

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assessments of projected appropriate monetary policy, September 2016

Percent

Variable	Median ¹					Central tendency ²					Range ³				
	2016	2017	2018	2019	Longer run	2016	2017	2018	2019	Longer run	2016	2017	2018	2019	Longer run
Change in real GDP	1.8	2.0	2.0	1.8	1.8	1.7–1.9	1.9–2.2	1.8–2.1	1.7–2.0	1.7–2.0	1.7–2.0	1.6–2.5	1.5–2.3	1.6–2.2	1.6–2.2
June projection	2.0	2.0	2.0	n.a.	2.0	1.9–2.0	1.9–2.2	1.8–2.1	n.a.	1.8–2.0	1.8–2.2	1.6–2.4	1.5–2.2	n.a.	1.6–2.4
Unemployment rate	4.8	4.6	4.5	4.6	4.8	4.7–4.9	4.5–4.7	4.4–4.7	4.4–4.8	4.7–5.0	4.7–4.9	4.4–4.8	4.3–4.9	4.2–5.0	4.5–5.0
June projection	4.7	4.6	4.6	n.a.	4.8	4.6–4.8	4.5–4.7	4.4–4.8	n.a.	4.7–5.0	4.5–4.9	4.3–4.8	4.3–5.0	n.a.	4.6–5.0
PCE inflation	1.3	1.9	2.0	2.0	2.0	1.2–1.4	1.7–1.9	1.8–2.0	1.9–2.0	2.0	1.1–1.7	1.5–2.0	1.8–2.0	1.8–2.1	2.0
June projection	1.4	1.9	2.0	n.a.	2.0	1.3–1.7	1.7–2.0	1.9–2.0	n.a.	2.0	1.3–2.0	1.6–2.0	1.8–2.1	n.a.	2.0
Core PCE inflation ⁴	1.7	1.8	2.0	2.0		1.6–1.8	1.7–1.9	1.9–2.0	2.0		1.5–2.0	1.6–2.0	1.8–2.0	1.8–2.1	
June projection	1.7	1.9	2.0	n.a.		1.6–1.8	1.7–2.0	1.9–2.0	n.a.		1.3–2.0	1.6–2.0	1.8–2.1	n.a.	
Memo: Projected appropriate policy path															
Federal funds rate	0.6	1.1	1.9	2.6	2.9	0.6–0.9	1.1–1.8	1.9–2.8	2.4–3.0	2.8–3.0	0.4–1.1	0.6–2.1	0.6–3.1	0.6–3.8	2.5–3.8
June projection	0.9	1.6	2.4	n.a.	3.0	0.6–0.9	1.4–1.9	2.1–2.9	n.a.	3.0–3.3	0.6–1.4	0.6–2.4	0.6–3.4	n.a.	2.8–3.8

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 June projections were made in conjunction with the meeting of the Federal Open Market Committee on June 14–15, 2016. One participant did not submit longer-run projections in conjunction with the June 14–15, 2016, meeting. For the September 20–21, 2016, meeting, one participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate.

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.

Table 1.A. Economic projections for the first half of 2016*
(in percent)

Medians, central tendencies, and ranges			
	Median	Central tendency	Range
Change in real GDP	1.1	1.0 – 1.1	1.0 – 1.1
June projection	1.6	1.5 – 1.7	1.4 – 1.9
PCE inflation	1.1	1.1	1.1
June projection	1.2	1.2 – 1.3	0.9 – 1.9
Core PCE inflation	1.9	1.9	1.9
June projection	1.9	1.9	1.8 – 2.0

Participants' projections			
Projection	Change in real GDP	PCE inflation	Core PCE inflation
1	1.0	1.1	1.9
2	1.1	1.1	1.9
3	1.1	1.1	1.9
4	1.1	1.1	1.9
5	1.1	1.1	1.9
6	1.0	1.1	1.9
7	1.1	1.1	1.9
8	1.1	1.1	1.9
9	1.0	1.1	1.9
10	1.1	1.1	1.9
11	1.0	1.1	1.9
12	1.1	1.1	1.9
13	1.1	1.1	1.9
14	1.1	1.1	1.9
15	1.0	1.1	1.9
16	1.0	1.1	1.9
17	1.1	1.1	1.9

* Growth and inflation are reported at annualized rates.

Table 1.B. Economic projections for the second half of 2016*
(in percent)

Medians, central tendencies, and ranges			
	Median	Central tendency	Range
Change in real GDP	2.5	2.3 – 2.8	2.3 – 3.0
June projection	2.3	2.2 – 2.5	2.1 – 2.7
PCE inflation	1.5	1.3 – 1.7	1.1 – 2.3
June projection	1.8	1.4 – 2.1	1.4 – 2.2
Core PCE inflation	1.5	1.3 – 1.7	1.1 – 2.1
June projection	1.5	1.3 – 1.8	0.7 – 2.1

Participants' projections			
Projection	Change in real GDP	PCE inflation	Core PCE inflation
1	2.6	1.5	1.5
2	2.5	1.3	1.3
3	2.3	1.3	1.3
4	2.3	1.1	1.1
5	2.5	2.3	1.7
6	2.8	1.5	1.5
7	2.9	1.5	1.3
8	2.3	1.3	1.3
9	3.0	1.5	1.5
10	2.9	1.3	1.3
11	2.8	1.5	1.3
12	2.3	1.3	1.3
13	2.5	1.3	1.5
14	2.5	1.9	1.7
15	2.6	1.9	2.1
16	2.4	1.7	1.7
17	2.7	1.3	1.5

* Projections for the second half of 2016 implied by participants' September projections for the first half of 2016 and for 2016 as a whole. Growth and inflation are reported at annualized rates.

Table 2. September economic projections, 2016–19 and over the longer run (in percent)

Projection	Year	Change in real GDP	Unemployment rate	PCE inflation	Core PCE inflation	Federal funds rate
1	2016	1.8	4.8	1.3	1.7	0.63
2	2016	1.8	4.9	1.2	1.6	0.63
3	2016	1.7	4.9	1.2	1.6	0.38
4	2016	1.7	4.9	1.1	1.5	0.38
5	2016	1.8	4.8	1.7	1.8	0.63
6	2016	1.9	4.8	1.3	1.7	0.63
7	2016	2.0	4.8	1.3	1.6	0.63
8	2016	1.7	4.9	1.2	1.6	0.38
9	2016	2.0	4.7	1.3	1.7	0.88
10	2016	2.0	4.8	1.2	1.6	0.63
11	2016	1.9	4.8	1.3	1.6	0.63
12	2016	1.7	4.7	1.2	1.6	0.63
13	2016	1.8	4.8	1.2	1.7	0.88
14	2016	1.8	4.8	1.5	1.8	0.63
15	2016	1.8	4.7	1.5	2.0	0.63
16	2016	1.7	4.7	1.4	1.8	0.88
17	2016	1.9	4.8	1.2	1.7	1.13
1	2017	2.4	4.5	1.9	1.9	1.63
2	2017	2.2	4.6	1.8	1.8	1.13
3	2017	2.2	4.7	1.6	1.6	0.63
4	2017	2.0	4.8	1.6	1.6	0.88
5	2017	2.3	4.4	1.9	1.9	1.63
6	2017	1.9	4.7	1.9	1.8	1.13
7	2017	2.5	4.6	1.5	1.8	1.38
8	2017	2.0	4.6	1.7	1.7	1.13
9	2017	2.2	4.5	1.9	1.9	1.75
10	2017	2.0	4.5	1.7	1.7	1.13
11	2017	2.2	4.5	1.7	1.7	1.13
12	2017	1.9	4.6	1.9	1.8	1.13
13	2017	1.6	4.7	1.8	1.8	1.88
14	2017	2.1	4.7	2.0	2.0	1.13
15	2017	2.0	4.7	2.0	2.0	0.63
16	2017	1.8	4.5	2.0	2.0	1.88
17	2017	1.7	4.8	1.9	1.9	2.13

Table 2. (continued)

Projection	Year	Change in real GDP	Unemployment rate	PCE inflation	Core PCE inflation	Federal funds rate
1	2018	2.1	4.3	2.0	2.0	2.63
2	2018	1.9	4.5	1.9	1.9	1.63
3	2018	2.0	4.5	1.8	1.8	1.63
4	2018	2.0	4.6	1.8	1.8	1.88
5	2018	2.1	4.4	2.0	2.0	2.63
6	2018	1.8	4.7	2.0	2.0	1.88
7	2018	2.3	4.5	1.8	2.0	1.88
8	2018	2.0	4.5	1.9	1.9	1.88
9	2018	2.0	4.8	2.0	2.0	2.75
10	2018	2.0	4.3	2.0	2.0	1.88
11	2018	2.2	4.3	1.8	1.8	2.13
12	2018	1.7	4.6	2.0	2.0	1.88
13	2018	1.5	4.9	2.0	2.0	2.75
14	2018	2.1	4.7	2.0	2.0	1.88
15	2018	2.0	4.7	2.0	2.0	0.63
16	2018	1.8	4.5	2.0	2.0	2.88
17	2018	1.7	4.8	2.0	2.0	3.13
1	2019	1.8	4.2	2.1	2.1	3.38
2	2019	1.6	4.5	2.0	2.0	2.13
3	2019	1.7	4.5	1.9	1.9	2.63
4	2019	1.7	4.4	1.8	1.8	2.38
5	2019	2.1	4.5	2.0	2.0	3.13
6	2019	1.8	4.8	2.0	2.0	2.38
7	2019	2.2	4.6	1.9	2.0	2.63
8	2019	1.8	4.7	2.0	2.0	2.38
9	2019	2.0	5.0	2.0	2.0	3.00
10	2019	1.7	4.3	2.0	2.0	2.63
11	2019	2.0	4.3	1.9	1.9	3.00
12	2019	1.6	4.7	2.0	2.0	2.63
13	2019	1.6	5.0	2.0	2.0	2.75
14	2019	2.0	4.7	2.0	2.0	2.63
15	2019	2.0	4.7	2.0	2.0	0.63
16	2019	1.8	4.6	2.0	2.0	3.00
17	2019	1.7	4.8	2.0	2.0	3.75

Table 2. (continued)

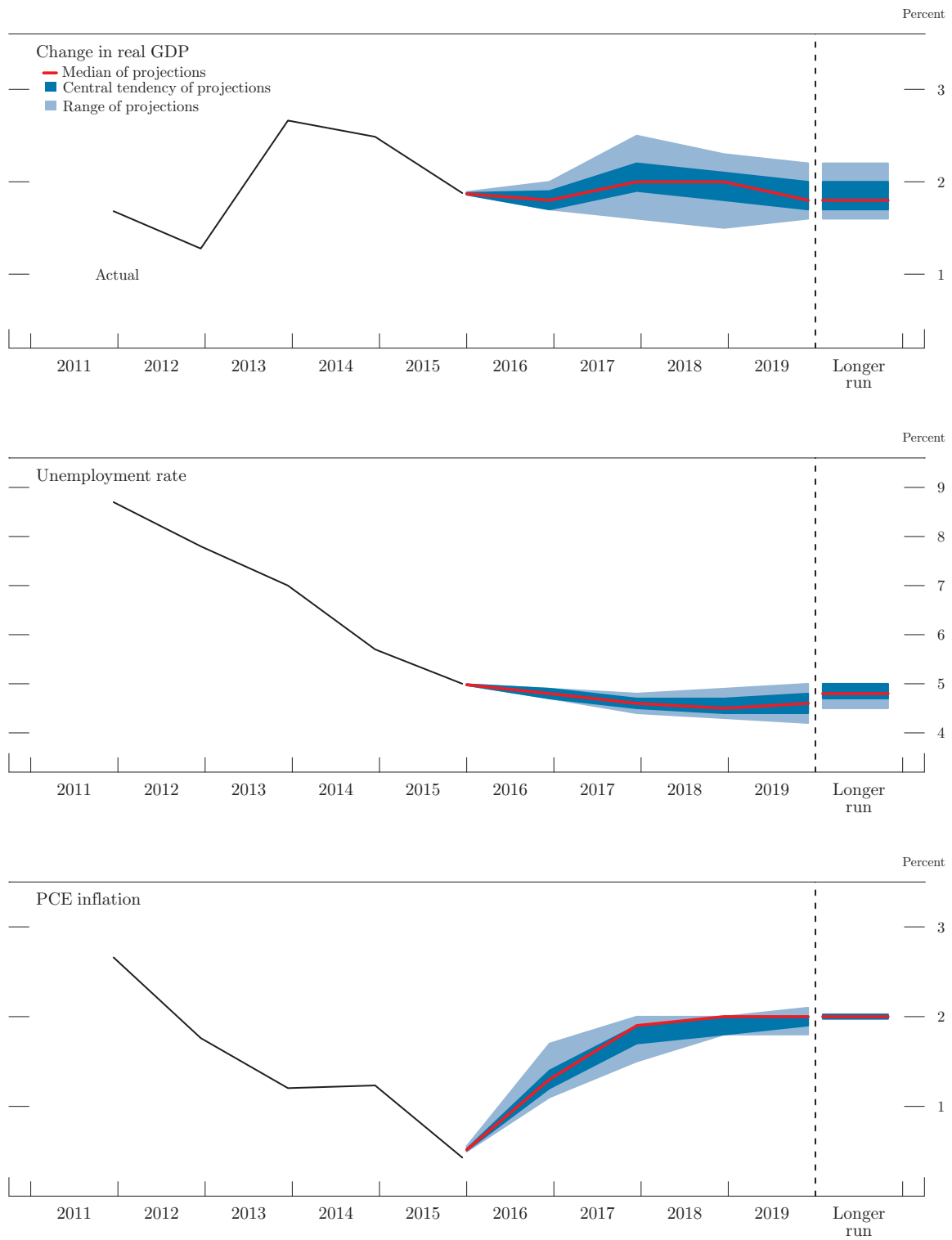
Projection	Year	Change in real GDP	Unemployment rate	PCE inflation	Core PCE inflation	Federal funds rate
1	LR	1.8	4.7	2.0		3.00
2	LR	1.7	4.7	2.0		2.75
3	LR	1.7	4.7	2.0		2.75
4	LR	2.0	4.6	2.0		2.75
5	LR	2.0	4.7	2.0		3.00
6	LR	1.8	4.8	2.0		2.50
7	LR	2.2	4.8	2.0		3.50
8	LR	1.8	4.7	2.0		2.50
9	LR	2.0	5.0	2.0		3.00
10	LR	1.7	4.8	2.0		2.50
11	LR	1.8	4.5	2.0		3.00
12	LR	1.7	4.8	2.0		2.75
13	LR	1.6	5.0	2.0		2.75
14	LR	2.0	4.7	2.0		3.00
15	LR			2.0		
16	LR	1.8	5.0	2.0		3.00
17	LR	1.8	5.0	2.0		3.75

Figure 1.A. Medians, central tendencies, and ranges of economic projections, 2016–19 and over the longer run



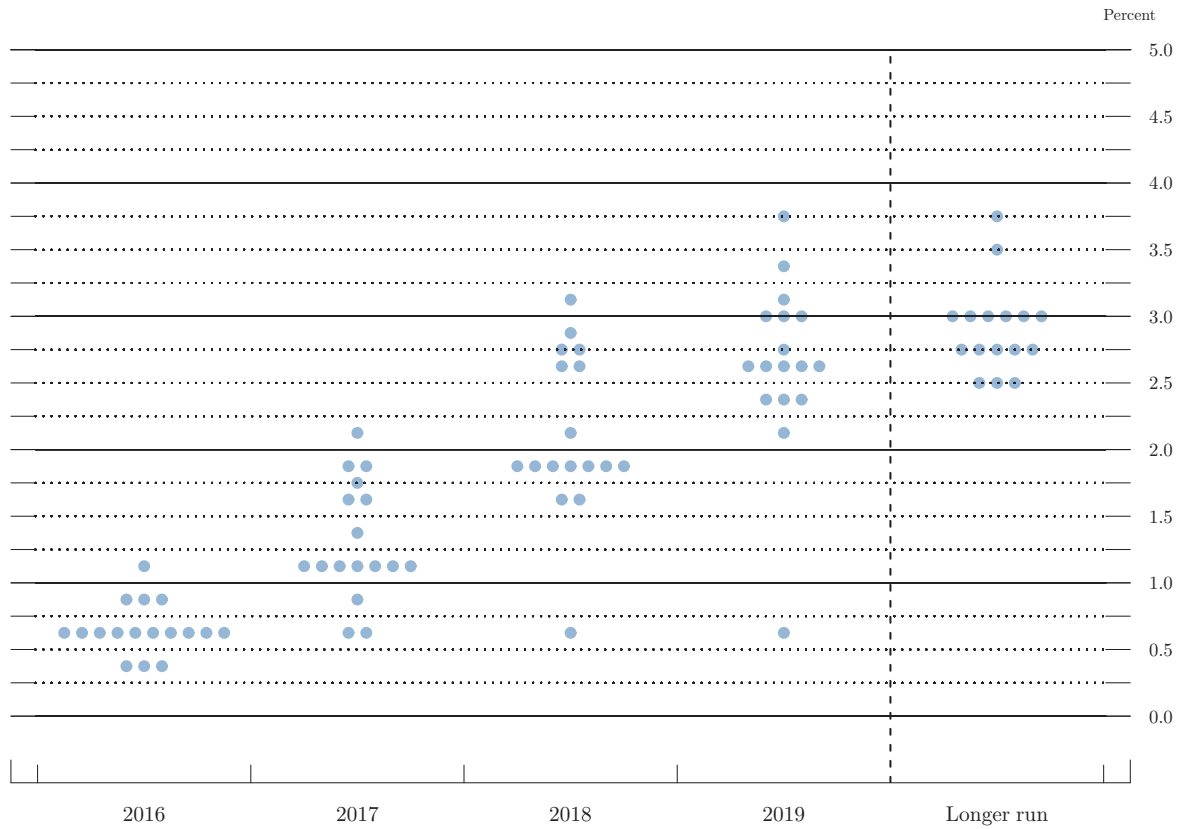
NOTE: Definitions of variables and other explanations are in the notes to table 1. The data for the actual values of the variables are annual.

Figure 1.B. Medians, central tendencies, and ranges of economic projections, 2016–19 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.

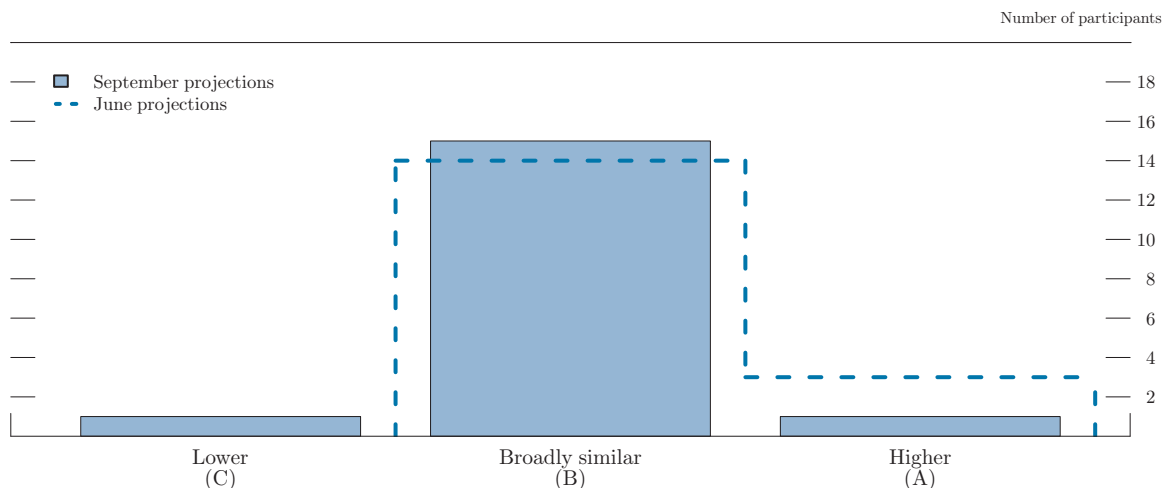
Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



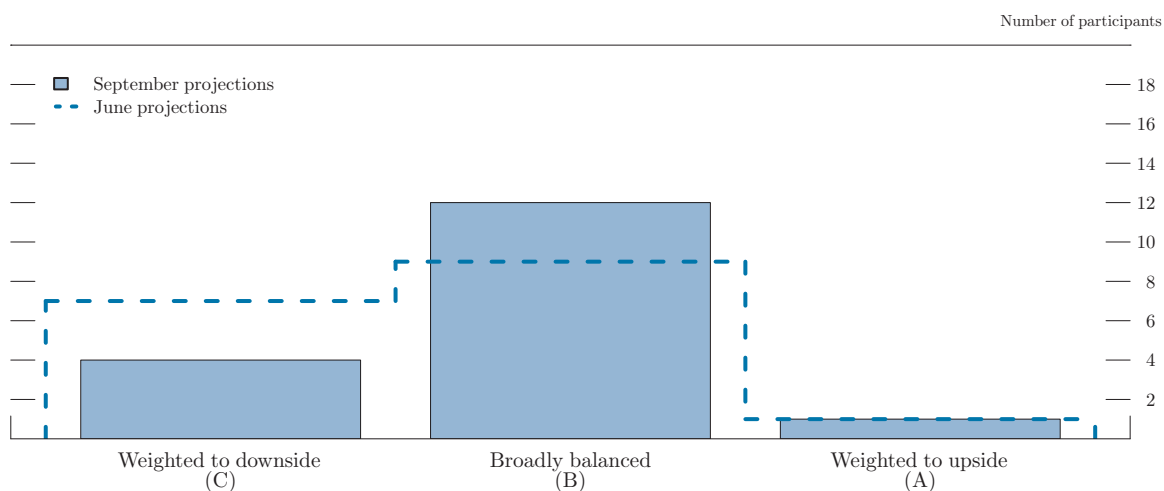
NOTE: Each shaded circle indicates the value (rounded to the nearest 1/8 percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar 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 – GDP growth

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



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

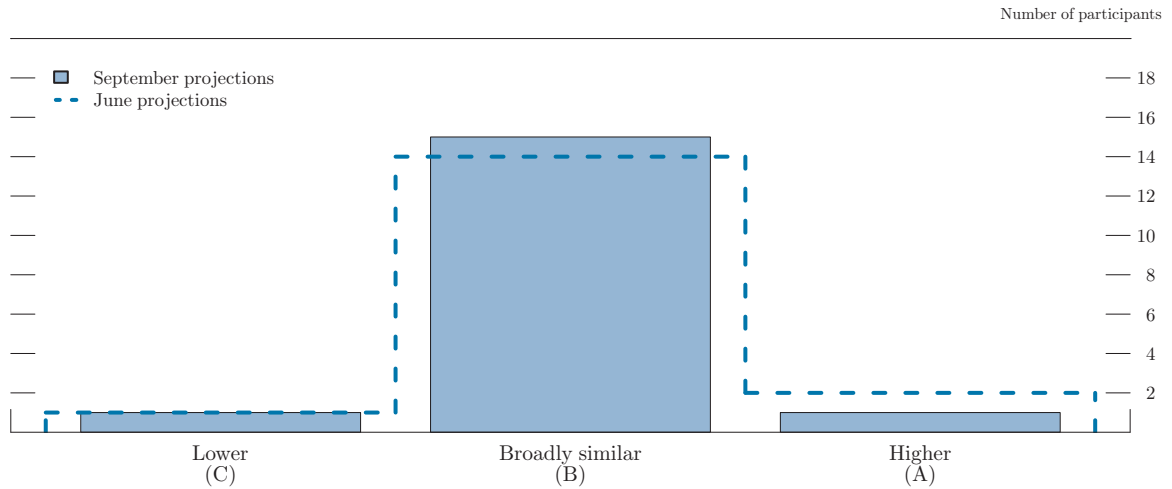


Individual responses

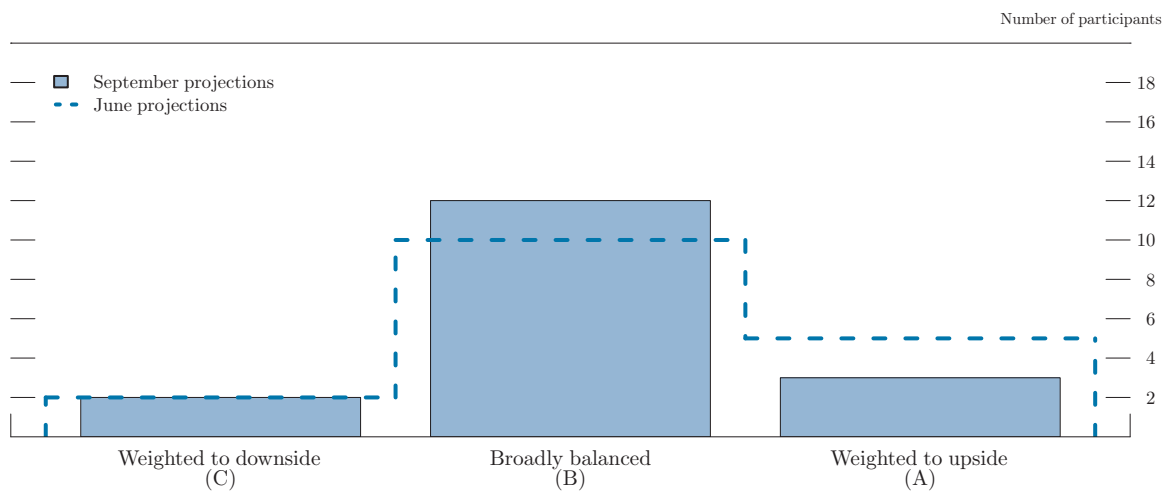
Respondent	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2(a)	B	B	B	B	B	A	C	B	B	B	B	B	B	B	B	B	B
2(b)	B	B	C	C	B	B	B	C	B	B	C	B	B	B	A	B	B

Figure 4.B. Uncertainty and risks – Unemployment rate

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



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

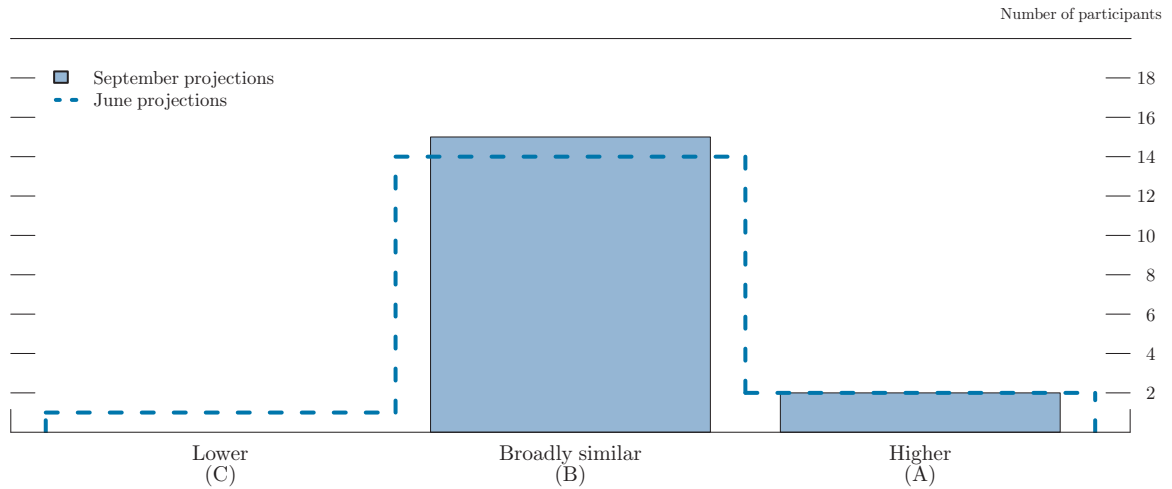


Individual responses

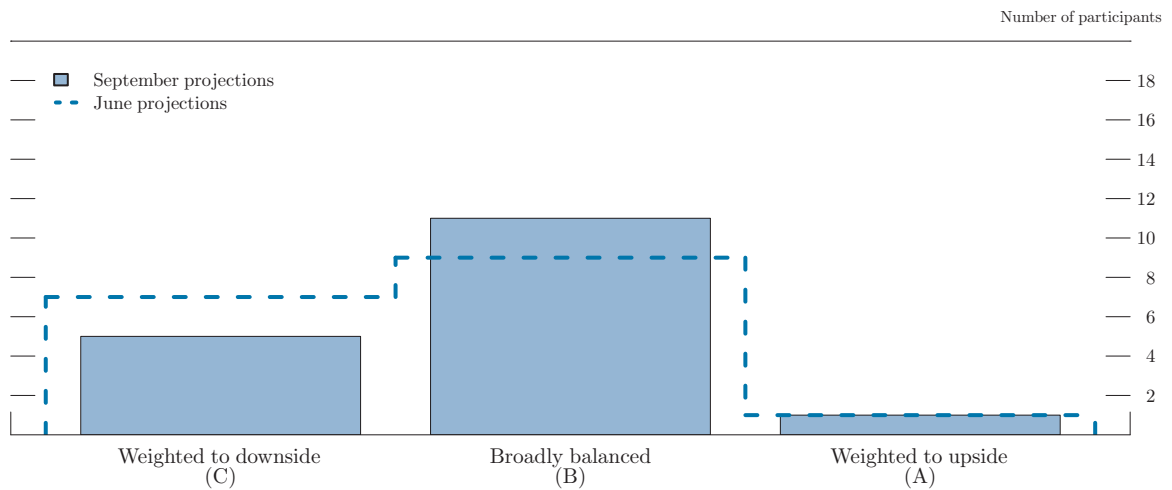
Respondent	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2(a)	B	B	B	B	B	A	C	B	B	B	B	B	B	B	B	B	B
2(b)	C	B	B	B	C	B	B	A	B	B	A	B	B	B	A	B	B

Figure 4.C. Uncertainty and risks – PCE inflation

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



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

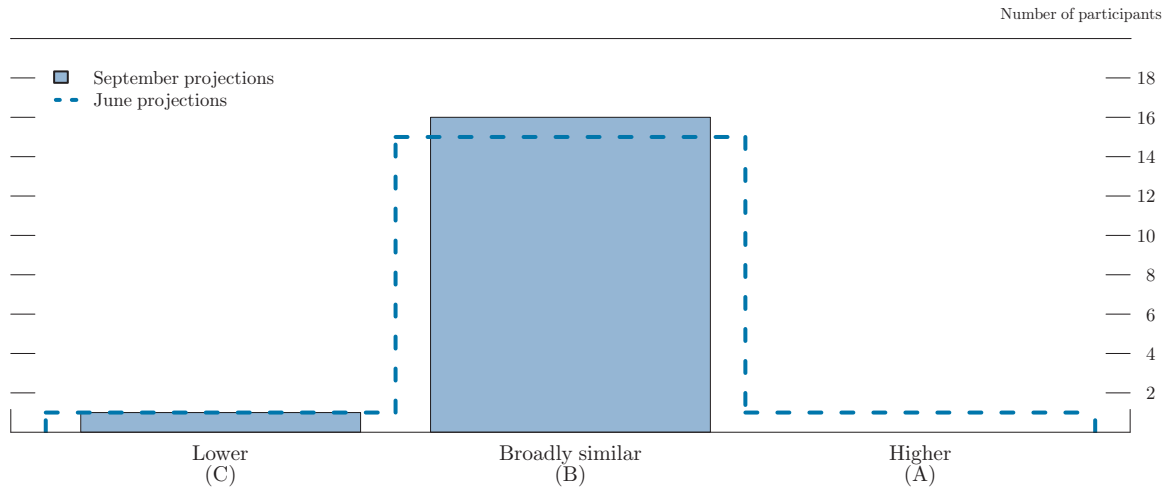


Individual responses

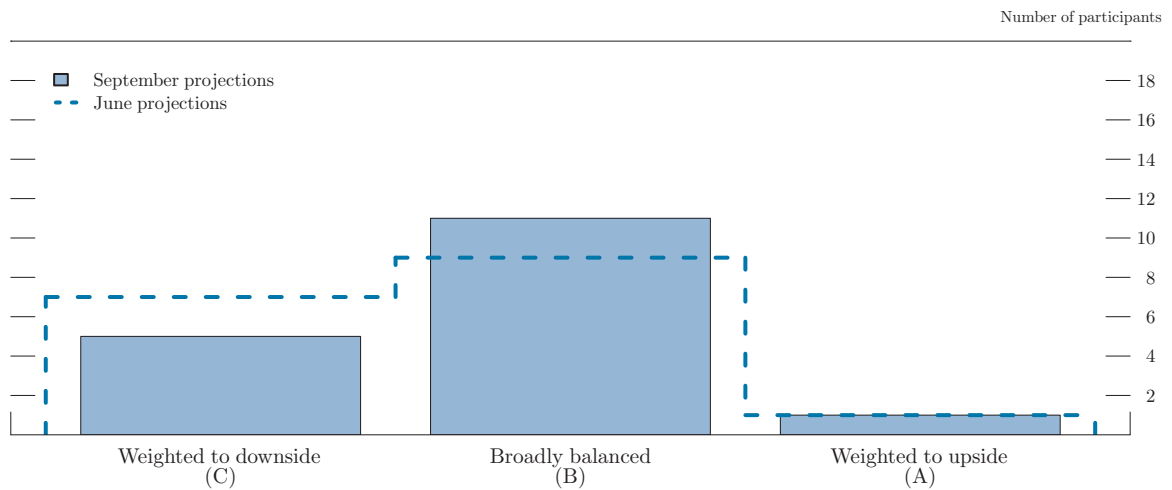
Respondent	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2(a)	B	B	B	B	B	B	A	B	B	B	B	B	B	B	B	A	B
2(b)	B	B	C	B	C	B	B	C	B	C	C	B	B	B	A	B	B

Figure 4.D. Uncertainty and risks – Core PCE inflation

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



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	16	17
2(a)	B	B	B	B	B	B	C	B	B	B	B	B	B	B	B	B	B
2(b)	B	B	C	B	C	B	B	C	B	C	C	B	B	B	A	B	B

Longer-run Projections

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 now view the current level of the unemployment rate as providing a good indication of the amount of slack in the economy, and we expect the activity gap to fully close in the first half of next year. Convergence to the inflation target is expected to occur in 2018.

Respondent 2: I anticipate that it will take at least six years, and maybe longer, for the economy to achieve full convergence because the real neutral federal funds rate – which I estimate is currently around zero – will probably still be considerably below its longer-run value in 2019.

Respondent 3: N/A

Respondent 4: There is an increasingly strong case for the proposition that monetary policy alone will have difficulty getting PCE inflation to the 2 percent target on a sustainable basis. Something external– such as a significant fiscal boost – may well be needed. However, since I think there is a reasonable chance that something of this sort will happen, over the next five or six years, I do not take the position here that a longer convergence process will be required.

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

Respondent 6: As is typical following the annual revisions to the GDP and productivity data, we reviewed our assumptions for potential GDP growth and the longer-run normal rate of unemployment. Our assessment was that there was no compelling reason to change those assumptions this year.

The unemployment rate currently is just above its longer-run normal level, and we project that it will fall slightly below that level in 2017 – 18 before returning to it in 2019. However, our scenario analysis of labor flows and the historical behavior of the unemployment rate in long expansions indicate that there is appreciable probability of the unemployment rate falling more substantially below its longer-run normal level during the projection period.

We assume that long-term inflation expectations will continue to be anchored at levels consistent with the FOMC longer-run objective. Under these conditions and with the resource gap anticipated to dissipate over the forecast horizon, we expect inflation as measured by the PCE deflator (on a quarterly basis) to be 2% by 2018.

As indicated in our projections, we anticipate that under appropriate monetary policy and no further shocks, the convergence process should be largely completed by 2018. Accordingly, the projections of the major economic variables for 2019 are at their longer-run values.

Respondent 7: N/A

Respondent 8: N/A

Respondent 9: At this point, convergence is likely in two to three years.

Respondent 10: N/A

Respondent 11: We believe convergence of the federal funds rate to its long-run level is likely to take 3 to 4 years.

Respondent 12: Labor-force participation is now near its demographic trend, and the unemployment rate is roughly at its longer-run sustainable level. The economy appears to be on a track that will push it past full employment. With the labor market tight and the restraining effects of oil-price declines and a stronger dollar waning, I expect inflation to reach our 2 percent longer-run objective over the next 1-to-1 1/2 years. In the absence of new shocks, the unemployment rate eventually converges to its longer-run sustainable level from below. Full convergence might take 5 years.

Respondent 13: Our dual mandate goals are reached or exceeded by 2018. However, it will take an additional year to work through the secondary dynamics and achieve complete convergence to our longer-run projections.

Respondent 14: N/A

Respondent 15: We think all variables have essentially converged to a regime characterized by low productivity growth and a low real interest rate on short-term government debt. This regime features GDP growth of 2.0%, unemployment of 4.7%, and inflation of 2.0%. Because there are multiple medium term outcomes, we cannot provide a single set of longer-run projections for GDP growth and unemployment. Calculating an average for these variables based on multiple possible outcomes is potentially misleading. We do provide a 2.0% longer-run inflation projection, which is independent of the regime.

Respondent 16: I anticipate that the convergence of real GDP growth and inflation will takes less than 5 years. Specifically, I expect real GDP growth to be at its longer-run rate and inflation to be at 2 percent in the period from 2017 to 2019. The unemployment rate has reached my estimate of its longer-run level, and I expect it will fall below its longer-run level in the period from 2016 to 2019, before moving back to its longer-run level.

Respondent 17: With real GDP growth expected to be around 2 percent this year and employment growth likely to slow as labor markets tighten, we are only about a year away from steady state growth of around 1 3/4 percent.

Uncertainty and Risks

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: N/A

Respondent 2: N/A

Respondent 3: 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 4: N/A

Respondent 5: N/A

Respondent 6: Quantitative judgment based on the width of the probability intervals from the FRBNY forecast distribution for real GDP growth and core PCE inflation relative to the forecast errors over the last 20 years. The widths of these intervals are somewhat narrower than in our June SEP submission. The probability intervals for the real activity forecasts remain modestly wider than the SEP standard. Although global risks have dissipated to some extent, we still see them as quite significant, which are reflected in financial market volatility of the past week. The forecast intervals for core PCE inflation still appear broadly consistent with the SEP standard, taking rough account of the differences between forecast errors for overall consumer inflation and core PCE inflation.

Respondent 7: N/A

Respondent 8: N/A

Respondent 9: N/A

Respondent 10: N/A

Respondent 11: N/A

Respondent 12: N/A

Respondent 13: 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 14: N/A

Respondent 15: N/A

Respondent 16: N/A

Respondent 17: N/A

Uncertainty and Risks (continued)

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: Developments since the June meeting have eased my concerns about both the May labor market report and (despite the Brexit vote) the potential for global economic and financial conditions to deteriorate. For this reason, I view the risks to my near-term projection as broadly balanced. In contrast, I view the risks to real activity and inflation beyond the near term as weighted to the downside, primarily because I anticipate that the federal funds rate will remain exceptionally low for the next few years, which will markedly lessen our ability to deal with recession should one occur.

Respondent 3: Risks for output and inflation are weighted to the downside because the effective lower bound limits the ability of monetary policy to respond to adverse shocks. The downward drift of inflation expectations presents an additional downside risk for inflation. For the unemployment rate, there is a countervailing risk that it will continue to fall more rapidly than expected for a given path for output, as it has over the past several years; therefore I see the risks to unemployment as broadly balanced.

Respondent 4: N/A

Respondent 5: I am anticipating a continued decline in the labor force participation rate, though there is uncertainty surrounding the path and the implied growth of the labor force. I see a risk that the unemployment rate falls further below my estimate of its longer-run average. Inflation has continued to run below the Committee's target for some time, despite significant improvement in labor market conditions.

Respondent 6: Quantitative judgment based on the difference between the central projection and the expected value from the FRBNY forecast distribution. There has been some reduction since June in our assessment of downside risks as much of the incoming data were consistent with the central forecast, at least until recently. Nevertheless, the future output implications of the softness in business fixed investment, the low levels of advanced foreign economy sovereign yields, and a soft foreign economic outlook pose some downside risks. Overall, we see the risks as roughly balanced over the near term, and modestly to the downside at longer horizons, in part reflecting the constraints on policy to react to negative shocks.

Inflation risks are nearly balanced for 2016 – 17 and slightly skewed to the downside for 2018 – 19; we assess that they are overall roughly balanced as we did in June. Core measures of inflation have been stable as we had anticipated and we project convergence to objective similar to the June projections, which is consistent with little change in inflation risks. However, low levels of market-based longer-term inflation compensation and survey measures of longer-term household inflation expectations suggest significant downside risks persist.

Respondent 7: N/A

Respondent 8: N/A

Respondent 9: I continue to view the risks around my forecast as broadly balanced.

Financial market volatility related to the June 23 “Brexit” vote subsided rapidly. The Chinese economy continues to rebalance, which will be a lengthy process. Monetary policy in many countries is likely to remain highly accommodative in the near to medium run, which will continue to support the outlook for growth and inflation.

The slowdown in payroll growth in May was reversed in subsequent months and a variety of recent indicators paint a very solid picture of the labor market. With the economy at or near full employment, we should expect to see payroll growth slow from the pace seen earlier in the year.

Inflation risks are balanced. The downward pressure on inflation coming from energy prices is subsiding, as oil prices have settled in the \$40-\$50 range for much of this year. The dollar has also shown signs of stabilizing, which will reduce the downward pressure on inflation from imported goods prices; indeed, deflation in nonpetroleum import prices has subsided since late last year. There have been small downward movements in some of the survey measures of inflation expectations, which I continue to watch, but my overall assessment is that inflation expectations have been relatively stable. Should inflation expectations show a more significant downward move, this would pose a downside risk to my inflation projection. On the other hand, too slow a withdrawal of monetary policy accommodation and continued declines in unemployment have the potential to create upside risks to inflation over the medium run.

Risks to financial stability from very low interest rates appear to be contained so far. I expect them to remain so if we gradually normalize interest rates. However, a failure to do so increases these risks.

Respondent 10: N/A

Respondent 11: Our growth forecast is driven by solid household sector spending, which, in turn, is propelled importantly by further labor market gains. However, our business contacts appear very cautious and quite attentive to any bad news they hear. Accordingly, it is much easier to envision shocks that would result in businesses delaying hiring or capital expenditures than it is to identify developments that would cause them to spend more robustly than in our projection. In sum, we see the balance of risks to the GDP forecast as tilted to the downside and those to the unemployment rate projection as tilted to the upside.

The incoming wage and price data have been roughly in line with our expectations, and are consistent with a slow return to target inflation. However, the downside risk to our projection for real activity imparts some downside risk to the inflation outlook. More importantly, financial market inflation compensation and household inflation expectations remain persistently low. This highlights the risk that longer-run inflation expectations may have slipped below 2 percent; at a minimum, it points to fragility in inflation expectations. Furthermore, our forecast assumes a flat dollar over the projection period, and we see a risk that it will instead appreciate due to differential monetary policies. We do not see major offsetting upside risks to prices. As a result, we feel the risks to our inflation forecast remain tilted to the downside.

Respondent 12: I show a balanced risk weighting on real growth and inflation. I'm comfortable with a balanced risk weighting given that my projections have been on the conservative side of the professional consensus.

Respondent 13: Risks to economic activity appear broadly balanced. We have essentially reached our objective of maximum sustainable employment according to a variety of labor market measures and will likely overshoot full employment over the next few years. The main uncertainty is by how much and for how long. Consumer spending is on track for solid growth this year, bolstered by a stronger labor market. Fiscal policy is set to be accommodative in the near term.

Uncertainty about growth in foreign economies appears to have subsided somewhat in recent months, but some risks to the foreign outlook remain.

Although the effective lower bound somewhat constrains our ability to respond to adverse shocks, this constraint is becoming less important given that appropriate policy calls for steady increases in the target funds rate over the next two years.

Inflation risks are also balanced around an inflation path that is slightly lower than in June. A tightening of resource utilization supports the continued movement of inflation towards 2 percent. Disinflationary pressures from abroad—namely previous strengthening of the dollar and declines in oil prices—are still present but dissipating.

Respondent 14: N/A

Respondent 15: We are answering this question variable by variable as they may be affected by important regime shifts.

With respect to GDP growth, the current productivity growth regime is low. A higher productivity growth regime is possible, but we see no reason to predict a switch at this time. Such a possible switch, however, leads us to weight to the upside more rapid GDP growth.

Concerning unemployment, the current unemployment rate is near the low 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. However, such a possibility leads us to weight to the upside a higher unemployment rate.

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 that inflation moves higher. It is also possible that inflation expectations, which are currently low, could drift higher and become unanchored. 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, much depends on the behavior and energy and other commodity prices. Overall, we see the risks as weighted to the upside.

Respondent 16: N/A

Respondent 17: N/A

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

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 reduced 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: Appropriate policy requires a resumption of the process of gradual normalization of the federal funds rate. With the economy already near full employment, increasing the federal funds rate sooner rather than later reduces the risk of overshooting full employment by a larger amount than what is already embedded in the forecast. While the inflation costs of overshooting full employment are likely small, it has proven difficult in the past to slow the economy to a sustainable rate without going too far and causing a recession. As a result, failure to continue on the path of gradual removal of accommodation could shorten, rather than lengthen, the duration of this recovery.

Respondent 2: Three considerations influence my forecast for the appropriate path of monetary policy. First, the neutral real funds rate appears to be close to zero currently and I anticipate that it will change little over the next two or three years. Second, monetary policy needs to remain somewhat accommodative for a while longer in order to produce a moderately tight labor market, thereby speeding the return to 2 percent inflation and possibly pulling more people back into the labor force. Lastly, in an uncertain environment it is appropriate to proceed cautiously and gradually in removing accommodation because the ZLB limits our ability to ease in the event we are hit with adverse shocks.

Respondent 3: The labor market, as measured by the unemployment rate, is essentially back to normal. But secondary measures of slack, such as the fraction of the labor force working part time for economic reasons, remain elevated, and wage growth remains subdued. As long as the unemployment rate stays at or above its long run level, it will not be appropriate to raise interest rates without a sustained increase in core inflation. In other words, job increases that do not lead to a drop in the unemployment rate or an increase in price inflation are not sufficient to raise interest rates.

Respondent 4: One of the many infirmities of the SEP is particularly apparent in the current circumstances. Given that we have only a couple of meetings left this year, a target federal funds rate in the above box that is higher than 0.38 is too readily translated into an indication that the participant is projecting an increase at the very next meeting or two. But leaving the projection at 0.38 strongly suggests the opposite. While, in theory, this projection is tied to the participant's expectations with respect to GDP growth, unemployment, and inflation, in fact the publicly reported version of the SEP does not allow anyone outside the Fed to see that, for example, an expectation of no increase is tied to a slippage in one's expectations for the economy. While my projection in the box above remains unchanged from current levels, I want to be clear – internally, at least – that it is premised on my expectation of just a modest slippage in economic performance. Should that not prove to be the case, I would of course reassess the appropriate monetary policy action.

At least so long as growth remains no better than slightly above trend and inflation is not fairly convincingly moving toward 2%, a key consideration in determining the appropriate path of monetary policy remains the asymmetric nature of the Committee's range of policy instruments. The nearly certain need for resort to unconventional policy instruments in the event that an adverse shock were to threaten the continued moderate expansion – or in the even growth significantly decelerates even in the absence of such a shock – argues strongly for maintaining current levels of accommodation so as to increase, even if only marginally, the economy's resilience to such a shock. With an external environment that is still somewhat disinflationary, with continued sluggish growth abroad, with even more accommodative monetary policies like in most other mature economies, and with the resulting risk of another period of dollar strengthening as rates in the U.S. rise, considerable caution is warranted.

Another key factor informing my judgment is the increasing strength of the hypothesis that secular stagnation, or a phenomenon sharing some of the same characteristics as classic secular stagnation, is affecting U.S. economic performance.

Respondent 5: In response to elevated uncertainty about future fiscal, regulatory, and trade policy I have pushed the next tightening of policy from this meeting to the end of 2016. My projection for the appropriate path for the federal funds rate reflects my view that policy should adjust at a more gradual pace than has been typical in past lift-off scenarios given low productivity growth, declining labor force participation, and inflation that has been running below target for some time.

Respondent 6: 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 pace of normalization also will depend on how overall financial conditions respond to our policy actions.

Our current projection of the appropriate path has the target FFR ranges at the end of 2016, 2017, 2018, and 2019 at $1/2 - 3/4\%$, $1 - 1\ 1/4\%$, $1\ 3/4 - 2\%$, and $2\ 1/4 - 2\ 1/2\%$ respectively; the projected ranges for 2016 – 2018 are each 25bps below the corresponding ranges in our June submission. In light of the still significant uncertainty surrounding the outlook, in part reflecting the negative forecast errors for GDP growth in recent quarters, and a low projected path of the short-term neutral rate (r^*), we believe this downward adjustment of the policy path is necessary to support our modal economic projections as well as to provide some additional insurance against the restraining forces on the U.S. economy. Furthermore, risk-management considerations point to smaller costs from a too-gradual path of removing accommodation than the costs from a too-rapid removal.

Another factor informing our assessment of the appropriate policy path is our estimate of the equilibrium real short-term interest rate over the longer run, which we now judge to be in the range of 0 – 2%. This range is 50 bps below our estimated range in June and is consistent with the estimates and forecasts from a variety of models. Adding the objective for inflation (2%) gives our estimated range for the nominal equilibrium rate as 2 – 4%. Our modal projection is in the lower half of this range due to the combination of subdued productivity growth, low longer-term sovereign yields, continued indications of a global “saving glut,” and demographic factors. These considerations lead to our point estimate of $2\ 1/2\%$ in the response to question 3(a).

We assume that reinvestment continues until economic and financial conditions indicate that the exit from the effective lower bound appears to be sustainable and risks of a reversion are deemed to be negligible. Based on our modal outlook, we expect those conditions to occur sometime in 2018.

Respondent 7: The low level of the federal funds rate has been necessary to move inflation and unemployment back toward our targets. This is likely because r^* is temporarily depressed by the low rate of productivity growth and other factors. Those factors are likely to dissipate only gradually, requiring a low federal funds rate in order to deliver an appropriate amount of accommodation.

Respondent 8: The neutral rate is currently very low, and I expect it to rise only gradually to a longer-run level that is also quite low by historical standards. In addition, downside risks to activity and inflation make the appropriate policy path lower over the medium term than it would be if risks were balanced.

In response to continued extremely weak readings on productivity growth in recent years, I lowered my estimate of the longer-run level of the federal funds rate by 25 basis points.

Respondent 9: The trajectory of my forecast is similar to my June forecast but I have revised down my estimate of the longer run fed funds rate from 3.25 to 3 percent so my monetary policy path is somewhat flatter than in June.

I project that growth will be slightly above my estimate of the longer run trend. From the standpoint of what monetary policy can do, I believe that the economy is basically at our goal of full employment. I expect the pace of further gains in employment and unemployment to slow. In this scenario, labor compensation measures will firm, in line with anecdotal reports of increasing wage pressures across a range of skill groups and a variety of data showing that wage and compensation gains have picked up. However, these gains will likely be slower than in past expansions reflecting slower growth in productivity. Reasonably stable inflation expectations coupled with continued improvement in labor markets and ongoing economic growth make me reasonably confident that inflation will move back to our goal of 2 percent over the next couple of years.

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. Given the outlook, I believe it will be appropriate for the FOMC to move rates up gradually throughout the forecast horizon, with the federal funds rate at the end of 2019 at its longer-run level, which I now estimate to be 3.00 percent. Forestalling rate increases for too long increases the risks to financial stability and has the potential to require sharper rate increases in the future, which poses its own risks to the outlook.

Respondent 10: In my forecast the unemployment rate will be below its long run level through 2019, and inflation will reach 2.0% in 2018. The fed funds rate will reach its longer run level of 2.5% in 2019.

Respondent 11: Our assumed appropriate policy path has the funds rate increasing 25 bps once in 2016, twice in 2017 and 4 times in 2018 before getting to its long-run neutral rate of 3% in 2019. We also assume the Committee strongly communicates that future rate hikes will depend on increasing confidence in achieving its employment and inflation objectives.

The weak first-half GDP data and some weak August indicators are reminders that the economy still faces substantial headwinds and that the equilibrium real interest rate is still quite low. The current level of the funds rate likely is providing only a modest amount of accommodation. We assume, however, that communication of a state-dependent path for future rates, and the likely shallow nature of this path, can deliver the degree of accommodation necessary to achieve our baseline projections for output and inflation. In addition, we assume policy communication will indicate that we are aiming to achieve our inflation target symmetrically, a strategy which, by definition, calls for a policy path that allows for a significant probability of modestly overshooting 2 percent inflation. Furthermore, risk management considerations continue to argue in favor of low rates in order to provide an extra boost to aggregate demand as a buffer against future downside shocks to activity and the asymmetric risks we see to the inflation forecast. Indeed, the continued low readings on financial market inflation compensation and survey measures of inflation expectations, as well as the possibility of further dollar strengthening, suggest that we should be putting meaningful weight on inflation risks.

Respondent 12: Weak longer-term growth prospects have combined with an expanded world-wide demand for safe assets and a weak and uncertain economic and political outlook abroad to put downward pressure on the neutral real federal funds rate. The implication is that monetary policy is substantially less accommodative at current settings than might have been expected. The global demand for safe assets is likely to remain elevated for quite a while.

Moreover, global financial integration means that financial-market conditions are likely to be quite sensitive to increases in the level of U.S. real short-term rates relative to foreign rates. As long as the foreign economic outlook remains subdued, a shallow path for U.S. rates is likely to be appropriate.

A lower and flatter policy path keeps us closer to the zero bound for longer. Downside risks to the outlook may, therefore, be somewhat larger than usual.

Analyses conducted by my staff and by researchers elsewhere around the Federal Reserve System have convinced me that sluggish productivity growth and aging demographics have had a larger effect on U.S. growth prospects and the longer-run equilibrium real interest rate than I previously believed. Accordingly, I've marked my estimate of the longer-run normal policy rate downward by 25 basis points, from 3.0 to 2.75 percent.

Respondent 13: The labor market is essentially at full employment according to various measures of slack. Labor markets will continue to tighten over the next year—with the unemployment rate falling below its natural rate—before gradually returning to full employment. On inflation, despite some transitory factors affecting recent data, I expect inflation to rise gradually and reach our 2 percent objective in 2018. Underpinning this path is my

view that the economy will continue to improve, causing it to run slightly above its potential. Overshooting in employment and output, paired with fading effects from the dollar appreciation and a drop in oil prices will push inflation up over the next year.

My assessment of appropriate policy is generally informed by looking at simple rules that adjust for the zero lower bound, as well as by my expectations of, and uncertainty about, the costs and benefits of continuing unconventional actions.

My fed funds path through the end of 2016 remains flatter than some simple rules would suggest. This is based on the following: The economy continues to face headwinds in 2016, including weak growth abroad, and lingering effects of the recent appreciation of the dollar. In addition, I have revised down my estimate of the long-term equilibrium real interest rate, incorporating the lessons from recent research on this topic.

Respondent 14: 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, similar to that used in the current Tealbook. I lowered my federal funds rate path taking into account a 25 basis point reduction in the long-run value of the federal funds rate and a judgment that short-term r^* will more gradually rise toward its longer-run value. My judgment is informed by recent movements in long-term real yields and projections that suggest a more muted path for equilibrium rates than I'd assumed in June.

Respondent 15: We think all variables have essentially converged to a regime characterized by low productivity growth and a low real interest rate on short-term government debt.

Respondent 16: My judgment regarding the appropriate path of the federal funds rate is predicated on promoting sustainable economic growth and price stability. My forecast calls for the unemployment rate to be below its longer-run level and inflation to be at two percent in 2017. Yet I view the appropriate level of the federal funds rate to be below my estimate of its longer-run level in 2017. In my view a gradual path of the funds rate promotes economic and financial stability.

I revised down my estimate of the longer-run federal funds rate, to 3.00 percent from 3.75 percent. I now view the factors weighing on the equilibrium real federal funds rate as longer term in nature, rather than being temporary headwinds. In particular, the reluctance of firms to invest.

Respondent 17: It would be unacceptably risky to leave the real funds rate below zero with real activity likely to grow faster than trend, the labor market at full employment, and core inflation reasonably close to our 2 percent objective. I also believe that we should begin reducing the size of our balance sheet in the near future.

Forecast Narratives

4(a). Please describe the key factors shaping your central economic outlook and the uncertainty and risks around that outlook.

Respondent 1: Recent data appear consistent with a solid rebound in economic activity in the second half of this year. The rebound is driven by private consumption expenditures, which are supported by noticeable gains in household income and a high level of household net worth. A buildup in inventories after the sharp drawdown in the first half of the year is also expected to contribute to the pickup in economic activity in the near term. Business investment has been disappointing, but the recent decline in corporate bond spreads should support modest additions to capital going forward. Investment should also benefit from the retrenchment in drilling and mining activity having run most of its course. In all, while not all of the components of demand are showing strength, the pace of GDP growth in the second half of this year is likely to be at least one percent above current estimates of potential GDP growth. Such a pace of growth is consistent with continued improvements in the labor market.

Beyond the near term, with the stance of monetary policy remaining accommodative, we continue to project growth slightly above potential over the forecast horizon. This pace of growth should generate further declines in the unemployment rate. In our baseline forecast, the cyclical improvement in labor force participation, coupled with a gradual removal of policy accommodation, generate some overshooting of full employment, with the unemployment rate reaching 4.2 percent by the end of 2019. Still, the possibility that the unemployment rate will ultimately decline by more than what we are currently envisioning is of particular concern. Past experience suggests that the more the economy overshoots full employment, the higher the likelihood that the economy will fall into a recession as monetary policy tightens. While monetary policy should probe for better labor market outcomes, the potential costs of this strategy should not be ignored. These costs include the risk of growing imbalances in some asset classes, which would then lead to conditions that require an even more rapid increase in interest rates and a more pronounced rise in unemployment. For these reasons, our projected path for the federal funds rate balances the need for probing cautiously with the risk of overheating the economy. This projected path requires rates to increase sooner rather later, given the lags with which monetary policy operates and the fact that the economy is already near our estimate of full capacity. With the unemployment rate projected to fall below its natural level, inflation is expected to reach and then rise marginally above target over the course of the forecast horizon.

We view the risks to the growth outlook as roughly balanced. Downside risks emanating from abroad are still present. The expected tightening of U.S. monetary policy could also entail a stronger dollar than what we are currently envisioning. On the upside, the increase in the pace of growth of final sales to domestic purchasers could signal a stronger-than-expected acceleration in activity. On the inflation side, while we continue to see risks associated with the possibility that long-run inflation expectations are anchored at a level below the 2 percent target, we take the recent progress towards the inflation target as signaling that the risks around the inflation outlook are becoming more balanced.

Respondent 2: My forecast is conditioned on two key assumptions. First, the forces currently restraining economic growth — including slow productivity growth, an elevated exchange rate, weak foreign growth, and restrictive mortgage credit — will abate very slowly over time, thereby causing the real neutral funds rate to remain persistently low. Second, the federal funds rate over the next few years will rise at a pace sufficiently gradual to narrow but not completely close the gap between the real funds rate and the real neutral rate. Under these conditions, real GDP growth outpaces potential (particularly in 2017) by enough to bring the unemployment rate down to 4.5 percent in 2018 and 2019 — two tenths of a percentage point below its longer-run level. In this moderately tight labor market environment, inflation moves up to 2 percent by 2019 under the assumption that inflation expectations are anchored at about 2 percent, and that oil prices and the exchange rate remain roughly unchanged at their current levels.

A key risk to this forecast is that inflation expectations are not anchored at 2 percent; alternatively put, low readings on inflation compensation and the Michigan survey could indicate that the underlying trend in inflation is lower than 2 percent. If so, then bringing inflation back to 2 percent would require an even flatter trajectory for the federal funds rate, both to generate tighter labor markets conditions and to bolster inflation expectations by demonstrating the FOMC's commitment to its inflation goal.

Respondent 3: Secondary measures of labor market slack continue to suggest that further reductions in slack are possible. In addition, inflation continues to run low and it is likely to be several years before it returns to target. The continued low level of inflation, the benefits to the economy of allowing further improvement in the labor market, weakness in foreign economies, and potential risks to the US economy from international policy divergence all suggest a gradual approach to normalizing the stance of monetary policy.

Respondent 4: My baseline expectations have slipped just a bit from June, which in turn had slipped a bit from March. While economic performance in the second half of this year has surely – as expected – improved on the first half, it may not be improving by as much as was expected three months ago. Indeed there are at least some signs that momentum may be slowing a bit more. So there is some increase in domestic downside risks, though not a particularly large one. Externally, the risk of sharp downside market movements has abated since June but – against the backdrop of expectations for improved overall foreign economic performance in the coming year, I find the risks to that projection to be weighted to the downside. China, in particular, poses such risks.

Respondent 5: I expect that output growth will accelerate from the below-trend pace over the last few quarters as the headwinds that have been depressing growth recede. Over the medium term, output grows at close to my longer-run trend pace of 2 percent. I expect that labor markets will continue to strengthen and that the unemployment rate will continue to edge down as the labor force participation rate declines further. Headline inflation has been held down by falling energy prices, but as oil prices stabilize and dollar appreciation wanes, inflation will rise and run at a pace close to the Committee's 2 percent target by the end of 2017. With inflation and output growth running near my longer-term trends, and the unemployment rate moving below my estimate of the natural rate, monetary policy becomes less accommodative over the forecast horizon, and the federal funds rate reaches 2.9 percent by the end of 2018 and slightly overshoots my longer-run funds rate of 3 percent in 2019.

Respondent 6: We expect real GDP growth to rebound to around 2 3/4% (annual rate) over 2016H2, resulting in a Q4/Q4 growth rate of around 2%, slightly below the projections in the June SEP submission. Consumer spending is expected to continue to be the main engine of growth, increasing 2 3/4% (annual rate) over 2016H2, a slightly slower pace than over 2016H1. The personal saving rate is expected to remain around its recent level of 5 3/4%. Business fixed investment is expected to provide a positive growth contribution, largely due to the end of the decline in oil and gas drilling activity, although we have lowered the growth contribution from this sector due to the continued weakness in equipment investment. Similarly, we have reduced our projection for residential investment growth due to the downturn in value added per completed unit. The net export growth contribution over 2016H2 is expected to be less negative than expected at the time of the June SEP submission. In addition, due to the steep decline of inventory investment in Q2, we now expect inventory investment to provide a positive growth contribution over 2016H2.

After declining in the past three quarters, we expect productivity growth to rebound over the 2016H2, which should keep monthly payroll gains below 200,000 (on average) over the remaining months of the year. Nonetheless, payroll growth is expected to be sufficient to reduce the unemployment rate to 4.8% for Q4 even with some movement upward in both the average work week and the participation rate. Core PCE deflator inflation is expected to average around 1 1/2% (annual rate) over 2016H2, similar to that projected in the June SEP submission.

Our real GDP growth forecast for 2017 has been raised to 1.9%, somewhat above our estimate of the economy's potential growth rate. Growth of consumer spending is projected to decrease from 3% in 2016 to around 2 1/4%, led by a continuation of the slowing of growth of durable goods spending and a reduction in the rate of growth of real disposable income. Growth of real residential investment also slows in response to higher interest rates. However, business investment spending is expected to be somewhat firmer, but still would not be regarded as robust. The trade drag is larger than in 2016 reflecting stronger growth of imports due to the dollar appreciation of the past few years and the normalization of domestic inventory-sales ratios.

With growth remaining above potential in 2017, the unemployment rate is expected to decline to 4.7% by the end of the year. Productivity growth is assumed to pick up from the 2016 pace but still be below its long-term trend of 1 1/4%. The compensation share of national income continues to rise gradually while the corporate profit share declines. Total PCE deflator inflation is expected to move higher, reaching 1.9% for 2017 (Q4/Q4), reflecting reduced slack, a declining impulse from past dollar appreciation, anchored expectations, and accommodative policy.

For 2018, we expect real GDP growth to slow slightly to its potential rate with the unemployment rate remaining at 4.7%. This slowing of growth is due to a combination of the aging of the business cycle and some tightening

of financial conditions associated with further removal of monetary accommodation. Reflecting the fact that the unemployment rate is at our estimate of NAIRU in 2017, and nonpetroleum import prices are projected to increase, total PCE inflation moves upward to 2% (Q4/Q4). For 2019—with economic slack largely dissipated, inflation at objective by the end of 2018, and the policy rate rising to near its longer-run normal level—real growth, unemployment, and inflation are anticipated to be at their longer-run levels.

Respondent 7: Continued uncertainty about the rate of productivity growth.

Respondent 8: N/A

Respondent 9: The fundamentals supporting the expansion remain favorable, including highly accommodative monetary policy, household balance sheets that have improved greatly since the recession, continued improvement in labor markets, and low oil prices. Consistent with the data, business contacts report further tightening in labor markets, more widespread difficulties in finding qualified workers, and some increased wage pressures across a range of skill groups and occupations. While global growth prospects remain subdued, monetary policy globally is highly accommodative, which should promote stronger growth and higher inflation rates abroad. After a weak start to the year, I expect U.S. growth to strengthen over the second half of the year, to a pace that is at or slightly above trend next year, which will support further improvement in labor markets. With the labor market already at full employment, I expect a slowing in the pace of labor market gains compared to last year. I project that the economy will be near its steady state by 2019.

Inflation rates have moved up from their year-ago levels as the effects of past declines in oil prices and appreciation of the dollar have faded. This path is consistent with what the FOMC has been expecting. I continue to monitor inflation expectations, but I judge inflation expectations as reasonably well-anchored. If this continues, then continued output growth and improvement in labor markets, and stabilizing oil prices and the dollar, are consistent with inflation moving back to the 2 percent longer-run objective over the next couple of years. Anecdotal information and the official statistics indicate there has been some acceleration in wages and compensation; I expect some further acceleration as the expansion continues and labor markets continue to improve. However, wage increases are likely to be lower than in earlier expansions due to lower productivity growth.

I view overall uncertainty as roughly comparable to 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.

Respondent 10: Global growth gradually moves up from its current anemic pace. U.S. GDP growth continues at close to 2%. Business investment gradually increases but the legacy of weak investment means that productivity moves up more slowly than in the Teal Book forecast. Job growth continues at a decent pace, unemployment declines, LFPR performs better than the baseline, wages increase, and inflation returns to 2.0% by 2018.

Respondent 11: Accommodative monetary policy, stable financial conditions, a healthy labor market, and improved household and business balance sheets should allow for solid consumer-led growth in domestic private demand. In addition, we assume little change in the dollar going forward, and so project that the drag from net exports will wane as we move through the projection period.

The factors supporting activity are sufficient to generate growth moderately above potential over the next three years. We assume that resource gaps will be closed by early 2018; although the unemployment rate today is only slightly above our estimate of the current natural rate, we think it will take a bit longer to close the gaps we still see remaining in some other labor market indicators. We assume growth will be strong enough to push the unemployment rate down to 4.3 percent by the end of the projection period, about a quarter percentage point below our estimate of the natural rate that we expect to prevail at that time.

As it has for some time, our forecast for rising inflation relies on reductions in resource slack (and eventually overshooting), stabilization of the dollar, some upward movement in energy prices, and a lift from the inflation attractor as it rises back to 2 percent. All but the latter seem to be in train now. We assume that a quite shallow path for policy normalization and a strongly communicated commitment to a symmetric 2 percent inflation target will solidify inflation expectations and allow them to assert an upward pull on actual inflation. If this does not occur, then we do not see the upward force from other factors as being adequate to bring inflation close to target over the forecast period.

As to sources of uncertainty, international developments, their influence on financial markets, and the spillovers to household and business confidence are likely to cloud the forecast for growth for some time to come. So, too, is the degree to which business caution may hold back investment spending and hiring. With regard to inflation, the linkages among Fed policy (including communications), inflation expectations, and actual inflation are key uncertainties. Risks to the forecasts were discussed in the risks and uncertainty section.

Respondent 12: My projections envision the U.S. economy making a successful transition to sustainable growth. Such transitions have always been difficult, and given greater international connectedness, divergent and uncertain global economic trends promise to make the current transition more than usually challenging for Federal Reserve policymakers.

Because of the lags in inflation's response to the real economy, and in the response of the real economy to monetary policy, it is essential that the process of removing policy accommodation begin before full employment and price stability are fully achieved. The main difficulty will be accurately assessing the degree of accommodation implied by a given funds-rate path.

Respondent 13: Recovery from the housing collapse and financial crisis has been a slow process. Nonetheless, most of the healing process has already taken place with improved financial conditions supportive of a healthy pace of consumer spending growth. Strength in the labor market hiring, a pick up in wage and disposable income growth, and household wealth gains should also support solid consumption growth going forward.

The strong relative performance of the U.S. economy over the past year, the subsequent monetary easing in Europe and elsewhere, and the depreciation of the renminbi resulted in a sharp appreciation of the dollar last year. This appreciation has been a drag on net exports and GDP growth. In recent months, the dollar has stabilized, eliminating that source of drag to GDP growth going forward. In addition, financial market volatility over the past year has calmed with equity prices rising on balance in recent months and interest rate spreads falling.

In this environment, I expect the economic recovery to proceed at a moderate pace. Output and unemployment gaps were essentially closed by the end of 2015. With substantial monetary stimulus still at play, I expect these aggregate indicators to overshoot in the coming year, before reverting back to potential in 2019. This overshooting, along with the dissipating effects from falling energy prices and a rising dollar should lead to faster inflation over the next year. Inflation reaches our 2 percent target in the first quarter of 2018.

Respondent 14: My outlook consists of above-trend growth over the next few years, a further, modest reduction of labor market slack, and inflation that converges to target by the end of next year.

Growth over the medium term is primarily driven by a sustained pace of consumption growth and a strengthening in investment growth. This growth of domestic demand is supported by continued firming in the labor market and growth of household incomes.

I view the risks to my growth outlook as roughly balanced. My staff presented survey evidence suggesting uncertainty over the upcoming election has been weighing on business investment and hiring decisions. Once lifted, investment spending could grow at a faster rate than I currently expect. On the other hand, the modest acceleration in productivity growth that I am projecting could fail to materialize.

The risks to my inflation outlook are also mostly balanced. While I view inflation expectations as anchored at policy-consistent levels, persistent, below-target inflation readings risk anchoring expectations to the downside. On the other hand, some measures of wage growth are accelerating in spite of weak productivity growth, a signal that we could be approaching full employment more quickly than I expect.

Respondent 15: Our forecast continues to be based on a regime-based conception of medium and long-term outcomes for the U.S. economy. In our conception, there are multiple regimes and we appear to have converged to one of them. The current regime is viewed as persistent, and so we see no reason to forecast an exit from the current regime over the forecast horizon. Monetary policy is regime-dependent, and can be viewed as optimal given the current regime. Longer term, the economy may visit some of the other regimes, such as ones associated with 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 rate would require adjustment. However, we have no way of predicting when these transitions may occur, and so we forecast that we will remain in the current regime over the forecast horizon.

Respondent 16: My forecast for real GDP growth is characterized by trend growth in the period from 2017 to 2019. Real GDP growth is supported by income growth from rising employment and wages, past gains in household wealth, and accommodative financing conditions. After the rapid reductions in economic slack in the past few years, I view the economy as currently operating near full capacity. Hence, I expect the unemployment rate to move only somewhat lower next year, before gradually moving back toward its longer-run rate in 2019. My inflation outlook projects an inflation rate near 2 percent from 2017 onwards, an increase from the inflation rate in 2016 that reflects tightening labor market conditions and the dissipating effects of past dollar appreciation and lower energy prices.

I view uncertainty surrounding my projection of the PCE inflation rate as higher than levels of uncertainty over the past 20 years, reflecting the volatility in oil prices in recent years. The risks to economic growth, inflation, and unemployment appear broadly balanced. In particular, the foreign outlook appears to have stabilized relative to earlier in the year, as the volatility stemming from Brexit has dissipated and growth in China has stabilized.

Respondent 17: Productivity growth has averaged below 1 percent for a considerable period, and employment growth of just 1/2 percent per year would be sufficient to maintain constant employment-to-population ratios. These supply factors suggest longer run growth of about 1 3/4 percent, assuming some improvement in productivity growth. My projection for GDP growth this year is slightly higher, reflecting mainly solid consumer spending growth.

Forecast Narratives (continued)

4(b). Please describe the key factors causing your forecasts to change since the previous SEP.

Respondent 1: There have been only minor changes to the real outlook. The unemployment rate is now expected to fall by less this year than in the June forecast, but in the out years the projected path is unchanged. The inflation outlook has not changed materially. The forecast is conditioned on a slightly lower path for the federal funds rate in the near and medium term, to reflect the fact that our estimate of the equilibrium federal funds rate over the forecast horizon lies somewhat below our longer-run estimate.

Respondent 2: Relative to the June SEP, I have lowered my estimate of the longer-run value of R^* to 0.75 percent, in part reflecting a slight downward revision to my assumptions for longer-run productivity growth. In addition, I have assumed a flatter trajectory for the path of the neutral funds rate over the next several years, reflecting more pessimistic assumptions about the speed at which various headwinds still restraining the economy will fade over time.

Respondent 3: Incoming data caused me to mark down GDP growth in 2016 and overall PCE inflation has run a bit lower than I expected. The recent upticks in the labor force participation rate are an encouraging sign that workers will continue to be drawn back into the workforce, but at a slightly lower rate.

Respondent 4: See answer to 4(1)

Respondent 5: Based on a reassessment of the data, I have lowered my longer-run projection for real GDP growth to 2 percent and my longer-run projection for the federal funds rate to 3 percent.

Respondent 6: Our macroeconomic projections have changed only modestly from those in June. Real GDP growth is anticipated to be slightly lower in 2016 and modestly higher in 2017 than the June SEP projections. The lower projection for 2016 is largely the result of the weaker-than-expected growth in 2016H1, while the reasons for the upgrade to 2017 are discussed in our forecast narrative (Question 4(a)). The stronger projected growth in 2017 also led us to lower our unemployment projections for 2017 and 2018. Overall and core inflation forecasts have not changed substantially from those in June: the convergence of inflation to the longer-term objective is expected by 2018. As noted and explained in the response to 3(b), we judge that a lower path of the policy rate is necessary to support these projections.

Respondent 7: N/A

Respondent 8: N/A

Respondent 9: My modal forecast is little changed since June, but the funds rate path consistent with this outlook is shallower because I have revised down my estimate of the equilibrium long-run interest rate. I continue to view the risks around my forecast as broadly balanced.

I modestly reduced my forecast for growth and PCE inflation in 2016 to account for the weak first half of the year, but the trajectory remains the same: I expect growth will pick up over the second half of the year and be at or slightly above trend next year, which will support continued growth in payrolls, albeit at a slower pace than last year. I view inflation as being on a gradual upward trajectory toward our 2 percent objective.

I continue to view a gradual upward path for the federal funds rate as appropriate monetary policy, which balances the risks to the forecast and takes into account uncertainty around the forecast. My slightly shallower path compared with my June projection reflects the slightly weaker growth forecast for 2016-2017 and the estimate of a lower long-run equilibrium interest rate compared to June.

Respondent 10: Labor market improvement is showing up more in LFPR than in unemployment. I now expect that will continue, with unemployment declining slower than my prior forecast (but at least as fast as the baseline), but LFPR outperforming baseline. I now see one rate increase in 2016 and two increases in 2017.

Respondent 11: Second-quarter growth was a percentage point weaker than we were expecting in June. We were particularly surprised by the further decline in business capital spending. We assume that the first-half weakness will largely be transitory; indeed, we see the third-quarter data as consistent with strong consumer spending and a moderate gain in BFI.

The incoming data on core PCE inflation were broadly in line with our expectations. However, financial market inflation compensation and survey measures of inflation expectations remain very low, highlighting the downside risks to the inflation outlook.

We reduced our assumptions for long-run growth and the equilibrium funds rates by a quarter percent and have one fewer rate increase in 2017 than we did in June. With this policy path, we expect core and total inflation to reach 1.9 percent by the end of the projection period, slightly later than we did in June.

Respondent 12: I've lowered my estimate of the economy's longer-run growth potential by a few tenths of a percentage point and adjusted my GDP growth projections for coming years downward accordingly. The net effect is to leave my unemployment projections unchanged from June. Reflecting downward revisions to official data and weakness in recent reports, I've lowered my inflation projections over the near term. As discussed above, in my response to 3(b), I've become convinced that demographic changes and weaker prospective productivity growth have had a significant impact on the longer-run equilibrium fed funds rate. As a result, the funds-rate path that I regard as most likely to be appropriate is lower than before.

Respondent 13: Since June, I have increased my unemployment path, largely reflecting incoming data. I now expect the unemployment rate to bottom out at 4.6 percent by the first quarter of next year before gradually rising back to its 5 percent natural rate over subsequent years. Despite strong consumer spending and a positive contribution from net exports, continuing weakness in business investment spending and construction activity led me to lower my projection of GDP growth for 2016.

My inflation projection is slightly lower owing mainly to lower than expected energy prices for the current year. With less overshooting in output and employment, I now expect inflation to reach our 2 percent target in 2018 and to remain there afterwards. As a result, my projection of core inflation is one-tenth lower for both 2016 and 2018.

Respondent 14: In response to weaker first half growth than I had expected in June, I lowered my current year projection by 0.2 percentage points. However, given that the shortfall was largely due to a downswing in inventories and final demand measures of economic growth remained reasonably solid, I am taking little signal from first half growth.

Progress on the unemployment rate has slowed over the course of this year, as the labor force participation rate (LFPR) has moved modestly higher. I've taken on board a slightly higher path for the LFPR and have marked up my forecast for the unemployment rate accordingly.

Respondent 15: We have made minor changes to our 2016 projections for GDP growth and PCE inflation based on data for the first half of 2016.

Respondent 16: I have revised down my forecasts for real GDP growth, PCE inflation, and core PCE inflation in the first half of 2016 based on the incoming data. In addition, I have lowered my medium-term projection of real GDP growth, from slightly above-trend growth to growth at its longer-run trend rate.

Respondent 17: I have lowered my near-term inflation forecast in response to somewhat soft data this summer.

Forecast Narratives (continued)

4(c). Please describe any important differences between your current economic forecast and the Tealbook.

Respondent 1: The Tealbook's estimate of the natural rate of unemployment, at 5.0 percent, is higher than our estimate, which stands at 4.7 percent. The Tealbook forecast implies a more pronounced overshooting of full employment than our forecast.

Respondent 2: Implicitly, the Tealbook assumes a faster recovery in the neutral federal funds rate over the next few years. In addition, the Tealbook assumes that the underlying trend in inflation is below 2 percent, which implies that they need a more pronounced undershoot of the unemployment rate relative to its longer-run level to bring inflation back to 2 percent. Lastly, I assume that the longer-run level of the unemployment rate is somewhat lower than in the Tealbook.

Respondent 3: My forecast for economic activity and inflation is broadly similar to the Tealbook except that I believe the improving labor market will continue to draw workers back into the labor force, leading to more progress on the labor force participation rate than the unemployment rate. This would lead to less upward movement for wages and prices if monetary policy were to follow the path assumed in the Tealbook. Removing monetary policy more gradually, as in my projection, would produce a path for inflation similar to the Tealbook.

Respondent 4: I continue to differ with the Tealbook on 2017 GDP projections, since I do not anticipate a significant pickup in growth. I should add that, although it does not reflect a difference on the forecast as such, I do differ in a non-trivial way with the Tealbook assumption that the natural rate of unemployment is 5 percent.

Respondent 5: N/A

Respondent 6: As in the June SEP, there are some notable differences between the Tealbook forecast and our projections for the key SEP variables. In part, these differences reflect divergences in some of the underlying assumptions in the two forecasts.

The two forecasts for real GDP growth in 2016 are similar, but the Tealbook projects faster growth in 2017 and 2018 than in our outlook. Furthermore, based on its assessment of potential GDP growth, which is below our assumption in 2016-18, the Tealbook path of real GDP leads to a notably positive output gap in 2017-19. Even though we do not calculate precise estimates of the output gap, our assessment is that there is not a significantly positive output gap at that time.

A major component behind the differences between the real GDP growth projections is consumption. The Tealbook forecast has higher real PCE growth in 2017 – 19 than in our projection, a long-standing difference between the two forecasts, which likely reflects a stronger wealth effects in the Tealbook forecast.

Another notable difference is the underlying assumptions on the longer-run natural rate of unemployment: the Tealbook assumption of 5.0% is above our assumption of 4.8%. Combined with our growth projections, we anticipate that unemployment will be fairly close to its natural rate over the projection period; in contrast, the Tealbook projects that unemployment significantly undershoots the longer-run natural rate. This pattern is a counterpart of the positive output gap that arises in the Tealbook forecast that does not arise in our projections.

One other difference in the labor market projections concerns the paths for labor force participation: in our projection the participation rate is roughly flat through 2018 at 62.8% while in the Tealbook it declines gradually to 62.2% at end-2018. This difference reflects our assumption of some positive cyclical effects on participation.

For inflation, the two forecasts continue to differ on how quickly inflation reaches the 2% objective. In our projection inflation is at 2% in 2018 whereas the Tealbook projects inflation below 2% until 2020, despite a sizable undershooting of unemployment in its projection. The considerable persistence of inflation within the Tealbook framework appears to require a prolonged period of above-potential growth in order to induce inflation to rise toward the longer-run inflation goal. In our forecast, the faster return of inflation to its goal reflects our assumptions of less inflation persistence and a stronger attraction provided by anchored inflation expectations.

In terms of the uncertainty and risk assessment, we see a few differences between the two projections. On the real side, we continue to see higher uncertainty than normal in the projections of real activity and unemployment,

whereas the Tealbook sees uncertainty at near normal levels. This assessment reflects our view that the unusual nature of the current expansion, the conflicting signals in recent economic data, and the atypical policy environment in the U.S. and abroad keep uncertainty about real activity above the SEP standard. However, we now see the risks to real growth as roughly balanced, especially over the near term, which is in contrast to the Tealbook's assessment of a downside skew to the risks. As for inflation, our uncertainty assessment is broadly similar to that in the Tealbook, but we see risks to inflation as broadly balanced.

Finally, our monetary policy path is aligned with the Tealbook projection for the rest of this year, but is significantly shallower than the Tealbook path for 2017-19. As discussed earlier in our submission, we believe that a very gradual removal of accommodation is necessary to support our projections and to address risk-management considerations. In addition, our assumption for the longer-run normal policy rate is 25bps below that of the Tealbook, as we take a somewhat stronger signal from the persistently low sovereign yields across the advanced economies.

Respondent 7: I am more optimistic about the current state and the growth potential of the U.S. economy than the Tealbook.

Respondent 8: N/A

Respondent 9: As in the Tealbook, I expect that the economy will grow at a moderate pace, the labor market will continue to improve, and inflation will gradually return to our 2 percent longer-term objective. My outlook for the real economy is generally similar to Tealbook's forecast, but I see somewhat greater inflationary pressures than in the Tealbook, with inflation returning to 2 percent over the next couple of years compared with 2020 in the Tealbook. As a result, I believe it will be appropriate to have a somewhat steeper path for the federal funds rate compared with the Tealbook, which limits the extent to which the unemployment rate undershoots its longer-run value.

Respondent 10: N/A

Respondent 11: Our Federal Funds rate path is 25-50 bps below the Tealbook over the forecast period, ending 2019 at 3%, which we view as its equilibrium level. We assume that these more moderate increases in policy rates will keep the dollar from increasing, as it does in the Tealbook. Relative to the Tealbook, we also see more slack in the economy; we assume the natural rate of unemployment trends down from 4.7 percent today to 4.5 percent at the end of 2019, in contrast to the Tealbook's constant 5 percent assumption. We also think that the current gap between actual and trend labor force participation is somewhat larger and that it will not close until the unemployment rate is modestly below its natural rate.

Thus even though we have slightly faster growth, on net, over the forecast period, we do not expect output to overshoot potential output to as great of a degree as in the Tealbook. Nonetheless, our outlook for inflation is very similar to the Tealbook, as we feel our more accommodative path for monetary policy will be successful at buoying inflationary expectations, firming the inflationary attractor and therefore providing a larger boost to actual inflation.

Respondent 12: There are several notable differences. First, I see the unemployment rate overshooting the longer-run sustainable unemployment rate by less than is projected in the Tealbook. Allowing the larger overshoot predicted by the Tealbook would risk the buildup of dangerous real and financial imbalances and an early or severe recession. Second, because I am relatively conservative in my views on the appropriate path for the unemployment rate, I project somewhat slower 2017 and 2018 GDP growth than does the Tealbook. Finally, I see a more rapid return to our 2-percent inflation objective than does the Tealbook. In my view, the longer-term inflation expectations relevant to wage and price setting remain anchored at 2 percent.

Respondent 13: The Tealbook projects a more substantial and protracted overshooting of full employment, with the unemployment rate declining to 4.2 percent at the end of 2019, and with inflation returning to the 2 percent target only very gradually. In my projection, there is a modest overshooting of unemployment and output through 2018, and those gaps close in 2019. I see the unemployment rate bottoming out at 4.6 percent in the first half of 2016. The gradual removal of policy accommodation tightens financial conditions over time and slows growth to

below potential in 2017 and 2018, respectively. This pushes up the unemployment rate to 4.9 percent by the end of 2018. Finally, the persistent overshoot of full employment, combined with firmer price pressures, pushes inflation back to 2 percent by the first quarter of 2018.

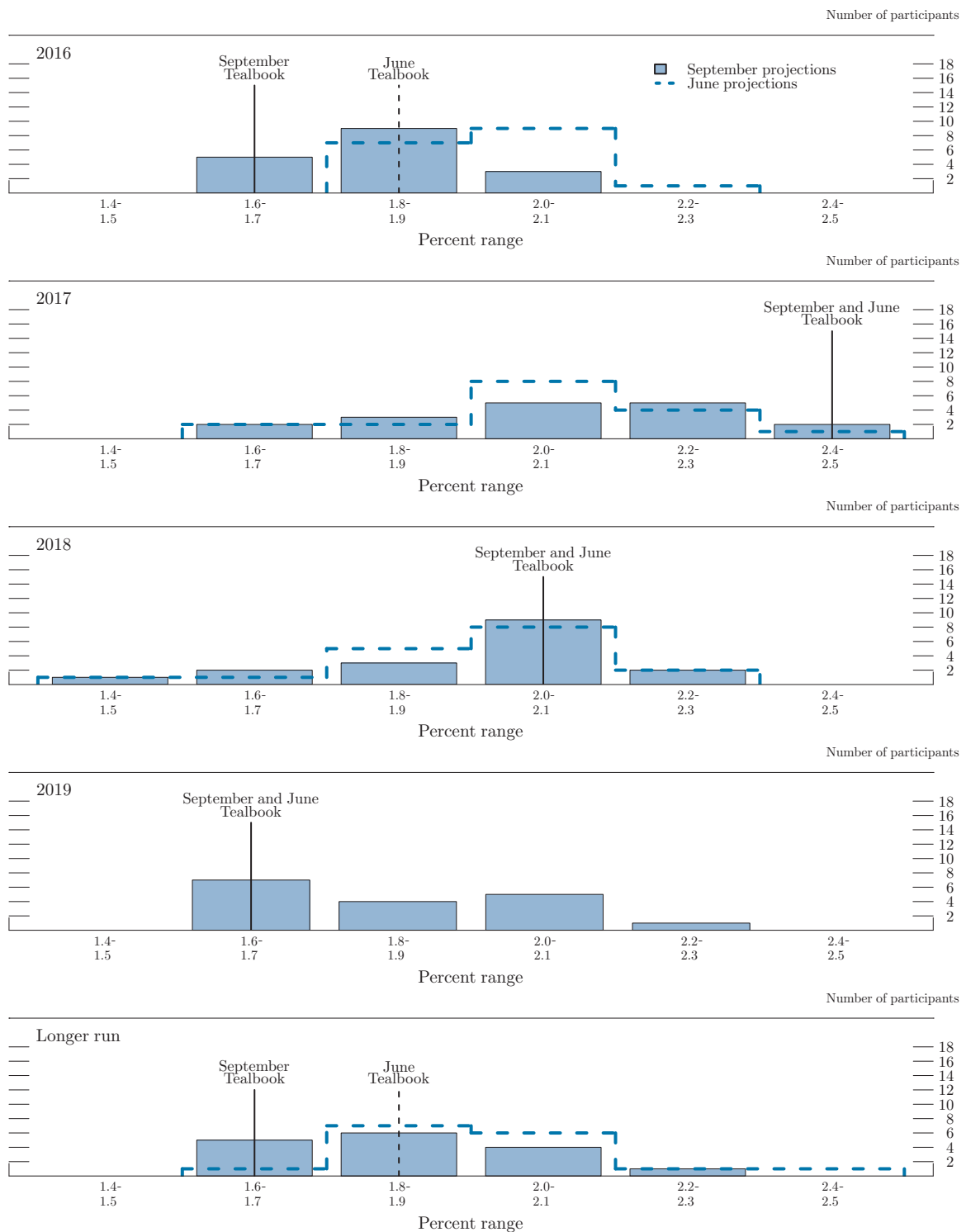
Respondent 14: I have marked in a slightly higher long-run growth trend owing to a somewhat stronger productivity assumption. My projection of a level unemployment rate results from a more modest employment growth trend. I have a faster acceleration in inflation to its longer-term target and I am assuming that inflation expectations are currently anchored at policy-consistent levels.

Respondent 15: The Tealbook forecast is in many ways similar to our forecast, but incorporates 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 toward the longer-run steady state. This tends to imply an upward-sloping policy rate path. The regime conception we use, 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 those regimes cannot be forecasted. This suggests a flat path for the policy rate over the forecast horizon.

Respondent 16: My projected path for real GDP growth in 2017 and 2018 is lower and my projected path for the unemployment rate is flatter than in Tealbook, as I expect to see less momentum once the economy operates at full capacity. My forecasts for PCE inflation and core PCE inflation in the period 2017-2019 are a few tenths of a percentage point above Tealbook's forecasts, with the difference narrowing over time. With inflation expectations well anchored, I view inflation as less inertial than Tealbook, and therefore expect the effects of past dollar appreciation and oil price declines to wane sooner than in the Tealbook projections.

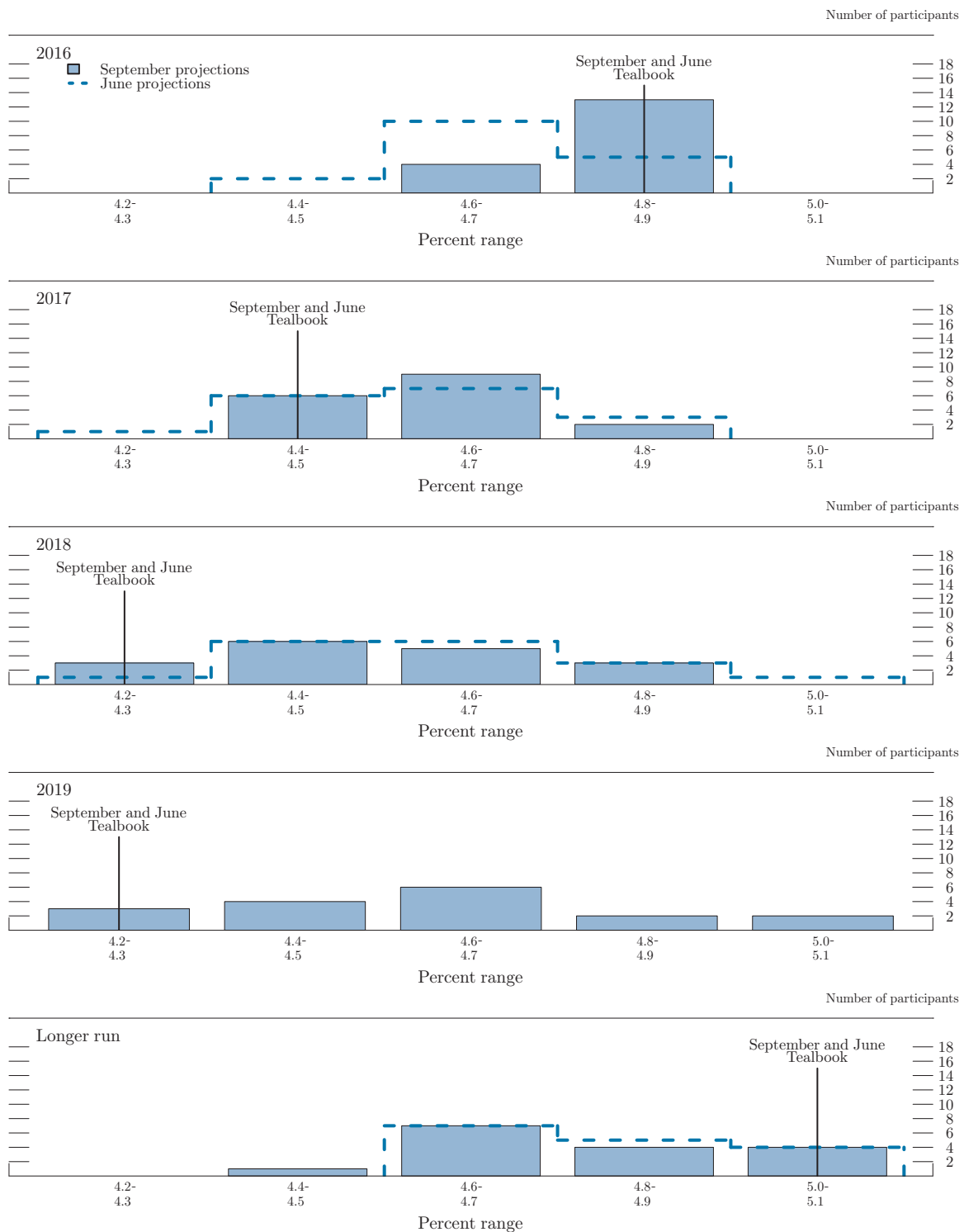
Respondent 17: I expect inflation to converge to 2 percent more rapidly than the Tealbook. I also expect real growth in 2017 and 2018 to be at trend.

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2016–19 and over the longer run



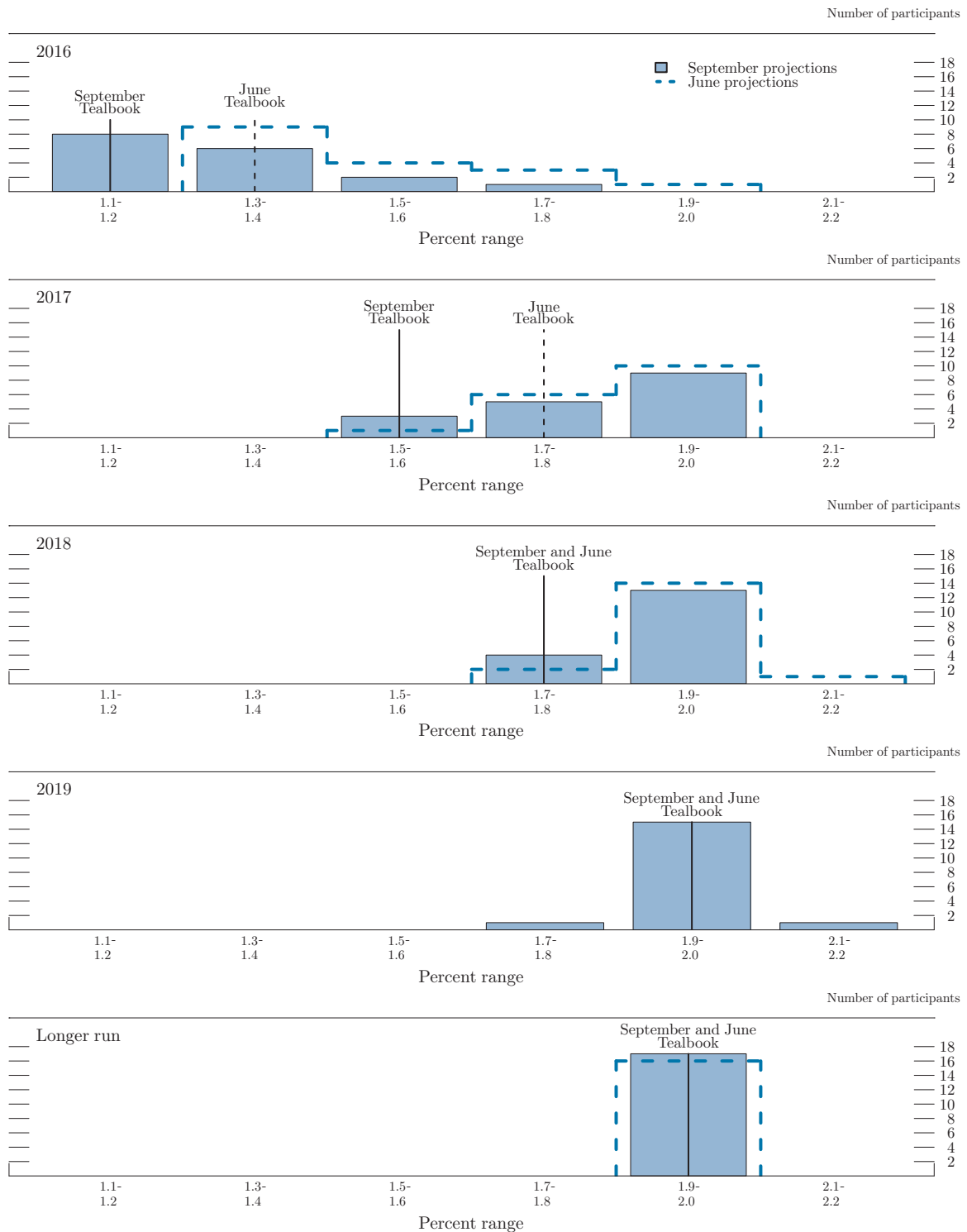
NOTE: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2016–19 and over the longer run



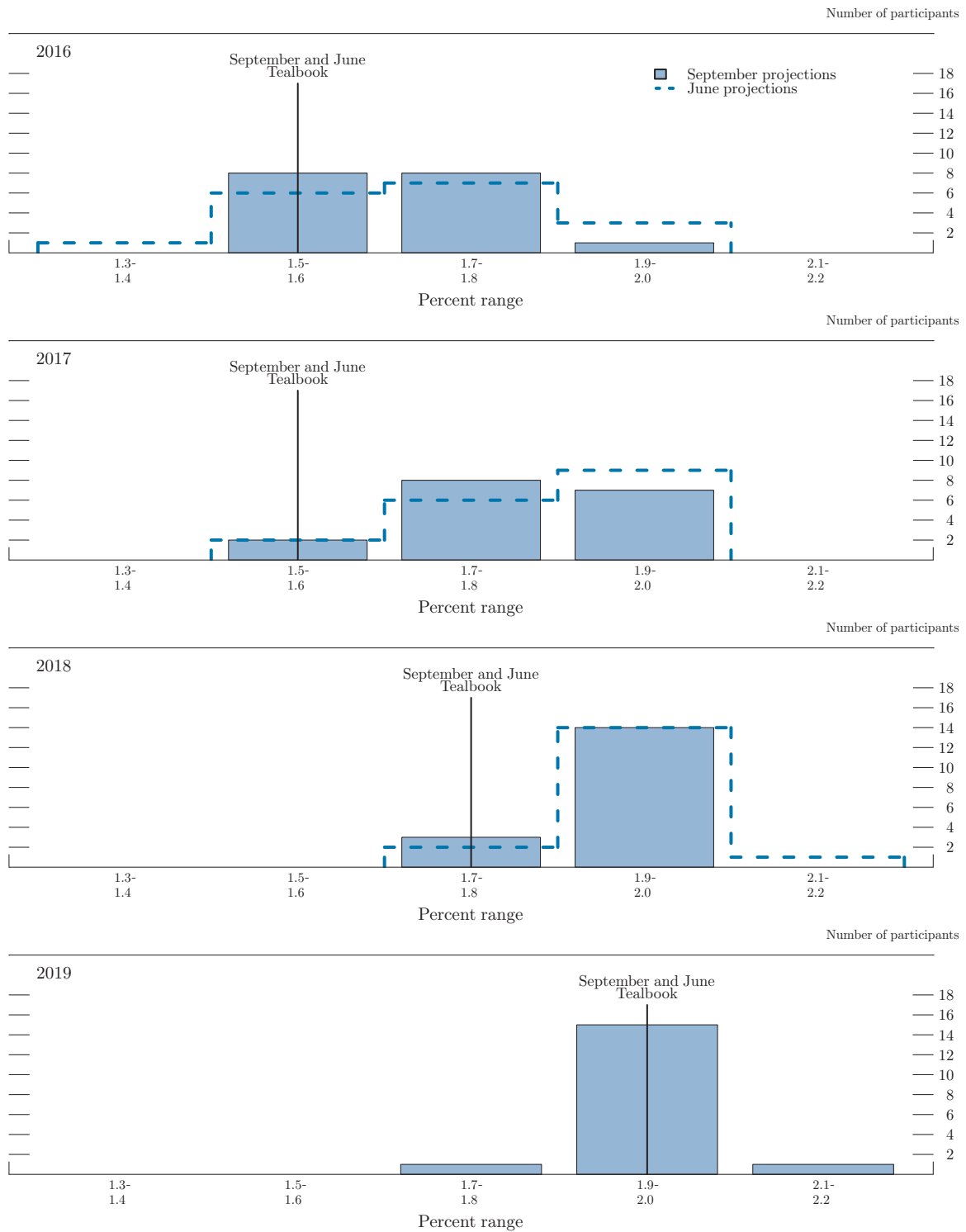
NOTE: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2016–19 and over the longer run



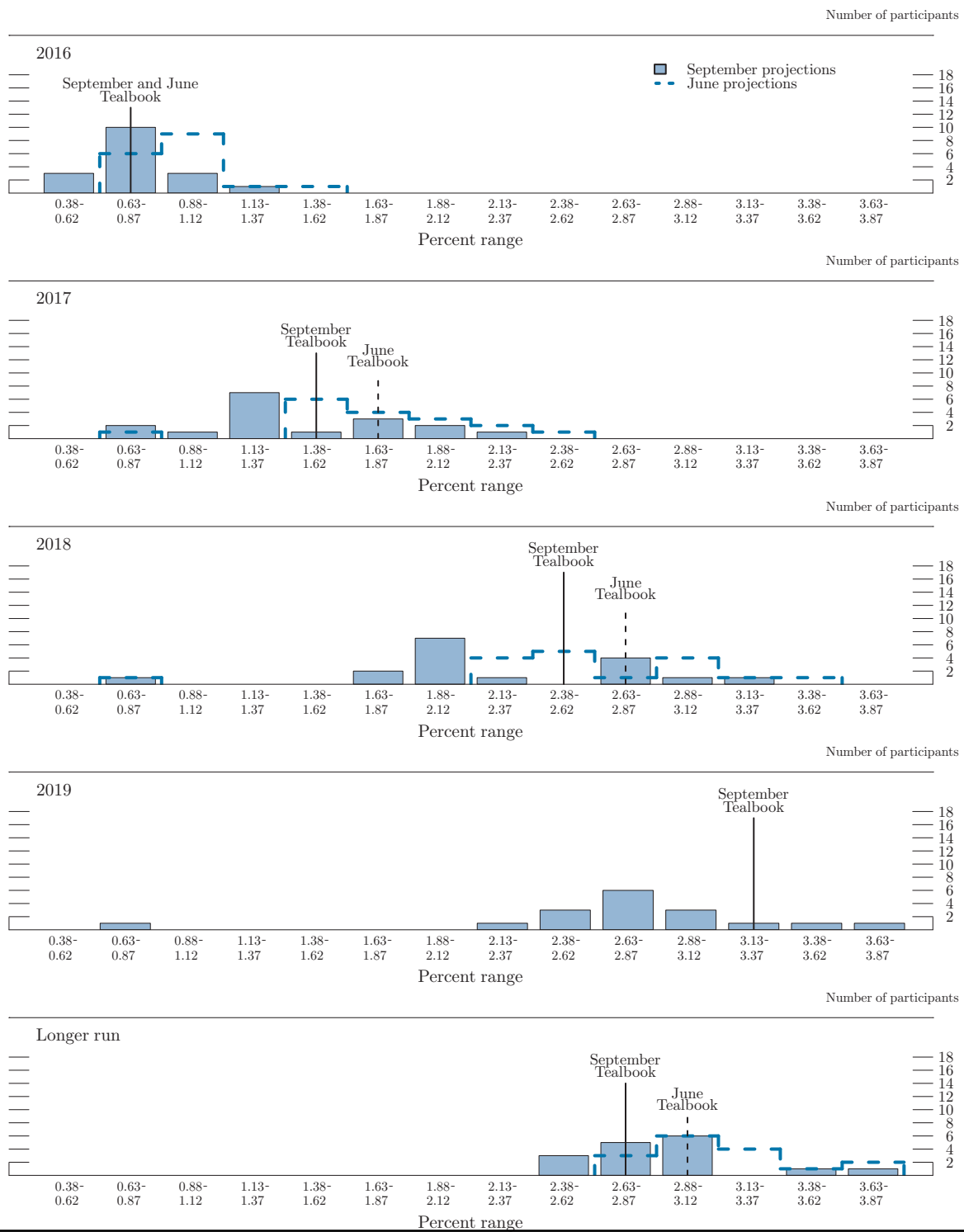
NOTE: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2016–19



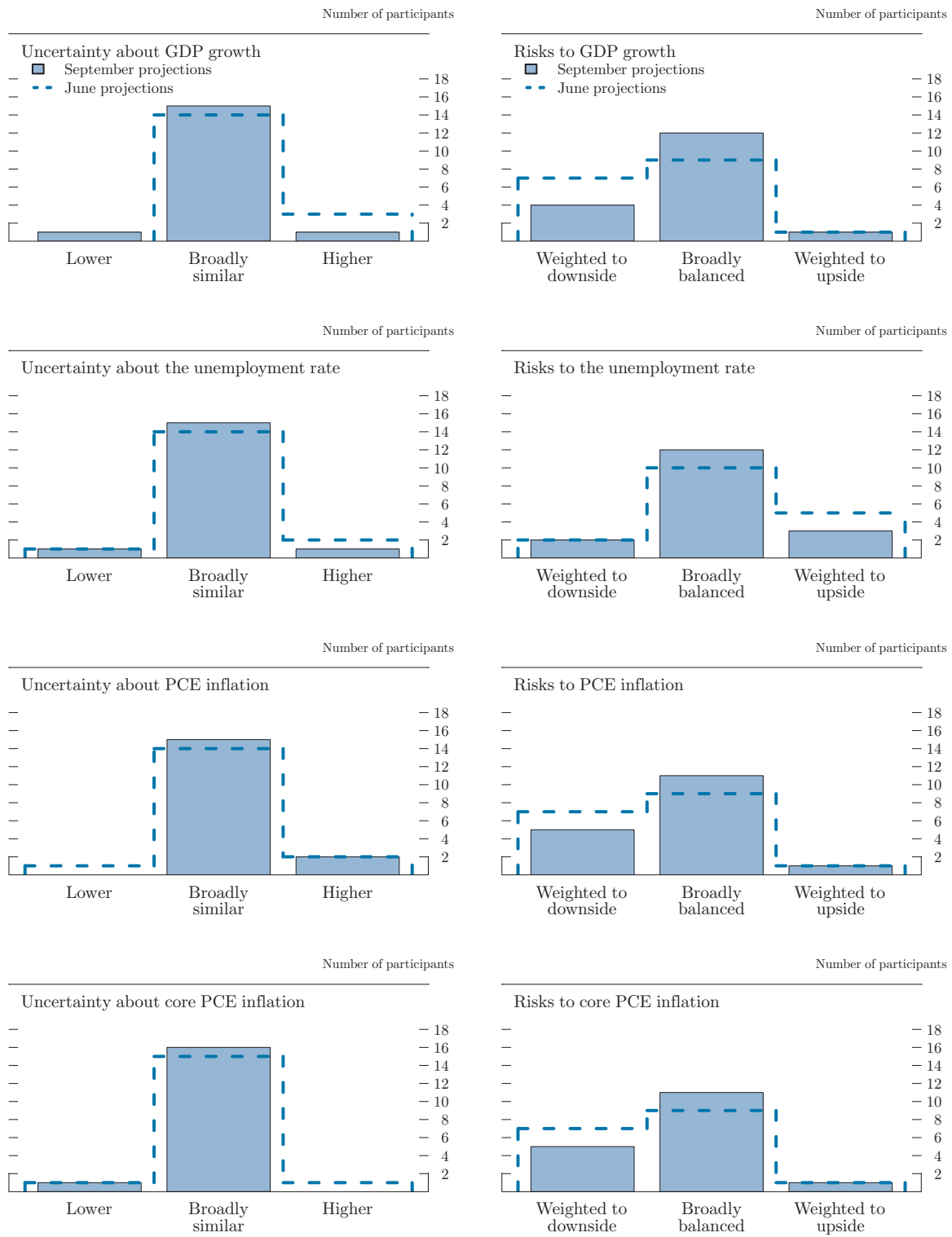
NOTE: Definitions of variables and other explanations are in the notes to table 1.

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, 2016–19 and over the longer run



NOTE: The midpoints of the target ranges for the federal funds rate and the target levels for the federal funds rate are measured 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 in conjunction with the June 14–15, 2016, meeting. One participant did not submit longer-run projections for the federal funds rate in conjunction with the September 20–21, 2016, meeting.

Figure 4. Uncertainty and risks in economic projections



NOTE: Definitions of variables are in the notes to table 1.