Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assumptions of projected appropriate monetary policy, September 2020

Percent

Variable	Median[1]					Central Tendency[2]					Range[3]				
	2020	2021	2022	2023	Longer run	2020	2021	2022	2023	Longer run	2020	2021	2022	2023	Longer run
Change in real GDP	-3.7	4.0	3.0	2.5	1.9	-4.0–-3.0	3.6–4.7	2.5–3.3	2.4–3.0	1.7–2.0	-5.5–1.0	0.0–5.5	2.0–4.5	2.0–4.0	1.6–2.2
June projection	-6.5	5.0	3.5		1.8	-7.6–-5.5	4.5–6.0	3.0–4.5		1.7–2.0	-10.0–-4.2	-1.0–7.0	2.0–6.0		1.6–2.2
Unemployment rate	7.6	5.5	4.6	4.0	4.1	7.0–8.0	5.0–6.2	4.0–5.0	3.5–4.4	3.9–4.3	6.5–8.0	4.0–8.0	3.5–7.5	3.5–6.0	3.5–4.7
June projection	9.3	6.5	5.5		4.1	9.0–10.0	5.9–7.5	4.8–6.1		4.0–4.3	7.0–14.0	4.5–12.0	4.0–8.0		3.5–4.7
PCE inflation	1.2	1.7	1.8	2.0	2.0	1.1–1.3	1.6–1.9	1.7–1.9	1.9–2.0	2.0	1.0–1.5	1.3–2.4	1.5–2.2	1.7–2.1	2.0
June projection	0.8	1.6	1.7		2.0	0.6–1.0	1.4–1.7	1.6–1.8		2.0	0.5–1.2	1.1–2.0	1.4–2.2		2.0
Core PCE inflation[4]	1.5	1.7	1.8	2.0		1.3–1.5	1.6–1.8	1.7–1.9	1.9–2.0		1.2–1.6	1.5–2.4	1.6–2.2	1.7–2.1	
June projection	1.0	1.5	1.7			0.9–1.1	1.4–1.7	1.6–1.8			0.7–1.3	1.2–2.0	1.2–2.2		
Memo: Projected appropriate policy path															
Federal funds rate	0.1	0.1	0.1	0.1	2.5	0.1	0.1	0.1	0.1–0.4	2.3–2.5	0.1	0.1	0.1–0.6	0.1–1.4	2.0–3.0
June projection	0.1	0.1	0.1		2.5	0.1	0.1	0.1		2.3–2.5	0.1	0.1	0.1–1.1		2.0–3.0

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 9–10, 2020. 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 June 9–10, 2020, meeting, and one participant did not submit such projections in conjunction with the September 15–16, 2020, 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.

Table 1.A. Economic Projections for the first half of 2020* (in percent)

Medians, central tendencies, and ranges

	Median	Central tendency	Range
Change in real GDP	-19.4	-19.5 to -19.4	-20.0 to -19.4
June projection	-21.4	-22.3 to -20.0	-26.0 to -18.5
PCE inflation	-0.3	-0.3	-0.3
June projection	-0.2	-0.3 to -0.1	-0.5 to 1.0
Core PCE inflation	0.3	0.3	0.3
June projection	0.3	0.3 to 0.4	0.2 to 1.0

Participants' Projections

Projection	Change in real GDP	PCE inflation	Core PCE Inflation
1	-19.4	-0.3	0.3
2	-19.4	-0.3	0.3
3	-19.5	-0.3	0.3
4	-19.4	-0.3	0.3
5	-19.4	-0.3	0.3
6	-19.4	-0.3	0.3
7	-19.4	-0.3	0.3
8	-19.4	-0.3	0.3
9	-19.5	-0.3	0.3
10	-19.5	-0.3	0.3
11	-19.5	-0.3	0.3
12	-19.4	-0.3	0.3
13	-20.0	-0.3	0.3
14	-19.5	-0.3	0.3
15	-19.5	-0.3	0.3
16	-19.4	-0.3	0.3
17	-19.5	-0.3	0.3

*Growth and inflation are reported at annualized rates.

Table 1.B. Economic Projections for the second half of 2020* (in percent)

Medians, central tendencies, and ranges

	Median	Central tendency	Range
Change in real GDP	15.2	14.3 to 16.7	10.9 to 26.7
June projection	11.2	9.5 to 13.7	3.1 to 16.3
PCE inflation	2.7	2.5 to 2.9	2.3 to 3.3
June projection	1.7	1.4 to 2.0	0.6 to 2.7
Core PCE inflation	2.7	2.3 to 2.7	2.1 to 2.9
June projection	1.7	1.4 to 1.9	0.9 to 2.3

Participants' Projections

Projection	Change in real GDP	PCE inflation	Core PCE Inflation
1	16.0	2.7	2.5
2	16.7	3.3	2.9
3	26.7	2.9	2.7
4	15.1	2.9	2.7
5	14.3	2.7	2.5
6	17.2	2.7	2.7
7	16.7	2.9	2.7
8	14.3	2.5	2.3
9	12.8	2.9	2.3
10	14.7	3.3	2.7
11	14.5	2.5	2.3
12	15.3	2.7	2.5
13	15.2	2.3	2.1
14	17.6	2.7	2.5
15	10.9	2.5	2.7
16	15.5	2.5	2.7
17	15.0	2.5	2.7

*Projections for the second half of 2020 implied by participants' September projections for the first half of 2020 and for 2020 as a whole. Growth and inflation are reported at annualized rates.

Table 2. September economic projections, 2020–23 and over the longer run (in percent)

Projection	Year	Change in real GDP	Unemployment rate	PCE inflation	Core PCE Inflation	Federal funds rate
1	2020	-3.3	7.8	1.2	1.4	0.13
2	2020	-3.0	7.0	1.5	1.6	0.13
3	2020	1.0	6.5	1.3	1.5	0.13
4	2020	-3.7	7.8	1.3	1.5	0.13
5	2020	-4.0	8.0	1.2	1.4	0.13
6	2020	-2.8	7.6	1.2	1.5	0.13
7	2020	-3.0	7.0	1.3	1.5	0.13
8	2020	-4.0	7.5	1.1	1.3	0.13
9	2020	-4.7	8.0	1.3	1.3	0.13
10	2020	-3.9	7.7	1.5	1.5	0.13
11	2020	-4.0	8.0	1.1	1.3	0.13
12	2020	-3.6	7.5	1.2	1.4	0.13
13	2020	-4.0	8.0	1.0	1.2	0.13
14	2020	-2.7	6.9	1.2	1.4	0.13
15	2020	-5.5	7.7	1.1	1.5	0.13
16	2020	-3.5	7.5	1.1	1.5	0.13
17	2020	-3.8	7.6	1.1	1.5	0.13
1	2021	3.9	5.3	1.6	1.6	0.13
2	2021	4.2	5.0	2.4	2.4	0.13
3	2021	5.0	4.0	1.7	1.8	0.13
4	2021	4.0	5.8	1.7	1.7	0.13
5	2021	4.2	6.0	2.2	2.2	0.13
6	2021	3.6	5.0	1.8	1.8	0.13
7	2021	4.0	5.0	1.8	1.8	0.13
8	2021	4.7	5.7	1.9	1.6	0.13
9	2021	2.0	7.0	1.5	1.5	0.13
10	2021	3.0	6.2	1.8	1.7	0.13
11	2021	0.0	8.0	1.3	1.5	0.13
12	2021	5.0	5.3	1.7	1.7	0.13
13	2021	3.8	6.5	1.5	1.5	0.13
14	2021	4.6	4.8	1.9	1.9	0.13
15	2021	5.5	6.0	1.6	1.6	0.13
16	2021	4.0	5.5	1.6	1.6	0.13
17	2021	4.2	5.1	1.7	1.7	0.13

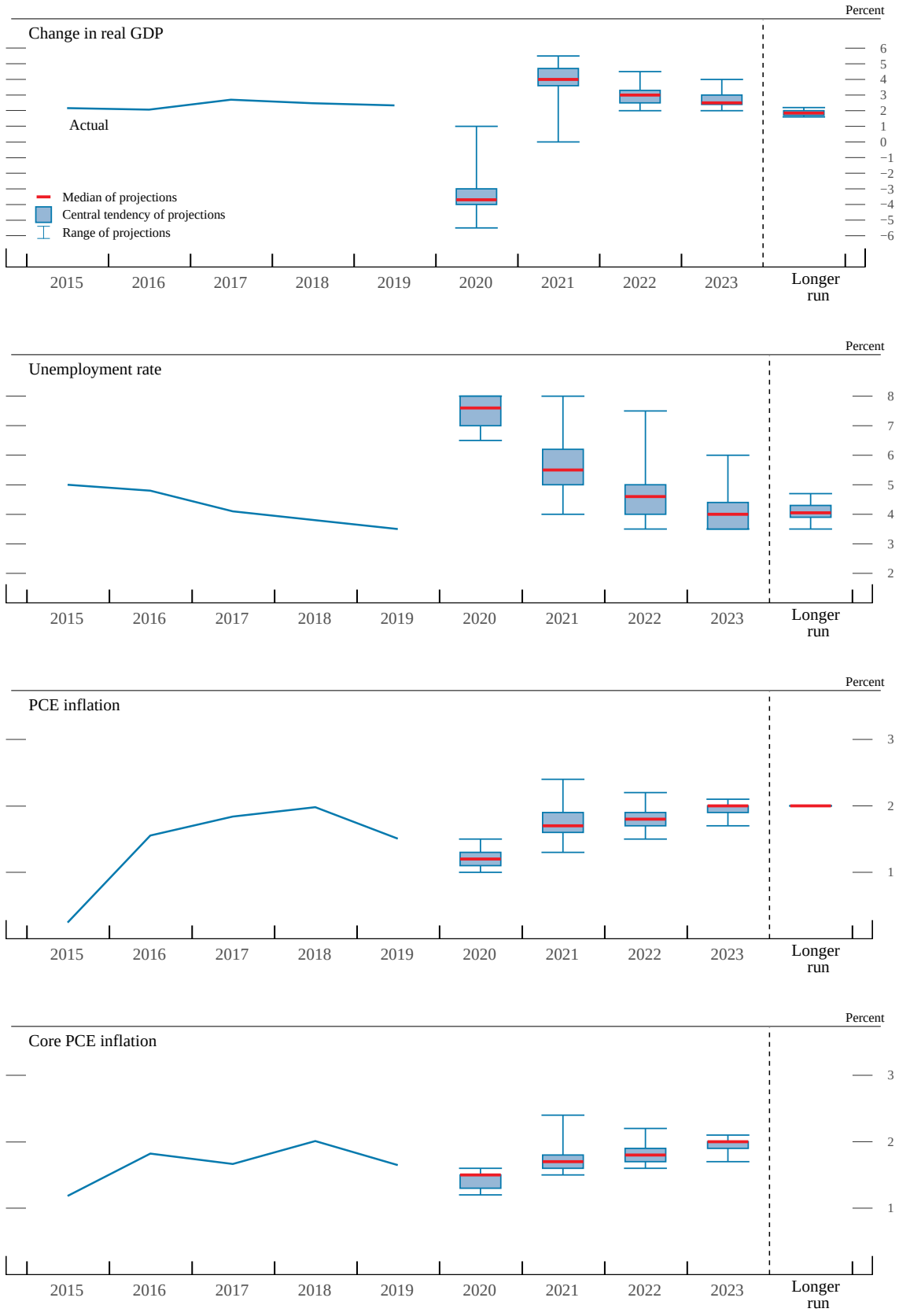
Table 2. ***(continued)***

Projection	Year	Change in real GDP	Unemployment rate	PCE inflation	Core PCE Inflation	Federal funds rate
1	2022	3.1	4.5	1.7	1.7	0.13
2	2022	2.0	4.3	2.2	2.2	0.13
3	2022	3.3	3.5	1.9	1.9	0.13
4	2022	3.2	4.6	1.8	1.8	0.13
5	2022	3.3	5.0	2.0	2.0	0.13
6	2022	3.0	4.0	1.9	1.9	0.13
7	2022	3.0	4.0	1.9	1.9	0.13
8	2022	2.5	4.7	1.8	1.8	0.13
9	2022	2.5	6.3	1.6	1.6	0.13
10	2022	2.5	5.2	1.9	1.9	0.13
11	2022	2.5	7.5	1.5	1.6	0.13
12	2022	3.4	4.1	1.9	1.9	0.13
13	2022	3.0	5.0	1.7	1.7	0.13
14	2022	3.5	3.8	2.2	2.2	0.63
15	2022	4.5	5.0	1.7	1.7	0.13
16	2022	3.0	4.8	1.8	1.8	0.13
17	2022	3.0	4.2	1.8	1.8	0.13
1	2023	2.4	4.0	1.9	1.9	0.13
2	2023	2.0	4.3	2.0	2.0	0.13
3	2023	3.0	3.5	2.0	2.0	0.13
4	2023	2.4	3.9	1.9	1.9	0.13
5	2023	2.5	4.3	2.1	2.1	0.38
6	2023	2.4	3.5	1.9	1.9	0.63
7	2023	2.7	3.5	2.0	2.0	0.13
8	2023	2.5	4.2	2.0	2.0	0.38
9	2023	3.0	5.3	1.8	1.8	0.13
10	2023	2.3	4.4	2.0	2.0	0.13
11	2023	4.0	6.0	1.7	1.7	0.13
12	2023	2.9	3.7	2.1	2.1	0.13
13	2023	2.6	4.5	1.9	1.9	0.13
14	2023	2.6	3.5	2.0	2.0	1.38
15	2023	3.0	4.0	1.9	1.9	0.13
16	2023	2.5	4.0	2.0	2.0	0.13
17	2023	2.5	3.7	1.9	1.9	0.13

Table 2. ***(continued)***

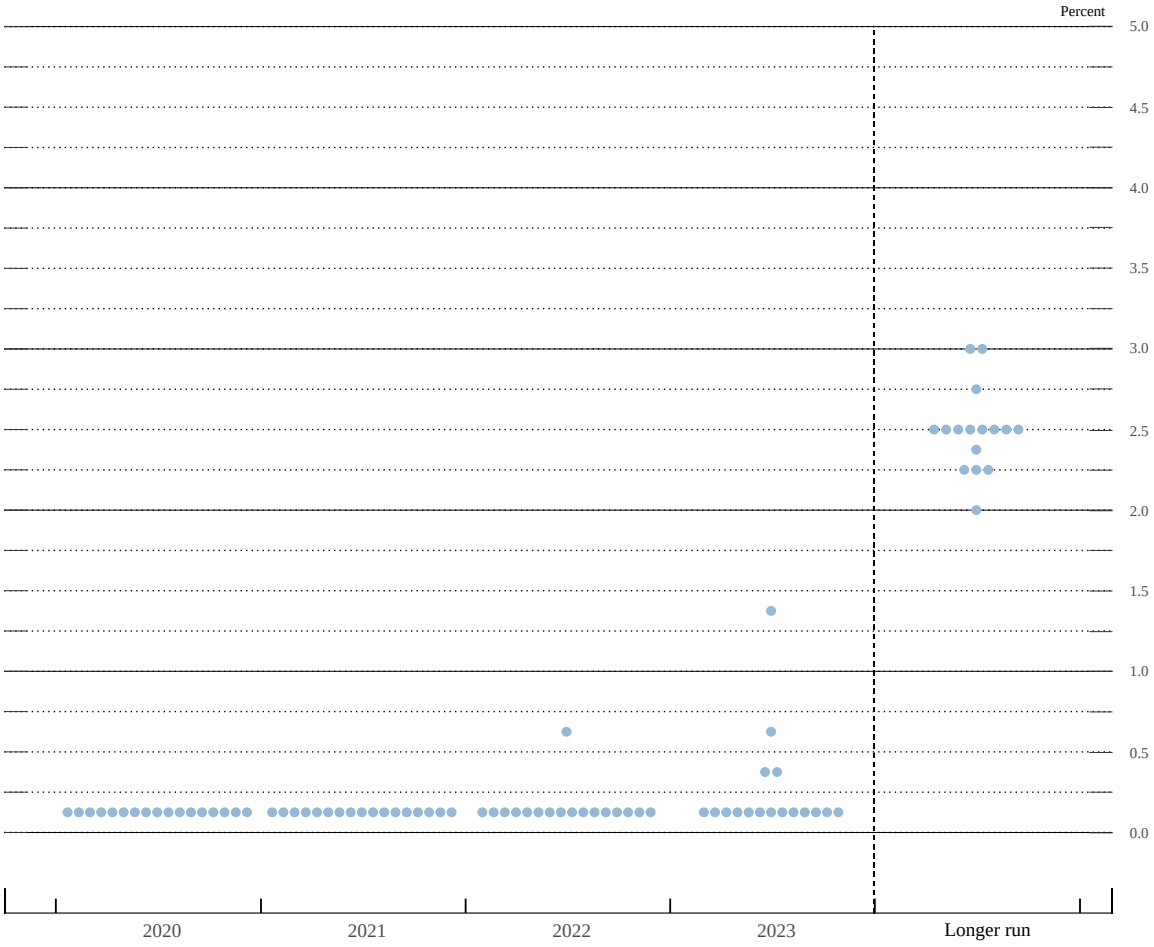
Projection	Year	Change in real GDP	Unemployment rate	PCE inflation	Core PCE Inflation	Federal funds rate
1	LR	1.7	3.8	2.0		2.30
2	LR			2.0		
3	LR	2.2	3.9	2.0		2.50
4	LR	1.8	3.8	2.0		2.50
5	LR	1.6	4.3	2.0		3.00
6	LR	1.9	4.1	2.0		2.25
7	LR	2.0	3.9	2.0		2.50
8	LR	2.0	4.3	2.0		2.75
9	LR	1.7	4.7	2.0		2.50
10	LR	1.8	4.4	2.0		2.50
11	LR	1.7	3.5	2.0		2.00
12	LR	1.9	4.0	2.0		2.38
13	LR	1.9	4.5	2.0		2.50
14	LR	2.0	4.0	2.0		3.00
15	LR	2.0	4.0	2.0		2.25
16	LR	1.8	4.2	2.0		2.50
17	LR	1.8	4.3	2.0		2.50

Figure 1. Medians, central tendencies, and ranges of economic projections, 2020–23 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. Uncertainty and risks in economic projections

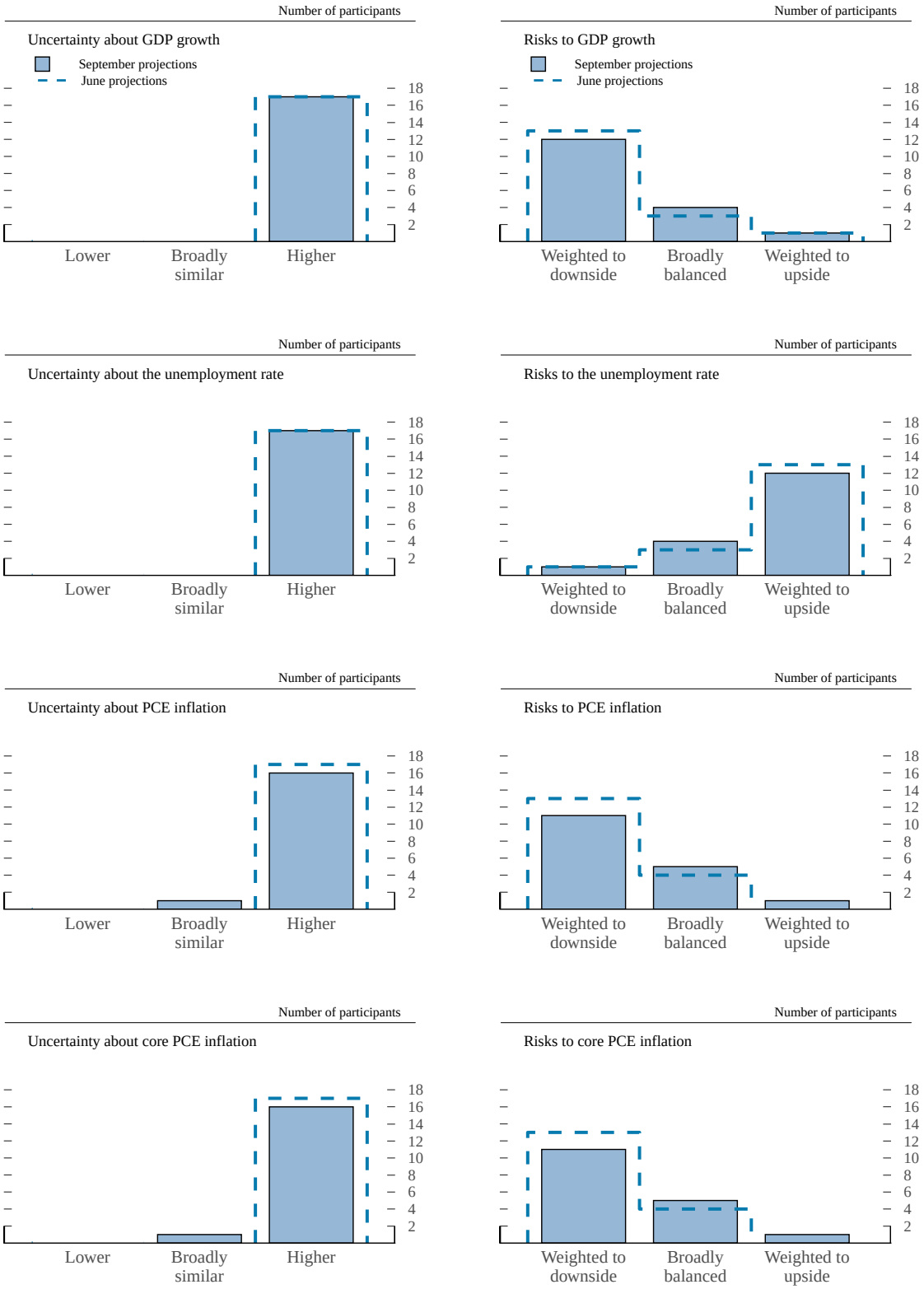
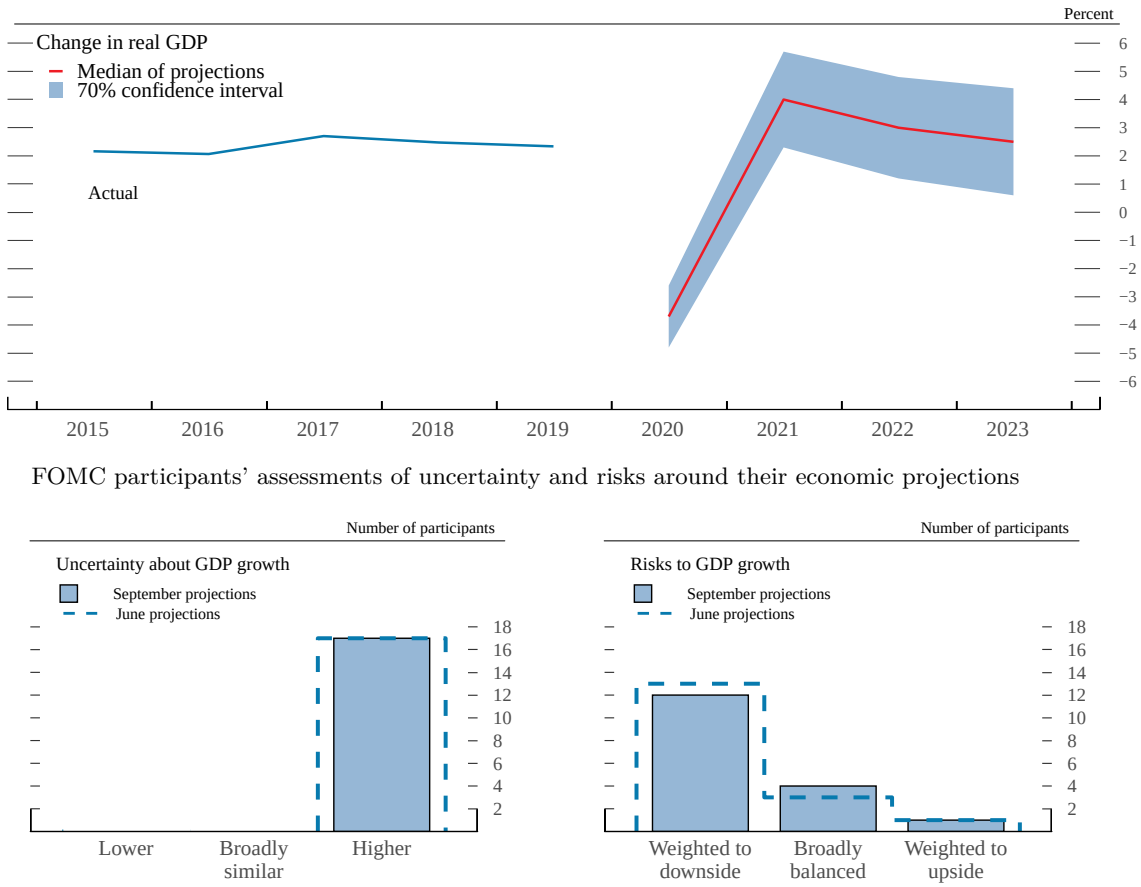
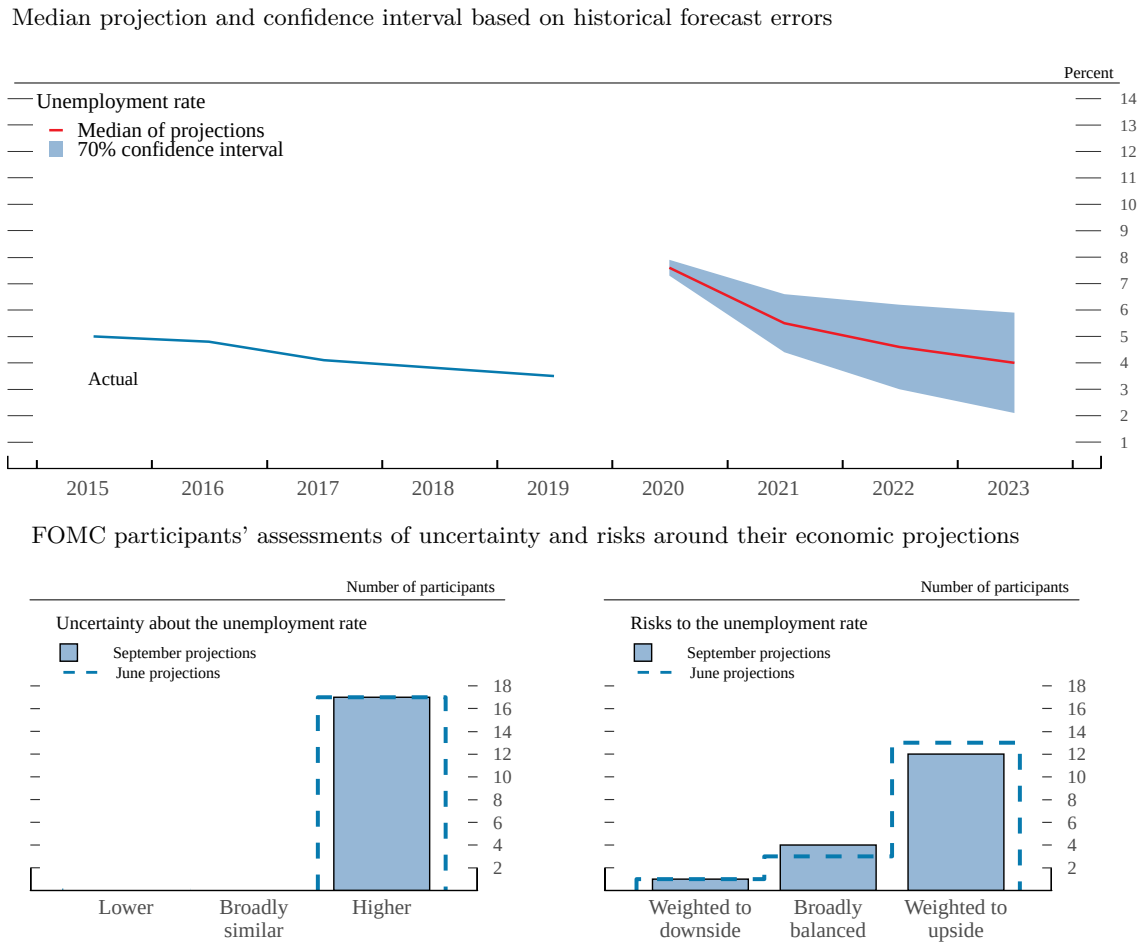


Figure 4.A. Uncertainty and risks in projections of GDP growth



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."

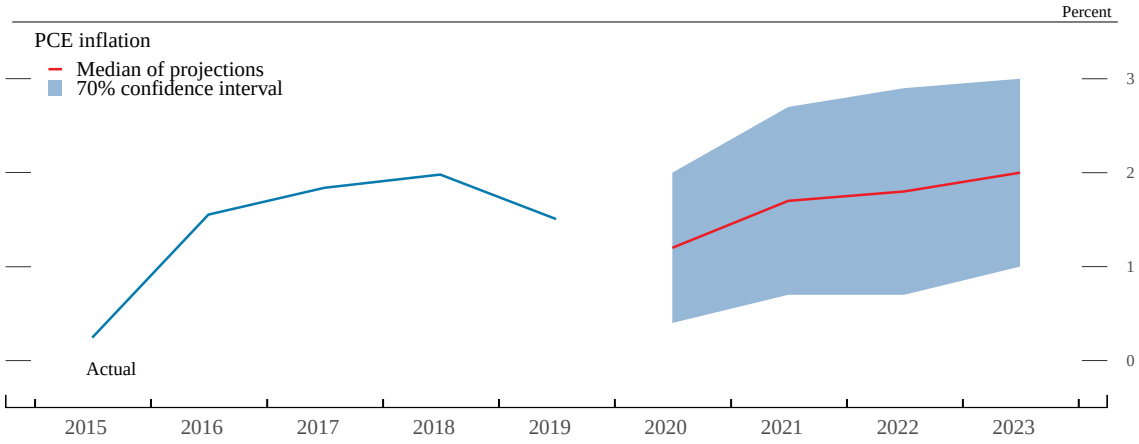
Figure 4.B. Uncertainty and risks in projections of the unemployment rate



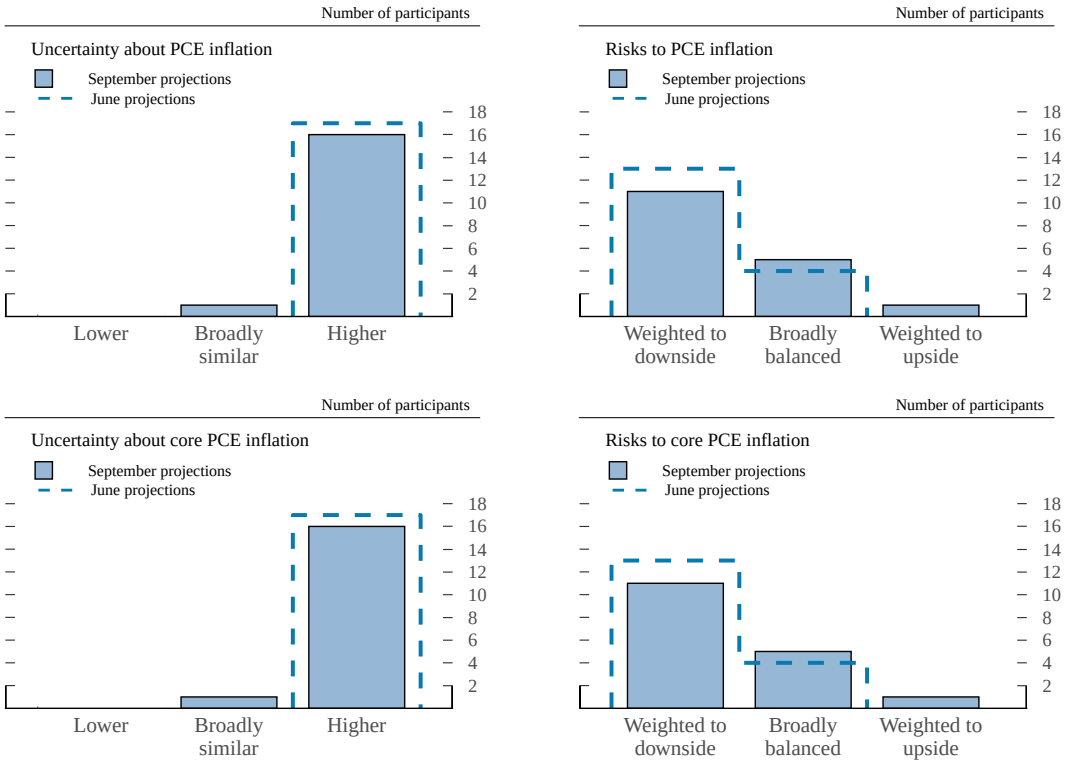
NOTE: The blue and red lines in the top panel show actual values and median projected values, respectively, of the average civilian unemployment rate in the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root 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

Median projection and confidence interval based on historical forecast errors



FOMC participants' assessments of uncertainty and risks around their economic projections



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	16	17
Change in real GDP	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Unemployment rate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
PCE inflation	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Core PCE inflation	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A

A = Higher B = Broadly similar C = Lower

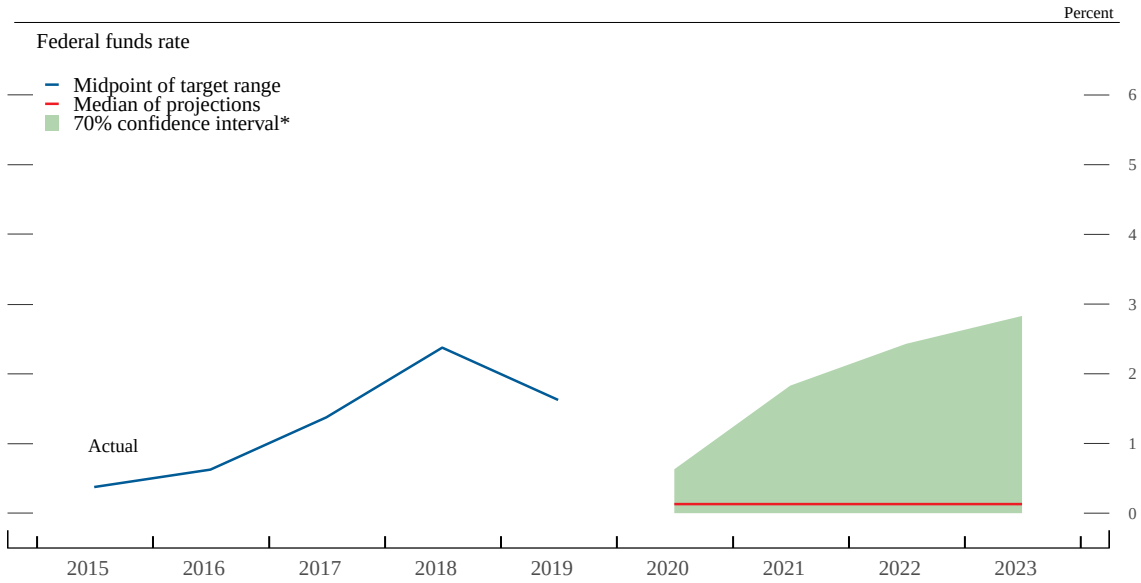
Question 2(b): Please indicate your judgment of the risk weighting around your projections.

Individual responses

Respondent	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Change in real GDP	C	C	A	B	B	B	C	C	C	C	B	C	C	C	C	C	C
Unemployment rate	A	A	C	B	B	B	A	A	A	A	B	A	A	A	A	A	A
PCE inflation	C	C	A	B	B	B	C	C	B	C	C	C	C	B	C	C	C
Core PCE inflation	C	C	A	B	B	B	C	C	B	C	C	C	C	B	C	C	C

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

Figure 5. Uncertainty and risks 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 onset 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 fix or six years, please indicate 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: The COVID-19 pandemic and the associated containment measures have caused a sharp drop in economic activity. Aggressive and timely monetary and fiscal policy actions helped to mitigate the downside impacts on U.S. growth, employment, and core inflation. These actions have also contributed to the ongoing rebound in 2020Q3. The shape of the recovery will primarily depend on the path of the disease, which remains uncertain. My assessment is that, even with aggressive policy measures and a relatively optimistic disease scenario, the economy will take time to heal, not reaching longer run levels until 2024 or beyond. While a large majority of the initial job losses associated with the pandemic were initially classified as temporary, the fraction identified as permanent has risen substantially. The historical evidence suggests that it takes time for new employment matches to be established.

Respondent 2: I expect that convergence to long-run values—conditional on a regime characterized by low productivity growth and a low real interest rate on short-term government debt—will occur by 2022 for GDP growth and unemployment. I expect inflation to converge to 2 percent by 2023.

Respondent 3: N/A

Respondent 4: N/A

Respondent 5: N/A

Respondent 6: Under my modal outlook, the unemployment rate ends 2023 at 3.5 percent, below my estimate of its long-run level, with PCE inflation of approximately 1.9 percent. Given our objective of moderately overshooting 2 percent inflation for some time as well as the need to eventually guide unemployment gradually to a long-run sustainable level, I expect convergence will take more than two years from that point—that is, more than five years from now. Monetary policy will need to walk a fine line if it is to promote the FOMC's goals without stoking real and/or financial imbalances that could ultimately impede attainment of those goals.

Respondent 7: N/A

Respondent 8: N/A

Respondent 9: We expect that convergence to full employment and to the inflation target will be achieved by 2024. Our estimate of the natural rate of unemployment, at 4.7 percent, reflects some contained but persistent supply-side damage from the pandemic.

Respondent 10: My projections for real GDP growth, the unemployment rate, and inflation are subject to more uncertainty than usual in light of the significant unknowns related to the evolution of the Coronavirus and the level of fiscal support going forward. However, under my modal outlook, I continue to expect that real GDP growth and the unemployment rate will converge to their their longer-run levels within the next five or six years.

I am less certain that inflation and the federal funds rate will converge to their longer-run levels within this same time frame. For the past several years, low rates of global inflation, the appreciation of the dollar,

and persistent declines in energy prices have restrained PCE inflation. These elements, combined with pandemic-induced declines in inflation aggregates and increases in domestic labor market slack lead me to anticipate that inflation will remain below 2 percent in coming years. However, as these effects fade policymakers will have the opportunity to demonstrate their commitment to 2 percent inflation on average by targeting a rise in annual inflation above 2 percent, facilitated in part by ongoing monetary policy accommodation. After a sustained period of PCE inflation moderately above 2 percent — achieved in the context of balanced growth, financial stability, and longer-run expectations for inflation which remain near 2 percent — I ultimately anticipate that under appropriate monetary policy inflation will converge to 2 percent and the federal funds rate will move up to its longer-run level.

While I have not changed my assumptions on the longer-run rate of unemployment nor trend growth at this time, I will be watching for signs that the sharp contraction in economic activity during the first half of this year and the still elevated rates of unemployment will cause lasting damage to labor markets or the productive capacity of the economy.

Respondent 11: Recovery from the Great Recession was not complete before the novel coronavirus outbreak in the sense that we had achieved neither full employment nor our 2 percent inflation target. The current recession is considerably deeper than the Great Recession and is likely to result in many bankruptcies and deep scarring in labor markets. As a result, the time needed to complete this evolution is likely to be longer than five or six years.

Respondent 12: The long-run effects of the pandemic are still highly uncertain, and thus it is too early to adjust my assumptions regarding the longer-run values of GDP growth, unemployment, and interest rates. My staff and I will continue to evaluate the implications of ongoing developments for those longer-run values.

As discussed in the narratives for monetary policy and for the projections, it will take some time before the SEP variables converge to their longer-run values. Consistent with the framework underlying the new consensus statement, I expect that unemployment and inflation will have to overshoot their longer-run levels for a number of years to achieve our dual-mandate goals on a sustained basis. Consequently, it probably will be the second half of this decade when real GDP growth, unemployment and inflation are all at their longer-run levels.

Respondent 13: I expect the convergence process will take about 5 years as resource reallocation in response to recent shocks unwinds.

Respondent 14: My longer-run projections remain unchanged from June 2020 and from December 2019. I continue to believe that it would be premature to conclude that the key factors affecting long-run outcomes for growth, employment and inflation have changed materially as a result of the COVID Event. However, the risks to those outcomes are skewed toward lower long-run growth and employment.

The fiscal trajectory of the United States was already unsustainable prior to the unprecedented deficits that are being run this year. The ratio of public debt to GDP for the US is now dangerously close to, if not above, thresholds where econometric estimates suggest negative effects on longer-run growth. Even before the COVID event, Treasury markets had functioned poorly at times in 2019 because of high Treasury issuance volumes. This suggests that there is not unlimited appetite for US Treasuries, ultimately generating inflation pressures and complicating the transmission of monetary policy. When the day comes to rationalize the budget, the mix of policies that are chosen will influence the extent to which the rising debt load impairs the fundamentals of the economy.

Respondent 15: N/A

Respondent 16: N/A

Respondent 17: N/A

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 the uncertainty over the past 20 years, you may enter them below.

Respondent 1: The projected path for the economy is particularly uncertain given its dependence on the progression of COVID-19 cases. Epidemiological models imply an enormous range of uncertainty surrounding the projected numbers of COVID-19 infections, recoveries, and deaths. Additional uncertainty stems from the availability and timeframe for development and deployment of an effective and safe vaccine. These factors translate into higher uncertainty about my projections for economic activity and inflation than the average level over the past 20 years. Although inflation remains anchored by stable longer-run inflation expectations at the FOMC's stated goal of 2 percent, there is heightened uncertainty around the path of oil prices, which magnifies overall inflation uncertainty.

Respondent 2: Uncertainty attached to my projections is elevated due to the high uncertainty on the evolution of the COVID-19 pandemic and its economic effects.

Respondent 3: N/A

Respondent 4: The timing of the end of the pandemic remains uncertain. There is also considerable uncertainty about the persistence of the impacts of the pandemic on households and businesses, and the amount and duration of fiscal support.

Respondent 5: Uncertainty would be elevated simply because the economy is in uncharted territory. And then we have the pandemic.

Respondent 6: The near-term evolution of the economy continues to be dictated in large part by the path of the Covid-19 pandemic and the public and private health-care responses to it, as well as by decisions taken on fiscal policy. There is material uncertainty along all of these dimensions, entailing significant upside and downside risks for the level of real economic activity.

Moreover, based on my conversations with businesspeople across the District and nationally, I believe that the pandemic and the policy responses are accelerating the structural forces of technology and technology enabled disruption—these forces are significantly impacting the competitive environment and ability of firms to exercise pricing power. As a result, I see substantial uncertainty surrounding inflation outcomes in the near-to-medium term.

Given these factors, I believe uncertainty about the outlooks for real activity and inflation are greater than what we have seen, on average, in the recent past.

Respondent 7: N/A

Respondent 8: The pandemic and economic shutdown represented an unprecedented situation that resulted in unprecedented job losses and a sharp contraction in activity. The reopening phase has seen some ups and downs but activity and hiring have been stronger than I had expected. Nonetheless, I see the recovery in activity as somewhat fragile. Macroeconomic forecasting remains particularly challenging given the uncertainties about the course of the COVID-19 pandemic and the difficulties in extracting the signal about the underlying state of the economy from extreme swings in the economic data. There continue to be several plausible paths the virus could take and progress on vaccine development and deployment remains uncertain. The level of uncertainty surrounding the forecast remains very high.

Respondent 9: Uncertainty around the economic projections is extremely elevated because of the uncertainty surrounding the evolution of the pandemic, the measures taken to contain it, the fiscal policy response, and the potential for behavioral changes by households and firms.

Respondent 10: N/A

Respondent 11: The current level of uncertainty is considerably higher than seen during the financial crisis. The health and economic effects of the coronavirus and their potential implications for financial stability are hard to project. Additional sources of uncertainty include the size and timing of future fiscal support, social unrest at home, simmering geopolitical tensions, and the ability of foreign governments to support their economies.

Respondent 12: The uncertainty surrounding the economic outlook is still centered on developments regarding the COVID-19 pandemic. In this unusual period, the signals about the outlook from the data can still be difficult to decipher. Moreover, even with the further advances in knowledge about the virus, there remains much to learn, especially about the best measures to address it while awaiting a vaccine or some other effective treatment. As such, the ultimate economic effects surrounding the disease are still cloudy. Beyond the pandemic, global geopolitical developments, including tensions between the U.S. and China, negotiations between the U.K. and the euro area about the post-Brexit relationship, and indications of strains in major EMEs, signal notable uncertainty. Consequently, even though it appears to be lower than in June, the uncertainty around the outlook remains very high and well above the SEP standard.

Respondent 13: The coronavirus pandemic and the responses to it by households and firms is both accelerating existing trends and driving new trends in economic interactions and resource allocation. How smoothly this resource reallocation occurs is highly uncertain. As well, it is possible that a significant second wave of the virus might emerge that has a further significant impact on economic activity.

Respondent 14: The unpredictable ways in which individuals, businesses, and governments are adapting in order to control the spread of COVID-19 and to news about the virus generally continue to make it significantly more difficult than usual to construct forecasts. The unresolved debate over the size and composition the next round of fiscal stimulus adds considerable uncertainty in the near term forecast.

Respondent 15: N/A

Respondent 16: Despite positive surprises since June, the overall level of uncertainty in this projection is still higher than historical norms. Many health and behavioral-related uncertainties remain unresolved, including the path of the virus and the public's responses to it; the speed at which a vaccine will be widely available and used, the management of school reopening; the long-term effectiveness of remote work in (cramped) spaces not designed for it; and consumers' attitudes towards re-engaging more fully in the retail, leisure and hospitality sectors. The lack of concrete progress on a new stimulus bill has increased uncertainty about the magnitude of fiscal support coming from the federal government. And similar uncertainties surround the growth prospects of our major trading partners.

Inflation has improved since June and our projection has it rising slowly over the projection period. This forecast is dependent on the trajectory of aggregate demand and so is subject to the same uncertainties as our outlook for growth. Furthermore, the magnitude of slack and resulting cost pressures are difficult to judge given the nature of the shocks hitting the economy; so, too, is the ability of aggressive monetary accommodation and policy communication to buoy inflation expectations and thus help lift actual inflation, which is a key factor in our forecast narrative.

Respondent 17: The COVID-19 global pandemic is outside the realm of recent historical experience. It is a severe and hopefully short-lived shock to both demand and supply that emanated from outside

the economic and financial system. Much depends on the course of the virus and the time at which effective therapeutics and vaccines will become widely available–and there is considerable uncertainty around these critical drivers. Additionally, fiscal policy will play a key role for the strength and timing of the recovery–and both the magnitude and timing of additional fiscal support are also subject to elevated uncertainty.

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: The surprisingly strong rebound in economic activity and inflation in recent months suggests that downside risks have eased somewhat since the previous SEP. However, on balance I view the risk weighting around my projections as remaining tilted to the downside. Fiscal policy has played a crucial role in supporting the economy since the start of the pandemic and I view it as partially responsible for the strong rebound in economic activity in the current quarter. Since monetary policy remains partially constrained by the effective lower bound on the federal funds rate, I view additional fiscal relief as essential in sustaining the recovery. Important downside risks to my projections stem from the lack of agreement in Congress about the timing, size, and composition of this additional stimulus. Further downside risks stem from the path of the virus. The relaxation of COVID-19 containment measures in many states together with the upcoming colder weather and return to in-person education increases the probability that another wave of COVID-19 cases will emerge in coming months. Such a scenario could trigger a renewal of stricter containment measures.

Respondent 2: Some downside risks (depression, financial crises) have abated. However, there are still risks of unfavorable developments in the public health situation. If these risks were to materialize, they would slow growth, reduce unemployment declines and put downward pressure on inflation.

Respondent 3: N/A

Respondent 4: In my view, the next several months will be revealing for the true strength of the economy as the effects of temporary fiscal policy support begin to wane, and depending on the path of the coronavirus. Given the amount of uncertainty, I can see plausible large upside and downside risks to the projection.

Respondent 5: N/A

Respondent 6: Behind my modal outlook is an assumption that businesses will continue to implement health-care protocols that enable consumers and workers to engage more fully in a broad range of economic activities. The mid-summer pickup in Covid cases caused improvements in mobility, engagement and economic activity to slow.

Downside risks to the outlook include a resurgence of the virus, a failure to extend necessary fiscal support, and disappointing outcomes related to the development of vaccines for the virus. On the other hand, it's also possible that mobility and engagement will improve more rapidly than in my baseline outlook, leading to a sharper recovery in economic activity. Positive surprises on the vaccine front could make that scenario more likely.

Altogether, I view these risks around the outlook as roughly balanced.

Respondent 7: N/A

Respondent 8: In my forecast submission, I assume that voluntary and mandated restrictions on activity are further relaxed over the course of this year and next year. There will be periodic regional upswings in virus cases but the healthcare system is able to handle these fluctuations in new cases. Progress is made on treatments and vaccines, with a vaccine becoming widely available in 2021Q3.

Conditional on this pandemic scenario, there are several downside risks to my forecast. While policy actions have supported the economy, the level of activity and employment remain well below pre-pandemic levels and the nature of this shock – a shock to public health – may be less responsive to policy actions than other shocks that are more economic in nature. My forecast assumes further fiscal action is in place next year, but this is now questionable. Credit quality problems, defaults, and business failures could be higher than expected and this could curtail activity, harm the labor market, and put stress on banks, which

would then curtail lending thereby further restraining the recovery. I expect to see further stress developing in the commercial real estate market, which has the potential to put stress on the wider financial system. The recent volatility in equity markets, which mainly originated in the tech sector, could have spillovers to the broader market and undermine business, consumer, and investor confidence. The prospect of very accommodative monetary policy could generate investors' search-for-yield behavior, driving further volatility.

In addition, the pandemic scenario on which I am conditioning my submitted forecast could be too optimistic. There is considerable uncertainty about the path of the virus this fall and the progress on vaccines.

The unexpected strength in the incoming economic data suggests there are upside risks to my forecast as well. Businesses could become more optimistic that another shutdown can be avoided and increase their rate of hiring and investment. Temporary job losses could continue to be unwound faster than I expect and consumers could begin to spend more of the increases in disposable personal income that came from the fiscal policy actions this spring.

On balance, I view the risks to my submitted forecast for growth and inflation as weighted to the downside and for unemployment as weighted to the upside, but less so than in my June submission as the case for more optimistic economic scenarios has strengthened.

Respondent 9: Our projection for activity is weaker than the Tealbook's baseline forecast, and as a result the risks around our outlook are somewhat more balanced. Nevertheless, our forecast remains conditioned on an effective COVID-19 vaccine becoming widely available in the second half of 2021. Such an assumption may prove too optimistic, and therefore the risks to the real outlook are tilted to the downside, which increases the likelihood of additional supply side damage. For this reason, the risks around the inflation forecast are more broadly balanced.

Respondent 10: N/A

Respondent 11: My projections for output and unemployment are sufficiently downbeat that the uncertainty around them is broadly balanced. The risks to my inflation projections are weighted to the downside because inflation was stubbornly below target in the years leading up to the current recession, despite record low levels for the unemployment rate.

Respondent 12: Despite a reduction in downside tail risks, the risks around the outlook for real activity are still skewed substantially to the downside. A major development since June has been the sizeable recovery in the U.S. and many foreign economies, even as the daily level of new COVID-19 cases rose in the U.S. and globally. This development indicates a lower probability of the dire economic scenarios associated with the pandemic than in June. Nevertheless, it is possible that necessary measures to address the pandemic, particularly if vaccine development faces obstacles or if the efficacy of vaccines and duration of immunity turn out to be relatively low, could slow the economy significantly. For example, widespread postponements of in-class school openings could hurt economic activity more than anticipated, or an intensification of the pandemic as more activity shifts indoors with upcoming colder weather could cause governments to reinstate some NPIs, households and businesses to pull back, and financial conditions to re-tighten, leading to a renewed economic downturn.

Even without another intensification of the pandemic, the downturn may have already caused sufficient damage for recessionary dynamics to become evident once the rebound from the spring closings subsides. Indications that severely affected businesses are instituting more layoffs and that more small businesses are permanently closing could be signals of this sort. Also, the deterioration of state and local government finances is leading those governments to institute significant austerity measures that, as seen after the 2007-09 recession, can have adverse effects on aggregate activity. Outside of the U.S., recent events regarding the U.K. – euro area trade negotiation indicate a greater risk of a hard Brexit that could have adverse effects on global economic and financial conditions. Finally, a failure to enact a fiscal package as I assume in my modal forecast would have adverse impact on the economy and exacerbate the other downside risks.

On the upside, there are risks arising from either more effective outbreak mitigation measures or more rapid medical advances; similarly, monetary and fiscal policy actions could be more effective in containing economic damage and promoting a rapid recovery; and the easing of financial conditions since June could

contribute to faster growth. But the downside risks still dominate.

The risks around the inflation outlook are also skewed to the downside. Even though supply chain disruptions associated with the pandemic could lead to greater upside price pressures than I anticipate, the disinflationary impact of downside real risks is more dominant.

Respondent 13: There is a possibility that a second wave of the virus may occur and have a significant negative impact on the economy in the fall and winter.

Respondent 14: The risks to GDP growth and unemployment are somewhat better balanced than they were in June, primarily because I believe that the likelihood of a sharp contraction in economic activity associated with a "second wave" of infections has diminished. But, it is not zero and other risks are still tilted toward worse outcomes.

My forecast assumes $1 trillion in economic stimulus in the 4th quarter, and that no vaccine or breakthrough treatment for COVID-19 emerges within the forecast window (though treatment and containment options continue to improve at the margin as they have been, leading to further organic reductions in social distancing). Thus, a larger-than-expected stimulus package or successful vaccine or treatment represent potential upside risks to growth and inflation.

In contrast, downside risks to growth and inflation include: a significantly delayed (perhaps to next year) or smaller-than-expected stimulus package, greater damage to the supply side of the economy than I am currently assuming (described further below), and a stall or reversal in the pace at which social distancing is relaxing.

Respondent 15: N/A

Respondent 16: We forecast a steady recovery in economic activity at a pace above potential through the forecast period. This outlook balances a numbers of risk factors that, overall, are weighted to the downside.

The most prominent risk to our forecast is the path of the virus. Our baseline projection assumes a continuation of intermittent regional surges followed by costly public and private responses that get caseloads sufficiently under control. There is the possibility that these outbreaks become more frequent as activity continues to normalize or that they could become more harmful during the influenza season. The news on widespread testing and therapeutic alternatives also has been disappointing, and there is concern that a vaccine might not be in wide use by the second half of 2021 as assumed in our forecast. Still, the likelihood of the most dire health and economic outcomes seem less likely now than in our last SEP. Behavior has responded to regional outbreaks, with more masking, social distancing, etc. in affected locales. The news on vaccine development has been positive (though not uniformly so). The surprising gains in activity this summer, despite virus outbreaks, suggest that some businesses environments are more readily amenable to operating safely than we had assumed. It also may be the case that the public is willing to take more health risk; while this behavior supports economic activity, it does suggest heightened chances of downside health outcomes.

There are a number of other risk factors in our growth forecast. As in our previous projection, we see downside risks from the degree to which business failures might destroy business and human capital; the effect of uncertainty on business investment and household precautionary saving; and the ability of parents to work productively in a virtual school environment. We now also think the risks from fiscal policy are tilted to the downside. We assume the same fiscal policy as the TealBook. But the contention around a compromise bill and the better-than-expected economic performance may temper any eventual package even further. On the upside, despite the virus outbreaks and enormous death toll, activity has increased much more than we had expected, and it is possible that the recovery will proceed more quickly, and reach a broader set of businesses and households sooner, than we currently assume.

The downside risks to our growth forecast also impart downside risks to our inflation projection. In addition, the long period of below-target inflation could make it difficult for policy to lift inflation

expectations to the degree we have assumed in our forecast. We view this risk as mitigated since last round, however, by the Committee's new long-run framework, particularly its commitment to overshoot our 2 percent target for some time following a period of sub-par inflation performance. The incoming data also have been a plus. Still, while a closer call than in June, we continue to see the overall risks to the inflation forecast as tilted to the downside.

Respondent 17: 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 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: My near-term view of the appropriate funds rate path reflects the magnitude of the cumulative losses to production, employment, and income from the COVID-19 outbreak. In addition, the pandemic's negative effect on global aggregate demand together with a sharp decline in oil prices will exert ongoing downward pressure on inflation in the near-term. Given that inflation was already below our 2 percent target before the pandemic, I view sustained and significant policy accommodation as essential to help return output to trend and push inflation up, closer to target. Appropriate monetary policy is therefore significantly accommodative for the next several years. I assume additional forward policy guidance and quantitative easing will be important elements of this accommodation. I view the new longer-run policy framework to be consistent with this assessment and expect it will help solidify public expectations for this highly accommodative policy path.

Respondent 2: Assuming the economy evolves as I expect, I deem appropriate for the federal funds rate to remain at the effective lower bound throughout the forecast horizon. While GDP growth and unemployment will have converged by 2022, inflation moderately over 2 percent in 2021 and 2022 will bring average inflation closer to 2 percent and will help anchor inflation expectations.

Respondent 3: N/A

Respondent 4: In my projection, an accommodative stance of monetary will be required for a period beyond 2023 in order to support a full labor market recovery and a rise in inflation consistent with the Committee's objectives.

Respondent 5: Inflation is above 2.0 percent in 2021, and unemployment is on a path toward its long-run rate, which it reaches by the end of 2023. In my view there are significant costs to remaining at zero, including incentives for leverage and reaching for yield. Accordingly, liftoff occurs in 2023, though on a gradual pace to remain accomodative. My view of appropriate policy is well approximated by the AFAID-19 rule used in the latest Tealbook.

Respondent 6: The economy has bounced back rapidly from its trough earlier in the Spring. However, the pace of recovery is likely to slow down considerably over the next few quarters, and the economy will probably not have fully recovered by 2022 even with aggressive monetary policy. This is because reduced incomes of households, firms and state and local authorities will persistently restrain aggregate demand, in line with more traditional recessionary dynamics.

With the near-term path of the economy heavily dependent on both the course of the virus and fiscal policy actions, monetary policy's role is to support growth as the non-monetary barriers to growth continue

to ease. It is important in the short run for the FOMC to provide reassurance that it will do its part as the non-monetary restraints to growth lift.

In the face of an incomplete economic recovery, appropriate monetary policy—judged through the lens of the new monetary policy framework—will need to remain highly accommodative, for employment to return to its maximum level and for inflation to moderately exceed 2 percent. Even with highly accommodative policy, the forces of technology and technology enabled disruption may mute the pricing power of businesses and limit progress toward achieving our inflation objectives. More research needs to be done to better understand the impact of these structural forces.

That said, "highly accommodative" does not necessarily require the commitment to a funds rate at the effective lower bound until the FOMC's dual mandate objectives are achieved. Indeed, it is likely that such a commitment could lead to significant real and financial imbalances, and financial market distortions which could ultimately jeopardize achievement of the Committee's goals.

Moreover, I think it is important to view decisions on the path of the funds rate in the context of other highly accommodative actions the FOMC has taken, including its ongoing Treasury and MBS purchases and, in particular, its corporate credit facilities, which have likely narrowed credit risk spreads to a significant degree and have sharply reduced tail risk despite the limited take-up.

Respondent 7: The path for the funds rate going forward needs to be consistent with the new framework. In this case even though I see inflation rising to 2% in 2023 I have no rate hike in that year (or before).

Respondent 8: In my forecast, the economy begins to recover in the second half of this year and continues to make progress over the forecast horizon. However, the shock has been a very deep one and combines both demand- and supply-side aspects. After the economy reopens, factors such as changes in consumer behavior including shopping preferences, household living preferences, firms' demand for office space, and the reestablishment of more robust supply chains, could necessitate structural changes to the economy which may take some time to work through.

My forecast takes on board the FOMC's new consensus statement, which indicates that after periods in which inflation has run persistently below 2 percent, appropriate monetary policy will aim to achieve inflation moderately above 2 percent for some time in order to anchor inflation expectations and achieve our longer-run 2 percent inflation goal. I believe it will be appropriate to maintain a highly accommodative monetary policy throughout the forecast horizon in an effort to mitigate the current shortfall from maximum employment and to engender inflation outcomes above 2 percent in pursuit of our longer-run inflation goal.

In my forecast, by the fourth quarter of 2023, the economy is growing at an above-trend rate, inflation has risen to 2 percent and is on track to rise further, and labor market conditions have reached levels consistent with maximum employment. Under these conditions, it is appropriate for monetary policy to remain very accommodative but for the funds rate to have moved off of the effective lower bound. Note that I am assuming financial stability risks are not realized over the extended period at the ELB, but this is a risk and the policy path could need to be adjusted if significant risks emerge.

My forecast assumes that we will continue to purchase assets in support of the recovery throughout the forecast horizon.

Respondent 9: Monetary policy is conditioned on asset purchases beyond the amounts required to ensure market functioning. Given that asset purchases lower the term premium, they provide more support to larger firms with access to capital markets. Smaller firms benefit less from these purchases since they are more reliant on shorter-maturity bank credit. As a result and given the nature of the current pandemic-induced crisis, it is important that credit policy through the use of 13(3) facilities focuses on effectively easing credit conditions for the universe of smaller businesses.

Respondent 10: My judgment regarding the appropriate path of the federal funds rate is predicated on promoting sustainable economic growth, maximum employment, and price stability. My modal outlook over the next couple of years calls for the level of output to remain below its pre-COVID trend, the unemployment rate to persist above its longer-run level, and inflation to remain below two percent. Given this outlook for the economy, I expect that the federal funds rate will remain at the effective lower bound for some time. At this time, I see significant downside risks around this outlook which, from a risk management

perspective, also calls for a persistent period of monetary accommodation.

Finally, in light of the recent period of below 2 percent inflation coupled with the Committee's aim to achieve inflation outcomes which average 2 percent over time, I anticipate the need for a prolonged period of monetary accommodation. In 2023 I project that the unemployment rate will decline to its longer-run level and that inflation will rise to 2 percent. However, I anticipate that a federal funds rate near zero — well below its longer-run level — will remain appropriate at that time to foster sustained rates of PCE inflation moderately above 2 percent. The degree and duration to which PCE inflation overshoots 2 percent will, under my view of appropriate monetary policy, depend on a broad range of factors including the performance of the real economy, the trade-off between higher consumer price inflation and financial and economic imbalances, and the evolution of inflation expectations.

In the process of forming my policy view, I consider the contour of rates prescribed by benchmark policy rules. However, I find policy rules less useful at this time for guiding the near-term path of the federal funds rate for three reasons. First, policy rules do not consider the need to manage risks to the outlook posed by recent developments. Second, in light of the uncertainty surrounding the economic outlook, the interest rate prescriptions from benchmark policy rules are also subject to considerable uncertainty at this time. Third, formalizing average inflation targeting into a policy rule requires a formulaic approach to averaging inflation outcomes. In the future, as risks either materialize or fade, uncertainty around the economic outlook normalizes, or inflation moves above 2 percent, benchmark policy rules may again serve as a useful reference for determining the timing and pace of future policy adjustments.

Respondent 11: My assessment of appropriate monetary policy reflects the highly adverse and uncertain effects of the coronavirus outbreak and the past, present, and potential future social distancing measures to mitigate the outbreak's spread. The recovery that started in May was strong but has slowed down. Economic activity still has a long way to go before it returns to pre-pandemic levels, especially in high social contact services. The gradual and likely uneven recovery from here forward calls for the funds rate to remain at its effective lower bound for the foreseeable future. Even after the outbreak passes and social distancing measures are no longer in place, the economy will require the support of accommodative monetary policy for some time. Before the health crisis hit, the economy had not reached full employment and inflation had been running below target, so we started the current recession still in need of monetary accommodation more than a decade after the financial crisis. We should not repeat the mistakes made during that recovery of reducing accommodation prematurely – or even signaling that we might do so.

Respondent 12: The principal factors behind my assessment of the appropriate path for monetary policy are the estimate of the natural real rate of interest, the economic outlook, and the balance of risks around that outlook.

As stated in my response to question 1(c), I am not changing my longer-run assumptions in this SEP, and so the range for r* remains 1/4 - 1/2 percent. Adding in the 2 percent inflation objective, the range for the longer-run federal funds rate is 2 1/4 - 2 1/2 percent, with the midpoint of 2 3/8 percent submitted as my estimate.

With inflation running below the FOMC's longer-run objective and shortfalls from maximum employment persisting well into 2023, my assessment of appropriate policy has the federal funds rate remaining at its current range through the end of the projection horizon. This policy path will support a moderate overshooting of inflation in 2023 and for some time after that, following a period of persistently low inflation.

Respondent 13: I anticipate that the economic reallocation that will occur in response to the pandemic will take some time to play out, especially in the labor market. My forecast calls for the unemployment rate to be above the natural rate over the next three years and the inflation rate to remain below the FOMC target. Consequently, the federal funds rate remains near the ELB over the forecast horizon.

Respondent 14: My assumptions about the appropriate path for the federal funds rate follow the logic of the forward guidance in Alternative B, by holding the federal funds target range at the effective lower bound until inflation reaches 2 percent and the unemployment rate reaches my assessment of the longer-run normal unemployment rate. I expect this to occur early in 2022 and liftoff in the second quarter,

with a second rate increase coming late that year. Further steps to normalize interest rates in 2023 (and beyond) are appropriate given my forecast that growth and employment would be above potential in 2023 and inflation still at the 2 percent long-run goal. Although the target range for the federal funds rate would not reach my 3 percent longer-run normal level within the forecast horizon, a still-accommodative policy at that point is consistent with both the Committee's new framework (inflation is at 2 percent in my 2023 forecast) and my own view that small deviations from 2 percent in either direction usually are not cause for alarm.

Respondent 15: N/A

Respondent 16: In our view, appropriate policy will leave the federal funds rate at the effective lower bound into early 2025. At that time, we project inflation will finally be crossing 2 percent sustainably and, with output exceeding potential, will be on its way towards a persistent moderate overshooting of 2 percent. Given this unimpeded inflation momentum, we've assumed a once-every-SEP-meeting path of rate increases commencing in 2025:Q1, with the funds rate reaching an equilibrium 2.50 percent in 2027. We also assume the Committee strongly articulates forward guidance about this policy path, particularly the linkage of the first rate increase to the inflation overshoot. We assume asset purchases will proceed as already communicated by the Committee.

Respondent 17: This forecast is predicated on the assumption that the Committee will soon put in place outcome-based forward guidance that will govern the liftoff of the federal funds rate from the ELB. I do not anticipate that 2 percent inflation will be achieved within the forecast horizon.

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: Aggressive monetary and fiscal policy actions taken since the start of the COVID-19 pandemic helped mitigate the severe initial downside impacts of the outbreak on economic activity and are contributing to the ongoing rebound. The major hit to the economy from the COVID-19 outbreak has been due to a sharp drop in aggregate demand. But there has also been some short- and medium-run damage to potential output, arising from the growing incidence of permanent job separations and likely restructuring of economic activity as the economy recovers My forecast assumes a gradual relaxation of COVID-19 containment measures alongside a recovery in individuals' mobility and economic engagement, but projects that some degree of restraint on economic activity lingers for the medium term. I assume some additional fiscal stimulus in the coming months, although there is heightened uncertainty regarding the timing and scale of the legislation. The uncertainty surrounding my economic forecast is higher than normal due to the uncertain path of the disease that emerges from leading epidemiology models, the difficulty of validating our current suite of economic forecasting models for an environment that is nearly unprecedented, and uncertainty about the size and timing of a second fiscal stimulus package. Given these extraordinary events, the risks to my forecasts for output growth, employment, and inflation are weighted to the downside.

Respondent 2: My projections rely on the economy continuing to adjust to the disease. As a baseline, I do not expect a second wave, i.e., I do not expect daily fatalities to increase back to the April levels. I expect that the decline in confirmed cases and fatalities will continue as riskier situations are being mitigated and those facing high health risks are more cautious. I view the amount of fiscal support already in place as adequate, at an aggregate level, and I attach a low probability to further fiscal support being enacted in 2020.

Respondent 3: N/A

Respondent 4: I continue to assume some additional fiscal support will be forthcoming in the near-term that will bolster the economy through the end of the year. Nonetheless, my outlook features a rather slow recovery as businesses and households grapple with the economic reality of less fiscal support, a relatively weak labor market featuring elevated frictional unemployment, and persistent businesses caution about expansion.

Respondent 5: I do not believe that Congress will pass any additional stimulus legislation before the election. Therefore my forecast for GDP growth in the fourth quarter is below consensus. I believe that significant progress is likely in the next six months on developing a vaccine and a cheap, rapid test for the coronavirus. That progress will unlock some of the additional saving that occurred this year as consumers begin to realize pent-up demand. Thus GDP growth next year will be rapid enough to attain the Q4 2019 level by Q4 2121. Recovery in the labor market lags, as skill mismatches impede the recovery. Inflation rises next year as pent-up demand meets firms with supply challenges, including difficulties finding workers with critical skills and lingering supply chain disruptions. Of course this central tendency is somewhat speculative, and the confidence interval around any forecast at this time is enormous.

Respondent 6: In the near term, the factors affecting the outlook and risks about it center squarely on the evolution of the Covid-19 pandemic, the public-health actions taken to address it, and the public's behavioral responses, as well as the actions taken by fiscal authorities.

We have so far seen a sharp improvement in the labor market and in economic activity more generally, as mobility and engagement rose quickly from their springtime lows, relaxing constraints on both supply and demand. Most of those gains appear to have been realized by mid-summer, with the pace of re-engagement slowing since then. As progress toward greater mobility and engagement slow, the usual factors of business and household income loss, labor market frictions, and precautionary behavior will likely play a greater role in the economy's recovery. On net, I expect that the initial rapid pace of improvement we've seen will eventually give way to a pace more typical of recent recoveries, but the balance between these forces is very

much a function of the path of the pandemic.

Additional fiscal support will be needed, particularly for states and localities, in order to avoid more severe headwinds to growth as the economy continues to recover.

Respondent 7: Outlook depends on course of the virus / potential for vaccine / social distancing / mitigation. Fiscal cliff is near term risk.

Respondent 8: The coronavirus pandemic is a global public health crisis that has inflicted pain and hardship on people all over the world. The pandemic and economic shutdown represent an unprecedented situation that has already resulted in unprecedented job losses and a sharp contraction in activity. The reopening phase has seen some ups and downs but activity and hiring have been stronger than I had expected. Nonetheless, I see the recovery in activity as somewhat fragile and in need of monetary policy and fiscal policy support. Macroeconomic forecasting remains particularly challenging given the uncertainties about the course of the COVID-19 pandemic and the difficulties in extracting the signal about the underlying state of the economy from extreme swings in the economic data. There continue to be several plausible paths the virus could take and progress on vaccine development and deployment remains uncertain. The level of uncertainty surrounding the forecast remains very high.

In my forecast submission, I assume that voluntary and mandated restrictions on activity are further relaxed over the course of this year and next year. There will be periodic regional upswings in virus cases but the healthcare system is able to handle these fluctuations in new cases. Progress is made on treatments and vaccines, with a vaccine becoming widely available in 2021Q3.

Under this scenario, I expect the second quarter will be the trough in activity and that there will be a sharp rebound in output growth in the third quarter as the economy has been reopening and people have begun to feel more comfortable reengaging in economic activity. The recovery continues over the rest of the forecast horizon, with growth above trend, declines in the unemployment rate, and gradually rising inflation. The recovery will be uneven, with some sectors recovering faster than others, and given the severity of the shock, it will take some time to move to a more broad-based sustainable recovery. Changes in consumer behavior including shopping and dining preferences, household living preferences, firms' demand for office space, and the reestablishment of more robust supply chains could all necessitate structural changes to the economy; some workers will need to retool for jobs in different sectors. All this will take some time to work itself through.

To achieve my forecasted outcomes, monetary policy will be highly accommodative over the forecast horizon. By the fourth quarter of 2023, the economy is growing at an above-trend rate, inflation has risen to 2 percent and is on track to rise further, and labor market conditions have reached levels consistent with maximum employment. Under these conditions, it is appropriate for monetary policy to remain very accommodative but for the funds rate to have moved off of the effective lower bound. I am assuming financial stability risks are not realized over the extended period at the ELB, but this is a risk and the policy path could need to be adjusted if significant risks emerge. My forecast assumes that we will continue to purchase assets to support the recovery, and that further fiscal action is in place next year.

There are both downside and upside risks to my forecast; I see the risks tilted to the downside, in particular because there is the potential for a more adverse pandemic scenario. In this more severe virus scenario, cases rise fast enough and fail to be contained, which puts significant stress on the healthcare system in some parts of the country. Even though governors would find it hard to gain enough public support to reinstate the wide-spread restrictions seen in the first shutdown, there would likely be voluntary restrictions on activity. The reduction in economic activity would result in sharp falls in spending, with more permanent job losses, business failures, and credit defaults. I put less weight on this scenario than in my June submission because we saw that the rise in virus cases in June and July could be contained through appropriate behavior of individuals and targeted government and public health policies.

On the upside, if there is faster progress on the development and deployment of the vaccine, then economic activity could pick up more quickly than I've assumed.

I put the greatest likelihood on the virus scenario on which I conditioned my forecast (75%), with the severe virus scenario at 15% and the more benign scenario at 10%.

Even conditional on the pandemic scenario I've assumed, there are upside and downside risks to the forecast. While policy actions have supported the economy, the level of activity and employment remain well below pre-pandemic levels and the nature of this shock – a shock to public health – may be less responsive to

policy actions than other shocks that are more economic in nature. My forecast assumes further fiscal action is in place next year, but this is now questionable. Credit quality problems, defaults, and business failures could be higher than expected and this could curtail activity, harm the labor market, and put stress on banks, which would then curtail lending thereby further restraining the recovery. I expect to see further stress developing in the commercial real estate market, which has the potential to put stress on the wider financial system. The recent volatility in equity markets, which mainly originated in the tech sector, could have spillovers to the broader market and undermine business, consumer, and investor confidence. The prospect of very accommodative monetary policy could generate investors' search-for-yield behavior, driving further volatility.

The unexpected strength in the incoming economic data suggests there are upside risks to my forecast as well. Businesses could become more optimistic that another shutdown can be avoided and increase their rate of hiring and investment. Temporary job losses could continue to be unwound faster than I expect and consumers could begin to spend more of the increases in disposable personal income that came from the fiscal policy actions this spring.

Respondent 9: Economic data have been more positive than expected, despite some flare-ups of the virus earlier in the summer. The flare-ups appear to have dented economic activity only marginally so far, possibly reflecting changing attitudes toward the trade-off between public health and economic growth. The better-than-expected economic outcomes achieved so far likely also reflect the effectiveness of the policy actions taken during the spring, when fiscal and monetary policymakers pulled out all of the stops to limit the economic fallout from the lockdowns.

Still, the surge in cases of the virus this summer in many states—including many where infections had previously been relatively low—is a reminder that the likelihood of a significant second wave of the virus remains very real. Importantly, our estimate of the probability of a second wave has not changed since our June SEP submission. What has changed is our assessment of the economic damage associated with a potential second wave this fall, which we now assume to be smaller.

In particular, our forecast is conditioned on a second wave of the pandemic occurring in November, which is consistent with some prominent epidemiological model forecasts. The economic fallout from the second wave is contained because agents are better able to adapt to social distancing, and because we expect some support from fiscal policy early next year. We think that a substantial second wave of infections will trigger a fiscal policy response, and that meaningful additional stimulus won't occur prior to that time. With the economic damage from a second wave relatively contained, the unemployment rate is projected to decline to near 7 percent by the end of 2021, when an effective, widely available, vaccine is assumed to be in place. While an effective vaccine will help the recovery, the second wave is expected to push more firms into bankruptcy and turn temporary layoffs into permanent job losses. This damage to the supply side of the economy lowers potential GDP growth and slows the recovery. As a result, by the end of 2023, the unemployment rate is still projected to be above 5 percent and above our estimate of the natural rate, which we have increased in this projection because of some assumed persistent supply-side effects from the pandemic.

As concerns inflation, supply damage to the economy, despite being relatively contained, is expected to offset some of the shortfall in aggregate demand, and as a result inflation is projected to run only modestly below the 2 percent target by the end of 2023. In this environment, it remains crucial for monetary policy to adjust where necessary to restore economic well-being as quickly as possible. Implicit in our forecast is the assumption that the Federal Reserve's emergency lending programs are expanded as needed to support small businesses and other agents in a timely and efficient way.

Respondent 10: Central economic outlook: After historically large contractions in GDP and employment in the second quarter, I anticipate a partial rebound in the second half of 2020. As portions of the economy have re-opened, spending and employment are again growing. However, I anticipate that the scope and extent of the economy's rebound will remain limited by the presence of the virus and the health risks it poses. The net effect of the pandemic on prices has been disinflationary as severely affected sectors experienced a sudden evaporation of demand. However, other parts of the economy are encountering robust demand, stimulated in part by policy, against a backdrop of pandemic-induced supply constraints. How inflation unfolds in the coming quarters is unusually uncertain as these competing forces of demand and supply push in opposite directions.

Uncertainty and risks: There are significant uncertainties and downside risks to my outlook for growth, employment, and inflation. The trajectory of the economy going forward will depend most directly on the course of the virus and therefore the range of future economic outcomes is unusually wide. A full-blown "second-wave" of the virus is a risk that will remain for much of this year as many states attempt to reopen schools and the US approaches its traditional cold and flu season.

The potential for a large fiscal drag on growth and employment also remains a key near-term risk. Large transfers from the federal government to households and businesses insulated the economy from an even sharper recession. However, as this stimulus expires, the economy faces the risk of running off of a fiscal cliff. State and local governments appear to be especially at risk as many municipalities have little room to navigate the sharp declines in revenue they are experiencing. The prospects for a fiscal standoff may be especially pronounced as the 2020 election draws near, adding an additional layer of uncertainty to an already murky outlook.

Respondent 11: The coronavirus and the past, present, and potential responses to it, both official and unofficial, dominate my outlook. I expect the disruptions from the virus to be persistent, especially for activities with high levels of social interaction. While the recovery from April to the present has been rapid, it will take a long time and control of the virus through testing, treatment, or vaccination to get the rest of the way back to pre-pandemic levels of activity. In addition, many businesses are likely to have declared bankruptcy, resulting in additional, significant scarring in business and labor markets. As a result, I expect that the recovery will be very gradual.

Respondent 12: As the path of the COVID-19 pandemic and the measures and actions, including fiscal policies, to address it, are primary influences on the medium-term economic outlook, I begin with a short description of the assumptions regarding those factors.

One COVID-related assumption underlying my projections is that a vaccine will start to become widely available sometime in the first half of 2021. Consequently, social distancing actions and other measures to address the pandemic along with their adverse economic impacts should recede over the course of next year.

In addition, even though there was a surge in cases in the U.S. during the summer, no widespread shutdowns were reintroduced and the measures taken during the surge did not have as severe an economic impact as those taken during the spring. Similarly, any necessary measures taken to address the pandemic over the rest of this year and next will have a less onerous effect on economic activity.

The implemented monetary and fiscal policy actions have been instrumental in limiting the economic damage from the pandemic, and appear to have contained the detrimental effects on medium-term activity that would have otherwise followed from the downturn. Focusing on fiscal policy, I anticipate that an additional fiscal package of around $500 billion will be passed later this year. As noted in my response to question 2(b), the possibility of no additional fiscal action is a downside risk to my outlook.

Turning to my economic projection, despite the rise in COVID-19 cases during the summer, the economy has rebounded more strongly in recent months than anticipated in June. Three factors have contributed to this greater economic resilience: (1) The economy has reopened more quickly than anticipated; (2) Measures undertaken to address the surge in cases had a less adverse effect on the economy; and (3) A number of sectors, including housing and segments of the retail sector, have adapted faster to the pandemic environment than anticipated. Because of this stronger rebound, growth over the second half of the year likely will be quite strong. This rebound is still only partial, so that real GDP growth over this year will be about -3 1/2 percent, but this is better than the -5 1/2 percent I projected in June.

The stronger second half rebound is largely a pulling forward of growth that would have occurred later, and so I have marked down my projections for real GDP growth in 2021 - 22. Nevertheless, recovery dynamics, including solid inventory accumulation over next year, and continued accommodative monetary policy lead to growth in 2021 – 23 that is significantly above my assumption of its potential rate. As a result, real GDP at the end of 2022 is moderately above that under my June projection, while the level at end-2023 is still modestly below the level implied by real GDP rising at its potential rate from 2019Q4.

The decline in the unemployment rate from the surge in March and April was even stronger than the rebound in aggregate real activity. Part of that decline reflects stronger growth in employment as measured in the household survey after a period where it had been weaker than job growth in the establishment survey. Another factor is that the fluctuations in employment have been concentrated in industries and occupations with low wages and productivity. Both of these factors will continue to contribute to labor market dynamics over the projection horizon. Combined with the outlook for real GDP growth, the unemployment rate is

projected to continue to fall quite quickly over the rest of the projection horizon. By the end of 2023, it is below my estimate of u*, but still above its level of 2019Q4, consistent with the level of real GDP at that time.

After being very low in the first half of the year, inflation has been relatively strong in the past couple of months, primarily reflecting a turnaround in some prices where the pandemic had a particularly large effect. I do not anticipate much further strengthening over the rest of the year, resulting in core PCE inflation of only 1.4 percent for this year (Q4/Q4). Further out, against a backdrop of stable inflation expectations, a recovery in the real economy, shrinking resource slack, and very accommodative monetary policy, inflation will rise gradually over the rest of the projection horizon, with core PCE inflation in 2023 at 2.1 percent. Beyond the projection horizon, I anticipate that inflation will be moderately above 2 percent for some time, consistent with the guidelines in the new consensus statement.

Respondent 13: My baseline forecast presumes that there will not be a second wave of the virus that has a large impact on the economy in the months ahead, though I do see that as a significant downside risk. Even without a second wave though, I anticipate that economic recovery will be hampered by the reluctance of firms and households to return to pre-pandemic levels of activity until a vaccine is widely available. Uncertainty about the virus and the attending caution on the part of consumers will have a significant impact on sectors such as education, healthcare, and travel which will be slow to recover. In addition, state and local government budgets are being hard hit and are unlikely to be a significant source of hiring and spending over the medium term. It is now less clear that further fiscal support will be provided to the economy. However, even if further fiscal support is enacted I anticipate that it will be in the form of enhancements to existing programs rather than the roll out of major new initiatives.

Respondent 14: The world remains highly focused on the trajectory of the coronavirus pandemic and the actions of individuals, businesses, and governments to contain its spread (hereafter, the "COVID event"). My forecast is predicated upon a continuation of the trends that emerged this summer. Most promisingly, advances in treatment and improved strategies for protecting vulnerable populations have pushed hospitalization rates and case-fatality rates down significantly. Therefore, despite a substantial rise in cases in many states, authorities in those areas did not re-impose widespread stay-at-home orders and close nonessential businesses. With those better-targeted actions proliferating, national daily case counts have fallen by more than 40 percent from the peak and are still declining. Meanwhile, high-frequency data showed only modest deterioration in mobility or overall spending in heavily hit areas, and little effect outside of those areas.

I expect that the faster-than-expected reduction in social distancing will continue, and pull more growth into 2020 and the first half of 2021 relative to the Tealbook forecast. However, I do not assume that a vaccine will be introduced or a revolutionary treatment will be discovered. Thus, either of those developments, especially if they were to occur early in the forecast horizon, represent an upside risk in my forecast.

My baseline forecast assumes a $1 trillion fiscal stimulus package, as in the Tealbook, will be passed early in the 4th quarter. In my reading, this assumption splits the difference between the downside risk of a "no deal" outcome (which would shave several percentage points off my 2020Q4 and 2021Q1 forecasts) and the potential upside that a larger deal could materialize.

My forecast projects that the stock of savings that households have accumulated over the past 6 months represents a larger stock of pent-up demand than is currently built into the Tealbook. Given that the decision to build this savings buffer was largely imposed by business closures and incomes were supplemented with stimulus payments, rather than an endogenous decision to build precautionary savings over a longer run period, I expect households to have a high propensity to consume out of these assets in coming months.

Within GDP, I expect that spending by households will continue to drive the recovery as spending by businesses lags. This has important implications for my inflation forecast, described below.

Respondent 15: N/A

Respondent 16: We expect the vaccines currently in phase 3 trials will be granted regulatory approval early in 2021 but will not be in broad usage until later in the year. In the meantime, intermittent waves of regional outbreaks will slow the pace of recovery in the affected areas. So, too, will business failures and other recessionary dynamics emanating from the large declines in output we have seen so far. We also

assume that the difficulty caregivers have balancing work with their children's on-line schooling will have a modest dampening effect on aggregate activity. Our fiscal policy assumptions are similar to the Tealbook and so provide a modest further boost to output later this year. Given these factors, and the simple fact that the bulk of the reopening from the spring shutdown appears to have occurred already, we expect growth to slow to around a 3 percent annual rate in 2020:Q4 and remain near that pace in 2021:H1.

With a medical solution widely adopted during the second half of 2021, this projection sees a transitory surge in growth as the economy returns to a semblance of business-as-usual by the end of that year. We project that the output gap will be closed that year, though at a level of potential output about 2.5 percent lower than we anticipated in March. A back-to-normal environment, accompanied by accommodative monetary policy, produces output growth above potential in 2022 and 2023, leaving a fairly sizable overshooting of potential by the end of the forecast period.

With growth consistently above potential and supply-side labor market disruptions subsiding, we project the unemployment rate will fall to 7.5 percent by the end of 2020, 5.5 percent in 2021:Q4, 4-3/4 percent in 2022:Q4, and 4 percent in 2023:Q4. By the end of the forecast period, the natural rate has returned to the long-run neutral rate of 4-1/4 percent that we assumed prior to the pandemic. Nevertheless, there still remains some disconnect between the unemployment rate and output gaps, which we feel appropriately reflects some longer-term labor market scarring that could take time to fully dissipate.

In light of stronger-than-expected incoming data, we see inflation coming in at 1.5 percent in 2020. Then, aided by a noticeable overrun of potential output, accommodative monetary policy, and a well-communicated commitment by the FOMC to overshooting, we forecast inflation will rise to 2.0 percent in 2023 and 2-1/4 percent in 2024. Crucially, we assume that the Committee's new framework statement enhances the credibility of its policy communication, and thus provides an important lift to inflation expectations. Any reluctance to follow through on the statements' strong commitments would limit these important increases.

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

Respondent 17: Uncertainty and risks associated with the COVID-19 pandemic continue to play a key role in shaping both the modal outlook and the assessment of risks. This forecast assumes that there will be periodic flare-ups in various areas of the country and globally, resulting in additional rounds of social distancing until a vaccine becomes widely available–but it also assumes that the economy is more resilient to social distancing than had been previously assumed. Another key factor for this forecast is fiscal policy and the associated uncertainty. On the household side, while the still-elevated saving rate could provide some cushion to support consumption spending for some consumers in coming months, we know from economic research that cash-constrained consumers make up a large fraction of the population–and these consumers seem unlikely to be able to sustain recent levels of consumption without additional support. And on the business side, many small businesses–who employ a large fraction of the workforce–continue to face large declines in revenues and will also likely necessitate additional support in order to make it through the crisis.

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: Partly as a result of faster relaxation of social distancing measures across the country, the rebound in economic activity in 2020Q3 has been significantly stronger than I anticipated in the previous SEP. This strong rebound can also be partially attributed to the effectiveness of recent monetary and fiscal policy actions. I assume that conventional and unconventional monetary policy will remain significantly accommodative for the next several years. In addition to taking into account fiscal stimulus from the CARES Act and other fiscal relief packages already enacted, my forecast assumes that an additional fiscal stimulus package that is significantly smaller than the CARES Act will be implemented in the coming months.

Respondent 2: My projections feature a faster recovery than the June SEP. The public health situation has been improving since mid-July (confirmed cases)/mid-August (fatalities). GDP growth for 2020H1 was less negative than I expected in June and incoming data indicate stronger growth for Q3. I expect this quicker recovery to continue into the first quarter of 2021. Unemployment has been declining faster than I expected in June and I project these sharper declines to continue until convergence is achieved in 2022. A faster recovery, supported by a more accommodative stance of monetary policy, is accompanied by higher inflation with respect to my previous projections.

Respondent 3: N/A

Respondent 4: Much of the recent data on real activity has been stronger than expected and caused me to revise GDP higher for the year and lower the unemployment rate projection. My assumption about the path of the pandemic has not changed materially, with an assumption that an effective vaccine will be widely deployed during the second half of 2021.

Respondent 5: N/A

Respondent 6: Labor market conditions, as well as consumer spending and some categories of investment, improved more quickly than expected since the Spring, while recent readings on inflation have surprised to the upside. My outlook takes these developments into account.

Respondent 7: Hard data flow has been very resilient since June notwithstanding the spike in new covid cases in the summer.

Respondent 8: The incoming data suggest a more rapid rebound in economic activity and hiring than I had been expecting in June. I have incorporated the FOMC's new monetary policy strategy into my forecast.

Respondent 9: Our June SEP submission was close to a simple average of the Tealbook baseline outlook and the 'second waves' scenario, and our current projection is conditioned on a second wave of the pandemic occurring in November. Given that the economic fallout from the second wave is now expected to be more contained, our current forecast remains fairly close to the previous one over the medium term. In the near-term, however, our outlook reflects the better-than-expected data that we have received since June.

Respondent 10: My September projections for 2020 growth, employment, and inflation have been marked-up as many parts of the economy have gained traction more quickly than I expected, largely reflecting a reduced sensitivity of economic activity to the recent rise in COVID-19 cases and the unprecedented level of fiscal support. Going forward, I anticipate that the trajectory of the economy will remain tightly linked to both the virus and fiscal policy. With regards to the spread of the virus, I am not assuming that the economy is struck by another wave of the virus and mandated lockdowns, but instead I expect that the number of new cases in the United States remains close to its current plateau for some time

with voluntary social distancing and intermittent flare ups remaining a headwind to the economic recovery. With regards to fiscal policy, I have incorporated the response of fiscal policymakers that have been passed into law at this time and I anticipate that another round of fiscal support will be enacted that includes enhanced unemployment benefits, albeit at a reduced level from the CARES act, and transfers to state and local governments. The failure of this fiscal support to materialize, especially as elements of the CARES act expire, is a growing threat to my economic outlook.

Respondent 11: Since the June SEP, I have been surprised by the speed of the recovery since April and the reduction of new cases from their peak in July. But I was also surprised by the run-up in cases from early June to late July, so there is still a lot of uncertainty about the path of the virus.

Respondent 12: As already noted, the rebound in real activity and the labor market in recent months has been quite a bit stronger than anticipated in June.

For real activity, this rebound is largely pulling forward growth that would have occurred in the future. Consequently, I raised my projection for growth for this year, but lowered it for 2021 and 2022, with the net result of only a moderately higher level of real GDP at the end of 2022.

The unemployment rate in August was below my June projection for the end of this year. Accordingly, my projected path of the unemployment rate is lower over the rest of the projection horizon. While the pace of the decline slows over the rest of the projection from the current pace, unemployment still declines extraordinarily fast by historical business cycle standards, befitting the unusual nature of this cycle.

I also raised the projected path of inflation from that in my June SEP submission. Part of this change reflects the stronger data of the past couple of months. Another factor is the impact of a projected tighter labor market. A final factor is the effect of a more accommodative policy path under the new framework on near- and medium-term inflation expectations.

Respondent 13: The economy has rebounded at a faster pace than I envisioned in June and that strength is reflected in my forecast. I am less certain that further significant fiscal support will be enacted.

Respondent 14: Changes to my forecast for 2020 reflect almost exclusively the stronger-than-expected data for growth, unemployment, and inflation that has arrived since the June SEP. Relatedly, the downward revisions to growth and unemployment in 2021 largely represent the pull-forward of growth into 2020; however, growth in 2021 remains quite strong, and materially exceeds the Tealbook. My outlook for growth in 2022 is largely unchanged, but the level of unemployment is much lower due to earlier gains.

Importantly, I have revised up my forecast of inflation in 2021 and 2022. The smaller output gap and the lower level of the unemployment rate interact with ongoing restraints on the supply side that are somewhat larger than built into Tealbook. In particular, business closings and failures continue to mount despite the faster recovery, and those can contribute to less competition, lower investment, and lower productivity due to loss of job-specific human capital. The inflation forecast for 2022 is somewhat higher than the Tealbook as a result of my assumption of greater supply-side damage.

Respondent 15: N/A

Respondent 16: The incoming data have been stronger than we had expected in June. On net, businesses appear to have adapted to the virus more successfully than we had assumed and people are willing to undertake more activity, despite the high caseloads this summer. On the downside, we see less fiscal stimulus, and see it coming later. All told, we now project GDP growth will be fall 3.5 percent this year, versus a 7 percent decline in our last SEP. A good deal of this additional output is brought forward from 2021 and 2022, and therefore growth in those years are now projected to be 0.5 and 1.0 percentage point less than in June. By the end of 2022, the level of GDP is roughly 2-1/2 percentage points higher than we forecast at the last SEP. The unemployment rate has also fallen faster than we projected. Consequently, we lowered our forecast of it by 2 percentage points in 2020, 1 percentage point in 2021, and 1/2 percentage point in 2022.

A more sanguine growth outlook, combined with higher-than-expected inflation readings since June, caused us to raise the path of core inflation by 0.5 percentage point in 2020 and 0.2 percentage point in 2021 and 2022. We now see inflation hitting target by 2023, a year earlier than in June.

The speed with which some firms have managed to get their operations running again made us reevaluate the timing of our assumptions about potential output. We reduced the hit to potential some this year and allowed for a smoother and quicker return to our long-run assumptions regarding potential GDP growth and the natural rate of unemployment. We now assume the first federal funds rate hike will occur in 2025:Q1, where as in June we had the first rate hike occurring in mid-2023. We feel this path is more consistent with the monetary policy strategy articulated in the Committee's revised strategy statement.

Respondent 17: The economic data received since the previous SEP have been much stronger than anticipated, and suggest that economic activity is a fair bit more resilient to social distancing than previously assumed. Financial conditions have also improved much more than anticipated at the time of the June SEP–as investor sentiment reacted positively to upside surprises in economic data and corporate earnings, declines in new COVID cases in the U.S. on net, and positive news on vaccine development. As a result, this forecast projects a shallower contraction in GDP this year and a lower unemployment rate and year-end compared to the previous SEP.

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: The two projections are largely in alignment around the anticipated path for the federal funds rate. However, I am projecting a somewhat slower recovery for real GDP and unemployment. The September 11th update to the Tealbook projects unemployment to decline to 4.9 percent by the end of 2021, and 3.2 percent by 2023. By contrast, I project unemployment to decline to 5.3 and to 4.0 percent over these time frames. The Tealbook update also shows a stronger recovery between 2021 and 2023 than does my forecast. I estimate a slightly lower inflation path than the Tealbook, though in both forecasts, core PCE inflation reaches 1.9 percent by the end of 2023. My expectation of slower growth implies a need for additional policy accommodation via forward guidance and expanded asset purchases.

Respondent 2: My GDP growth projection is stronger than the Tealbook for 2020H2 and in line with the Tealbook for 2021. With convergence occurring at a quicker pace, I expect growth in 2022 and 2023 to be lower than the Tealbook. I project the unemployment rate to decline more rapidly than the Tealbook.

Consistent with the Tealbook, I project PCE inflation to moderately overshoot its 2.0 percent long-run value. However, I project this to occur sooner, starting in the second half of 2020 and continuing throughout 2022, and for inflation to peak at a higher value before converging to its long-run value in 2023.

My view of the appropriate path for the federal funds rate coincides with the Tealbook over the forecast horizon 2020-2023.

Respondent 3: N/A

Respondent 4: I have less improvement in labor market conditions over the forecast horizon than in the Tealbook. I am seeing dislocations in the labor market, such as a rising trend in permanent layoffs, that suggest rising frictional unemployment and a slower pace of the labor market recovery.

Respondent 5: N/A

Respondent 6: Relative to the Tealbook, I see a somewhat smaller decline in GDP in 2020, and consequently a somewhat smaller gain in 2021.

With respect to the unemployment rate, my projected path is higher than the Tealbook's, by a small amount, as I see a slightly higher rate of unemployment at the end of 2020, but after that a pace of improvement roughly similar to that in the Tealbook.

The differences in our outlooks for inflation, both headline and core, are not material.

The biggest difference in my outlook relative to the Tealbook's is, of course, with regard to the policy path. I expect that it will be appropriate for policy to remain highly accommodative throughout the forecast horizon. At the same time, though, in order to avoid generating real and financial imbalances that could impede the attainment of the FOMC's goals, I expect that modest increases in the funds rate will be needed well before the Tealbook baseline's lift-off in 2025.

Respondent 7: I am broadly in synch with TB - fiscal is near term downside risk / but elevated saving/ pent up demand (in aggregate) is upside risk

Respondent 8: Qualitatively, my projection is similar to the Tealbook forecast. The economy contracts in the first half of this year and begins to recover in the second half. The economy grows at an above-trend pace over 2021-2023. The unemployment rate peaks in the second quarter and moves down significantly over the second half of the year, and declines further over the rest of the forecast horizon. By the end of 2023, inflation has moved up to 2 percent and is on track to move higher thereafter. Monetary policy is highly accommodative over the forecast horizon in both my forecast and the Tealbook forecast, but while the Tealbook assumes

that the funds rate will remain at the effective lower bound until 2025, in my forecast it is appropriate for the funds rate to move up by 25 basis points in 2023. I also assumed further fiscal stimulus, as in the Tealbook.

Respondent 9: The baseline Tealbook forecast is predicated on no significant flare-ups of the virus occurring over the forecast horizon. The 'second waves' scenario in the Tealbook, which is closer to our assumptions regarding the projected evolution of the pandemic, therefore provides a better point of comparison. Indeed, our outlook is noticeably closer, on an unemployment rate basis, to the Tealbook's 'second waves' scenario especially over the medium term. In 2021, our forecast is considerably more optimistic than the 'second waves' alternative because we are assuming additional fiscal stimulus next year that is not present in the Tealbook scenario.

Respondent 10: Relative to the Tealbook baseline, my projections call for a more protracted recovery of the labor market and a slightly higher path for inflation over the next couple of years. However, given the unprecedented uncertainty that accompanies the outlook, the differences in my projections and the Tealbook forecast do not appear to be meaningfully different. My assumptions regarding both the path of the virus and fiscal policy are broadly similar to those in the Tealbook baseline.

Respondent 11: I think the effects of the coronavirus outbreak will be comparable to the Tealbook's "Slower Recovery" scenario. Once the outbreak passes, I think monetary policy will need to be very accommodative, even longer than in the Tealbook's "Slower Recovery" scenario.

Respondent 12: Regarding the underlying assumptions in the forecasts, the one notable difference is in the fiscal assumption, where my projection assumes a $500 billion package whereas the Tealbook forecast assumes a $1 trillion package.

Given the high uncertainty around forecasts in the current environment, my projections for real GDP are broadly in line with the Tealbook forecast for most years of the projection; however, my projection is noticeably above the Tealbook's for 2021. The difference largely appears to be in inventory investment, reflecting differences about the level of desired inventories after the large fluctuations in inventories-sales ratios associated with the pandemic.

While close to the Tealbook in the near term, my projection for the path of the unemployment rate in 2021 – 2023 is somewhat above that in the Tealbook, despite the Tealbook having a somewhat higher u*. This difference may be due to the Tealbook expecting that some of the previously cited factors contributing to the very rapid decline in unemployment since April will persist longer than in my forecast.

The other difference between these forecasts concerns inflation. Although the forecasts are fairly close though 2022, my projection has inflation beginning to overshoot 2 percent in 2023, while the Tealbook does not anticipate that occurring until 2025 (based on its long-term outlook), despite a very low unemployment path. This difference appears to be occurring because of the Tealbook's assumption that underlying inflation is 1.8 percent: to push inflation above 2 percent thus requires an extended period of low unemployment.

Respondent 13: My forecast is less optimistic than the Tealbook. I expected somewhat slower economic growth and a slower rebound in the labor market. Resource reallocation across the economy in response to the pandemic and longer-term responses to this shock by households and firms will likely be a protracted process.

Respondent 14: (Described above in context)

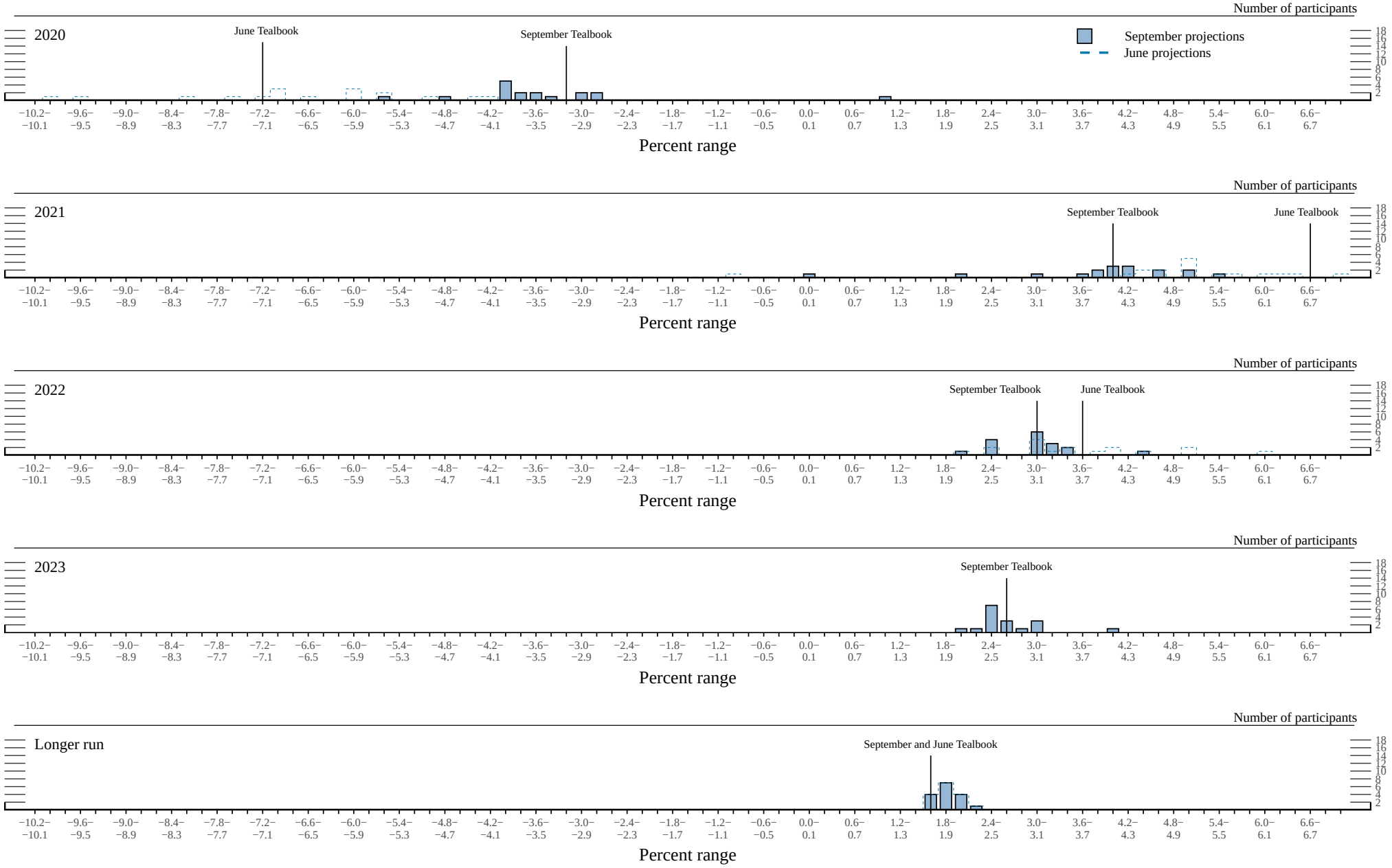
Respondent 15: N/A

Respondent 16: Our assumptions for fiscal and public health developments are similar to those underlying the Tealbook's baseline scenario. Our monetary policy liftoff occurs around the same time as in the Tealbook, but subsequently follows a somewhat steeper path.

The broad contours of our growth forecast are similar to the Tealbook's. Nevertheless, we have the unemployment rate higher in 2021-2023, reflecting our somewhat more pessimistic view of the medium-term labor market damage caused by the recession. We also see inflation reaching target in 2023 and beginning to overshoot in 2024, a year earlier than the Tealbook. This reflects a somewhat more positive view than the Tealbook about the ability of monetary policy communications to lift inflation expectations and the underlying trend in inflation.

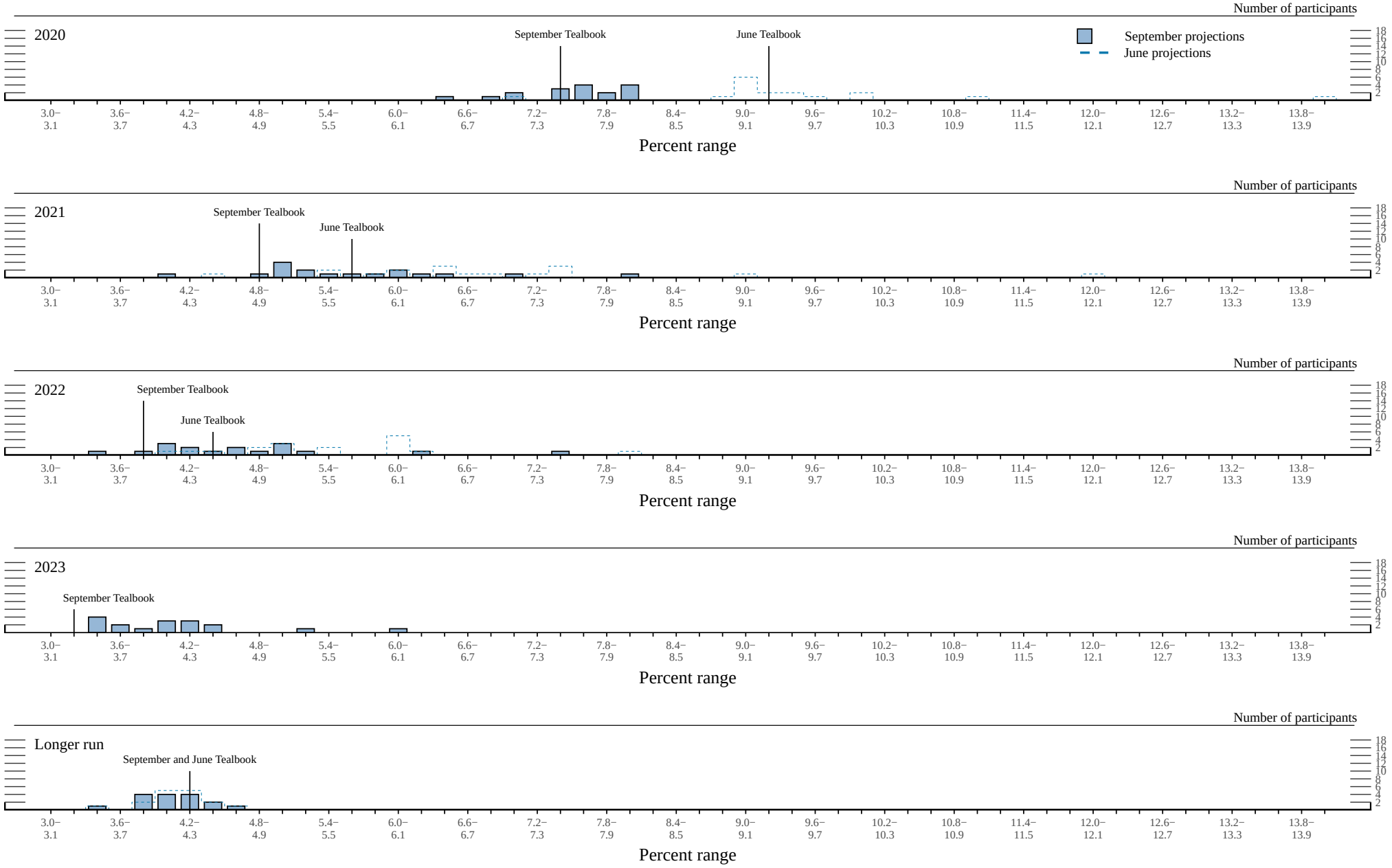
Respondent 17: Compared with the Tealbook projection, my forecast is less optimistic regarding the size and timing of additional fiscal support.

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2020–23 and over the longer run



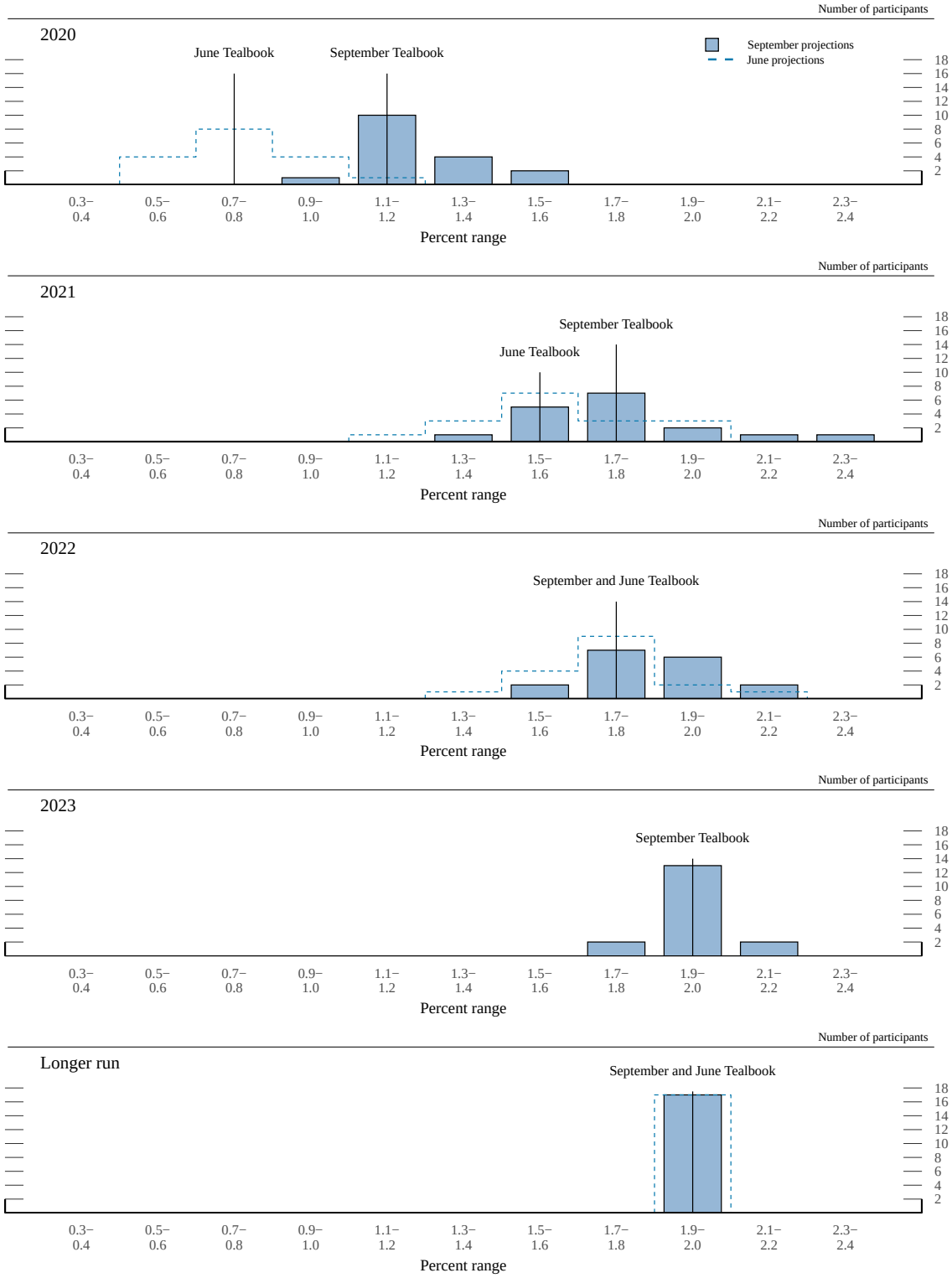
NOTE: Updated September Tealbook values are reported. Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2020–23 and over the longer run



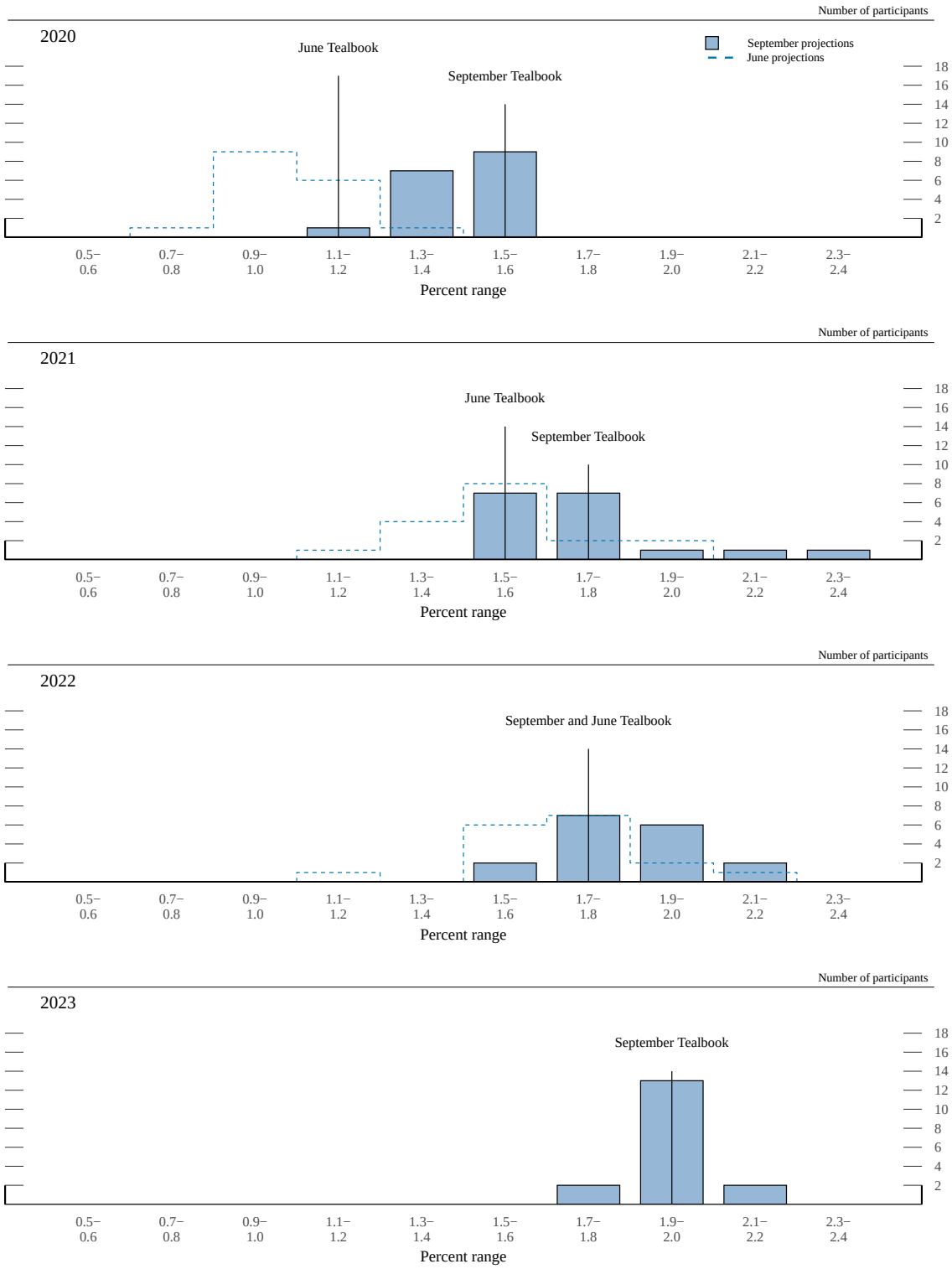
NOTE: Updated September Tealbook values are reported. Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2020–23 and over the longer run



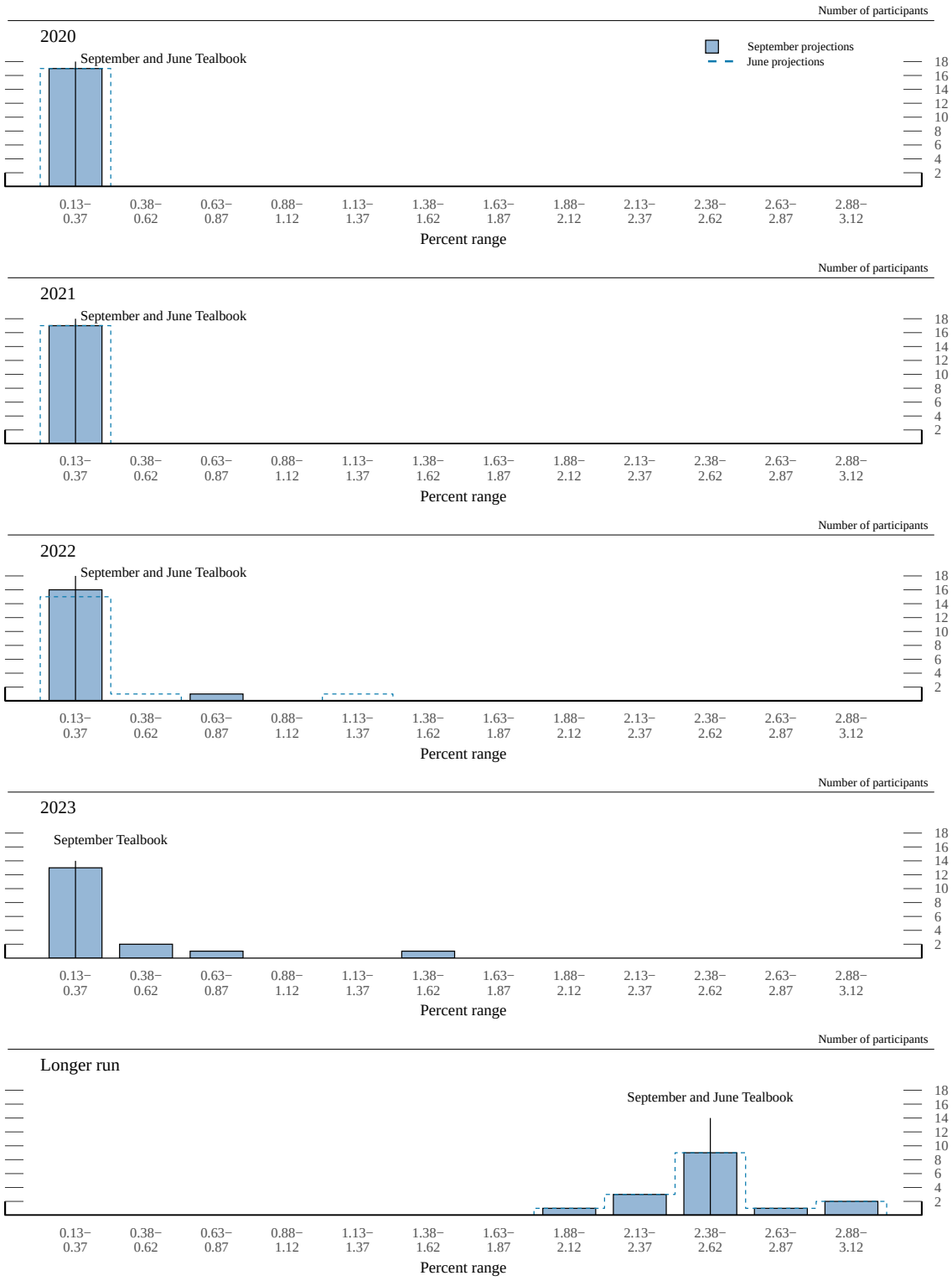
NOTE: Updated September Tealbook values are reported. Definitions of variables and other explanations are in the notes to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2020–23



NOTE: Updated September 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, 2020–23 and over the longer run



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