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Examining the Performance of FOMC Inflation Forecasts

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Calendar-year inflation forecasts from Federal Open Market Committee meeting participants typically start near 2% and then are revised in response to incoming data. Before the pandemic when actual inflation was mostly below 2%, participants consistently lowered their forecasts over time. From 2021 onward when inflation surged to 40-year highs, participants consistently raised their forecasts over time. In both periods, cumulative forecast revisions help predict the size of subsequent forecast errors. This implies that the typical inflation forecast was slow to adjust to new information that could have improved forecast accuracy.

The Federal Open Market Committee (FOMC) releases a set of forecasts for economic outcomes four times each year. These Summary of Economic Projections (SEP) forecasts are based on each FOMC meeting participant's view of the appropriate path for monetary policy. As such, SEP forecasts are a window into what each participant sees as the policy path likely to be most consistent with the Fed's dual mandate of price stability and full employment.

This *Economic Letter* examines the performance of the SEP's central tendency midpoint forecasts for inflation as measured by the calendar-year change in the personal consumption expenditures (PCE) price index. Inflation forecasts for future calendar years typically start near 2% and then are revised over time in response to incoming data. Forecasts were consistently lowered in the years before the pandemic, when actual inflation fell mostly below the Fed's 2% longer-run goal. Forecasts were consistently raised from 2021 onward, when inflation surged to 40-year highs.

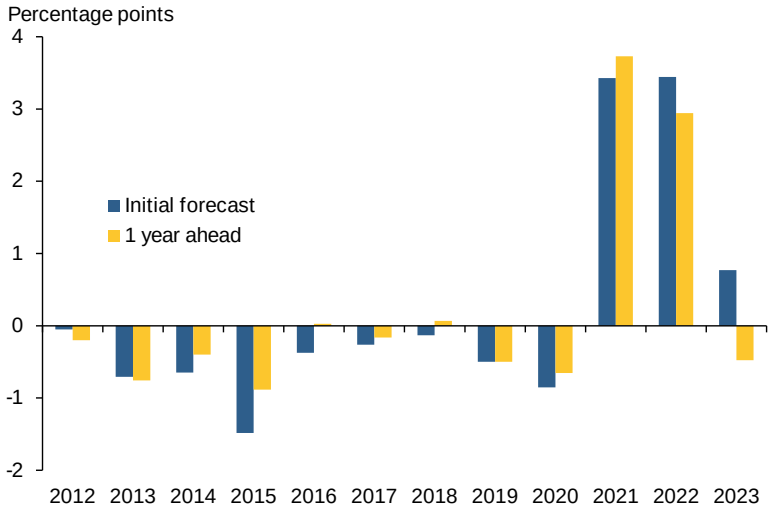
We find that the cumulative revision to the inflation forecast for a given calendar year helps predict the size of the subsequent forecast error. This tells us that the typical inflation forecast could have adjusted further in the same direction to improve forecast accuracy. Put another way, the typical forecast appeared to be slow to adjust to new information that could have improved the accuracy of the forecast—a pattern also observed in survey forecasts of professional economists (Coibion and Gorodnichenko 2015).

Additionally, revisions to SEP forecasts for the federal funds rate move together with revisions to SEP inflation forecasts. This positive correlation pattern is not surprising given that forecasts for the federal funds rate in future calendar years typically start with the assumption that monetary policy will return inflation to 2% over the forecast horizon. But if this does not happen, then both forecasts are revised up or down in the same direction.

SEP inflation forecasts

The FOMC first announced its 2% longer-run goal for 12-month PCE inflation in January 2012 (Board of Governors 2012). From 2012 through 2020, PCE inflation remained mostly below 2%, despite highly accommodative monetary policy over much of that period. Evidence indicates that persistent downward shocks to inflation were an important driving force during those years (Lansing 2022). Starting in early 2021, PCE inflation surged to 40-year highs that peaked in mid-2022, largely driven by pandemic-induced imbalances between supply and demand (Shapiro 2024).

Figure 1
SEP headline inflation forecast errors over time



Note: SEP forecasts for headline PCE inflation are represented by central tendency midpoints for a given calendar year. Initial forecasts are the first SEP forecasts for a given calendar year, approximately three years ahead. One-year-ahead forecasts are the SEP forecasts released in the fourth quarter of the year prior to the calendar year being forecasted.
Source: Federal Reserve Board of Governors and authors' calculations.

Figure 1 plots SEP forecast errors for headline PCE inflation from 2012 through 2023, defined as the difference between the first reported inflation rate for a given calendar year and the SEP central tendency midpoint forecast made at two points in time: the initial forecast made approximately three years ahead of the calendar year being forecasted (blue bars) and a later forecast made approximately one year ahead of the calendar year being forecasted, before any monthly inflation data for the calendar year in question had been released (yellow bars).

Forecast errors for the years 2012 through 2020 are almost entirely negative, implying that first-reported inflation came in below the SEP forecast. The opposite is true for the years 2021 through 2023 when forecast errors are almost entirely positive, implying that first-reported inflation came in above the SEP forecasts. These patterns show that SEP forecasts consistently overpredicted actual inflation from 2012 through 2020 and then consistently underpredicted actual inflation from 2021 onward.

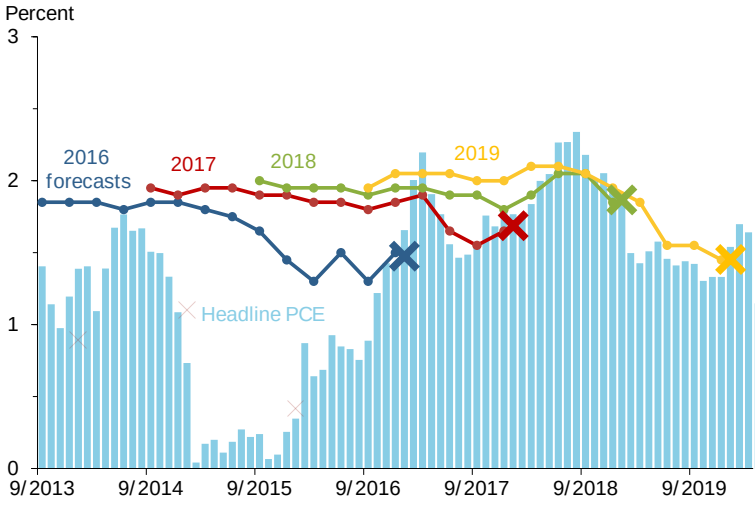
Inflation forecast revisions

Figures 2 and 3 provide a more detailed look at the SEP inflation forecasts for the years 2016 through 2023. The solid lines with dots show how the SEP forecast for a given calendar year evolved from the initial release approximately three years ahead to its final release in December of the calendar year being forecasted. Each dot represents an SEP release, and an X marks the first reported PCE inflation rate for the calendar year being forecasted, typically released in January of the following calendar year. The light blue bars indicate the trailing 12-month PCE inflation rate that would have been observed by SEP participants on the date shown.

In both figures, the pattern of revisions from initial to final forecast appears to be roughly correlated with contemporaneous movements in the light blue bars. In Figure 2, the final SEP inflation forecast for a given calendar year (last dot before the X) is notably lower than the initial forecast (first dot)—implying a net downward revision to the forecast. The final forecast is always close to the X because SEP participants have been able to observe numerous monthly inflation readings during the calendar year and have incorporated these readings into their forecasts. The SEP inflation forecasts for the years 2012 through 2015 (not shown) exhibit a similar pattern of mostly net downward revisions.

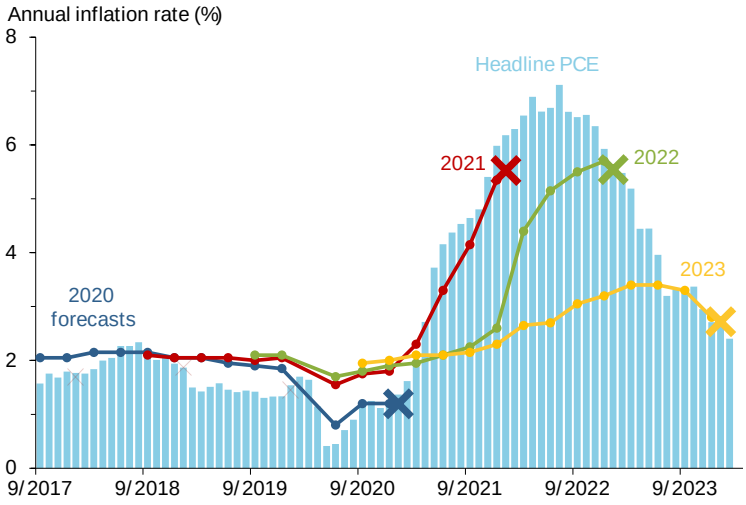
In Figure 3, with the exception of the pandemic year of 2020, the final SEP inflation forecast for a given calendar year is higher than the initial forecast, implying a net upward revision. Across all years from 2012 through 2023, the initial forecast always starts close to 2% but then is revised down or up in mostly one direction.

Figure 2
SEP inflation forecasts versus incoming data, 2016 to 2019



Note: Bars represent the 12-month headline PCE inflation rate one month prior to the date shown. Dots mark the SEP forecast release dates; X marks the first reported headline PCE inflation rate for the calendar year.
Source: Bureau of Economic Analysis, Federal Reserve Board of Governors, and authors' calcualtions.

Figure 3
SEP inflation forecasts versus incoming data, 2020 to 2023



Note: Bars represent the 12-month headline PCE inflation rate one month prior to the date shown. Dots mark the SEP forecast release dates; X marks the first reported headline PCE inflation rate for the calendar year.
Source: Bureau of Economic Analysis, Federal Reserve Board of Governors, and authors' calcualtions.

Predictability of SEP inflation forecast errors

The theory of rational expectations states that forecasters will use all available information to eliminate any predictable pattern of errors. If forecast errors are predictable in either direction or magnitude, the theory implies that forecasters did not make the best use of available information to improve forecast accuracy. An example of information available to forecasters at the time the forecast is constructed is their own cumulative forecast revision, defined as the difference between the current forecast and the initial forecast.

To gauge how well SEP inflation forecasts use available information, we estimate regression equations that seek to predict the size of forecast errors for the years 2012 through 2023 using the cumulative forecast revisions for those years. The estimated constant term in the regression equation allows us to test whether forecast errors indicate a bias towards overpredicting or underpredicting first-reported inflation. The estimated slope coefficient in the regression equation allows us to test how well SEP inflation forecasts make use of information about forecast revisions when seeking to minimize subsequent forecast errors.

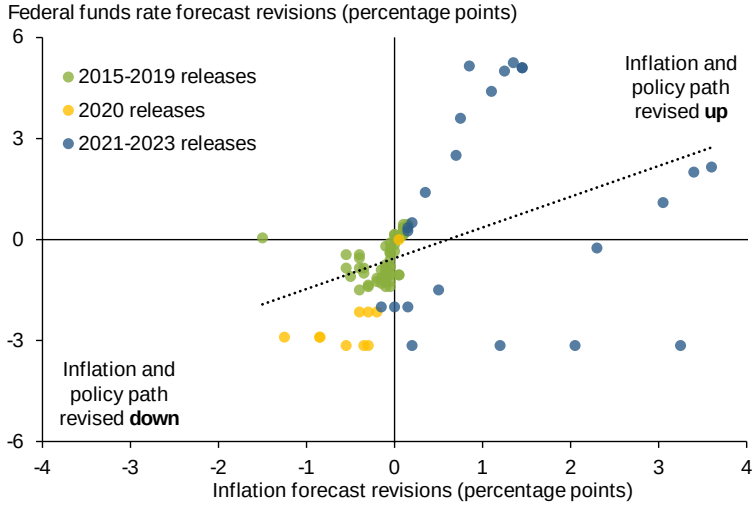
For the sample period from 2012 to 2020, SEP inflation forecast errors are negative on average with a statistically significant overprediction bias in the forecasts. The net downward revision to inflation forecasts for those years averaged 0.54 percentage point, while first-reported inflation averaged 1.3%. For the sample period from 2021 to 2023, SEP inflation forecast errors are positive on average with a statistically significant underprediction bias in the forecasts. The net upward revision to inflation forecasts for those years averaged 2.57 percentage points, while first-reported inflation averaged 4.6%.

For both sample periods, cumulative forecast revisions are statistically significant in helping to predict subsequent forecast errors, with a larger cumulative revision serving to shrink the size of the forecast error. Given that SEP forecast revisions typically move in one direction over time, this result tells us that the typical inflation forecast could have adjusted further in the same direction to improve forecast accuracy. Along similar lines, Coibion and Gorodnichenko (2015) find that survey-based forecasts of economic variables from professional economists also exhibit sluggish adjustment to new information that could have improved forecast accuracy.

SEP inflation forecasts and the federal funds rate

SEP inflation forecasts are based on each participant's view of the appropriate path of monetary policy. In September 2015, the SEP started including participants' projected paths for the federal funds rate over the same forecast horizons as other economic variables. Figure 4 plots the cumulative revisions to the SEP's central tendency midpoint forecasts for the federal funds rate on the vertical axis versus the corresponding cumulative revisions to the inflation forecasts on the horizontal axis.

Figure 4
Cumulative revisions to inflation, fed funds rate forecasts



Note: Each dot represents the cumulative revision to the SEP's central tendency midpoint forecast for a given calendar year measured relative to the initial forecast for that same year. Slope of the dotted line represents the correlation coefficient between the two revision series from 2015 through 2023.
Source: Federal Reserve Board of Governors and authors' calcualtions.

The two revision series show a strong positive correlation. For example, the high inflation episode starting in 2021 (blue dots) exhibits some large upward

revisions to both forecasts. The positive correlation between the two revision series is not surprising given that projections for the federal funds rate in future calendar years typically start with the assumption that monetary policy will return inflation to the FOMC's 2% goal over the forecast horizon. But if this does not happen, then both forecasts are revised up or down in the same direction.

Conclusion

Calendar-year inflation forecasts by FOMC meeting participants start near 2% and then are revised in response to incoming data. These forecasts were consistently revised down from 2012 through 2020 and then were consistently revised up from 2021 through 2023. In this *Letter*, we find that the cumulative revision to the inflation forecast for a given calendar year helps predict the size of the subsequent forecast error. This result implies that the typical SEP inflation forecast was slow to adjust to new information that could have improved forecast accuracy—a pattern also observed in survey forecasts by professional economists.

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References

Board of Governors of the Federal Reserve System. 2012. "Federal Reserve Issues FOMC Statement of Longer-Run Goals and Policy Strategy." January 25.

Coibion, Olivier, and Yuriy Gorodnichenko. 2015. "Information Rigidity and the Expectations Formation Process: A Simple Framework and New Facts." *American Economic Review* 105, pp. 2,644–2,678.

Lansing, Kevin J. 2022. "Untangling Persistent versus Transitory Shocks to Inflation." *FRBSF Economic Letter* 2022-13 (May 23).

Shapiro, Adam Hale. 2024. "Decomposing Supply and Demand Driven Inflation." Forthcoming in *Journal of Money, Credit, and Banking*, available as FRB San Francisco Working Paper 2022-18.

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