

The Fed's Communications: Suggestions for Improvement

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The Fed has significantly improved its communications, but it is far from transparent on many key issues, and there is a lot of room for improvement. Let's start with the good news. Most favorably, in January 2012 the Fed formally adopted a Statement on Longer-Run Goals and Monetary Policy Strategy, which it updates and formally adopts each year. The Fed prominently highlights its longer-run 2 percent inflation target and emphasizes the importance of well-anchored inflationary expectations. The Fed also clearly announces its monetary policy changes, which has not always been the case. And the Fed usually tells us what's on its mind--on most issues--and sometimes, excessively.

But the Fed faces communications challenges on many fronts. In general, the Fed's discretionary approach to achieving its dual mandate goals muddles its communications; it's very difficult to be clear and predictable if the conduct of monetary policy and what drives it is always changing. This is complicated by the differing views of Fed members on how to achieve its objectives, and how those objectives relate and interact. Second, since the financial crisis, while pursuing its dual mandate, the Fed has broadened the scope of monetary policy, particularly toward placing a higher priority on financial stability. Third, the Fed's enlarged balance sheet and its normalization strategy have posed a communications challenge that until recently the Fed has largely swept under the rug.

The Fed's uneasy and unhealthy relationship with financial markets heavily influences and strains its communications. Markets look to the Fed for forward guidance while the Fed's monetary policy and its communications are heavily influenced by how the Fed perceives its policy changes and what it says will affect financial markets. The Fed's communications, and particularly its forecasts, are monetary policy. The Fed has heightened its emphasis on what it says and its forward guidance to the same level of importance as interest rate policy, while its policies on bank reserves and money are distant priorities.

Facing all of these issues, the Fed tries to achieve too many goals in its communications strategy: managing and fine-tuning the economy, financial markets and expectations; providing forecasts and its perspective on how the economy, labor markets and inflation relate to each other; and its perspective on the appropriate path of the Federal funds rate. No wonder its public messages get jumbled.

The broadest improvements in the Fed's communications would require: 1) establishing a more systematic approach to achieving its dual mandate, 2) clarifying the proper role of monetary policy

in achieving those objectives—that is, identifying what is within and beyond the scope of monetary policy, and 3) articulating the Fed’s goals and role in achieving macro-prudential risk management and financial stability. Modifications to some of the Fed’s current communications practices would move toward these improvements and clarify monetary policy.

The Fed’s official Longer-Run Strategy Statement emphasizes that while inflation over the longer-run is primarily determined by monetary policy, “the maximum level of employment is largely determined by nonmonetary factors that affect the structure and dynamics of the labor market.” In practice, the Fed does not seem to heed this official message: an inordinate amount of its communications and focus are on current economic conditions, even though short-run fluctuations are beyond the control of the Fed and have little to do with the Fed’s dual mandate.

Fed members provide constant commentary on economic conditions in public speeches and appear on TV to comment on the just-released monthly Employment Report and other high-frequency government data. All of this public commentary sends a clear message to financial markets and the media: focus on every aspect of current economic conditions, because that’s the Fed’s focus.

The Fed’s official Policy Statement following each FOMC meeting begins with the Fed’s description of economic conditions. Small word changes are closely scrutinized for insights into the Fed’s assessments of the economy and what they may imply for future policy rates. The Policy Statement typically includes a balance of risk that tends to focus more on economic activity than the Fed’s dual mandate.

The clear impression is that the Fed perceives that its primary pursuit is to manage the economy and its short-term fluctuations subject to its 2 percent inflation target, and that those short-term conditions are really important to the Fed’s longer-run dual mandate objectives. This is a different reaction function than the Fed pursued during the Volcker-Greenspan regimes when it made clear that stable low inflation and inflationary expectations were the best contribution monetary policy could make to the Fed achieving its dual mandate.

This broadened scope of monetary policy into managing the real economy is reflected in its policy and communications. Its communications suggest that the historic lags between monetary policy and the economy and inflation have disappeared, which is inconsistent with the Fed’s actual view. The reality is the Fed takes its dual mandate seriously and it is very aware of the blurry linkages between the economy, labor markets, wages and inflation. Its belated acknowledgement that the

Phillips Curve is flawed and not a reliable framework for countercyclical monetary policy has heightened its communications challenges.

The Fed should tone down its commentary on short-term economic fluctuations, be clearer about what is within and beyond the scope of monetary policy.

One simple recommendation is that FOMC members should cease making public comments immediately following government data releases. Such commentary should be left to private economic and financial market participants and the media. In public speeches and statements, FOMC members should be encouraged to relate their comments on the economy to the Fed's dual mandate. They should also emphasize the distinction between the short-term fluctuations (and statistical noise) of high frequency data and intermediate-term trends that may be influenced by monetary policy.

The Fed's official Policy Statement following FOMC meetings should be modified in at least three ways. First, it should begin with an assessment of monetary policy and whether it is consistent with achieving the Fed's statutory mandate, rather than the Fed's assessment of the real economy. A simple reordering of the current format in the Policy Statement would reinforce the Fed's primary focus on its statutory mandate and policy stance, and properly put current economic conditions as a supporting and not the lead role.

Secondly, the Fed should explicitly convey in every Policy Statement separate explicit risk assessments on inflation and on employment and/or the economy. Dropping the risk assessments from a Policy Statement and replacing them with nuanced language (for example, on changes on inflation and inflationary expectations) would not be permitted. Changes in these risk assessments from the prior Policy Statement must be carefully aligned with changes in the Fed's forecasts, as described below.

Such changes may have helped to avoid the Fed's communications missteps in December 2018 when the Policy Statement, SEP forecasts and Chairman Powell's press conference and subsequently released minutes of the FOMC meeting provided conflicting messages. The Fed's balance of risks on the economy seemed uncoordinated with its downward revisions to economic growth, and the subsequently released minutes of the FOMC meeting painted a different picture. A better alignment would have read along the lines of "Reflecting perceived downside risks to economic activity stemming from international and financial uncertainties, the Committee's

members have lowered their projections of economic growth.” The FOMC said that its risks to PCE inflation were broadly balanced, but it lowered its forecast of inflation.

Third, the Policy Statement must include the Fed’s strategy on its balance sheet and unwind policy. The Fed’s balance sheet strategy cannot simply be ignored or put into an addendum. When the Fed implemented its quantitative easing programs, they were prominently highlighted in the Policy Statements. Separately, the Fed highlighted studies that related magnitudes of asset purchases to the effective real Fed funds rate, and how QE and forward guidance would stimulate asset prices and encourage financial risk-taking. Until recently, the Fed has been noticeably quiet; while it has emphasized interest rates as its main tool of monetary policy, its policy on bank reserves remains very important.

The Fed’s difficulty in communicating its strategy on the balance sheet stems from its uncertainties about the financial and economic effects. The Fed’s QEI and MBS purchases clearly helped to end the severe financial crisis and avoid further damage. However, there are significant uncertainties about the impacts of large scale asset purchases implemented well after the financial crisis ended and the economy had regained traction, particularly QEIII: the relationship between interest rates and changes in its balance sheet, the impact of a balance sheet unwind and the purpose of maintaining large excess reserves in the banking system. Fed statements on these important issues have varied over time. Despite uncertainties, the Fed’s Policy Statement must include its balance sheet strategy; an addendum may include details and appropriate analysis.

The Fed’s quarterly Summary of Economic Projections (SEPs) must be redesigned to include FOMC estimates of forecast and policy uncertainties that are shown in place of the current central tendency and range of forecasts. The Fed has published economic and inflation forecasts since 1980, and in 2012 instituted the quarterly Summary of Economic Forecasts (SEPs), including forecasts of the appropriate path of the Federal funds rate, in an effort to increase transparency. But as closely-followed forward guidance, the SEPs have been the source of much confusion and misinterpretation. The Fed should have three goals in redesigning the SEPs: 1) they should be as transparent as possible about the Fed’s economic and inflation outlooks and what they may imply for monetary policy, while conveying more information about forecast and policy uncertainties; 2) they should be a rigorous exercise for the Fed in assessing its monetary policy under different situations and contingency planning; and 3) the forecasts of the appropriate Fed funds rate should not be a constraint or a commitment on the Fed’s conduct of monetary policy.

The current SEPs have the benefit of incorporating the forecasts of all FOMC members, including longer-run forecasts. The inputs of the Federal Reserve Bank Presidents are important, reflecting their diverse opinions and anecdotal evidence from the districts.

But the SEPs are limited and prone to misinterpretation. Most importantly, the Fed's median forecasts of real GDP growth, inflation, the unemployment rate and the appropriate path of the Federal funds rate consistent with those forecasts draw too much attention to a single point estimate of the Fed's baseline forecast and significantly understate the forecast uncertainties. The Fed's central tendency and range of forecasts, which are simply the bands of the baseline ("best") forecasts of the FOMC members (the central tendency throws out the three highest and three lowest forecasts), are frequently misinterpreted as forecast uncertainties. The median forecast of the appropriate Fed funds rate forecast at year end—the so-called median "dot" of all FOMC member forecasts—is too frequently perceived to be a binding commitment that influences markets and constrains the Fed's policy deliberations and communications.

The Fed's forecasts may have other problems. Member forecasts may be based on differing assumptions about what is "appropriate monetary policy", so they may not be comparable, and combining them may be biased. FOMC members may be influenced by concerns about how financial markets may respond to their forecasts, and their forecasts of inflation may be constrained by the Fed's 2 percent target. Moreover, the Fed Governors may be constrained because their forecasts cannot stray too far from the senior Fed staff FRB/US model forecasts.

Since the financial crisis, the SEPs have been highly inaccurate. Since 2010, real GDP growth in the year following the FOMC's December forecasts has been outside of the Fed's forecast central tendency in seven out of nine years and outside the range in six years (Levy, 2018). Let's be honest: forecasting is difficult and the projections of different government and private sector forecasters have experienced similar magnitude of errors. Nevertheless, they pose particular challenges to the Fed; it is noteworthy that in recent years, the futures market has provided more accurate forecasts of the Fed funds rate than the FOMC's median dot.

The issues of uncertainty and perceived reliability of the SEPs are very important, and must be incorporated into the Fed's forecasting process and communications. In a presentation to the SOMC in October 2016, Federal Reserve Bank of Cleveland President Loretta Mester identified key issues in uncertainties and recommended changes, including providing estimates of confidence bands around the SEP projections (Mester, 2016). In a subsequent Fed research paper, David

Reifschneider and Peter Tulip analyzed forecasting uncertainties and found that the Fed's median forecasts of real GDP plus or minus the 20-year moving average of the root mean squared errors (RMSE) computed from a blend of real GDP forecasts of the Fed and other government and private sector forecasters captured approximately 70 percent of actual outcomes (Reifschneider and Tulip, 2017).

Reflecting these observations, the Fed now shows charts of those 70 percent confidence intervals around the FOMC's median forecasts, but they are not included in the SEPs. Rather, they and other measures of uncertainty and balances of risks are attached to the back of the FOMC meeting minutes released with a three week lag, and do not get much attention.

These recommendations and ideas should be incorporated into the process of developing the SEPs as follows: before every quarterly FOMC meeting, each FOMC member should submit 1) his or her baseline forecasts and estimates of 70 percent confidence intervals around his/her baseline for real GDP, the unemployment rate and inflation (headline and core), 2) a longer-run estimate of each variable and an estimate of a 70 percent confidence band of each variable, and 3) three forecasts of the Fed funds rate: one appropriate rate for their baseline economic and inflation forecast and one each for their high and low bands of their estimated 70 percent confidence intervals of their economic and inflation forecasts.

A single, agreed upon set of forecasts would be better—and would push the Fed closer to a strategy for achieving its goals—but the Fed has studied this and said it is too difficult. Median forecasts are a proxy and augmenting them with estimates of confidence intervals would be very instructive in deliberating on monetary policy and developing contingencies under reasonable uncertainties.

Having each FOMC member assume an appropriate monetary policy for forecasting purposes involves problems, but there is no easy solution; assuming a set path or the Fed senior staff Fed funds rate projections presents other problems and biases. Also, the Fed should consider cutting the projection period back to two years from three; the third year is an unnecessary extrapolation that is beyond the scope of the Fed's thinking on monetary policy,

The Fed's senior staff would also be required to estimate a 70 percent confidence interval prior to each quarterly FOMC meeting.

The FOMC members must not just pay lip service to estimating confidence intervals, as experience since the financial crisis has shown the large dispersion of actual economic outcomes around the

FOMC's median forecast. Emphasizing the confidence intervals would lean against the tendency to focus on the baseline forecasts. It would force the Fed to move toward a strategy for achieving its goals under reasonable economic outcomes. Also, it would help the Fed clarify its balance of risks assessment at every FOMC meeting. As is currently the practice, following the FOMC debate at the quarterly meetings, FOMC members would be able to modify their forecasts and confidence intervals, and final forecasts and confidence bands would be calculated.

The new SEP Report and summary table and charts published at the conclusion of each quarterly FOMC meeting would include:

- 1) The summary table of the medians of the members' baseline forecasts and their estimated 70 percent confidence intervals for the economic and inflation variables and the Fed funds rate over the projected period and longer-run (a prototype with hypotheticals is shown in Table 1). These median estimates of confidence intervals would replace the current "Central tendency" and "Range" forecasts.
- 2) The Fed's senior staff baseline forecast and its 70 percent confidence intervals for the economic and inflation variables and the appropriate Fed funds rate would be shown in a separate table (Table 2).
- 3) A chart of the FOMC median forecasts of the appropriate path of the Fed funds rate and upper and lower band of the FOMC median 70 percent confidence intervals at the end of each year and for the longer-run; these would replace the current "dot plots" (Chart 1).
- 4) The dot plots of all FOMC members would be shown against the backdrop of the shaded area that bounds the FOMC's median estimated 70 percent confidence interval (Chart 2)
- 5) Separate charts of the FOMC's median forecasts and estimated confidence intervals for the unemployment rate, real GDP and PCE inflation (Charts 3-5).
- 6) The FOMC's balance of risk bar charts which are now in the back of the minutes of each meeting.

The process of estimating a 70 confidence interval around baseline economic and inflation forecasts--and aligning appropriate Fed funds forecasts to the upper and lower bands--would be a difficult but fruitful task for FOMC members. Each would have to consider the distribution of probable outcomes around their most likely forecast and estimate the confidence interval that would capture all but roughly one-sixth of the possible outcomes on either side. It is noteworthy that an overwhelming majority of FOMC members tend to view risks on real GDP growth as "broadly balanced" when in fact the errors in the Fed's forecasts have been strikingly large. This

may reflect the Fed's (misplaced) confidence in its forecasting ability, or maybe its confidence that it can change monetary policy or forward guidance in such a way that its economic projection is realized.

Mapping monetary policy responses to alternative reasonable economic and inflation outcomes would move the Fed toward a more systematic approach to achieving its goals. This approach has been advocated by Andrew Levin (2014) who urges Fed scenario analysis analogous to "stress tests for monetary policy and others who see costly faults in the Fed's current discretionary approach to monetary policy (Calomiris).

Changes in the medians of the baseline and confidence intervals from prior quarterly SEPs would help the Fed align and convey its perceived balances of risks. Consider the Fed's December 2018 SEPs: the minutes of the meeting clearly suggest that the estimated lower band of the confidence interval of real GDP would have declined significantly from September 2018 (and the lower estimated band of the Fed funds rate may also have been reduced). The estimated lower band of the confidence interval of inflation also may have been reduced.

Explicitly emphasizing the uncertainties of forecasting would convey the conditionality of monetary policy. Highlighting the longer-run forecasting uncertainties would be consistent with the views of Fed Chair Powell and Governor John Williams and others (Powell, 2018; Williams, 2018).

The value of estimating and analyzing confidence intervals and displaying them in the SEPs is perhaps best captured by a recent quote from an unnamed global central banker: "We have a substantial probability of a good outcome. Then we have a perhaps not very large probability of the expected forecast outcome. And then we have a larger probability of an even worse outcome that forecasted, so the average is probably okay, but the distribution of probabilities..."

At the "in between" FOMC meetings when the Fed is not updating its quarterly SEPs, the Fed must take care that its Policy Statement and the Chair's press conference reflect any changes in its balance of risks and what they may imply for monetary policy.

Market participants may initially balk at the magnitude of the 70 percent confidence intervals, which may be seemingly large compared to the current central tendency forecasts. However, they would soon find the confidence intervals useful in mapping the Fed's conditional policy rate forecasts with alternative reasonable economic and inflation outcomes. These would improve and simplify the Fed's communications with financial markets.

A final observation is the SEPs do not include any forecast of the appropriate size of the balance sheet. This is short-sighted, ignoring the likelihood that while interest rates are the Fed's primary monetary policy tool, its balance sheet strategy is contingent on its economic and inflation projections. While this seems well beyond the scope of the Fed's current considerations, it should include its balance sheet projections as an addendum to its SEPs.

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Table 1: Hypothetical Summary Table - Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents under their individual assessments of projected appropriate monetary policy, March 2019*

Percent												
Variable	Median ¹ and 70 Percent Confident Intervals Around Forecasts ²											
	2019			2020			2021			Longer run		
Change in real GDP	<i>a</i>	2.1	<i>b</i>	<i>a</i>	1.9	<i>b</i>	<i>a</i>	1.8	<i>b</i>	<i>a</i>	1.9	<i>b</i>
December projection	<i>a</i>	2.3	<i>b</i>	<i>a</i>	2.0	<i>b</i>	<i>a</i>	1.8	<i>b</i>	<i>a</i>	1.9	<i>b</i>
Unemployment rate	<i>a</i>	3.7	<i>b</i>	<i>a</i>	3.8	<i>b</i>	<i>a</i>	3.9	<i>b</i>	<i>a</i>	4.3	<i>b</i>
December projection	<i>a</i>	3.5	<i>b</i>	<i>a</i>	3.6	<i>b</i>	<i>a</i>	3.8	<i>b</i>	<i>a</i>	4.4	<i>b</i>
PCE inflation	<i>a</i>	1.8	<i>b</i>	<i>a</i>	2.0	<i>b</i>	<i>a</i>	2.0	<i>b</i>	<i>a</i>	2.0	<i>b</i>
December projection	<i>a</i>	1.9	<i>b</i>	<i>a</i>	2.1	<i>b</i>	<i>a</i>	2.1	<i>b</i>	<i>a</i>	2.0	<i>b</i>
Core PCE inflation ³	<i>a</i>	2.0	<i>b</i>	<i>a</i>	2.0	<i>b</i>	<i>a</i>	2.0	<i>b</i>			
December projection	<i>a</i>	2.0	<i>b</i>	<i>a</i>	2.0	<i>b</i>	<i>a</i>	2.0	<i>b</i>			
Memo: Projected appropriate policy path												
Federal funds rate	<i>a</i>	2.4	<i>b</i>	<i>a</i>	2.6	<i>b</i>	<i>a</i>	2.6	<i>b</i>	<i>a</i>	2.8	<i>b</i>
December projection	<i>a</i>	2.9	<i>b</i>	<i>a</i>	3.1	<i>b</i>	<i>a</i>	3.1	<i>b</i>	<i>a</i>	2.8	<i>b</i>

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 December projections were made in conjunction with the meeting of the Federal Open Market Committee on December 18–19, 2018. One participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate in conjunction with the December 18–19, 2018, and one participant did not submit such projections in conjunction with the March 19–20, 2019 meeting.

*Forecasts are hypothetical and for illustration purposes only.

1. For each period, the median is the middle projection when individuals' baseline 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. For each period, each member estimates 70 percent confidence intervals around his/her baseline for real GDP, the unemployment rate and inflation (headline and core), and the Fed funds rate. "a" represents the median of Fed members' estimates of the lower end of the 70% confidence interval around these baseline forecasts and "b" represents the median of Fed members' estimates of the upper end of the 70% confidence interval around these baseline forecasts.
3. Longer-run projections for core PCE inflation are not collected.

Table 2: Hypothetical Staff Summary Table - Economic projections of Federal Reserve Board's senior staff under their assessments of projected appropriate monetary policy, March 2019*

Percent												
Variable	Baseline ¹ and 70 Percent Confident Intervals Around Baseline Forecasts ²											
	2019			2020			2021			Longer run		
Change in real GDP	<i>a</i>	1.9	<i>b</i>	<i>a</i>	1.6	<i>b</i>	<i>a</i>	1.5	<i>b</i>	<i>a</i>	1.7	<i>b</i>
December projection	<i>a</i>	2.1	<i>b</i>	<i>a</i>	1.7	<i>b</i>	<i>a</i>	2.1	<i>b</i>	<i>a</i>	1.7	<i>b</i>
Unemployment rate	<i>a</i>	3.8	<i>b</i>	<i>a</i>	3.9	<i>b</i>	<i>a</i>	4.0	<i>b</i>	<i>a</i>	4.4	<i>b</i>
December projection	<i>a</i>	3.6	<i>b</i>	<i>a</i>	3.7	<i>b</i>	<i>a</i>	3.9	<i>b</i>	<i>a</i>	4.5	<i>b</i>
PCE inflation	<i>a</i>	1.9	<i>b</i>	<i>a</i>	2.1	<i>b</i>	<i>a</i>	2.1	<i>b</i>	<i>a</i>	2.0	<i>b</i>
December projection	<i>a</i>	2.0	<i>b</i>	<i>a</i>	2.2	<i>b</i>	<i>a</i>	2.2	<i>b</i>	<i>a</i>	2.0	<i>b</i>
Core PCE inflation ³	<i>a</i>	2.0	<i>b</i>	<i>a</i>	2.1	<i>b</i>	<i>a</i>	2.1	<i>b</i>			
December projection	<i>a</i>	2.0	<i>b</i>	<i>a</i>	2.1	<i>b</i>	<i>a</i>	2.1	<i>b</i>			
Memo: Projected appropriate policy path												
Federal funds rate	<i>a</i>	2.4	<i>b</i>	<i>a</i>	2.6	<i>b</i>	<i>a</i>	2.6	<i>b</i>	<i>a</i>	2.8	<i>b</i>
December projection	<i>a</i>	2.9	<i>b</i>	<i>a</i>	3.1	<i>b</i>	<i>a</i>	3.1	<i>b</i>	<i>a</i>	2.8	<i>b</i>

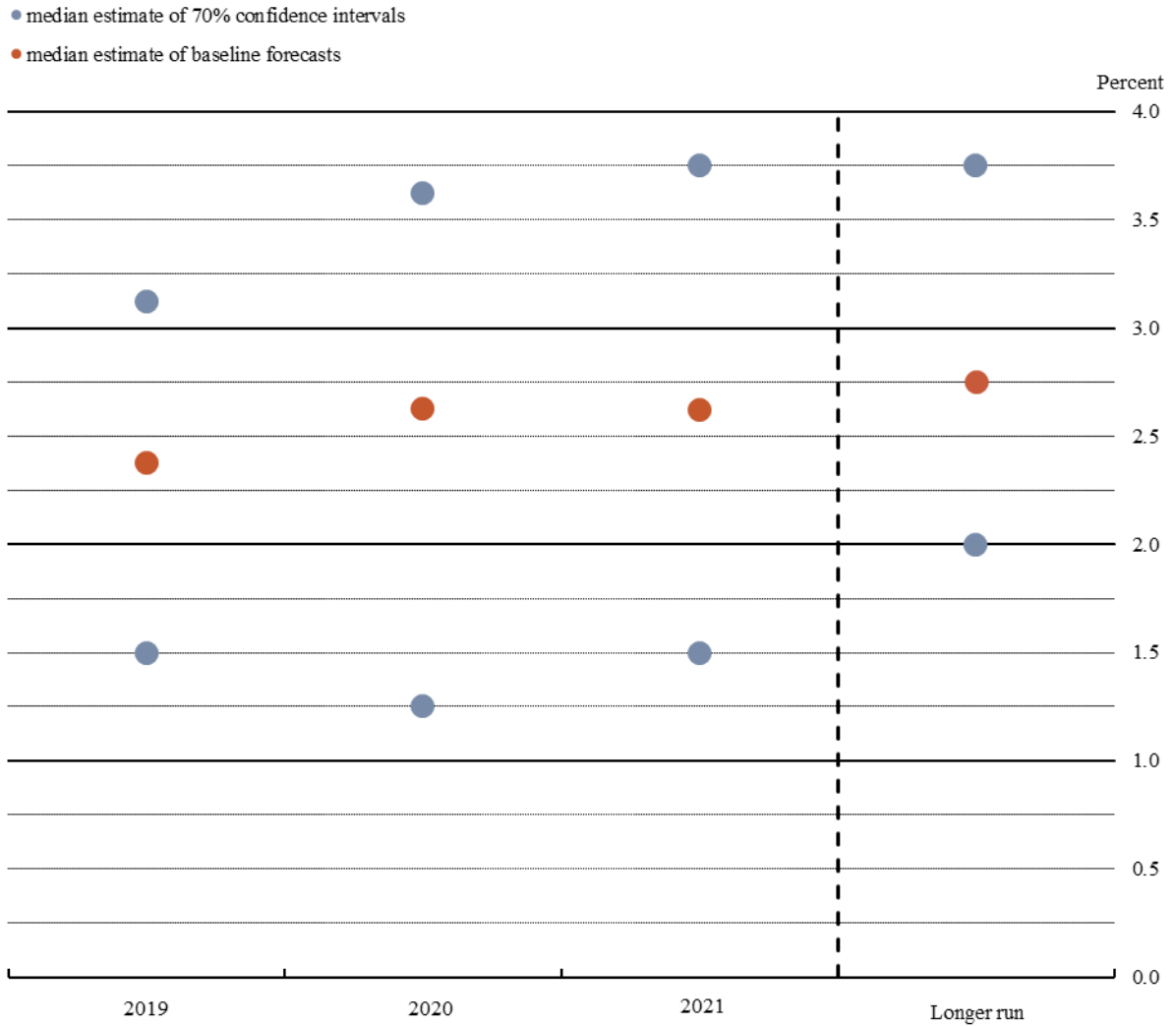
*Forecasts are hypothetical and for illustration purposes only.

1. For each period, the baseline is the outcome the Fed's senior staff assesses to be most likely.

2. For each period, the Fed's senior staff estimates 70 percent confidence intervals around the baseline for real GDP, the unemployment rate and inflation (headline and core), and the Fed funds rate. "a" represents the lower end of the 70% confidence interval around these baseline forecasts and "b" represents the upper end of the 70% confidence interval around these baseline forecasts.

3. Longer-run projections for core PCE inflation are not collected.

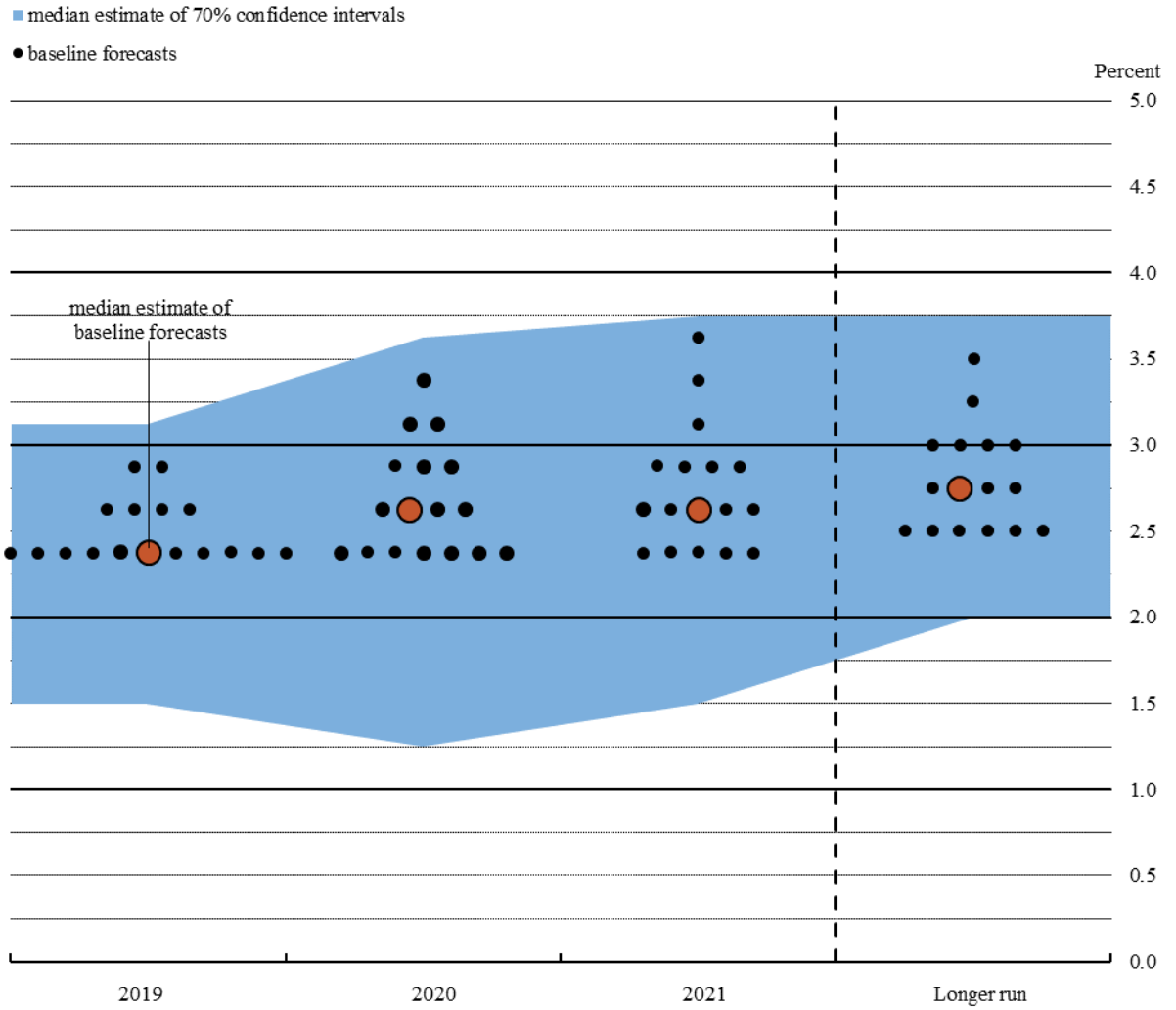
Chart 1: Hypothetical Dots Plot - FOMC participants' assessments of appropriate monetary policy: Median estimate of baseline forecasts and median estimate of 70% confidence intervals around baseline forecasts*



*Forecasts are hypothetical and for illustration purposes only.

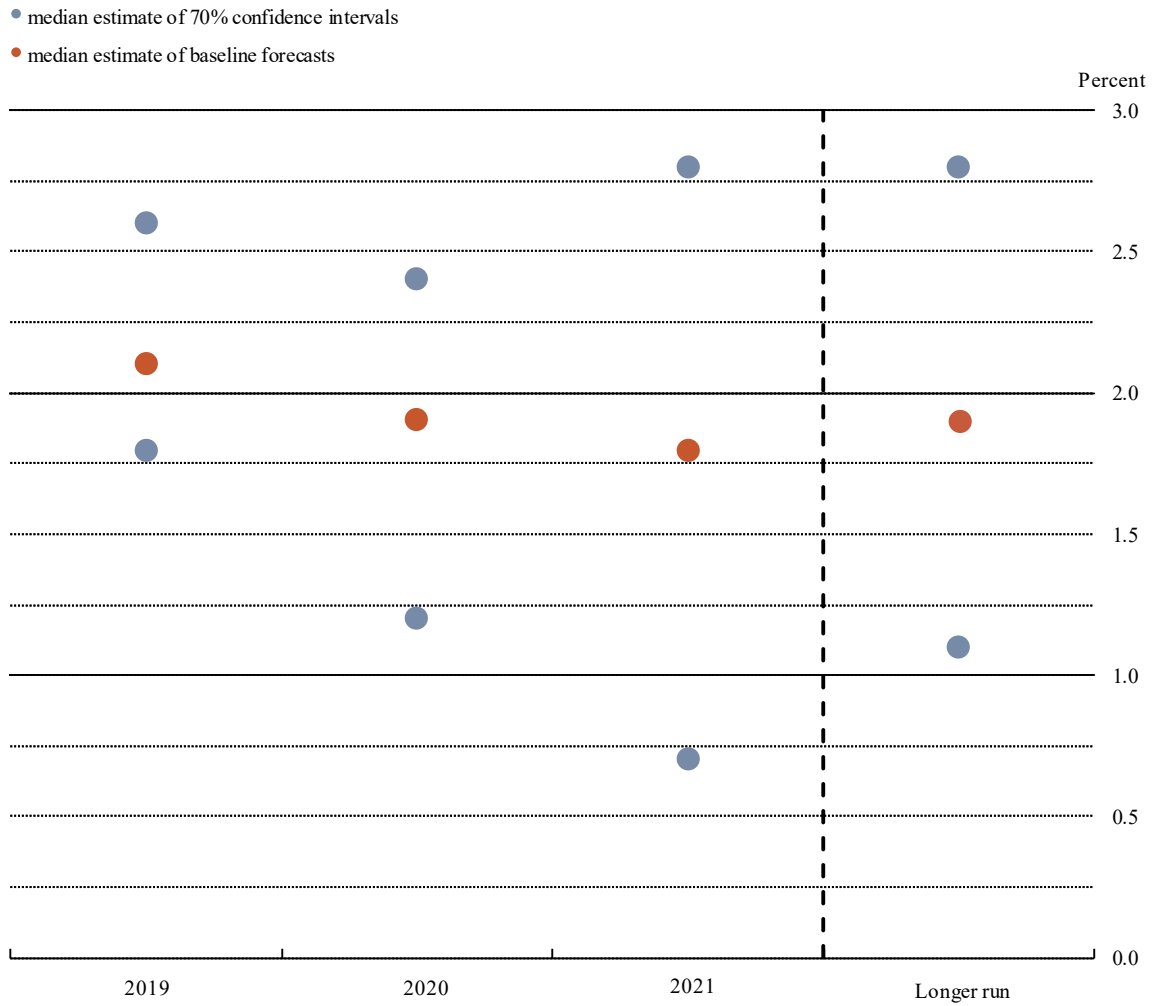
Note: Each shaded orange circle indicates the median value of individual participants' baseline judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. Shaded blue circles indicate the median value of individual participants' judgment of the lower and upper ends of the 70% confidence interval associated with their baseline forecasts. One participant did not submit longer-run projections for the federal funds rate.

Chart 2: Hypothetical Dots Plot - FOMC participants' assessments of appropriate monetary policy: Baseline forecasts of each participant and median estimate of 70% confidence intervals around baseline forecasts*



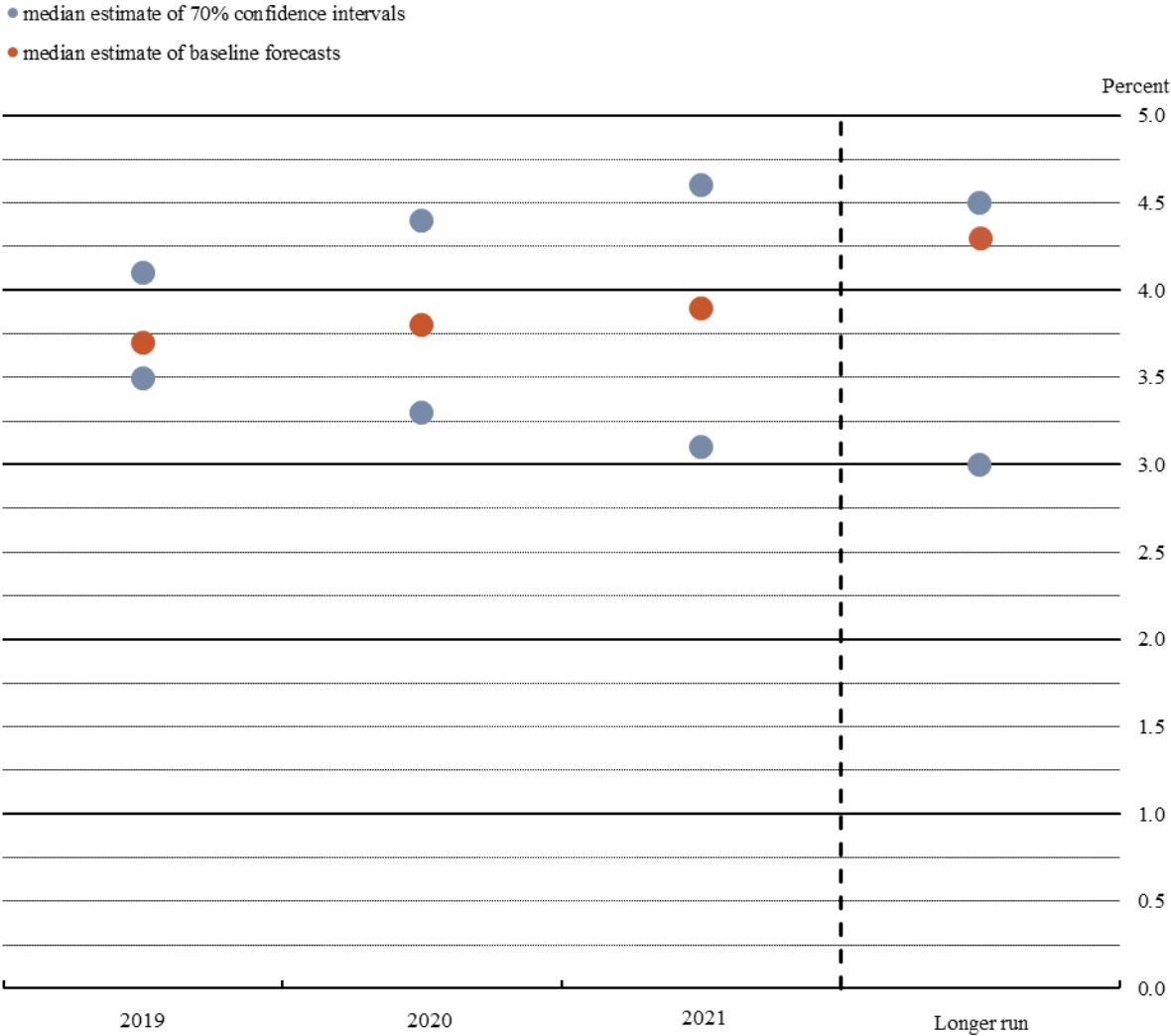
*Forecasts are hypothetical and for illustration purposes only.

**Chart 3: Hypothetical GDP Plot - FOMC participants' assessments of the change in real GDP:
 Median estimate of baseline forecasts and median estimate of 70% confidence intervals
 around baseline forecasts***



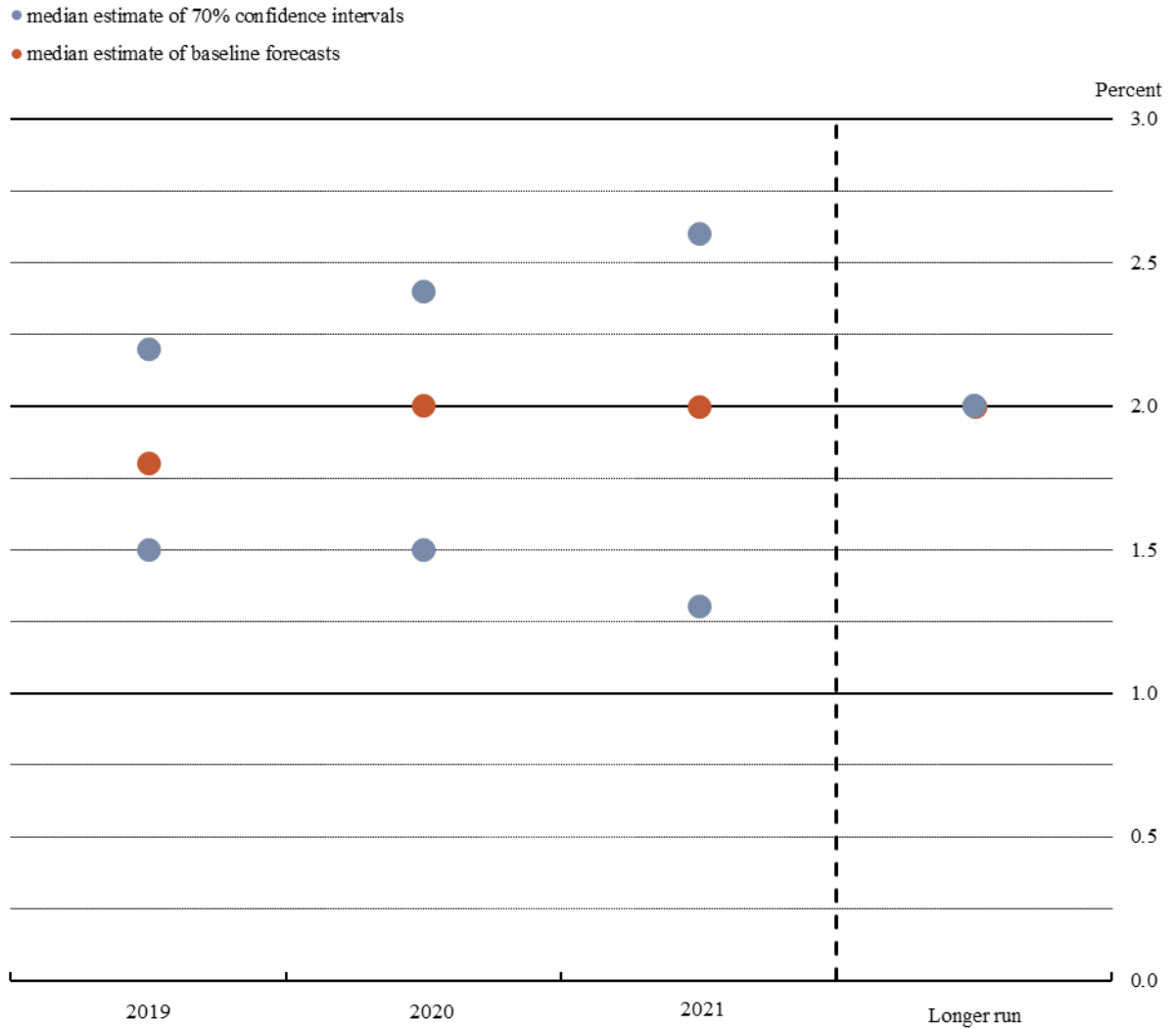
*Forecasts are hypothetical and for illustration purposes only.

Chart 4: Hypothetical Unemployment Rate Plot - FOMC participants' assessments of the unemployment rate: Median estimate of baseline forecasts and median estimate of 70% confidence intervals*



*Forecasts are hypothetical and for illustration purposes only.

Chart 5: Hypothetical PCE Inflation Plot - FOMC participants' assessments of PCE inflation: Median estimate of baseline forecasts and median estimate of 70% confidence intervals around baseline forecasts*



*Forecasts are hypothetical and for illustration purposes only.