Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assessments of projected appropriate monetary policy, June 2018

Percent

Variable	Median[1]				Central tendency[2]				Range[3]			
	2018	2019	2020	Longer run	2018	2019	2020	Longer run	2018	2019	2020	Longer run
Change in real GDP	2.8	2.4	2.0	1.8	2.7 – 3.0	2.2 – 2.6	1.8 – 2.0	1.8 – 2.0	2.5 – 3.0	2.1 – 2.7	1.5 – 2.2	1.7 – 2.1
March projection	2.7	2.4	2.0	1.8	2.6 – 3.0	2.2 – 2.6	1.8 – 2.1	1.8 – 2.0	2.5 – 3.0	2.0 – 2.8	1.5 – 2.3	1.7 – 2.2
Unemployment rate	3.6	3.5	3.5	4.5	3.6 – 3.7	3.4 – 3.5	3.4 – 3.7	4.3 – 4.6	3.5 – 3.8	3.3 – 3.8	3.3 – 4.0	4.1 – 4.7
March projection	3.8	3.6	3.6	4.5	3.6 – 3.8	3.4 – 3.7	3.5 – 3.8	4.3 – 4.7	3.6 – 4.0	3.3 – 4.2	3.3 – 4.4	4.2 – 4.8
PCE inflation	2.1	2.1	2.1	2.0	2.0 – 2.1	2.0 – 2.2	2.1 – 2.2	2.0	2.0 – 2.2	1.9 – 2.3	2.0 – 2.3	2.0
March projection	1.9	2.0	2.1	2.0	1.8 – 2.0	2.0 – 2.2	2.1 – 2.2	2.0	1.8 – 2.1	1.9 – 2.3	2.0 – 2.3	2.0
Core PCE inflation[4]	2.0	2.1	2.1		1.9 – 2.0	2.0 – 2.2	2.1 – 2.2		1.9 – 2.1	2.0 – 2.3	2.0 – 2.3	
March projection	1.9	2.1	2.1		1.8 – 2.0	2.0 – 2.2	2.1 – 2.2		1.8 – 2.1	1.9 – 2.3	2.0 – 2.3	
Memo: Projected appropriate policy path												
Federal funds rate	2.4	3.1	3.4	2.9	2.1 – 2.4	2.9 – 3.4	3.1 – 3.6	2.8 – 3.0	1.9 – 2.6	1.9 – 3.6	1.9 – 4.1	2.3 – 3.5
March projection	2.1	2.9	3.4	2.9	2.1 – 2.4	2.8 – 3.4	3.1 – 3.6	2.8 – 3.0	1.6 – 2.6	1.6 – 3.9	1.6 – 4.9	2.3 – 3.5

NOTE: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are percent changes from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The projections for the federal funds rate are the value of the midpoint of the projected appropriate target range for the federal funds rate or the projected appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. The March projections were made in conjunction with the meeting of the Federal Open Market Committee on March 20–21, 2018. One participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate in conjunction with the March 20–21, 2018, meeting, and one participant did not submit such projections in conjunction with the June 12–13, 2018, meeting.

1. For each period, the median is the middle projection when the projections are arranged from lowest to highest. When the number of projections is even, the median is the average of the two middle projections.
2. The central tendency excludes the three highest and three lowest projections for each variable in each year.
3. The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.
4. Longer-run projections for core PCE inflation are not collected.

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Table 1.A. Economic projections for the first half of 2018*
(in percent)

Medians, central tendencies, and ranges

	Median	Central tendency	Range
Change in real GDP	2.8	2.8 – 2.9	2.5 – 3.1
March projection	2.5	2.4 – 2.6	2.2 – 2.7
PCE inflation	2.3	2.2 – 2.3	1.9 – 2.3
March projection	2.0	1.9 – 2.0	1.7 – 2.3
Core PCE inflation	2.1	2.1	1.8 – 2.2
March projection	2.0	1.9 – 2.1	1.7 – 2.1

Participants' projections

Projection	Change in real GDP	PCE inflation	Core PCE inflation
1	3.0	2.3	2.1
2	2.9	2.3	2.1
3	2.8	2.3	2.1
4	2.8	2.2	2.1
5	2.8	2.3	2.2
6	2.8	2.3	2.1
7	2.9	2.3	2.1
8	3.1	2.3	2.1
9	2.8	2.2	2.1
10	2.8	2.1	2.1
11	2.8	2.3	2.1
12	2.8	1.9	1.8
13	2.8	2.3	2.1
14	3.0	2.3	2.1
15	2.5	2.0	2.1

* Growth and inflation are reported at annualized rates.

Table 1.B. Economic projections for the second half of 2018*
(in percent)

Medians, central tendencies, and ranges

	Median	Central tendency	Range
Change in real GDP	2.8	2.6 – 3.0	2.5 – 3.2
March projection	3.0	2.7 – 3.3	2.5 – 3.5
PCE inflation	1.9	1.9 – 2.1	1.8 – 2.1
March projection	1.9	1.6 – 2.0	1.6 – 2.3
Core PCE inflation	1.9	1.7 – 1.9	1.7 – 2.2
March projection	1.9	1.7 – 2.0	1.5 – 2.1

Participants' projections

Projection	Change in real GDP	PCE inflation	Core PCE inflation
1	2.6	1.9	1.9
2	2.5	1.9	1.9
3	2.8	2.1	1.9
4	3.2	2.0	1.7
5	2.8	1.9	1.8
6	2.8	1.9	1.7
7	2.7	1.9	1.9
8	2.9	1.9	1.9
9	3.2	1.8	1.7
10	2.6	1.9	1.7
11	3.0	2.1	1.9
12	2.8	2.1	2.2
13	2.6	1.9	1.7
14	3.0	2.1	2.1
15	2.5	2.0	1.9

* Projections for the second half of 2018 implied by participants' June projections for the first half of 2018 and for 2018 as a whole. Growth and inflation are reported at annualized rates.

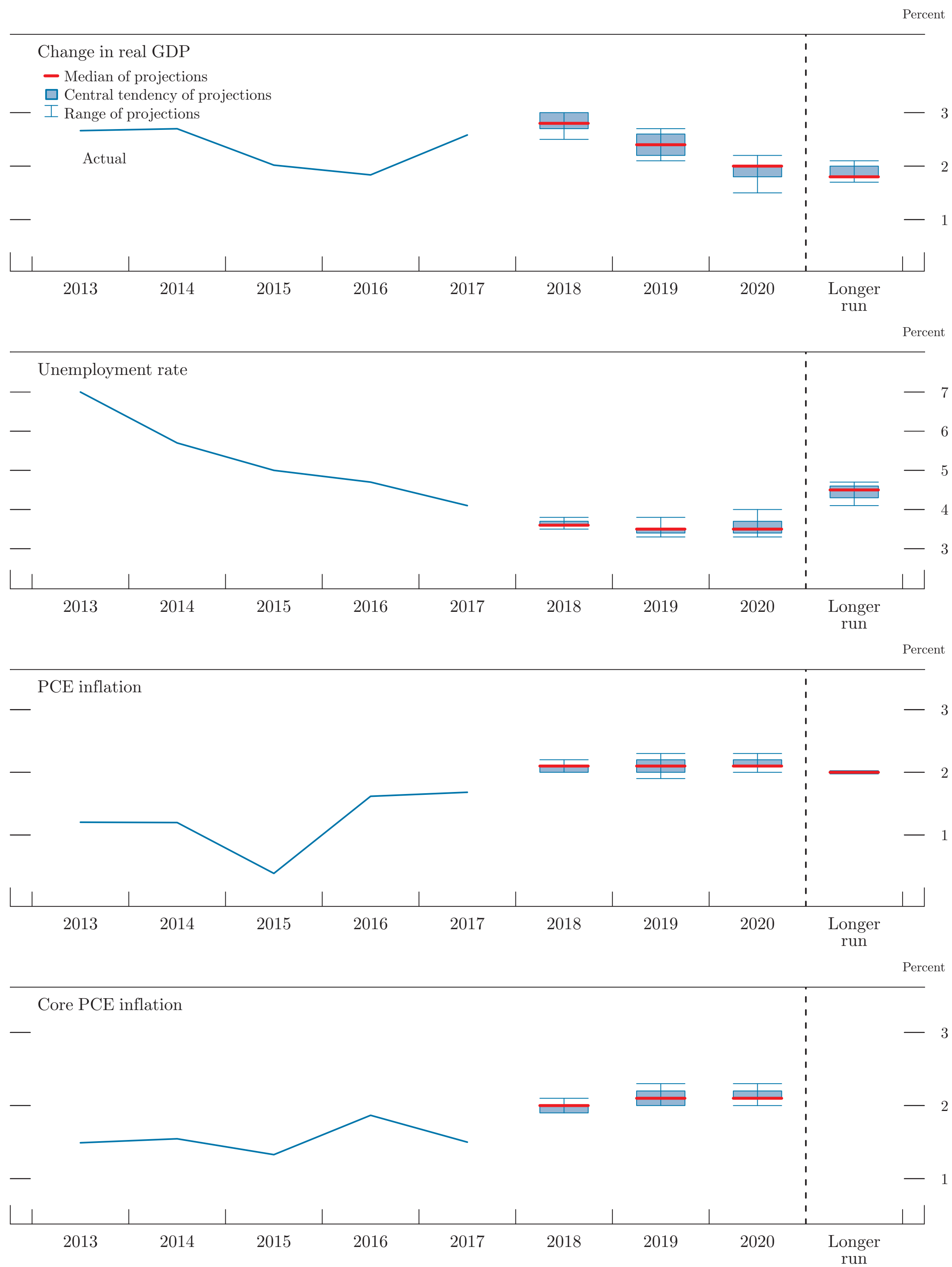
Table 2. June economic projections, 2018–20 and over the longer run (in percent)

Projection	Year	Change in real GDP	Unemployment rate	PCE inflation	Core PCE inflation	Federal funds rate
1	2018	2.8	3.6	2.1	2.0	2.13
2	2018	2.7	3.6	2.1	2.0	2.13
3	2018	2.8	3.7	2.2	2.0	2.38
4	2018	3.0	3.7	2.1	1.9	1.88
5	2018	2.8	3.6	2.1	2.0	2.63
6	2018	2.8	3.6	2.1	1.9	2.38
7	2018	2.8	3.6	2.1	2.0	2.13
8	2018	3.0	3.5	2.1	2.0	2.13
9	2018	3.0	3.8	2.0	1.9	2.13
10	2018	2.7	3.7	2.0	1.9	2.38
11	2018	2.9	3.6	2.2	2.0	2.38
12	2018	2.8	3.7	2.0	2.0	1.88
13	2018	2.7	3.5	2.1	1.9	2.38
14	2018	3.0	3.6	2.2	2.1	2.38
15	2018	2.5	3.7	2.0	2.0	2.38
1	2019	2.1	3.4	2.2	2.2	2.88
2	2019	2.1	3.5	2.1	2.2	2.63
3	2019	2.4	3.7	2.1	2.1	2.88
4	2019	2.6	3.4	2.0	2.0	2.13
5	2019	2.1	3.4	2.2	2.2	3.38
6	2019	2.2	3.5	1.9	2.0	3.38
7	2019	2.4	3.5	2.3	2.3	2.88
8	2019	2.4	3.3	2.0	2.0	3.13
9	2019	2.7	3.8	2.0	2.1	2.88
10	2019	2.6	3.5	2.0	2.0	3.63
11	2019	2.6	3.3	2.1	2.1	3.13
12	2019	2.4	3.7	2.0	2.0	1.88
13	2019	2.2	3.3	2.1	2.1	3.13
14	2019	2.4	3.4	2.3	2.3	3.13
15	2019	2.3	3.5	2.1	2.1	3.38

Table 2. *(continued)*

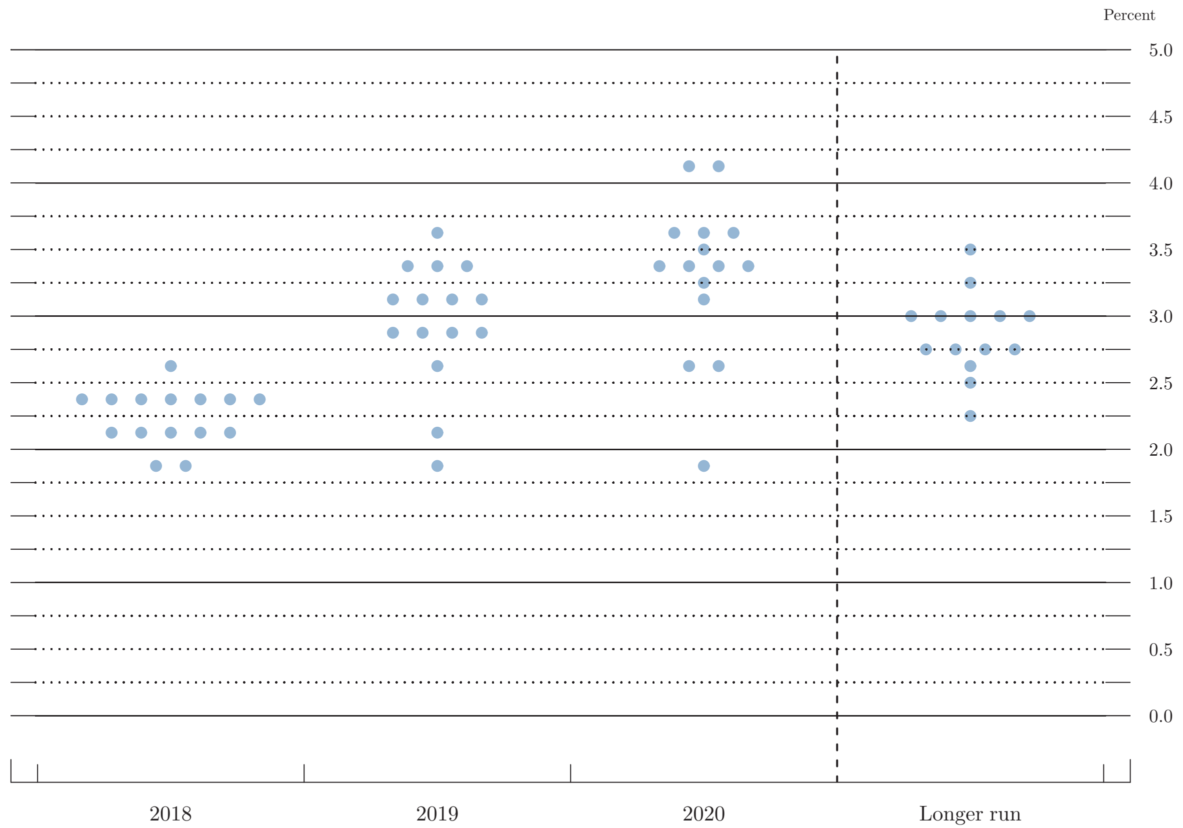
Projection	Year	Change in real GDP	Unemployment rate	PCE inflation	Core PCE inflation	Federal funds rate
1	2020	1.7	3.6	2.2	2.2	3.13
2	2020	1.8	3.7	2.2	2.2	2.63
3	2020	2.1	3.8	2.1	2.1	3.38
4	2020	2.0	3.4	2.1	2.1	2.63
5	2020	1.5	3.5	2.3	2.3	4.13
6	2020	1.9	3.5	2.1	2.2	3.50
7	2020	2.0	3.7	2.1	2.1	3.38
8	2020	1.8	3.5	2.1	2.1	3.25
9	2020	2.2	3.8	2.1	2.1	3.63
10	2020	2.2	3.5	2.0	2.0	3.63
11	2020	2.0	3.3	2.1	2.1	3.38
12	2020	2.0	4.0	2.0	2.0	1.88
13	2020	1.6	3.4	2.1	2.1	3.38
14	2020	2.0	3.4	2.3	2.3	3.63
15	2020	2.0	3.5	2.1	2.1	4.13
1	LR	1.8	4.6	2.0		2.63
2	LR	1.8	4.2	2.0		2.75
3	LR	2.0	4.5	2.0		3.50
4	LR	1.7	4.1	2.0		2.25
5	LR	1.7	4.7	2.0		2.75
6	LR	1.7	4.6	2.0		2.50
7	LR	2.0	4.5	2.0		3.00
8	LR	1.8	4.3	2.0		2.75
9	LR	2.1	4.5	2.0		3.25
10	LR	2.0	4.5	2.0		3.00
11	LR	1.9	4.4	2.0		3.00
12	LR			2.0		
13	LR	1.9	4.3	2.0		2.75
14	LR	1.8	4.3	2.0		3.00
15	LR	1.8	4.6	2.0		3.00

Figure 1. Medians, central tendencies, and ranges of economic projections, 2018–20 and over the longer run



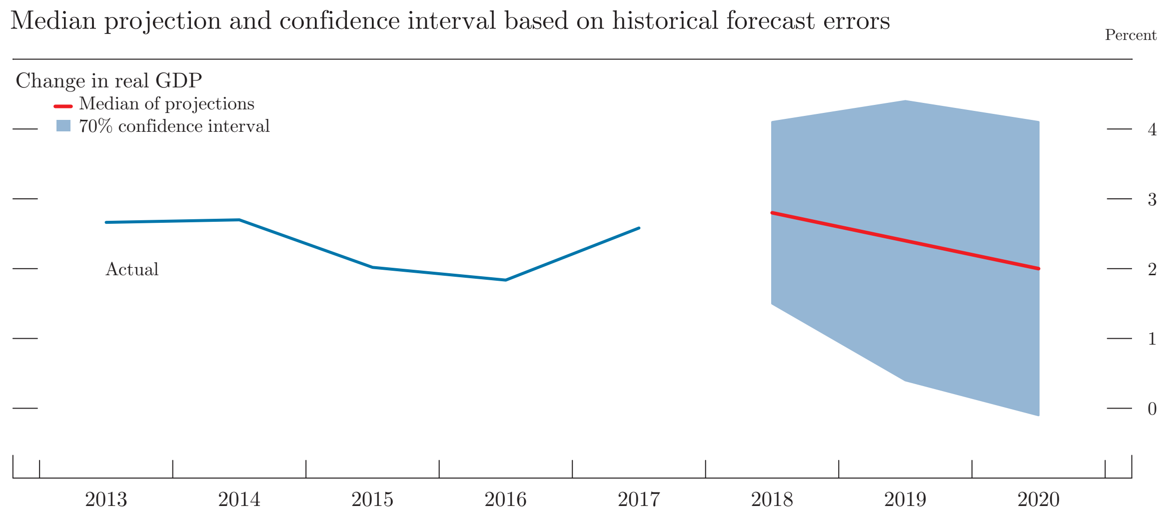
NOTE: Definitions of variables and other explanations are in the notes to table 1. The data for the actual values of the variables are annual.

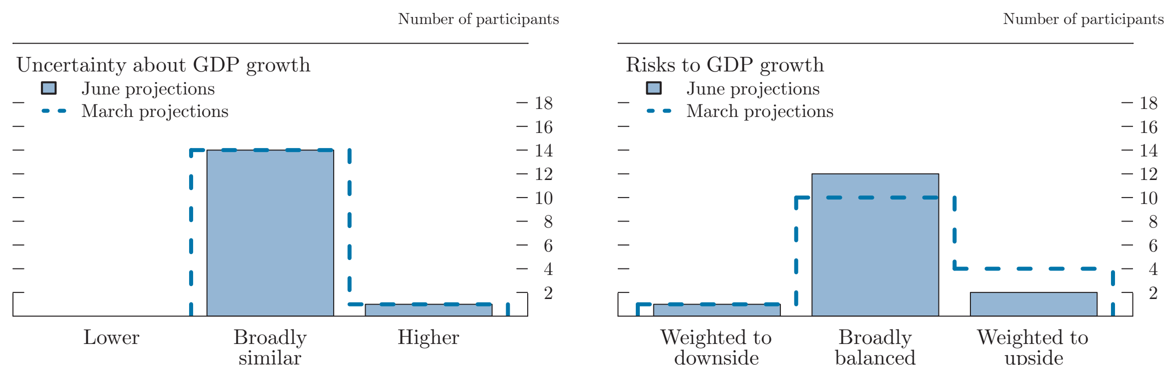
Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



NOTE: Each shaded circle indicates the value (rounded to the nearest 1/8 percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. One participant did not submit longer-run projections for the federal funds rate.

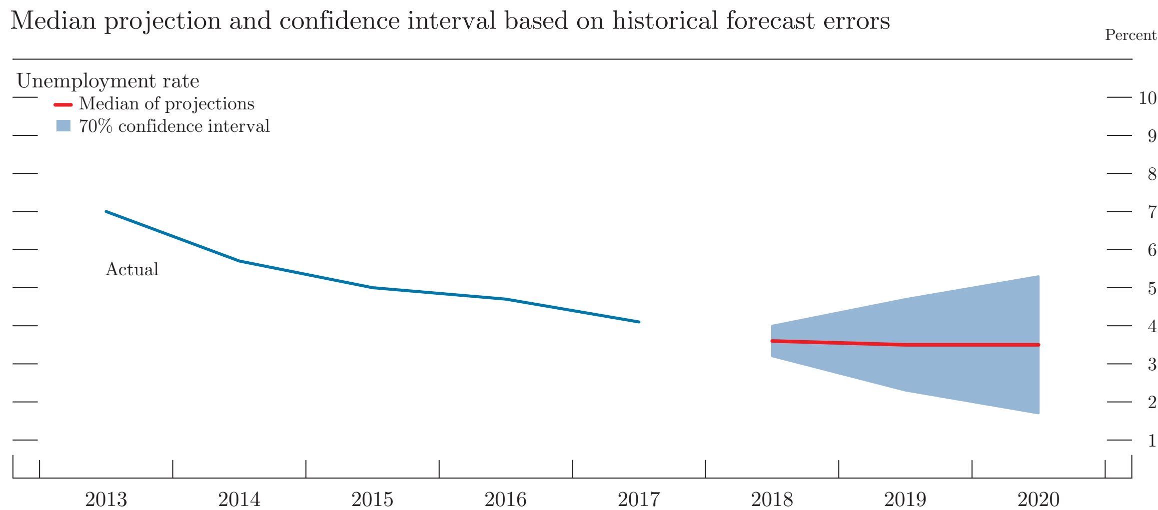
Figure 4.A. Uncertainty and risks in projections of GDP growth

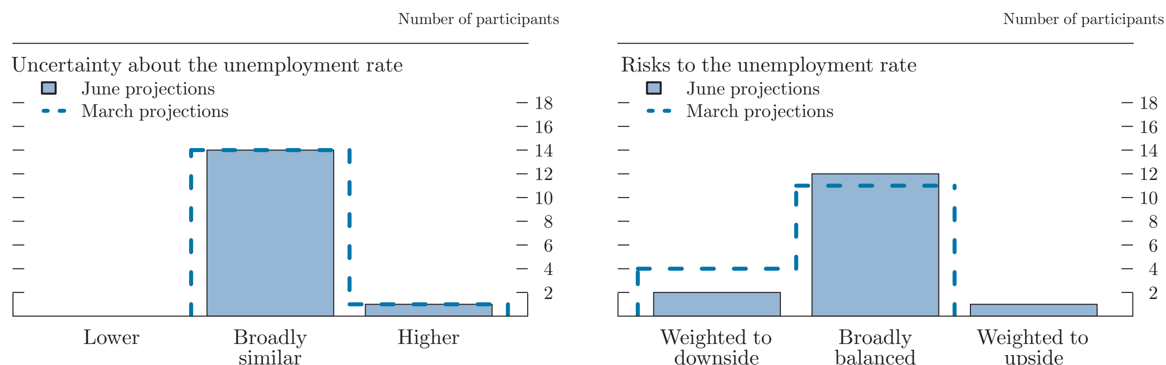




Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in real gross domestic product (GDP) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

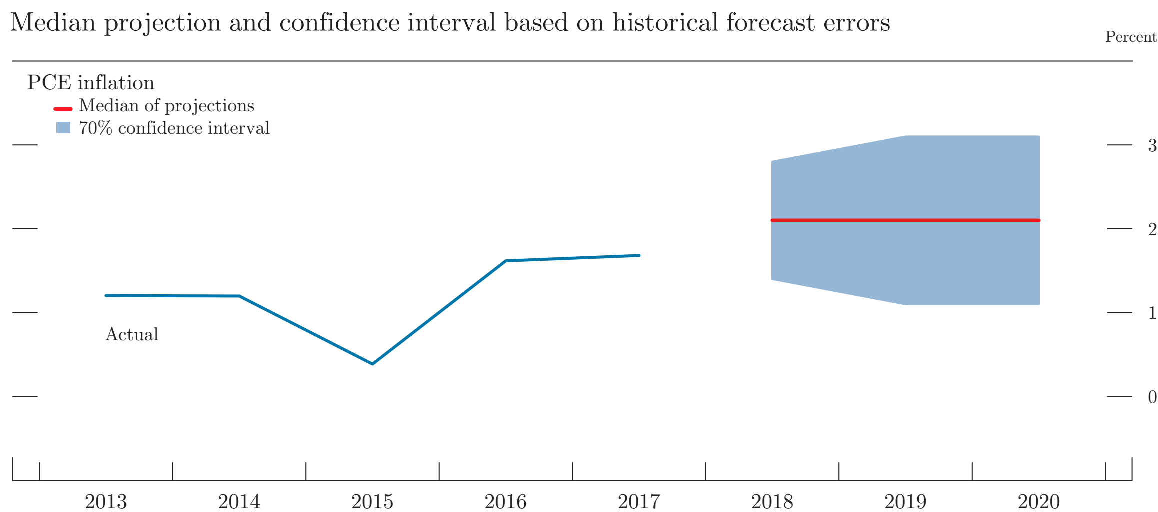
Figure 4.B. Uncertainty and risks in projections of the unemployment rate

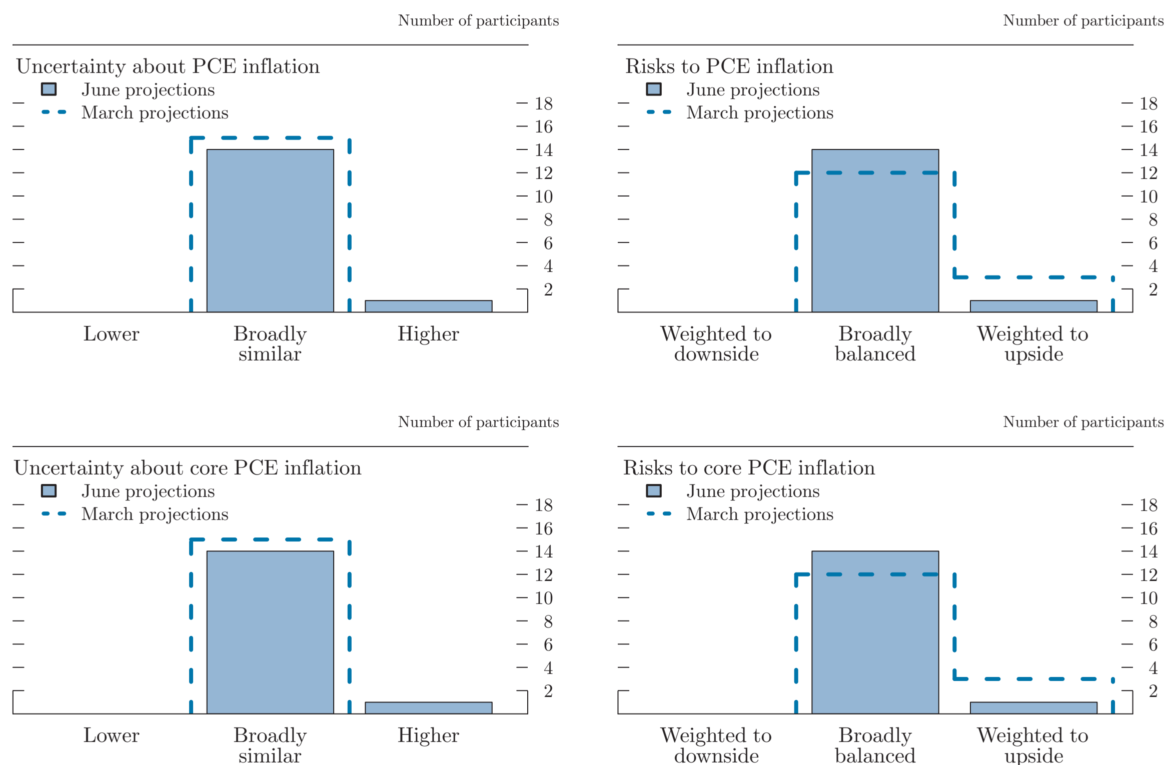




Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the average civilian unemployment rate in the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 4.C. Uncertainty and risks in projections of PCE inflation





NOTE: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in the price index for personal consumption expenditures (PCE) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Table 3. Uncertainty and risks

Question 2(a): Please indicate your judgment of the uncertainty attached to your projections relative to levels of uncertainty over the past 20 years.

Individual responses

Respondent	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Change in real GDP	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
Unemployment rate	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B
PCE Inflation	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B
Core PCE Inflation	B	B	B	B	B	B	B	B	B	B	B	B	B	A	B

A = Higher B = Broadly similar C = Lower

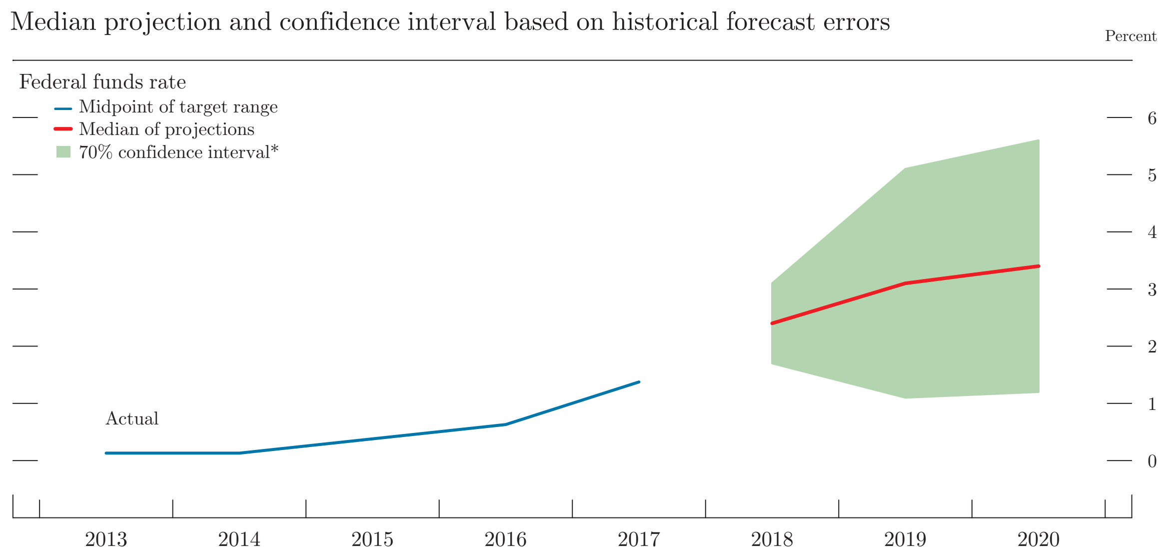
Question 2(b): Please indicate your judgment of the risk weighting around your projections.

Individual responses

Respondent	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Change in real GDP	B	B	B	B	B	B	A	B	B	B	B	A	C	B	B
Unemployment rate	B	B	B	B	B	B	C	B	C	B	B	B	A	B	B
PCE Inflation	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B
Core PCE Inflation	B	B	B	B	B	B	B	B	B	B	B	A	B	B	B

A = Weighted to upside B = Broadly balanced C = Weighted to downside

Figure 5. Uncertainty in projections of the federal funds rate



Note: The blue and red lines are based on actual values and median projected values, respectively, of the Committee's target for the federal funds rate at the end of the year indicated. The actual values are the midpoint of the target range; the median projected values are based on either the midpoint of the target range or the target level. The confidence interval around the median projected values is based on root mean squared errors of various private and government forecasts made over the previous 20 years. The confidence interval is not strictly consistent with the projections for the federal funds rate, primarily because these projections are not forecasts of the likeliest outcomes for the federal funds rate, but rather projections of participants' individual assessments of appropriate monetary policy. Still, historical forecast errors provide a broad sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that may be appropriate to offset the effects of shocks to the economy.

The confidence interval is assumed to be symmetric except when it is truncated at zero—the bottom of the lowest target range for the federal funds rate that has been adopted in the past by the Committee. This truncation would not be intended to indicate the likelihood of the use of negative interest rates to provide additional monetary policy accommodation if doing so was judged appropriate. In such situations, the Committee could also employ other tools, including forward guidance and large-scale asset purchases, to provide additional accommodation. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections.

* The confidence interval is derived from forecasts of the average level of short-term interest rates in the fourth quarter of the year indicated; more information about these data is available in table 2. The shaded area encompasses less than a 70 percent confidence interval if the confidence interval has been truncated at zero.

Longer-run Projections

Question 1(c). If you anticipate that the convergence process will take SHORTER OR LONGER than about five or six years, please indicate below your best estimate of the duration of the convergence process. You may also include below any other explanatory comments that you think would be helpful.

Respondent 1: We are at or very near our inflation target, but likely headed well past full employment. The challenge is to gradually rein in growth–leaving the economy vulnerable to policy missteps and adverse shocks. Full convergence is likely to take at least 5 years.

Respondent 2: N/A

Respondent 3: N/A

Respondent 4: N/A

Respondent 5: The forecast for the rest of this year and next calls for further declines in the unemployment rate. Thereafter, the growth rate of the economy will need to slow below potential for a prolonged period of time in order to achieve a soft landing. The historical record, however, suggests that the "growth recession" implicit in a soft landing scenario runs a high risk of morphing into a full-blown recession. In sum, while a purely model-driven forecast would suggest convergence to the equilibrium unemployment rate from below around 2024-25, the probability that the projected soft landing will not materialize in practice is sizable.

Respondent 6: Our dual mandate goals are reached by 2019. However, it will take some more time to achieve complete convergence to longer-run levels. The effects from sustained accommodative monetary policy will generate a modest degree of overshooting of inflation and an unemployment rate that remains well below the natural rate for a number of years, before returning back to longer-run levels. Recent data show no indication of a shift in longer-run levels of GDP growth or the unemployment rate.

Respondent 7: I anticipate that the economy will converge to my longer-run projection within 5 years

Respondent 8: N/A

Respondent 9: N/A

Respondent 10: N/A

Respondent 11: N/A

Respondent 12: We expect headline and core inflation of 2.0 percent in 2018 and beyond, but GDP growth and unemployment are expected to deviate from their long-run values conditional on the current regime. This regime, characterized by low productivity growth and a low real interest rate on short-term government debt, features GDP growth of 2.0 percent, an unemployment rate of 4.5 percent, and inflation of 2.0 percent. The projected deviations, due in part to federal stimulus, are expected to be temporary. We project that overshooting of GDP growth will end in 2020 and the undershooting of unemployment will end in 2021. Because there are multiple medium term outcomes, we cannot provide a single set of projections for GDP growth and unemployment. Calculating an average of these variables based on multiple outcomes is potentially misleading. We do provide a 2.0 percent longer-run inflation projection that is independent of the regime.

Respondent 13: N/A

Respondent 14: We still assume the potential GDP growth rate is 1.8 percent. We continue to judge that the longer-run normal rate of unemployment is between 4 and 6 percent, and place the mode of that distribution in the lower half of that interval at 4.3 percent.

At this time, we tentatively judge that any supply-side impacts from fiscal, trade, and immigration policies will have only a limited effect on potential GDP growth and the longer-run normal rate of unemployment. We will continue to monitor the impact of policy changes on these variables.

Based on our scenario analysis of labor flows and the historical behavior of the unemployment rate in long expansions, we project that the unemployment rate will be significantly below its longer-run normal level through 2020, and probably not return to that level until at least few years into that decade.

We assume that long-term inflation expectations will remain anchored at levels consistent with the FOMC's longer-run objective. Under these conditions and with the projected undershooting of the longer-run normal unemployment rate over the forecast horizon, we expect inflation as measured by the PCE price index to be mildly above the FOMC's longer-run objective in 2019-20, before returning to that level early in the next decade.

Respondent 15: Having essentially achieved our objectives for inflation and unemployment, the current stance of monetary policy will likely cause a further decline of the unemployment rate below its longer-run level. Policy rates will need to adjust over several years to bring unemployment back in line with the longer-run objective and ensure sustainable economic growth with price stability.

I reduced my estimate of the longer-run unemployment rate in light of the downward unemployment surprises since September 2017, when I last revised this estimate. A lower longer-run unemployment rate is consistent with ongoing demographic changes, such as the aging of the workforce.

Uncertainty and Risks

Question 2(a). (Optional) If you have any explanatory comments regarding your judgment of the uncertainty attached to your projections relative to levels of uncertainty over the past 20 years, you may enter them below.

Respondent 1: Near-term uncertainty is likely somewhat below average. Uncertainty two or three years out may be above average: We have seldom succeeded in stabilizing the unemployment rate–much less engineering a non-trivial increase in unemployment–without triggering a recession. Strong, unpredictable fiscal- and trade-policy crosswinds have the potential to make the convergence process more-than-usually challenging.

Respondent 2: N/A

Respondent 3: N/A

Respondent 4: The current level of uncertainty lies somewhere between the low levels experienced during the Great Moderation and the high levels experienced during the financial crisis and its immediate aftermath.

Respondent 5: While the forecasting exercise under current conditions may not be as uncertain as during the Great Recession, it is worth noting that spells with an economy significantly above full employment for a considerable amount of time – the kind of scenario implied by our forecast – have been rare in the post-WWII period. Therefore, there is uncertainty about the ability of our forecasting models to capture adequately some of the relevant features associated with the current state of the economy.

Respondent 6: Uncertainty about my projection for economic activity and inflation is similar to its average level over the past 20 years. Inflation remains anchored by stable longer-run inflation expectations at the FOMC's stated goal of 2 percent.

Respondent 7: Uncertainty surrounding output growth and unemployment remains elevated by heightened uncertainty about the effects of fiscal stimulus on an economy that is near full employment. Trade policy is a source of increased uncertainty as well. The impact on inflation uncertainty is small given how flat the Phillips curve seems to be.

Respondent 8: Changes to the tax code and the Bipartisan Budget Act (BBA) continue to add uncertainty to the outlook. Tax cuts will boost consumption and investment and the BBA will increase government spending over the next few years. However, the magnitude and timing of the fiscal impulse and the multiplier and crowding out effects are all uncertain. The potential for trade barriers to intensify adds uncertainty both in terms of the impact of the policies ultimately enacted (or not) and through its current and prospective influence on business sentiment and spending. These considerations raise the uncertainty of our projections for real activity, but not by enough to move us out of the "broadly similar" uncertainty box. Recent data have lowered our uncertainty about the inflation outlook somewhat, but, as with growth, it remains broadly similar to historical uncertainty for the inflation projection.

Respondent 9: N/A

Respondent 10: N/A

Respondent 11: N/A

Respondent 12: N/A

Respondent 13: As noted under question 2b, risks concerning the global outlook are greater than they were earlier in the year. While these heightened risks don't yet tilt the balance to notably greater-than-average uncertainty, the degree of uncertainty is clearly greater than it was late last year.

Respondent 14: Ours is a quantitative judgment based on the widths of the probability intervals from the New York Fed forecast distributions for real GDP growth and core PCE inflation. For inflation, the increased prospects for the imposition of significantly restrictive trade and immigration policies in the U.S. has increased uncertainty around the outlook to somewhat above the SEP standard. This factor also increases the uncertainty around the real growth outlook; however, continued indications that the U.S. economy is progressing roughly along the lines of our outlook suggest some offsetting reduction in uncertainty. Consequently, we assess that the uncertainty around the real growth outlook has not changed significantly since the March SEP and remains near the SEP standard.

Respondent 15: N/A

Uncertainty and Risks (continued)

Question 2(b). (Optional) If you have any explanatory comments regarding your judgment of the risk weighting around your projections, you may enter them below.

Respondent 1: N/A

Respondent 2: N/A

Respondent 3: N/A

Respondent 4: Risks are roughly balanced. On the one hand, the effective lower bound limits monetary policy's ability to respond to negative shocks. On the other, the recent changes in fiscal policy present increased upside risks to activity.

Respondent 5: Over the period 2018-2020, we view the risks around our projections as roughly balanced. At a longer horizon, however, our baseline forecast delivers a soft landing from a very low level of the unemployment rate to a higher level consistent with full employment. As already mentioned, these smooth transitions are rare in practice. We would therefore judge the risks to our projection of real activity growth beyond 2020 as being weighted to the downside.

Respondent 6: Risks to economic activity appear broadly balanced. There still remains uncertainty about the effects of recent tax and budget changes on the economic outlook. The possibility of retaliatory responses to U.S. trade policies adds additional risk around the outlook

Respondent 7: I anticipate fiscal stimulus from the tax reform and BBA through 2019 that will boost demand, raise output growth, and lower the unemployment rate further. However, my uncertainty about the magnitude of the effect on demand from fiscal stimulus remains high. Though I am concerned about possible adverse effects from international trade conflicts, I have not yet factored that into my forecast.

Respondent 8: We see the risks to the outlook for both growth and inflation as broadly balanced. In the near term, domestic demand appears quite robust, and we may be underestimating its momentum. Overall, we see the odds as roughly equal that fiscal policy will result in a bit more, or a bit less, stimulus than we built into our projection. Our projection does incorporate a fairly large fiscal boost in 2018, and we see some risk that more of the stimulus will occur later in the forecast period than we have assumed. Trade and international risks appear to have become tilted to the downside, but not by enough to change our overall risk assessment. That said, these risks could become more acute if developments in Italy generate financial stress that spreads to other Eurozone countries, a strengthening dollar challenges emerging market economies, or trade barriers intensify. Indeed, the reports from our contacts suggest that business concerns related to trade policy have increased since March and some say that these worries could soon begin to have a measureable effect on investment.

With regard to inflation, we think the modest increase to our 2018 inflation forecast balances the near-term risks. Over the medium term, there is a risk that we've underestimated the underlying inflationary pressures in our forecast, particularly given our projection that the unemployment rate will average almost one percentage point below our estimate of its natural rate over most of the projection period. However, on the downside, continued low levels of inflation compensation in financial markets and some surveys suggest low long run inflation expectations could hold back inflation more than we assume in our baseline forecast. In addition, the international risks noted above could generate a higher dollar and lower U.S. inflation.

Respondent 9: N/A

Respondent 10: I continue to view the risks around my forecast as broadly balanced, conditional on a monetary policy path that is slightly steeper than the median path in the March SEPs.

The underlying fundamentals of the domestic economy are healthy. The outlook for foreign economies remains sound, with growth supported by accommodative monetary policy. Nonetheless, downside risks have risen in the euro area surrounding the formation of an Italian government and financial stresses have increased in some emerging market economies that face large current account deficits and external debt burdens.

Fiscal policy (the effects of tax cuts and increased federal spending in the Bipartisan Budget Act) is an upside risk to the forecast over the forecast horizon. The magnitude and timing of the effects of fiscal policy remain uncertain but I expect the effects to become apparent in the second half of this year and carry through over the forecast horizon. I am estimating that the combined effect will provide an additional 0.5 percentage point to Q4/Q4 GDP growth in 2018-2020, but there is an upside risk that the effect could be larger. Beyond the forecast horizon, these fiscal policy actions pose some downside risk to the outlook because higher fiscal deficits could necessitate reduced fiscal spending, an increase in taxes, and higher longer-term interest rates.

The uncertainty over trade policy poses a downside risk to the forecast, which could grow over time. Escalating rhetoric of tariff threats and retaliatory threats, along with steps toward actual tariff actions and the lack of progress in renegotiating trade agreements, raise the level of uncertainty in the economy. Higher uncertainty could negatively affect business investment apart from the impact of actual tariffs.

I continue to see inflation risks as roughly balanced, but this is contingent on a path of gradually increasing policy rates. If policy were not expected to tighten over the forecast horizon, I would view inflation risks as tilted to the upside. Incoming data suggest that inflation is firming. My modal forecast is that inflation will move up to 2 percent on a sustained basis by the end of this year, and remain near 2 percent over the medium run.

If the dynamics of inflation have fundamentally changed, then I may be underestimating the persistence of low inflation outcomes. But if labor markets tighten more than I expect, or if nonlinear Phillips curve dynamics begin to kick in, inflation could move higher than I anticipate, especially if the withdrawal of monetary accommodation is slower than I've assumed. Even absent a change in the slope of the Phillips curve, a slower withdrawal of monetary accommodation than I've assumed poses an upside risk to my inflation forecast.

After depreciating over much of the past year, the dollar has begun to strengthen. I expect further appreciation given the strength of the U.S. economy and prospects for tighter monetary policy. But the risks around the path of the dollar are two-sided. A considerably stronger (weaker)-than-expected appreciation in the dollar poses a downside (upside) risk to the inflation forecast.

Risks to financial stability from very low interest rates appear to be contained so far. There does not seem to be excessive leverage and banks are holding relatively high levels of capital and liquid assets. However, equity prices still appear to be somewhat high relative to earnings even accounting for the low level of interest rates, reduced tax rates, and the tempering of stock price increases this year. Commercial real estate valuations also continue to be lofty. These signs, the relatively low level of interest rates, and the outlook for continued strength in the economy suggest that financial stability risks could rise should we fail to remove monetary policy accommodation at an appropriate pace.

Respondent 11: N/A

Respondent 12: With respect to GDP growth, the current productivity regime is low. A higher productivity growth regime is possible, but we see no compelling reason to predict a switch at this time. Recent changes in productivity growth still leave productivity in its low regime. However, as changes in fiscal and regulatory policy continue to impact the economy, we see the possibility of more rapid GDP growth. On the other hand, we see US trade policy as generating some downward risk for growth.

Concerning unemployment, the current rate is at the low end for an economic expansion. If a recession were to occur, the unemployment rate would rise substantially. We have no compelling reason to predict a recession during the forecast horizon. US trade policy also raises the possibility of trade disruptions that might increase unemployment. On the other hand, we also see the possibility of further declines in the unemployment rate if GDP growth surprises on the upside. Federal stimulus associated with recent tax and spending changes might produce such a surprise. Overall, we see the risks as balanced.

For core PCE inflation, we place negligible weight on the prospects of Phillips Curve effects. There is, however, a risk that Phillips Curve effects reassert themselves and inflation moves higher as the unemployment rate falls. It is also possible that inflation expectations drift higher and become unanchored. In addition, federal stimulus associated with recent tax and spending changes could push prices higher. Trade policy changes might also put

some upward pressure on import prices. Anecdotal reports are consistent with building price pressures. Thus, we see the risks on this variable to be weighted to the upside.

For PCE inflation, the risks are the same as for core PCE inflation. In addition, the variable depends on the behavior of energy prices. While an upward energy-price shock is a possibility, a case can also be made for some downward drift in energy prices. Overall, we see the risks for PCE inflation as weighted to the upside.

Respondent 13: There are several risks to the outlook, chiefly concerning the global outlook. First, while the Italian political situation appears to be settled for the time being, the recent imbroglio is a reminder that the rise of populist, euroskeptic governments continues to pose risks. Second, although rising U.S. interest rates have been signaled for some time, their arrival seems to have led to heightened stress in a number of emerging-market economies; with U.S. rates likely to rise further, these stresses may intensify. Finally, U.S. trade policy has become even more aggressive in recent weeks, raising the risk of a widening trade war.

Respondent 14: Ours is a quantitative judgment based on the difference between the central projection and the expected value of the New York Fed forecast distribution. We see two-sided risks to real activity associated with recent and possible future changes in government policies. On the one hand the recent changes in fiscal policies could have more positive supply-side and/or demand-side effects than we currently anticipate; on the other, government policies, particularly possible more restrictive trade and immigration policies, could lead to adverse supply-side and demand-side effects. Along with other risks, such as the possibility of stronger momentum associated with robust household and business confidence, these forces appear to roughly offset, and so we judge these risks to be roughly balanced over the forecast horizon.

We now see inflation risks as roughly balanced, as opposed to the upside skew in our March submission. The heightened prospects of more restrictive trade and immigration policies raise both upside and downside risks, as the supply-side effects of such policies raise upside risks while the demand-side effects raise downside risks. Beyond the risks associated with those policies, dollar appreciation and continued soft global inflation data suggest somewhat less upside risks than in March.

Respondent 15: N/A

Key Factors Informing Your Judgments regarding the Appropriate Path of the Federal Funds Rate

Question 3(b). Please describe the key factors informing your judgments regarding the appropriate path of the federal funds rate. If, in your projections for any year in the projection period, the unemployment rate for that year is close to or below your projection for its longer-run normal level and inflation for that year is close to or above 2 percent, and your assessment of the appropriate level of the federal funds rate for that year is still significantly below your assessment of its longer-run normal value, please describe the factor or factors that you anticipate will make the lower-than-normal funds rate appropriate. If you have revised your estimate of the longer-run normal value of the federal funds rate since the previous SEP, please indicate the factor or factors accounting for the change. You may include any other comments on appropriate monetary policy as well.

Respondent 1: Policy to date has kept nominal demand growth on a fairly steady, moderate path. This gives me hope that a relatively gradual transition to a modestly restrictive monetary policy stance will be sufficient to put the economy on a path that sustains the expansion while holding inflation to mandate-consistent levels. There are two important risks to that scenario, working in opposite directions. First, there is a risk of disappointing growth or financial instability overseas that could blow back onto U.S. financial markets, putting downward pressure on r*. Shifting U.S. trade policy is unhelpful in this regard. Second, there is a risk that U.S. fiscal policy will have larger or more persistent positive effects on real activity and r* than I currently anticipate. My base case continues to be 3 rate hikes during 2018 and another 3 during 2019, but I will be keeping a close watch for signs of strain in foreign financial markets, shifts in the U.S. economic outlook, and changes in the shape of the U.S. yield curve.

Respondent 2: My projection for the federal funds rate is informed by a simple policy rule with a gradual rise in the short-run equilibrium funds rate.

Respondent 3: I believe that a gradual path of funds rate increases is likely to be appropriate for the next few years, since I do not believe that inflation is likely to increase rapidly. Accordingly, a gradual path should give us the time and latitude to assess the data flow and make adjustments as necessary. In addition, my forecast for labor productivity growth in the longer run is 1 1/2 percent per year, which is a key factor supporting my longer run interest rate projection.

Respondent 4: Although inflation appears to be firming, it has been running below our 2 percent target for quite some time. While the labor market continues to strengthen with unemployment falling the past two months, it is not clear that we have reached maximum employment as the labor force participation rate and employment-population ratio for prime age persons remain well below their pre-recession levels, and wage growth remains subdued. Given the persistent undershooting of our inflation target, I believe that appropriate monetary policy implies a very gradual path for the federal funds rate.

Respondent 5: With the economy running already well above full employment and a policy stance that is still accommodative, it is difficult to chart an appropriate path for policy. Optimal control simulations prescribe a higher path for the federal funds rate than the one penciled in here. A more aggressive policy tightening, however, could increase the probability of a recession in ways that our linear models are unable to capture. Our projected path for the federal funds rate tries to balance this concern against the concern that running an economy above full employment for a prolonged period of time might create distortions that, too, increase the probability of a future downturn. Given that the near term outlook calls for GDP growth well above potential, it may be appropriate to reach a neutral level of the federal funds rate sooner rather than later, and then raise rates more gradually in 2019

and 2020 as the stance of monetary policy turns restrictive. Such a strategy would reduce the scope for further declines in the unemployment rate, while providing policymakers with more time later to assess how the economy responds to a contractionary stance, thus lowering the risk of tipping the economy into a recession.

Respondent 6: The labor market has exceeded full employment according to various measures and I expect it to continue to strengthen over the next couple of years with impetus from fiscal policy. Given the strong momentum in the economy, I expect the unemployment rate to reach 3.5 percent by next year. With the economy above potential, I anticipate inflation will modestly overshoot our 2 percent objective in 2020.

My assessment of appropriate policy is generally informed by looking at simple rules that adjust for the zero lower bound and assume a low natural rate of interest of 1/2 percent.

My fed funds rate path is flatter than some simple rules would suggest. This reflects an inflation rate that has been rising only gradually toward our objective from below. Beyond the near term, I envision a path for the fed funds rate that moderately overshoots its long-run level in 2019 and 2020 as policy acts to unwind the overshooting in inflation and labor market conditions.

Respondent 7: My projection for the appropriate path of the federal funds rate over the next three years is unchanged from March. My forecasts for output growth and inflation in 2018 are somewhat higher compared to March based on incoming data and anticipated effects of fiscal stimulus. I am willing to accept inflation that runs modestly above the FOMC target over the medium term given the Committee's symmetric inflation objective. Consequently, my path for the funds rate calls for a gradual pace of increases over the forecast horizon.

Respondent 8: We assume three total funds rate increases in 2018, leaving the funds rate in the range of 2.00 to 2.25 percent at the end of the year. We see the choice between three or four moves in 2018 as a close call and could envision one more rate increase if inflation expectations firm more noticeably as we move through the year. In 2019, the policy rate moves modestly above our estimate of the long run neutral rate of 2.75 percent, reaching 3.00 to 3.25 percent at the end of the year and remaining at that moderately restrictive setting through 2020. We assume balance sheet normalization proceeds according to the announced plan.

For some time, our view of appropriate monetary policy has been predicated on gradual increases in the funds rate in order to firm inflation expectations at 2 percent and ensure that inflation is firmly on a trajectory toward our symmetric 2 percent objective. A number of factors suggest this approach is working and that inflation and inflation expectations are headed in the right direction: the recent inflation data have firmed; reports from our contacts point to higher wage and cost pressures, some of which are being passed through to prices; TIPS inflation compensation has moved up some over the past year; and some tentative model results suggest that the underlying inflation trend may have firmed a bit recently.

Nonetheless, the low levels of inflation expectations in surveys and implied by TIPS pricing remind us of the need to stay the course for a while longer, and our appropriate policy path remains modestly accommodative until mid-2019. At that time, assuming inflationary trends and expectations firm as we expect, we think it will be appropriate to generate moderately restrictive financial conditions. In our forecast higher rates lead to growth slightly below potential by 2020. Although our assumed rate path is flat between 2019 and 2020, we would be prepared to move policy either way depending on events. Our policy trajectory is consistent with some modest overshooting of our 2 percent inflation objective in 2020, which we see as a virtue that will help to firm inflation expectations symmetrically around the 2 percent target.

Respondent 9: N/A

Respondent 10: I continue to view a gradual upward path for the funds rate as appropriate; the slope of the path will depend on the evolution of the economy, medium run outlook, and the risks around the outlook, in particular, for inflation and labor markets.

Over the forecast horizon, I project growth above trend and the unemployment rate below my 4.5 percent estimate of its longer-run level. Labor markets are tight and wages are accelerating. I anticipate that further tightening in the labor market will translate into some continued firming in the labor compensation measures, in line with anecdotal reports of increasing wage pressures across a range of skill groups. However, given slow productivity growth, I expect wages to rise at a slower pace than in past expansions.

Inflation is firming, as expected. Firms report increased price power; there is a rising number of reports that firms are passing along higher input costs to their customers. Inflation expectations are well anchored and the economy is strong, so my modal projection is that inflation will be sustainably at our goal by the end of this year and remain there over the rest of the forecast horizon.

Given that monetary policy affects the economy with a lag, I believe appropriate monetary policy should reflect both actual and projected progress toward the Committee's goals. Based on the outlook and risks, I believe it will be appropriate for the FOMC to move rates up over the course of the forecast horizon. This strategy would seem to prudently balance the risk of stronger-than-expected growth leading to overheating in labor markets, which would necessitate sharper, and potentially destabilizing, rate increases in the future versus the risk that inflation will continue to undershoot our goal, causing an unanchoring of inflation expectations and possible loss of Fed credibility. Indeed, the inflation risks may be tilting to the upside, and that combined with strong growth and strong labor markets has led me to steepen my policy path somewhat. With above-trend growth, labor markets beyond full employment, and inflation moving back to 2 percent by year-end, I believe it will be appropriate for the funds rate to rise somewhat above my longer-run estimate of 3 percent in order to promote our longer-run goals of maximum employment and price stability.

Respondent 11: My assessment of the appropriate path of the federal funds rate has not changed since the previous SEP.

Respondent 12: A target of 1.88 percent for the forecast horizon is consistent with our assessment of current economic conditions and for the convergence of inflation, GDP growth, and unemployment to their values in a regime characterized by low productivity growth and a low real interest rate on short-term government debt. In the event of a regime change, such as a shift from low productivity growth to high productivity growth, our target federal funds rate will change.

Respondent 13: My funds rate path reflects two key considerations. First, owing to the recent fiscal policy changes, the short-run neutral rate is likely rising, and will may exceed its long-run level before too long. As a consequence, the path of the federal funds rate will need to be higher than it would otherwise be. At the same time, it is likely that underlying inflation is currently running somewhat below the Committee's 2 percent target. An important part of raising that target will be actively signaling that the Committee is serious about achieving its target – which will require patience in raising the funds rate. I believe that a gradual path of funds rate increases, along the lines that I have penciled in above, will most appropriately balance these two considerations.

Respondent 14: The principal factors behind our assessment of the appropriate path for monetary policy are the current state of the economy, our central economic outlook, and our balance of risks around the outlook. The steepness of the policy path also depends on how overall financial conditions respond to our policy actions.

The near-term real growth outlook has improved, but the medium-term outlook is little changed since March. Financial conditions have modestly tightened, the inflation outlook has not changed significantly, and the risks for inflation have moved back toward balance. Consequently, our projection of the appropriate policy path is the same as in the March SEP submission: the target FFR ranges at the end of 2018, 2019 and 2020 are $2\,^1/_4$ – $2\,^1/_2$ percent, 3 - $3\,^1/_4$ percent and $3\,^1/_2$ - $3\,^3/_4$ percent, respectively. We judge this policy stance as appropriate to ensure achievement of the FOMC's objectives over the longer run. Our policy path remains fairly shallow and is consistent with the gradual rising path of the natural interest rate as projected by the New York Fed sta DSGE model.

Our estimate of the longer-run equilibrium real short-term interest rate remains in the range of 0 – 2 percent, consistent with the estimates and forecasts from a variety of models. Adding the objective for inflation (2 percent) gives our estimated range for the nominal equilibrium rate as 2 – 4 percent. Our modal projection remains in the center of this range, taking into account fairly subdued trend productivity growth, little change in longer-term sovereign yields, and demographic factors. Consequently, as reported in the response to question 3(a), our point estimate of the nominal equilibrium rate is still 3.0 percent. Our assessment of the appropriate policy path thus slightly overshoots the longer-run FFR.

Respondent 15: My judgment regarding the appropriate path of the federal funds rate is predicated on promoting sustainable economic growth and price stability. The economy has gone beyond full capacity and we have essentially achieved price stability, yet I view the appropriate level of the federal funds rate to be below my

estimate of its longer-run level in 2018. That the federal funds rate is still low despite the economy's return to full employment and price stability reflects the Committee's past decisions, and I view a gradual path of the federal funds rate as important to promote economic and financial stability. Balancing a gradual path of the federal funds rate with accommodative monetary policy, stronger growth, lower unemployment, and higher inflation, I believe the funds rate will need to rise above its longer-run level in 2019 and beyond.

Forecast Narratives

Question 4(a). Please describe the key factors, potentially including your assumptions about changes to government policies, shaping your central economic outlook and the uncertainty and risks around that outlook.

Respondent 1: Near term, expansionary fiscal policy and accommodative monetary policy are pushing real activity forward at a rapid clip, increasing pressure on an already strained labor market. With longer-run inflation expectations well anchored, the tightening labor market is likely to drive inflation to, and then past, our 2-percent longer-run objective. In this setting it is appropriate that we continue to move toward a neutral policy stance while remaining cognizant of potential shifts in financial-market conditions and inflation pressures. The longer that we maintain growth above potential, the more difficult it will be to achieve a smooth transition to sustainable growth with stable, on-target inflation. Over the medium and longer runs, I continue to be concerned about eroding demographic trends, education and skill levels that are not keeping pace with business needs and are contributing to sluggish productivity growth, and the likely unsustainable path of U.S. government debt relative to GDP.

Respondent 2: My outlook consists of above trend growth for the next two years before converging to trend in 2020. The recent tax reform and an increase in federal discretionary spending are the primary drivers of the overshoot of potential. The change in the tax code accelerates capital investment plans, pulling some investment spending forward into the latter half of this year and 2019. However, it is my judgment that the tax reform will only lead to modest changes in output growth.

The risks to my growth outlook are roughly balanced. Uncertainty has grown markedly following changes in U.S. trade policy and firms could pull back on plans by more than I currently marked in. On the other hand, this uncertainty could abate quickly and the recently enacted fiscal measures could have a much more transformative effect on growth than I currently expect.

By most estimates, measured inflation appears to be running at or very close to target already. Given the absence of slack in my projection, I see inflation continuing at or modestly above the FOMC's inflation objective through 2020.

The risks to my inflation outlook are roughly balanced. Given high rates of resource utilization, we could see a more pronounced inflation response than a linear Phillips curve would suggest. However, after a prolonged period of below target inflation, inflation expectations of firms and households may be anchored below mandate-consistent levels.

Respondent 3: In conversations with senior business executives, I have heard very optimistic remarks on the broad economic outlook and on the outlook for their own firms. I believe that this optimism will support above-trend GDP growth this year and next. In addition, expansive fiscal policy will continue to boost growth. While the unemployment rate is now below its long run level, I do not expect inflation to spike, as expectations appear to be well anchored. Factors such as improved transparency of pricing, offshoring of production, and competition from foreign sellers will make it difficult for many domestic firms to raise prices significantly in the near term.

Respondent 4: Core inflation remains below target and the economy continues to add jobs with only modest increases in wage growth. This reinforces my assessment that there continues to be some slack in the economy.

Respondent 5: Activity in the first half of the year is expanding at a somewhat faster pace than what was projected in March. The unemployment rate has already declined to a level that, according to the March median SEP, was expected to be reached only by the end of the year. Support to demand appears to be fairly broad based, with firms' business investment now contributing more steadily to growth, and relative strength from net exports. Given the state of the labor market, the underlying momentum, and the ongoing fiscal stimulus, we expect growth in the second half of the year to outstrip potential by a full percentage point. With monetary policy tightening, the pace of growth is expected to slow down in 2019, and to eventually fall below potential in 2020, when the effects of monetary policy take hold more fully. We expect the unemployment rate to drop this year to 3.6 percent, and to 3.4 percent by the end of 2019. This level is roughly 1 1/4 percentage point below our assessment of the equilibrium unemployment rate, which stands at 4.7 percent. With the unemployment rate projected to stay below its equilibrium level over the forecast horizon, inflation is expected to increase modestly above 2 percent.

Given the economy's momentum, monetary policy needs to become restrictive to raise the unemployment rate to a level consistent with full employment. The current forecast is conditioned on increases in the federal funds rate that by the end of the forecast horizon steer policy to a stance that is only moderately restrictive. By historical standards, this is a cautious pace of policy tightening given that the unemployment rate is already below its estimated equilibrium level. Such an approach tries to strike a balance between the risks associated with an even more gradual increase in rates, and the risk that faster policy tightening may increase the probability of the economy falling into a recession. It is nevertheless important to recognize that the past does not provide much guidance in terms of how to conduct policy so as to achieve a soft landing when the economy is beyond full employment.

We view the risks around the GDP growth outlook as roughly balanced in the near term. We take a fairly conservative view of the effect of the Tax Cuts and Jobs Act on GDP growth, and it is possible that the tax cuts will stimulate activity by more than what we are currently expecting, for example via business sentiment effects that are outside of our forecasting model. Recent events highlight the risk that concerns about Italy's solvency and continued membership in the euro area may trigger a confidence crisis with widespread adverse spillovers to the rest of the world. Such a development could have even more dire consequences if coupled with a loss of confidence in Deutsche Bank, whose ongoing troubles pose a threat to financial stability. In the medium term, the ability to achieve a soft landing remains questionable, and a scenario such as the one outlined in the current Tealbook ("A Strong but Precarious Projection") in which the economy eventually falls into a recession as monetary policy tries to move the unemployment rate back up to its natural level would have several historical precedents. The probability of such a scenario would be even higher if in the presence of persistently tight labor market conditions inflation reacts more forcefully, thus eliciting a stronger monetary policy response. Still, in the near term we view the risks to inflation as fairly balanced, as a countervailing risk to a nonlinear inflation response may be given by an equilibrium unemployment rate that is lower than what we are currently estimating.

Respondent 6: The economy continues to expand at a solid pace relative to trend, which has pushed the unemployment rate lower. As in my March SEP, I have factored in a sizable amount of fiscal stimulus to the economic outlook. Going forward, ongoing strength in households disposable income coupled with past gains in household wealth should support continued consumption growth. The outlook for fixed business investment also appears strong given the tax changes and continued optimism. However, there is uncertainty regarding the impact of rising oil prices, an appreciating U.S. dollar, and possible retaliatory tariffs from U.S. trading partners

In this environment, I expect the economic expansion to proceed at a pace that is well above potential. With considerable fiscal stimulus and some monetary accommodation still in place, I expect these gaps to overshoot for the next few years, leading to a further pickup in inflation. I continue to expect inflation to reach our 2 percent target by 2019, and to overshoot slightly through 2020. Normalization of monetary policy and a tightening of fiscal policy will help bring inflation, growth, and unemployment back to their long-run sustainable levels by the following years.

Respondent 7: My forecast calls for above-trend growth of 2.8 percent in 2018, edging down to 2 percent in 2020. My near-term forecast is slightly higher than in March based on the strength of incoming data and anticipated effects on demand from fiscal stimulus. However, my uncertainty about the demand effects from fiscal stimulus remains high, especially given the high level of resource utilization in the economy. As well, uncertainty about trade policy and the potential for escalating trade frictions with our trading partners is elevated. I expect the unemployment rate to remain below my estimate of the natural rate over the forecast horizon as output grows at a healthy pace and the labor force participation rate path flattens. My forecast for the unemployment rate is slightly lower over the forecast horizon compared to March largely because of strong incoming data on the labor market. I anticipate that inflation will run modestly above the Committee's target in 2019 and 2020. With above-trend output growth, low unemployment, and slightly above-target inflation over the forecast horizon I anticipate a gradual increase in the federal funds to a level in 2020 that is slightly above my longer-run projection.

Respondent 8: The fundamentals underlying private domestic final demand are strong. Accommodative monetary and fiscal policy, a robust labor market, and improved balance sheets support strong gains in consumer spending and investment. Although recent indicators of international growth are mixed, we continue to see healthy foreign demand as another plus for the outlook. We also expect tax cuts and higher government spending to boost growth in 2018 by close to 1 percent. The gradual removal of monetary accommodation and a smaller impulse from fiscal policy are projected to bring GDP growth down in 2019 and 2020. (We assume the fiscal impulse is only a tenth or two in 2020.) On the supply side, we assume that robust capital spending, due in part to the tax bill, will

boost potential growth a bit over the forecast period. Our assumptions regarding fiscal policy are unchanged and our forecast does not incorporate any changes in trade or immigration policy. In sum, we project growth will run more than a full percentage point above potential in 2018, a little less than 1/2 percentage point above in 2019, and then slow to modestly below potential in 2020.

We think the natural rate of unemployment is currently 4.4 percent and that it will fall to its long-run level of 4.3 percent by 2019. We expect the actual unemployment rate to move down to 3.3 percent in 2019 and then rise to 3.5 percent in 2020, leaving a 0.8 percentage point gap from the natural rate we expect to prevail at that time.

Although we have some tentative indications that the trend in inflation may be firming, relatively low readings on key measures of inflation expectations suggest that underlying inflation is likely still below 2 percent. Various features of our forecast will help boost this trend closer to target. With unemployment forecast to undershoot the natural rate substantially, resource pressures should provide a notable lift to inflation going forward. We also rely on a shallow path for policy normalization and a strongly communicated commitment to a symmetric 2 percent inflation target to solidify inflation expectations around our 2 percent inflation objective. A non-accelerationist Philipps curve limits the upside risk to inflation, even with the unemployment rate a little below 3 1/2 percent. All told, we see inflation reaching 2.0 percent this year, remaining at that level in 2019, and then modestly overshooting our objective in 2020.

The key factors shaping uncertainty and the risks to the forecasts were discussed earlier in the risks and uncertainty sections.

Respondent 9: I believe that the economy has considerable momentum, helped along by expansionary fiscal policy. Strong growth will push down the unemployment rate, but by a fairly modest amount as workers are drawn into the workforce, increasing labor force participation. The buffering effect of higher potential growth, both in response to policy changes as well as increased investment and labor force participation, will limit the spillover of growth into inflation.

Respondent 10: The fundamentals supporting the expansion remain favorable, including accommodative financial conditions, household balance sheets that have improved greatly since the recession, strong labor market conditions, and accommodative monetary and fiscal policy. Oil prices have risen, but remain relatively low and the economy is less sensitive to oil prices than in the past. The tax changes imply higher disposable personal income and after-tax corporate profits, which should lead to somewhat higher spending over the forecast horizon. The budget package will expand federal government spending, although the timing is uncertain. Consumer and business sentiment remain positive. Consistent with the data, business contacts report ongoing tightness in labor markets, more widespread difficulties in finding qualified workers, and the increasing need to raise wages in order to retain workers across a range of skill groups and occupations. The global outlook remains positive, although risks to the euro area have risen.

I project above-trend growth and that labor market strength will continue, moving the economy further beyond maximum employment.

Incoming data indicate that inflation is firming and anecdotal reports indicate firms have increasing pricing power to pass along higher input costs to their customers. Inflation is near our goal and I expect inflation to be sustainably at 2 percent by year end and to remain at that level through the forecast horizon, based on my projection that growth will be above trend, labor markets will continue to strengthen, and inflation expectations will continue to be well-anchored.

I view overall uncertainty as roughly comparable to the historical norms of the last 20 years. As described above, while there are a number of risks to my outlook, I view them as broadly balanced for both the real economy and inflation, but this is contingent on an upward policy rate path.

Respondent 11: The main factors shaping my economic outlook include an increasingly strong labor market, still-supportive domestic financial conditions, growth abroad, accommodative domestic fiscal policy, and more data suggesting that inflation will move to around 2 percent on a sustained basis.

Respondent 12: Our forecast continues to use a regime-based conception of outcomes for the US economy. In our conception, there are multiple regimes and we appear to have nearly converged to one of them. The current regime is viewed as persistent, and we see no reason to forecast an exit from the current regime over the forecast horizon. We are, however, paying close attention to many factors that might precipitate a regime change, such

as a change in tax policy that might move the economy to a high productivity state. Monetary policy is regime-dependent and can be viewed as optimal given the current regime. Longer term, the economy may visit other regimes, such as ones associated with the previously mentioned higher productivity growth, a higher real return to short-term government debt, or recession. If the economy transitions to any of these states, all variables may be affected and, in particular, the optimal regime-dependent policy may require adjustment, However, predicted when these transitions may occur is very challenging, so we forecast that the economy will remain in the current regime over the forecast horizon.

Respondent 13: Fiscal policy is a key factor in my outlook, providing a boost to aggregate demand this year and next. With the unemployment rate already significantly below my estimate of its longer-run value, it will be appropriate to raise the federal funds rate over the next several years, to a level that exceeds that in the longer-run. These competing factors net out to above-trend GDP growth this year and next, and the unemployment rate drops to 3.3 percent next year. With fiscal impetus fading and interest rates rising still further, GDP growth drops below potential in 2020 and the unemployment rate edges up. Inflation moves up in my outlook to a pace that slightly exceeds the Committee's objective. In my projection, an important factor boosting inflation is the FOMC's patience in raising interest rates. Patience in the face of low unemployment and inflation that is close to the Committee's objective will help re-anchor trend inflation at target.

Respondent 14: The recent expenditure data indicate a stronger rebound of growth in Q2 than had been previously anticipated, with our projection for real GDP growth now around 4 percent (annual rate). Consequently, the real GDP growth rate for 2018H1 now looks to be about 3 percent, which is about the same as that over 2017H2 and about 1/2 percentage point above our projection in the March SEP. We view some of the Q2 strength to be transitory, reflecting the unwinding of factors that held down growth at the beginning of the year. As in the March SEP, we expect growth to remain near 3 percent over 2018H2, so that the 2018 Q4/Q4 growth rate is 3.0 percent, up from 2.6 percent in March. We expect growth to slow to around 2 1/2 percent in 2019, and then slow further to 2 percent in 2020, due to ongoing tightening of financial conditions and fading of fiscal stimulus.

Even though we have marked up our projection, the pickup in growth in 2018 is generally consistent with the narrative of the U.S. economy that we have had for the past few SEP rounds. After a soft patch from mid-2015 to early-2016, the economy has regained its footing and is now in a strong cyclical position. Household balance sheets appear to be in the best shape in years, and indices of consumer confidence are at high levels. Housing starts per capita remain below their long-run average and home prices continue to increase, suggesting that housing could provide a positive growth impulse for some time, although supply constraints could limit that impulse over the short term. Businesses appear to have begun to ramp up investment spending, with new orders for nondefense capital goods ex-aircraft trending higher. Global demand remains solid, supporting U.S. exports. Furthermore, a substantial amount of fiscal stimulus has been added through the Tax Cut and Jobs Act of 2017 and the Bipartisan Budget Act of 2018: These changes are expected to reduce the primary budget balance by 0.3 and 0.4 percent of GDP in 2018 and 2019, respectively, according to the CBO.

With growth above our estimate of its potential rate over the entire forecast horizon, we see the unemployment rate trending lower, averaging 3.6 percent in 2018Q4 and 3.4 percent in 2019Q4. It is expected to remain near 3 1/2 percent in 2020. Our projected decline of the unemployment rate is dampened by anticipated modest increases in productivity growth and in the labor force participation rate. The growth rate of compensation per hour is projected to trend higher over the forecast horizon, with the quarterly change exceeding 4 percent by 2019Q4. The projected increase in compensation growth surpasses that of productivity growth, resulting in a gradual upward trend in the rate of growth of unit labor costs. This in turn leads to a gradual upward trend in the labor share of national income.

As in the March SEP, inflation is projected to overshoot the FOMC's 2 percent objective, with the core PCE inflation at 2.1 percent in 2018 (Q4/Q4) and 2.3 percent in 2019 and 2020. Near-term overall PCE inflation is somewhat higher than core inflation because of the rise of energy prices, but it is expected to be at a similar rate over the medium term. Nevertheless, we anticipate that inflation expectations will remain at levels consistent with the FOMC's longer-run objective.

Respondent 15: Central economic outlook: My forecast for real GDP growth is characterized by above-trend growth from 2018 to 2020, where fiscal policy is the main factor boosting growth above trend. With the economy already beyond full capacity, the growth forecast indicates that the gap between real GDP and its potential level

will widen over the forecast period. I expect headline and core inflation to rise above 2 percent over the forecast horizon, reflecting accommodative monetary policy and real GDP above potential.

Uncertainty and risks: I view uncertainty surrounding my projections as broadly similar to levels of uncertainty over the past 20 years, considering the magnitude of historical projection errors and current economic and policy uncertainty at home and abroad. The risks to economic growth, inflation, and unemployment appear broadly balanced. On the downside, possible changes in government policies, including the risk of escalating trade restrictions and tighter immigration policies, could harm economic growth. Softer data in Europe along with renewed political concerns there also pose downside risk to economic growth. Furthermore, as monetary policy becomes less accommodative and heads toward a restrictive policy stance, the combination of tightening financial conditions and tightening labor market conditions is likely to make monetary policy-making more difficult, increasing the risk of a policy error. In the past, periods of overheating have often led to higher inflation and/or financial imbalances, and ultimately recession. Upside risks to my forecast stem from greater-than-expected momentum in the economy and the possibility that deregulation and elevated business confidence translate into sustained increases in investment and productivity.

Forecast Narratives (continued)

Question 4(b). Please describe the key factors, potentially including revisions to your assumptions about changes to government policies, causing your forecasts to change since the previous SEP.

Respondent 1: Marginally stronger-than-expected incoming data have led me to revise my GDP growth projections modestly upward in 2018 and 2019, and to revise my unemployment projections modestly downward. With a somewhat tighter labor market, inflation rises a little bit faster to a little bit higher level over the projections horizon.

Respondent 2: The economic data released since the March meeting have led me to arithmetically adjust my 2018:H1 projection. However, I view much of the unexpected strength in the recent data as transitory, not as a signal of an accelerated pace of growth.

I have marked down my path for the unemployment rate to incorporate its surprise decline over the last two employment reports.

In response to a higher near-term trajectory of gasoline prices, I've marked up my 2018 headline PCE forecast. However, the slope of oil futures would translate into a moderate decline in gasoline prices should historical relationships hold. As such, I've marked down headline inflation in 2019 by a tenth.

Respondent 3: My projection for GDP growth this year increased slightly, due to strong consumer spending recently. And my projection for the PCEPI this year increased in order to reflect the higher trajectory of gasoline prices since the last SEP.

Respondent 4: Energy prices have moved up more than I had expected, causing me to move up my projections for near-term inflation.

Respondent 5: Revisions to the real outlook have been minor, and the inflation outlook is essentially unchanged. These outcomes are achieved with less policy tightening in this forecast, as we are estimating a larger response of economic activity to an increase in interest rates.

Respondent 6: My assumptions about the effects of fiscal stimulus on the economic outlook are unchanged from the March SEP.

My inflation projection is largely unchanged from September. I continue to expect inflation to reach the 2 percent target by 2019 and modestly overshoot in 2020.

Respondent 7: I have revised down my unemployment rate path slightly and edged down my estimate of longer-run unemployment compared to March – largely on the strength of incoming data. My forecast continues to build in some fiscal stimulus in 2018 and 2019, however I remain uncertain about its effective magnitude.

Respondent 8: Our current forecast incorporates a revised estimate of the natural rate of unemployment that, in addition to changes in the age and gender composition of the population over time, also accounts for changes in skills as measured by completed years of education. As a result, our current estimates of the NAIRU are 0.2 – 0.3 percentage point lower over the forecast period, and our long-run normal unemployment rate is now 4.3 percent. We also incorporated a revised estimate of potential GDP which takes into account the new NAIRU as well as the usual range of factors that go into our regular growth accounting exercise; these boosted our numbers for potential output a bit in 2018-2020, but left our long-run growth assumption unchanged at 1.8 percent.

On net, our GDP growth forecast is little changed compared to March. Our projections of the GDP gap and the gap between the unemployment rate and the natural rate are 0.1 to 0.2 percentage points smaller over the forecast period.

The incoming data and anecdotal reports from our business contacts point to a bit firmer inflation trend. Accordingly, we raised our forecast for core CPE inflation by 0.2 percentage point in 2018 and 0.1 percentage point in 2019. In response, we made monetary policy slightly less accommodative (moving forward a rate increase into 2019). This forecast continues to generate modest overshooting of inflation in 2020.

Respondent 9: My outlook is little changed. I have lowered my near-term unemployment forecast in response to the incoming data. I have boosted near-term headline inflation to incorporate the recent run up in oil prices.

Respondent 10: The narrative of my forecast is similar to that in March. Economic fundamentals remain healthy and fiscal policy will add to growth over the forecast horizon. Reflecting incoming data, I have edged up my growth and inflation forecasts and edged down my unemployment rate forecast over the projection horizon. I expect growth to be above trend, the unemployment rate to be below its longer run level over the forecast horizon, and inflation to be sustainably at 2 percent by the end of this year and over the rest of the forecast horizon.

Given current conditions, the medium run outlook, and risks, I view an upward path of monetary policy as appropriate and a prudent course that balances the risks. My funds rate path is slightly steeper than in my March projection reflecting the changes I've made to my growth, unemployment, and inflation forecasts (consistent with steeper paths seen across a number of monetary policy rules).

Respondent 11: My projection has not changed all that much since the previous SEP.

Respondent 12: Recent data has caused us to increase our projections for GDP growth for 2018 and 2019 and decrease our projections for unemployment for 2018, 2019, and 2020.

Respondent 13: A key factor underlying my forecast revision has been the strong incoming data, especially on the labor market. As a consequence of those incoming data, my projection for the unemployment rate at the end of the year is now 0.2 percentage point lower than in March. That stronger outlook has led me to revise up my estimate of the short-run neutral rate and as a consequence, my path for the federal funds rate is somewhat steeper than in March.

Respondent 14: As noted earlier, the recent expenditure data indicate stronger growth over 2018H1 than we anticipated in March; however, we see some of that strength as transitory and have not made substantial changes to the medium-term projections. We assume no material effect of the fiscal stimulus on the potential growth rate. Similarly, we currently see no material effect of trade and immigration policies on the potential growth rate or other longer-run variables.

Although greater prospects for more restrictive trade and immigration policies do not have a significant effect on our modal projections, they have increased our assessment of the uncertainty around the inflation outlook as noted in the response to question 2(a).

As noted in the response to question 2(b), we now see the inflation risks as returning to a rough balance after being modestly skewed to the upside in March. This shift reflects the impact of the recent appreciation of the dollar and continued soft global inflation data on our risk assessment.

Respondent 15: I have made no significant changes to my forecast or underlying assumptions since March.

Forecast Narratives (continued)

Question 4(c). Please describe any important differences, potentially including those related to your assumptions about changes to government policies, between your current economic forecast and the Tealbook.

Respondent 1: Despite a fed-funds-rate path that is less aggressive than that of the Tealbook, I see a bit more of a deceleration in real activity in 2019 and 2020. In my submission, consequently, the unemployment rate begins to turn up at the end of the projections horizon. Fading fiscal stimulus contributes to the anticipated growth slowdown.

My inflation path is slightly higher than the Tealbook's, principally because I'm not convinced that the longer-term inflation expectations relevant to price setting are currently below our 2-percent inflation objective.

Respondent 2: My baseline growth projection remains muted relative to the Tealbook baseline. I am continuing to mark in a smaller impact from tax reform on overall growth than the Tealbook, resulting in a lower growth profile over the next two years. Much of the divergence between my path for the unemployment rate and the projection marked into the Tealbook owes to differences in our employment growth projections over the next several years.

Respondent 3: In both the Tealbook and this submission, real GDP growth is near trend in 2020; however, my estimate of trend is a quarter point higher than the Tealbook's, due to my higher forecast for labor productivity. That difference also leads my unemployment path to be higher than in the Tealbook.

Respondent 4: Relative to the Tealbook, my forecast for economic activity is a bit stronger, but my forecast for inflation is broadly similar. I believe the long-run unemployment rate is lower and the improving labor market will continue to keep the labor force participation rate from falling, minimizing the downward effects of healthy job growth on the unemployment rate. I believe that it is appropriate for the federal funds rate to rise more gradually than in the Tealbook. Even with lower rates, my projection anticipates that inflation will return to target at about the same time as the Tealbook.

Respondent 5: We view our forecast as qualitatively similar to the Tealbook. In both forecasts monetary policy needs to tighten noticeably more than what financial markets are currently expecting for the unemployment rate to revert back to a level consistent with full employment. Our outlook features a path for the federal funds rate which is somewhat less steep, consistent with empirical evidence suggesting that a monetary policy tightening has a greater impact on economic activity than a monetary policy easing of the same magnitude.

Respondent 6: The two projections are largely in alignment, with the exception of the anticipated path for the federal funds rate.

In both, the waning effects of the fiscal stimulus and the gradual removal of monetary policy accommodation slow growth closer to potential by the end of 2019. Finally, the persistent overshooting of full employment pushes inflation back to 2 percent by 2019 and results in a slight overshooting of inflation for some time afterwards. The Tealbook projects a slightly more protracted overshooting of full employment, with the unemployment rate declining to 3.4 percent at the end of 2020. In my projection, the unemployment rate bottoms out at 3.5 percent by the middle of 2019. My projection for the funds rate path shows a more gradual rise and less overshooting relative to the funds rate path in the Tealbook.

Respondent 7: My path for appropriate monetary policy remains considerably more accommodative than the Tealbook over the forecast horizon.

Respondent 8: Our federal funds rate path is noticeably below the Tealbook over the next three years, ending 2020 at 3.25 percent. We assess the long-run neutral funds rate to be 2.75 percent, so we do not overshoot the long-run fed funds rate by nearly as much as the Tealbook does.

Our projection for Q4-to-Q4 GDP growth in 2018 is 2 tenths higher than that of the Tealbook, but very similar in 2019 and 2020. Our forecast is based on a touch smaller but more front-loaded impulse from tax cuts and

government spending, and a shallower path for the funds rate. We continue to view the current output gap to be narrower than the Tealbook so that by the end of 2020 it remains about 1 percentage point smaller than the Tealbook's. Our projection for the unemployment rate is similar to the Tealbook's, although we see unemployment rising slightly (albeit to a level still well below the natural rate) by the end of the projection period. Our revised estimates of the natural rate of unemployment are three to four tenths lower than the Tealbook estimates. As a result, our 3.5 percent unemployment rate projection for 2020:Q4 undershoots the natural rate by about 0.5 percentage point less than in the Tealbook.

Our forecast for inflation is very similar to the Tealbook's, although it is conditioned on a more accommodative monetary policy path.

Respondent 9: I have a stronger outlook for potential growth than the Tealbook. Consequently, I believe that the economy can grow faster in the near-term than projected in the Tealbook without much additional upward impetus to price inflation. My more optimistic outlook for potential growth is consistent with a slightly higher long-run neutral interest rate compared to that in the Sta outlook.

Respondent 10: As in the Tealbook forecast, I expect that the economy will grow at an above-trend pace, labor market conditions will continue to strengthen, and inflation will remain near our 2 percent goal over the forecast horizon. The Tealbook has revised its unemployment rate path up and its inflation forecast down since March, so the Tealbook and my forecast are now quantitatively similar along many dimensions. However, to get these similar outcomes, the Tealbook has a steeper funds rate path, especially in 2020. By the end of the forecast horizon, the Tealbook policy path is about 90 basis points higher than mine. Thus, the Tealbook sees a slightly stronger underlying economy that needs to be tempered by more restrictive monetary policy compared to my projection.

Respondent 11: My projections for GDP growth, the unemployment rate, and inflation are broadly consistent with the Tealbook. I have slightly stronger growth and a slightly higher path for inflation. My path for the target federal funds rate is substantially lower than the Tealbook path.

Respondent 12: For GDP growth and inflation, our projections are similar to those in the Tealbook. Differences arise with respect to monetary policy implications because the Tealbook projections incorporate the idea of a longer-run steady state to which the economy is converging. Monetary policy has to be set appropriately as the economy transitions to the longer-run steady state. This tends to imply an upward-sloping policy rate path. Our regime conception, in contrast, views monetary policy as regime-dependent and the current regime is viewed as persistent. It is acknowledged that the economy may visit other regimes in the future, but switches to these regime are difficult to forecast. This suggests a flat path for the policy rate over the forecast horizon relative to that contained in the Tealbook. The Tealbook also has a substantial undershooting of the unemployment rate, far more than our undershooting, before returning to its longer-run value of 4.7 percent.

Respondent 13: N/A

Respondent 14: Our growth projections are fairly similar to those in the Tealbook (and in the Tealbook update), but there are larger differences between the Tealbook forecast and our projections for the other SEP variables.

Although the unemployment rate paths in our projection and in the Tealbook are essentially the same, the Tealbook features a larger undershooting of the unemployment rate, as its estimate of the longer-run normal unemployment rate, at 4.7 percent is 0.4 percentage point above our estimate. This larger undershooting of unemployment is the counterpart of a sizable positive output gap that arises in the Tealbook forecast.

One other difference in the labor market projections concerns the paths for labor force participation. In our projection, the participation rate rises gradually to just above 63 percent in 2019, while in the Tealbook this rate is steady at 62.7 percent at end-2019. This difference reflects our assumption of some positive cyclical effects on participation.

For inflation, the two forecasts continue to differ, as they did in March. We see core PCE inflation rising to 2.1 percent in 2018 and further to 2.3 percent in 2019-2020, before returning to objective early in the next decade. The Tealbook projects inflation still below target in 2018 and mildly overshooting in 2020: core inflation is projected at

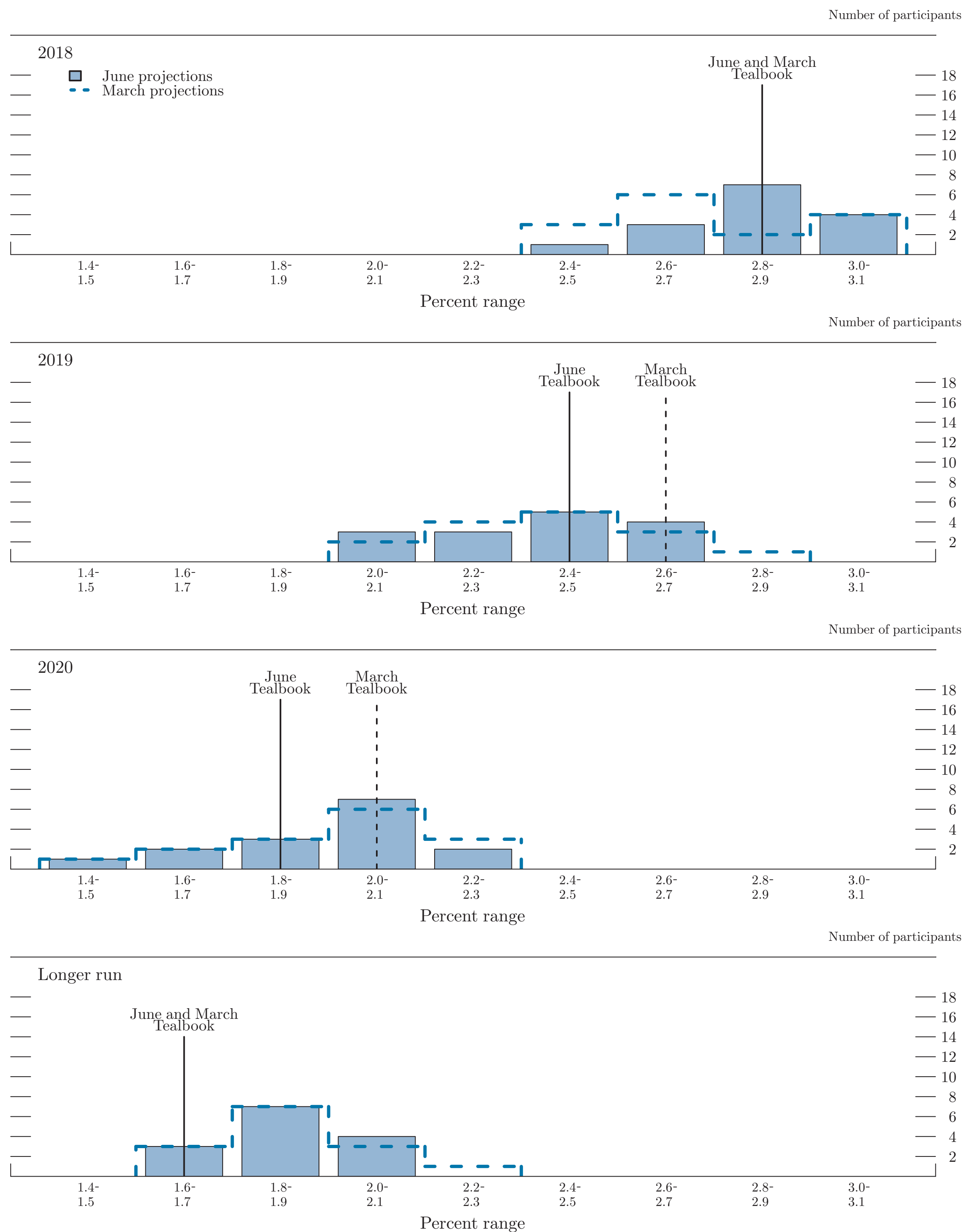
2.1 percent, despite a larger undershooting of unemployment than in our projection. The considerable persistence of inflation and the flat Phillips curve in the Tealbook appear to require a prolonged period of above-potential growth in order to induce inflation to rise toward the longer-run inflation goal. The overshoot of inflation in our projection helps to ensure that inflation expectations do not fall below levels consistent with the FOMC's longer-run objective.

In terms of the uncertainty and risk assessment, both projections see uncertainty at near normal levels and risks to real growth and inflation as broadly balanced.

Finally, our monetary policy path is below the Tealbook path for 2018 – 20. In addition, our assumption for the longer-run normal policy rate is 50 basis points above that of the Tealbook, which is unchanged at 2.50 percent. Both policy paths have an overshooting of the longer-run FFR in 2019 – 20, although the Tealbook's is appreciably larger, which is a reflection of the larger projected positive output gap in the Tealbook forecast.

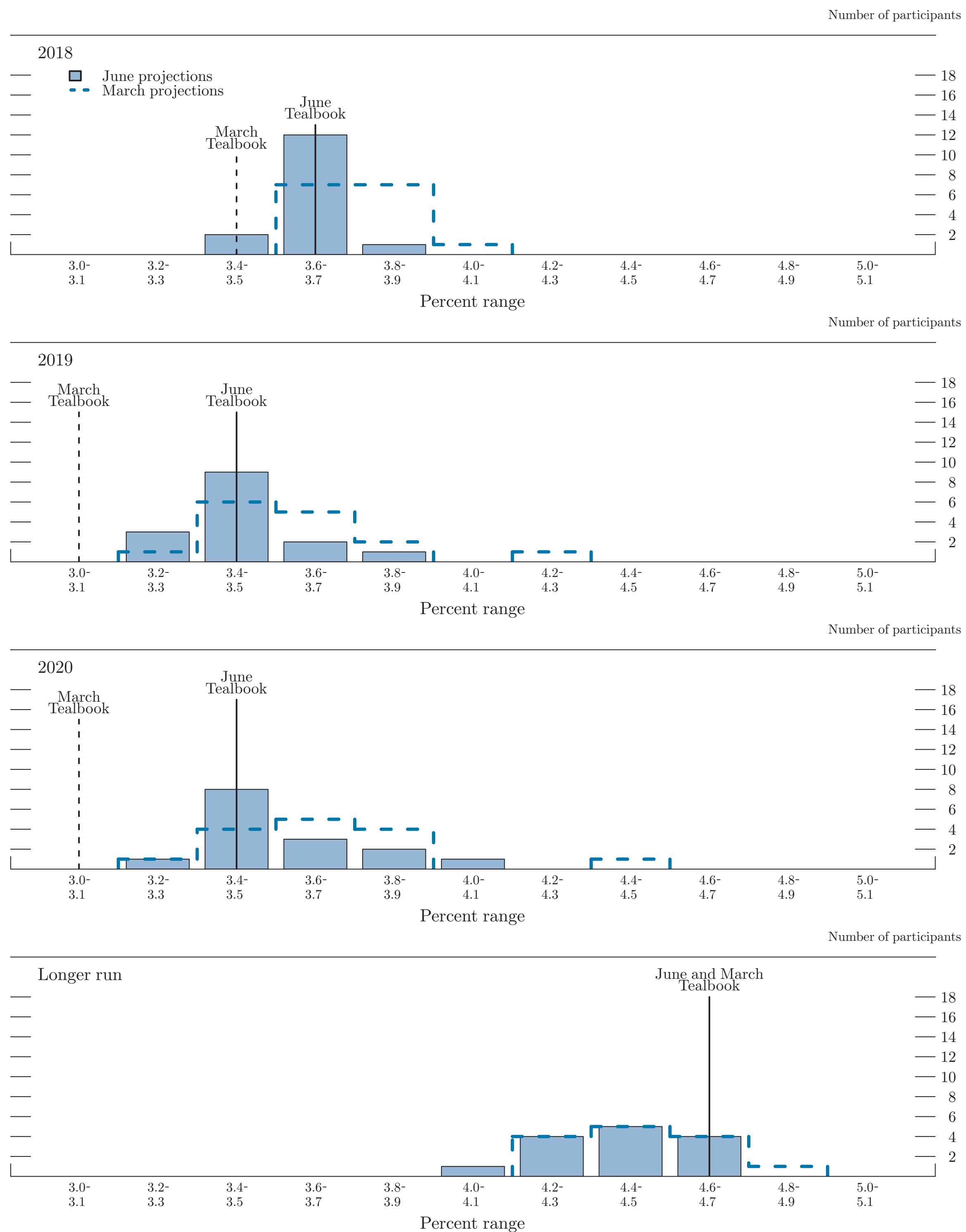
Respondent 15: My assumptions and projections are similar to those in the Tealbook.

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2018–20 and over the longer run



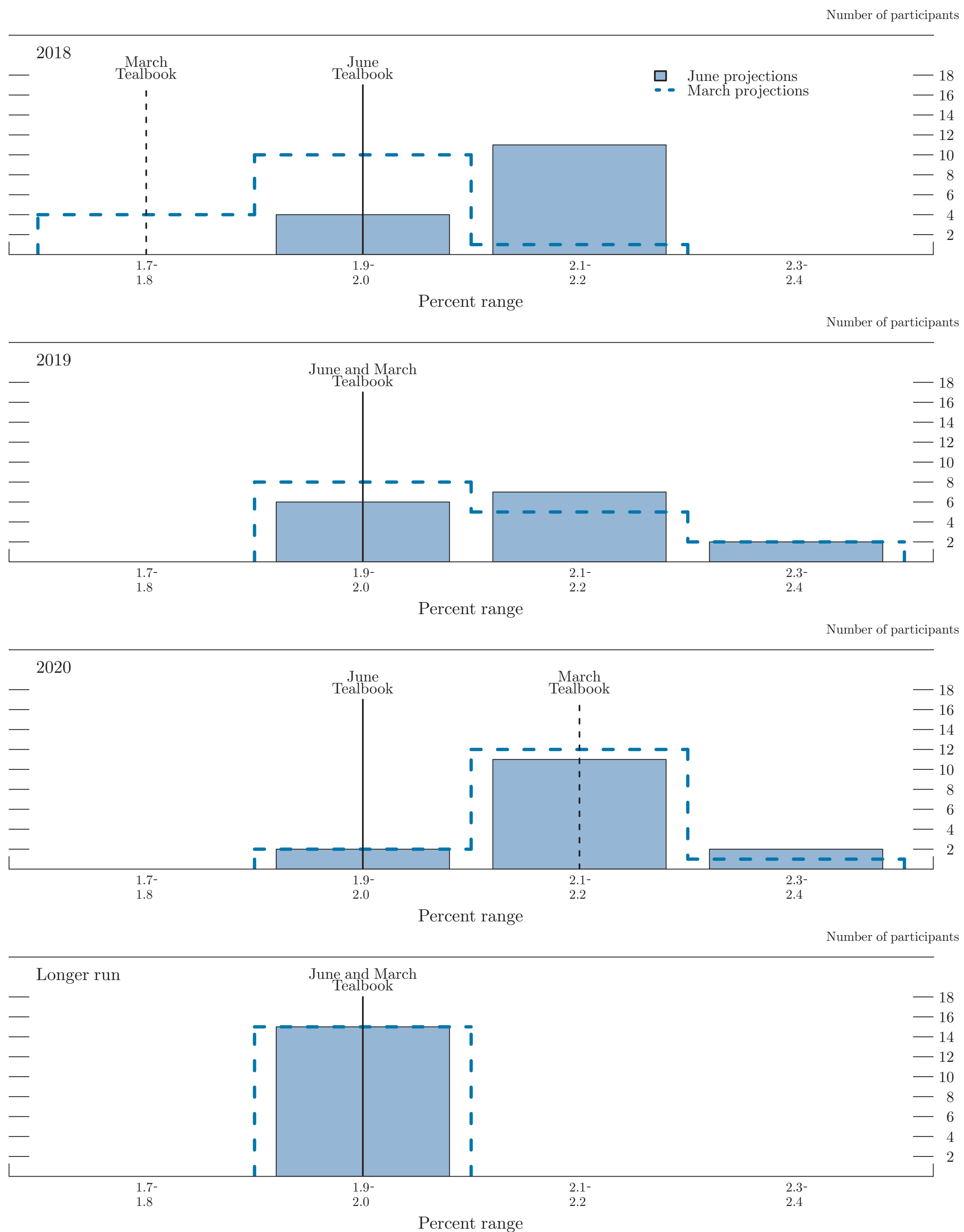
NOTE: Updated June Tealbook values are reported. Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2018–20 and over the longer run



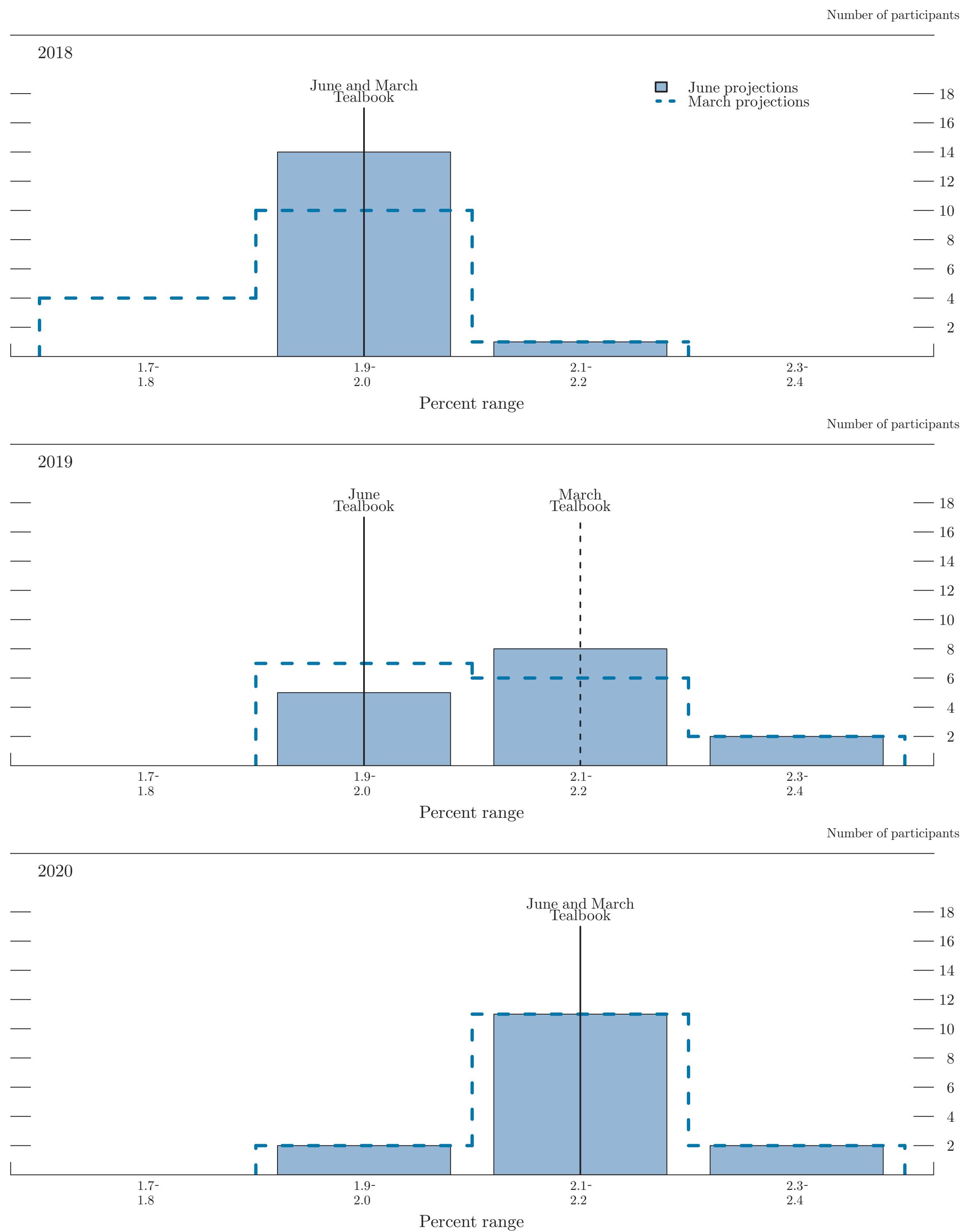
NOTE: Updated June Tealbook values are reported. Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2018–20 and over the longer run



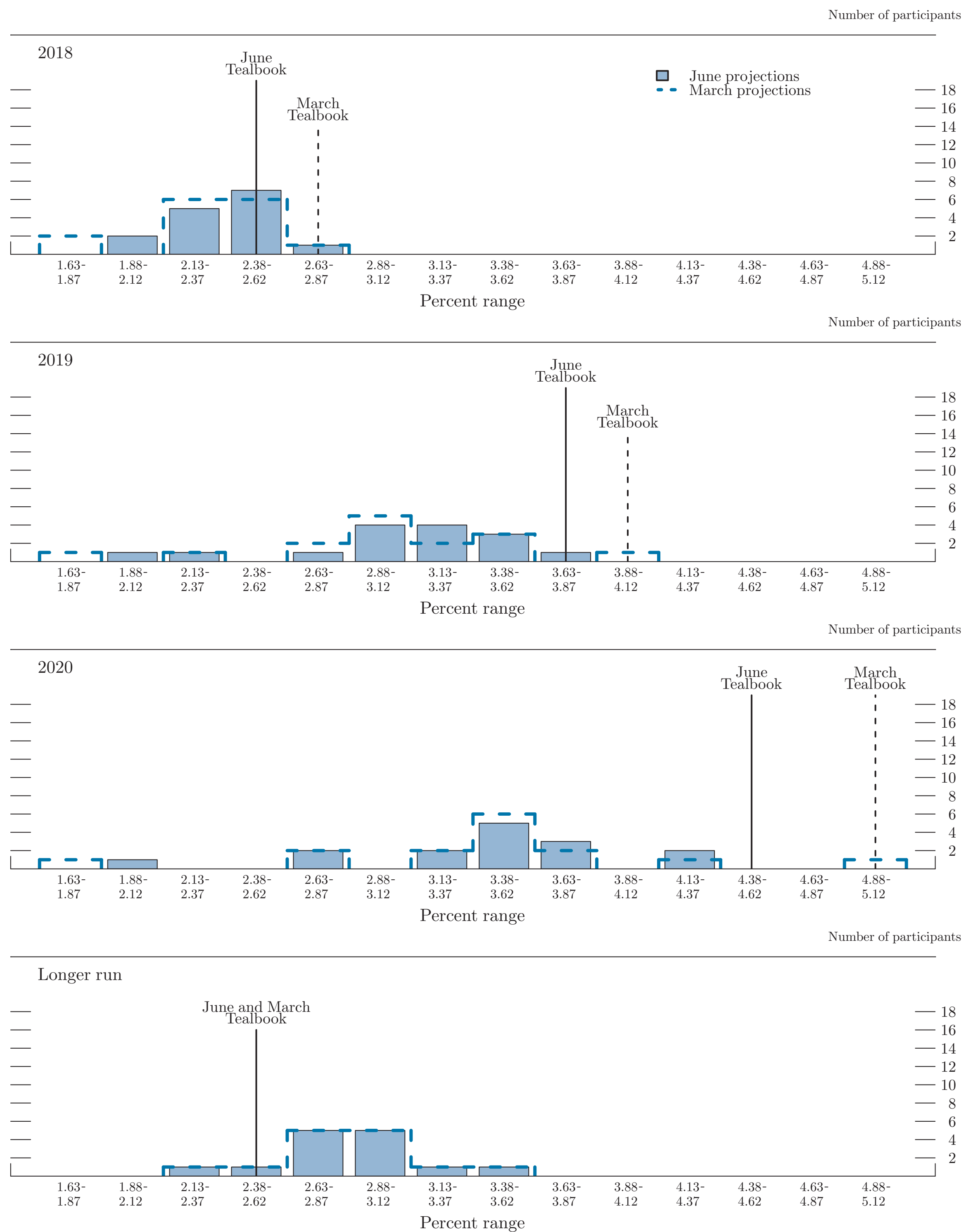
NOTE: Updated June Tealbook values are reported. Definitions of variables and other explanations are in the notes to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2018–20



NOTE: Updated June Tealbook values are reported. Definitions of variables and other explanations are in the notes to table 1.

Figure 3.E. Distribution of participants' judgments of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate, 2018–20 and over the longer run



NOTE: Updated June Tealbook values are reported. Definitions of variables and other explanations are in the notes to table 1.