

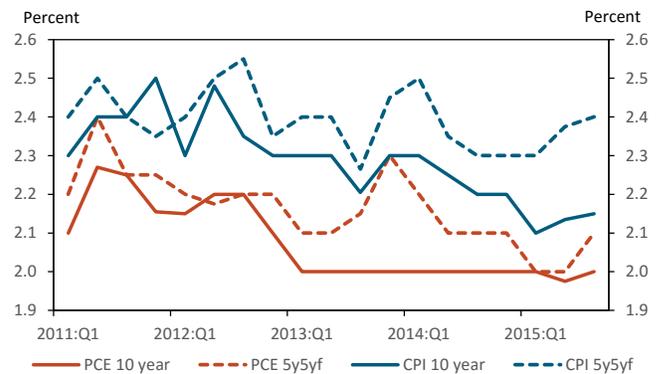
Long-Term Survey-Based Inflation Expectations Have Become Better Anchored

By Craig S. Hakkio

The decline in the median of estimates of long-term inflation expectations over the last couple of years should not be a cause for concern. The distribution of individual forecasts from the Survey of Professional Forecasters suggests longer-term inflation expectations have become better anchored, and the decline in the median forecast appears to be the result of a few individual forecasters.

In its July and September press releases, the Federal Open Market Committee stated “survey-based measures of longer-term inflation expectations have remained stable.” However, the July FOMC meeting minutes noted “participants discussed how to interpret downward movements in some survey and market-based measures of inflation expectations over the past few years.” In this Bulletin, I offer one interpretation of the changes the Committee observed and conclude survey-based inflation expectations have become better anchored.

Chart 1: Median long-term inflation expectations



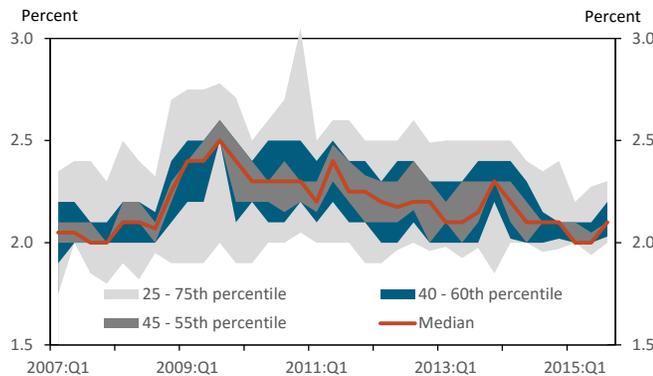
Source: Federal Reserve Bank of Philadelphia.

Chart 1 plots the median forecast from the Survey of Professional Forecasters (SPF) for four measures of longer-term inflation forecasts from 2011 to the present. The measures are the Consumer Price Index (CPI) and PCE (Personal Consumption Expenditure) inflation forecasts over the next 10 years and the CPI and PCE inflation forecasts from years six to 10 (called the five-year, five-year forward inflation expectation). While most of the longer-term expectations have fallen over the last few years, they all ticked up in the last couple of quarters.

The stability of the median 10-year PCE forecast at 2 percent is striking.¹ In fact, it looks as though starting in 2013—one year after the FOMC stated that PCE inflation of 2 percent was its longer-run goal—participants simply set their 10-year PCE inflation rate equal to 2 percent and kept it there. However, the data does not support this conclusion. With about 35 participants per quarter, and 10 quarters from 2013:Q2 to 2015:Q3, the SPF contains 348 observations. Out of these 348 observations, only 64 observations (18 percent) had an inflation forecast of 2 percent, and only 33 observations (9 percent) had an inflation forecast of 2 percent in two consecutive quarters.²

Rather than focus on all four measures of long-term inflation expectations, I look at the distribution of the five-year, five-year forward PCE inflation rate since 2007 (Chart 2). The five-year, five-year forward expectation is preferable for looking at whether longer-term inflation expectations are well-anchored because it ignores transitory shocks to inflation. During the financial crisis, not only did the median rise, but the entire distribution of inflation rates drifted upward and widened. Since 2011, however, the upper end of the

Chart 2: Distribution of five-year, five-year forward PCE inflation rate



Source: Federal Reserve Bank of Philadelphia.

affected by outliers. For example, if the top 10 forecasts increased by 1 percentage point each, the median would not change. More specifically, if a number of forecasters reduced their expected long-term inflation forecasts from 3.0 percent to 2.5 percent, the median would probably not change though the 75th percentile would likely decline.

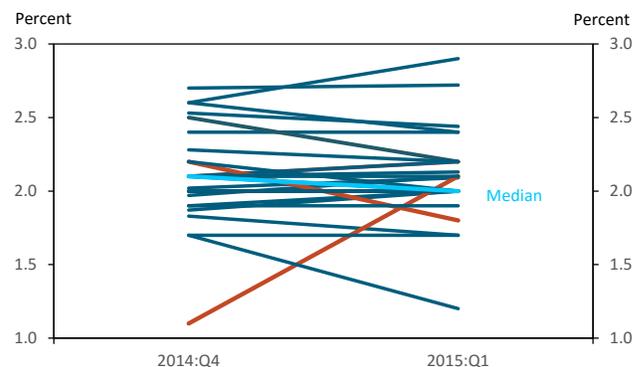
Explaining why the median changed is not easy: any number of several possible explanations may be relevant for a particular date. For a single forecaster to reduce the median, he or she must reduce his or her forecast from a high forecast (above the median) to a low forecast (below the median). Alternatively, if he or she has a high forecast and exits the survey, the median could decline. Finally, if he or she enters the survey with a low forecast (below the median), the median could decline.

As an example, the median fell from 2.1 percent in 2014:Q4 to 2.0 percent in 2015:Q1. Chart 3 illustrates the challenges in explaining *why* the median fell. The chart shows forecasts for all forecasters with forecasts for both quarters varied widely, with many increases and many decreases. I use red lines to highlight two forecasters: one increased his or her forecast from 1.1 percent (below the median) to 2.1 percent (above the median), and another reduced his or her forecast from 2.2 percent in 2014:Q4 (above the median) to 1.8 percent in 2015:Q1 (below the median).

distribution has generally drifted downward. Looking at the 25th percentile, fewer forecasters now expect inflation to be below 2 percent than in 2007–08, and the number has not changed significantly since 2010. Overall, then, the change in the distribution looks promising: high forecasts have declined, and low forecasts have remained relatively stable, suggesting longer-term inflation expectations are better anchored.

The change in the distribution suggests better anchored inflation expectations but does not explain the decline in the median. By construction, the median forecast is the middle forecast—half the forecasts are higher and half the forecasts are lower—and not

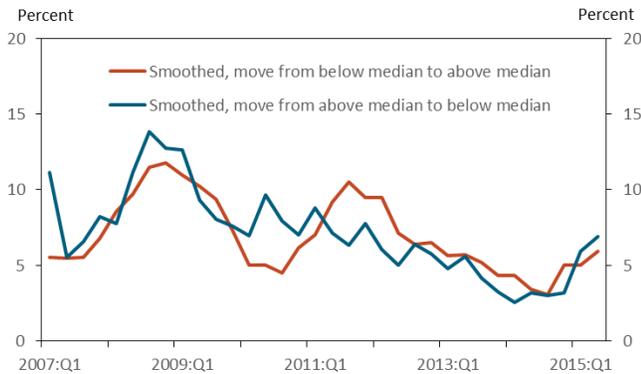
Chart 3: Individual forecasts in 2014:Q4 and 2015:Q1



Source: Federal Reserve Bank of Philadelphia.

In general, most forecasters do not change their forecasts from one side of the median to the other over the sample. Chart 4 shows the smoothed fraction of forecasters who moved from above the median in the “previous” quarter to below the median in the “current”

Chart 4: Movers



Source: Federal Reserve Bank of Philadelphia.

individual forecasts suggests long-term inflation expectations have become better anchored. First, the decline in the median has reversed in the last couple of quarters. Second, even with the decline, the median has remained relatively stable around 2 percent. Third, the entire distribution of forecasts has changed in a favorable way, with fewer high forecasts and about the same or slightly fewer low forecasts, suggesting longer-term inflation expectations are better anchored. Fourth, while identifying specific reasons for the decline in the median over the past few years is difficult, the decline appears to reflect changes in forecasts from about 10 to 20 percent of forecasters each quarter.

quarter and the smoothed fraction of those who moved from below the median to above the median.³ The chart shows that generally less than 10 percent of the forecasters changed their forecast sufficiently to move from one side of the median to the other. In other words, the 10 to 20 percent of forecasters who changed their forecasts by a sufficient amount are largely responsible for the change in the median.

In summary, while the median of long-term survey-based inflation expectations has generally declined over the last few years, the distribution of

¹ The median for 2015:Q2 was 1.975 percent.

² The SPF has 348 observations with a 10-year-ahead forecast of PCE inflation. However, since some forecasters drop out in some quarters or enter in other quarters, there are only 303 observations for the change in a forecaster's 10-year-ahead forecast of PCE inflation.

³ The smoothed series is a four-quarter moving average.

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