

The principal tool used by the Central Bank of Iceland for forecasting and simulations is its Quarterly Macroeconomic Model (QMM, see Danielsson et al., 2009). Since January 2009, the Bank has been using a revised version of the model. This revision affects the Bank's macroeconomic forecasts and consists of two parts.

Re-estimation and revision

The model's behavioural relations are re-estimated and revised regularly. They are now estimated using data through 2006 instead of 2004, as in previous versions. In most instances the revision was minor, but in several instances the relationships were significantly altered. As a result of structural changes in the housing market in 2004, for example, the housing investment and housing price equations changed somewhat. Another example is the private consumption equation, which has changed to reflect new official household disposable income data from Statistics Iceland, which are now used instead of the Bank's own data.

Forward-looking expectations

To forecast the expectations of economic agents, previous versions of QMM have used backward-looking updating rules; i.e., inflation, interest rate and exchange rate developments were determined exclusively by historical trends and not by forward-looking expectations, as is assumed by the modern literature.

In the revised version of QMM, the Central Bank's policy rate is determined by forward-looking inflation expectations, inflation itself is also partly determined by forward-looking inflation expectations, long-term interest rates are determined by forward-looking expectations of the future short-term rate, and the real exchange rate is affected by the expected future real exchange rates. Expectations are therefore rational; that is, future model solutions are found by iterating the model so that expectations of, for example, the future inflation rate are consistent with the inflation path generated by the model. Expectations are therefore said to be model-consistent. The model's long-term solution is assumed to be consistent with the balanced growth path of the economy, as is discussed in Danielsson (2009).

The cost of reducing inflation

Making the model forward-looking in this manner has important effects on its properties. Assuming forward-looking monetary policy improves its performance; i.e., the trade-off between inflation and output stability is much more favourable than under the previous policy rule, which assumed that inflation only responded to the current inflation rate.

Another important change concerns the cost of disinflation. It is well known from the literature that backward-looking models like the previous version of QMM suggest a relatively high sacrifice ratio; in other words, disinflation can only be achieved by creating a sizeable contraction in the real economy. Such models have often been compared to oil tankers that must exert considerable effort to change direction (see, for example, Berg et al., 2006). Fully forward-looking models, however, suggest that the cost is much less or even non-existent, and are sometimes compared to speedboats, which can change course very easily. The new version of QMM falls somewhere between the two: real and nominal inertia are introduced by assuming partly backward-looking behaviour, but key behavioural variables are also determined by forward-looking expectations. This is in line with the standard approach to economic modelling used by most central banks today.

This change in the structure of QMM affects the Bank's macroeconomic forecasts. Inflation and long-term rates, for example,

Box VIII-1

Updated macroeconomic model

decline more rapidly in the new version of the model than in the previous version, since they are affected by forward-looking expectations rather than being based exclusively on historical developments where they were fairly high. As a result, in the new version of QMM, the policy rate needed to achieve a specified reduction of inflation is not as high as in the older version.

References

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