Discussion*

This discussion reviews a paper by Robert Tetlow that shifts the frontier of economic understanding in two ways. It makes substantial contributions to the analytics of this literature. It also provides new methods to evaluate monetary policy responses to asset-price shocks or bubbles. This paper extends the Bernanke, Gertler, and Gilchrist (1999) model in innovative ways. It solves for the Taylor rule response coefficients under a quadratic loss function. This paper contains a variety of robustness tests, allowing for changes in central bank preferences, the Taylor rule specification, the correlation of shocks, and the features of the bubble. In addition, it allows for Knightian uncertainty regarding the model parameters along the continuous line between the Bernanke, Gertler, and Gilchrist view and the Cecchetti et al. (2000) view of policy. The results in this paper are very close to the former position: Most of the time, central banks should refrain from responding to bubbles.

In the Taylor rule specification, the interest rate does not converge to the neutral rate *r* star in the specification, because the third determinant of interest rates is the change in stock prices, not the deviation from some fundamentals, as in Bernanke, Gertler, and Gilchrist. Tetlow justifies his specification because of the difficulty in measuring the fundamental underlying equilibrium stock market price. His implicit assumption is that, in the steady state, the stock market price is constant, and hence, any deviation from it is a bubble. This assumption is unlikely to be true. Tetlow specifies interest rate adjustment as instantaneous, although probably this is unlikely empirically. If there is policy sluggishness, the gains that he

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simulates to respond to bubbles, particularly to bubbles that are temporary and have high variance, should be much smaller than those reported in the paper. If Tetlow had included a lagged interest rate term, the differences between response and no response would be even smaller.

The optimal response coefficients calculated by Tetlow are larger than normal. On inflation, the output gap and the bubble response coefficients range from anywhere between 2 and 35 across the different tables of the paper; the average is 5 if outliers are included. In one instance, all three coefficients are close to 3. If there was a demand-driven shock of 1 per cent to the inflation forecast, 1 per cent to the output gap, and 1 per cent in stock prices, the interest rate should rise by 9 per cent, which is unusually strong. The estimated coefficients are well above those reported in the empirical literature for the United States and other countries. This may suggest a possible problem with model specification. Further evidence of misspecification is apparent when the bubble response is shut down. The optimal response coefficients are 11 for inflation and 35 for the output gap, while the rest of the specification is "standard." In this case, not responding to asset prices is "welfare superior" to responding to them, a result that contradicts the general claim that rules based on larger sets of variables must outperform rules based on a smaller set.

It is important to examine the regions of model stability. The regions of stability, instability, and indeterminacy are somewhat surprising, both in terms of coefficient combinations, and in terms of the absolute size of the coefficients. For example, instability arises even when the Taylor principle is satisfied, with coefficients on inflation and asset prices of 1.1 and 2.0, respectively. In addition, the model is stable when there is a negative reaction to inflation shocks and bubbles, which is counterintuitive.

Tetlow uses a minimax criterion to show the losses associated with responding to a "bubble" that is not present. Otherwise, the paper assumes full certainty about a bubble when it arises. Whenever a positive price shock arrives, it must be a bubble. If the alternative Bernanke, Gertler, and Gilchrist model were adopted, that is, the one that specifies a policy response to deviations of stock prices from fundamentals, one could address two different questions. First, what would be the optimal response under uncertainty about the fundamentals, based on a minimax strategy? Second, what is the cost of responding wrongly to a perceived bubble by the central bank as a result of underestimating fundamentals? Answers to these questions would help in providing more and better perspective to assessing gains from reacting to bubbles under uncertainty.

Tetlow mentions in the paper that the logic of responding to stock prices could be used to respond to the exchange rate, shocks, commodity price shocks, or real estate price bubbles. Should monetary policy react to exchange rate devaluations over and above its effects on inflation and output? One paper that considers this issue is Schmidt-Hebbel and Werner (2002), which examines three Latin American inflation-targeting countries: Brazil, Chile, and Mexico. In these countries, the relative exchange rate to reserve volatility is high. Also, exchange rate pass-through is low, after achieving low stationary inflation. The authors fit a Taylor reaction function, including an exchange rate response coefficient. Central banks did not generally respond to the exchange rate in the 1990s, but at certain times of stress, they have done so. Rolling estimates show that the response coefficients were well above zero in Brazil from 1999 to 2001, in Chile from 1999 to 2000, and in Mexico before 2000.

References

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