

# Economic Trends

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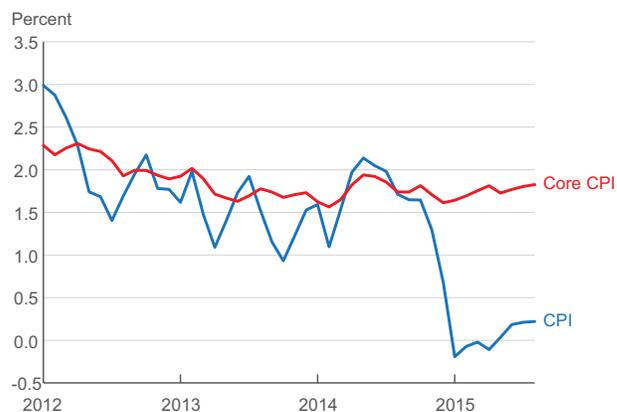
## Survey and Market Measures of Inflation Expectations

Sara Millington and Mehmet Pasaogullari

Inflation has been rising this year, but the overall increase appears to be small. The year-over-year change in the Consumer Price Index (CPI) is 0.2 percent (as of August 2015), while the core CPI (which removes volatile food and energy prices) has risen between 1.6 and 1.8 percent throughout the year. In this article, we review several measures of inflation expectations, which reflect economic agents' perceptions about the future course of inflation.

We look at two kinds of measures, expectations reported in surveys and expectations derived from financial markets. For survey expectations we consider the University of Michigan Survey of Consumers (UM Survey) and the Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters (SPF). The former is conducted monthly, and the latter quarterly. The market measures of inflation expectations that we look at include the TIPS breakeven inflation rate and the inflation swaps rate, both of which are available at a daily frequency.

One-Year Change in CPI and Core CPI



Source: Bureau of Labor Statistics.

## Survey Measures

Overall, surveys show that short-term inflation expectations have increased recently, but the increase has been limited. The UM Survey's 1-year median inflation expectation has risen over the last six months, going from 2.6 percent to 2.9 percent (April to September). Similarly, the SPF 1-year median expectation has risen in the last two surveys, increasing about 0.1 percentage points for the CPI and 0.2 percentage points for the core CPI. As of 2015:Q3, SPF survey participants expect CPI and core CPI inflation to be 2 percent in one year.

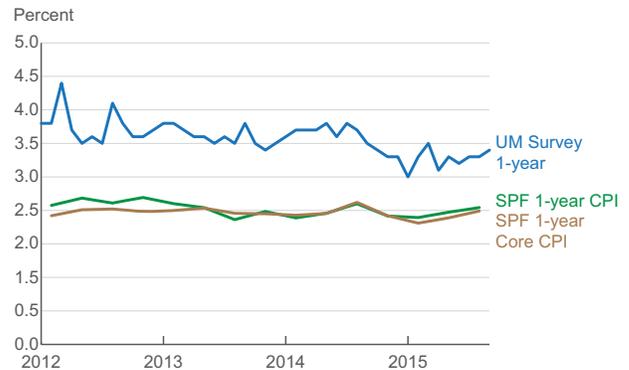
The upside risks to the core CPI inflation outlook for the end of 2015 and for 2016 seem more pronounced than before, judging from the SPF. The most likely outcome for the 12-month change in the core CPI at the end of 2015:Q4 is still in the 1.5 to 2.0 percent range, but the probability of it falling in the 2.0 to 2.5 percent range is a close second at 34 percent, which has almost doubled in the last two surveys. In contrast, the odds for the 1.0 to 1.5 percent range declined more than 13 percent, and now this range is the third-most likely outcome. The same trend is also seen for the 2016:Q4 outcomes, for which the 2.0 to 2.5 percent range is currently viewed as the most likely.

Meanwhile, long-term inflation expectations have been quite stable in 2015 according to the surveys. The UM Survey's 5-to-10-year inflation expectation has bounced back and forth in a narrow band of 2.6 to 2.8 percent this year and is currently at 2.8 percent (as of September 2015, preliminary result). The SPF 5-year CPI inflation expectation has remained at 2.0 percent since falling there in the first survey of 2015. The 10-year SPF increased only by 0.05 percentage points in the last two surveys; it is 2.15 percent in the recent survey.

## Market Measures

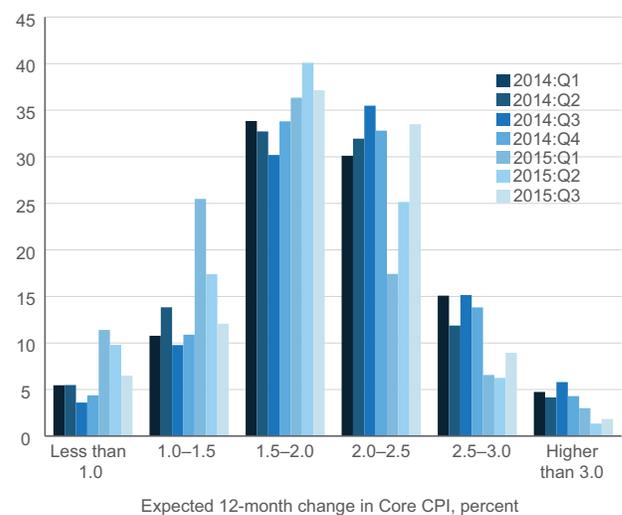
Market measures of long-term inflation expectations have been volatile in the last six months, especially in the most recent period. Between mid-March and early July, the 10-year inflation swap rate increased by about 30 basis points to 2.16 percent, whereas the 10-year TIPS breakeven rate rose by 27 basis points to 1.91

Inflation Expectations, One-Year Ahead



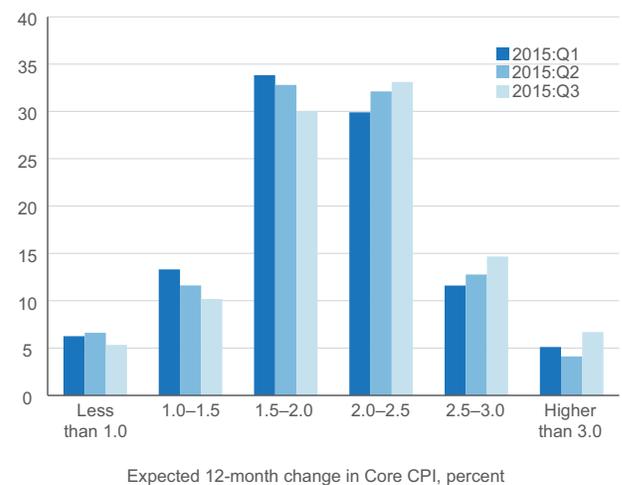
Sources: University of Michigan and Federal Reserve Bank of Philadelphia.

SPF Core CPI Probabilities, 2015:Q4



Source: Federal Reserve Bank of Philadelphia.

SPF Core CPI Probabilities, 2016:Q4



Source: Federal Reserve Bank of Philadelphia.

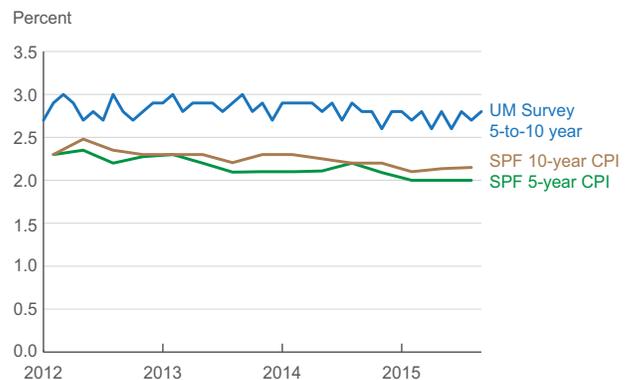
percent. However, from then until August 24, both measures declined steadily. On August 24, 2015, the TIPS breakeven rate was 1.49 percent, its lowest level since May 2009, and the 10-year inflation swap rate was 1.73 percent, its lowest level since January 2009.

One thing to keep in mind when looking at market expectations is that they are not reflections of pure inflation expectations. They also reflect inflation and liquidity premiums, and the fact that financial markets have been quite volatile recently may have affected these premiums. On the same day these swap and breakeven rates were reported, August 24, US stock market indexes declined by about 4 percent, suggesting that the market measures' low levels of inflation expectations reflect more than just a deterioration of market perceptions for the long-term inflation outlook. Since then, these measures have continued their volatile pattern. As of September 10, the 10-year TIPS breakeven rate was 1.59 percent, and the inflation swap rate was 1.84 percent.

### Bottom Line

There has been a limited rise in short-term inflation expectations. Long-term inflation expectations are either rising slightly or falling quite a bit, depending on the measure consulted. Survey measures suggest that long-term inflation expectations have been largely stable or increasing only slightly over the last six months. In contrast, market measures of long-term expectations showed large declines recently, possibly due to liquidity and inflation premiums among other things.

Long-Term Inflation Expectations from Surveys



Sources: University of Michigan and Federal Reserve Bank of Philadelphia.

Long-Term Inflation Expectations from Market Measures



Sources: University of Michigan and Federal Reserve Bank of Philadelphia.



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