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Are Longer-Term Inflation Expectations Stable?

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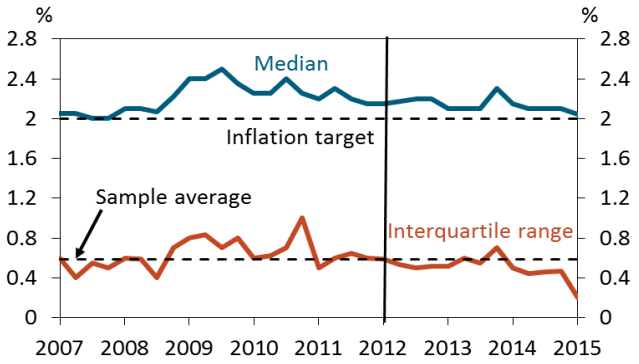
Survey-based expectations of inflation over the past year have been relatively stable and consistent with the FOMC's longer-term inflation objective of 2 percent. However, individual participants' longer-term forecasts can vary considerably and are not always aligned with this target.

In its last three statements, the Federal Open Market Committee (FOMC) emphasized the stability of survey-based measures of longer-term inflation expectations. Expectations about future inflation are important for monetary policy decisions and explaining changes in actual inflation. Using data from the Survey of Professional Forecasters (SPF), we examine three different concepts of stability in longer-term inflation expectations. Throughout, we focus on the five-year, five-year forward inflation rate, which measures the average expected inflation rate over a five-year period beginning five years from today. We measure inflation using the personal consumption expenditure (PCE) price index, the FOMC's preferred inflation measure.

Chart 1 plots the median forecast across survey participants for the last several years. When the FOMC announced their 2-percent longer-term inflation objective in 2012:Q1, the median forecast became less volatile and gradually declined over time. Over the past year, the median has held nearly constant. Thus, if we measure stability using the survey median, Chart 1 suggests recent longer-term inflation expectations are relatively stable compared with their eight-year history.[1]

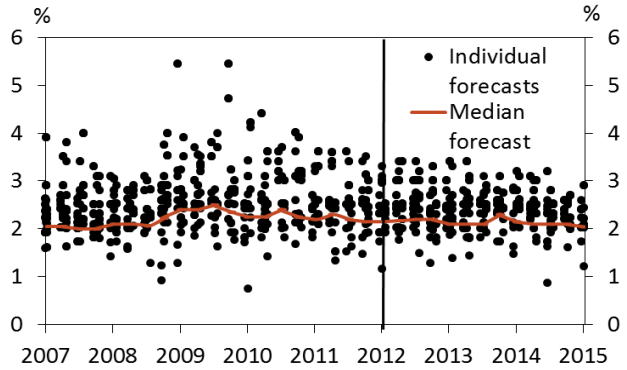
Chart 1: Longer-term inflation expectations



Source: Federal Reserve Bank of Philadelphia.

While the median measures the central tendency of forecasts, it excludes substantial information about the expectations of individual forecasters. To incorporate this information, we consider two alternative concepts of stability for longer-term inflation expectations. The first is a measure of dispersion across forecasters and the second evaluates changes in their forecasts.

Chart 2: Individual longer-term forecasts



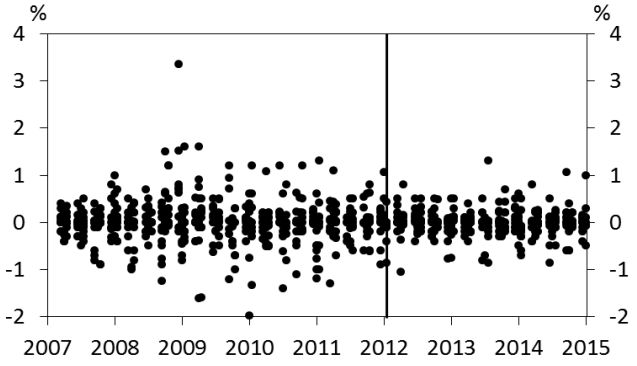
Source: Federal Reserve Bank of Philadelphia.

Chart 2 plots individual forecasts over time and reveals substantial disagreement about longer-term inflation expectations, especially during the financial crisis. Over the last year, however, forecasts became less dispersed. If we measure stability using the dispersion of individual forecasts, Chart 2 suggests inflation expectations have been more stable over the last few years. In fact, Chart 1 shows the interquartile range—the difference between

the 25th and 75th percentiles—was at its historic low of 0.2 percent in 2015:Q1.

The third measure of stability reflects change in individual participants' longer-term forecasts. Chart 3 plots the changes in an individual's current five-year, five-year forward forecast relative to their forecast last quarter. The chart suggests that forecasters revise their forecasts over time, with significant revisions during the financial crisis. However, individual forecasters have been less prone to adjust their longer-term forecasts over the past year, suggesting some recent stability at the individual level.

Chart 3: Changes in individual inflation forecasts



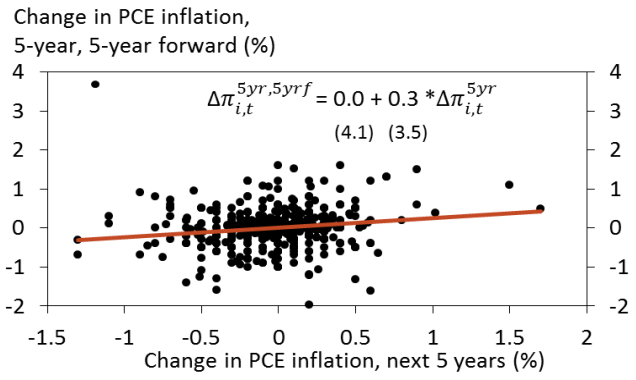
Source: Federal Reserve Bank of Philadelphia.

All three concepts of stability suggest that survey-based expectations of longer-term inflation remain steady and centered near the FOMC's 2-percent inflation target. However, some evidence suggests forecasts of individual survey participants are not consistently aligned with the FOMC's 2-percent goal.

First, fewer participants forecast longer-term inflation near 2 percent than we would have expected. From 2012:Q1 to 2014:Q2, around 30 percent of participants in each survey expected five-year, five-year forward inflation from 1.9 to 2.1 percent. While the fraction rose to over 40 percent in the last three surveys, the percentage appears somewhat low to reflect an unwavering belief that the FOMC will achieve its longer-run inflation objective.

Second, individual longer-term inflation forecasts display excess sensitivity to changes in the short-run inflation outlook. Shocks in the macroeconomy, such as changes in aggregate demand or oil prices, can cause realized inflation to fluctuate. However, these shocks should only have a temporary effect on inflation. Thus, the forecasts of inflation six to 10 years in the future should primarily reflect the central bank's inflation target and its ability to stabilize inflation around that target. Under this view, changes in an individual's five-year-ahead forecast should be relatively infrequent.[2]

Chart 4: Changes in near-term and longer-term inflation forecasts



Source: Federal Reserve Bank of Philadelphia.

However, the data suggest forecasters often adjust their longer-run forecasts in response to current inflation. For example, an individual's longer-term inflation forecasts are correlated with changes in their short-run inflation outlook. Chart 4 shows the change in an individual's forecast for the five-year, five-year forward expected inflation rate on the vertical axis ($\Delta\pi_{i,t}^{5yr,5yrf}$) and the change in their five-year expected inflation forecast on the horizontal axis ($\Delta\pi_{i,t}^{5yr}$). The positive correlation

implies individual forecasters often change their longer-term forecast for inflation in the same direction as their short-term forecast. Chart 4 shows the line that provides the best fit between the two variables. The fitted values are shown in red.[3]

For the period 2007:Q1 to 2015:Q1, a 1-percentage-point decline in expected inflation over the next five years is associated with a 0.3-percentage-point decline in expected inflation over the five-year period beginning five years from the forecast date. This relationship is statistically significant at the 1-percent level using robust standard errors. The relationship is unchanged if we use the 2012:Q1 to 2015:Q1 sample period, which is the period after the FOMC announced their explicit inflation objective. While we cannot draw any causal relationship from this regression, the results support the idea that longer-term inflation forecasts at the individual level are not simply constant at the FOMC's 2-percent inflation objective. Instead, they move systematically with changes in expected inflation over the next five years. Thus, expectations that inflation will run below target in the near term may pose a risk to longer-term inflation expectations drifting below the FOMC's inflation objective.

Currently, headline PCE inflation has been running below the 2-percent target. As a result, the 2015:Q1 median survey expects 2015 Q4/Q4 headline inflation to be 1.1 percent. Although the lower level of headline inflation this year does pose some risk to the stability of longer-term expectations, the median forecast suggests inflation will run at a rate consistent with the 2-percent goal next year (specifically,1.9 percent in 2016). Given no further unexpected declines in energy or food prices, or broader softness in consumer prices causing near-term forecasts to be marked down, the median of longer-term expectations is likely to remain fairly stable.

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[1] *The Survey begins collecting longer-term forecasts for PCE inflation in 2007:Q1. Two forecasters were excluded from the analysis because their forecasts appeared unreliable or had large quarter-to-quarter changes.*

[2] *Under an alternative view, suppose that a forecaster never changed their 10-year average expected inflation forecast but consistently updated their five-year forecast. Then, changes in their five-year, five-year forward inflation rate would be negatively correlated with changes in their five-year forecast.*

[3] *The regression line in Chart 4 excludes the outlier in the upper left corner.*

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