MONETARY POLICY IN THE SLOVAK REPUBLIC

IMPLICIT INFLATION TARGETING AND THE CHOICE OF AN OPTIMAL EXCHANGE RATE REGIME

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Continuation from issue 9/2004

5. Implicit Inflation Targeting and Different Exchange Rate Regimes

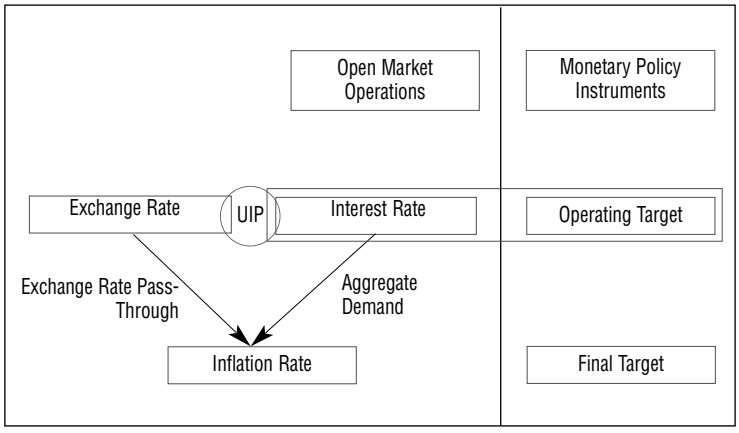
In the previous sections we have seen that a fixed peg regime, i.e. a hard, horizontal and publicly announced target within an exchange rate targeting framework, is not a viable alternative for the NBS. Thus, the strategic debate has to comprise other policy options.

5.1. The Shortcomings of Existing Inflation Targeting Models

The recurrent theme in various discussions of inflation targeting is that no other nominal anchor such as the exchange rate must be targeted. Mishkin (2000), for instance, stresses that only flexible exchange rate regimes, i.e. pure or independent floating, are possible within an inflation targeting framework. However, that notion can be traced to a lack of theoretical discussion on managed floating, arising because most economists in their theories do not differentiate between pure, independent and managed floating.

Managed floating, though, does not provide a nominal anchor/intermediate target and may hence not be in conflict with (implicit) inflation targeting. These very facts shed another light on the open-economy inflation targeting models developed, for example, by Ball (1999), Batini/Haldane (1999), Bharucha/Kent (1998), Sutherland (2001) and Svensson (1998), as well as on the conclusions most authors draw with regards to the exchange rate regime that has to accompany (implicit) inflation targeting.

Figure 1: The Conventional View of Open-Economy Inflation Targeting



Source: Hüfner (2004)

The models mentioned above share two common features (see figure 2). On the one hand, they assume that exchange rate changes are reflected by fundamental variables, even in the short run. That is, PPP and particularly UIP are believed to hold at all times. On the other hand, the short-term interest rate is assumed to be the sole operating target for the monetary authorities.

The first feature does not reflect reality because PPP may in the short run strongly be deviated by pricing-to-market. What is more, systematic divergences of exchange rate changes from UIP occur frequently. Therefore, the policy rules the models imply are largely unrealistic. The second assumption does not account for managed floating as an independent monetary policy strategy where sterilized foreign exchange interventions come into play (see figure 3 below).

A more realistic approach has to be chosen for an analysis of the suitability of various exchange rate arrangements with implicit inflation targeting.

5.2. An Implicit Inflation Targeting Model

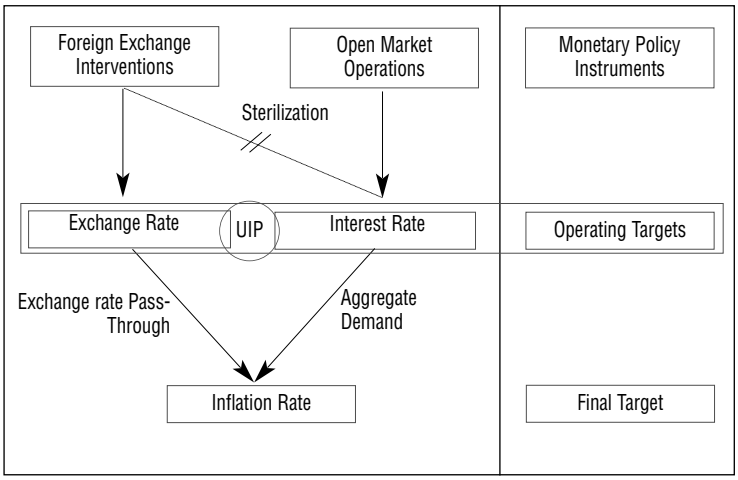
There are at large two diverging positions on what inflation targeting involves.[1] On the one hand, inflation targeting can be seen as a framework (Bernanke, Laubach, Mishkin and Posen, 1999). On the other hand, inflation targeting can be interpreted as a rule (Svensson, 1998, 2000).

If inflation targeting is perceived as a framework, this in practice means that it lacks an explicit intermediate target. In other words, there is no rule for the central bank's conduct of monetary policy such as a growth rate of a monetary aggregate (as in a monetary targeting framework) or an exchange rate target (as in pure exchange rate targeting regimes). Rather, monetary policy instruments are set on the basis of available information on factors that might affect inflation and the inflation targets, e.g. supply and demand shocks or exchange rate movements.

If interpreted in line with Svensson, the rule for the monetary authorities effectively comes down to inflation-forecast targeting. In its explicit

[1] The following formal work is largely based on the works of Bofinger and Wollmershäuser (2001, 2002) and Hüfner (2004).

Figure 2: Open-Economy Inflation Targeting with an Exchange Rate Target



Source: Hüfner (2004)

form, the forecast-targeting rule implies that a central bank has to keep its conditional inflation forecast, i.e. the forecast based on current interest rate levels or interest rate paths, close to the pre-announced inflation target (Bofinger, 2001).[2] Implicitly, the forecast-targeting rule expresses that if the conditional forecast deviated from the target, the central bank would have to adjust its short-term key interest rate. Formally, the implicit rule may be written as $i - i_{-1} = \varsigma(\pi^{fore|i-1} - \pi^{T})$, with $\varsigma > 1$ and i denoting the domestic interest rate, $\pi^{fore|i-1}$ the inflation forecast based on the interest rate of the previous period, and π^{T} the inflation target.

For the NBS, it seems, a hybrid understanding of inflation targeting is suitable. The NBS is a managed floating central bank operating within an implicit inflation targeting framework characterized by the following key features:

- the NBS uses internal short-term inflation targets that are to some extent based on unannounced targets for other intermediate variables, i.e. implicit inflation targets;
- policy decisions are significantly based on deviations of the conditional short-term forecasts from the internal targets.

The NBS as an implicit inflation targeting central bank in practice publishes year-on-year inflation forecasts. The forecasts are based on a multitude of economic factors, e.g. projections for the development of the output gap, the exchange rate, and supply shocks. Moreover, the NBS' conditional forecasts are also anchored in its internal inflation targets. Hence, its conditional inflation forecast ($\pi^{fore|i-1}$) may be approximated by a simple, one-period Phillips curve relation with a direct exchange rate channel:

(6) $\pi^{fore|i-1} = \pi_{int}^{T} + \chi_4\tilde{y} + \chi_5\Delta q^{T} + \in^{S}$ or $\pi^{fore|i-1} - \pi_{int}^{T} = \chi_4\tilde{y} + \chi_5\Delta q^{T} + \in^{S}$.

π_{int}^{T} denotes the internal inflation target $\tilde{y}$ refers to the output gap, $\in^{S}$ to a random white noise supply shock. χ_4 and χ_5 are reaction parameters that describe by how much the inflation forecast is revised if the output gap or the real exchange rate (target) changes. Both parameters are assumed to be positive.

As a flexible implicit inflation targeting central bank, the NBS puts some weight on both the deviation of forecasted from targeted inflation and the output gap. Thus, the (internal) social loss function may take the following form:

(7) $L_1 = \lambda_1\tilde{y}^2 + \lambda_2(\pi^{fore|i-1} - \pi_{int}^{T})^2$,

where λ_1 and λ_2 oreflect the central bank's relative preferences for its respective policy objectives.

Substituting (6) into (7), and minimizing (7) with respect to the output gap, yields:

(8) $\tilde{y}^{opt} = -\frac{\lambda_2\chi_4}{\lambda_1 + \lambda_2\chi_4^2}(\chi_5\Delta q^{T} + \in^{S})$.

The demand side of the economy can be described by a simple IS relation in terms of the output gap:

(9) $\tilde{y} = -\chi_1 r + \chi_2\Delta q^{T} + \in^{D}$ [3],

where χ_1 is the interest rate elasticity and χ_2 the exchange rate elasticity of aggregate demand. Both values are assumed to be positive. $\in^{D}$ is a random white noise disturbance reflecting domestic demand shocks.

Rewritten, equation (9) changes to:

(10) $\tilde{y} = -\chi_1(r - \frac{\chi_2}{\chi_1}\Delta q^{T}) + \in^{D}$.

The term in the brackets is the known expression for the actual real MCI in equation (1), since $\delta = \frac{\chi_2}{\chi_1}$ .Hence:

(11) $\tilde{y} = -\chi_1 MCI + \in^{D}$.

Since it is assumed that prices are sticky, the central bank has control over the real interest rate and the exchange rate target path – and therefore over the MCI – via their nominal counterparts. This means that the output gap is in fact largely under the control of the central bank. Thus, the monetary authorities may maneuver their operating targets so as to achieve the optimal output gap:

(12) $\tilde{y} = -\chi_1 r + \chi_2\Delta q^{T} + \in^{D} \doteq -\frac{\lambda_2\chi_4}{\lambda_1 + \chi_2\chi_4^2}(\chi_5\Delta q^{T} + \in^{S}) = \tilde{y}^{opt}$.

[2] A central bank may also use unconditional forecasts, i.e. forecasts not based on current interest rate levels or interest rate paths. However, in this thesis we assume the conditional version of the explicit rule, because it better relates to the forecast production at the NBS.

[3] Since we do not yet assume an exchange rate targeting central bank, the inclusion of the superscript T does not yet have any qualitative implications and is done for formal simplicity only.

Equation (12), solved for a linear combination of r and Δq^T yields::

$$(13)\quad r - \rho\Delta q^T \doteq \frac{1}{\chi_1}\in^D + \frac{\lambda_2\chi_4}{\chi_1(\lambda_1 + \lambda_2\chi_4^2)}\in^S,$$

$$\text{if}\quad \rho = \frac{\chi_2}{\chi_1} + \frac{\lambda_2\chi_4\chi_5}{\chi_1(\lambda_1 + \lambda_2\chi_4^2)}.$$

In fact, the expression on the left-hand side of (13) is nothing else than a slightly extended version of the actual real MCI already known.

The right-hand side of equation (13) can be interpreted as the optimal real MCI. Thus, the optimal policy rule for an implicit inflation targeting central bank takes the following form:

$$(14)\quad MCI = r - \rho\Delta q^T \doteq \frac{1}{\chi_1}\in^D + \frac{\lambda_2\chi_4}{\chi_1(\lambda_1 + \lambda_2\chi_4^2)}\in^S = MCI^{opt}.$$

The result given by equation (14) can be interpreted as follows. If positive demand and supply shocks occurred (e.g. government spending would pick up or the use of new technology would boost production), the central bank's monetary policy stance would have to be tightened, i.e. real interest rates would have to rise or the currency appreciated. In contrast, a more lenient monetary policy could be pursued in the event of negative shocks.

Finding the optimal policy would not be problematic since – theoretically – there are infinite possible combinations of the real interest rate and the targeted exchange rate path. However, the central bank's possibilities are limited by two interrelated restrictions: 1) the targeted nominal exchange rate has to be in line with the interest rate differential and, 2) UIP has to hold. Formally:

$$(15)\quad \Delta s^T = i - i^* \doteq E[\Delta s^T] + \alpha = i - i^*.$$

On the basis of this simple model one can analyze implicit inflation targeting's compatibility with and suitability for different exchange rate regimes, and vice versa.

5.3. Implicit Inflation Targeting and Fixed Exchange Rates – Opt. I

Under a regime of absolutely fixed exchange rates, the change of the nominal exchange rate target path is zero ($\Delta s^T = 0$). If the central bank wishes to maintain external stability, the domestic interest rate is determined only by the private sector UIP condition: $E[\Delta s^T] + \alpha = i - i^*$.This is so because in a fixed peg regime there is typically no room for sterilized interventions (Bofinger and Wollmershäuser, 2001). Accounting for both the nominal exchange rate target path in a fixed exchange rate regime, i.e. $\Delta s^T = 0$, and thus $E[\Delta s^T] = 0$, and the Fisher equation for the foreign nominal interest rate, i.e. $i^* + r^* - \pi^*$, the MCI for a fixed peg becomes:

$$(16)\quad MCI^{fix} = r^* + \alpha + (1 - \rho)(\pi^* - \pi).$$

Equation (16) shows that domestic monetary conditions under a fixed peg regime are completely determined by exogenous or predetermined variables, i.e. the foreign real interest rate, the risk premium and domestic inflation.[4] In other words, monetary policy in the SR would not be autonomous. It would be completely out of hands for the central bank to maneuver actual domestic monetary conditions towards their optimum if shocks came about. Such a lack of autonomy would be bearable only under very restrictive conditions.

First, a fixed peg may be viable if the interest channel did not play a role for targeting domestic inflation, i.e. changes in the interest rate do not affect aggregate demand. Even though the interest rate channel has thus far been not very significant for aggregate demand in the SR directly, indirectly it has. Moreover, the direct importance is gradually increasing, making a fixed peg more and more unviable.

Second, strong economic integration with the anchor country would be required so that the pegging country is exposed to similar business cycles as the anchor country, i.e. the euro zone. This would mean that ceteris paribus domestic monetary conditions would follow suit the optimal foreign MCI which is within the control of the anchor country central bank. While a partial synchronization of economic cycles has taken place in the SR, the Slovak economy still responds asymmetrically to shocks vis-à-vis the euro area countries. Hence, that precondition is not fulfilled either.

Third, a fixed peg may be the only alternative because the central bank's management is too unskilled to conduct a different exchange rate regime. Then, the setting of both target variables would not result in the congruence of the actual and the optimal MCI anyway. Incompetence, however, can be ruled out for the NBS. Therefore, adopting a fixed exchange rate regime within the framework of implicit inflation targeting should be rejected as an escapist strategy.

To be continued in issue 11/2004

[4] The risk premium is exogenous because it is determined by international financial markets.