

## REVIEW

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## Commentary

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I want to begin by complimenting both sets of authors on excellent pieces of applied econometric research.

Particularly impressive are Anderson and Rasche's estimates of how changes in minimum reserve requirements affect commercial banks' demand for reserves, a task which required a careful analysis of a large panel data set. For their part, Dueker and Serletis have performed a useful replication study, which provides valuable information about the sensitivity of some key empirical results to changes in data construction and sample period.

For the bulk of my comments, I will reconsider the basic premise of this conference and ask whether the monetary base (adjusted or not) is, or could become, a good indicator of the stance of monetary policy. My belief is that it is not, and (most likely) cannot be. In giving my reasons for this view I will interject some comments bearing more specifically on the two papers just presented.

There are really two questions about the role of the base in monetary policy: a short-run question and a long-run question. The short-run question is whether high-frequency fluctuations in the base provide useful information about changes in the stance of monetary policy. The long-run question is whether targeting base growth is sufficient to ensure long-run stability of the growth rates of prices and output.

### HIGH-FREQUENCY FLUCTUATIONS

Are high-frequency fluctuations useful sources of information? In general, the usefulness of the base (or any other simple

measure) as an indicator of policy changes depends on the central bank's operating procedures. In virtually all industrialized countries, over short- and medium-term horizons the central bank implements policy by targeting a short-term nominal interest rate—the federal funds rate in the United States. (In contrast, Switzerland is the only country I know of with a systematic record of targeting the monetary base.) In order to keep the interest rate at its target, the central bank must accommodate fluctuations in the demand for reserves by adjusting reserves, and hence the monetary base. Thus, any potential value that the base might otherwise have as a short-run indicator of monetary stance is contaminated by its endogenous response to changes in reserves demand. Indeed, demand effects probably dominate short-term movements in the base, a conclusion that is supported by the common finding of the “liquidity puzzle”: As Dueker and Serletis show in their article, positive innovations in the base (as well as in broader monetary aggregates) are generally followed by increases, rather than decreases, in short-term interest rates. This result, however, is interpretable in the conventional framework only if base fluctuations reflect passive accommodations of changes in money demand rather than changes in policy.

Given the Fed's operating procedures, I would argue that the federal funds rate is a much better (high-frequency) indicator of monetary policy changes than is the base, a view that would certainly be shared by both Fed governors and the financial markets. Indeed, in our recent work, Ilian Mihov and I have used a structural vector autoregressive (SVAR) methodology to confirm that funds-rate innovations are the best simple measure of monetary policy innovations during the past thirty years, except during the 1979-82 Volcker experiment (Bernanke and Mihov, 1995). Dueker and Serletis's replication of several VAR studies yields findings generally con-

sistent with this view. They do have a couple of reservations about the funds-rate indicator, however: First, they find that the percentage of forecast error variance (e.g., for output) explained by funds-rate innovations differs over specifications. Second, their results exhibit the “price puzzle” of Sims (1992); analogous to the liquidity puzzle mentioned above, the price puzzle is the finding that positive innovations to the funds rate (supposedly, a tightening of monetary policy) are followed by increases, rather than declines, in the general price level.

Without entering deeply into the issues associated with the SVAR methodology, I would make just two suggestions to Dueker and Serletis. First, I think it is a mistake to put much weight on the decomposition of forecast-error variance when comparing candidate indicators; I find the impulse responses to be much more informative. There is no reason why the share of the forecast that is error explained by the optimal monetary policy indicator should be large, or small, or even constant over time; indeed, with the ideal monetary policy, unanticipated policy changes would contribute zero to forecast-error variance. Second, some allowance should be made for possible structural breaks, particularly around the regime switches in 1979 and the early 1980s (Dueker and Serletis never test for or allow for these). In our work, Mihov and I found that when the sample is broken up, and the appropriate monetary policy indicator is associated with each sub-sample, the implied impulse responses are very reasonable. In particular, there is no evidence of a price puzzle.

## TARGETED BASE GROWTH

What about the long-run issue of whether a targeted rate of base growth is a reasonable anchor for monetary policy? Our economic intuition, which tells us that the monetary base is a natural anchor, is conditioned by the homogeneity results of classical monetary theory: All else equal, a doubling of the monetary base

should double the price level. But, unlike the situation in comparative statics exercises, all else is not equal when the state of a dynamic economy is compared at different points in time. In particular, changes in technology, policy, and institutions can—and typically do—lead to unpredictable and long-lasting shifts in the velocity of the base and other monetary aggregates. Because a large component of the base is currency, base velocity is also potentially sensitive to phenomena like currency substitution and fluctuations in foreign and domestic cash hoarding. It is well known that if base velocity contains a unit root, then stabilizing base growth will not lead necessarily to stable growth in prices or nominal GDP. More subtly, we know from rational-expectations analyses of the interactions of monetary and fiscal policy that fixing the current rate of base growth does not necessarily tie down even the current rate of inflation; expectations of future base growth, which depend among other things on the government’s expected budgetary position, are also relevant.

It should be emphasized that even if one were willing to assume that base demand is stationary (that is, assume that base velocity does not contain a unit root), that assumption would not be sufficient to make the base a good anchor for monetary policy. Stationarity of base demand does not rule out either a high variance or strong persistence of velocity shocks, either of which would imply substantial economic instability over medium-term horizons. For a point of comparison, think of the record of the gold standard: Although this classical monetary regime stabilized prices for a century in some countries, it also permitted bouts of inflation or deflation (sometimes severe) over lengthy periods. Thus the theoretical and empirical arguments for a stable relationship between the prices of consumer goods and gold bullion in the very long run are not sufficient to make gold a good nominal anchor; similarly, even if base velocity were shown to be ultimately mean-reverting, large or persistent deviations of velocity from its normal

value would be a major problem for a base-targeting procedure. (A small point in favor of the new adjusted base can be made here; Dueker and Serletis find that, post-1985, the forecast error for the velocity of the current measure of the adjusted base is about 15 percent greater than that of the revised adjusted base.)

## CONCLUSIONS

I would agree with most of the participants at this conference that short-term interest rates are not enough; monetary policy needs a longer-term anchor. What that anchor should be, however, is an empirical question. Personally, my interest has been piqued by recent experiments with inflation targeting in many countries, including Canada, New Zealand, the United Kingdom, and Sweden. Although this strategy has the important weakness that inflation is not directly controllable by the central bank, it also has several significant advantages: First, because inflation control is the ultimate goal (and the only feasible long-run goal) of monetary policy, a central bank with inflation targets never has to choose between achieving its announced path for an intermediate variable (like the base) and taking the actions most likely to achieve its ultimate target. For example, if velocity shocks make the planned growth of a monetary aggregate inconsistent with the inflation goal, an inflation-targeting central bank can make the necessary technical adjustment in money growth without sacrificing credibility with the public, the legislature, or the markets. Second, inflation targets allow the central bank to use information from many sources (including, for example, private-sector forecasts) in making policy, rather than being forced to rely on a single predictor or indicator. Finally, inflation targets are easily communicated to the public and are probably the best means of increasing the transparency and accountability of monetary policy. I look forward to seeing the results of the various inflation-targeting experiments now under way.

## REFERENCES

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