The Central Bank's main forecasting and economic analysis tool is its quarterly macroeconomic model (QMM). The model is reviewed on an ongoing basis and is updated regularly to reflect new data and experience gained in forecasting and analysis. The new version of the QMM (Version 3.0) incorporates a number of changes from the previous version (Version 2.2), which was published in autumn 2011.[1] The principal changes in the model are summarised in this Box.

**Changes in the new version**
Macroeconomic models must be constantly revised and maintained, both to reflect advances in economic theory and econometric methods and because new data necessitate re-estimation of the economic relationships in the model concerned. The new version of the QMM uses data through Q4/2012, whereas the previous one used data through year-end 2006. In general, macroeconomic models should be revised more frequently, but in this instance, re-estimation would be based on data for a period during which a banking system with substantial foreign assets and liabilities collapsed and capital controls were imposed in order to shelter the domestic financial and monetary system in the wake of a severe financial crisis. The estimation of economic relationships usually improves if it is based on more extensive data. However, sudden occurrences that are unrelated to the underlying functioning of the economy under normal circumstances but strongly affect key variables at the time of the occurrence can affect the empirical estimates and reduce the forecasting ability of the model.

The re-estimation of the economic relationships in Version 3.0 is based on Statistics Iceland's most recent data on key economic variables. In the figures published by Statistics Iceland in September 2014, these data had changed radically due to changes in national accounts methodology.[2] So far, Statistics Iceland has published data based on the new methodology for 1997 onwards. This change alone would have necessitated a re-estimation of the model.

Another important change to the model pertains to the labour market. The new version of the QMM is based on the Statistics Iceland labour force survey definition of unemployment instead of the Directorate of Labour definition. It is also based on Statistics Iceland's measurements of the number of employed persons and the number of persons in the labour market. In addition, an equation has been added that forecasts developments in hours worked, and equilibrium unemployment is no longer an exogenous variable that remains largely constant.[3]

Other changes centre mainly on imports and exports. Some of them have been made in response to changes in Statistics Iceland methodology; for instance, concerning the registration of domestic activities as services when raw materials (such as aluminium) processed domestically are owned by the foreign buyer of the finished product. Another change worth mentioning is that imports are now explained in terms of weighted domestic demand, with the weight of individual components – private consumption, investment, and

Box 5

# Updated Central Bank of Iceland macroeconomic model

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1. The QMM Handbook, together with further information on the model and its database, can be found at http://www.cb.is/monetary-policy/central-bank-of-iceland-economic-forecasts/.

2. The changes in Statistics Iceland's methodology are described in Box 1 of *Monetary Bulletin* 2014/4.

3. The method used to estimate equilibrium unemployment is discussed in the paper by Bjarni G. Einarsson and Jósef Sigurdsson, "How "natural" is the natural rate? Unemployment and hysteresis in Iceland". Central Bank of Iceland *Working Paper* no. 64.

public consumption – determined by the estimated share of foreign inputs in their production. Other changes are minor in scope and nature.