

Economic Trends

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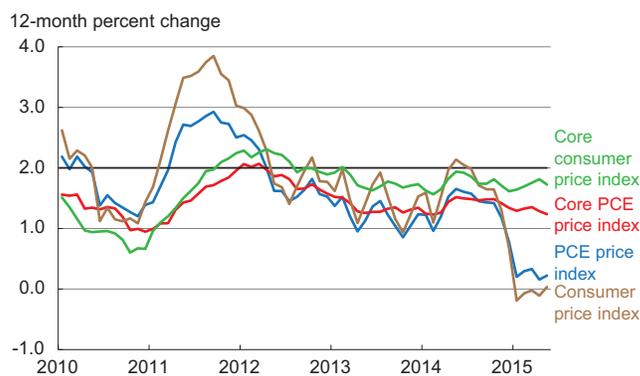
Recent Inflation Trends

Todd Clark and William Bednar

The Federal Reserve's Federal Open Market Committee (FOMC) has set a long-run objective for consumer price inflation of 2.0 percent. For some time, most measures of inflation in the US have fallen short of this objective. For example, in May, the year-over-year percent change in the Personal Consumption Expenditures (PCE) price index was 0.2 percentage point; this inflation measure has been below 0.5 percent throughout 2015. The year-over-year percent change in the PCE price index excluding food and energy was 1.2 percent in May; this indicator has been below 1.5 percent every month of 2015. Inflation rates based on the Consumer Price Index (CPI) have been higher than PCE-based rates, consistent with historical norms, but they paint a broadly similar picture. On a year-over-year basis, overall and core CPI inflation were at 0.0 and 1.7 percent, respectively, in May.

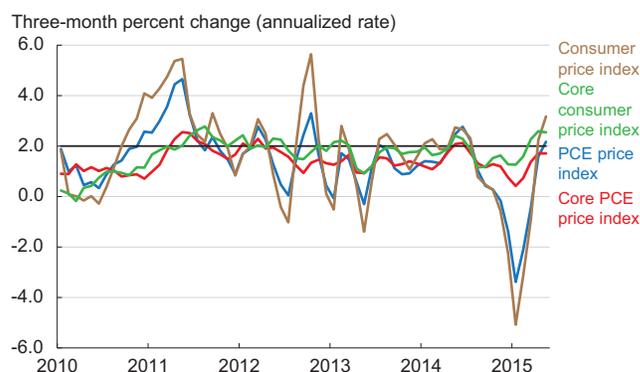
Although year-over-year rates are very useful for gauging inflation rates, they may at times be slow to display shifts in inflation. Underlying changes will show up more quickly in inflation rates calculated over shorter periods such as three months. Of course, there is a tradeoff: smoothing over three months rather than 12 months can provide a more timely signal, but doing so removes less of the noise in month-to-month inflation rates and thereby can provide a more

Inflation Measures: 12-Month Percent Change



Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

Inflation Measures: Three-Month Percent Change



Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

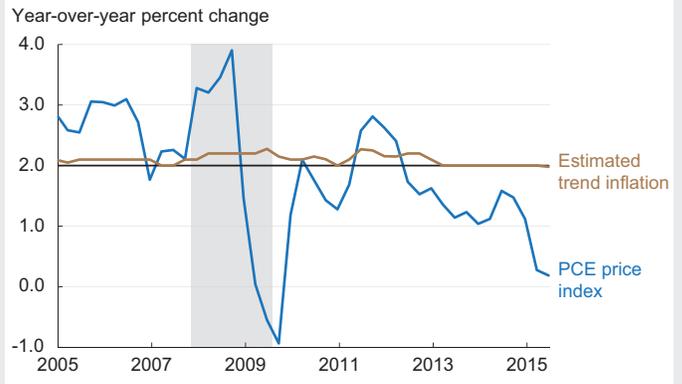
variable signal of the underlying trend in prices. With that proviso, it is encouraging that recent three-month inflation rates have increased from the very low levels that prevailed early in the year. Measured on a three-month basis, overall PCE inflation was 2.2 percent in May, up substantially from its recent nadir of -3.4 percent in January. The corresponding core PCE inflation figures are 1.7 percent for May and 0.4 percent for January. Again, CPI inflation rates are higher, with overall inflation (three-month rates) at 3.2 percent and core inflation at 2.5 percent.

The recent pickup in three-month inflation rates suggests the possibility—admittedly, not very likely, with just a few months of data—that trend inflation rates have bottomed out and begun to move back toward rates consistent with the FOMC’s 2-percent objective for PCE inflation. As described in Bednar and Clark (2014), one can think of trend inflation as the rate of inflation that would be expected to prevail if there were no temporary factors such as a level of economic activity below the economy’s potential influencing the inflation rate. Put another way, trend inflation is the inflation rate that we would expect after temporary factors subside.

There are a number of ways to measure or estimate trend inflation. Different approaches can be reasonable because, with the available data, it can be difficult to distinguish a change in trend from a persistent deviation of inflation from the trend. One model might attribute a long-running change in inflation to a change in the trend, while another attributes the change to a persistent deviation of inflation from an unchanged trend. Both models may nonetheless predict a similar path of future inflation.

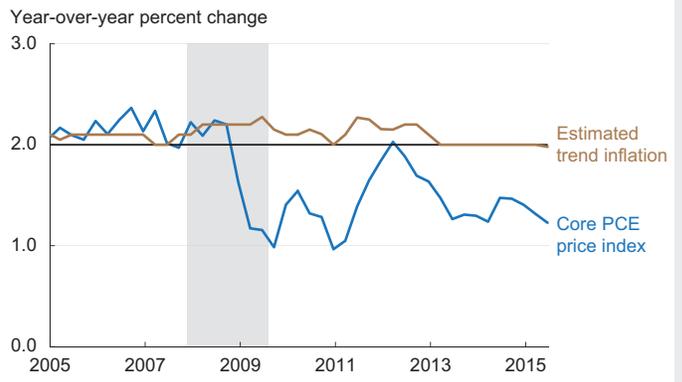
Recent research (Clark and Doh 2014) compares how well different models or measures of trend inflation fare in forecasting inflation from 1975 through 2012. Several measures stand out for forecasting relatively well, yet they are quite different. Updating the analysis of Bednar and Clark (2014), which used data through 2013:Q4, this article uses PCE inflation data through mid-2015 to assess what each model says about the current trend rate of inflation and what each implies for the inflation outlook. For the second quarter of this year, the nowcasts of inflation obtained from the

Survey-Based Trend Inflation: PCE



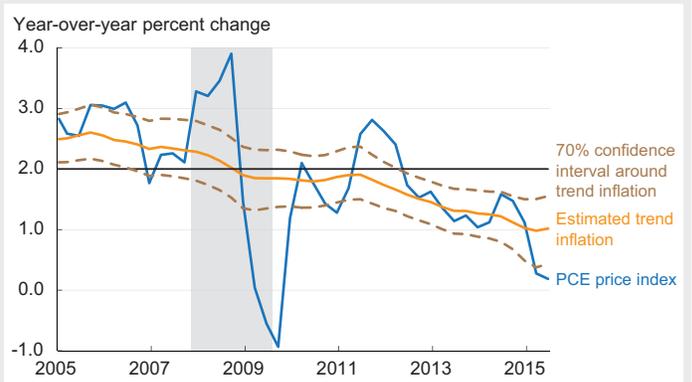
Note: Shaded bar indicates a recession.
Sources: Bureau of Economic Analysis, authors' calculations.

Survey-Based Trend Inflation: Core PCE



Note: Shaded bar indicates a recession.
Sources: Bureau of Economic Analysis, authors' calculations.

Trend Inflation from Model 2: PCE



Note: Shaded bar indicates a recession.
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methods of Knotek and Zaman (2014) are used as actual values of second-quarter inflation rates. These nowcasts reflect monthly PCE prices for April and May and forecasts for June.

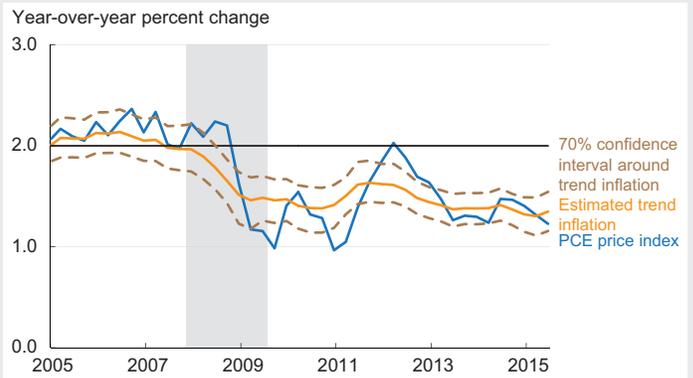
Three Measures of Trend Inflation

One approach to measuring trend inflation is to define it as the long-run forecast of professional forecasters. The forecast used is the 10-year-ahead average inflation forecast from the Survey of Professional Forecasters (SPF). By this measure, trend inflation has remained stable: the survey estimates of long-run inflation haven't changed much in recent years, including the past year. This definition of trend inflation implies that the recent decline in inflation is a persistent deviation from an unchanged trend rather than a change in the trend itself.

A second approach to quantifying trend inflation relies on a simple statistical model that decomposes inflation into a trend component and noise, very temporary deviations from trend (Stock and Watson 2007). According to this approach, trend inflation has fallen noticeably over the past several years, but has remained fairly stable over the past year. However, the estimate of trend from this model has been quite variable over time, and it tends to move somewhat in line with actual inflation. Yet the recent uptick in inflation rates has so far been too short-lived to lead to any rise in the estimate of trend inflation. Broadly, as noted in Bednar and Clark (2014), by this method the recent disinflation looks to be caused by both the decline in the trend and temporary deviation from it.

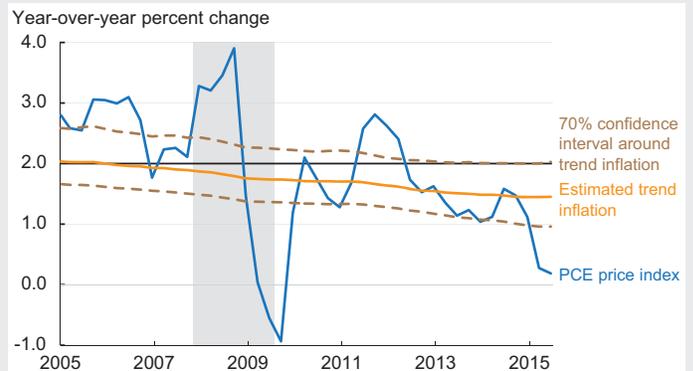
A third measure of trend inflation comes from a model that decomposes inflation into a trend component and somewhat persistent deviations from trend (Cogley and Sargent 2005). As was the case at the time of the analysis of Bednar and Clark (2014), estimates of the trend from this model fall somewhere in between those of the first two measures. By this measure, trend inflation has moved down gradually in recent years. But with this estimate, too, the recent uptick in inflation rates has been too short-lived to lead to any rise in the estimate of trend inflation. Broadly, this trend estimate also implies that recent low inflation is the result of both a lower trend inflation rate and a temporary fall of inflation below the trend.

Trend Inflation from Model 2: Core PCE



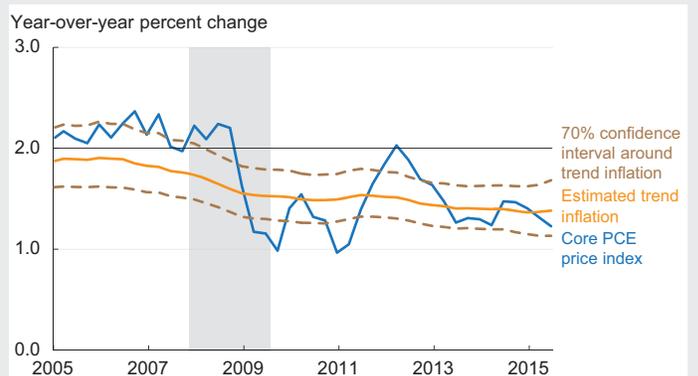
Note: Shaded bar indicates a recession.
Sources: Bureau of Economic Analysis, authors' calculations.

Trend Inflation from Model 3: PCE



Note: Shaded bar indicates a recession.
Sources: Bureau of Economic Analysis, authors' calculations.

Trend Inflation from Model 3: Core PCE



Note: Shaded bar indicates a recession.
Sources: Bureau of Economic Analysis, authors' calculations.

Implications for the Inflation Outlook

Overall, despite some significant differences among them, these three trend inflation models have been similarly successful in predicting future inflation in the past. So it is not easy or possible to say which will give the most accurate forecast going forward. They do imply slightly different outlooks for inflation over the next few years.

Let's start with the forecasting approach that defines trend inflation as the long-run forecast of professional forecasters. In the model that uses this measure of the trend, inflation depends on this trend and past inflation departures from the trend. This specification yields a forecast of PCE inflation gradually rising over time to about 2 percent. This rise is not surprising given that the inflation trend estimated by this method has been stable around these levels.

The models based on the other two trend inflation estimates yield forecasts that are relatively flat around the recent estimate of the trend rate, with the forecasted inflation rate from the model with the smoother trend (using the third measure) a bit higher than the forecasted rate from the model with the most variable trend (using the second measure). Putting all of this together, by any measure we have considered, recent inflation trends suggest inflation is likely to remain low in coming quarters, although not as low as it was early this year.

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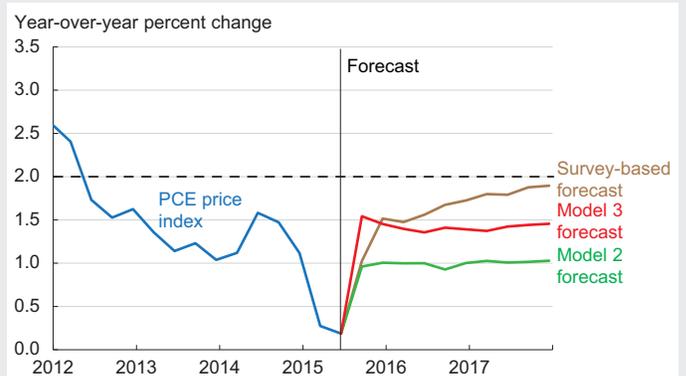
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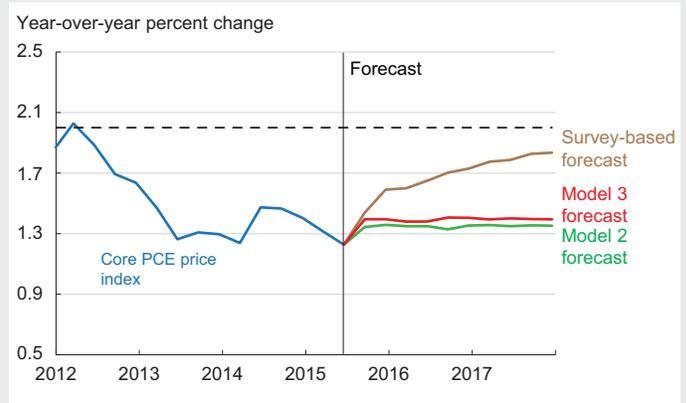
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Forecasts of PCE Inflation



Sources: Bureau of Economic Analysis, authors' calculations.

Forecasts of Core PCE Inflation



Sources: Bureau of Economic Analysis, authors' calculations.



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