Monetary policy rules for an open economy

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The literature on simple rules for monetary policy is vast. However, the literature does not contain a thorough normative analysis of simple rules for open economies, ie for economies where the exchange rate channel of monetary policy plays an important role in the transmission mechanism. The most popular simple rule for the interest rate—the 'Taylor rule'—for example, was designed for the United States and, thus, on the assumption that the exchange rate channel is less important. And the main open-economy alternatives—such as a rule based on a monetary conditions index (MCI)—may perform poorly in the face of specific types of exchange rate shocks.

This paper analyses the performance of a variety of simple rules using a model of the UK economy. To do so, we specify and evaluate a family of simple monetary policy rules that may stabilise inflation and output at a lower social cost than existing rules. These rules parsimoniously modify alternative closed or open-economy rules to analyse different ways of explicitly accounting for the exchange rate channel of monetary transmission. We compare the performance of this family of rules to that of the Taylor rule, naïve MCI-based rules as well as Ball's MCI-based rule, and inflation-forecast-based rules when the model economy is buffeted by various shocks.

To test the rules, we stylise the economy—that we calibrate to UK data—as a two-sector open-economy dynamic stochastic general equilibrium model. The export/non-traded sector split is important because it allows us to discern different impacts of the same shock on output and inflation in the two sectors. Identification of sectoral inflation and output dynamics is a key element on which to base the design of efficient policy rules.

To mimic observed stickiness in the adjustment of prices and wages in the United Kingdom, our model also features a wide range of nominal rigidities, modelled using the Calvo (1983) approach. These nominal rigidities have two crucial implications for our model. First, in our model economy macroeconomic equilibrium is inefficient, as with sticky prices changes in aggregate demand give rise to 'Okun gaps', in turn arising from specific microeconomic distortions. Second, monetary policy has real effects, and can be designed optimally to offset these various distortions. Specifically, since in an open economy monetary impulses are transmitted via multiple channels, in our model an efficient simple policy rule is one that offsets distortions by exploiting effectively all those channels.

Finally, because it is theoretically derived on the assumption that consumers maximise utility and firms maximise profits, the model has a rich structural specification. This enables us to contemplate shocks that could not be analysed in reduced-form small macro-models. For example, we can analyse the impact of a relative productivity shock on the two sectors. The ability to examine this range of shocks is important when comparing alternative policy rules for an open economy, because the efficient policy response to changes in the exchange rate will typically depend on the shocks hitting the economy—with different shocks sometimes requiring opposite responses. One drawback to this approach is that it is difficult to account for some features of the UK economy (most notably, the persistence of inflation) using a micro-founded model.

We find that a good rule for our small open-economy model is an inflation-forecast-based rule (IFB), ie a rule that reacts to deviations of expected inflation from target, if the forecast horizon is chosen appropriately. This rule is associated with a lower-than-average variability of inflation when compared with the other rules. Adding a separate response to the level of the real exchange rate improves stabilisation only marginally, suggesting that the inflation forecast contains all of the information relevant to policy-makers, including information about the exchange rate channel of the transmission mechanism. Importantly, an IFB rule, with or without exchange rate adjustment, appears quite robust to different shocks, in contrast to the MCI-based rules we examine.

These results on the relative performance of the rules are broadly confirmed by results using the utility losses faced by the households in our model economy under each rule, implying that the distortions in our economy are quantitatively and qualitatively similar to those envisaged in existing closed-economy models.