Discussion of Michael Ehrmann’s “Targeting Inflation from Below: How Do Inflation Expectations Behave?”

Eric T. Swanson
University of California, Irvine

The adoption of inflation targeting by central banks around the world has been nothing short of spectacular. In the 25 years since the Reserve Bank of New Zealand first adopted the inflation targeting (IT) framework, it has become the de facto standard against which all other monetary policy frameworks are compared. While some countries, such as New Zealand, the U.K., Sweden, and Norway, are very explicit about how their monetary policy is tied to IT, other countries, such as the U.S., are not explicit followers of the framework and can only be considered inflation targeters “in spirit”, if at all.

Given the widespread success of inflation targeting as an idea, it is perhaps surprising that there is not more empirical evidence documenting its success as a monetary policy framework. In fact, the empirical evidence on this question is decidedly mixed, as can be seen in the nice literature review in Michael Ehrmann’s paper. While many studies have found that countries that adopted IT have lower inflation and/or better-anchored inflation expectations than they did before adopting IT, the difficulty lies in showing that those countries have lower inflation and/or better-anchored inflation expectations than a control group of countries that did not adopt IT. Ideally, the control group should also control for the initial level of inflation, since IT countries as a whole have tended to start from a higher initial inflation level, which was what drove them to adopt IT in the first place (Ball and Sheridan, 2005). This correlation in the data makes it hard to separate the effects of IT from those of potential mean reversion (Ball and Sheridan, 2005).

Thus, the difficulties in the empirical literature seem to be not so much documenting an improved performance of IT countries per se, but rather documenting a performance in IT countries that is significantly better than in other countries that didn’t adopt IT.

In “Targeting Inflation from Below: How Do Inflation Expectations Behave?” Michael Ehrmann looks at a somewhat different question. Rather than ask whether IT has affected the behavior of inflation and inflation expectations relative to a control group of non-IT countries, Michael investigates whether the behavior of inflation and inflation expectations differs across IT countries with low vs. average or high inflation. The comparison that’s being studied by Michael in this paper is thus substantially different from the comparisons that have been analyzed before, and may be more cleanly identified in the data.

Data and Sample

Of course, for any empirical study, it’s important to have good data. The first point to note about Michael’s analysis is the wealth of data that is brought to bear on the issue. The Consensus Economics dataset consists of monthly observations for about 10 countries over 20 or
more years. Moreover, the Consensus Economics data includes not just the level of inflation, but also inflation expectations for the current year, next year, and individual forecasters’ predictions, which allows the researcher to construct measures of cross-sectional forecast dispersion, or disagreement. The richness of the dataset gives Michael a reasonable chance of identifying the difference that he is interested in—the differential behavior of inflation and inflation expectations in IT countries with low vs. high inflation.

Although the Consensus Economics inflation and mean inflation expectations data go back to at least the beginning of 1990 for all the countries (other than the Euro area) listed in Michael’s Table 1, his analysis focuses only on the period during which each listed country was an inflation targeter. Thus, the “start dates” listed in the first column of his Table 1 are not due to data availability, but rather correspond to the date that inflation targeting in each country began. The reason for this choice is the paper’s different focus from the previous literature—rather than compare IT vs. non-IT countries, Michael’s paper focuses on the comparison between IT countries with low vs. average or high inflation. This results in a somewhat reduced sample size of about 1,955 country-month observations, relative to the maximum possible sample size of about 3,000 country-month observations that would be available using all of the Consensus Economics data (not to mention the additional non-IT countries of France, Germany, Italy, and the Netherlands, which could be included in the analysis prior to 1999 along with Spain.) The reduced sample size that results from this choice is made up for by the clearer focus of the regressions on the comparison of interest—the additional observations discussed above would not help to identify the difference between IT countries with low vs. high inflation.

**Correlation over Time and across Countries**

As impressive as the large sample size in the Consensus Economics dataset is, it’s important to bear in mind that those 1,955 (or even 3,000+) observations are not independent. Inflation is a persistent, slow-moving process in every country, so the residuals in each of Michael’s regressions are likely to be serially correlated. Although each of those regressions includes country fixed effects, those fixed effects control only for differences in the average level of inflation across countries, and do not fully remove the serial correlation that is present within each country. A few of Michael’s regressions include time fixed effects as well, but those also will not eliminate the problem—time fixed effects remove the average level of inflation residuals across countries each month, but do not correct for the fact that countries with idiosyncratically high inflation one month will also tend to have idiosyncratically high inflation for several subsequent months.

Inflation is also likely to be correlated across countries due to changes in global commodity prices, global business cycle conditions, and other global factors, but here the time fixed effects that Michael includes in some of the regressions will typically be sufficient to soak up the correlation. Regressions without those time fixed effects, however, will be subject to this additional source of correlation as well. (It’s important to note, however, that many of Michael’s regressions include “month fixed effects”, which is just a set of twelve dummy variables corresponding to the twelve calendar months of the year. These “month fixed effects”, of course, do not control for cross-
country correlation in the residuals; a full set of “time fixed effects” is required. The latter are included in a few of Michael’s regressions, but only a few.)

A separate, but closely related, issue is that inflation has trended downward over time in virtually every country. After removing country fixed effects, these downward trends will appear as serial correlation in the residuals within each country, independent of whether inflation deviations from trend are serially correlated or not.

For all of these reasons, there are effectively far fewer than 1,955 independent observations in each of Michael’s regressions. Ordinary least squares standard errors will be severely downward biased (and $t$-statistics upward biased), even when country and/or time fixed effects are included. Thus, the use of the Driscoll-Kraay (1998) panel standard error correction in each regression is crucial for ascertaining the true asymptotic statistical significance of the results. This correction (or something like it) is not performed nearly as often as it should be in panel studies of inflation targeting. However, as with the standard Newey-West (1987) procedure for a single time series, it is important to specify the number of lags of potential serial correlation in the Driscoll-Kraay (1998) correction. A moderate number of monthly lags, such as 12, may be sufficient if serially correlated inflation deviations from trend are the only problem, but if the inflation data suffer from downward trends over the sample, then 12 lags may not be sufficient, since the residual serial correlation will persist for several years. (Of course, the best correction in case of downward trends would be to explicitly allow for these trends in the regression specification itself, rather than try to control for them in the standard error correction procedure, but given that Michael’s regressions do not include time trends we should bear in mind the possibility of biased standard errors from this source.) It would be helpful in the future if Michael (and other authors) offered some justification that 12 lags is sufficient for the standard error correction, and considered a specification with time trends as a robustness check on the results.

**Regression Results**

The results in Michael’s regressions are quite robust. IT countries with persistently low inflation (below target for 9 months or more) seem to have substantially lower inflation expectations than IT countries with average or high inflation (Table 3), and those expectations are more sensitive to the level of inflation itself (also Table 3). IT countries with persistently low inflation also seem to have significantly greater inflation forecast dispersion (Table 4). The statistical significance of these results holds across a wide variety of specifications in both tables, which is remarkable given the difficulty the literature has had in finding robust differences between IT vs. non-IT countries. Apparently, the difference between low- vs. average- or high-inflation IT countries is easier to identify in the data than the difference between IT vs. non-IT countries.

The results in Tables 3 and 4 suggest that inflation expectations in IT countries with persistently low inflation are not as well anchored as in average or high-inflation IT countries. Inflation expectations are below target, they are more below target for countries with lower inflation, and disagreement across forecasters is greater for countries that are more below target.
The effects are not symmetric—they apply only to countries that are running below target, and not above. The regressions do not shed light on why inflation expectations seem to become unanchored when inflation is below rather than above target, but they do suggest that there is a cost of inflation running below target. To the extent that the benefits of inflation targeting come from a firmer anchoring of inflation expectations, those benefits seem to decline substantially if inflation remains below target for more than a few months. Of course, this raises the intriguing possibility that the benefits may decline to the point where non-IT countries could actually perform better than IT countries in a low inflation environment, in terms of inflation and inflation expectations being closer to the central bank’s objective and better anchored.

**Interpretation of the Results**

Let me speculate as to why Michael finds the results that he does. In other words, why does inflation below target seem to de-anchor inflation expectations in IT countries, while inflation above target does not have the same de-anchoring effect?

A natural explanation seems to be one of perceived impotence of the central bank. When inflation is above target, it’s natural for the public and the media to interpret the higher inflation as an optimal choice of the central bank. After all, the central bank’s alternative was to raise interest rates further and thereby reduce real economic activity.

However, when inflation is running below target, it’s more difficult for the public and the media to interpret the outcome as an optimal choice. Presumably central banks prefer more real economic activity to less, as long as inflation does not rise substantially above target, and yet the central bank did not stimulate the economy. It’s hard to imagine why the central bank wouldn’t have done so unless it was somehow unable to. Thus, inflation target misses on the downside naturally seem to suggest an explanation based on central bank impotence rather than optimization. This perception of impotence is probably strengthened by the obvious zero lower bound constraint faced by many central banks in recent years.

It’s important to note that Michael’s results suggest a problem of perceptions of central bank impotence by forecasters, rather than actual impotence. Much theoretical work (e.g., Reifschneider and Williams, 2000; Eggertsson and Woodford, 2003) and empirical evidence (e.g., Gurkaynak, Sack, and Swanson, 2005, Swanson and Williams, 2014) suggests that central banks can work around the zero lower bound constraint as long as they have some ability and willingness to commit to policy actions in the future. Nevertheless, central banks may suffer from a perception of impotence to the extent that these workarounds are not understood by the public and the Consensus Economics forecasters.

However, if Michael’s results are driven by the zero lower bound and private-sector perceptions of central bank impotence, then this does call into question whether the inflation targeting criterion is necessary or even relevant for the analysis. In other words, do we need to

---

1 Of course, it’s also possible that central banks do suffer from impotence to some extent at the zero lower bound, which would help to explain why several of them allowed inflation to run below target for several months or even years without doing more to stimulate their economies.
restrict attention to inflation targeting countries to obtain the same results that Michael finds? Or would we find very similar results if we looked at a broader sample of low-inflation vs. high-inflation countries that included both IT and non-IT central banks? Some additional research on this question seems like it would be warranted.

Conclusions

In summary, Michael asks a question in this paper that is different from what has typically been considered in the inflation targeting literature. As a result, he gets stronger and more robust results than is typical for that literature. Apparently, the difference between IT countries with low inflation vs. average or high inflation is better identified in the data than is the difference between IT and non-IT countries themselves.

IT countries with persistently low inflation seem to suffer from a “de-anchoring” problem. Their inflation expectations are lower (relative to IT countries with average or high inflation), their inflation expectations are more sensitive to the level of inflation itself, and there is more disagreement across forecasters about the future path of inflation.

A natural explanation for these findings seems to be the zero lower bound and private-sector perceptions of central bank impotence. However, this raises the question whether the restriction to IT countries is necessary to obtain the same result. To the extent that all central banks face a problem of impotence (or perceived impotence) at the zero lower bound, then we should expect to see similar results even for non-IT central banks. Future research into this question seems warranted.

References


