2.8	4.4	6.2	1.2	1.2
<i>Contributions to change in real GDP</i>						
Inventory investment <sup>1</sup>	.6	.6	-.4	-.8	-.4	-.3
Net exports <sup>1</sup>	1.0	.9	-.5	-.3	.0	.0

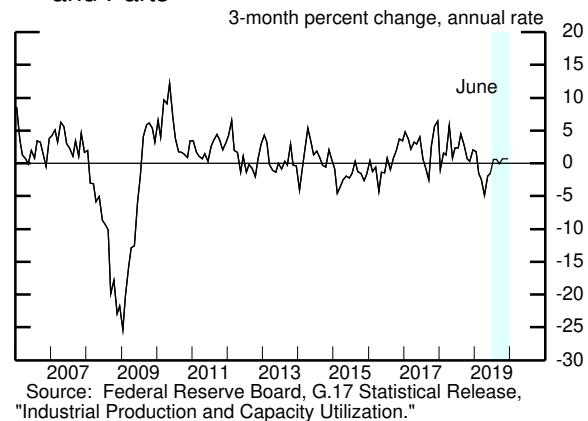
1. Percentage points.

### Recent Nonfinancial Developments (1)

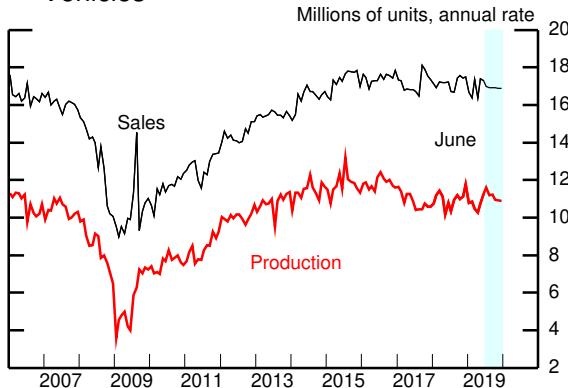
#### Real GDP and GDI



#### Manufacturing IP ex. Motor Vehicles and Parts



#### Sales and Production of Light Motor Vehicles

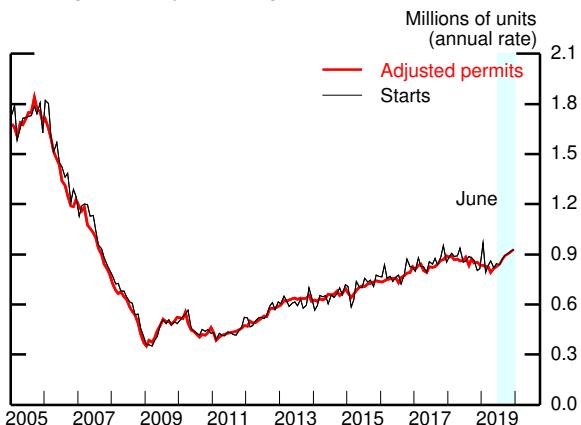


#### Real PCE Growth



## Recent Nonfinancial Developments (2)

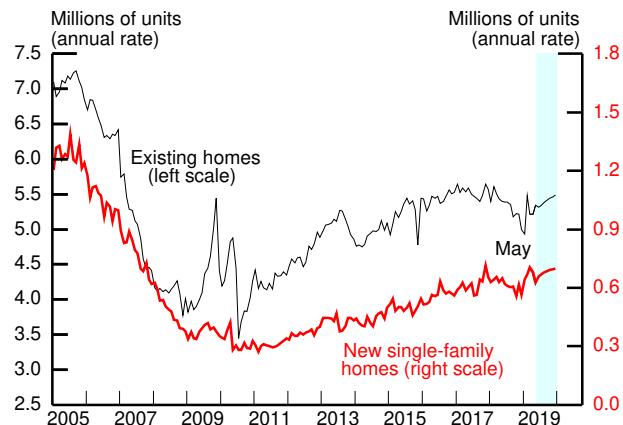
### Single-Family Housing Starts and Permits



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

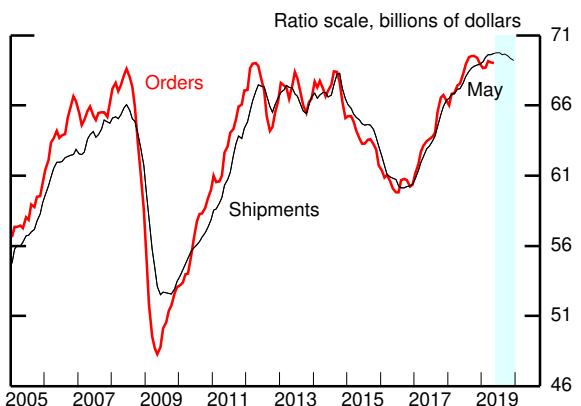
Source: U.S. Census Bureau.

### Home Sales



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

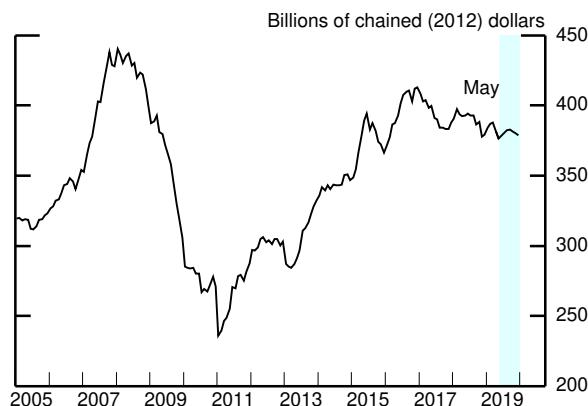
### Nondefense Capital Goods ex. Aircraft



Note: Data are 3-month moving averages.

Source: U.S. Census Bureau.

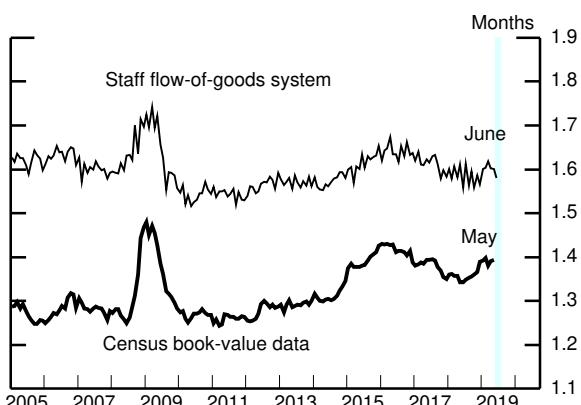
### Nonresidential Construction Put in Place



Note: Nominal CPIP deflated by BEA prices through 2019:Q1 and by the staff's estimated deflator thereafter.

Source: U.S. Census Bureau.

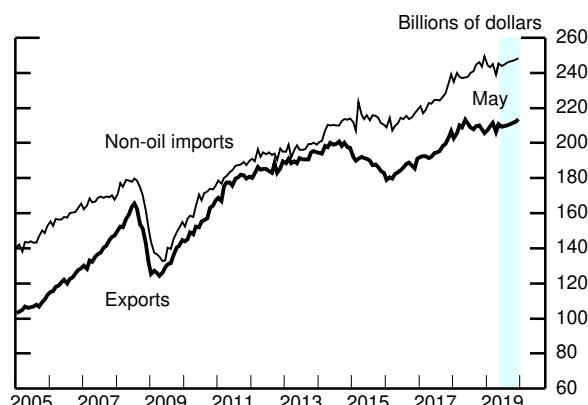
### Inventory Ratios



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

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

### Exports and Non-oil Imports

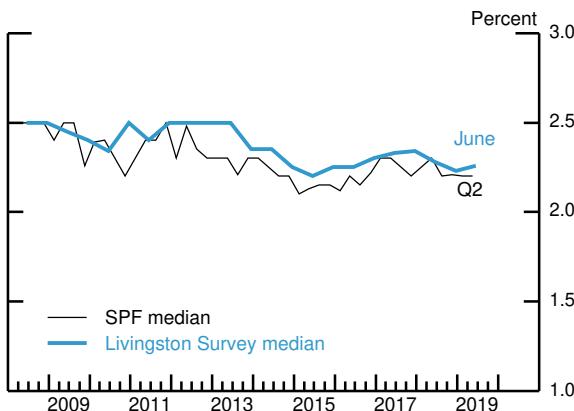


Note: Forecasts are linear interpolations of quarterly values.

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

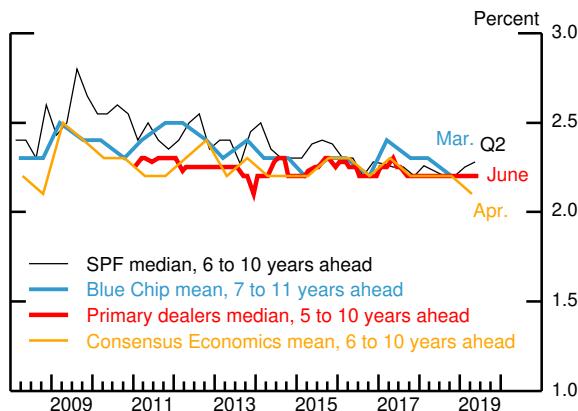
## Survey Measures of Longer-Term Inflation Expectations

CPI Next 10 Years



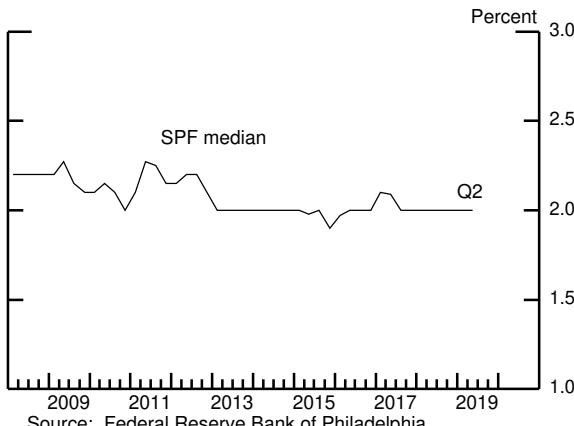
Note: SPF is Survey of Professional Forecasters.  
Source: Federal Reserve Bank of Philadelphia.

CPI Forward Expectations



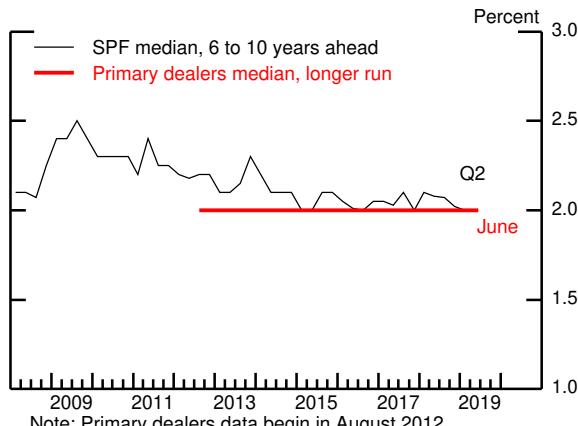
Source: Federal Reserve Bank of Philadelphia; Blue Chip Economic Indicators; Federal Reserve Bank of New York; Consensus Economics.

PCE Next 10 Years



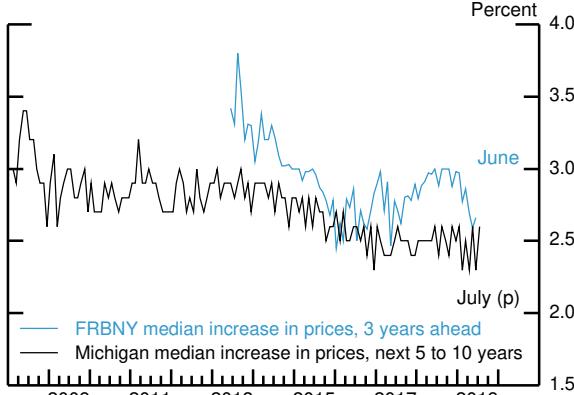
Source: Federal Reserve Bank of Philadelphia.

PCE Forward Expectations



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

Surveys of Consumers

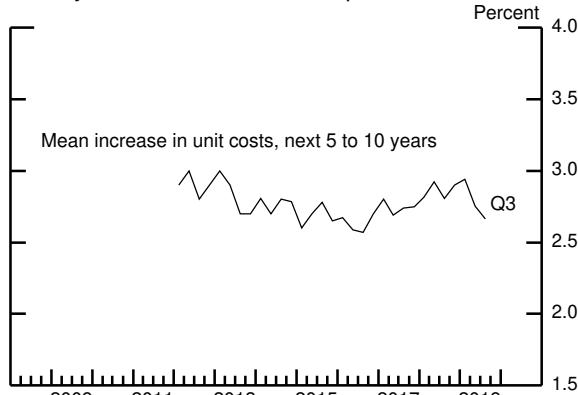


Note: Federal Reserve Bank of New York (FRBNY) Survey of Consumer Expectations reports expected 12-month inflation rate 3 years from the current survey date. FRBNY data begin in June 2013.

(p) Preliminary.

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

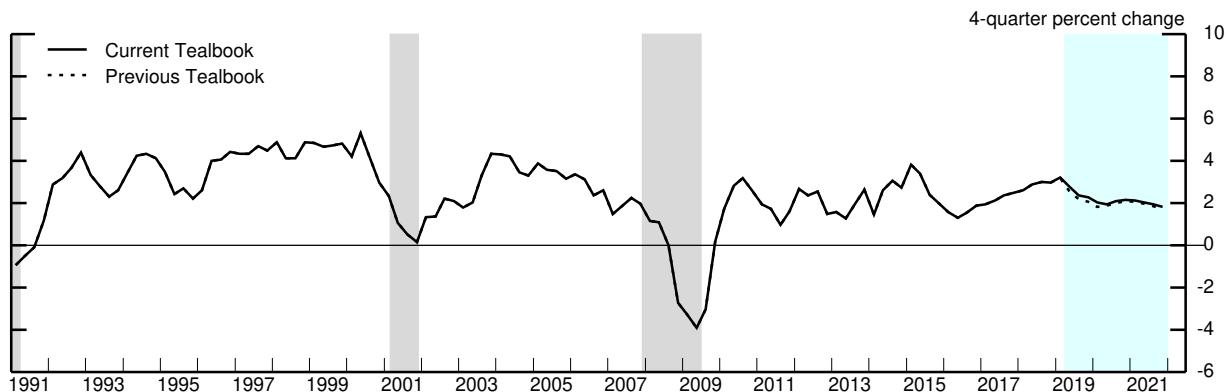
Survey of Business Inflation Expectations



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

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

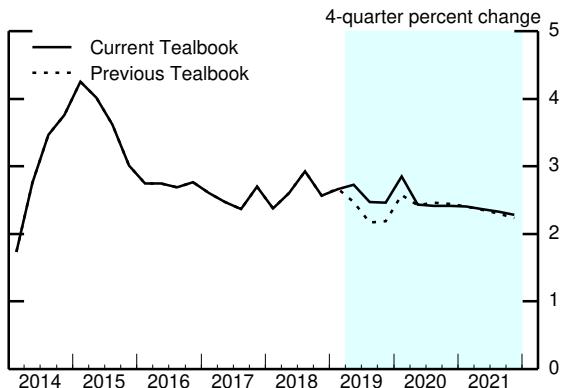
Measure	2018	2019 H1	2019 H2	2019	2020	2021
<b>Real GDP</b>	<b>3.0</b>	<b>2.8</b>	<b>1.7</b>	<b>2.3</b>	<b>2.1</b>	<b>1.8</b>
Previous Tealbook	3.0	2.4	1.7	2.0	2.1	1.7
Final sales	2.6	3.0	2.0	2.5	2.2	1.8
Previous Tealbook	2.6	2.3	2.1	2.2	2.2	1.7
Personal consumption expenditures	2.6	2.5	2.5	2.5	2.4	2.3
Previous Tealbook	2.6	2.0	2.4	2.2	2.4	2.2
Residential investment	-3.3	-2.3	5.8	1.6	2.8	-3.6
Previous Tealbook	-3.3	-2.1	5.7	1.7	2.5	-3.4
Nonresidential structures	4.9	-2.2	-1.1	-1.6	-1.9	-.8
Previous Tealbook	4.9	-.9	-.4	-.6	-1.8	-1.3
Equipment and intangibles	7.6	3.5	.2	1.9	3.0	2.7
Previous Tealbook	7.6	1.8	.1	1.0	2.8	2.3
Federal purchases	2.7	5.3	3.7	4.5	1.7	.8
Previous Tealbook	2.7	4.5	3.0	3.7	2.5	.8
State and local purchases	.8	4.0	-.4	1.8	.9	1.0
Previous Tealbook	.8	3.1	.1	1.6	.9	1.0
Exports	2.3	1.3	1.8	1.5	3.0	3.5
Previous Tealbook	2.3	1.3	1.7	1.5	2.8	3.1
Imports	3.4	-.9	1.7	.4	2.3	3.2
Previous Tealbook	3.4	-.5	1.4	.4	2.6	3.0
Contributions to change in real GDP (percentage points)						
Inventory change	.4	-.2	-.3	-.2	-.1	.0
Previous Tealbook	.4	.1	-.4	-.1	-.1	.0
Net exports	-.2	.3	.0	.1	.0	-.1
Previous Tealbook	-.2	.2	.0	.1	-.1	-.1

**Real GDP**

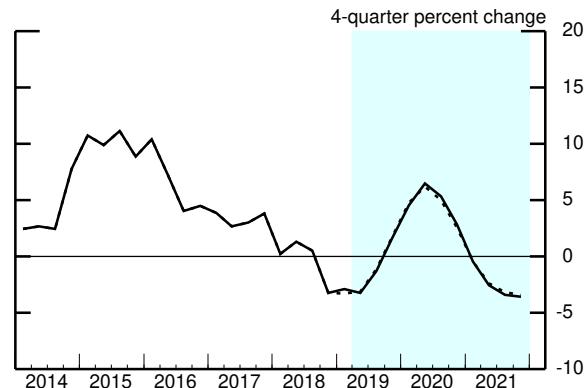
Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.  
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

## Components of Final Demand

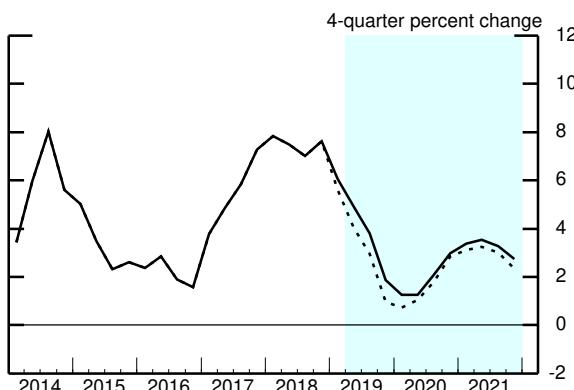
**Personal Consumption Expenditures**



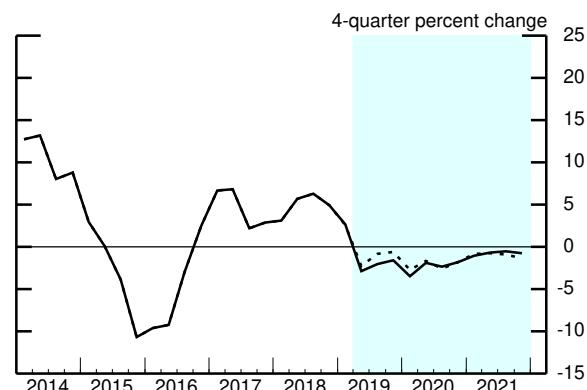
**Residential Investment**



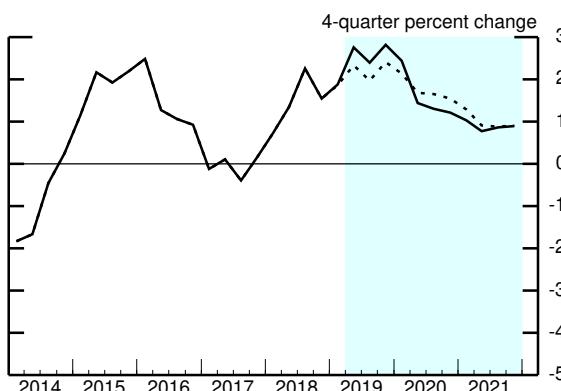
**Equipment and Intangibles**



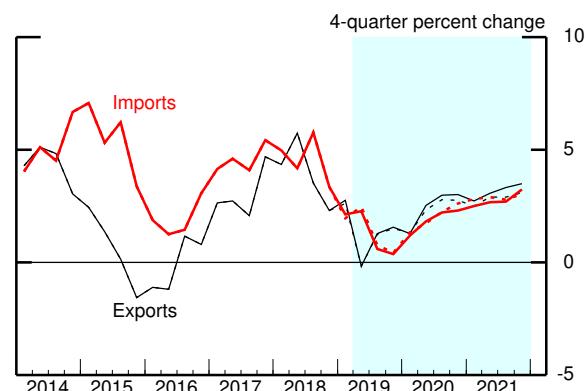
**Nonresidential Structures**



**Government Consumption and Investment**

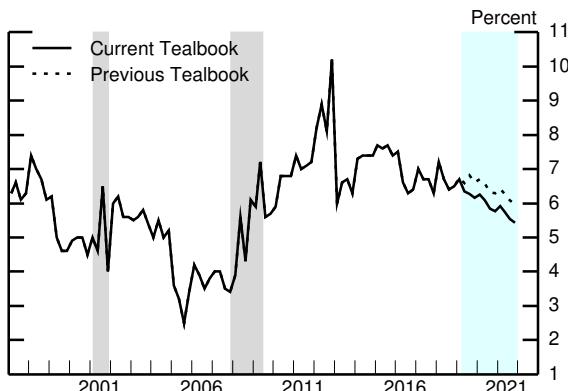


**Exports and Imports**

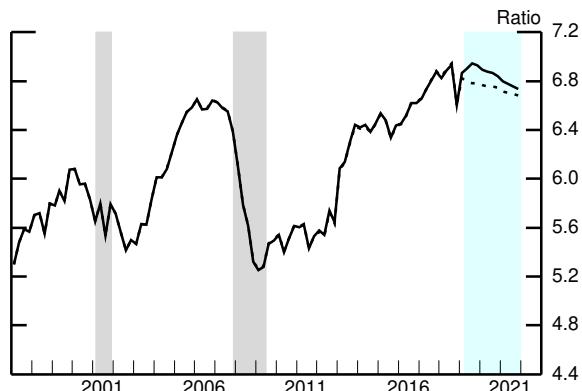


Source: U.S. Department of Commerce, Bureau of Economic Analysis.

## Aspects of the Medium-Term Projection

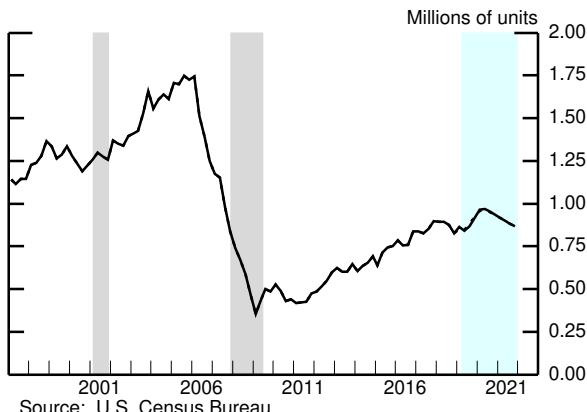
**Personal Saving Rate**

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

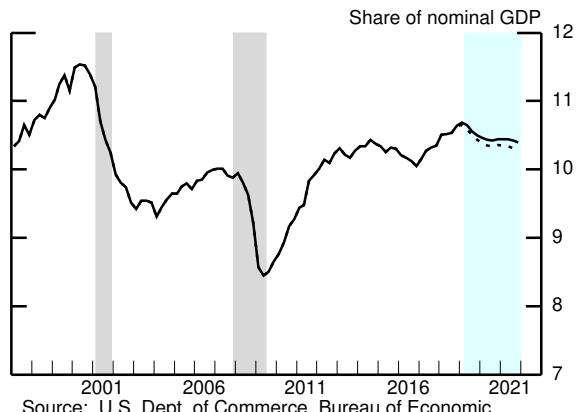
**Wealth-to-Income Ratio**

Note: Ratio of household net worth to disposable personal income.

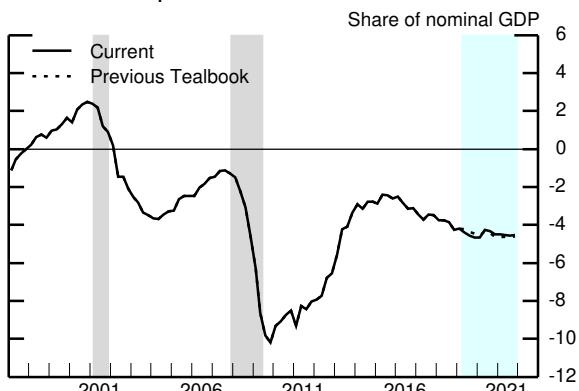
Source: For net worth, Federal Reserve Board, Financial Accounts of the United States; for income, U.S. Dept. of Commerce, Bureau of Economic Analysis.

**Single-Family Housing Starts**

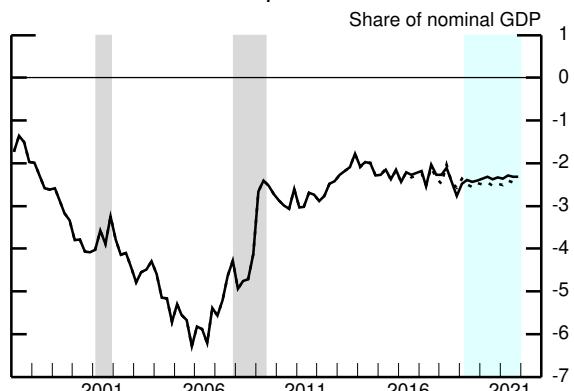
Source: U.S. Census Bureau.

**Equipment and Intangibles Spending**

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

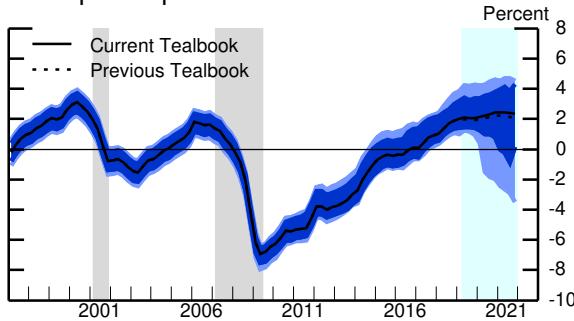
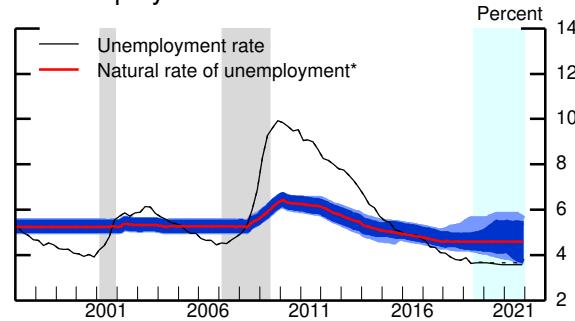
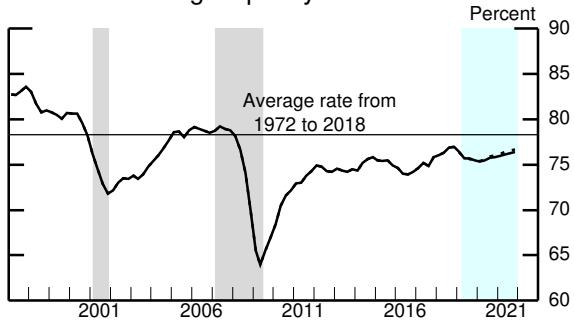
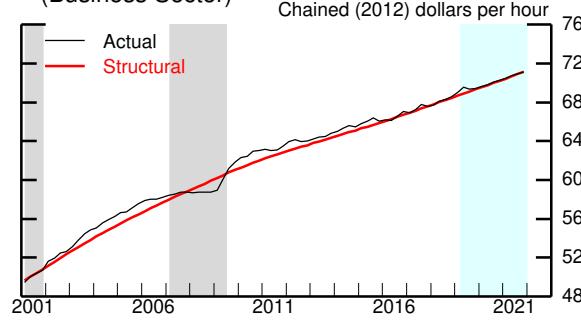
**Federal Surplus/Deficit**

Note: 4-quarter moving average.  
Source: Monthly Treasury Statement.

**Current Account Surplus/Deficit**

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.

**Output Gap****Unemployment Rate****Manufacturing Capacity Utilization Rate****Actual and Structural Labor Productivity (Business Sector)**

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	1.8	1.9
Previous Tealbook	3.1	3.6	2.7	1.9	1.4	1.7	1.8	1.8	1.8	1.9
<i>Selected contributions</i> <sup>1</sup>										
Structural labor productivity <sup>2</sup>	1.7	2.9	2.7	1.8	1.2	1.3	1.3	1.3	1.2	1.3
Previous Tealbook	1.7	2.9	2.7	1.8	1.2	1.3	1.3	1.3	1.2	1.3
Capital deepening	.7	1.4	1.0	.5	.8	.7	.7	.8	.5	.5
Multifactor productivity	.8	1.1	1.4	1.0	.2	.4	.4	.4	.5	.6
Structural hours	1.5	1.3	.8	.5	.4	.3	.7	.2	.6	.5
Previous Tealbook	1.5	1.3	.8	.5	.4	.3	.7	.2	.6	.5
Labor force participation	.4	-.1	-.2	-.4	-.5	-.3	-.2	-.2	-.2	-.2
Previous Tealbook	.4	-.1	-.2	-.4	-.5	-.3	-.2	-.2	-.2	-.2
Memo:										
Output gap <sup>3</sup>	-1.2	2.5	.3	-5.4	.1	.9	1.9	2.1	2.4	2.3
Previous Tealbook	-1.2	2.5	.3	-5.4	.1	.9	1.9	1.9	2.2	2.0

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

1. Percentage points.

2. Total business sector.

3. Percent difference between actual and potential 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	2018	2019 H1	2019 H2	2019	2020	2021
Nonfarm payroll employment <sup>1</sup> Previous Tealbook	223 223	173 165	155 154	163 159	147 142	111 99
Private employment <sup>1</sup> Previous Tealbook	215 215	161 157	143 143	152 150	138 133	101 89
Labor force participation rate <sup>2</sup> Previous Tealbook	63.0 63.0	62.9 62.8	62.9 62.9	62.9 62.9	62.9 62.9	62.8 62.7
Civilian unemployment rate <sup>2</sup> Previous Tealbook	3.8 3.8	3.6 3.6	3.7 3.7	3.7 3.7	3.6 3.7	3.6 3.7
Employment to population ratio <sup>2</sup> Previous Tealbook	60.6 60.6	60.6 60.6	60.6 60.6	60.6 60.6	60.7 60.6	60.6 60.5

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	2018	2019 H1	2019 H2	2019	2020	2021
<i>Percent change at annual rate from final quarter of preceding period</i>						
PCE chain-weighted price index Previous Tealbook	1.9 1.9	1.6 1.4	1.8 1.6	1.7 1.5	1.8 1.9	1.8 1.9
Food and beverages Previous Tealbook	.5 .5	1.8 1.7	2.6 2.8	2.2 2.3	2.6 2.6	2.6 2.6
Energy Previous Tealbook	3.5 3.5	-.8 -1.8	-6.8 -10.6	-3.8 -6.3	-1.4 -.1	.0 .3
Excluding food and energy Previous Tealbook	1.9 1.9	1.7 1.5	2.2 2.1	1.9 1.8	1.9 1.9	1.9 1.9
Prices of core goods imports <sup>1</sup> Previous Tealbook	.5 .5	-.6 .0	1.1 .7	.3 .3	.9 .9	.8 .8
<i>12-month percent change</i>	June 2019 <sup>2</sup>	July 2019 <sup>2</sup>	Aug. 2019 <sup>2</sup>	Sept. 2019 <sup>2</sup>	Oct. 2019 <sup>2</sup>	Nov. 2019 <sup>2</sup>
PCE chain-weighted price index Previous Tealbook	1.5 1.4	1.6 1.3	1.7 1.4	1.6 1.4	1.6 ...	1.7 ...
Excluding food and energy Previous Tealbook	1.7 1.6	1.7 1.6	1.9 1.8	1.9 1.8	1.9 ...	1.9 ...

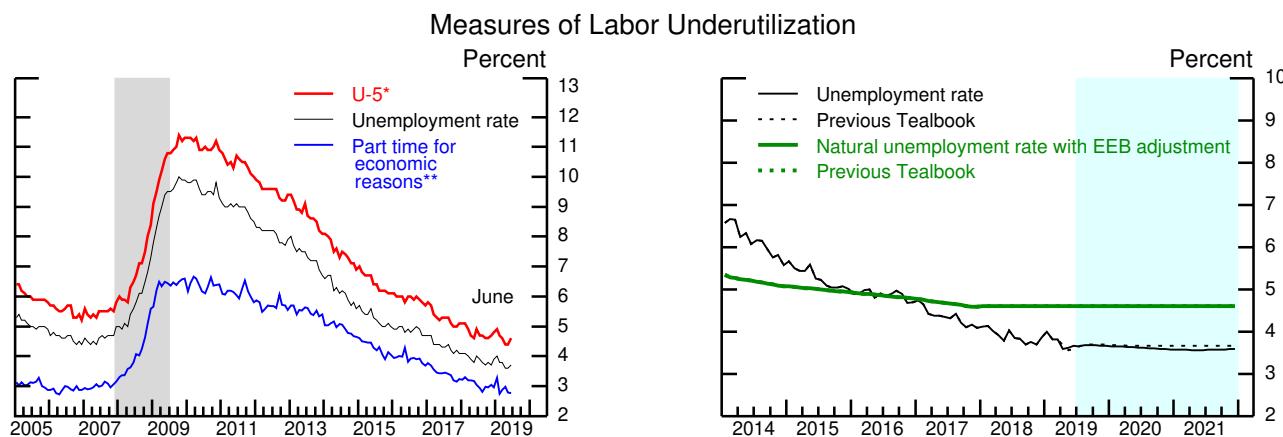
... Not applicable.

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

2. Staff forecast.

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

## Labor Market Developments and Outlook (1)



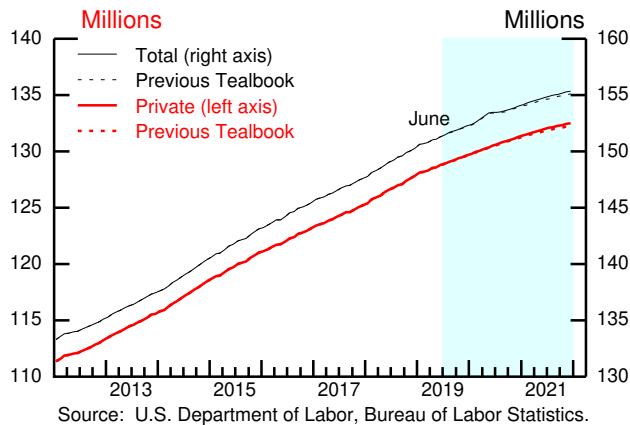
\* U-5 measures total unemployed persons plus all marginally attached to the labor force as a percent of the labor force plus persons marginally attached to the labor force.

\*\* Percent of Current Population Survey employment.

EEB Extended and emergency unemployment benefits.

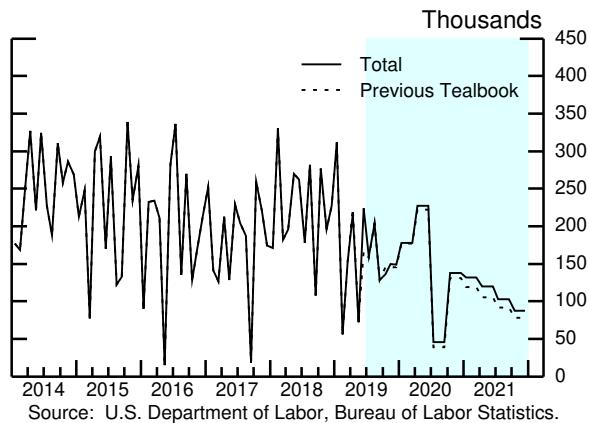
Source: U.S. Department of Labor, Bureau of Labor Statistics.

### Level of Payroll Employment



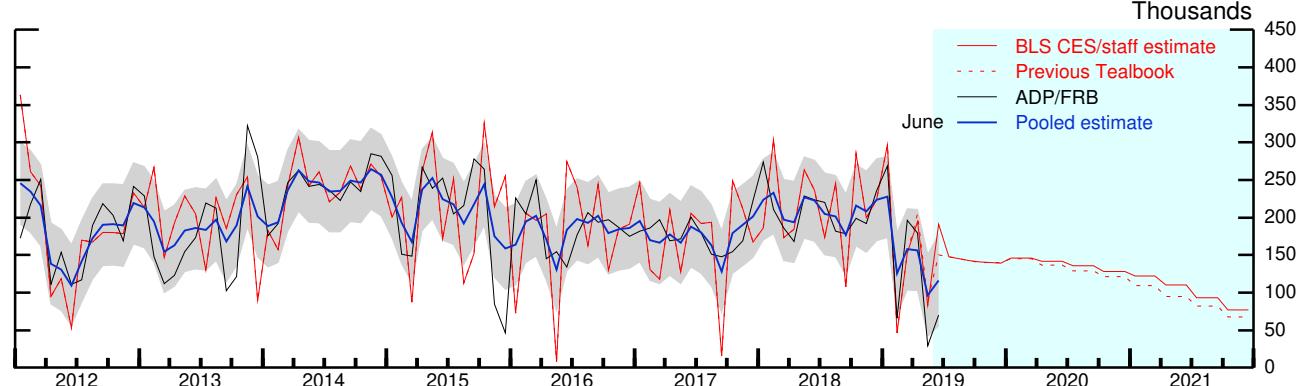
Source: U.S. Department of Labor, Bureau of Labor Statistics.

### Change in Total Payroll Employment



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

### Change in Private Payroll Employment

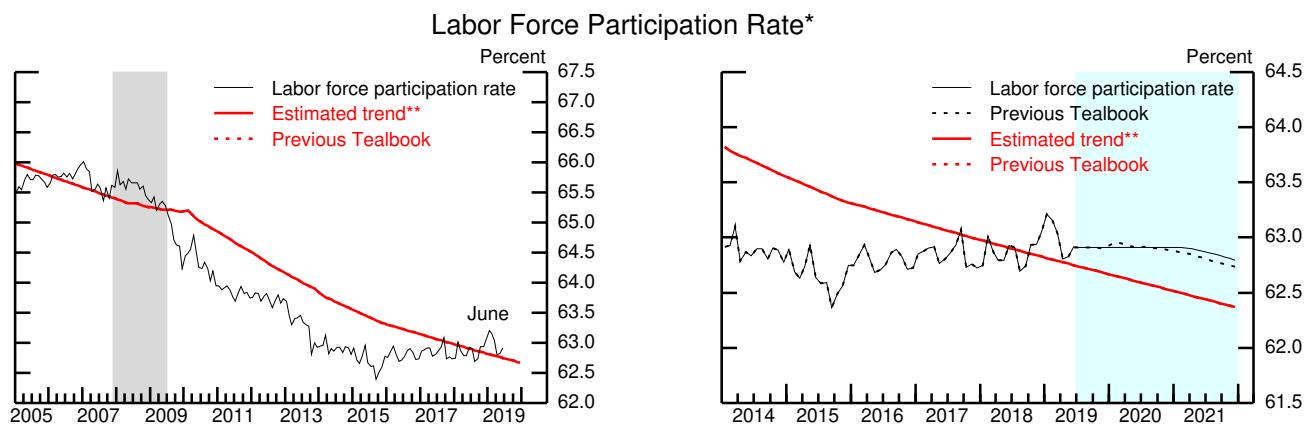


Note: Gray shaded area around blue line is 90 percent confidence interval around pooled estimate.

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.

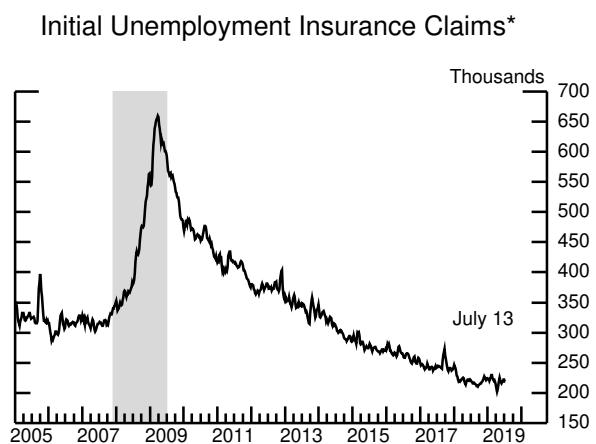
## Labor Market Developments and Outlook (2)



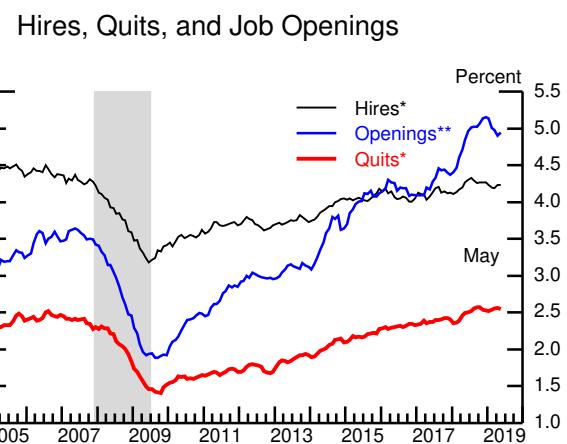
\* Published data adjusted by staff to account for changes in population weights.

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

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



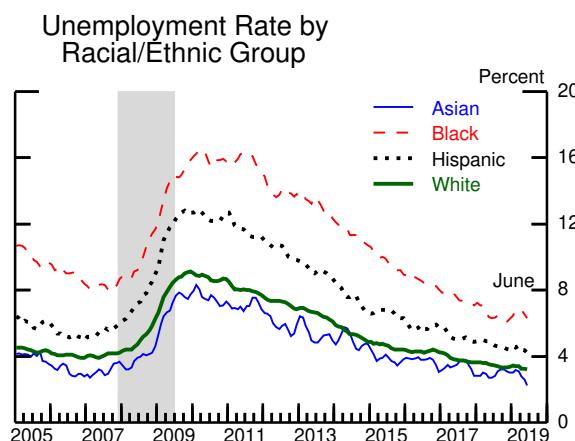
\* 4-week moving average.  
Source: U.S. Department of Labor, Employment and Training Administration.



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

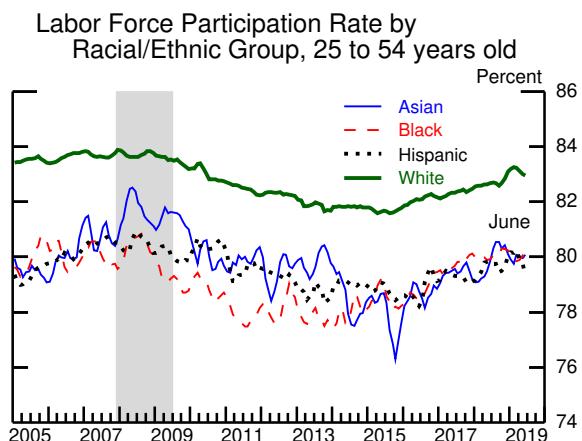
\*\* Percent of private nonfarm payroll employment plus unfilled jobs, 3-month moving average.

Source: Job Openings and Labor Turnover Survey.



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.



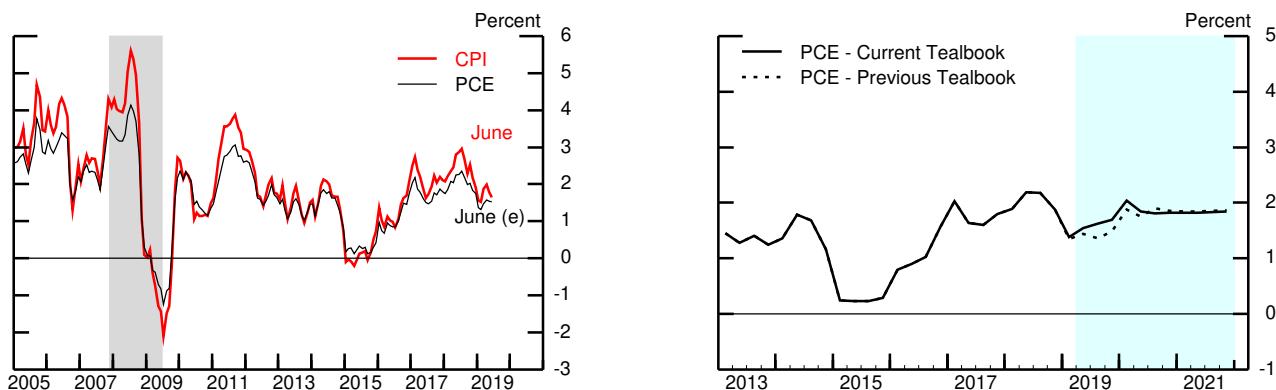
Note: These categories are not mutually exclusive, as the ethnicity Hispanic may include people of any race. The Current Population Survey defines Hispanic ethnicity as those who report their origin is Mexican, Puerto Rican, Cuban, Central American, or South American (and some others). 3-month moving averages.

Source: U.S. Department of Labor, Bureau of Labor Statistics, Current Population Survey.

## Inflation Developments and Outlook (1)

(Percent change from year-earlier period)

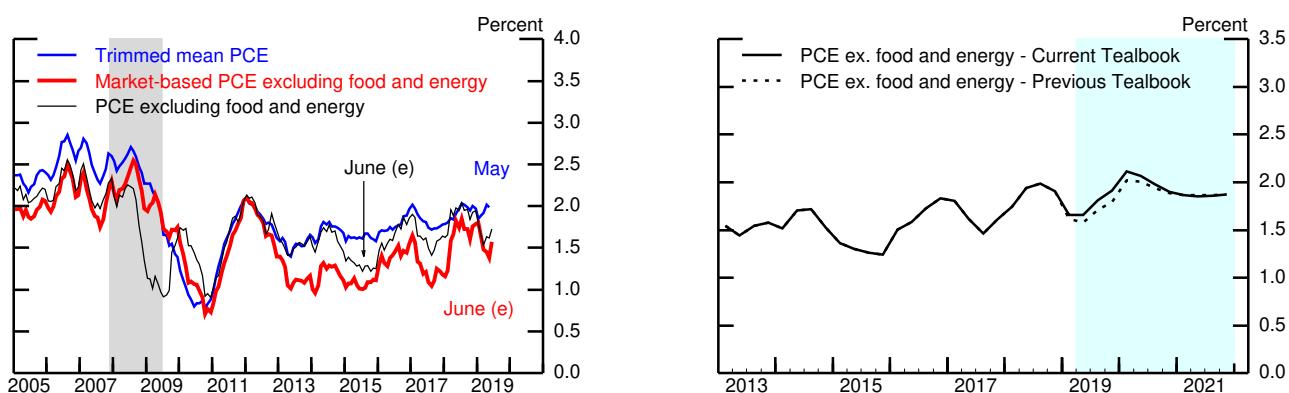
### Headline Consumer Price Inflation



Note: PCE prices from May to June 2019 are staff estimates (e).

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

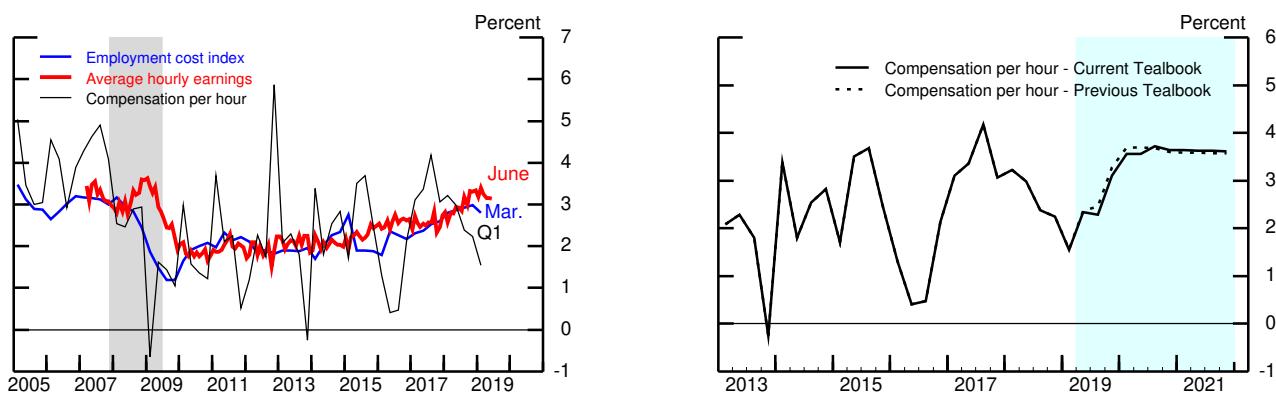
### Measures of Core PCE Price Inflation



Note: Core PCE prices from May to June 2019 are staff estimates (e).

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

### Labor Cost Growth



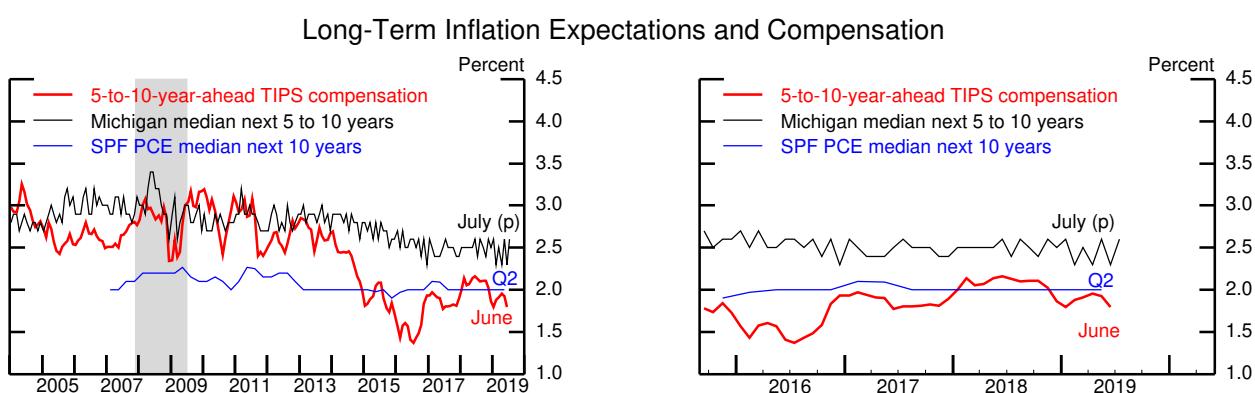
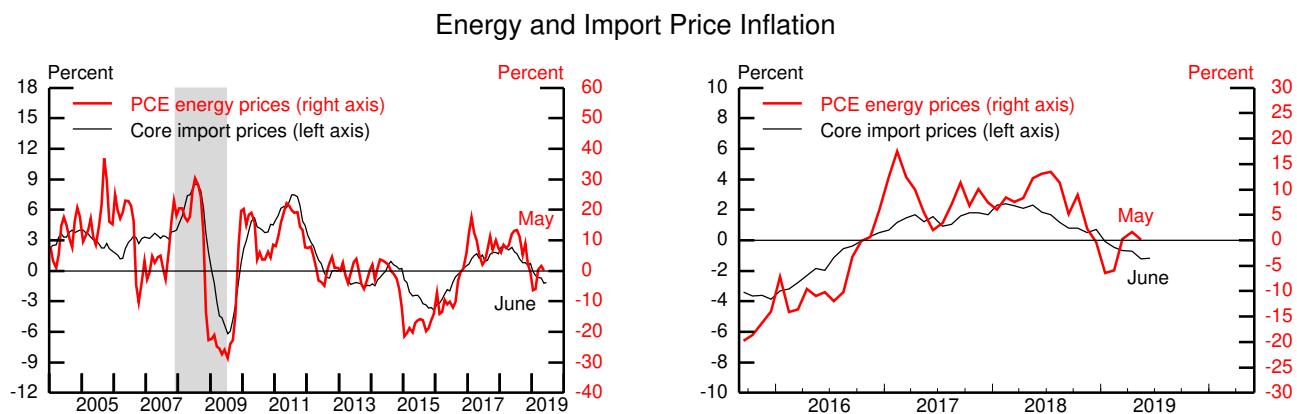
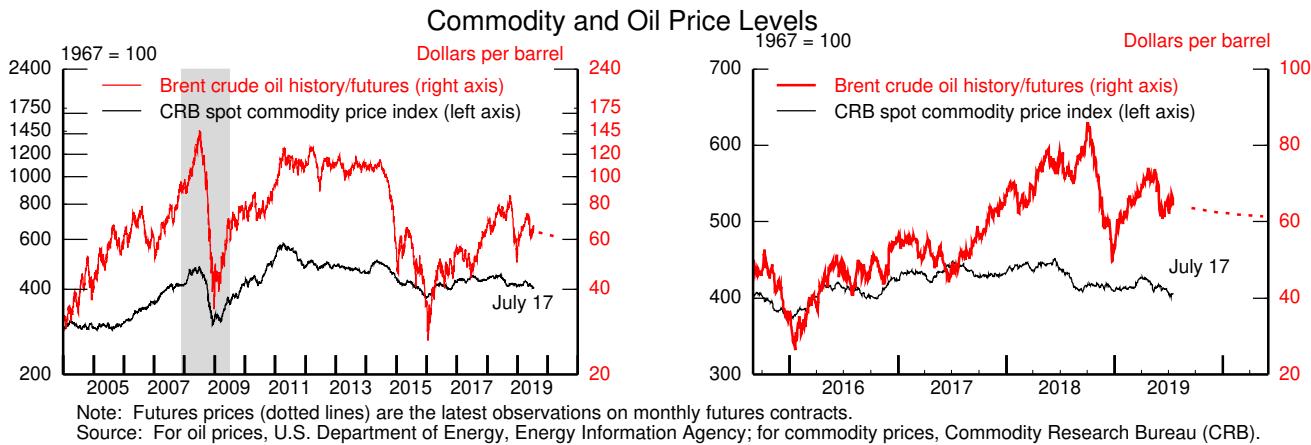
Note: Compensation per hour is for the business sector. Average hourly earnings are for the private nonfarm sector. The employment cost index is for the private sector.

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

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

## Inflation Developments and Outlook (2)

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



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

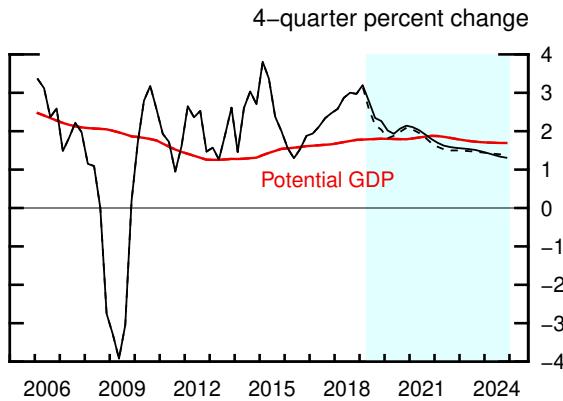
**The Long-Term Outlook**

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

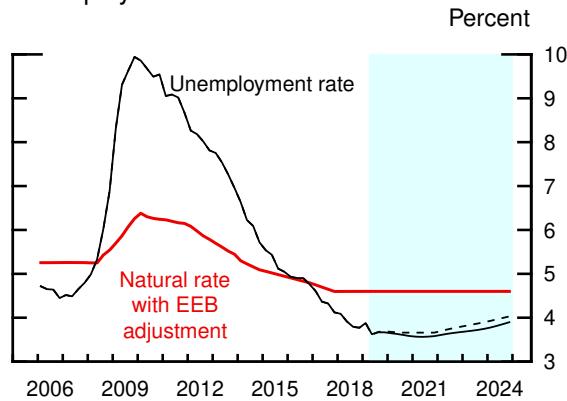
Measure	2019	2020	2021	2022	2023	2024	Longer run
Real GDP Previous Tealbook	2.3 2.0	2.1 2.1	1.8 1.7	1.6 1.5	1.5 1.4	1.3 1.4	1.7 1.7
Civilian unemployment rate <sup>1</sup> Previous Tealbook	3.7 3.7	3.6 3.7	3.6 3.7	3.7 3.8	3.7 3.9	3.9 4.0	4.6 4.6
PCE prices, total Previous Tealbook	1.7 1.5	1.8 1.9	1.8 1.9	1.9 1.9	2.0 1.9	2.0 2.0	2.0 2.0
Core PCE prices Previous Tealbook	1.9 1.8	1.9 1.9	1.9 1.9	1.9 1.9	2.0 2.0	2.0 2.0	2.0 2.0
Federal funds rate <sup>1</sup> Previous Tealbook	2.45 2.40	2.64 2.56	2.68 2.62	2.72 2.64	2.76 2.66	2.77 2.67	2.50 2.50
10-year Treasury yield <sup>1</sup> Previous Tealbook	2.2 2.4	2.7 2.8	2.9 3.1	3.1 3.2	3.2 3.3	3.2 3.3	3.4 3.4

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

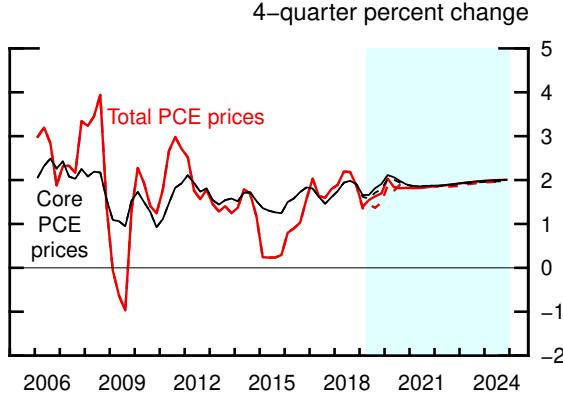
Real GDP



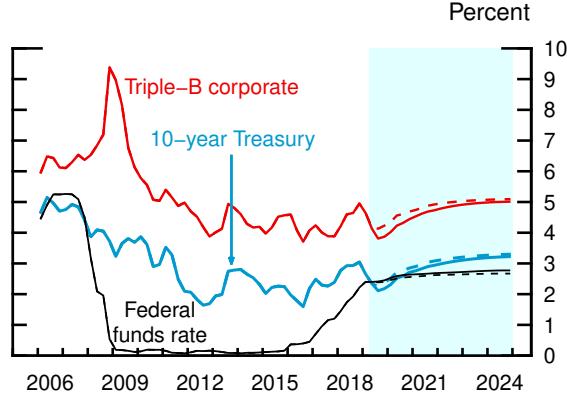
Unemployment Rate



PCE Prices



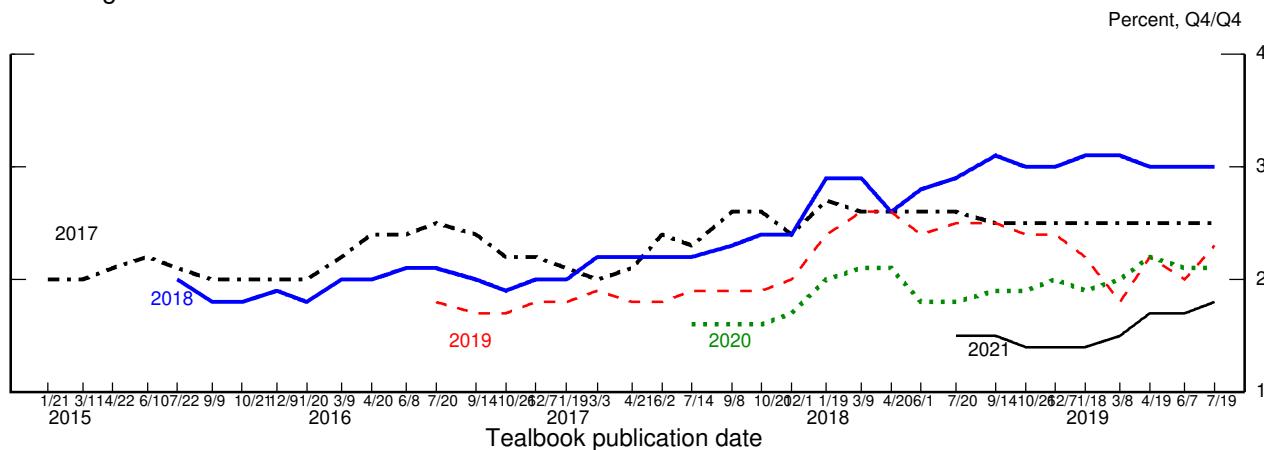
Interest Rates



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

## Evolution of the Staff Forecast

Change in Real GDP



## The Foreign GDP Outlook

Real GDP\*

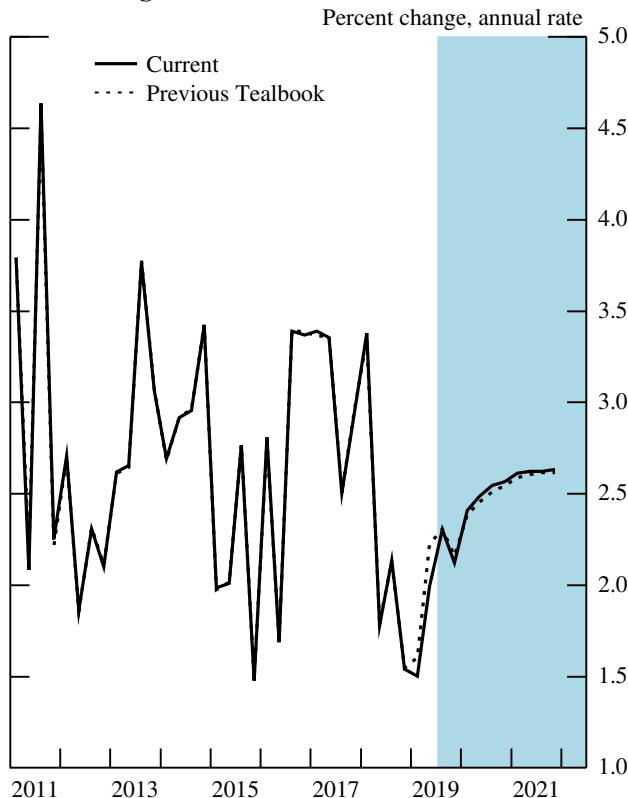
Percent change, annual rate

	2018			2019			2020	2021
	H1	Q3	Q4	Q1	Q2	H2		
1. Total Foreign	2.6	2.1	1.5	1.5	2.0	2.2	2.5	2.6
Previous Tealbook	2.6	2.1	1.5	1.6	2.2	2.2	2.5	2.6
2. Advanced Foreign Economies	1.8	1.1	.8	1.2	1.5	1.3	1.6	1.7
Previous Tealbook	1.8	1.1	.7	1.2	1.5	1.3	1.5	1.6
3. Canada	2.0	2.1	.3	.4	2.6	1.7	1.7	1.7
4. Euro Area	1.6	.5	1.0	1.6	1.0	1.1	1.5	1.8
5. Japan	.9	-2.6	1.8	2.2	-.0	.0	.9	.8
6. United Kingdom	.9	2.8	.9	2.0	-.2	1.3	1.6	1.6
7. Emerging Market Economies	3.4	3.2	2.3	1.8	2.4	3.1	3.4	3.6
Previous Tealbook	3.3	3.2	2.3	2.0	3.0	3.2	3.4	3.6
8. China	6.8	5.9	6.0	7.3	5.6	5.8	5.7	5.7
9. Emerging Asia ex. China	3.9	2.6	2.7	2.4	2.8	3.3	3.5	3.5
10. Mexico	1.9	2.7	.1	-.7	.5	1.7	2.3	2.7
11. Brazil	1.0	2.0	.4	-.6	.4	1.7	2.5	2.8

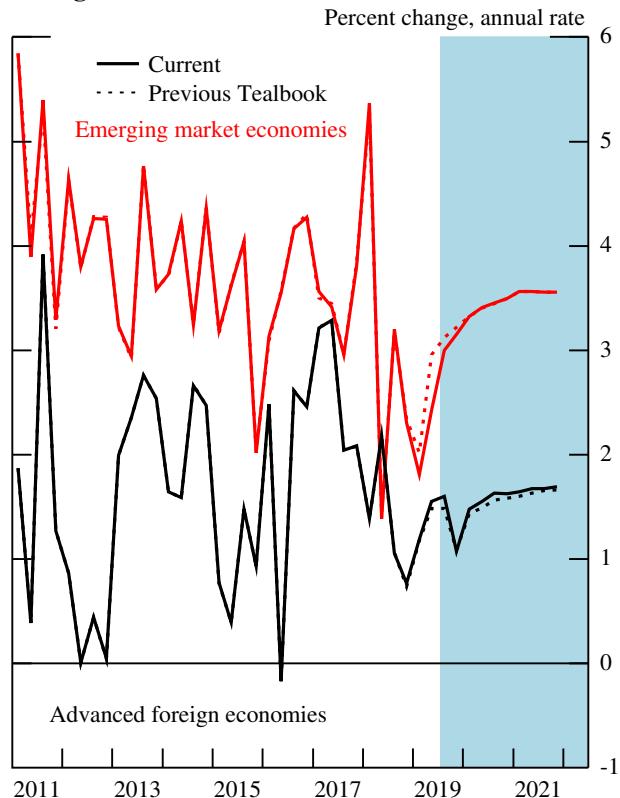
\* GDP aggregates weighted by shares of U.S. merchandise exports.

Int'l Econ Devel &amp; Outlook

### Total Foreign GDP



### Foreign GDP



## The Foreign Inflation Outlook

Consumer Prices\*

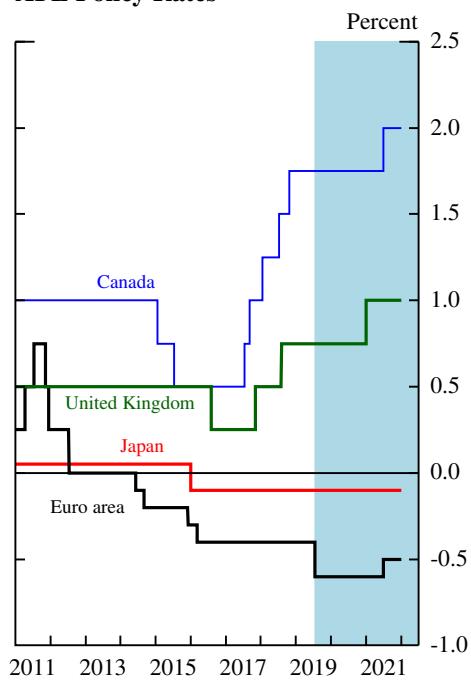
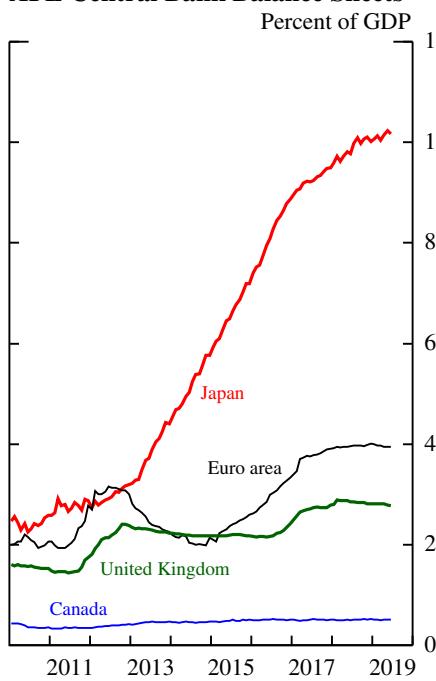
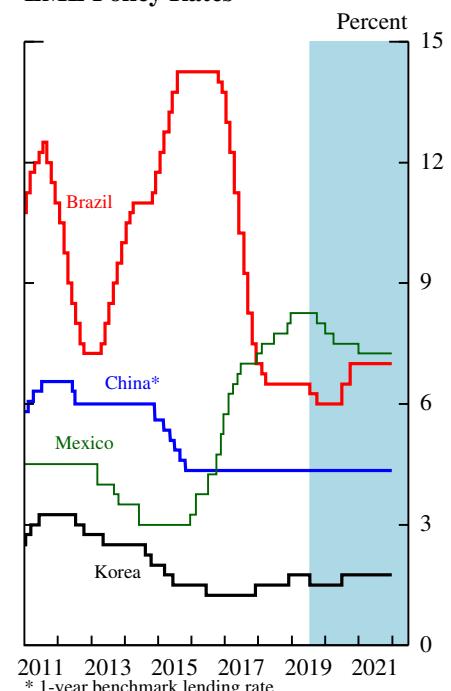
Percent change, annual rate

	2018			2019			2020	2021
	H1	Q3	Q4	Q1	Q2	H2		
1. Total Foreign Previous Tealbook	2.2	3.4	1.9	.8	3.3	2.6	2.3	2.3
	2.2	3.4	1.9	.8	2.9	2.4	2.3	2.3
2. Advanced Foreign Economies Previous Tealbook	1.9	2.4	.7	.7	2.2	1.9	1.5	1.5
3. Canada	2.2	2.6	1.1	1.6	3.4	1.8	1.9	2.0
4. Euro Area	2.2	2.6	.7	.1	2.2	1.4	1.3	1.4
5. Japan	.6	2.0	-.1	.9	.2	3.6	.9	1.0
6. United Kingdom	2.2	2.7	1.8	.9	2.7	2.3	2.1	2.0
7. Emerging Market Economies Previous Tealbook	2.5	4.1	2.7	.8	4.1	3.0	2.8	2.8
8. China	1.5	3.7	2.0	.6	4.3	3.0	2.5	2.5
9. Emerging Asia ex. China	2.2	2.0	1.2	.1	3.1	2.7	2.8	2.7
10. Mexico	4.0	6.5	4.9	1.1	4.5	3.2	3.2	3.2
11. Brazil	3.7	6.6	2.5	2.9	5.2	3.8	4.3	4.3

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

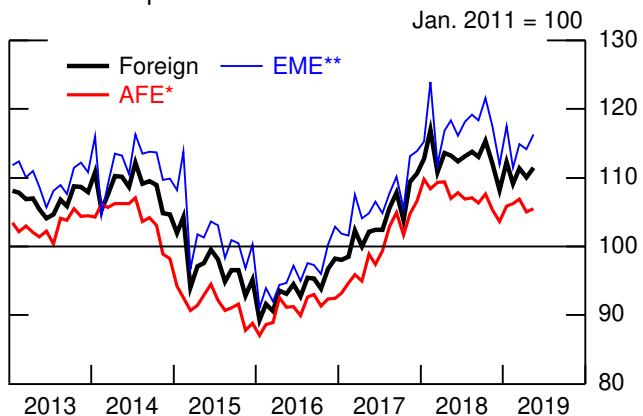
Int'l Econ Devel &amp; Outlook

## Foreign Monetary Policy

**AFE Policy Rates****AFE Central Bank Balance Sheets****EME Policy Rates**

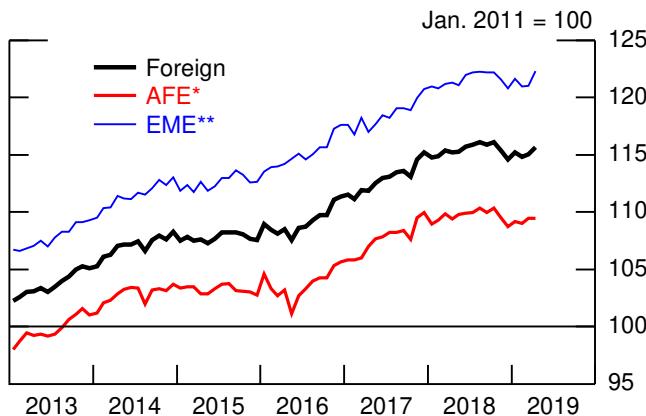
## Recent Foreign Indicators

### Nominal Exports



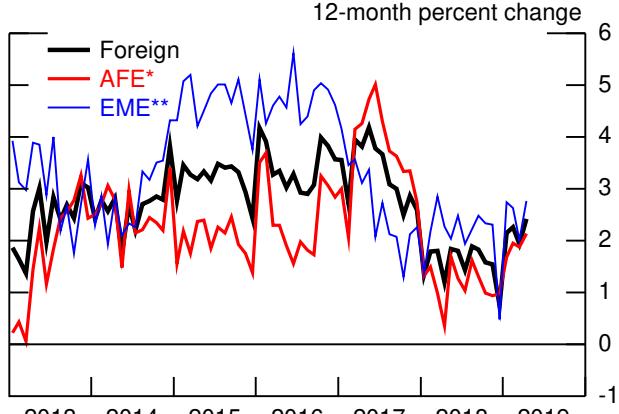
\* Includes Australia, Canada, euro area, Japan, Sweden, Switzerland, U.K.  
\*\* Includes Argentina, Brazil, Chile, China, Colombia, Hong Kong, India, Indonesia, Israel, Korea, Malaysia, Mexico, Singapore, Taiwan, Thailand.

### Industrial Production



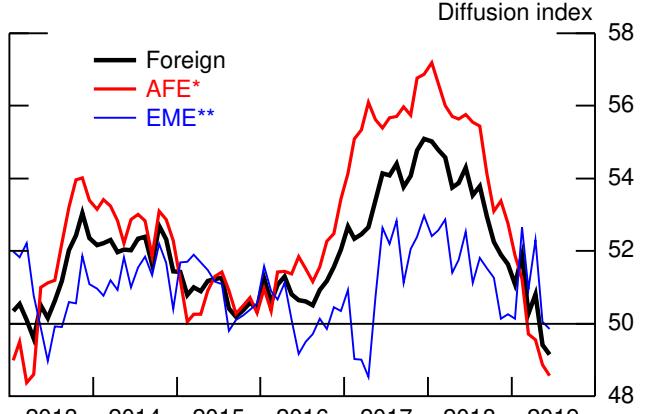
\* Includes Canada, euro area, Japan, Sweden, U.K.  
\*\* Includes Argentina, Brazil, Chile, China, Colombia, India, Indonesia, Israel, Korea, Malaysia, Mexico, Philippines, Russia, Singapore, Taiwan, Thailand.

### Retail Sales



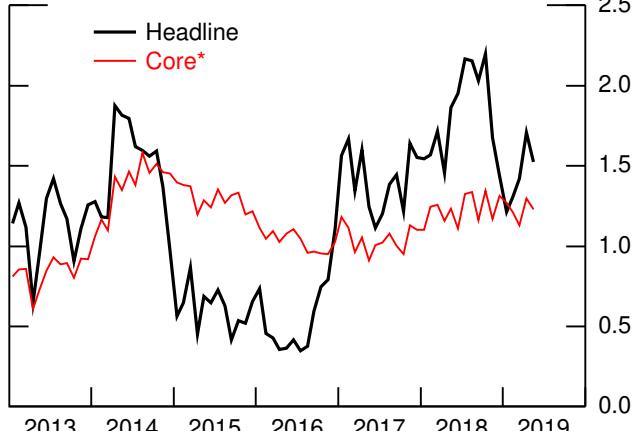
\* Includes Canada, euro area, Japan, Sweden, Switzerland, U.K.  
\*\* Includes Brazil, Chile, China, Korea, Mexico, Singapore, Taiwan.

### Manufacturing PMI



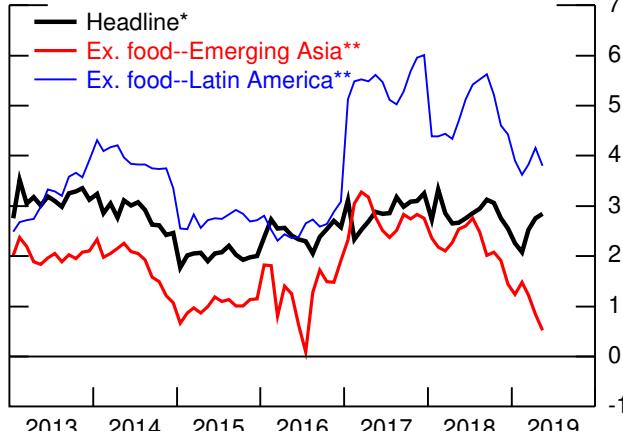
\* Includes Australia, Canada, euro area, Japan, Sweden, Switzerland, U.K.  
\*\* Includes Brazil, China, India, Indonesia, Israel, Korea, Mexico, Russia, Singapore, Taiwan, Turkey.

### Consumer Prices: Advanced Foreign Economies



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

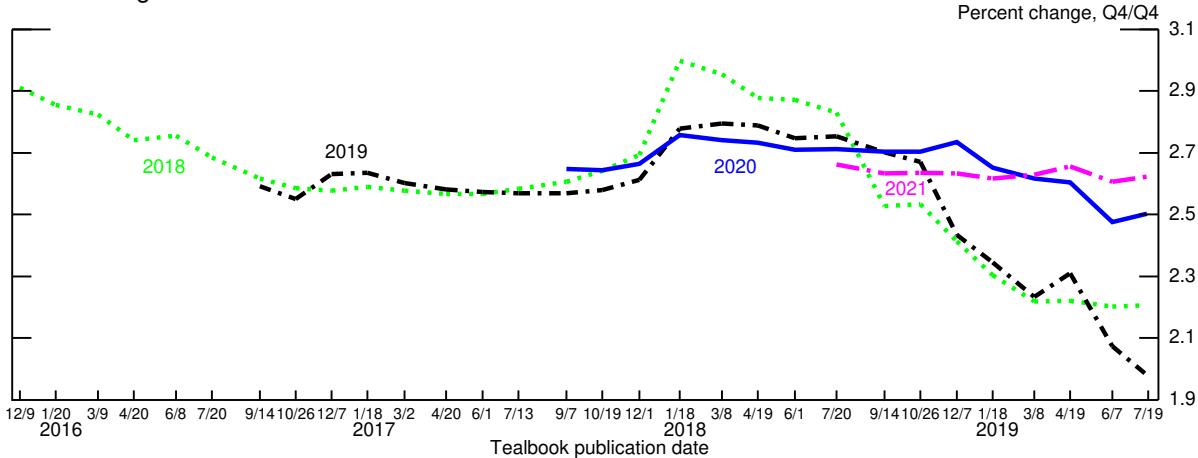
### Consumer Prices: Emerging Market Economies



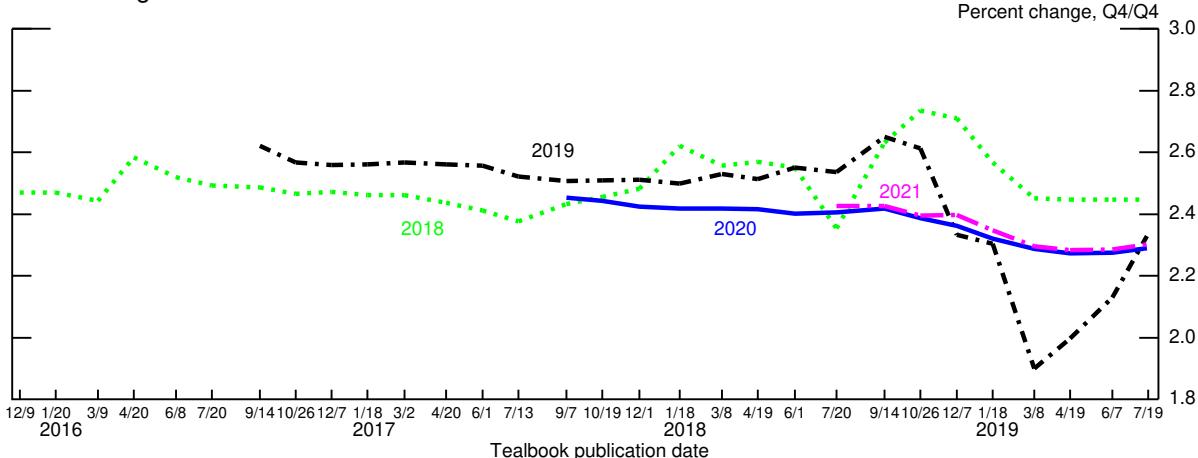
\* Includes Brazil, Chile, China, Colombia, Hong Kong, India, Indonesia, Korea, Malaysia, Mexico, Philippines, Singapore, Taiwan, Thailand.  
\*\* Excludes all food; staff calculation. Latin America excludes Argentina and Venezuela.

## Evolution of Staff's International Forecast

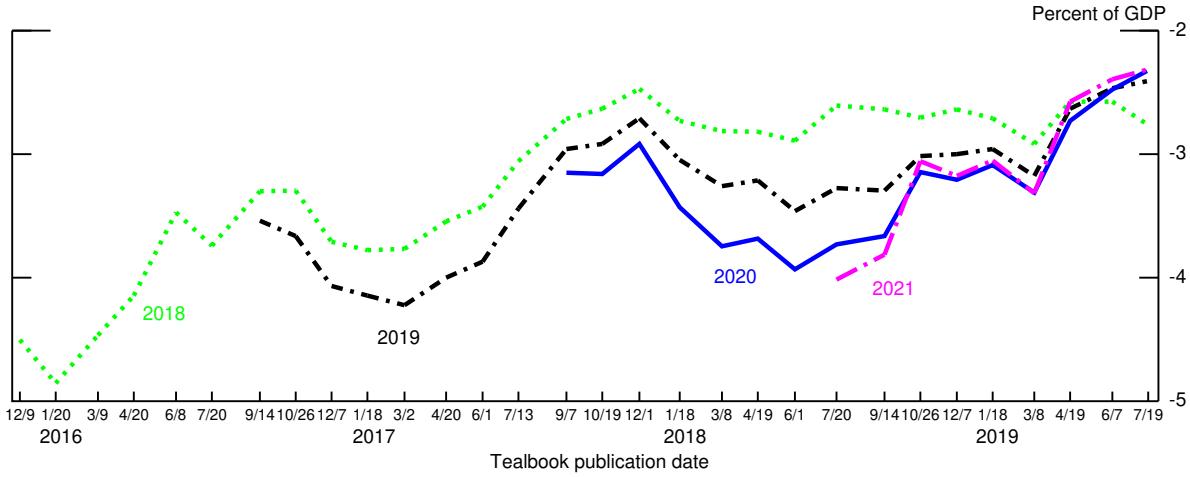
Total Foreign GDP



Total Foreign CPI

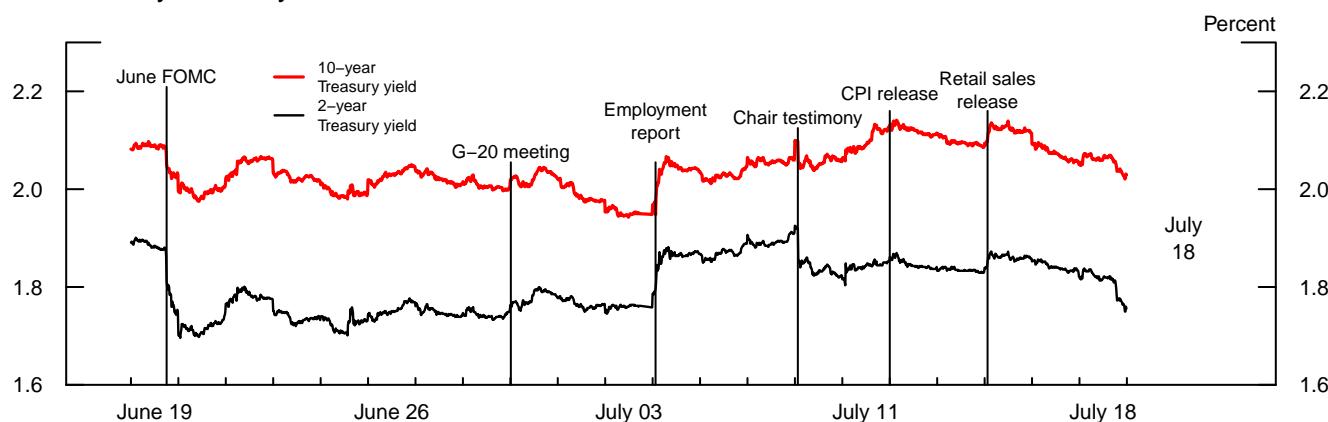


U.S. Current Account Balance



## Policy Expectations and Treasury Yields

### Intraday Treasury Yields



Note: Data are spaced at 5-minute intervals from 8:00 a.m. to 4:00 p.m.

Source: Bloomberg.

### TIPS-Based Inflation Compensation

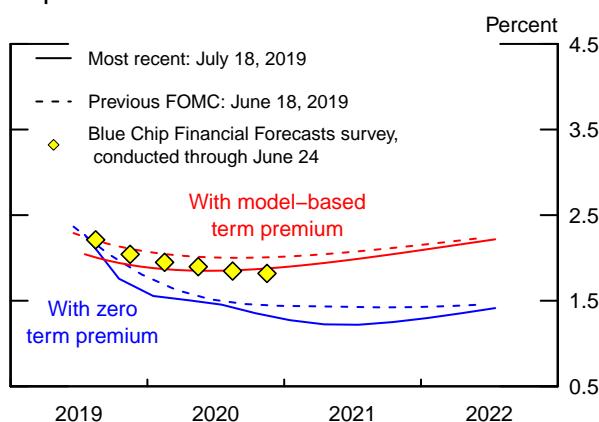


Note: Estimates based on smoothed nominal and inflation-indexed Treasury yield curves.

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

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

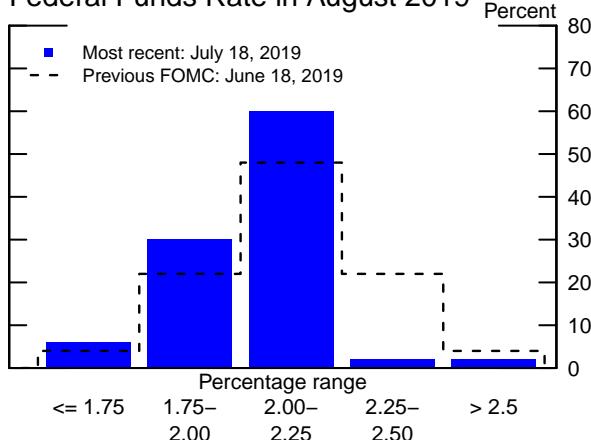
### Implied Federal Funds Rate



Note: Zero term premium path is estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points. Model-based term premium path is estimated using a term structure model maintained by Board staff and corrects for term premiums. The Blue Chip path is the average of respondents' expectations for the federal funds rate in the survey conducted through June 24 and published July 1.

Source: Bloomberg; Wolters Kluwer Legal and Regulatory Solutions U.S.; Board staff calculations.

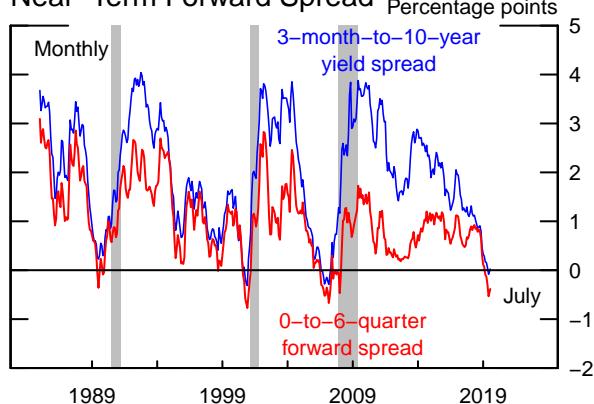
### Market-Implied Probability Distribution of the Federal Funds Rate in August 2019



Note: Estimated from federal funds futures options, not adjusted for risk premiums.

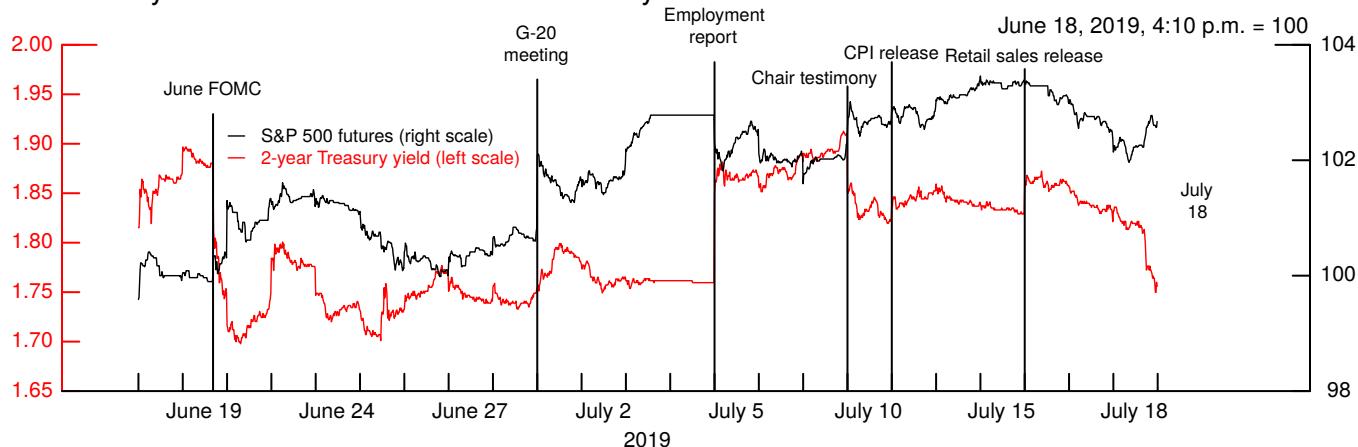
Source: CME Group; Board staff calculations.

### Long-Term Yield Spread and Near-Term Forward Spread



Note: The 0-to-6-quarter forward spread is the difference between the 3-month Treasury bill yield and the implied forward rate between 6 and 7 quarters ahead based on a smoothed Treasury yield curve. Data through June 2019 are monthly averages. Data for July 2019 are based on values for July 18. Shaded bars indicate U.S. recessions as defined by the National Bureau of Economic Research.

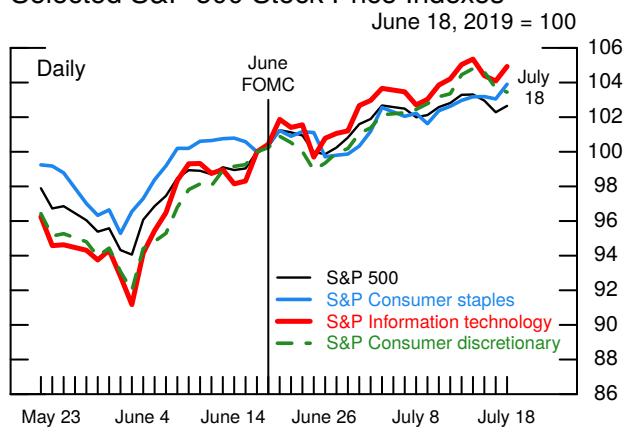
Source: Federal Reserve Bank of New York; Board staff calculations.

**Corporate Asset Market Developments****Intraday S&P 500 Futures and 2-Year Treasury Yield**

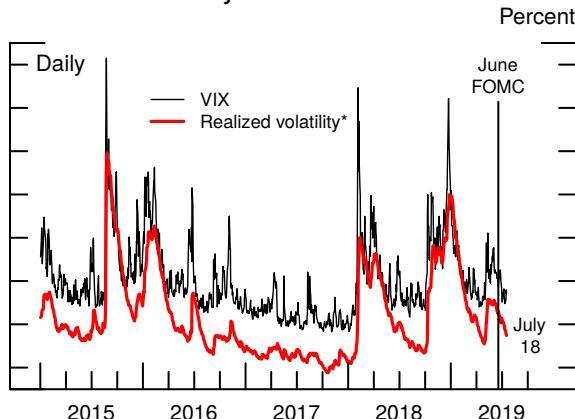
Note: Data are spaced at 5-minute intervals from 9:30 a.m. to 4:10 p.m.  
Source: Bloomberg.

**S&P 500 Index and China Exposure Portfolio**

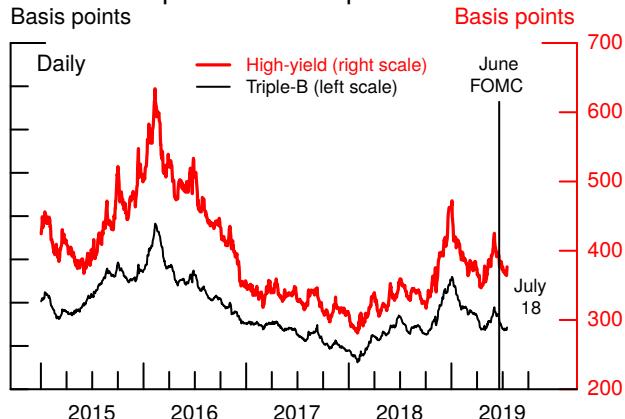
Note: China exposure is measured based on Board staff calculations of stock price sensitivity to the ASHR China A-Shares exchange-traded fund.  
Source: Bloomberg; Compustat; Yahoo Finance.

**Selected S&P 500 Stock Price Indexes**

Source: Bloomberg.

**S&P 500 Volatility**

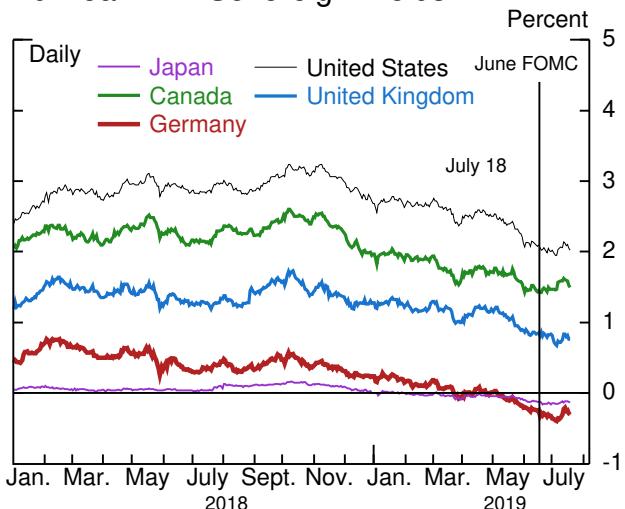
\* 5-minute returns used in exponentially weighted moving average with 75 percent of weight distributed over the most recent 20 days.  
Source: Bloomberg.

**10-Year Corporate Bond Spreads**

Note: Spreads over 10-year Treasury yield.  
Source: Merrill Lynch; Federal Reserve Bank of New York; Board staff calculations.

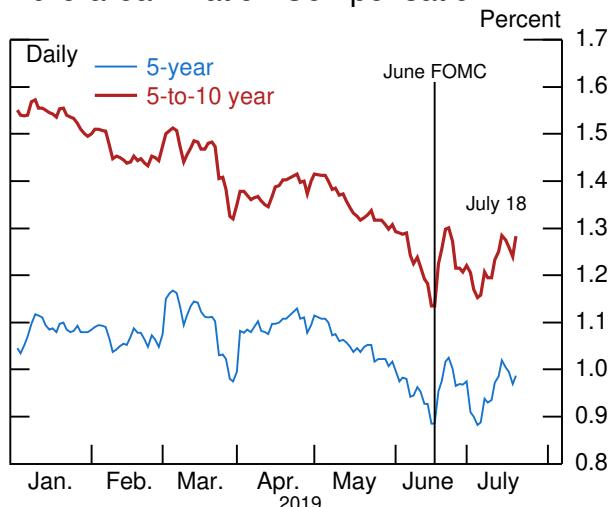
## Foreign Developments

### 10-Year AFE Sovereign Yields



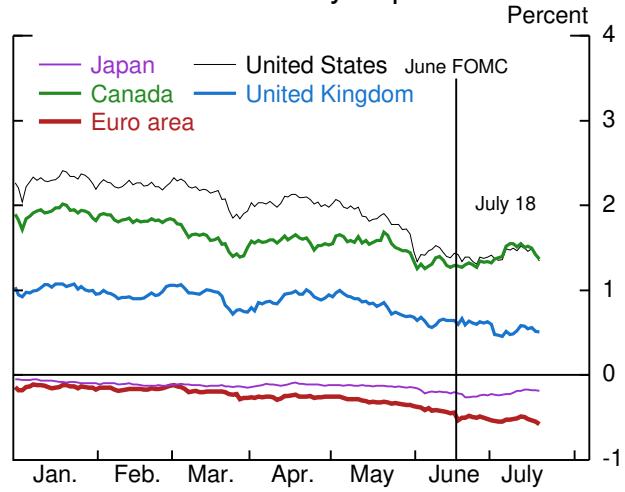
Source: Bloomberg.

### Euro-area Inflation Compensation



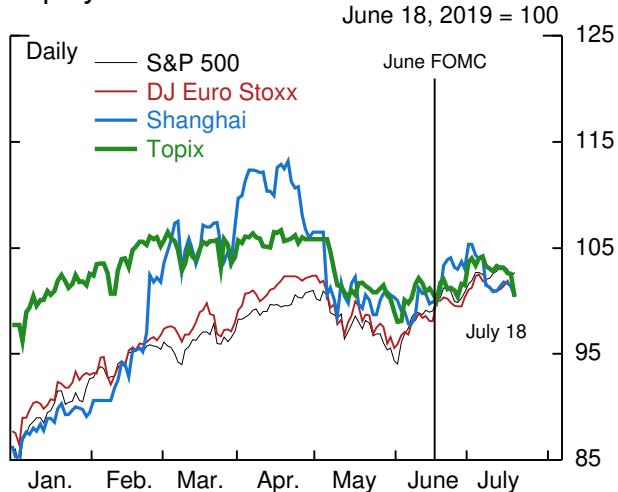
Source: Barclays.

### 24-Month-Ahead Policy Expectations



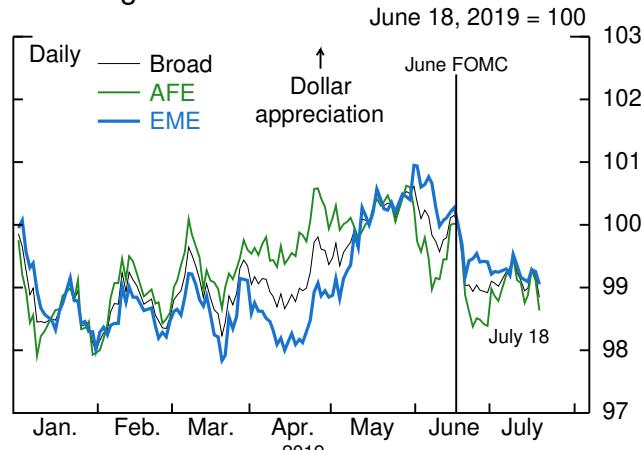
Source: Bloomberg, staff calculations.

### Equity Indexes



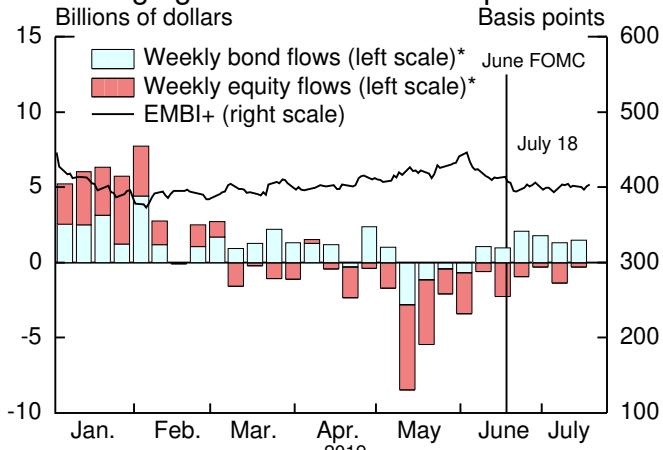
Note: Indexes denominated in local currency.  
Source: Bloomberg.

### Exchange Rates



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

### Emerging Market Flows and Spreads



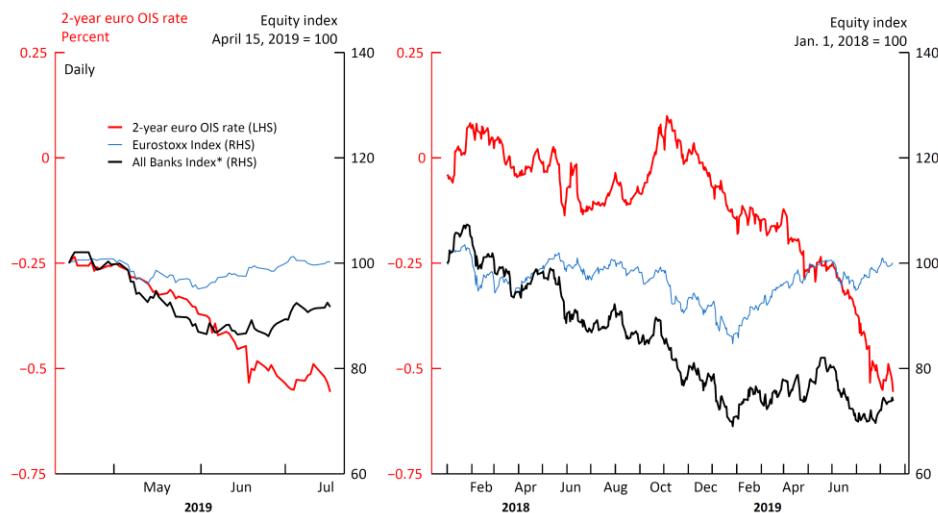
\* Average weekly flow by month.  
Note: EMBI+ refers to emerging market bond spreads to Treasury securities.  
Source: Emerging Portfolio Fund Research. Excludes intra-China flows.

## Interest Rate Expectations and Market Performance of European Banks

Disappointing data and dovish communications from the European Central Bank (ECB) over the past several months, stressing a weaker growth outlook, have contributed to a further decline in the expected path of ECB policy rates and raised concerns about the earnings outlook for European banks. Since mid-April, the broad index of European corporate share prices is little changed, but European bank share prices have declined notably. Over the same period, market participants have not priced in additional default risk for financial firms compared to corporates. This fact suggests market participants assess that lower-for-longer interest rates will not have significant effects on the safety and soundness of large European banks and, by implication, on financial stability.

A weaker European economy would likely depress profits at both European corporates and banks; however, banks would bear the brunt of lower-for-longer interest rate policies, which have been shown to compress banks' net interest margins.<sup>1</sup> Indeed, we see a notable divergence of stock performance of European corporates and banks. As shown in figure 1, coinciding with the steep decline in expected ECB policy rates implied by overnight index swaps (the red line), the European bank stock index (the black line) has underperformed the broad European stock index (the blue line).

**Figure 1: European Stock Indexes and 2-Year Euro Overnight Index Swap Rate**



Note: Last data value is July 17, 2019.

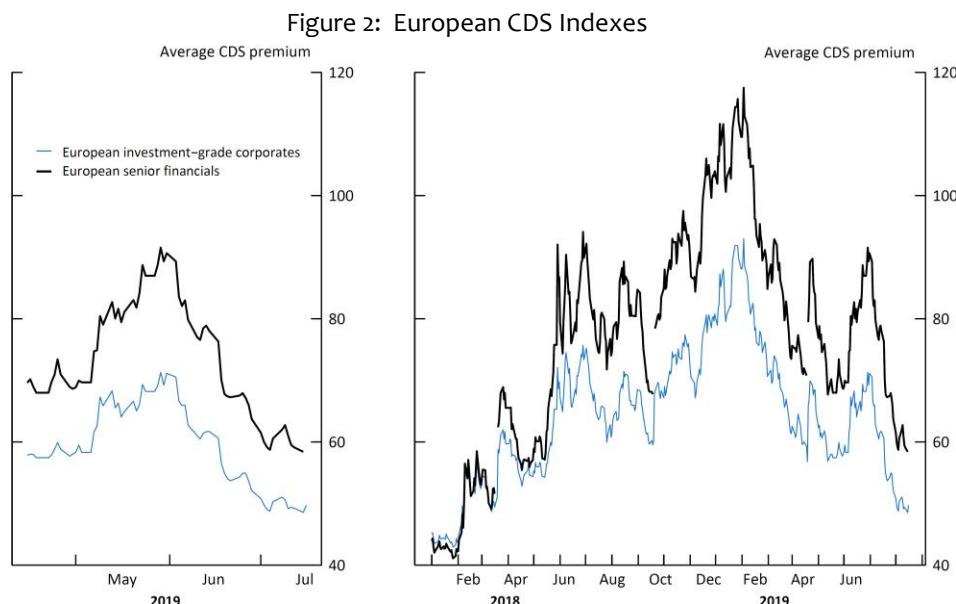
\*All Banks Index is an index of bank stock prices for 32 European banks weighted by total bank assets as of 2019:Q1.

Source: Bloomberg, staff calculations.

<sup>1</sup> For more details, see Stijn Claessens, Nicholas Coleman, and Michael Donnelly (2018), “‘Low-for-Long’ Interest Rates and Banks’ Interest Margins and Profitability: Cross-Country Evidence,” *Journal of Financial Intermediation*, vol. 35 (July), pp. 1–16; see also Committee on the Global Financial System (2018), “Financial Stability Implications of a Prolonged Period of Low Interest Rates,” CGFS paper 61 (Basel, Switzerland: Bank for International Settlements, July), <https://www.bis.org/publ/cgfs61.pdf>.

The underperformance of European banks relative to the broader market is not new. For example, the right panel of figure 1 shows that the divergence in corporate and bank stock prices largely coincides with the overall downward trend in ECB policy expectations since late 2018. The declines in the bank index are broad based and influenced only slightly by the roughly 50 percent decline since January 1, 2018, in Deutsche Bank's stock price. Deutsche Bank's stock price has been adversely affected by chronically low profitability, legacy problems, market pessimism about its newest, drastic restructuring plan, and the recent step-down in interest rate expectations.

The market does not appear to be inferring any implications of the changes in the euro-area economic outlook and ECB policy rates for financial stability because, on net, the cost of protection against default risk of European financials has fallen and has not changed relative to that of European corporates, as illustrated in figure 2. Credit default swap (CDS) indexes of senior debt of European financials (the black line) and European investment-grade corporates (the blue line) have both declined in recent weeks to their lowest levels since early 2018.<sup>2</sup> Average CDS premiums of European financials' subordinated debt (not shown), which is more sensitive to default risk than senior debt, are also little changed. These trends imply that the factors driving corporate default risk—mainly the economic outlook—are also driving the default risk of European financials, and that expectations of lower-for-longer rates do not appear to be have added to default risk of European banks.



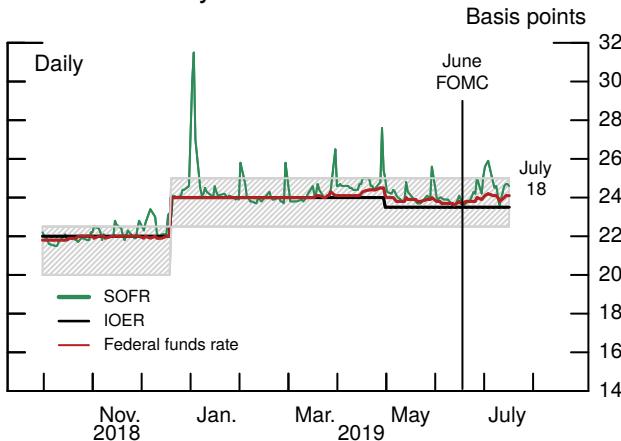
Note: The indexes may be changed each March and September in response to illiquidity of underlying CDS contracts. These changes can cause discontinuities in the indexes. Last data value is July 16, 2019.

Source: Markit.

<sup>2</sup> The European financials index includes banks (roughly 75 percent weight) and insurance companies (roughly 25 percent weight).

## Short-Term Funding Markets

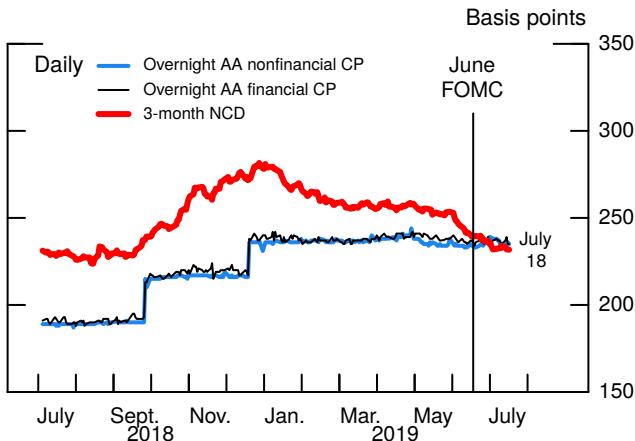
### Selected Money Market Rates



Note: SOFR is Secured Overnight Financing Rate. IOER is interest on excess reserves. Federal funds rate is a weighted median. Shaded area is the target range for the federal funds rate.

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

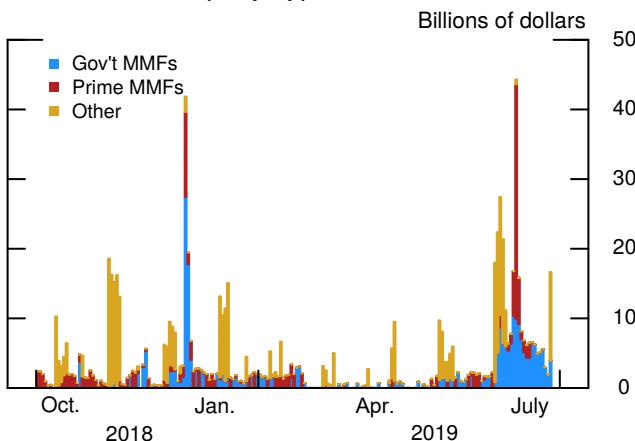
### CP and NCD Rates



Note: CP is commercial paper; NCD is negotiable certificate of deposit. NCD rates are computed as 5-day moving averages.

Source: Depository Trust & Clearing Corporation.

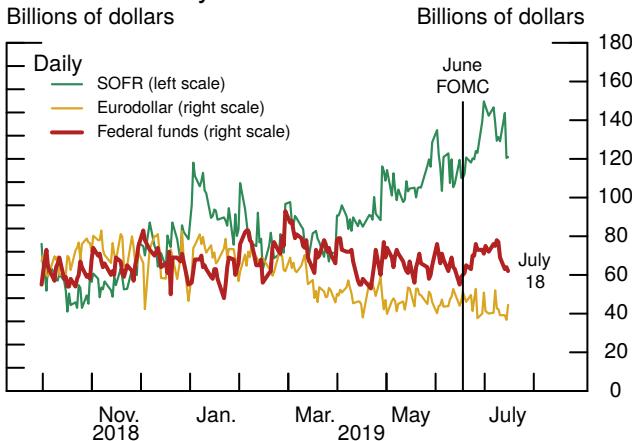
### ON RRP Take-Up, by Type



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

Source: Federal Reserve Bank of New York.

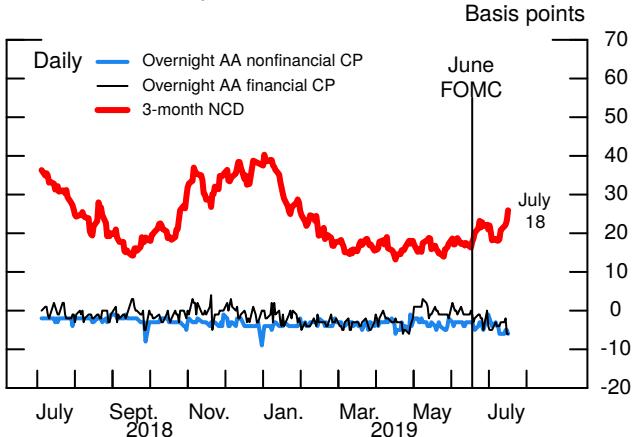
### Selected Money Market Volumes



Note: SOFR is Secured Overnight Financing Rate.

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

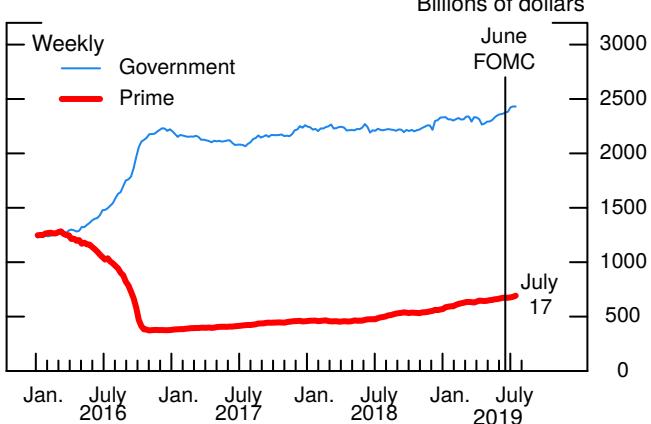
### CP and NCD Spreads



Note: CP is commercial paper; NCD is negotiable certificate of deposit. Overnight CP spreads are to the effective federal funds rate and NCD spreads to OIS. NCD spreads are 5-day moving averages.

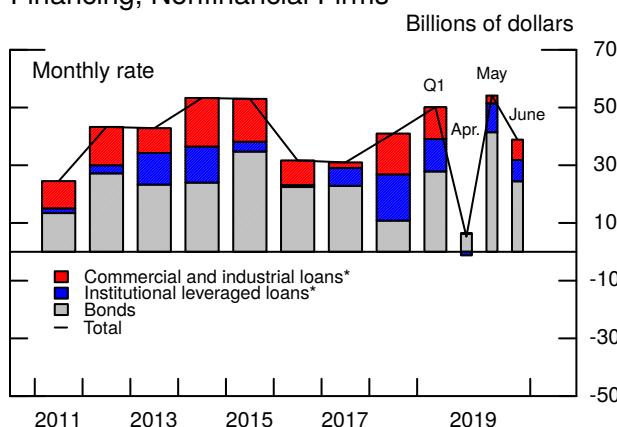
Source: Depository Trust & Clearing Corporation.

### MMF Assets under Management

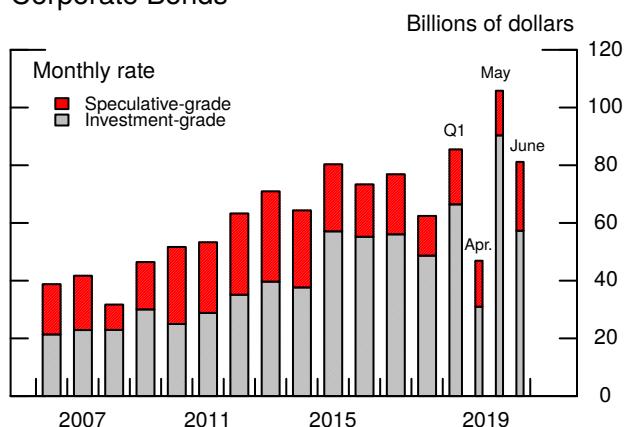


Note: MMF is money market fund.

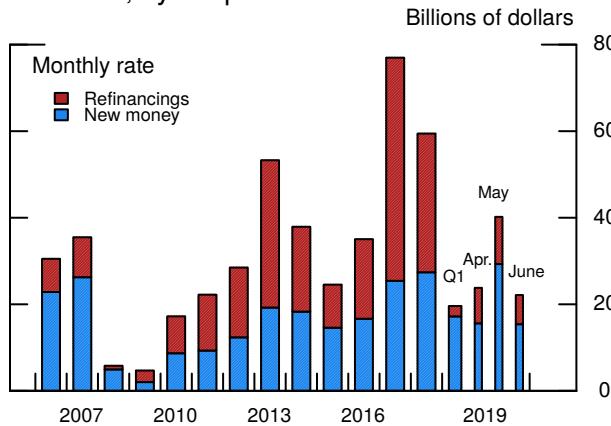
Source: Investment Company Institute.

**Business Finance****Selected Components of Net Debt Financing, Nonfinancial Firms**

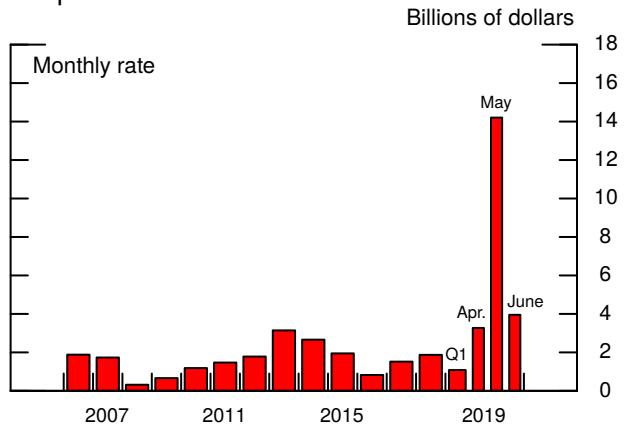
\* Period-end basis.  
Source: Mergent Fixed Income Securities Database; Thomson Reuters LPC; Federal Reserve Board.

**Gross Issuance of Nonfinancial Corporate Bonds**

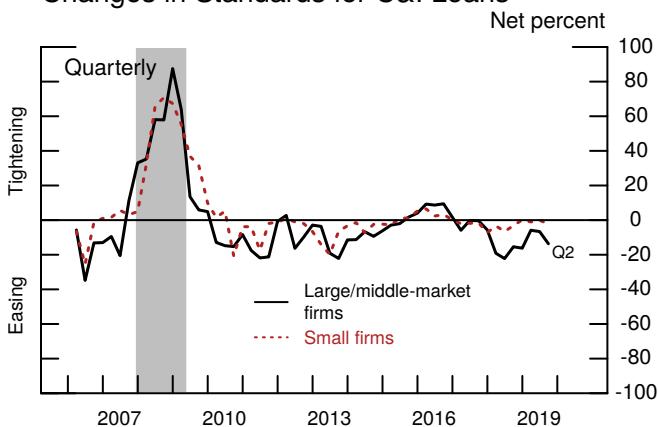
Note: Bonds are categorized by Moody's, Standard & Poor's, and Fitch.  
Source: Mergent Fixed Income Securities Database.

**Institutional Leveraged Loan Gross Issuance, by Purpose**

Source: Thomson Reuters LPC.

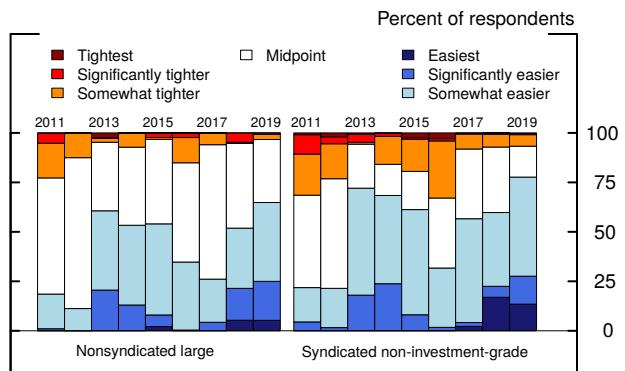
**IPO Issuance by Nonfinancial Corporations**

Note: IPO is initial public offering.  
Source: Securities Data Company.

**Changes in Standards for C&I Loans**

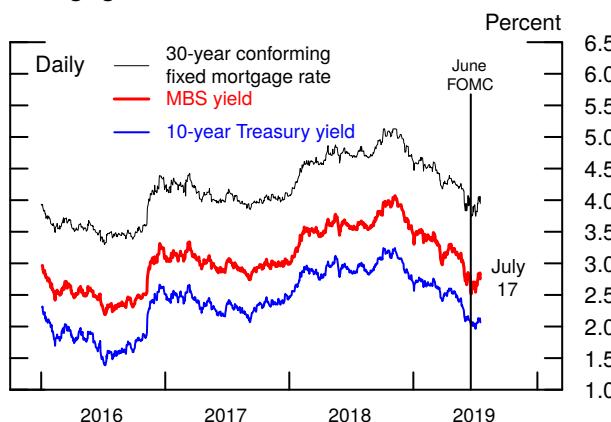
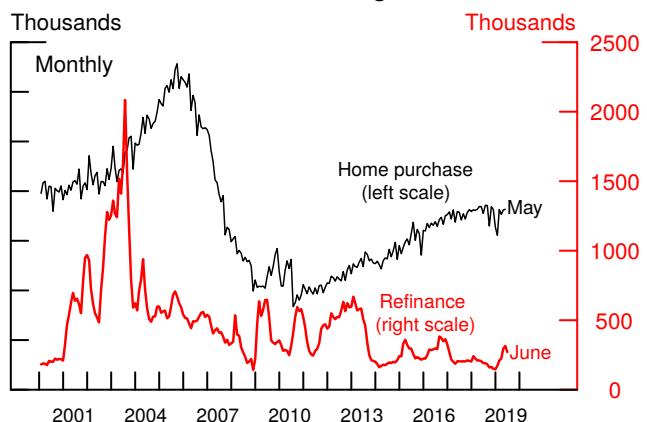
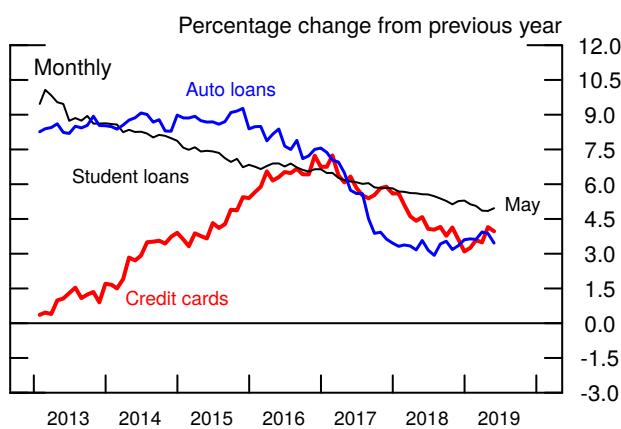
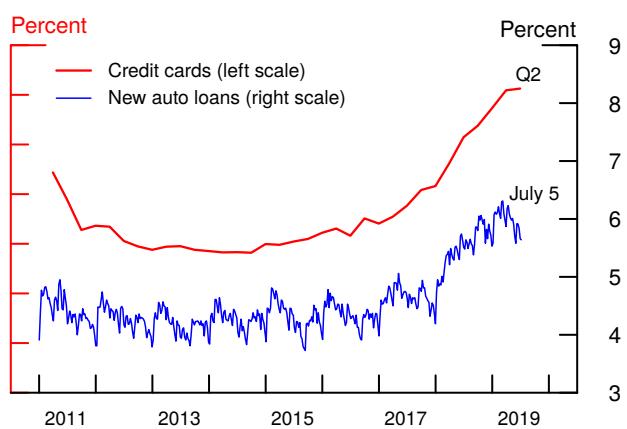
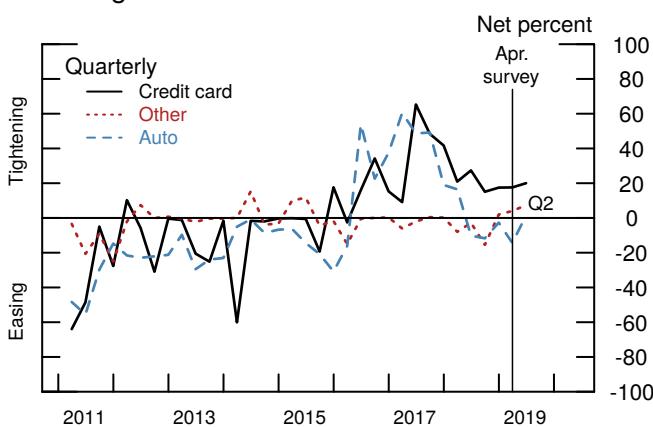
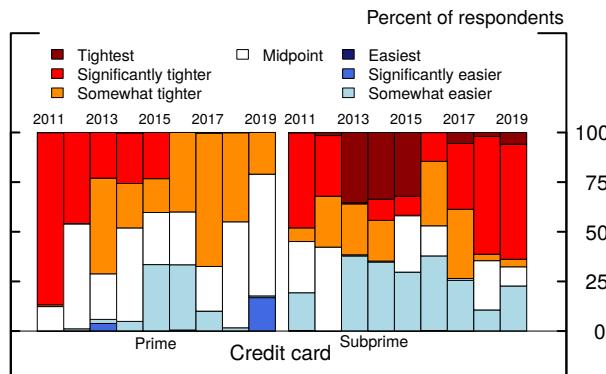
Note: Banks' responses are weighted by the outstanding amount of the relevant loan categories on their balance sheets at the end of the previous quarter. The shaded bar indicates a period of business recession as defined by the National Bureau of Economic Research. C&I is commercial and industrial.

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

**Level of Standards on Commercial and Industrial Loans at Domestic Banks**

Note: Banks were asked to describe their current level of standards in relation to the midpoint of the range of standards at their bank between 2005 and the present. Responses are weighted by survey respondents' commercial and industrial holdings reported in the Q1 Call Reports of the given year.

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

**Household Finance****Mortgage Rate and MBS Yield****Purchase and Refinance Originations****Consumer Credit****Consumer Interest Rates****Changes in Standards for Consumer Loans****Level of Standards on Credit Card Loans at Domestic Banks**

## Appendix

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### Technical Note on Financial Conditions Indexes

The table “Overview of Selected FCIs” provides a summary of various financial conditions indexes (FCIs) that have been developed at the Federal Reserve Board and elsewhere. The historical evolution of these indexes is reported in the exhibit “Selected Financial Conditions Indexes.”

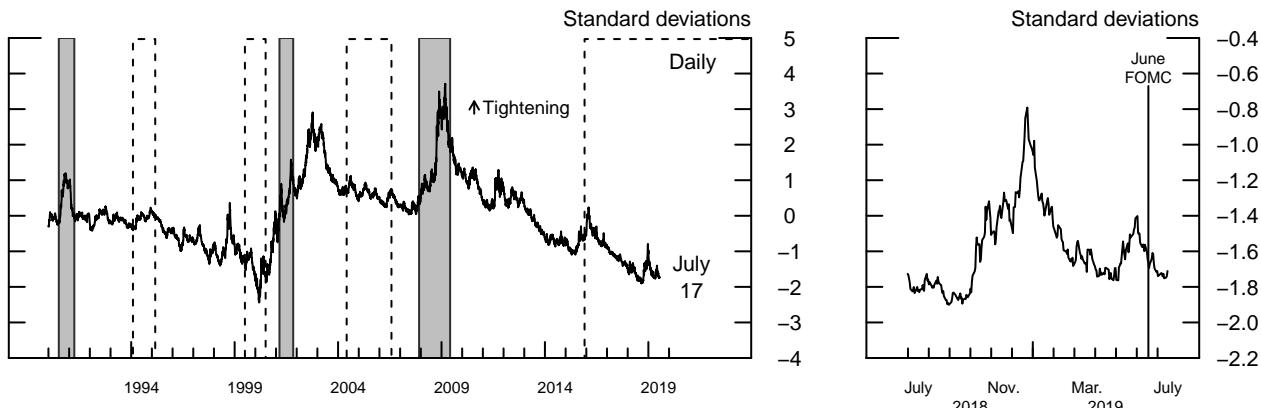
**Overview of Selected FCIs**

Index	Frequency	Sample start	Methodology	Components
Staff FCI for nonfinancial corporations	Daily	1973	Difference in equity returns between two portfolios of firms with credit ratings above and just below investment grade	Nonfinancial firms' stock returns and credit ratings; five Fama-French factors, plus momentum and quality minus junk factors
SLOOS Bank Lending Standards Index	Quarterly	1991	Weighted average of the net percentage of domestic banks tightening standards for 11 loan categories, with weights given by the size of each loan category on banks' balance sheets	Lending standards for 11 loan categories
Goldman Sachs Financial Conditions Index	Daily	1990	Weighted average of financial variables with weights pinned down by the contribution of each financial variable on real GDP growth over the following year using a VAR model	5 financial variables: the federal funds rate, the 10-year Treasury yield, the triple-B yield spreads to Treasury, the S&P price-to-earnings ratio, and the broad value of the U.S. dollar
Chicago Fed National Financial Conditions Index	Weekly	1971	Dynamic factor model	100 financial variables related to money markets (28 indicators), debt and equity markets (27 indicators), and the banking system (45 indicators)
St. Louis Fed Financial Stress Index	Weekly	1993	Principal component analysis	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
Kansas City Fed Financial Stress Index	Monthly	1990	Principal component analysis	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: CRSP; Yahoo Finance; Moody's Bond Ratings; Ken French website; AQR Capital Management website; Federal Reserve Board, Senior Loan Officer Opinion Survey on Bank Lending Practices; Bloomberg; Federal Reserve Banks of Chicago, St. Louis, and Kansas City.

**Selected Financial Conditions Indexes**

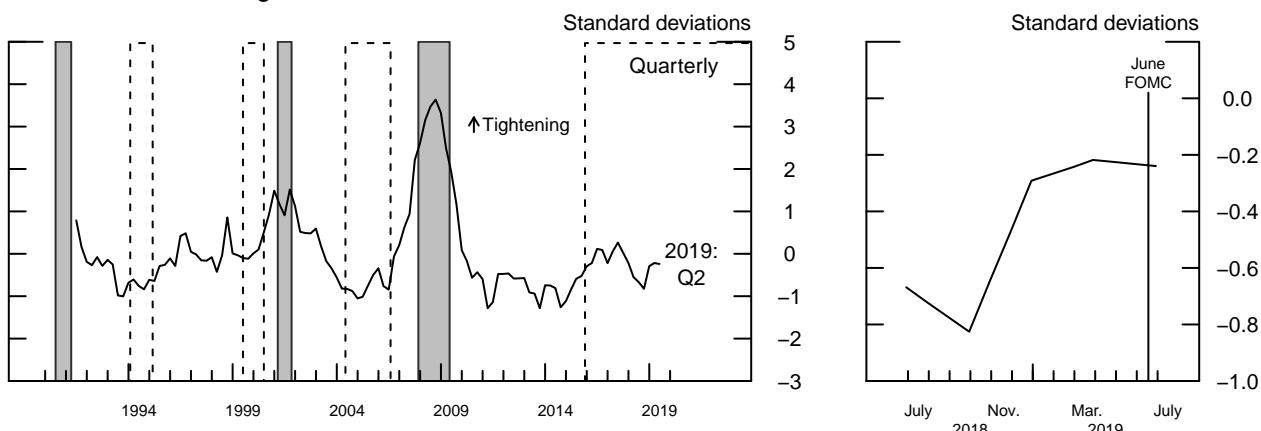
## Staff FCI for Nonfinancial Corporations



Note: The financial conditions index (FCI) 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.

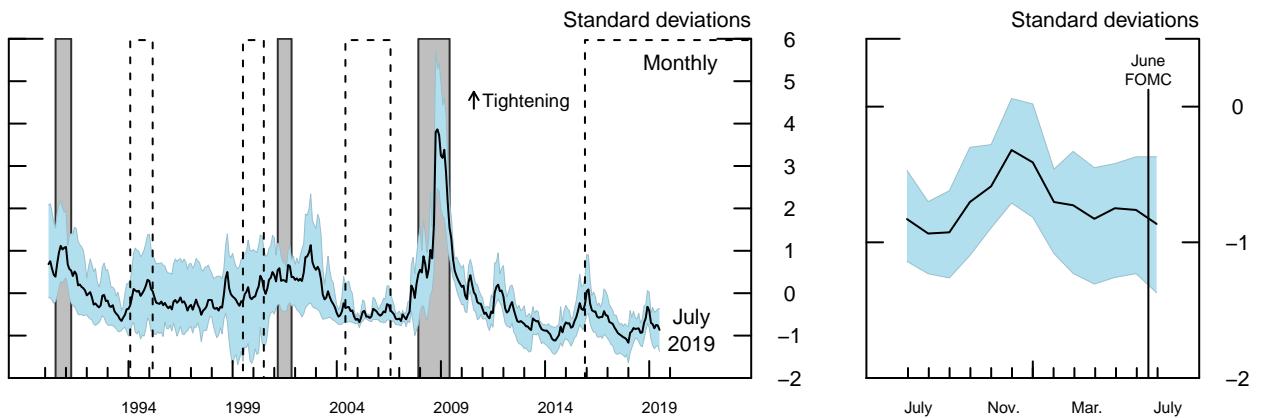
## SLOOS Bank Lending Standards Index



Note: The index is a weighted average of the net percentage of domestic banks tightening standards for 11 loan categories, with weights given by the size of each loan category on banks' balance sheets.

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

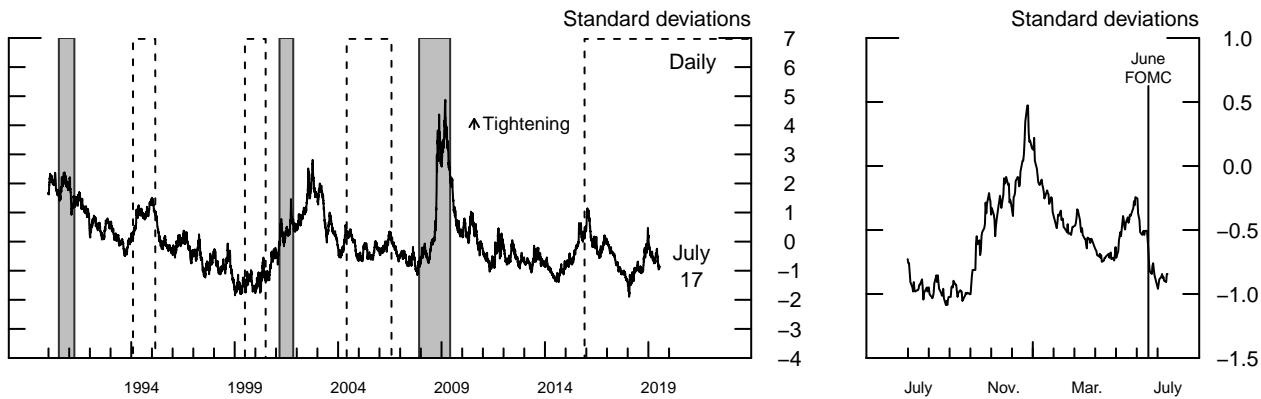
## Mean and Range of External FCIs



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.

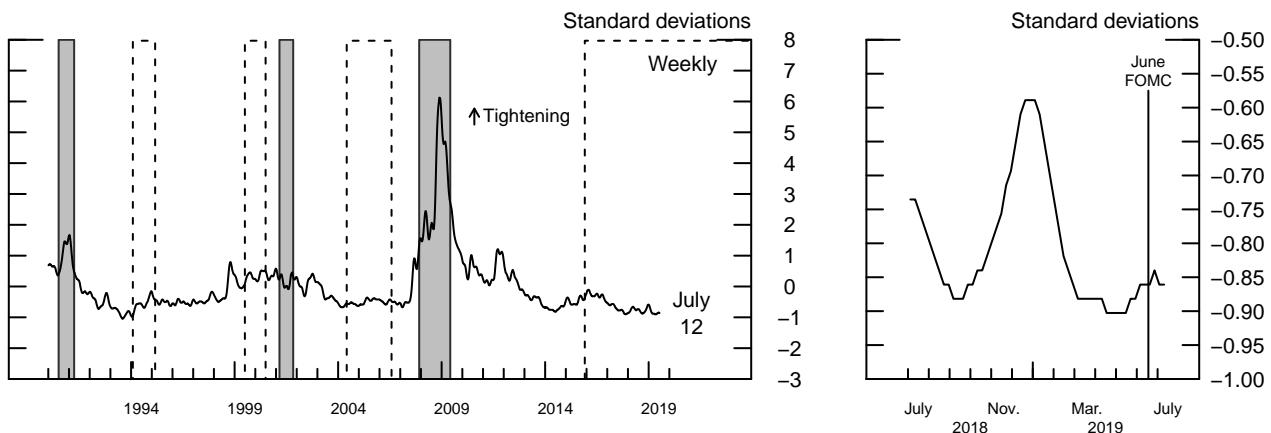
Source: Bloomberg; The Federal Reserve Banks of Chicago, St. Louis, and Kansas City.

**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.**

**Selected Financial Conditions Indexes (continued)****Goldman Sachs FCI**

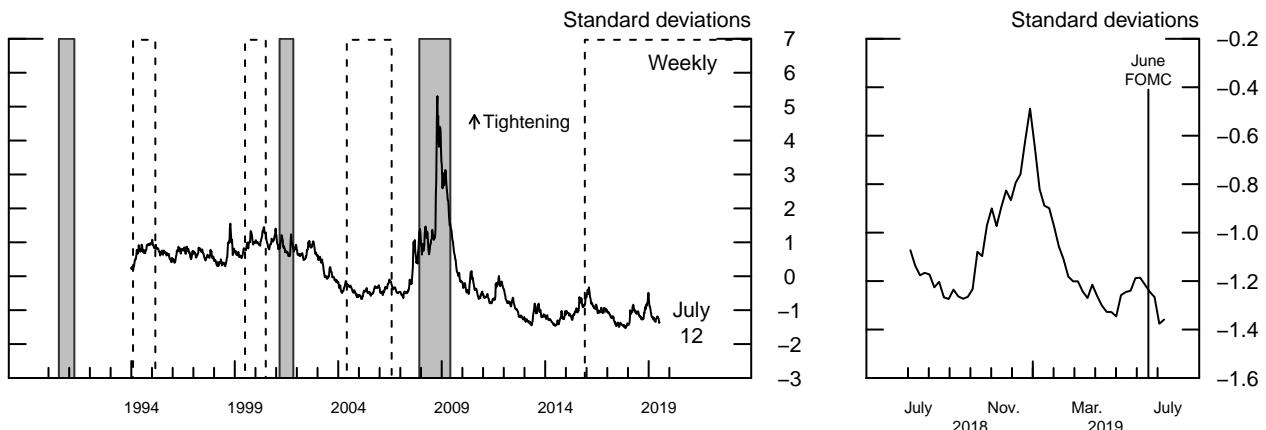
Note: The index is a weighted average of 5 financial variables: the federal funds rate, the 10-year Treasury yield, the triple-B yields spreads to Treasury, the S&P price-to-earnings ratio, the broad value of the U.S. dollar. Weights are pinned down by the contribution of each financial variable on real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

Source: Bloomberg.

**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**

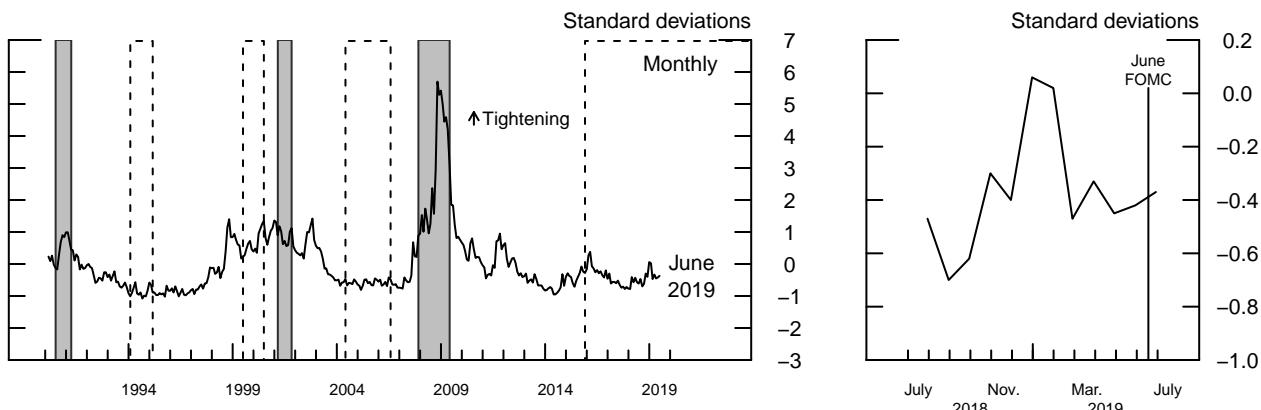
Note: The index is the principal component of 18 variables including short- and long-term Treasury yields, corporate yields, money market and corporate bond spreads, bond and stock market volatility indicators, breakeven inflation rate, and the S&P 500 index.

Source: Federal Reserve Bank of St. Louis.

**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.**

**Selected Financial Conditions Indexes (continued)**

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.**

## 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
<i>Greater than 3 percent</i>				
Current Tealbook	.09	.05	.02	.05
Previous Tealbook	.06	.04	.01	.04
<i>Between 1 3/4 and 2 1/4 percent</i>				
Current Tealbook	.28	.27	.41	.25
Previous Tealbook	.27	.24	.41	.24
<i>Less than 1 percent</i>				
Current Tealbook	.07	.13	.02	.19
Previous Tealbook	.11	.18	.02	.20

### Probability of Unemployment Events

(4 quarters ahead)

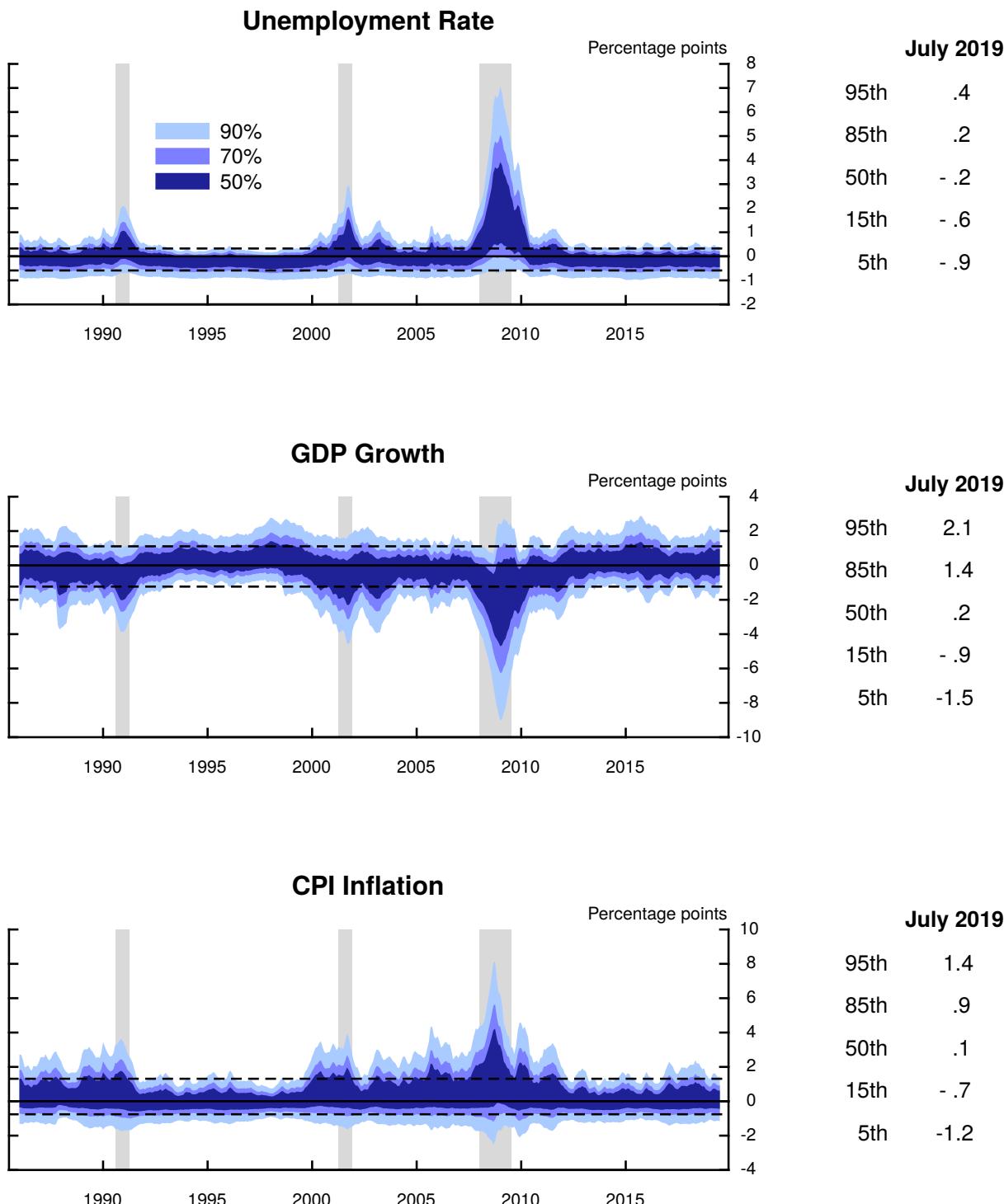
Probability that the unemployment rate will . . .	Staff	FRB/US	EDO	BVAR
<i>Increase by 1 percentage point</i>				
Current Tealbook	.01	.03	.14	.04
Previous Tealbook	.02	.03	.11	.04
<i>Decrease by 1 percentage point</i>				
Current Tealbook	.09	.03	.02	.05
Previous Tealbook	.08	.03	.02	.05

### Probability of Recession Over Next 4 Quarters

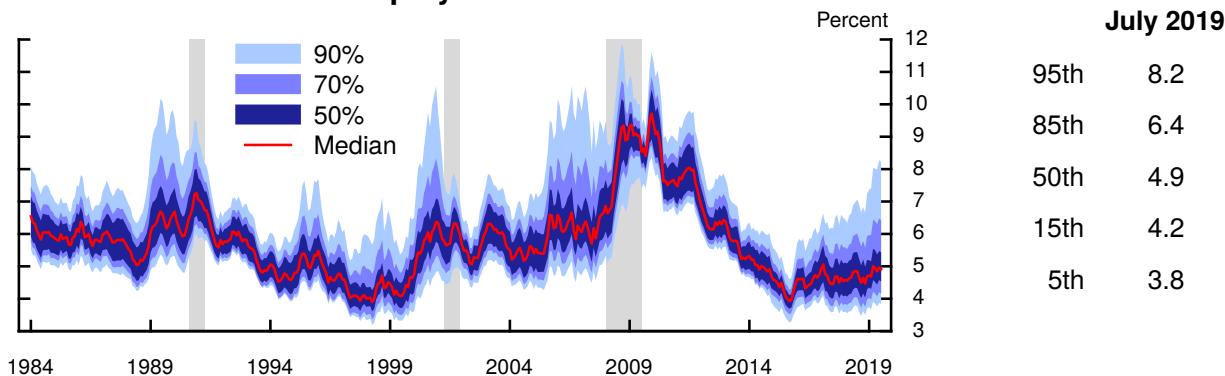
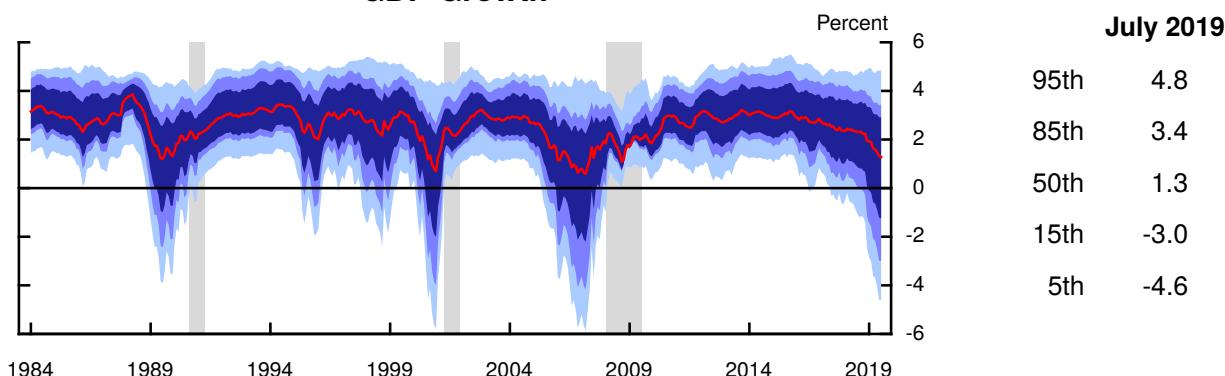
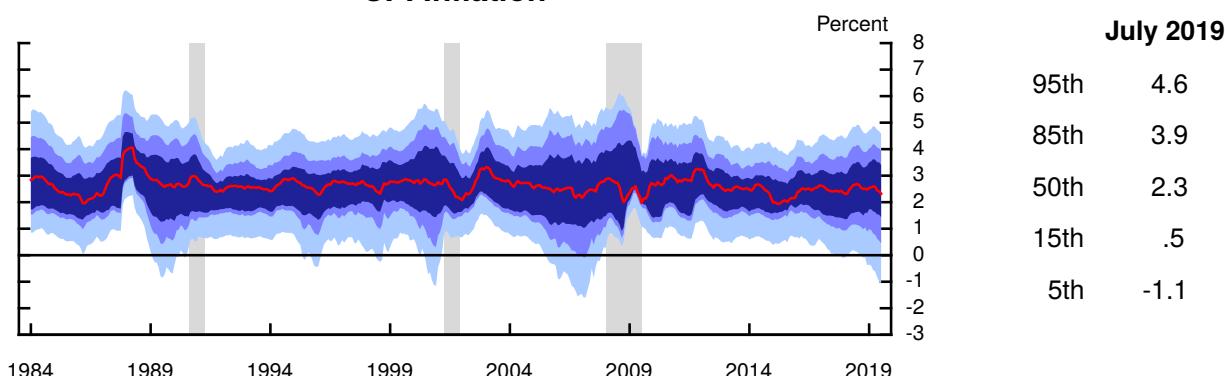
Probability of transitioning into or remaining in a recession	Staff	FRB/US	MAF	Term Spread	Unconditional
Current Tealbook	.07	.09	.36	.65	.23
Previous Tealbook	.08	.11	.51	.67	.23

Note: “Staff” represents stochastic simulations in FRB/US around the staff judgmental baseline; baselines for FRB/US, EDO, and BVAR are generated by those models. The “MAF” estimate uses a model averaging framework to infer the probability from a selection of real and financial variables. “Term Spread” shows the probability implied by the spread between the current month’s 10-year and 3-month Treasury yields. “Unconditional” is calculated using NBER recession dating from 1973:Q1 to the most recent quarter with a BEA estimate of GDP.

## Time-Varying Macroeconomic Risk 1 Year Ahead

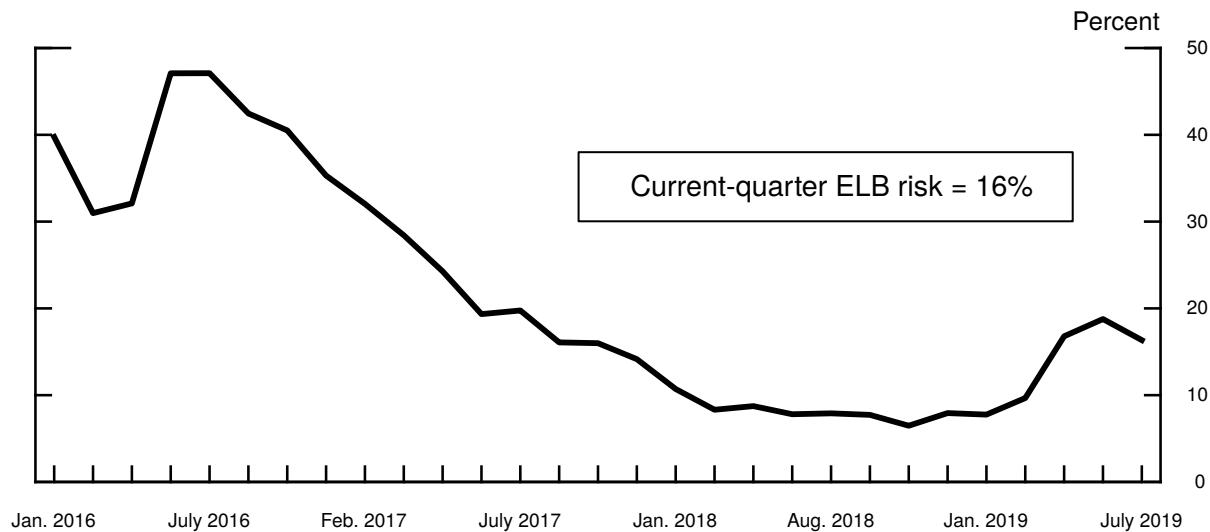


Note: The exhibit shows estimates of quantiles of the distribution of errors for four-quarter-ahead staff forecasts. The estimates are conditioned on indicators of real activity, inflation, financial market strain, and the volatility of high-frequency macroeconomic indicators. The tables show selected 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.

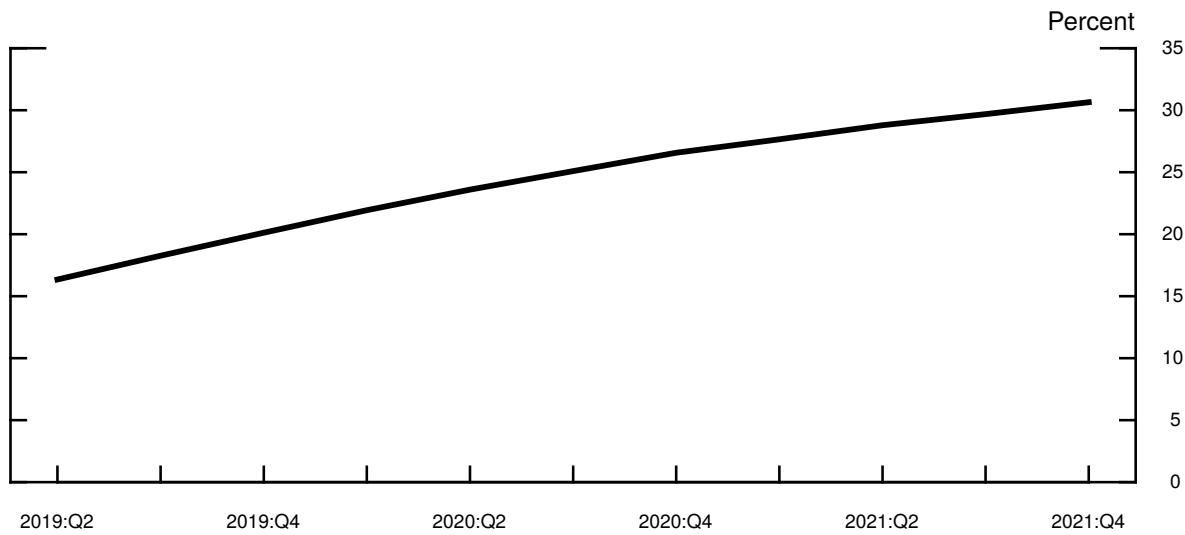
**Conditional Distributions of Macroeconomic Variables 2 Years Ahead****Unemployment Rate****GDP Growth****CPI Inflation**

## Effective Lower Bound Risk Estimate

### ELB Risk since Liftoff



### ELB Risk over the Projection Period



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.

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

Measure and scenario	2019		2020	2021	2022	2023-24
	H1	H2				
<i>Real GDP</i>						
Tealbook baseline and extension	2.8	1.7	2.1	1.8	1.6	1.4
Lower inflation expectations	2.8	1.7	2.1	1.7	1.5	1.3
Stronger aggregate demand	2.8	3.4	3.1	2.4	2.0	1.6
Stronger aggregate supply	2.8	2.4	3.0	2.9	2.7	2.4
Recession with financial amplification	2.8	.7	-1.6	-.2	1.2	2.3
Global investment slump	2.8	.2	.9	1.7	1.9	1.6
Escalation of trade tensions	2.8	.3	1.2	1.9	1.9	1.6
<i>Unemployment rate<sup>1</sup></i>						
Tealbook baseline and extension	3.6	3.7	3.6	3.6	3.7	3.9
Lower inflation expectations	3.6	3.7	3.6	3.6	3.8	4.0
Stronger aggregate demand	3.6	3.5	3.1	2.9	2.8	3.1
Stronger aggregate supply	3.6	3.7	3.6	3.4	3.3	3.1
Recession with financial amplification	3.6	4.0	5.9	6.9	7.0	5.9
Global investment slump	3.6	3.8	4.1	4.2	4.2	4.2
Escalation of trade tensions	3.6	3.8	4.1	4.1	4.0	4.0
<i>Total PCE prices</i>						
Tealbook baseline and extension	1.6	1.8	1.8	1.8	1.9	2.0
Lower inflation expectations	1.6	1.8	1.6	1.6	1.7	1.8
Stronger aggregate demand	1.6	1.8	1.8	1.9	2.0	2.1
Stronger aggregate supply	1.6	1.8	1.7	1.7	1.7	1.8
Recession with financial amplification	1.6	1.8	1.7	1.5	1.5	1.5
Global investment slump	1.6	1.5	1.3	1.6	1.7	1.9
Escalation of trade tensions	1.6	3.5	1.5	1.7	2.0	2.2
<i>Core PCE prices</i>						
Tealbook baseline and extension	1.7	2.2	1.9	1.9	1.9	2.0
Lower inflation expectations	1.7	2.1	1.7	1.6	1.7	1.8
Stronger aggregate demand	1.7	2.2	1.9	1.9	2.0	2.1
Stronger aggregate supply	1.7	2.1	1.8	1.7	1.7	1.8
Recession with financial amplification	1.7	2.2	1.7	1.5	1.5	1.6
Global investment slump	1.7	2.0	1.5	1.6	1.7	1.8
Escalation of trade tensions	1.7	3.9	1.6	1.7	2.0	2.2
<i>Federal funds rate<sup>1</sup></i>						
Tealbook baseline and extension	2.4	2.4	2.6	2.7	2.7	2.8
Lower inflation expectations	2.4	2.4	2.5	2.5	2.4	2.4
Stronger aggregate demand	2.4	2.5	2.8	3.0	3.1	3.3
Stronger aggregate supply	2.4	2.3	2.3	2.3	2.3	2.5
Recession with financial amplification	2.4	2.2	.1	.1	.1	.3
Global investment slump	2.4	2.3	2.0	1.7	1.7	2.2
Escalation of trade tensions	2.4	2.3	1.9	1.9	2.1	2.7

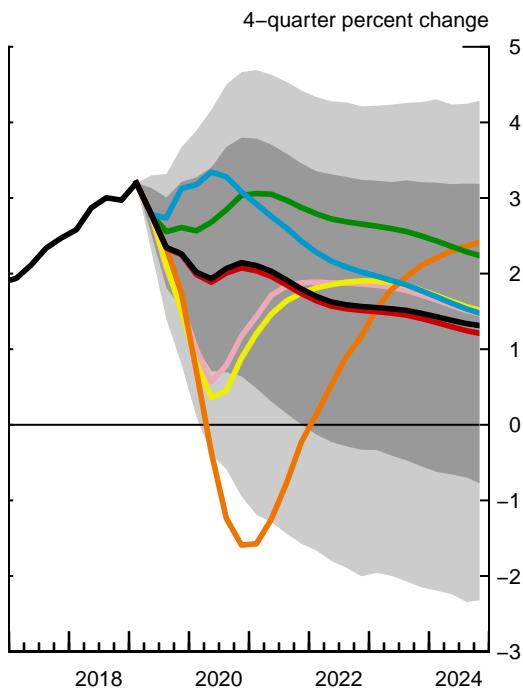
1. Percent, average for the final quarter of the period.

## Forecast Confidence Intervals and Alternative Scenarios

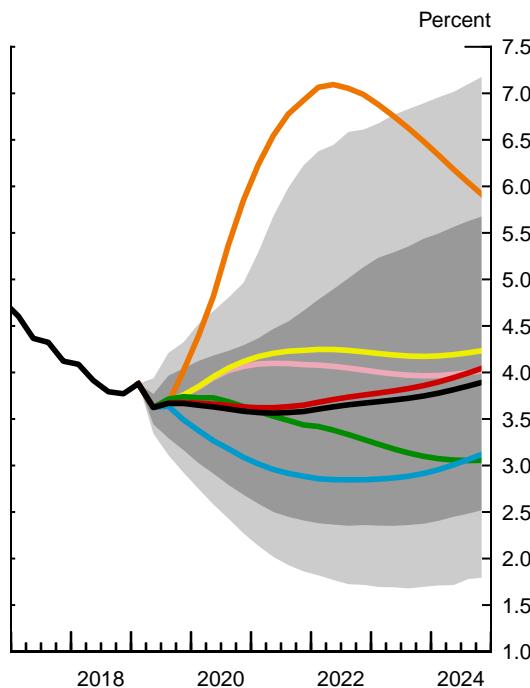
Confidence Intervals Based on FRB/US Stochastic Simulations\*

- Tealbook baseline and extension
- Stronger aggregate supply
- Global investment slump
- Lower inflation expectations
- Recession with financial amplification
- Escalation of trade tensions
- Stronger aggregate demand

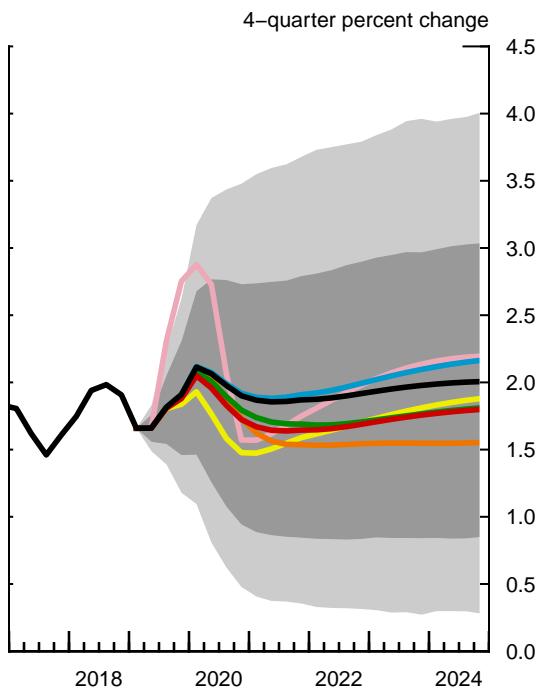
Real GDP



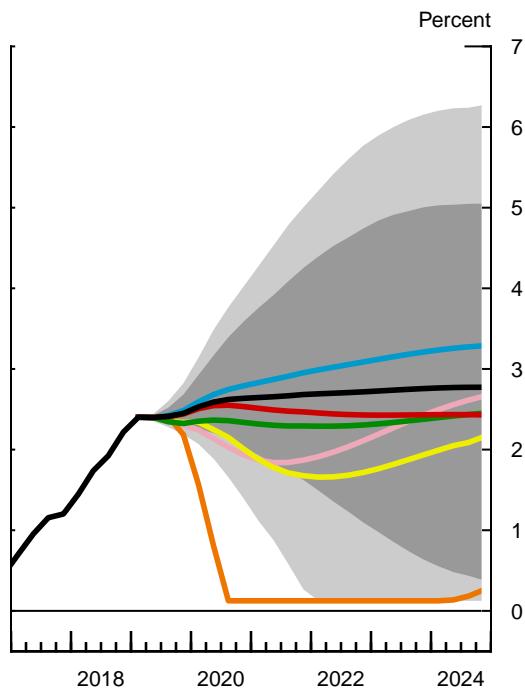
Unemployment Rate



PCE Prices excluding Food and Energy



Federal Funds Rate



\* The dark gray shaded area is the 70 percent interval, and the light gray shaded area is the 90 percent interval from stochastic simulations around the Tealbook baseline.

## Alternative Model Forecasts

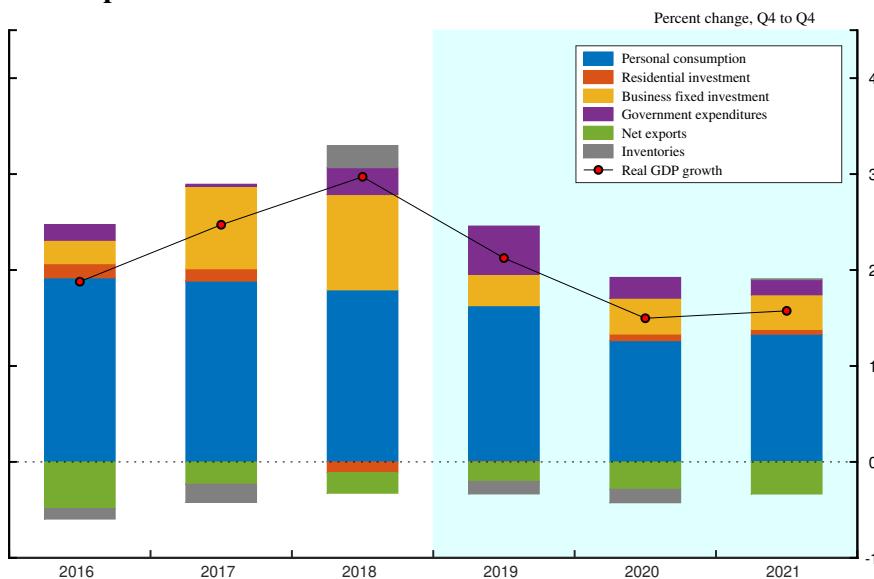
(Percent change, Q4 to Q4, except as noted)

Measure and projection	2019		2020		2021	
	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook
<i>Real GDP</i>						
Staff	2.0	2.3	2.1	2.1	1.7	1.8
FRB/US	1.8	2.1	1.5	1.5	1.6	1.6
EDO <sup>1</sup>	2.4	2.5	2.2	2.1	2.3	2.3
<i>Unemployment rate<sup>2</sup></i>						
Staff	3.7	3.7	3.7	3.6	3.7	3.6
FRB/US	3.8	3.8	4.0	4.0	4.1	4.2
EDO <sup>1</sup>	4.0	4.0	4.3	4.3	4.5	4.6
<i>Total PCE prices</i>						
Staff	1.5	1.7	1.9	1.8	1.9	1.8
FRB/US	1.3	1.5	1.8	1.8	1.9	1.9
EDO <sup>1</sup>	1.6	1.7	1.9	1.9	2.0	2.0
<i>Core PCE prices</i>						
Staff	1.8	1.9	1.9	1.9	1.9	1.9
FRB/US	1.7	1.8	2.0	2.0	2.0	2.0
EDO <sup>1</sup>	1.6	1.7	1.9	1.9	2.0	2.0
<i>Federal funds rate<sup>2</sup></i>						
Staff	2.4	2.4	2.6	2.6	2.6	2.7
FRB/US	2.3	2.4	2.4	2.5	2.5	2.5
EDO <sup>1</sup>	2.8	2.8	3.3	3.2	3.7	3.6

1. The EDO projections labeled "Previous Tealbook" and "Current Tealbook" integrate over the posterior distribution of model parameters.

2. Percent, average for Q4.

### Decomposition of FRB/US Real GDP Growth Forecast



Note: Shading represents the projection period.

Source: Staff calculations.

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

Measure	2019	2020	2021	2022	2023	2024
<i>Real GDP</i> <i>(percent change, Q4 to Q4)</i>						
Projection	2.3	2.1	1.8	1.6	1.5	1.3
Confidence interval						
Tealbook forecast errors	1.4–3.8	.6–3.6	-.3–3.4	...	...	...
FRB/US stochastic simulations	1.5–3.2	.6–3.8	.0–3.5	-.3–3.2	-.5–3.2	-.8–3.2
<i>Civilian unemployment rate</i> <i>(percent, Q4)</i>						
Projection	3.7	3.6	3.6	3.7	3.7	3.9
Confidence interval						
Tealbook forecast errors	3.3–4.0	2.6–4.6	2.1–5.1	...	...	...
FRB/US stochastic simulations	3.2–4.0	2.7–4.3	2.4–4.7	2.4–5.1	2.4–5.4	2.5–5.7
<i>PCE prices, total</i> <i>(percent change, Q4 to Q4)</i>						
Projection	1.7	1.8	1.8	1.9	2.0	2.0
Confidence interval						
Tealbook forecast errors	1.1–2.1	.9–3.3	.7–3.3	...	...	...
FRB/US stochastic simulations	1.2–2.2	.8–2.8	.7–2.9	.7–3.0	.7–3.1	.8–3.1
<i>PCE prices excluding</i> <i>food and energy</i> <i>(percent change, Q4 to Q4)</i>						
Projection	1.9	1.9	1.9	1.9	2.0	2.0
Confidence interval						
Tealbook forecast errors	1.7–2.2	1.3–2.5	...	...	...	...
FRB/US stochastic simulations	1.5–2.3	.9–2.7	.8–2.8	.8–2.9	.8–3.0	.9–3.0
<i>Federal funds rate</i> <i>(percent, Q4)</i>						
Projection	2.4	2.6	2.7	2.7	2.8	2.8
Confidence interval						
FRB/US stochastic simulations	2.3–2.7	2.0–3.6	1.6–4.3	1.1–4.7	.6–5.0	.4–5.1

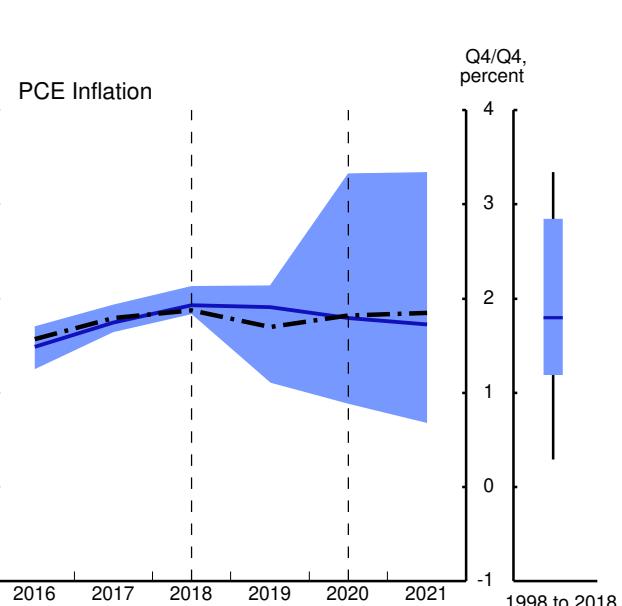
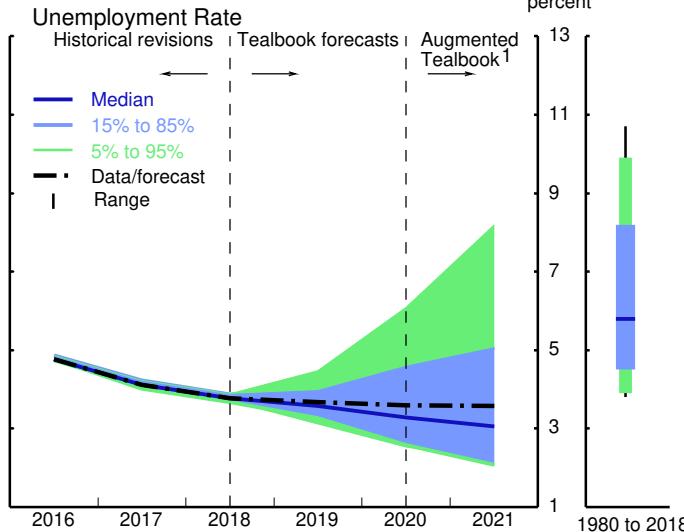
Note: Shocks underlying FRB/US stochastic simulations are randomly drawn from the 1969–2018 set of model equation residuals. Intervals derived from Tealbook forecast errors are based on projections made from 1980 to 2018 for real GDP and unemployment and from 1998 to 2018 for PCE prices. The intervals 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.

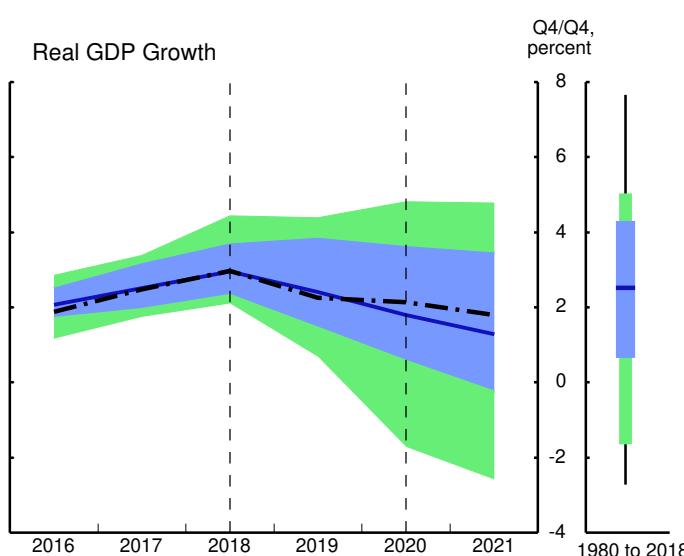
## Prediction Intervals Derived from Historical Tealbook Forecast Errors

### Risks & Uncertainty

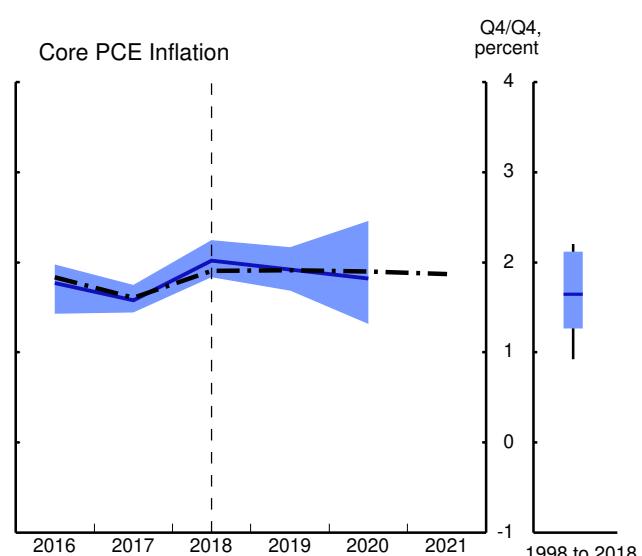
#### Forecast Error Percentiles



#### Real GDP Growth

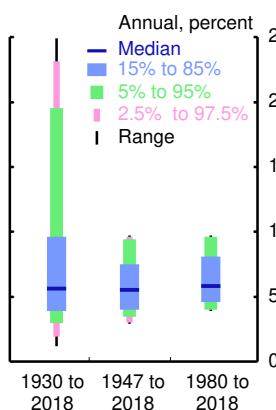


#### Core PCE Inflation

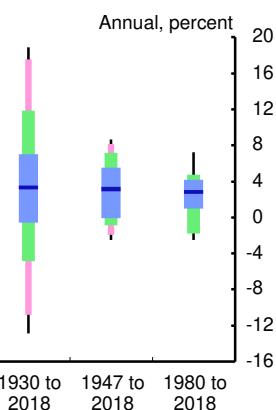


#### Historical Distributions

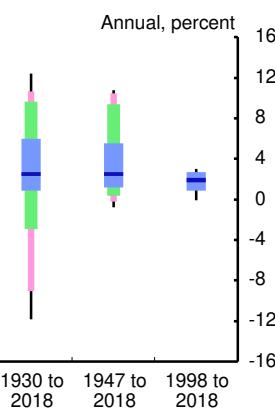
##### Unemployment Rate



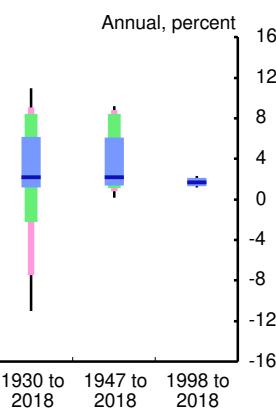
##### Real GDP Growth



##### PCE Inflation



##### Core PCE Inflation



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

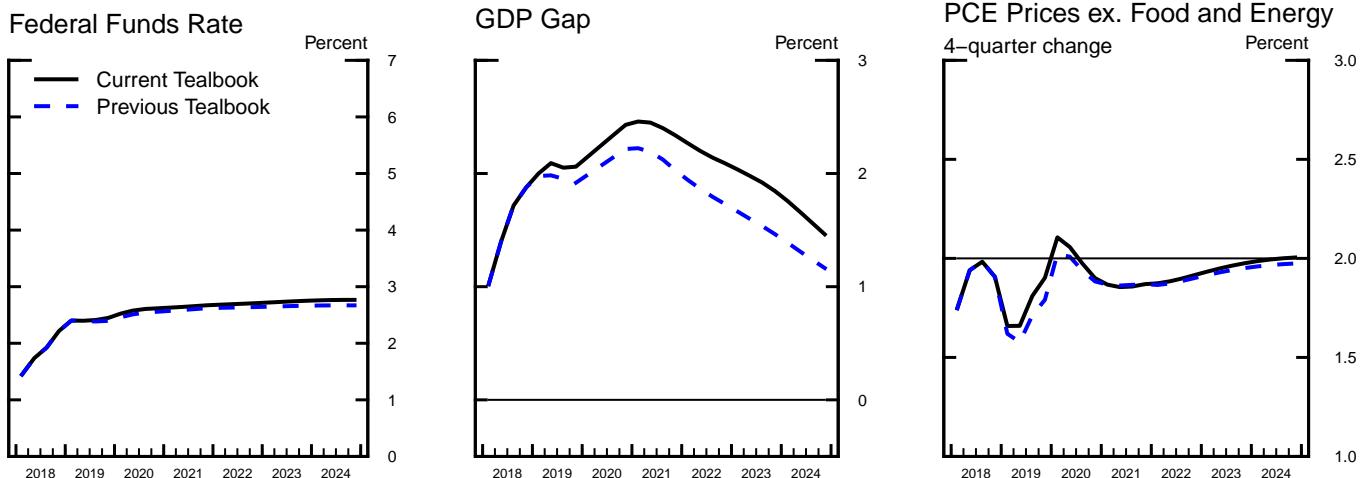
1. Augmented Tealbook prediction intervals use 1- and 2-year-ahead forecast errors from Blue Chip, CBO, and CEA to extend the Tealbook prediction intervals through 2021.

## Policy Rules and the Staff Projection

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

	(Percent)	<u>2019:Q3</u>	<u>2019:Q4</u>
Inertial Taylor (1999) rule	<b>2.67</b>	<b>2.93</b>	
<i>Previous Tealbook projection</i>	2.64	2.85	
Taylor (1993) rule	<b>3.22</b>	<b>3.36</b>	
<i>Previous Tealbook projection</i>	3.02	3.12	
First-difference rule	<b>2.50</b>	<b>2.63</b>	
<i>Previous Tealbook projection</i>	2.44	2.51	
Flexible price-level targeting rule	<b>2.13</b>	<b>1.93</b>	
<i>Previous Tealbook projection</i>	2.10	1.87	
<i>Addendum:</i>			
Tealbook baseline	<b>2.41</b>	<b>2.45</b>	

### Key Elements of the Staff Projection



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

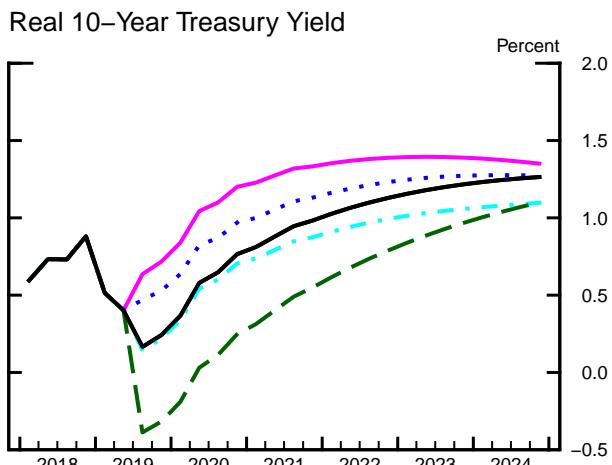
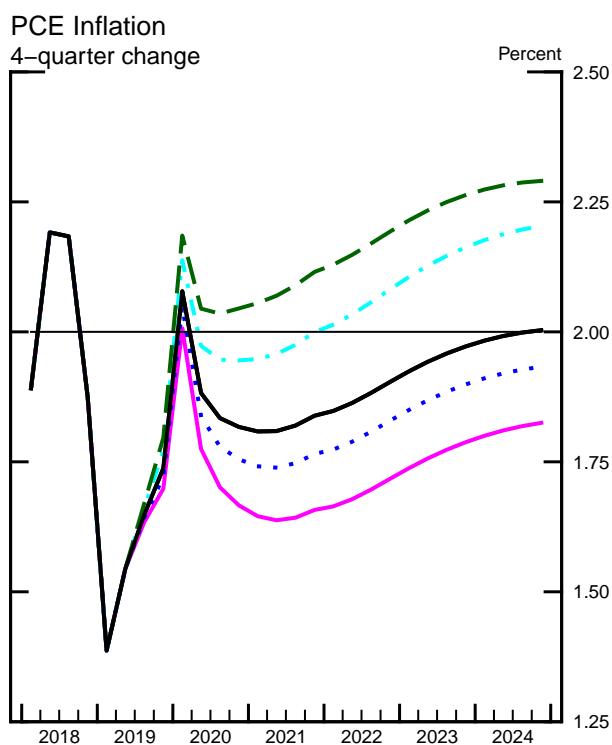
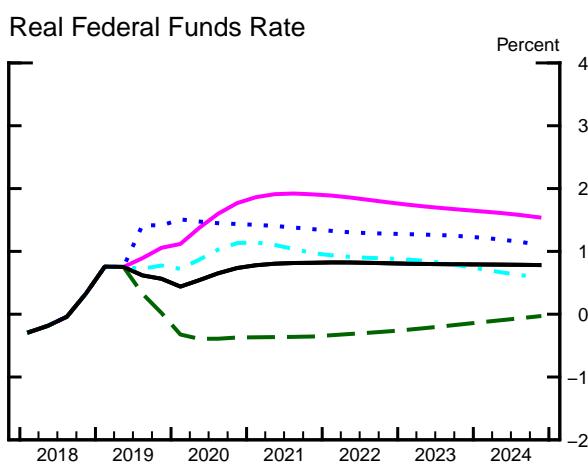
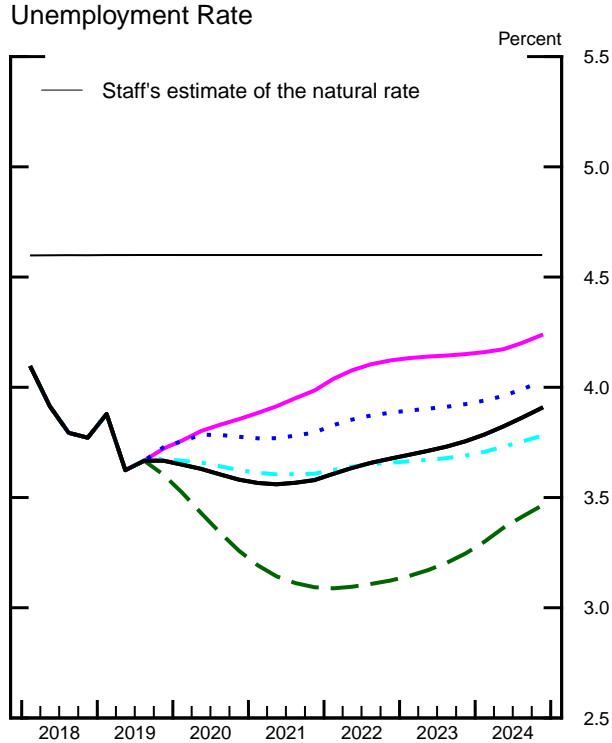
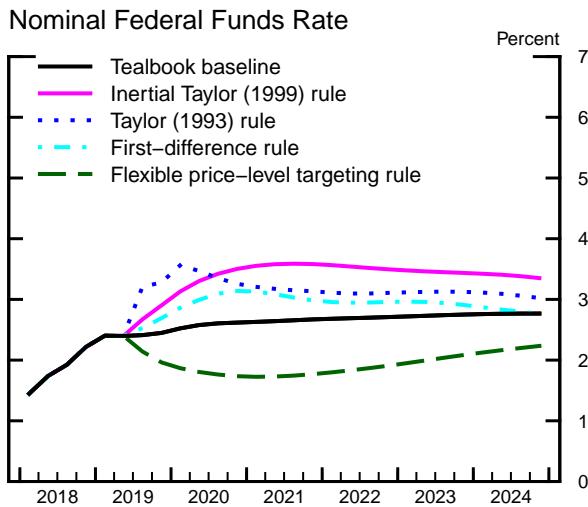
	(Percent)	Current Value	Current-Quarter Estimate Based on Previous Tealbook	Previous Tealbook
Tealbook baseline				
FRB/US $r^*$	1.95		1.74	1.79
Average projected real federal funds rate	.70		.68	.68
SEP-consistent baseline				
FRB/US $r^*$	.65			
Average projected real federal funds rate	.38			

1. The lines denoted "Previous Tealbook projection" report prescriptions based on the previous Tealbook's staff outlook for inflation and resource slack. Rules that have a lagged policy rate as a right-hand-side variable are conditional on the current-Tealbook value of the lagged policy rate.

2. The "FRB/US  $r^*$ " is the level of the real federal funds rate that, if maintained over a 12-quarter period (beginning in the current quarter) in the FRB/US model, sets the output gap equal to zero in the final quarter of that period given either the Tealbook or SEP-consistent projection. The SEP-consistent baseline corresponds to the June 2019 median SEP responses. The "Average projected real federal funds rate" is calculated under the Tealbook and SEP-consistent baseline projections over the same 12-quarter period as FRB/US  $r^*$ .

## Simple Policy Rule Simulations

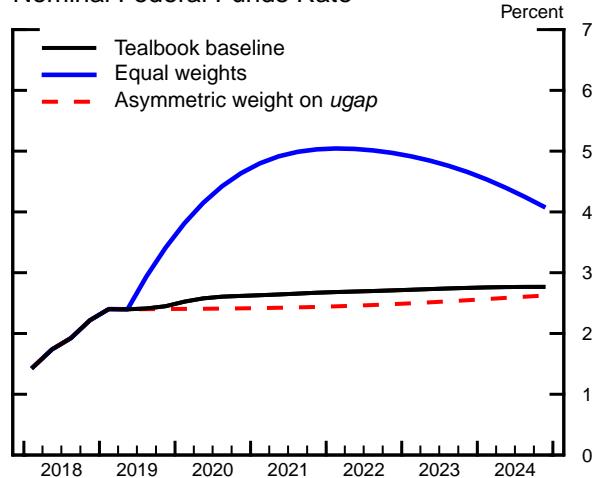
## Monetary Policy Strategies



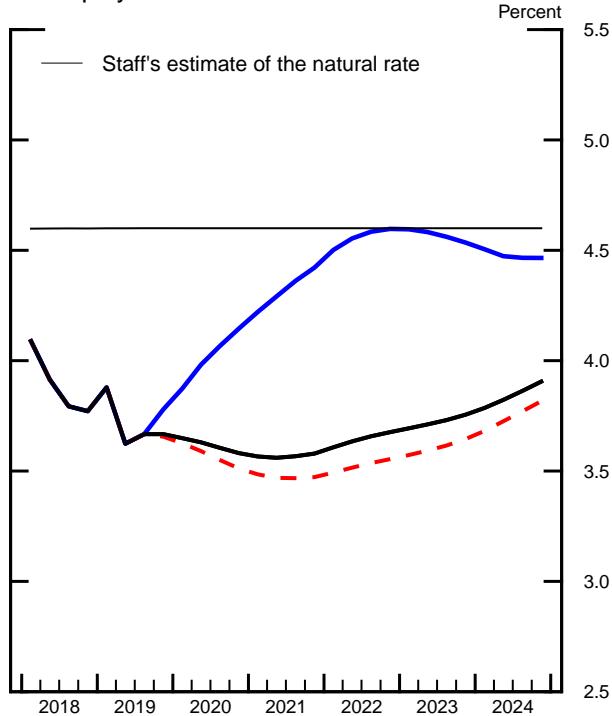
Note: The policy rule simulations in this exhibit are based on rules that respond to core inflation rather than to headline inflation. This choice of rule specification was made in light of a tendency for current and near-term core inflation rates to outperform headline inflation rates as predictors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

## Optimal Control Simulations under Commitment

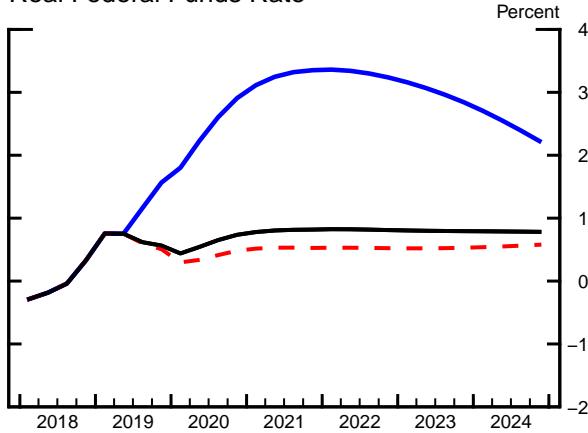
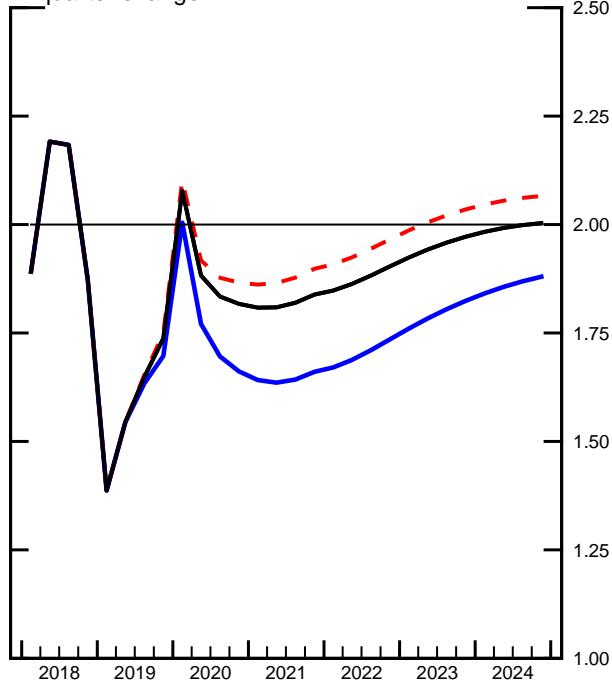
Nominal Federal Funds Rate



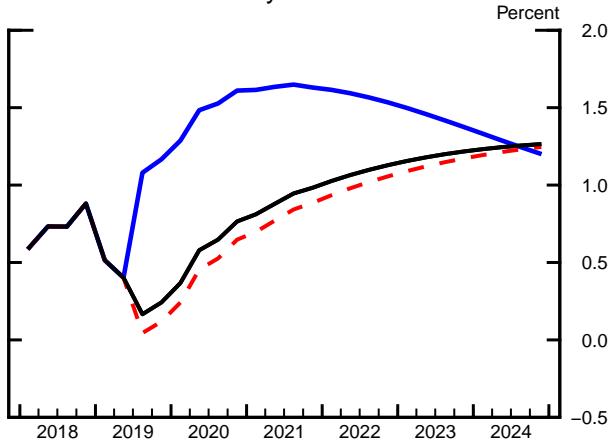
Unemployment Rate



Real Federal Funds Rate

PCE Inflation  
4-quarter change

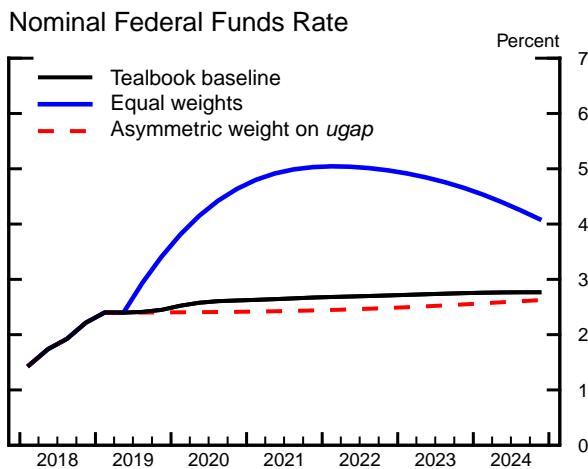
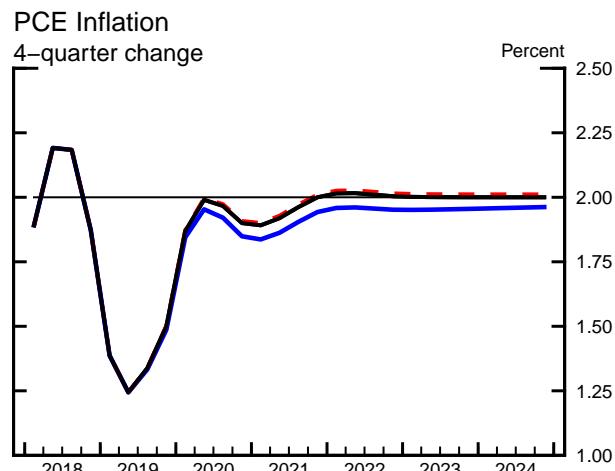
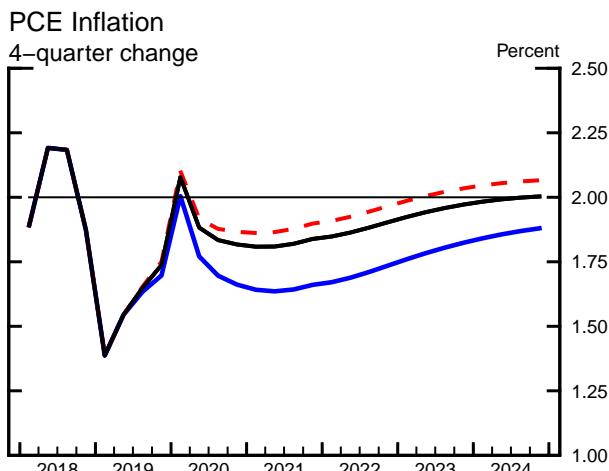
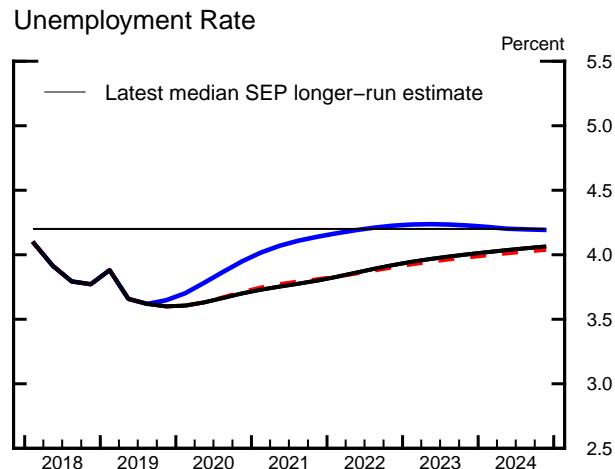
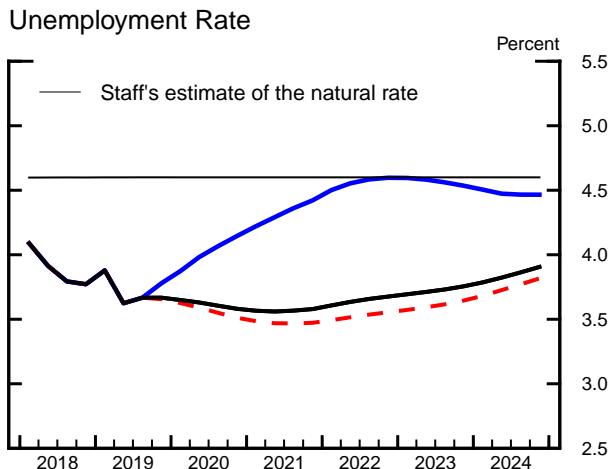
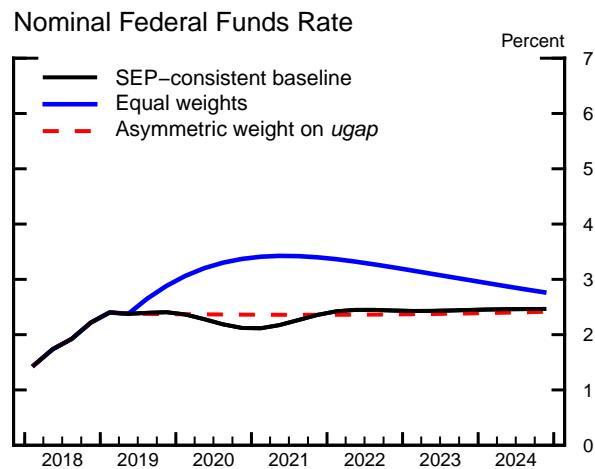
Real 10-Year Treasury Yield



Note: Each set of lines corresponds to an optimal control policy under commitment in which policymakers minimize a discounted weighted sum of squared deviations of 4-quarter headline PCE inflation from the Committee's 2 percent objective, of squared deviations of the unemployment rate from the staff's estimate of the natural rate, and of squared changes in the federal funds rate. The weights vary across simulations. See the appendix for technical details and the box "Optimal Control and the Loss Function" in the June 2016 Tealbook B for a motivation.

## Optimal Control Using a Projection Consistent with the SEP

Monetary Policy Strategies

**Tealbook Baseline****SEP–Consistent Baseline**

Note: Each set of lines corresponds to an optimal control policy under commitment in which policymakers minimize a discounted weighted sum of squared deviations of 4-quarter headline PCE inflation from the Committee's 2 percent objective, of squared deviations of the unemployment rate from the staff's estimate of the natural rate, and of squared changes in the federal funds rate. The weights vary across simulations. See the appendix for technical details and the box "Optimal Control and the Loss Function" in the June 2016 Tealbook B for a motivation.

**Outcomes of Simple Policy Rule Simulations**

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

Outcome and strategy	2019	2020	2021	2022	2023	2024
<i>Nominal federal funds rate<sup>1</sup></i>						
Inertial Taylor (1999)	2.9	3.5	3.6	3.5	3.4	3.4
Taylor (1993)	3.3	3.3	3.1	3.1	3.1	3.0
First-difference	2.7	3.1	3.0	3.0	2.9	2.8
Flexible price-level targeting	2.0	1.7	1.8	1.9	2.1	2.2
Extended Tealbook baseline	2.4	2.6	2.7	2.7	2.8	2.8
<i>Real GDP</i>						
Inertial Taylor (1999)	2.1	1.7	1.5	1.5	1.6	1.4
Taylor (1993)	2.2	1.9	1.7	1.6	1.5	1.4
First-difference	2.2	2.1	1.8	1.7	1.6	1.4
Flexible price-level targeting	2.4	2.7	2.1	1.7	1.4	1.3
Extended Tealbook baseline	2.3	2.2	1.8	1.6	1.5	1.3
<i>Unemployment rate<sup>1</sup></i>						
Inertial Taylor (1999)	3.7	3.9	4.0	4.1	4.2	4.2
Taylor (1993)	3.7	3.8	3.8	3.9	3.9	4.0
First-difference	3.7	3.6	3.6	3.7	3.7	3.8
Flexible price-level targeting	3.6	3.3	3.1	3.1	3.2	3.5
Extended Tealbook baseline	3.7	3.6	3.6	3.7	3.8	3.9
<i>Total PCE prices</i>						
Inertial Taylor (1999)	1.7	1.7	1.7	1.7	1.8	1.8
Taylor (1993)	1.7	1.8	1.8	1.8	1.9	1.9
First-difference	1.8	1.9	2.0	2.1	2.2	2.2
Flexible price-level targeting	1.8	2.0	2.1	2.2	2.3	2.3
Extended Tealbook baseline	1.7	1.8	1.8	1.9	2.0	2.0
<i>Core PCE prices</i>						
Inertial Taylor (1999)	1.9	1.7	1.7	1.7	1.8	1.8
Taylor (1993)	1.9	1.8	1.8	1.8	1.9	1.9
First-difference	1.9	2.0	2.0	2.1	2.2	2.2
Flexible price-level targeting	2.0	2.1	2.1	2.2	2.3	2.3
Extended Tealbook baseline	1.9	1.9	1.9	1.9	2.0	2.0

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

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

Outcome and strategy	2019				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<i>Nominal federal funds rate<sup>1</sup></i>								
Inertial Taylor (1999)	2.4	2.4	2.7	2.9	3.1	3.3	3.4	3.5
Taylor (1993)	2.4	2.4	3.2	3.3	3.6	3.5	3.3	3.3
First-difference	2.4	2.4	2.5	2.7	2.9	3.0	3.1	3.1
Flexible price-level targeting	2.4	2.4	2.1	2.0	1.9	1.8	1.8	1.7
Extended Tealbook baseline	2.4	2.4	2.4	2.4	2.5	2.6	2.6	2.6
<i>Real GDP</i>								
Inertial Taylor (1999)	3.2	2.8	2.3	2.1	1.8	1.6	1.6	1.7
Taylor (1993)	3.2	2.8	2.3	2.2	1.8	1.7	1.7	1.9
First-difference	3.2	2.8	2.3	2.2	2.0	1.9	2.0	2.1
Flexible price-level targeting	3.2	2.8	2.3	2.4	2.3	2.4	2.7	2.7
Extended Tealbook baseline	3.2	2.8	2.3	2.3	2.0	2.0	2.1	2.2
<i>Unemployment rate<sup>1</sup></i>								
Inertial Taylor (1999)	3.9	3.6	3.7	3.7	3.8	3.8	3.8	3.9
Taylor (1993)	3.9	3.6	3.7	3.7	3.8	3.8	3.8	3.8
First-difference	3.9	3.6	3.7	3.7	3.7	3.7	3.6	3.6
Flexible price-level targeting	3.9	3.6	3.7	3.6	3.5	3.4	3.3	3.3
Extended Tealbook baseline	3.9	3.6	3.7	3.7	3.6	3.6	3.6	3.6
<i>Total PCE prices</i>								
Inertial Taylor (1999)	1.4	1.5	1.6	1.7	2.0	1.8	1.7	1.7
Taylor (1993)	1.4	1.5	1.6	1.7	2.0	1.8	1.8	1.8
First-difference	1.4	1.5	1.7	1.8	2.1	2.0	1.9	1.9
Flexible price-level targeting	1.4	1.5	1.7	1.8	2.2	2.0	2.0	2.0
Extended Tealbook baseline	1.4	1.5	1.6	1.7	2.1	1.9	1.8	1.8
<i>Core PCE prices</i>								
Inertial Taylor (1999)	1.7	1.7	1.8	1.9	2.0	1.9	1.8	1.7
Taylor (1993)	1.7	1.7	1.8	1.9	2.1	2.0	1.9	1.8
First-difference	1.7	1.7	1.8	1.9	2.2	2.1	2.1	2.0
Flexible price-level targeting	1.7	1.7	1.8	2.0	2.2	2.2	2.2	2.1
Extended Tealbook baseline	1.7	1.7	1.8	1.9	2.1	2.1	2.0	1.9

1. Percent, average for the quarter.

**Outcomes of Optimal Control Simulations under Commitment**

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

Outcome and strategy	2019	2020	2021	2022	2023	2024
<i>Nominal federal funds rate<sup>1</sup></i>						
Equal weights	3.4	4.6	5.0	5.0	4.7	4.1
Asymmetric weight on <i>ugap</i>	2.4	2.4	2.4	2.5	2.5	2.6
Extended Tealbook baseline	2.4	2.6	2.7	2.7	2.8	2.8
<i>Real GDP</i>						
Equal weights	2.0	1.2	1.2	1.4	1.7	1.7
Asymmetric weight on <i>ugap</i>	2.3	2.3	1.9	1.6	1.5	1.3
Extended Tealbook baseline	2.3	2.2	1.8	1.6	1.5	1.3
<i>Unemployment rate<sup>1</sup></i>						
Equal weights	3.8	4.1	4.4	4.6	4.5	4.5
Asymmetric weight on <i>ugap</i>	3.7	3.5	3.5	3.6	3.6	3.8
Extended Tealbook baseline	3.7	3.6	3.6	3.7	3.8	3.9
<i>Total PCE prices</i>						
Equal weights	1.7	1.7	1.7	1.7	1.8	1.9
Asymmetric weight on <i>ugap</i>	1.8	1.9	1.9	2.0	2.0	2.1
Extended Tealbook baseline	1.7	1.8	1.8	1.9	2.0	2.0
<i>Core PCE prices</i>						
Equal weights	1.9	1.7	1.7	1.7	1.8	1.9
Asymmetric weight on <i>ugap</i>	1.9	1.9	1.9	2.0	2.0	2.1
Extended Tealbook baseline	1.9	1.9	1.9	1.9	2.0	2.0

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

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

Outcome and strategy	2019				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<i>Nominal federal funds rate<sup>1</sup></i>								
Equal weights	2.4	2.4	2.9	3.4	3.8	4.1	4.4	4.6
Asymmetric weight on ugap	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Extended Tealbook baseline	2.4	2.4	2.4	2.4	2.5	2.6	2.6	2.6
<i>Real GDP</i>								
Equal weights	3.2	2.8	2.3	2.0	1.5	1.2	1.1	1.2
Asymmetric weight on ugap	3.2	2.8	2.3	2.3	2.1	2.0	2.2	2.3
Extended Tealbook baseline	3.2	2.8	2.3	2.3	2.0	2.0	2.1	2.2
<i>Unemployment rate<sup>1</sup></i>								
Equal weights	3.9	3.6	3.7	3.8	3.9	4.0	4.1	4.1
Asymmetric weight on ugap	3.9	3.6	3.7	3.7	3.6	3.6	3.5	3.5
Extended Tealbook baseline	3.9	3.6	3.7	3.7	3.6	3.6	3.6	3.6
<i>Total PCE prices</i>								
Equal weights	1.4	1.5	1.6	1.7	2.0	1.8	1.7	1.7
Asymmetric weight on ugap	1.4	1.5	1.7	1.8	2.1	1.9	1.9	1.9
Extended Tealbook baseline	1.4	1.5	1.6	1.7	2.1	1.9	1.8	1.8
<i>Core PCE prices</i>								
Equal weights	1.7	1.7	1.8	1.9	2.0	1.9	1.8	1.7
Asymmetric weight on ugap	1.7	1.7	1.8	1.9	2.1	2.1	2.0	1.9
Extended Tealbook baseline	1.7	1.7	1.8	1.9	2.1	2.1	2.0	1.9

1. Percent, average for the quarter.

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

Interval	Nominal GDP		Real GDP		PCE price index		Core PCE price index		Unemployment rate <sup>1</sup>	
	06/07/19	07/18/19	06/07/19	07/18/19	06/07/19	07/18/19	06/07/19	07/18/19	06/07/19	07/18/19
<i>Quarterly</i>										
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	4.9	4.9	3.4	3.4	1.6	1.6	1.6	1.6	3.8	3.8
Q4	4.1	4.1	2.2	2.2	1.5	1.5	1.8	1.8	3.8	3.8
2019:Q1	3.5	3.8	3.0	3.1	.4	.5	1.0	1.2	3.9	3.9
Q2	3.7	4.8	1.8	2.5	2.4	2.6	1.9	2.1	3.6	3.6
Q3	3.6	4.0	1.7	1.6	1.2	1.9	2.1	2.2	3.7	3.7
Q4	3.8	3.7	1.7	1.8	2.0	1.8	2.1	2.1	3.7	3.7
2020:Q1	4.1	4.1	2.1	2.1	1.9	1.9	2.0	2.0	3.7	3.6
Q2	4.3	4.4	2.1	2.1	1.9	1.8	1.9	1.9	3.7	3.6
Q3	4.2	4.2	2.1	2.1	1.8	1.8	1.8	1.9	3.7	3.6
Q4	4.1	4.1	2.1	2.1	1.8	1.8	1.8	1.8	3.7	3.6
<i>Two-quarter<sup>2</sup></i>										
2018:Q2	5.9	5.9	3.2	3.2	2.2	2.2	2.1	2.1	-.2	-.2
Q4	4.5	4.5	2.8	2.8	1.5	1.5	1.7	1.7	-.1	-.1
2019:Q2	3.6	4.3	2.4	2.8	1.4	1.6	1.5	1.7	-.2	-.2
Q4	3.7	3.8	1.7	1.7	1.6	1.8	2.1	2.2	.1	.1
2020:Q2	4.2	4.2	2.1	2.1	1.9	1.9	1.9	2.0	.0	-.1
Q4	4.1	4.2	2.1	2.1	1.8	1.8	1.8	1.8	.0	.0
<i>Four-quarter<sup>3</sup></i>										
2017:Q4	4.5	4.5	2.5	2.5	1.8	1.8	1.6	1.6	-.7	-.7
2018:Q4	5.2	5.2	3.0	3.0	1.9	1.9	1.9	1.9	-.3	-.3
2019:Q4	3.6	4.0	2.0	2.3	1.5	1.7	1.8	1.9	-.1	-.1
2020:Q4	4.1	4.2	2.1	2.1	1.9	1.8	1.9	1.9	.0	-.1
2021:Q4	3.7	3.8	1.7	1.8	1.9	1.8	1.9	1.9	.0	.0
<i>Annual</i>										
2017	4.2	4.2	2.2	2.2	1.8	1.8	1.6	1.6	4.4	4.4
2018	5.2	5.2	2.9	2.9	2.0	2.0	1.9	1.9	3.9	3.9
2019	4.1	4.4	2.5	2.6	1.4	1.6	1.7	1.8	3.7	3.7
2020	4.0	4.1	1.9	2.0	1.8	1.9	2.0	2.0	3.7	3.6
2021	3.9	4.0	1.9	2.0	1.9	1.8	1.9	1.9	3.7	3.6

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.

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

Item	2018			2019				2020				2018 <sup>1</sup>	2019 <sup>1</sup>	2020 <sup>1</sup>	2021 <sup>1</sup>
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Real GDP	4.2	3.4	2.2	3.1	2.5	1.6	1.8	2.1	2.1	2.1	2.1	3.0	2.3	2.1	1.8
<i>Previous Tealbook</i>	4.2	3.4	2.2	3.0	1.8	1.7	1.7	2.1	2.1	2.1	2.1	3.0	2.0	2.1	1.7
Final sales	5.4	1.0	2.1	2.6	3.4	1.8	2.3	2.7	2.3	1.8	2.2	2.6	2.5	2.2	1.8
<i>Previous Tealbook</i>	5.4	1.0	2.1	2.4	2.2	1.8	2.4	2.6	2.3	1.8	2.2	2.6	2.2	2.2	1.7
Priv. dom. final purch.	4.3	3.0	2.6	1.3	3.1	2.2	2.2	2.5	2.4	2.3	2.3	3.0	2.2	2.4	2.0
<i>Previous Tealbook</i>	4.3	3.0	2.6	1.1	2.2	2.1	2.2	2.4	2.4	2.3	2.3	3.0	1.9	2.3	1.9
Personal cons. expend.	3.8	3.5	2.5	.9	4.1	2.5	2.4	2.4	2.4	2.4	2.4	2.6	2.5	2.4	2.3
<i>Previous Tealbook</i>	3.8	3.5	2.5	.9	3.0	2.3	2.5	2.4	2.4	2.4	2.4	2.6	2.2	2.4	2.2
Durables	8.6	3.7	3.6	-2.4	15.4	1.0	2.3	1.9	1.9	1.8	1.8	3.4	3.9	1.9	1.7
Nondurables	4.0	4.6	2.1	2.3	6.0	3.6	3.0	2.5	2.5	2.5	2.5	2.7	3.7	2.5	2.4
Services	3.0	3.2	2.4	1.0	1.9	2.4	2.3	2.5	2.5	2.5	2.5	2.4	1.9	2.5	2.3
Residential investment	-1.3	-3.6	-4.7	-2.0	-2.6	4.3	7.3	9.7	4.8	-.1	-2.6	-3.3	1.6	2.8	-3.6
<i>Previous Tealbook</i>	-1.3	-3.6	-4.7	-3.5	-.7	4.6	6.9	8.6	4.8	-.2	-2.7	-3.3	1.7	2.5	-3.4
Nonres. priv. fixed invest.	8.7	2.5	5.4	4.4	.0	.0	-.2	.8	1.6	2.1	3.0	7.0	1.1	1.9	1.9
<i>Previous Tealbook</i>	8.7	2.5	5.4	3.1	-.7	.6	-.6	.4	1.2	2.2	3.3	7.0	.6	1.8	1.5
Equipment & intangibles	7.1	4.4	8.3	4.5	2.6	.0	.5	2.0	2.6	3.3	4.0	7.6	1.9	3.0	2.7
<i>Previous Tealbook</i>	7.1	4.4	8.3	2.8	.8	.1	.2	1.8	2.0	3.1	4.4	7.6	1.0	2.8	2.3
Nonres. structures	14.5	-3.4	-3.9	4.3	-8.3	.1	-2.2	-3.3	-2.0	-1.8	-.3	4.9	-1.6	-1.9	-.8
<i>Previous Tealbook</i>	14.5	-3.4	-3.9	4.0	-5.6	2.5	-3.2	-4.5	-1.4	-1.2	-.2	4.9	-.6	-1.8	-1.3
Net exports <sup>2</sup>	-841	-950	-956	-905	-923	-938	-929	-914	-922	-939	-933	-912	-924	-927	-943
<i>Previous Tealbook<sup>2</sup></i>	-841	-950	-956	-904	-930	-945	-932	-917	-930	-952	-952	-912	-928	-938	-965
Exports	9.3	-4.9	1.8	5.4	-2.7	.7	2.9	4.3	2.2	2.6	2.9	2.3	1.5	3.0	3.5
Imports	-.6	9.3	2.0	-1.9	.0	2.3	1.1	1.3	2.6	3.8	1.5	3.4	.4	2.3	3.2
Gov't. cons. & invest.	2.5	2.6	-.4	2.8	6.2	1.1	1.2	1.3	2.1	.6	.9	1.5	2.8	1.2	.9
<i>Previous Tealbook</i>	2.5	2.6	-.4	2.8	4.4	1.1	1.3	1.7	2.6	1.0	.9	1.5	2.4	1.5	.9
Federal	3.7	3.5	1.1	-.1	10.9	3.5	3.9	2.2	4.2	-.1	.7	2.7	4.5	1.7	.8
Defense	6.0	4.9	6.3	4.0	6.9	3.5	4.1	1.6	1.3	1.0	1.0	5.0	4.6	1.2	.5
Nonddefense	.5	1.6	-6.1	-5.8	17.3	3.6	3.7	3.1	8.7	-1.6	.2	-.5	4.4	2.5	1.2
State & local	1.8	2.0	-1.3	4.6	3.4	-.3	-.4	.8	.8	1.0	1.0	.8	1.8	.9	1.0
Change in priv. inventories <sup>2</sup>	-37	90	97	123	79	69	46	18	11	31	26	45	79	22	28
<i>Previous Tealbook<sup>2</sup></i>	-37	90	97	126	107	104	66	38	29	46	41	45	101	38	45

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 <i>Previous Tealbook</i>	1.5 1.5	2.6 2.6	2.7 2.7	2.0 2.0	1.9 1.9	2.5 2.5	3.0 3.0	2.3 2.0	2.1 2.1	1.8 1.7
Final sales <i>Previous Tealbook</i>	1.9 1.9	2.0 2.0	3.0 3.0	1.9 1.9	2.1 2.1	2.6 2.6	2.6 2.6	2.5 2.2	2.2 2.2	1.8 1.7
Priv. dom. final purch. <i>Previous Tealbook</i>	2.6 2.6	2.6 2.6	4.3 4.3	2.7 2.7	2.7 2.7	3.3 3.3	3.0 3.0	2.2 1.9	2.4 2.3	2.0 1.9
Personal cons. expend. <i>Previous Tealbook</i>	1.6 1.6	1.9 1.9	3.8 3.8	3.0 3.0	2.8 2.8	2.7 2.7	2.6 2.6	2.5 2.2	2.4 2.4	2.3 2.2
Durables	6.3	5.0	9.2	6.0	6.8	7.7	3.4	3.9	1.9	1.7
Nondurables	.7	2.8	3.0	3.0	2.0	3.0	2.7	3.7	2.5	2.4
Services	1.2	1.1	3.2	2.6	2.4	1.8	2.4	1.9	2.5	2.3
Residential investment <i>Previous Tealbook</i>	15.4 15.4	7.1 7.1	7.8 7.8	8.9 8.9	4.5 4.5	3.8 3.8	-3.3 -3.3	1.6 1.7	2.8 2.5	-3.6 -3.4
Nonres. priv. fixed invest. <i>Previous Tealbook</i>	5.6 5.6	5.4 5.4	6.4 6.4	-.7 -.7	1.8 1.8	6.3 6.3	7.0 7.0	1.1 .6	1.9 1.8	1.9 1.5
Equipment & intangibles <i>Previous Tealbook</i>	6.1 6.1	5.1 5.1	5.6 5.6	2.6 2.6	1.6 1.6	7.3 7.3	7.6 7.6	1.9 1.0	3.0 2.8	2.7 2.3
Nonres. structures <i>Previous Tealbook</i>	4.0 4.0	6.7 6.7	8.8 8.8	-10.7 -10.7	2.5 2.5	2.9 2.9	4.9 4.9	-1.6 -.6	-1.9 -1.8	-.8 -1.3
Net exports <sup>1</sup> <i>Previous Tealbook<sup>1</sup></i>	-569 -569	-533 -533	-578 -578	-725 -725	-786 -786	-859 -859	-912 -912	-924 -924	-927 -927	-943 -965
Exports	2.1	6.0	3.0	-1.6	.8	4.7	2.3	1.5	3.0	3.5
Imports	.6	3.0	6.7	3.4	3.1	5.4	3.4	.4	2.3	3.2
Gov't. cons. & invest. <i>Previous Tealbook</i>	-2.1 -2.1	-2.4 -2.4	.2 .2	2.2 2.2	.9 .9	.1 .1	1.5 1.5	2.8 2.4	1.2 1.5	.9 .9
Federal	-2.6	-6.1	-1.2	1.2	.2	1.3	2.7	4.5	1.7	.8
Defense	-4.7	-6.5	-3.6	-.2	-.7	1.3	5.0	4.6	1.2	.5
Nondefense	1.2	-5.5	2.7	3.4	1.5	1.3	-.5	4.4	2.5	1.2
State & local	-1.7	.2	1.1	2.8	1.4	-.5	.8	1.8	.9	1.0
Change in priv. inventories <sup>1</sup> <i>Previous Tealbook<sup>1</sup></i>	71 71	109 109	87 87	129 129	23 23	23 23	45 45	79 101	22 38	28 45

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

# Greensheets

## Contributions to Changes in Real Gross Domestic Product

(Percentage points, annual rate except as noted)

Item	2018			2019				2020				2018 <sup>1</sup>	2019 <sup>1</sup>	2020 <sup>1</sup>	2021 <sup>1</sup>
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Real GDP <i>Previous Tealbook</i>	4.2	3.4	2.2	3.1	2.5	1.6	1.8	2.1	2.1	2.1	2.1	3.0	2.3	2.1	1.8
	4.2	3.4	2.2	3.0	1.8	1.7	1.7	2.1	2.1	2.1	2.1	3.0	2.0	2.1	1.7
Final sales <i>Previous Tealbook</i>	5.3	1.0	2.1	2.6	3.3	1.8	2.3	2.7	2.3	1.8	2.2	2.6	2.5	2.2	1.8
	5.3	1.0	2.1	2.4	2.2	1.7	2.4	2.6	2.2	1.8	2.2	2.6	2.2	2.2	1.7
Priv. dom. final purch. <i>Previous Tealbook</i>	3.7	2.6	2.2	1.2	2.6	1.8	1.9	2.1	2.0	1.9	1.9	2.5	1.9	2.0	1.7
	3.7	2.6	2.2	.9	1.9	1.8	1.9	2.0	2.0	1.9	2.0	2.5	1.6	2.0	1.6
Personal cons. expend. <i>Previous Tealbook</i>	2.6	2.4	1.7	.6	2.7	1.7	1.6	1.6	1.6	1.6	1.6	1.8	1.7	1.6	1.6
	2.6	2.4	1.7	.6	2.0	1.6	1.7	1.7	1.7	1.7	1.7	1.8	1.5	1.7	1.5
Durables	.6	.3	.3	-.2	1.0	.1	.2	.1	.1	.1	.1	.2	.3	.1	.1
Nondurables	.6	.6	.3	.3	.8	.5	.4	.3	.3	.3	.3	.4	.5	.3	.3
Services	1.4	1.5	1.1	.5	.9	1.1	1.1	1.2	1.2	1.2	1.2	1.1	.9	1.2	1.1
Residential investment <i>Previous Tealbook</i>	-.1	-.1	-.2	-.1	-.1	.2	.3	.4	.2	.0	-.1	-.1	.1	.1	-.1
	-.1	-.1	-.2	-.1	.0	.2	.3	.3	.2	.0	-.1	-.1	.1	.1	-.1
Nonres. priv. fixed invest. <i>Previous Tealbook</i>	1.2	.4	.7	.6	.0	.0	.0	.1	.2	.3	.4	.9	.1	.3	.3
	1.2	.4	.7	.4	-.1	.1	-.1	.1	.2	.3	.4	.9	.1	.2	.2
Equipment & intangibles <i>Previous Tealbook</i>	.7	.5	.9	.5	.3	.0	.0	.2	.3	.3	.4	.8	.2	.3	.3
	.7	.5	.9	.3	.1	.0	-.0	.2	.2	.3	.4	.8	.1	.3	.2
Nonres. structures <i>Previous Tealbook</i>	.4	-.1	-.1	.1	-.3	.0	-.1	-.1	-.1	-.1	0.0	.1	-.1	-.1	0.0
	.4	-.1	-.1	.1	-.2	.1	-.1	-.1	0.0	0.0	0.0	.1	0.0	-.1	0.0
Net exports <i>Previous Tealbook</i>	1.2	-2.0	-.1	.9	-.3	-.3	.2	.3	-.1	-.2	.1	-.2	.1	0.0	-.1
	1.2	-2.0	-.1	1.0	-.5	-.2	.2	.3	-.2	-.3	.0	-.2	.1	-.1	-.1
Exports	1.1	-.6	.2	.7	-.3	.1	.3	.5	.3	.3	.3	.3	.2	.4	.4
Imports	.1	-1.4	-.3	.3	.0	-.3	-.2	-.2	-.4	-.5	-.2	-.5	-.1	-.3	-.5
Gov't. cons. & invest. <i>Previous Tealbook</i>	.4	.4	-.1	.5	1.0	.2	.2	.2	.4	.1	.1	.3	.5	.2	.2
	.4	.4	-.1	.5	.7	.2	.2	.3	.4	.2	.2	.3	.4	.3	.2
Federal	.2	.2	.1	.0	.7	.2	.3	.1	.3	.0	.0	.2	.3	.1	.0
Defense	.2	.2	.2	.2	.3	.1	.2	.1	.0	.0	.0	.2	.2	.0	.0
Nondefense	.0	.0	-.2	-.2	.4	.1	.1	.1	.2	.0	.0	.0	.1	.1	.0
State & local	.2	.2	-.1	.5	.4	.0	.0	.1	.1	.1	.1	.1	.2	.1	.1
Change in priv. inventories <i>Previous Tealbook</i>	-1.2	2.3	.1	.6	-.8	-.2	-.4	-.5	-.1	.4	-.1	.4	-.2	-.1	0.0
	-1.2	2.3	.1	.6	-.4	-.1	-.7	-.5	-.2	.3	-.1	.4	-.1	-.1	0.0

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

Class II FOMC – Restricted (FR)

Authorized for Public Release

July 19, 2019

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

Item	2018			2019				2020				2018 <sup>1</sup>	2019 <sup>1</sup>	2020 <sup>1</sup>	2021 <sup>1</sup>
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
GDP chain-wt. price index <i>Previous Tealbook</i>	3.0	1.8	1.7	.9	2.2	2.3	1.8	1.9	2.2	2.0	1.9	2.1	1.8	2.0	2.0
	3.0	1.8	1.7	.8	1.8	1.8	2.1	1.9	2.2	2.0	1.9	2.1	1.6	2.0	2.0
PCE chain-wt. price index <i>Previous Tealbook</i>	2.0	1.6	1.5	.5	2.6	1.9	1.8	1.9	1.8	1.8	1.8	1.9	1.7	1.8	1.8
Energy <i>Previous Tealbook</i>	.7	3.3	-2.0	-16.9	18.4	-5.5	-8.1	-2.5	-1.5	-.9	-.7	3.5	-3.8	-1.4	.0
Food <i>Previous Tealbook</i>	.7	3.3	-2.0	-16.8	15.8	-19.2	-1.2	-.1	.0	.1	-.1	3.5	-6.3	-.1	.3
Food <i>Previous Tealbook</i>	1.2	.4	.3	3.0	.6	2.5	2.7	2.6	2.6	2.6	2.6	.5	2.2	2.6	2.6
Ex. food & energy <i>Previous Tealbook</i>	1.2	.4	.3	3.0	.5	3.0	2.6	2.6	2.6	2.6	2.6	.5	2.3	2.6	2.6
Ex. food & energy <i>Previous Tealbook</i>	2.1	1.6	1.8	1.2	2.1	2.2	2.1	2.0	1.9	1.9	1.8	1.9	1.9	1.9	1.9
Ex. food & energy, market based <i>Previous Tealbook</i>	2.1	1.6	1.8	1.0	1.9	2.1	2.1	2.0	1.9	1.8	1.8	1.9	1.8	1.9	1.9
Ex. food & energy, market based <i>Previous Tealbook</i>	2.2	1.2	1.5	1.7	1.5	2.1	2.0	1.9	1.8	1.7	1.7	1.7	1.8	1.8	1.7
CPI <i>Previous Tealbook</i>	2.2	2.0	1.5	.9	2.9	2.0	1.8	2.1	2.1	2.1	2.1	2.2	1.9	2.1	2.2
CPI <i>Previous Tealbook</i>	2.1	2.0	1.5	.9	3.0	1.0	2.2	2.2	2.2	2.2	2.2	2.2	1.8	2.2	2.2
Ex. food & energy <i>Previous Tealbook</i>	1.9	2.0	2.2	2.3	1.8	2.6	2.6	2.4	2.3	2.3	2.3	2.2	2.3	2.3	2.3
Ex. food & energy <i>Previous Tealbook</i>	1.9	2.0	2.2	2.3	2.0	2.6	2.4	2.4	2.3	2.3	2.3	2.2	2.3	2.3	2.3
ECI, hourly compensation <sup>2</sup> <i>Previous Tealbook<sup>2</sup></i>	2.4	3.0	2.7	2.7	2.8	2.8	2.8	2.7	2.7	2.7	2.7	3.0	2.8	2.7	2.7
Business sector															
Output per hour <i>Previous Tealbook</i>	3.5	1.5	1.2	3.7	3.5	-1.0	.3	1.1	1.1	1.5	1.4	1.8	1.6	1.3	1.2
Output per hour <i>Previous Tealbook</i>	3.5	1.5	1.2	3.4	1.8	-.4	.5	1.3	1.1	1.3	1.3	1.8	1.3	1.3	1.2
Compensation per hour <i>Previous Tealbook</i>	.4	3.2	.7	1.9	3.6	3.0	3.9	3.7	3.7	3.7	3.6	2.2	3.1	3.6	3.6
Compensation per hour <i>Previous Tealbook</i>	.4	3.2	.7	1.9	3.6	3.6	3.9	3.6	3.6	3.6	3.6	2.2	3.3	3.6	3.6
Unit labor costs <i>Previous Tealbook</i>	-3.0	1.8	-.5	-1.8	.1	4.1	3.6	2.5	2.5	2.2	2.2	.5	1.5	2.3	2.4
Unit labor costs <i>Previous Tealbook</i>	-3.0	1.8	-.5	-1.4	1.8	4.0	3.4	2.3	2.5	2.2	2.2	.5	1.9	2.3	2.4
Core goods imports chain-wt. price index <sup>3</sup> <i>Previous Tealbook<sup>3</sup></i>	.6	-1.2	.1	-.8	-.5	.9	1.4	1.1	1.0	.7	.8	.5	.3	.9	.8
Core goods imports chain-wt. price index <sup>3</sup> <i>Previous Tealbook<sup>3</sup></i>	.6	-1.2	.1	-.7	.6	.6	.7	1.1	1.0	.7	.7	.5	.3	.9	.8

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

2. Private-industry workers.

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

## Greensheets

### Changes in Prices and Costs

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

Item	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
GDP chain-wt. price index <i>Previous Tealbook</i>	2.1 2.1	1.8 1.8	1.6 1.6	.9 .9	1.5 1.5	2.0 2.0	2.1 2.1	1.8 1.6	2.0 2.0	2.0 2.0
PCE chain-wt. price index <i>Previous Tealbook</i>	1.8 1.8	1.2 1.2	1.2 1.2	.3 .3	1.6 1.6	1.8 1.8	1.9 1.9	1.7 1.5	1.8 1.9	1.8 1.9
Energy <i>Previous Tealbook</i>	2.1 2.1	-2.9 -2.9	-6.9 -6.9	-16.4 -16.4	2.1 2.1	8.1 8.1	3.5 3.5	-3.8 -6.3	-1.4 -.1	.0 .3
Food <i>Previous Tealbook</i>	1.3 1.3	.7 .7	2.8 2.8	.3 .3	-1.8 -1.8	.7 .7	.5 .5	2.2 2.3	2.6 2.6	2.6 2.6
Ex. food & energy <i>Previous Tealbook</i>	1.8 1.8	1.6 1.6	1.5 1.5	1.2 1.2	1.8 1.8	1.6 1.6	1.9 1.9	1.9 1.8	1.9 1.9	1.9 1.9
Ex. food & energy, market based <i>Previous Tealbook</i>	1.5 1.5	1.1 1.1	1.2 1.2	1.1 1.1	1.5 1.5	1.2 1.2	1.7 1.7	1.8 1.8	1.8 1.7	1.7 1.7
CPI <i>Previous Tealbook</i>	1.9 1.9	1.2 1.2	1.2 1.2	.4 .4	1.8 1.8	2.1 2.1	2.2 2.2	1.9 1.8	2.1 2.2	2.2 2.2
Ex. food & energy <i>Previous Tealbook</i>	1.9 1.9	1.7 1.7	1.7 1.7	2.0 2.0	2.2 2.2	1.8 1.8	2.2 2.2	2.3 2.3	2.3 2.3	2.3 2.3
ECI, hourly compensation <sup>1</sup> <i>Previous Tealbook<sup>1</sup></i>	1.8 1.8	2.0 2.0	2.3 2.3	1.9 1.9	2.2 2.2	2.6 2.6	3.0 3.0	2.8 2.8	2.7 2.7	2.7 2.7
Business sector										
Output per hour <i>Previous Tealbook</i>	.1 .1	1.8 1.8	.2 .2	.7 .7	1.1 1.1	.8 .8	1.8 1.8	1.6 1.3	1.3 1.3	1.2 1.2
Compensation per hour <i>Previous Tealbook</i>	5.9 5.9	-.3 -.3	2.8 2.8	2.5 2.5	2.1 2.1	3.1 3.1	2.2 2.2	3.1 3.3	3.6 3.6	3.6 3.6
Unit labor costs <i>Previous Tealbook</i>	5.7 5.7	-2.0 -2.0	2.7 2.7	1.8 1.8	1.0 1.0	2.3 2.3	.5 .5	1.5 1.9	2.3 2.3	2.4 2.4
Core goods imports chain-wt. price index <sup>2</sup> <i>Previous Tealbook<sup>2</sup></i>	-.4 -.4	-2.2 -2.2	-.4 -.4	-4.4 -4.4	-.7 -.7	1.1 1.1	.5 .5	.3 .3	.9 .9	.8 .8

1. Private-industry workers.

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

### Other Macroeconomic Indicators

Item	2018			2019				2020				2018 <sup>1</sup>	2019 <sup>1</sup>	2020 <sup>1</sup>	2021 <sup>1</sup>	Class II FOMC – Restricted (FR)
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4					
<i>Employment and production</i>																
Nonfarm payroll employment <sup>2</sup>	243	189	233	174	171	164	145	178	227	46	138	223	163	147	111	
Unemployment rate <sup>3</sup>	3.9	3.8	3.8	3.9	3.6	3.7	3.7	3.6	3.6	3.6	3.6	3.8	3.7	3.6	3.6	
<i>Previous Tealbook<sup>3</sup></i>	3.9	3.8	3.8	3.9	3.6	3.7	3.7	3.7	3.7	3.7	3.7	3.8	3.7	3.7	3.7	
Natural rate of unemployment <sup>3</sup>	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	
<i>Previous Tealbook<sup>3</sup></i>	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 <sup>3</sup>	60.4	60.4	60.6	60.7	60.6	60.6	60.6	60.6	60.6	60.6	60.7	60.6	60.6	60.7	60.6	
Employment-to-Population Trend <sup>3</sup>	60.0	60.0	59.9	59.9	59.9	59.8	59.8	59.8	59.7	59.7	59.7	59.9	59.8	59.7	59.5	
Output gap <sup>4</sup>	1.4	1.7	1.9	2.0	2.1	2.1	2.1	2.2	2.2	2.3	2.4	1.9	2.1	2.4	2.3	
<i>Previous Tealbook<sup>4</sup></i>	1.4	1.7	1.9	2.0	2.0	2.0	1.9	2.0	2.1	2.1	2.2	1.9	1.9	2.2	2.0	
Industrial production <sup>5</sup>	4.6	5.2	3.9	-1.9	-1.2	2.1	.7	.6	1.8	2.0	1.0	4.0	-.1	1.3	1.1	Authorized for Public Release
<i>Previous Tealbook<sup>5</sup></i>	4.6	5.2	3.9	-1.9	-.7	1.2	.6	1.3	1.7	1.8	.7	4.0	-.2	1.4	1.1	
Manufacturing industr. prod. <sup>5</sup>	2.0	3.6	1.5	-1.9	-2.2	1.4	.1	.2	1.4	1.9	1.2	2.2	-.7	1.2	1.1	
<i>Previous Tealbook<sup>5</sup></i>	2.0	3.6	1.6	-2.1	-1.9	.7	.0	.6	1.5	2.1	1.4	2.2	-.8	1.4	1.1	
Capacity utilization rate - mfg. <sup>3</sup>	76.4	76.9	77.0	76.4	75.7	75.7	75.4	75.4	75.5	75.7	75.8	77.0	75.4	75.8	76.4	
<i>Previous Tealbook<sup>3</sup></i>	76.4	76.9	77.0	76.4	75.8	75.6	75.4	75.4	75.6	75.9	76.0	77.0	75.4	76.0	76.7	
Housing starts <sup>6</sup>	1.3	1.2	1.2	1.2	1.3	1.2	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.3	1.2	
Light motor vehicle sales <sup>6</sup>	17.2	16.9	17.5	16.8	17.0	17.0	16.9	16.9	16.9	16.9	16.9	17.2	16.9	16.9	16.8	
<i>Income and saving</i>																
Nominal GDP <sup>5</sup>	7.6	4.9	4.1	3.8	4.8	4.0	3.7	4.1	4.4	4.2	4.1	5.2	4.0	4.2	3.8	
Real disposable pers. income <sup>5</sup>	1.8	2.6	3.2	2.0	2.4	2.2	2.0	2.7	1.7	1.3	2.1	3.0	2.2	2.0	1.9	
<i>Previous Tealbook<sup>5</sup></i>	1.8	2.6	3.2	2.2	2.5	3.3	1.6	2.8	1.9	1.3	2.2	3.0	2.4	2.1	1.9	
Personal saving rate <sup>3</sup>	6.7	6.4	6.5	6.7	6.3	6.3	6.2	6.2	6.1	5.8	5.8	6.5	6.2	5.8	5.4	
<i>Previous Tealbook<sup>3</sup></i>	6.7	6.4	6.5	6.7	6.6	6.8	6.6	6.7	6.6	6.3	6.3	6.5	6.6	6.3	6.0	
Corporate profits <sup>7</sup>	12.5	14.7	-1.7	-9.9	5.3	3.1	-5.0	-6.1	3.2	5.7	4.4	7.4	-1.8	1.7	1.8	July 19, 2019
Profit share of GNP <sup>3</sup>	10.8	11.1	10.9	10.6	10.6	10.6	10.3	10.1	10.1	10.1	10.1	10.9	10.3	10.1	9.9	
Gross national saving rate <sup>3</sup>	18.5	18.8	18.4	18.3	17.9	17.9	17.8	17.7	17.7	17.7	17.8	18.4	17.8	17.8	17.6	
Net national saving rate <sup>3</sup>	3.3	3.6	3.1	2.9	2.8	2.8	2.6	2.2	2.2	2.2	2.2	3.1	2.6	2.2	1.8	

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

### 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
<i>Employment and production</i>										
Nonfarm payroll employment <sup>1</sup>	181	192	251	227	193	179	223	163	147	111
Unemployment rate <sup>2</sup>	7.8	7.0	5.7	5.0	4.8	4.1	3.8	3.7	3.6	3.6
<i>Previous Tealbook</i> <sup>2</sup>	7.8	7.0	5.7	5.0	4.8	4.1	3.8	3.7	3.7	3.7
Natural rate of unemployment <sup>2</sup>	5.6	5.4	5.1	4.9	4.8	4.6	4.6	4.6	4.6	4.6
<i>Previous Tealbook</i> <sup>2</sup>	5.6	5.4	5.1	4.9	4.8	4.6	4.6	4.6	4.6	4.6
Employment-to-Population Ratio <sup>2</sup>	58.7	58.5	59.3	59.4	59.8	60.2	60.6	60.6	60.7	60.6
Employment-to-Population Trend <sup>2</sup>	60.5	60.4	60.3	60.2	60.1	60.1	59.9	59.8	59.7	59.5
Output gap <sup>3</sup>	-3.8	-3.0	-1.0	-.4	.1	.9	1.9	2.1	2.4	2.3
<i>Previous Tealbook</i> <sup>3</sup>	-3.8	-3.0	-1.0	-.4	.1	.9	1.9	1.9	2.2	2.0
Industrial production	2.1	2.3	3.4	-3.4	-.3	3.6	4.0	-.1	1.3	1.1
<i>Previous Tealbook</i>	2.1	2.3	3.4	-3.4	-.3	3.6	4.0	-.2	1.4	1.1
Manufacturing industr. prod.	1.4	1.1	1.4	-1.7	.3	2.5	2.2	-.7	1.2	1.1
<i>Previous Tealbook</i>	1.4	1.1	1.4	-1.7	.3	2.5	2.2	-.8	1.4	1.1
Capacity utilization rate - mfg. <sup>2</sup>	74.2	74.5	75.8	74.9	74.2	75.8	77.0	75.4	75.8	76.4
<i>Previous Tealbook</i> <sup>2</sup>	74.2	74.5	75.8	74.9	74.2	75.8	77.0	75.4	76.0	76.7
Housing starts <sup>4</sup>	.8	.9	1.0	1.1	1.2	1.2	1.2	1.2	1.3	1.2
Light motor vehicle sales <sup>4</sup>	14.4	15.5	16.5	17.4	17.5	17.1	17.2	16.9	16.9	16.8
<i>Income and saving</i>										
Nominal GDP	3.6	4.4	4.4	2.9	3.4	4.5	5.2	4.0	4.2	3.8
Real disposable pers. income	4.9	-2.5	5.2	3.1	1.6	2.8	3.0	2.2	2.0	1.9
<i>Previous Tealbook</i>	4.9	-2.5	5.2	3.1	1.6	2.8	3.0	2.4	2.1	1.9
Personal saving rate <sup>2</sup>	10.2	6.3	7.4	7.4	6.4	6.3	6.5	6.2	5.8	5.4
<i>Previous Tealbook</i> <sup>2</sup>	10.2	6.3	7.4	7.4	6.4	6.3	6.5	6.6	6.3	6.0
Corporate profits <sup>5</sup>	.7	3.9	5.9	-10.7	7.6	3.3	7.4	-1.8	1.7	1.8
Profit share of GNP <sup>2</sup>	11.9	11.8	12.0	10.4	10.8	10.7	10.9	10.3	10.1	9.9
Gross national saving rate <sup>2</sup>	18.8	19.2	20.2	19.4	18.3	18.3	18.4	17.8	17.8	17.6
Net national saving rate <sup>2</sup>	3.7	4.0	5.1	4.3	3.0	3.1	3.1	2.6	2.2	1.8

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.

## Staff Projections of Government-Sector Accounts and Related Items

Item	2016	2017	2018	2019	2020	2021	2019			
							Q1	Q2	Q3	Q4
<b>Unified federal budget<sup>1</sup></b>							Nominal dollars, billions			
Receipts	3,268	3,316	3,330	3,472	3,702	3,840	736	1,102	863	810
Outlays	3,853	3,982	4,109	4,435	4,653	4,888	1,108	1,158	1,079	1,163
Surplus/deficit	-585	-665	-779	-963	-950	-1,048	-372	-56	-216	-353
Surplus/deficit	-3.2	-3.5	-3.9	-4.5	-4.3	-4.6	-7.2	-1.1	-4.1	-6.6
<i>Previous Tealbook</i>	-3.2	-3.5	-3.9	-4.4	-4.4	-4.7	-7.2	-.4	-4.0	-6.5
Primary surplus/deficit	-1.9	-2.1	-2.2	-2.8	-2.5	-2.6	-5.4	1.2	-2.9	-4.6
Net interest	1.3	1.4	1.6	1.7	1.8	2.0	1.7	2.3	1.2	2.0
Cyclically adjusted surplus/deficit	-3.0	-3.6	-4.4	-5.4	-5.3	-5.7	-8.0	-2.0	-5.0	-7.6
Federal debt held by public	76.4	76.1	77.8	76.6	79.3	81.1	78.1	77.1	76.6	79.5
<b>Government in the NIPA<sup>2</sup></b>							Real percent change, annual rate			
Purchases	.9	.1	1.5	2.8	1.2	.9	2.8	6.2	1.1	1.2
Consumption	.9	-.1	1.4	2.0	.9	.6	.3	4.4	1.6	1.6
Investment	.7	1.4	2.3	6.2	2.2	2.0	14.1	13.0	-.8	-.4
State and local construction	1.8	-2.9	.4	6.9	.5	1.0	29.4	19.1	-8.0	-8.0
Real disposable personal income	1.6	2.8	3.0	2.2	2.0	1.9	2.0	2.4	2.2	2.0
Contribution from transfers <sup>3</sup>	.3	.2	.5	.9	.5	.8	2.7	.6	-.1	.5
Contribution from taxes <sup>3</sup>	-.1	-.6	.1	-.7	-.5	-.5	-1.5	-.9	.1	-.4
<b>Government employment</b>							Average net change in monthly payrolls, thousands			
Federal	3	-2	0	3	0	1	2	4	9	-4
State and local	14	9	8	9	9	9	7	11	9	9
<b>Fiscal indicators<sup>2</sup></b>							Percentage point contribution to change in real GDP, annual rate			
Fiscal effect (FE) <sup>4</sup>	.4	.1	.4	.9	.5	.4	1.1	1.6	.5	.5
Discretionary policy actions (FI)	.3	.2	.6	.7	.4	.2	.8	1.3	.4	.4
<i>Previous Tealbook</i>	.3	.2	.6	.7	.5	.2	.8	1.0	.4	.4
Federal purchases	.0	.1	.2	.3	.1	.0	.0	.7	.2	.3
State and local purchases	.1	-.1	.1	.2	.1	.1	.5	.4	.0	.0
Taxes and transfers	.1	.1	.3	.3	.2	.0	.3	.3	.2	.2
Cyclical	-.1	-.1	-.2	-.1	-.1	.0	-.1	-.2	-.1	-.1
Other	.2	.1	.0	.3	.2	.3	.4	.5	.2	.2

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

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

Measure and country	Projected											
	2018				2019				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Real GDP<sup>1</sup></b>												
Total foreign	3.4	1.8	2.1	1.5	1.5	2.0	2.3	2.1	2.4	2.5	2.5	2.6
<i>Previous Tealbook</i>	3.3	1.8	2.1	1.5	1.6	2.2	2.3	2.2	2.4	2.5	2.5	2.5
Advanced foreign economies	1.4	2.2	1.1	.8	1.2	1.5	1.6	1.1	1.5	1.6	1.6	1.6
Canada	1.5	2.5	2.1	.3	.4	2.6	1.9	1.6	1.6	1.7	1.8	1.7
Japan	-.4	2.3	-2.6	1.8	2.2	0	2.1	-2.0	.7	1.0	1.0	.9
United Kingdom	.2	1.6	2.8	.9	2.0	-.2	1.5	1.1	1.5	1.6	1.6	1.6
Euro area	1.6	1.6	.5	1.0	1.6	1.0	1.0	1.2	1.4	1.4	1.5	1.6
Germany	1.5	1.8	-.8	.1	1.7	.3	1.4	1.4	1.4	1.4	1.4	1.4
Emerging market economies	5.4	1.4	3.2	2.3	1.8	2.4	3.0	3.2	3.3	3.4	3.5	3.5
Asia	6.0	4.0	3.8	4.0	4.3	3.8	4.2	4.3	4.3	4.3	4.3	4.3
Korea	3.9	2.3	1.8	3.8	-1.5	1.6	2.2	2.4	2.4	2.4	2.4	2.4
China	7.1	6.5	5.9	6.0	7.3	5.6	5.8	5.8	5.7	5.7	5.7	5.7
Latin America	4.7	-1.6	2.5	.3	-.6	.8	1.7	2.0	2.2	2.4	2.5	2.6
Mexico	5.4	-1.5	2.7	.1	-.7	.5	1.6	1.8	2.1	2.3	2.4	2.5
Brazil	2.1	.0	2.0	.4	-.6	.4	1.4	2.1	2.3	2.5	2.5	2.6
<b>Consumer prices<sup>2</sup></b>												
Total foreign	2.6	1.8	3.4	1.9	.8	3.3	2.5	2.7	2.3	2.3	2.3	2.3
<i>Previous Tealbook</i>	2.6	1.8	3.4	1.9	.8	2.9	2.2	2.6	2.3	2.3	2.3	2.3
Advanced foreign economies	2.5	1.3	2.4	.7	.7	2.2	1.4	2.5	1.4	1.5	1.5	1.5
Canada	3.3	1.2	2.6	1.1	1.6	3.4	1.7	2.0	1.9	1.9	1.9	1.9
Japan	2.8	-1.6	2.0	-.1	.9	.2	1.0	6.3	.7	1.0	1.0	1.0
United Kingdom	2.5	2.0	2.7	1.8	.9	2.7	2.3	2.2	2.2	2.1	2.1	2.1
Euro area	2.0	2.3	2.6	.7	.1	2.2	1.2	1.5	1.3	1.3	1.3	1.4
Germany	2.1	2.3	3.0	1.2	-.1	2.6	1.6	2.0	1.9	2.0	2.0	2.1
Emerging market economies	2.7	2.2	4.1	2.7	.8	4.1	3.2	2.9	2.9	2.8	2.8	2.8
Asia	2.2	1.4	3.0	1.7	.4	3.9	3.1	2.7	2.6	2.6	2.6	2.6
Korea	1.6	2.2	1.9	1.5	-3.3	2.7	2.0	1.9	2.0	2.1	2.1	2.1
China	1.9	1.1	3.7	2.0	.6	4.3	3.5	2.6	2.5	2.5	2.5	2.5
Latin America	4.1	4.2	6.8	5.4	1.7	4.9	3.5	3.6	3.4	3.4	3.4	3.4
Mexico	4.0	4.0	6.5	4.9	1.1	4.5	3.2	3.3	3.2	3.2	3.2	3.2
Brazil	3.1	4.3	6.6	2.5	2.9	5.2	3.4	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	Projected		
								2019	2020	2021
<b>Real GDP<sup>1</sup></b>										
Total foreign	2.2	3.0	3.0	2.1	2.8	3.0	2.2	2.0	2.5	2.6
<i>Previous Tealbook</i>	2.2	3.0	3.0	2.1	2.8	3.1	2.2	2.1	2.5	2.6
Advanced foreign economies	.3	2.4	2.1	.9	1.8	2.7	1.3	1.4	1.6	1.7
Canada	.7	3.4	2.8	-.4	1.8	2.9	1.6	1.6	1.7	1.7
Japan	.3	2.8	-.4	1.0	1.2	2.3	.3	.6	.9	.8
United Kingdom	1.6	2.6	3.1	2.2	1.7	1.6	1.4	1.1	1.6	1.6
Euro area	-1.1	.8	1.5	2.0	2.1	2.8	1.2	1.2	1.5	1.8
Germany	.2	1.6	2.3	1.3	1.9	2.8	.6	1.2	1.4	1.5
Emerging market economies	4.2	3.6	3.9	3.2	3.8	3.4	3.1	2.6	3.4	3.6
Asia	5.9	5.4	5.1	4.6	5.1	5.2	4.4	4.1	4.3	4.3
Korea	2.4	3.7	2.6	3.4	2.7	2.8	3.0	1.2	2.4	2.4
China	8.0	7.6	7.1	6.8	6.8	6.7	6.4	6.1	5.7	5.7
Latin America	2.9	1.6	2.8	1.9	2.5	1.7	1.5	1.0	2.4	2.8
Mexico	3.0	1.2	3.4	2.8	3.3	1.5	1.6	.8	2.3	2.7
Brazil	2.6	2.6	-.1	-5.5	-2.3	2.2	1.1	.8	2.5	2.8
<b>Consumer prices<sup>2</sup></b>										
Total foreign	2.3	2.4	2.0	1.4	1.9	2.5	2.4	2.3	2.3	2.3
<i>Previous Tealbook</i>	2.3	2.4	2.0	1.4	1.9	2.5	2.4	2.1	2.3	2.3
Advanced foreign economies	1.3	1.0	1.2	.5	.9	1.5	1.7	1.7	1.5	1.5
Canada	1.0	1.0	2.0	1.3	1.4	1.8	2.1	2.2	1.9	2.0
Japan	-.2	1.4	2.6	.1	.3	.6	.8	2.1	.9	1.0
United Kingdom	2.6	2.1	.9	.1	1.2	3.0	2.3	2.0	2.1	2.0
Euro area	2.3	.8	.2	.3	.7	1.4	1.9	1.3	1.3	1.4
Germany	2.0	1.4	.4	.5	1.0	1.6	2.2	1.5	2.0	2.2
Emerging market economies	3.1	3.4	2.6	2.0	2.6	3.2	2.9	2.7	2.8	2.8
Asia	2.7	3.2	1.8	1.5	2.1	2.0	2.1	2.5	2.6	2.6
Korea	1.7	1.1	1.0	.9	1.4	1.4	1.8	.8	2.0	2.1
China	2.1	2.9	1.5	1.4	2.1	1.8	2.2	2.7	2.5	2.5
Latin America	4.3	4.0	4.7	3.2	4.0	6.4	5.1	3.4	3.4	3.3
Mexico	4.1	3.6	4.2	2.3	3.3	6.6	4.8	3.0	3.2	3.2
Brazil	5.6	5.8	6.5	10.4	7.1	2.8	4.1	3.9	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.

## U.S. Current Account

## Quarterly Data

	2018				2019				Projected 2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Billions of dollars, s.a.a.r.											
<b>U.S. current account balance</b>	<b>-456.0</b>	<b>-429.2</b>	<b>-503.0</b>	<b>-575.7</b>	<b>-521.6</b>	<b>-508.0</b>	<b>-523.9</b>	<b>-523.1</b>	<b>-517.5</b>	<b>-512.0</b>	<b>-533.4</b>	<b>-526.8</b>
<i>Previous Tealbook</i>	-495.7	-414.3	-506.4	-537.5	-495.6	-531.5	-546.4	-533.9	-546.3	-541.9	-563.7	-558.8
Current account as percent of GDP	-2.3	-2.1	-2.4	-2.8	-2.5	-2.4	-2.4	-2.4	-2.4	-2.3	-2.4	-2.3
<i>Previous Tealbook</i>	-2.5	-2.0	-2.5	-2.6	-2.4	-2.5	-2.6	-2.5	-2.5	-2.5	-2.5	-2.5
Net goods & services	-612.4	-560.0	-653.7	-684.6	-618.4	-637.5	-626.7	-618.8	-605.2	-599.9	-607.6	-601.3
Investment income, net	278.3	264.0	272.0	253.3	257.5	276.4	255.7	244.7	248.4	234.7	227.1	223.4
Direct, net	340.0	327.9	338.8	314.4	326.3	339.3	332.8	335.9	353.4	355.0	359.0	366.9
Portfolio, net	-61.6	-63.9	-66.8	-61.1	-68.7	-62.9	-77.1	-91.2	-105.0	-120.3	-131.8	-143.5
Other income and transfers, net	-121.9	-133.3	-121.2	-144.4	-160.7	-146.8	-152.9	-148.9	-160.7	-146.8	-152.9	-148.9
Annual Data												
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		Projected
	Billions of dollars											
<b>U.S. current account balance</b>	<b>-426.8</b>	<b>-348.8</b>	<b>-365.2</b>	<b>-407.8</b>	<b>-428.3</b>	<b>-439.6</b>	<b>-491.0</b>	<b>-519.1</b>	<b>-522.4</b>	<b>-537.4</b>		
<i>Previous Tealbook</i>	-426.8	-348.8	-365.2	-407.8	-432.9	-449.1	-488.5	-526.9	-552.7	-562.5		
Current account as percent of GDP	-2.6	-2.1	-2.1	-2.2	-2.3	-2.3	-2.4	-2.4	-2.3	-2.3	-2.3	-2.3
<i>Previous Tealbook</i>	-2.6	-2.1	-2.1	-2.2	-2.3	-2.3	-2.4	-2.5	-2.5	-2.5	-2.4	-2.4
Net goods & services	-537.4	-461.1	-489.6	-498.5	-503.0	-550.1	-627.7	-625.4	-603.5	-597.5		
Investment income, net	216.1	215.4	228.9	214.7	211.1	238.7	266.9	258.6	233.4	212.4		
Direct, net	285.5	283.3	284.2	284.6	278.0	304.0	330.3	333.6	358.6	382.2		
Portfolio, net	-69.4	-67.9	-55.3	-70.0	-66.9	-65.3	-63.4	-75.0	-125.1	-169.8		
Other income and transfers, net	-105.5	-103.1	-104.6	-123.9	-136.4	-128.2	-130.2	-152.4	-152.4	-152.4		

Class I FOMC – Restricted Controlled (FR)

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# Report to the FOMC on Economic Conditions and Monetary Policy



## Book B Monetary Policy Alternatives

July 25, 2019

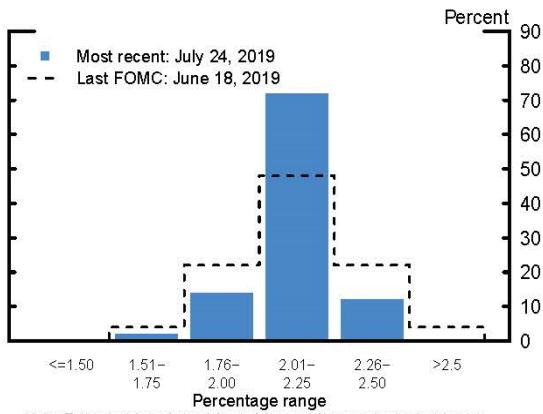
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Prepared for the Federal Open Market Committee  
by the staff of the Board of Governors of the Federal Reserve System

The July Desk surveys also asked respondents for their estimates of the current and future levels of the neutral real federal funds rate. The median estimate of the current neutral rate (not shown) was 0.5 percent, 0.1 percentage point lower than in the January surveys, when this question was last asked. Median estimates for the end of 2019, 2020, and 2021 all declined about 25 basis points, to 0.5, 0.54 and 0.5 percent, respectively. In comparison to the January surveys, the dispersion of views among respondents was generally little changed.

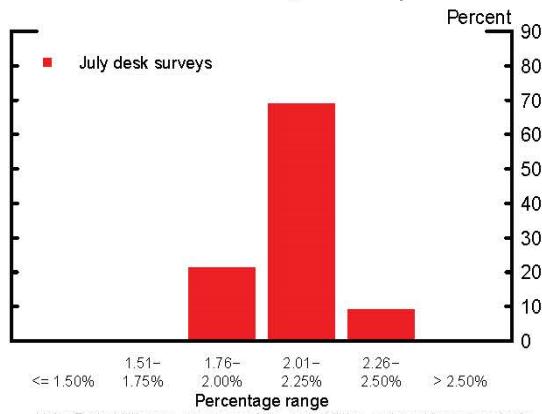
Figure 1: Market-Implied Probability Distribution of the Federal Funds Rate, Post-July FOMC



Note: Estimated from federal funds futures options, not adjusted for risk premiums. The distribution for August 2019 is used to provide a read on the distribution following the July FOMC meeting.

Source: CME Group; Federal Reserve Board staff estimates.

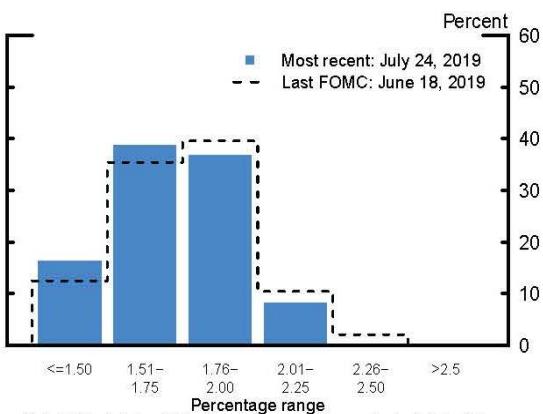
Figure 2: Desk Surveys Average Probability Distribution of the Federal Funds Rate, Post-July FOMC



Note: Probabilities are averages of the probabilities assigned by respondents to different ranges of the federal funds rate following the July FOMC meeting.

Source: FRBNY.

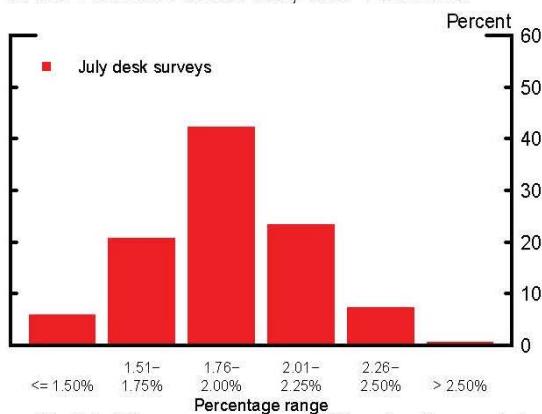
Figure 3: Market-Implied Probability Distribution of the Federal Funds Rate, Year-End 2019



Note: Estimated from federal funds futures options, not adjusted for risk premiums. The distribution for January 2020 is used to provide a read on the distribution at the end of 2019.

Source: CME Group; Federal Reserve Board staff estimates.

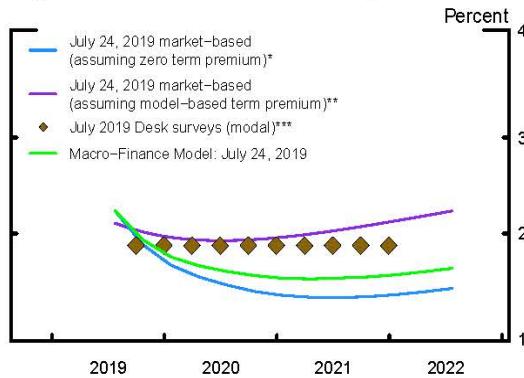
Figure 4: Desk Surveys Average Probability Distribution of the Federal Funds Rate, Year-End 2019



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 5: Federal Funds Rate Projections



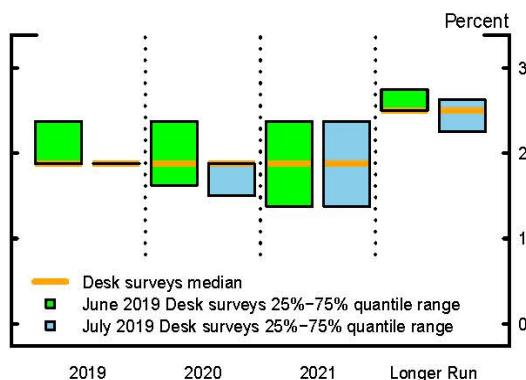
\* Estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points.

\*\* Adjusting for premiums using a term structure model maintained by Board staff.

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

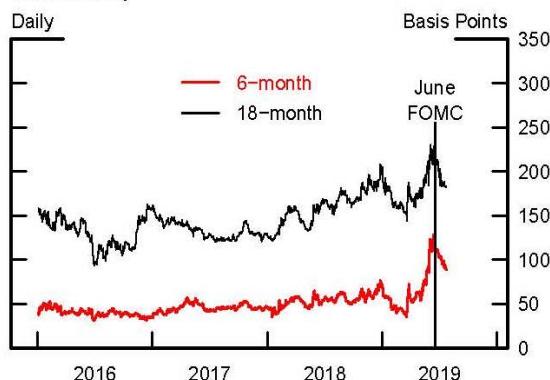
Source: Bloomberg; Federal Reserve Board staff estimates; FRBNY.

Figure 6: Desk Surveys Modal Projections for the Year-End Federal Funds Rate



Note: Based on all responses from the June 2019 and July 2019 Desk surveys.  
Source: FRBNY.

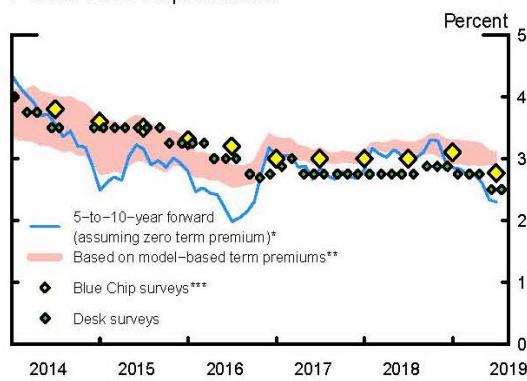
Figure 7: Measures of Monetary Policy Uncertainty



Note: Computed as the width of the 90-percent confidence interval of the market-implied federal funds rate distribution at each horizon. The distribution is estimated from Eurodollar futures options, accounting for the difference in the volatilities of LIBOR and the federal funds rate.

Source: CME; Federal Reserve Board staff estimates.

Figure 8: 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 Kim and Priebsch (2019).

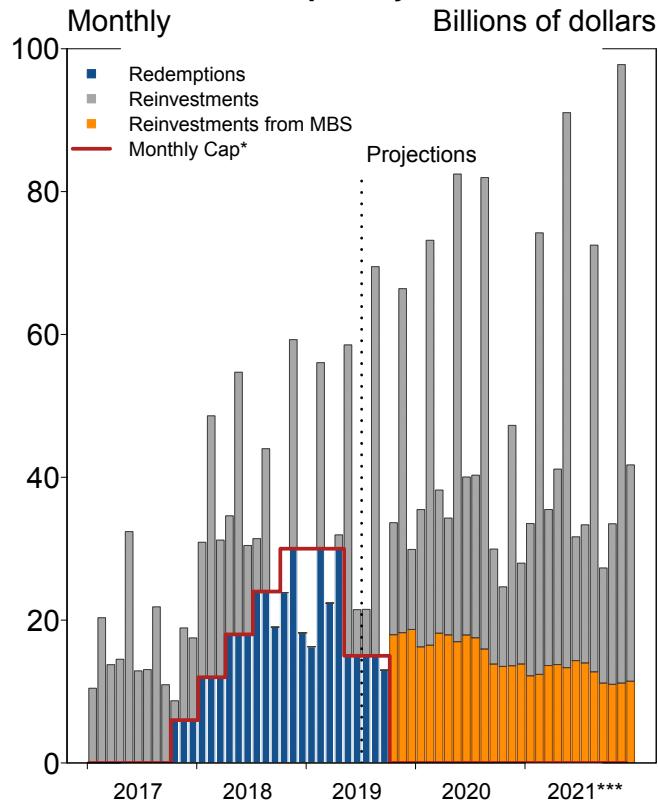
\*\*\* Most recent long-run survey value is from the June 2019 Blue Chip survey.  
Source: Blue Chip, FRBNY; Federal Reserve Board staff estimates.

## Redemptions and Reinvestments of SOMA Principal Payments

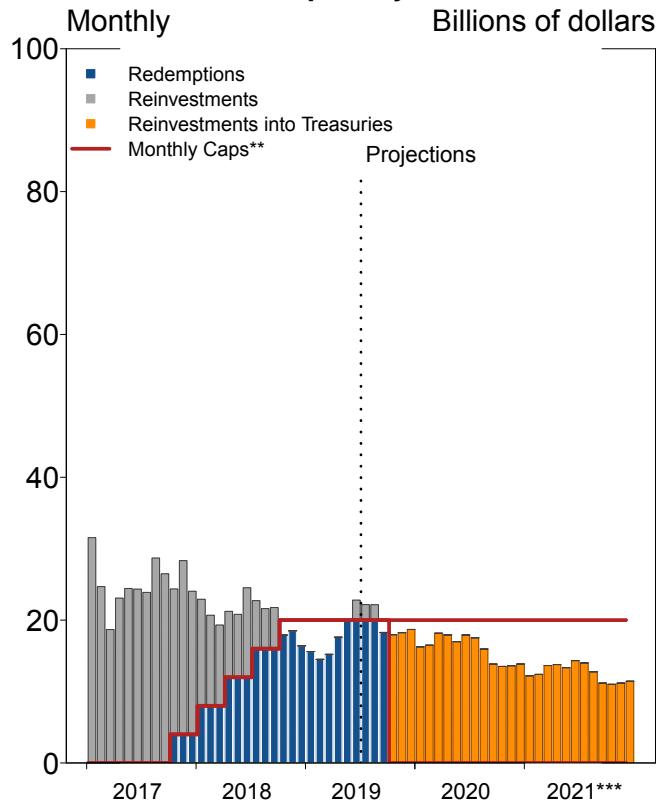
### *Baseline*

Projections for Treasury Securities (Billions of dollars)				Projections for Agency Securities (Billions of dollars)			
	Redemptions	Reinvestments*			Redemptions	Reinvestments** (Agency/Treasury)	
	Since Oct. Period	2017	Since Oct. Period	2017	Since Oct. Period	2017	Since Oct. Period
2019:Q2	60.0	375.7	51.9	302.2	57.6	275.7	2.9 / 0.0
2019:Q3	43.0	418.7	61.0	363.2	58.3	334.0	4.3 / 0.0
2019:Q4	0.0	418.7	75.1	438.3	0.0	334.0	0.0 / 54.9
2018	229.1	247.1	197.1	224.2	160.8	172.8	87.6 / 0.0
2019	171.6	418.7	214.0	438.3	161.2	334.0	7.2 / 54.9
2020	0.0	418.7	363.7	802.0	0.0	334.0	0.0 / 192.0
2021***	0.0	418.7	345.1	1147.0	0.0	334.0	0.0 / 128.6

### SOMA Treasury Securities Principal Payments



### SOMA Agency Debt and MBS Principal Payments



\* Starting in May 2019, principal payments from maturing Treasury securities below \$15 billion per month are redeemed, while those above are reinvested into Treasury securities. Starting in October 2019, all principal payments from maturing Treasury securities are reinvested into Treasury securities.

\*\* Starting in October 2019, principal payments from holdings of agency securities below \$20 billion per month are reinvested into Treasury securities, while those above are reinvested into agency MBS.

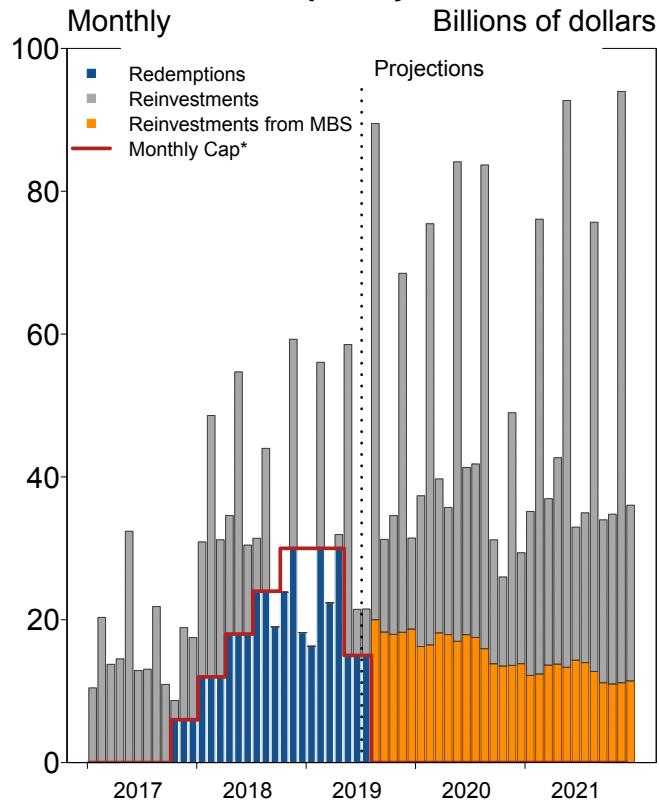
\*\*\* Reserves are projected to reach \$1 trillion in October 2021. After this date, all principal payments received from all security holdings are reinvested into Treasury securities.

## Redemptions and Reinvestments of SOMA Principal Payments

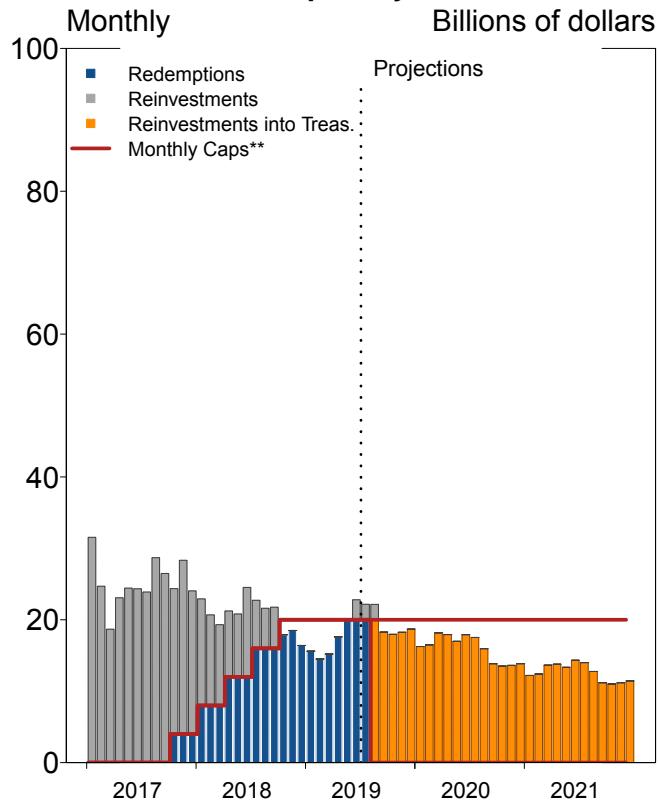
### Earlier End to Runoff

Projections for Treasury Securities (Billions of dollars)				Projections for Agency Securities (Billions of dollars)			
	Redemptions	Reinvestments *			Redemptions	Reinvestments ** (Agency/Treasury)	
	Since Oct. 2017	Period	Since Oct. 2017		Since Oct. 2017	Period	Since Oct. 2017
2019:Q2	60.0	375.7	51.9	302.2	57.6	275.7	2.9 / 0.0
2019:Q3	15.0	390.7	89.0	391.2	20.0	295.7	4.3 / 38.3
2019:Q4	0.0	390.7	79.7	470.8	0.0	295.7	0.0 / 54.9
2018	229.1	247.1	197.1	224.2	160.8	172.8	87.6 / 0.0
2019	143.7	390.7	246.6	470.8	122.9	295.7	7.2 / 93.2
2020	0.0	390.7	382.7	853.6	0.0	295.7	0.0 / 192.0
2021	0.0	390.7	474.7	1328.3	0.0	295.7	0.0 / 151.3

### SOMA Treasury Securities Principal Payments



### SOMA Agency Debt and MBS Principal Payments



\* Starting in May 2019, principal payments from maturing Treasury securities below \$15 billion per month are redeemed, while those above are reinvested into Treasury securities. Starting in October 2019, all principal payments from maturing Treasury securities are reinvested into Treasury securities.

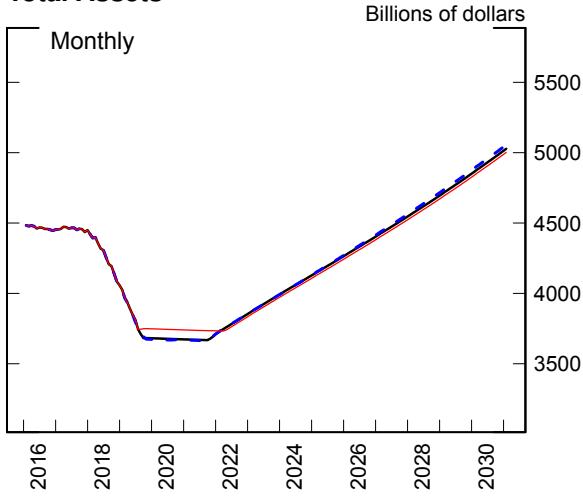
\*\* Starting in August 2019, principal payments from holdings of agency securities below \$20 billion per month are reinvested into Treasury securities, while those above are reinvested into agency MBS.

Note: Under this scenario, reserves are projected to reach \$1 trillion in April 2022.

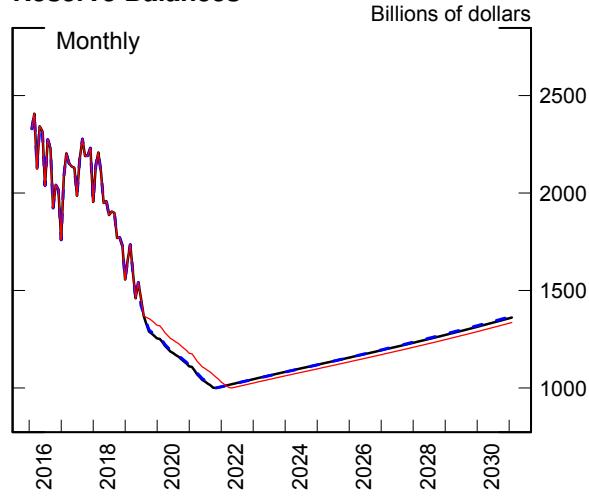
## Total Assets and Selected Balance Sheet Items

— July Tealbook baseline    - - June Tealbook baseline    — July Tealbook-Earlier End to Runoff

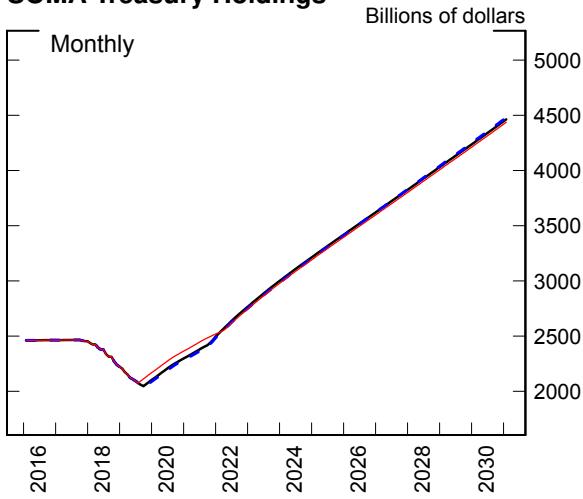
### Total Assets



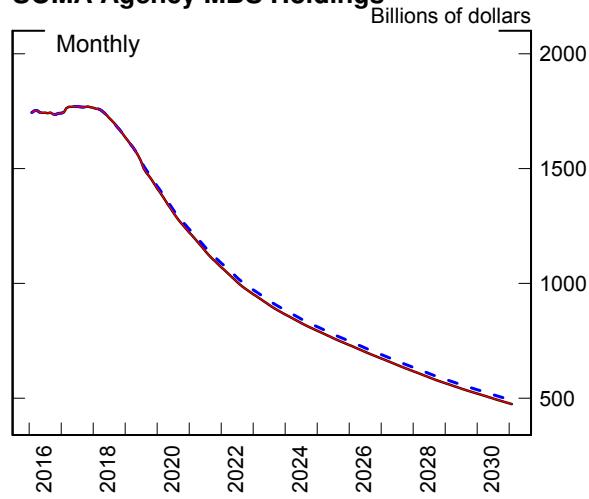
### Reserve Balances



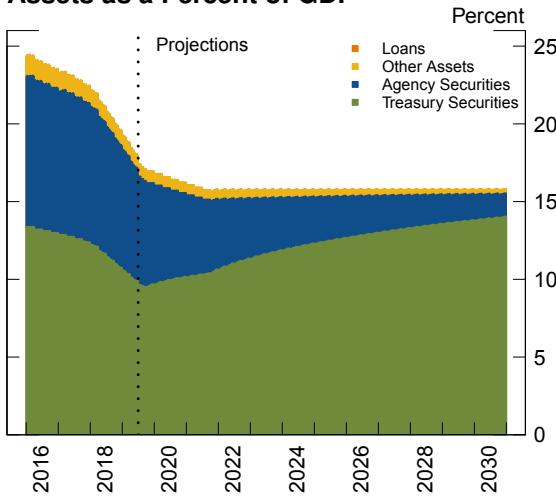
### SOMA Treasury Holdings



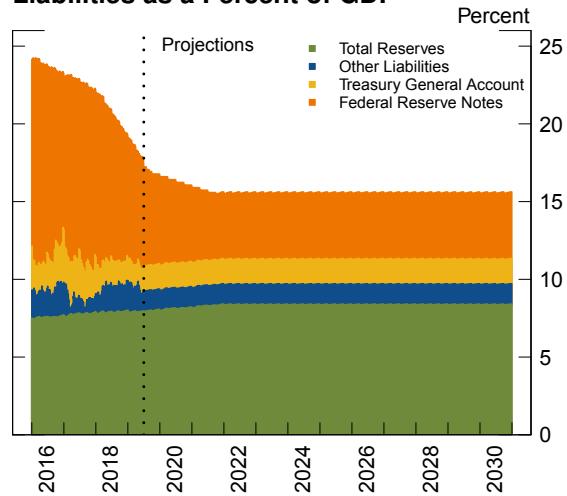
### SOMA Agency MBS Holdings



### Assets as a Percent of GDP



### Liabilities as a Percent of GDP



**Federal Reserve Balance Sheet  
Month-end Projections – July Tealbook**  
(Billions of dollars)

	Historical*			Projections				
	Aug 2014	Sep 2017	Jun 2019	Dec 2019	Dec 2020	Dec 2022	Dec 2025	Dec 2030
Total assets	4,416	4,460	3,812	3,681	3,673	3,853	4,264	5,013
<b>Selected assets</b>								
Loans and other credit extensions**	2	6	0	0	0	0	0	0
Securities held outright	4,157	4,240	3,630	3,519	3,522	3,720	4,151	4,925
U.S. Treasury securities	2,437	2,465	2,095	2,102	2,297	2,764	3,417	4,445
Agency debt securities	42	7	2	2	2	2	2	2
Agency mortgage-backed securities	1,678	1,768	1,533	1,414	1,222	953	732	478
Unamortized premiums	209	162	131	123	111	90	68	41
Unamortized discounts	19	14	13	12	11	9	7	4
Total other assets	29	37	38	28	29	34	38	43
Total liabilities	4,360	4,419	3,773	3,642	3,633	3,809	4,213	4,950
<b>Selected liabilities</b>								
Federal Reserve notes in circulation	1,249	1,533	1,697	1,748	1,856	2,046	2,264	2,659
Reverse repurchase agreements	277	432	303	280	292	315	348	409
Deposits with Federal Reserve Banks	2,825	2,447	1,766	1,608	1,480	1,443	1,596	1,875
Reserve balances held by depository institutions	2,762	2,190	1,461	1,254	1,111	1,045	1,156	1,358
U.S. Treasury, General Account	49	176	243	288	300	323	357	420
Other deposits	15	82	62	67	69	75	83	97
Earnings remittances due to the U.S. Treasury	3	2	2	0	0	0	0	0
Total Federal Reserve Bank capital***	56	41	39	39	40	44	50	64

Source: Federal Reserve H.4.1 daily data and staff calculations.

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

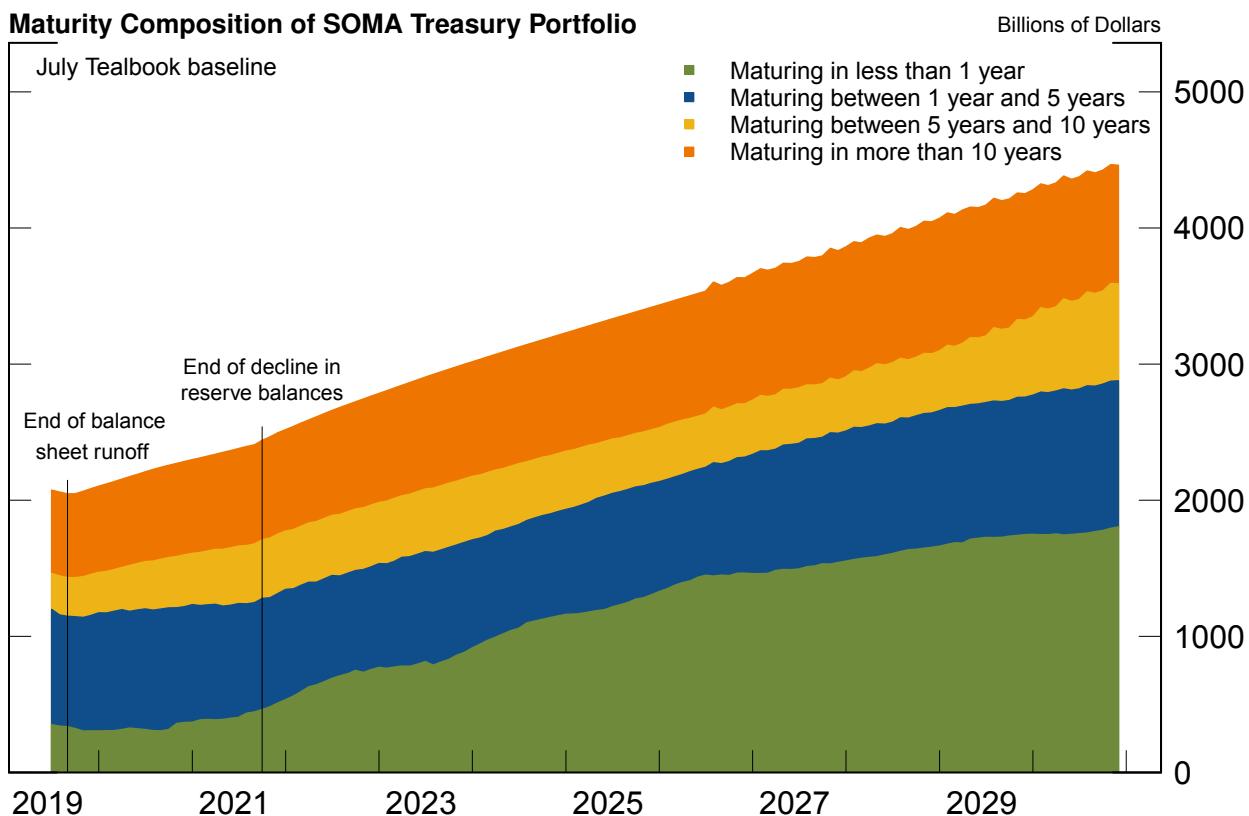
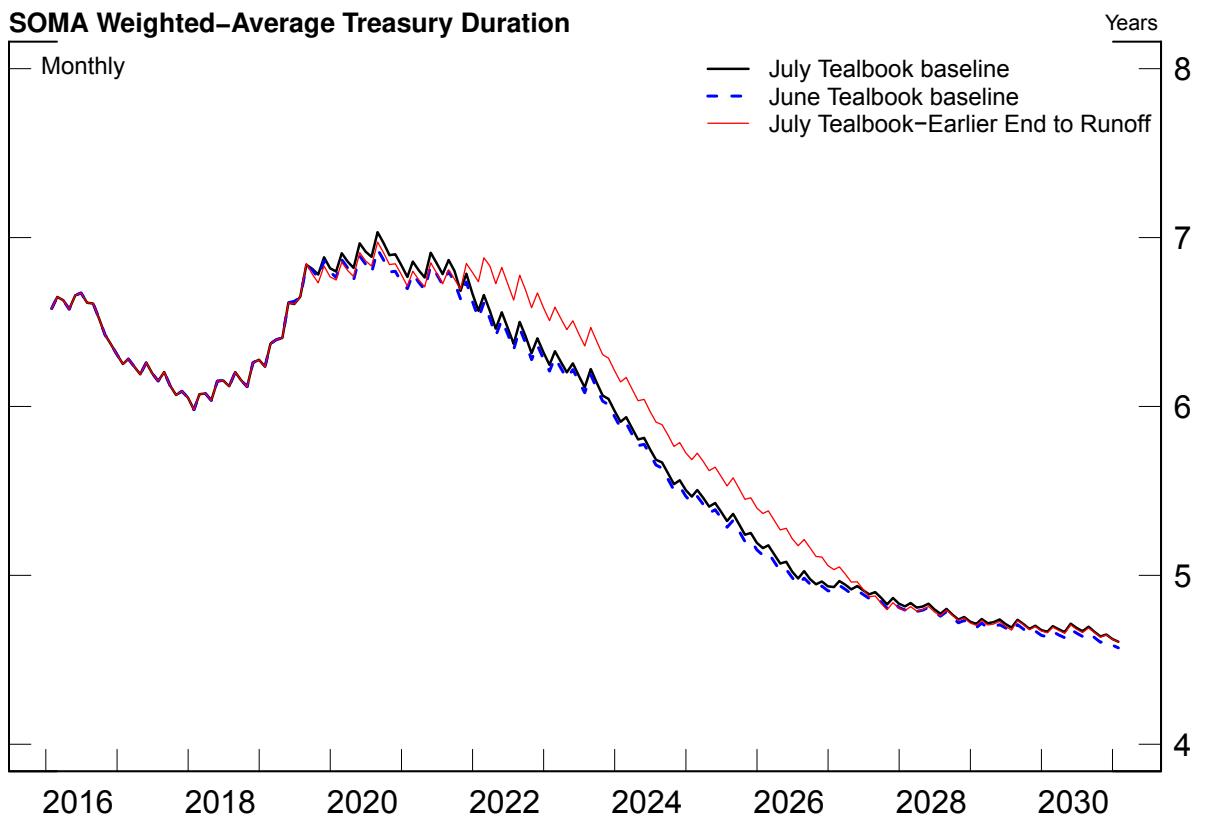
\*August 2014 corresponds to the peak month-end value of reserve balances; September 2017 corresponds to the last month-end before the initiation of the normalization program; June 2019 is the most recent historical value

\*\*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.

# Projections for the Characteristics of SOMA Treasury Securities Holdings

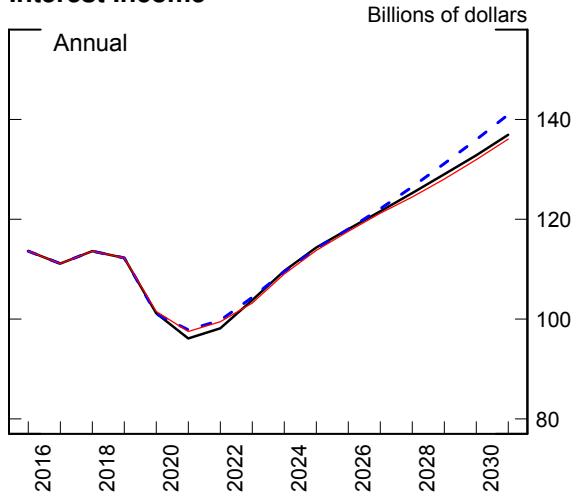
Balance Sheet &amp; Income



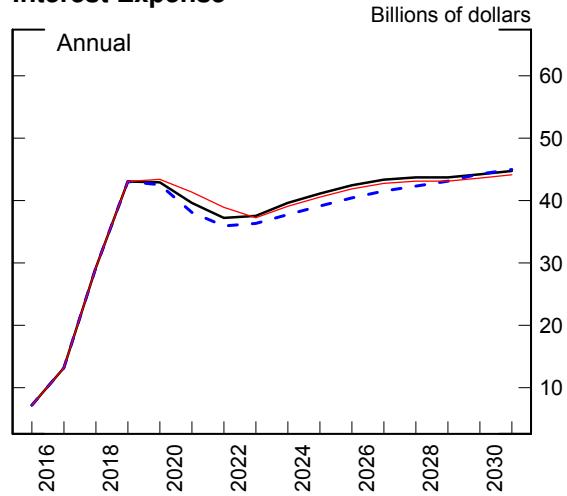
## Income Projections

— July Tealbook baseline    — June Tealbook baseline    — July Tealbook-Earlier End to Runoff

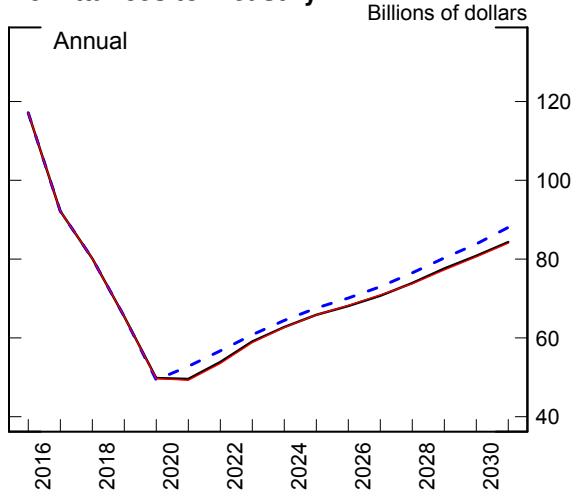
### Interest Income



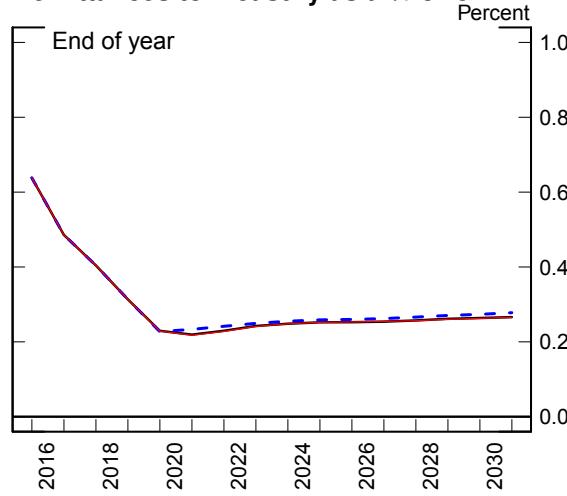
### Interest Expense



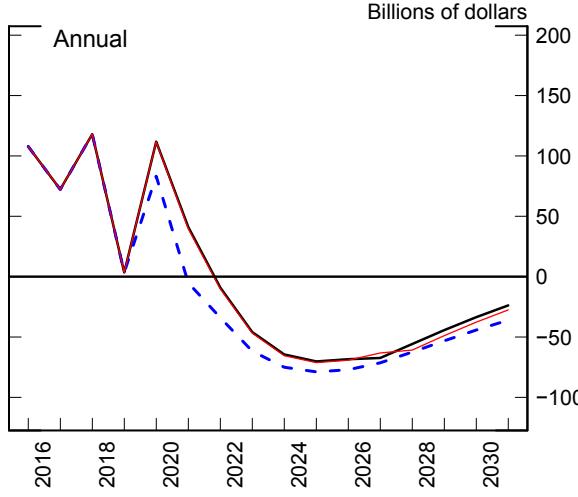
### Remittances to Treasury



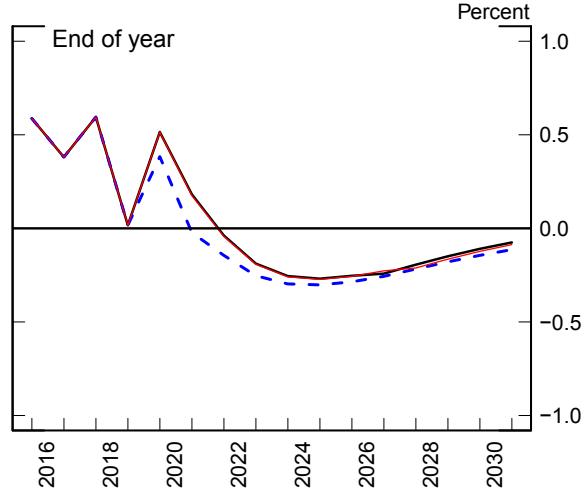
### Remittances to Treasury as a % of GDP



### Unrealized Gains/Losses



### Unrealized Gains/Losses as a % of GDP



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

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Date	July Tealbook	June Tealbook	July Tealbook - Earlier End to Runoff
Quarterly Averages			
2019:Q3	-132	-133	-134
Q4	-130	-131	-133
2020:Q4	-125	-126	-128
2021:Q4	-121	-121	-123
2022:Q4	-116	-117	-118
2023:Q4	-111	-112	-113
2024:Q4	-108	-109	-108
2025:Q4	-105	-106	-105
2026:Q4	-103	-103	-102
2027:Q4	-101	-101	-100
2028:Q4	-99	-99	-98
2029:Q4	-97	-97	-97
2030:Q4	-95	-95	-95