

# Commentary

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**B**ecause inflation targeting is a relatively recent phenomena, in the past we have had insufficient data to conduct time-series econometric work to evaluate this important new monetary policy strategy. However, now that inflation targeting has been around for close to ten years, we are able to do some preliminary econometric work on this topic. This is exactly what Neumann and von Hagen do in their paper, and it is a welcomed addition to the literature.

I break my comments up into two parts. The first part looks at the empirical analysis in the paper, while the second examines the question of whether the non-inflation-targeting countries that Neumann and von Hagen look at are really that different from the inflation targeters they study.

## EMPIRICAL ANALYSIS

Neumann and von Hagen produce several pieces of evidence quite favorable to inflation targeting.

- After countries adopt inflation targeting, the volatility of inflation, interest rates, and output falls to levels that are similar to those in the successful non-inflation-targeting countries (the United States, Germany, and Switzerland).
- Taylor rules display a greater focus on the control of inflation after adoption of inflation targeting.
- Vector autoregression (VAR) evidence indicates that the relative importance of inflation shocks as a source of the variance of interest rates rises after adoption of inflation targeting, and this might also suggest a greater focus on inflation control after adoption of inflation targeting.
- The response of inflation and output to oil price shocks is relatively more favorable after inflation targeting is adopted.

Neumann and von Hagen thus conclude that

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inflation targeting has improved monetary policy performance in the countries that have adopted it.

Given that my past research has been quite favorable to inflation targeting, it is not surprising that I like the conclusions in this paper. Unfortunately I am forced to point out that the evidence in the paper suffers from several problems and so is not completely convincing.

Although the reduction in volatility after inflation targeting is adopted is suggestive, there is the potential problem that possibly it is something else that produced these declines. Neumann and von Hagen are aware of this problem, and this is why they turn to other evidence to evaluate whether inflation targeting has been beneficial.

The Taylor rule evidence also looks quite favorable to inflation targeting because it suggests that the central bank puts a greater weight on the control of inflation relative to output stabilization, thus making it more likely that price stability will be achieved. However, a troubling feature of the Taylor rules estimated in the paper is that, even when the long-run coefficient on inflation has risen after inflation targeting has been adopted, it still remains less than 1. Values less than 1 on this coefficient indicate that the inflation process is unstable: When inflation and inflation expectations rise, the central bank raises interest rates by a lesser amount so that the real rate of interest falls. The lower real interest rate then stimulates inflation further and is thus likely to lead to an inflationary spiral. Indeed, as John Taylor (1993) has pointed out, an estimated Taylor rule for the United States in the pre-1979 period does have a coefficient less than 1 on inflation, and this is an explanation why inflation rose to double-digit levels by the end of the 1970s.

Therefore, although the estimated Taylor rules in the paper suggest that the weight on the inflation gap increases after inflation targeting has been adopted, the central bank is still not doing its job well enough if the long-run inflation coefficient remains less than 1, as it does for all inflation-targeting countries other than Sweden in the monthly estimates and Sweden and the United Kingdom in the quarterly estimates. The Taylor rule estimates do not suggest that inflation-targeting countries have improved monetary policy enough to achieve the goal of price stability. The fact that inflation-targeting countries have been so successful in inflation control should raise some concern about the Taylor rule estimates.

Furthermore, the Taylor rule estimates for the

non-inflation-targeting countries also tend to have long-run coefficients on inflation that are less than 1. The exception is Germany in the post-1993 period. Especially troubling is that the long-run coefficient on inflation is less than 1 for the United States in both the 1978-92 and 1993-2001 periods. These results appear to be inconsistent with those of Taylor (1993) who finds that, for the United States after 1979, the coefficient on inflation rises above 1—which is an important reason why the performance of monetary policy improved so much in the post-1979 period relative to the pre-1979 period.

The authors point out in an appendix that the low coefficients on their estimated Taylor rules stem from using the CPI to measure inflation rather than the GDP deflator as Taylor does. This is somewhat troubling because it suggests large differences in results occur when slightly different inflation measures are utilized. The most serious problem with the Taylor rule results in the paper may not be that monetary policy does not respond sufficiently to changes in (CPI) inflation, but rather that estimated Taylor rules in the paper are misspecified. From my experience with central banks, it is quite clear that they respond to future forecasts of inflation rather than to current inflation. Indeed, this is exactly what theorizing on the design of optimal monetary policy suggests that they should do. Estimating Taylor rules with actual rather than forecasted inflation thus results in an errors-in-variables problem for the long-run inflation coefficient and is thus likely to bias this coefficient downward. Orphanides (2001) shows that this is exactly what occurs in estimates of Taylor rules for the United States. The fit is better when one-year-ahead inflation forecasts are used in the Taylor rule equations and the inflation coefficients are much higher and always above 1. Orphanides (2001) also shows that using revised data, rather than the data available in real time, creates a further errors-in-variables problem, as does possible improper measurement of the output gap. The bottom line is that, although I am sympathetic to the view that countries adopting inflation targeting increase their focus on inflation control, I am highly skeptical of the Taylor rule evidence in this paper that supports this.

I also am very skeptical of the VAR evidence in the paper. A basic problem with VARs is that they appear to yield a lot of useful evidence without putting a lot of structure in their models. However, as economists, we always need to be skeptical of getting something for nothing, because as we always

say, “there is no such thing as a free lunch.” This applies to econometrics just as much as it does to filling our stomachs. The paper uses an implicit identification scheme that inflation and output react to monetary policy only with a lag. This is a standard identification scheme, and although not without its problems, it is not unreasonable. However, a serious problem for the analysis in this paper arises from the fact that VARs don’t have any structural model of dynamics, and such a structural model is needed if we are to interpret the response of monetary policy to inflation. The fact that the contribution of inflation shocks to the variance of interest rates rises does not tell us that monetary policy has an increased focus on the control of inflation. To see this, consider the following example. Suppose that the monetary authorities greatly increase their focus on inflation control and are able to develop a super-credible inflation-targeting regime. This regime would then change the time-series process of inflation so that, when inflation rises above its target level, the public and markets expect it to fall back down to the target level very quickly. Then the central bank doesn’t need to respond much to the temporary upward blip in inflation because inflation expectations will keep inflation from deviating much from the inflation target. In this environment, we would expect a decreased contribution of inflation shocks to the variance of interest rates. Should the smaller impact of inflation shocks on interest rates then be interpreted as indicating that the central bank is less focused on inflation? Of course not, because in this example the opposite has actually occurred. The above reasoning suggests that the VAR evidence in the paper tells us little about the impact of inflation targeting on the conduct of monetary policy.

The most interesting evidence in the paper involves the examination of the different responses before and after inflation targeting to upward spikes in oil prices in 1978 and 1998. Neumann and von Hagen look at oil price shocks because it is reasonable to assume that these shocks are exogenous to most of the countries they are studying. (This might be less true for the United States in the 1978 episode because overly expansionary monetary policy might have driven up oil prices at the time; see Barsky and Killian, 2001.) It is also useful to look at the effect of the oil price shock in 1998 on inflation targeting because one commonly heard claim is that inflation targeting has not been tested because so many shocks in the 1990s have been favorable. However,

we recently made the point (Mishkin and Schmidt-Hebbel, 2002) that this view is incorrect. To the contrary, we point out that the oil price shock in 1998 was an adverse shock that was handled very well by inflation-targeting regimes, which is also the conclusion that Neumann and von Hagen reach.

Their paper uses the method of double differences to look at the difference in outcomes for inflation-targeting countries relative to non-inflation-targeting countries. To justify their analysis, they need several assumptions. First is that the response to other exogenous shocks is the same for both inflation-targeting and non-inflation-targeting countries. Second is that, when the oil price shock occurs, nothing else is occurring that affects inflation-targeting and non-inflation-targeting countries differently. Third is that the dynamic response to oil price shocks is the same in all inflation-targeting countries. It would be easy to cast some doubt on the first two assumptions, but they are pretty reasonable relative to other assumptions we often have to make in doing empirical work. However, there are more serious concerns about the third assumption that I think the authors of the paper share. Under the third assumption, double differencing would choose the same starting date, and this is what is conventionally done. However, Neumann and von Hagen instead make use of a nonstandard dating scheme that chooses the starting date for each country on the basis of when the trough and peak of the inflation rate is reached after the oil price shock. It is appropriate that they choose a date after the shock because it takes time for commodity price shocks to affect inflation. However, it is not clear under what assumption their procedure makes sense. I think that the reason they chose to use this procedure is because they have doubts about the assumption that the dynamic response to oil price shocks is the same in all the inflation-targeting countries, and this is a little worrisome. I am not sure how important this is because it is not clear that their results would be very different if they chose the same starting date for the double differencing.

To conclude my discussion of the empirical work in the paper: Although the research conducted by Neumann and von Hagen is worth doing, I have some doubts about the quality of the evidence. Thus I see the results as suggestive, but not much more than that. Should the fact that there are doubts about the evidence in this paper shake our faith in the benefits of inflation targeting? I think not. The doubts about the evidence just mean that we have

to look at broader types of evidence. One reason why some of my recent research on inflation targeting (Mishkin and Posen, 1997; Bernanke et al., 1999; and Mishkin and Savastano, 2001) has focused on historical case studies is because of the difficulty of doing econometric analysis of the type done in this paper. (Neumann and von Hagen call their double-differencing empirical work a case study approach, but it really is more like an event study rather than a case study.) Case studies allow us to see how inflation targeting has worked in practice and so provide some evidence about the mechanisms through which inflation targeting has affected the interaction of the markets, the public, politicians, and central banks. Then we can see if that interaction has been likely to improve how monetary policy is conducted and whether it results in better policy outcomes. This type of evidence is also not without its faults because it is necessarily anecdotal. However, I think that we need to be honest and admit that all evidence, including econometric evidence, has its faults. This is why we need to take a broader view on what evidence to examine and try to understand what makes monetary policy strategies successful from alternative perspectives.

## ARE THE SUCCESSFUL NON-INFLATION TARGETERS VERY DIFFERENT FROM INFLATION TARGETERS?

I want to address a final issue that is also very relevant to the interpretation of this paper. It is not at all clear that the successful non-inflation targeters that Neumann and von Hagen study (the United States and especially Germany and Switzerland) are very different in their monetary policy strategies from the inflation targeters.

As documented in my work with Ben Bernanke, Thomas Laubach, and Adam Posen (Bernanke et al., 1999), the successful non-inflation targeters' strategies for conducting monetary policy have many of the same elements as those pursued by inflation targeters. Indeed, my reading of Neumann and von Hagen's paper is that they would agree with the view that inflation targeters and the successful non-inflation targeters are not all that different. Both do focus on the long-run goal of price stability and stress transparency, accountability, and flexibility, the key elements of inflation-targeting regimes. Thus, the adoption of inflation targeting should be seen as a convergence to best practice in the conduct of monetary policy.

I agree with Neumann and von Hagen that monetary targeting worked well in Germany and that the evidence does not suggest that inflation targeting would have been superior to the monetary targeting approach used by the Bundesbank from 1974 to 1998. As pointed out by Neumann and von Hagen and also in my work with Bernanke, Laubach, and Posen, the Bundesbank's monetary targeting strategy was a success because it helped both the officials inside the central bank and the public and markets to focus on longer-run issues, particularly price stability. This view leads the authors to end their paper by stating that, "Given the central bank's commitment to price stability and its willingness to bind its policy to an intermediate target that serves as the nominal anchor for monetary policy, the choice between an inflation target or a monetary aggregate then is probably more a question of culture than economic principles." I agree.

However, it is important to point out that the context (culture) for the conduct of monetary policy in Germany is quite different from what it is in the European Monetary Union. Because of its history in which it experienced horrendous costs from hyperinflation, the German public is far more sophisticated about monetary policy than other Europeans and has much greater support for a central bank that focuses on inflation control. As a result, the complicated explanations provided by the Bundesbank when it missed its monetary target ranges were accepted by the public and did not weaken the support for the Bundesbank's monetary policy strategy. This is much less likely to work with the wider European population.

Some evidence for this view is that the European Central Bank (ECB) (or, more accurately, the European System of Central Banks) has received a tremendous amount of flack since its inception, although its policies seem to be reasonable and inflation has remained under control. I believe this has occurred because the ECB suffers from a "communications gap" and not a "policy executions gap." Part of the problem stems from the two-pillar strategy, which I believe is confusing to the European public and hinders effective communication. Given the instability of the money-income relationship, the monetary reference value requires complicated explanations that are not fully understood by the European public. It would be much clearer for the ECB to focus its explanations of the conduct of monetary policy on the second pillar, which addresses whether it is meeting its inflation goal. In other words, one pillar

is better than two. I thus believe that the ECB would reduce its communications gap if it adopted a flexible inflation-targeting framework akin to that followed by inflation targeters, just as Switzerland has done recently. It is important to note that dropping the monetary-reference-value pillar does not rule out a role for monetary aggregates in the formulation of policy. Many inflation targeters, including the Bank of England, do follow monetary aggregates quite closely in thinking about the future path of inflation, and this could certainly be an element in an inflation-targeting framework for the ECB.

The Federal Reserve's monetary policy actions under Alan Greenspan have probably also been quite consistent with what would have been done under an inflation-targeting regime. Furthermore, as I have pointed out elsewhere (Mishkin, 2000), the United States has a nominal anchor that has been very effective in recent years—it is Alan Greenspan. Thus it is not at all clear that adoption of inflation targeting in the United States would have improved recent monetary policy performance. However, there is still a strong argument for adoption of inflation targeting by the United States. No matter how good a nominal anchor Alan Greenspan is, he won't be around forever. It is better to depend less on individuals and more on institutions to achieve good policy results. Thus we need to take steps now that will institutionalize the desirable features of the Greenspan Fed with its focus on price stability and the use of preemptive strikes against either inflationary or deflationary impulses in the economy. This is exactly what inflation targeting is intended to achieve.

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