## Evaluating different monetary policy alternatives

Monetary policy aims to stabilise inflation around the inflation target at the same time as weight is attached to stabilising the real economy. One way of measuring how successful different monetary policy alternatives are at this is to calculate the sum of the squared deviations between the inflation forecast and the inflation target, and between the forecasts for actual and normal resource utilisation. This overall measure provides a way of comparing the expected consequences of different future interest rate scenarios. In some cases, however, it does not provide all the relevant information required for the monetary policy considerations.

According to the Sveriges Riksbank Act, the objective of monetary policy is to maintain price stability. In the preamble to the Act, it is stated that the Riksbank, without prejudice to the price stability target, should also support the goals of general economic policy with a view to maintaining a sustainable level of growth and high rate of employment. The Act states, moreover, that the Riksbank's tasks include promoting a safe and efficient payment system. This is often expressed as an assignment to safeguard financial stability.

The preamble also makes it clear that monetary policy can only influence growth and employment in the short term. Today, it is generally accepted that a central bank can not lastingly increase GDP growth and employment by conducting a systematically expansionary monetary policy. What monetary policy can do is to create sound conditions for the efficient functioning of the economy and relatively stable macroeconomic development. This can be achieved by conducting a monetary policy that aims to stabilise inflation around the inflation target at the same time as weight is attached to stabilising the real economy. Such a policy is usually referred to as flexible inflation targeting. A measure of resource utilisation is often used as an overall measure of the development of the real economy.

The approach normally used by the Riksbank entails setting a current repo rate and selecting a future repo rate path so that the forecasts for inflation and resource utilisation together "look good". To simplify somewhat, this means that if one looks ahead, any deviation from the inflation target or deviation from the normal level of resource utilisation appears reasonable and not too large. If a conflict of interests arises in which, for example, inflation increases at the same time as the real economy weakens, then monetary policy should aim to achieve a reasonable compromise between stable inflation and stable resource utilisation.

Such a policy can be described as choosing a repo rate path that minimises a loss function of the form

$${\textstyle \sum_{k=0}^{T}}(\pi_{_{t+k,\,t}}{-}\pi^{*})^{_{2}}{+}\lambda\,{\textstyle \sum_{k=0}^{T}}(y_{_{t+k,\,t}}{-}\overline{y}^{*}_{_{t+k,\,t}})^{_{2}}$$

where  $\pi_{t+k,t}$  is the forecast in quarter t for inflation in quarter t+k,  $\pi^*$  is the inflation target,  $\lambda$  is the weight of the stabilisation of resource utilisation (often measured using the production gap) relative to the stabilisation

Figure B1. Mean square gaps for the forecast of inflation and resource utilisation Average squared deviation during the forecast horizon



Higher rate

Note. Resource utilisation is measured as the deviation in GDP from the HP trend and the deviation in inflation is measured as the deviation in the CPIF from the inflation target.

Source: The Riksbank

of inflation,  $y_{t+k,t} - \overline{y}_{t+k,t}$  is a measure of resource utilisation (often the socalled production gap) and T is the forecast horizon (normally 12 quarters). It is thus a case of choosing a repo rate path that minimises the squared sum for the forecast for the inflation deviation  $\sum_{k=0}^{T} (\pi_{t+k,t} - \pi^*)^2$ , plus the weight  $\lambda$  times the squared sum for the forecast for resource utilisation  $\sum_{k=0}^{T} (y_{t+k,t} - \overline{y}_{t+k,t})^2$ .

In producing its forecast, the Riksbank analyses the consequences of various possible repo rate paths. These are presented in Chapter 2 of the Monetary Policy Reports under the heading "Alternative scenarios and risks". The alternative scenarios are usually presented in the form of figures that show, over time, the forecast development of inflation and a measure of the production gap that a particular repo rate is expected to give rise to. Figures 2:14 and 2:12 show the forecast development for CPIF inflation and resource utilisation measured in terms of the production gap in the main scenario and in the two alternative repo rate scenarios presented in Chapter 2.

A complementary way of presenting the alternative scenarios is to calculate the mean squared sums, the mean squared gaps, for the forecasts for inflation deviation and resource utilisation.<sup>15</sup> These have been plotted in Figure B1. The Figure sums up the information already presented in Figures 2:12 and 2:14 and thus makes it easier to compare alternative courses of action. It also relates directly to the point above that in conducting monetary policy one aims to minimise a loss function. The information is, however, independent of the relative weight,  $\lambda$ , that the central bank attaches to stabilising inflation in relation to stabilising resource utilisation.

The closer to origin, or "south-west" in the Figure, a scenario lies, the smaller the deviations between inflation and resource utilisation and the respective target levels are. The Figure shows that the scenario with a lower repo rate generates smaller mean squared gaps for both inflation and resource utilisation. All other things being equal, the alternative with the lower rate might thus be preferable. It is possible, however, that different interest rate paths, for example for a very low interest rate, may have consequences for financial stability or the functioning of the financial markets that may affect the decision.

<sup>15</sup> The mean squared sums for the forecasts for the inflation deviation and resource utilisation are calculated as  $\sum_{k=0}^{T} (\pi_{t+k,t} - \pi^*)^2 / (T-1)$  and  $\sum_{k=0}^{T} (y_{t+k,t} - y_{t+k,t})^2 / (T+1)$ , where T is the forecast horizon (normally 12 quarters).

<sup>16</sup> For more discussion, see L.E.O. Svensson, "Evaluating Monetary Policy," forthcoming in E. Koenig, and R. Leeson, eds., From the Great Moderation to the Great Deviation: A Round-Trip Journey Based on the Work of John B. Taylor, 2009 (updated and revised version of a speech on 13 March 2009).