Box 2 The relation between the exchange rate, wages and prices

The Central Bank's inflation forecasts have been based on models which are broadly determined by the relation between prices and wages, import prices and the exchange rate. Models are estimated using statistical techniques. It was common to use models in which inflation was solely explained by a distributed lag of changes in wages and import prices. Closer consistency with economic theory is obtained by also including the long-run equilibrium of these variables, in which case productivity developments also have to be taken into account. In recent years the Bank has also employed models which incorporate the impact of demand pressure in the domestic goods and labour markets.

Evaluation of parameters in long-run relations is sensitive to inherent measurement biases, and the difficulty of making exact measurements of general price changes over the long run is familiar from index number theory. When the Bank's models are estimated using data extending back to the 1960s or 1970s, they appear to be statistically well determined with stable parameters. However, the models based on both long-run relations and changes fitted slightly but significantly better than models that only incorporated changes.

Prior to 1990 the models explained a large proportion of price changes. After 1990 there was a marked slowdown in wage and price rises, and the exchange rate stabilised. No clear signs emerged that the relations had changed but the standard deviation of the inflation models fell.

More than a decade has now passed since inflation in Iceland reached a similar level to that which is common among nations with comparable standards of living. This could be enough to evaluate the parameters in a simple model of quarterly inflation values without going further back in time. However, measurements from periods of little change contain less information about the economic relations than periods of greater fluctuations, and ten years is a short period for assessing the impact of long-run equilibrium relations. Thus, all statistical findings from such models need to be interpreted with great caution.

Estimation results using an inflation model confined to the period of "national accord" (which broke the wage-price spiral) differ considerably from the Bank's earlier models. The standard deviation is lower, yet the model explains a much smaller proportion of price changes than its predecessors, and the estimation of its parameters is imprecise. There is little sign of the former short-term relations between changes in inflation, wages and import prices. The impact of long-term equilibrium in these variables is still present, but describes a slow adjustment of prices to wage and import price developments. Thus the results suggest that the link between the exchange rate and prices is still in place, but that the lag in transmitting the impact of exchange rate changes is greater than before.

This model shows greater price change inertia than was revealed by earlier models, and could reflect a structural change. It is also possible that this impact has long been present, but did not come to the fore as long as price changes kept pace with rapid, large changes in wages and import prices. Among the factors which are never directly shown in measurements covered by the model, but influence its results, are inflation expectations, greater price competition and built-in bias in measurements.