



## Commentary

Alec Chrystal

I am very pleased to be asked to participate in this conference that honors the career of Bill Poole. As a student of monetary economics I, like all my generation, was substantially influenced by Poole (1970). I was pleased to meet him many times at the annual St. Louis economic policy conference, both before and after he became president of the Federal Reserve Bank of St. Louis. We were also very grateful that he came to London in 2000 to give the annual Henry Thornton Lecture at the Cass Business School of City University.

I now turn to my comments on Professor Hamilton's (2008) paper. The paper uses data from daily movements in federal funds futures to test for links between futures prices, the policy rate itself, and the behavior of market interest rates. I first comment on the empirical work presented and then suggest additional avenues of research to further enlighten the topic. I then ask this: Who might be interested in these results and what might they learn from them?

Some of the difficulty in using the federal funds futures price as an indicator of market expectations arises from the fact that the contract settles on an average daily price over a month. I do not wish to get into the institutional detail here or into the econometric problems this causes, not least because I am dominated in institutional knowledge by Ken Kuttner, the other discussant, and in econometric expertise by Professor Hamilton himself. However, as a naive outsider, I cannot help but ask whether there is some

“cleaner” money market interest rate that contains the same information but avoids the complexities of moving-average valuation. Could we, for example, do roughly the same exercise with short-term Treasury bill discount rates, short maturity Treasury bond yields, or indeed interbank loan rates? If we could, then it would surely be simpler to use these rates and parsimony would lean in their favor.

Assuming now that the federal funds futures prices are the best proxy for market expectations, what do the results tell us, and what else might we like to know? The results reported in this paper confirm two earlier findings: First, market rates anticipate actual policy rate changes and, second, other market rates (yields to maturity) move with the federal funds rate, including those of up to 10-year maturity. I will discuss each of these in turn.

It is not a major surprise to find that markets anticipate policymakers' decisions. That this is highly likely has been central to economics since the rational expectations revolution of the 1970s. However, it would be interesting to know if markets have become better at doing this over time and whether this ability has been affected by improved transparency about the target rate, the stated biases in the policy stance, and what is being targeted. Similar questions apply to the unexpected component of policy changes: Has the impact of policy changed over time, and are the results for the full sample dependent on specific periods or specific sets of events?

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Alec Chrystal is a professor of money and banking and associate dean and head of the faculty of finance at Sir John Cass Business School, City University, London, England.

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A slightly different point arises in the context of testing the effects of federal funds futures on other market rates. It makes sense that short rates move most closely with the federal funds rate. However, the theoretical link with long rates is rather more ambiguous. In what way should long rates react to changes (and expected changes) in short-term policy rates? This could go either way, and indeed there could be no link at all. Suppose the Fed is tightening rates in order to bring down inflation in the future. This will raise implied forward rates up to some term, but it may lower interest rate expectations further out, that is, tip the yield curve. In such cases, forward rates further out will change but the change could quite logically be in the opposite direction. Tighter policy now could lower inflation expectations further out and, hence, create expectations of lower interest rates in the future. Hence, it might be interesting to test the reaction of long forward rates, in addition to yields to maturity, as the former will strip out the impact at the short end of the yield curve. What actually happens in each case will be dependent on the complexity of the environment, and the reaction might be asymmetric—rises may have a different impact than falls.

Why and to whom is all this likely to be interesting? Potentially there are three groups who may be able to learn something from the relationships that emerge from this and similar studies: first, the monetary authorities themselves; second, market participants who trade in these and related markets; and third, those in the economics profession who want to understand how monetary policy works, that is, those with an interest in the transmission mechanism.

The monetary authorities may be interested in all this for two possible reasons. First, by monitoring the federal fund futures they can see what the markets expect policy to be and can factor that into their decisions. Second, they could understand what impact an unexpected rate change has on the markets. (I will return later to the issue of whether these results mean that only unexpected rate changes matter.) I do not know for sure, but my guess is that Federal Open Market Committee members have reliable ways of backing out market expectations and of estimating

the impact of their policy rate changes without having to rely on this evidence from the federal funds futures market. Hence, I suspect that the contribution of these results to policymakers' decisionmaking is quite small.

Market participants have little to learn from these results because the federal funds futures prices reflect their behavior in the first place, so they are not going to learn about their own expectations from a price that their behavior has created. There may be something that these players could learn from federal funds futures prices, but only if the data were much more finely sampled. Tick-by-tick data for this and other closely linked money markets might help to identify exactly where changes in sentiment first appear. Market traders probably know this already, but it is also possible that the news for some episodes appears to some segments of the market first. However, it is more likely that market participants get new information more or less simultaneously and the timing of market movements is purely a product of how we measure the "market price." That is, all prices respond as quickly as is technically possible to the same information.

So what can we as economists learn from all this about the transmission mechanism of monetary policy? I suggest that this evidence does nothing but confirm what we already knew: Markets anticipate what policymakers are going to do, and markets move most when the policy change is most unexpected. However, I should emphasize that this evidence neither supports nor confounds the old notion of the Lucas aggregate supply curve, by which only unexpected policy changes have real effects.

To see this, I hypothesize that monetary policy works through a number of channels to influence aggregate demand in the economy. Only one of these channels is the direct effects on other market interest rates. Other channels include asset prices (and thus wealth effects), expectations and confidence, and international financial markets (and thus the exchange rate). The fact that market rates anticipate policy rate changes does not mean that the changes have no effect; it just means that the effects happen sooner. Market rate changes will still affect saving and investment decisions and

thus also aggregate demand. They will also affect asset valuations and thus create wealth effects.

Unexpected policy rate changes may well have a bigger measurable impact on market rates of all maturities, but this does not prove either that only unexpected rate changes have real effects or that unexpected rate changes have bigger real effects. It remains possible that unexpected policy changes have a bigger impact on aggregate demand, but the evidence adduced here does not address this issue.

In short, this paper contains some outstanding innovative econometric work that throws much light on the links between federal funds futures prices, the policy rate, and other market rates. However, the results have no apparent implications that should cause us to revise our view of how monetary policy works.

## REFERENCES

Poole, William. "Optimal Choice of Monetary Policy Instrument in a Simple Stochastic Macro Model." *Quarterly Journal of Economics*, 1970, 84(2), pp. 197-216.

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