Is the Fed slow?

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Has the Federal Reserve responded too slowly to macroeconomic conditions during the crisis? This column defends the central bank based on new estimates of the policy function, arguing that it has reacted promptly to a gradually evolving macroeconomic situation.

When the global economy starts to turn around, growth and inflation will pick up again. The Federal Reserve, ECB, Bank of Japan, and others will have to switch from their current expansionary policies to something more restrictive. The speed at which they make this switch will surely be hotly debated – especially given the general concern about central banks' exit strategies from the conventional and unconventional monetary policy they are currently employing to counter the global crisis. But how can we judge whether they are reacting too fast or too slow?

Policy rules: The key issues

Since the introduction of Taylor (1993) rules, mainstream research has described the behaviour of central banks via the relation between policy interest rates and a small set of macroeconomic observables. There are two main normative and positive issues regarding the form of these rules: the variables they contain and how they deal with dynamic adjustment.

As far as the first issue is concerned, a consensus has emerged on two variables:

- the expected output gap (the percentage difference between actual output and potential output, defined as the level of output produced by a frictionless economy when all resources are fully employed), and
- the expected inflation rate.

On the second issue, there is a consensus on the fact that monetary policy changes gradually; slow dynamic adjustment is an empirical fact in virtually all estimated monetary policy rules, when these are estimated using data that is at the frequency with which macroeconomic information becomes available (quarterly, monthly, etc). There remains, by contrast, a dispute about the source of the sluggish response (see, for example, Rudebusch 2006).

Why the sluggish response?

One school of thought labels the observed inertia as *endogenous* to central banks; the target policy-rates are the time-evolving means towards which observed rates fluctuates with inertia. Under this interpretation, it is the central banks that are slow to adjust. For example, given typical empirical estimates, if a central bank knew it wanted to increase the policy rate by a half a percentage point, it would only raise it by about 10 basis points in the first three months and by about 30 basis points after one year.

The alternative school of thought views the persistence of policy rates as *exogenous* – a consequence of the timely and prompt response by central banks to slow cyclical fluctuations in the key macroeconomic variables determining expected inflation and output gap. Note that neither expected inflation nor the output gap is observable when monetary policy is made in real time. Thus, a policy reaction function relating policy rates to these two variables is fully consistent with central banks monitoring a very wide set of economic indicators, which can be interpreted as econometric

instruments for the two relevant variables.

The key point is that according to this view, it is the economy that is slow to adjust, so observed persistence in interest rates it is not necessarily a signal that central banks are slow to react. Identifying whether policy rate persistence is endogenous or exogenous is therefore crucial to judging the reaction of central banks. It is also a difficult identification exercise.

New evidence

Rudebusch (2006) offers some evidence in favour of the exogenous interpretation of persistence by analysing the response of the US yield curve to monetary policy changes to conclude that “in essence, quarterly monetary policy partial adjustment does not appear to be consistent with the financial market’s understanding of the monetary policy rule”.

More recent econometric work reinforces this point. In Consolo and Favero (2009), we examine the potential relevance of the “weak instruments problem” to correctly identify the degree of monetary policy inertia in forward-looking monetary policy reaction function estimated for the US Fed. After appropriately diagnosing and taking care of the weak instruments problem, we find an estimated degree of policy inertia that is significantly lower than the common value in the empirical literature on monetary policy rules.

What is the weak instrument problem?

As we discussed above, interest rate rules contain unobserved variables such as expected inflation and the output gap. This is a consequence of the lags with which monetary policy normally operates. Parameters in the rule are estimated by rewriting the relation between monetary policy rates, lagged monetary policy rates, and future expected macroeconomic variables as a relation between monetary policy rates, lagged monetary policy rates, future *ex post* observed macroeconomic variables and an error term. The error term is a linear combination of forecast errors for macroeconomic variables and therefore orthogonal to any variables included in the information set of the agents at the time in which expectations are formed. Obviously, *ex post* observed macroeconomic variables are correlated with the error term in the re-specified rule, but the orthogonality condition could be exploited to construct valid instruments for the relevant endogenous variables.

The orthogonality condition between the innovation in the monetary policy rule and the relevant information set is known as a moment condition. A weak instrument problem occurs when those variables used as instruments are not sufficiently highly correlated with the variables they are meant to capture. Weak instruments affect consistency of all estimates obtained via moment conditions and can therefore explain the "illusion" of high monetary policy persistence. In the traditional Taylor rule case, the observed persistence may be due to weak instruments used for future inflation and/or the future output gap.

Note however that, unlike traditional regressions, moment conditions could be expressed in different alternative regression specifications when there are many variables involved in such conditions. In a situation in which the impact of the weak instrument problem is different on the relevant variables, the optimal specification of the moment conditions for estimation is the one in which the variable most affected by the weak instruments problem is used as dependent variable, so that instruments are adopted where they have more strength. Our empirical evidence suggests that the weak instrument problem could be particularly relevant for future US inflation. As a consequence, the specification least affected by weak instruments problem is a reverse regression in which future inflation is the left hand side variable and therefore not instrumented. This is obviously different from the traditional specification of the moment condition where the monetary policy rate is used as the dependent variable. Our estimation of the reverse regression delivers a much lower estimate of monetary policy persistence than the one usually found in the literature.

Conclusion

Our conclusion is that the Fed is not slow to react to macroeconomic conditions. Rather it has, in the past, reacted promptly to a gradually evolving macroeconomic situation.

References

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