

Zdeněk Tůma: The forecasting process from the perspective of a new EU member

Speech by Mr Zdeněk Tůma, Governor of the Czech National Bank, at the Bundesbank's Eighth Spring conference - New developments in Economic Forecasting, Eltville, 5 May 2006.

* * *

Ladies and gentlemen, dear colleagues,

It is my pleasure to be here tonight to share with you some thoughts on the forecasting process at central banks, and in particular at the Czech National Bank as an example of a new EU member state. It is generally recognised that central bank policies must be forward-looking. As emphasised by Milton Friedman, for example, there are long lags between monetary policy actions and their impact on the economy. This means that policies responding only to the current state of the economy might miss turning points and be pro-cyclical rather than stabilising. Therefore, central banks have always been among the leaders in the macroeconomic forecasting field.

David Hendry in his recent book on forecasting aptly remarks that whereas a failure in the stochastic part of the forecast is still something you can live with, a failure in forecasting the trend can cause enormous inaccuracy of the forecast. Consequently, forecasting techniques do not necessarily have to match for any short-run movement; however, they must not fail when break points in the economy are under consideration. Well, you all well know that Milton Friedman was rather sceptical about our ability to avoid serious mistakes in this very area and that led him towards the formulation of a "simple rule" of constant growth of the money stock. In this framework no forecasting was required.

Of course, he faced evidence of the failure of the large-scale econometric models that had been used in the 1950s to 1970s and that were later subject to strong criticism. The models were hit by a series of structural breaks, which made the previously observed relationships unreliable. Consequently, it was argued that these breaks were not a result of bad luck only, but also reflected a lack of microeconomic foundations in the models, neglect of forward-looking expectations and ad hoc econometric restrictions. The terms "Lucas critique" and "Goodhart law" have become standard warning signs for all macroeconomic modellers.

The actual way in which forecasts are produced and used at central banks has, however, changed substantially over the past two decades. The changes have reflected developments both in the economic (and econometric) theory and in monetary policy regimes. Bearing in mind the failure of large-scale models, the profession has started to prefer smaller-scale models with a sounder microeconomic background, built in recent decades usually along the lines of New Keynesian Economics.

As the first generation of these new models matured, though, the second generation started to become more detailed again. The recent third generation of models has added the aspect of stock-flow consistency, which has pushed the number of equations even further. The state-of-the-art forecasting models have consequently become quite big animals again, but their philosophical foundations remain very different from those of the 1950s to 1970s, as the third generation has extended the microeconomic foundations considerably.

All these developments have improved the accuracy of our forecasts substantially. Well, maybe we are still not able to match all the statistical numbers perfectly, but I hope that we are more skilled in recognising important breaks in the development of our economies than we were 15 years ago. Indeed, the use of multivariate filters such as the Kalman filter has improved our knowledge about the current position of the economy in the business cycle. Similarly, the use of general equilibrium models forces us to think about the economy in a consistent way. Karl Brunner and Alan Meltzer pointed out in their Mattioli Lectures at the end of the 1980s that in monetary policy practice you have basically two options. Either you can opt for your own evaluation of the position of the economy in the business cycle and the forecast implied by that, or you can decide to rely on a simple rule. Karl Brunner and Alan Meltzer would definitely have voted for the second option, but the experience of the 1990s shows that many central banks have voted for the first one. It seems to me that this has not been a generally wrong decision. In my view, developments in forecasting over the last 15 years have played a decisive role in that shift.

Simultaneously, the ever-changing world map in terms of monetary policy regimes has also modified the role of forecasting at central banks. In the past, most countries had pegged exchange rates against the major currencies. Indeed, in the 1980s and the first half of the 1990s one could hardly imagine a macroeconomic stabilisation programme without an exchange rate anchor and, of course, under such a system, the role of forecasting is rather small. However, since the early 1990s the number of countries with floating exchange rates has increased dramatically, reflecting numerous currency crises and a growing consensus on the undesirability of conventional currency pegs. Moreover, the inflation targeting regime has gained much more weight among the group of countries with floating rates. Inflation targeting, or following Svensson “inflation forecast targeting”, has placed the forecasting process at the heart of monetary policy decision-making.

Under inflation targeting, the forecasting process centres on future price developments. This does not necessarily mean, though, that central bankers are obsessed with inflation. In fact, inflation targeting requires us to assess all the available information, including real economic developments, monetary analysis and the external balance of the economy, in a systematic and complex way. It is hence more demanding from the point of view of consistency than the alternative monetary strategies. Of course, the latter require a consistent system for analysis and forecasting.

The inflation forecast is not only an important internal decision-making tool, but also a crucial communication device. Monetary policy has become considerably more transparent over recent decades. It is now commonly believed that open communication of monetary policy is beneficial to the stability and predictability of its transmission into the economy, and is also crucial for the accountability of an independent central bank. As a result, the inflation forecast, including its underlying assumptions and policy implications, is openly explained to the public.

Nonetheless, we must always bear in mind that even highly developed, technically advanced and well-organised forecasting procedures are not an automatic pilot for inflation-targeting central banks. They are no more – but also no less – than an important input into the monetary policy process. Eventually, the decision is always based not only on the central forecast itself, but also on the decision-makers’ discussions about all the associated risks. Good analytical tools, however, can be helpful even in this respect, by enabling the simulation of different alternative scenarios in a consistent manner.

Let me now turn to the progress we have achieved so far in building our forecasting system at the Czech National Bank, where we now have nine years of experience with inflation targeting. The new regime was introduced in a challenging situation, after a period of currency turmoil in May 1997, which ended the fixed exchange rate period and resulted in higher inflation and rising inflation expectations. The economy needed a new nominal anchor in order to return to a disinflation path. Inflation targeting was chosen as “the best of all bad” alternatives at the time.

Such a sudden switch from a fixed exchange rate system to inflation targeting required a radical and fast change in the central bank’s mentality. This was perhaps the biggest challenge that the CNB had to face. Over the past five years it has involved much work on improving our forecasting tools, leading to substantial development in our internal analytical processes.

These changes culminated at the beginning of 2002, when the CNB settled on a new forecasting process. This integrates expert judgment and short-term analyses – which were the key pillars of the CNB’s forecasting tool-kit in the first years of inflation targeting – with a small-scale macroeconomic model developed by the CNB’s staff with the assistance of the International Monetary Fund. An important element of this step was a switch from a forecast with a fixed-interest-rate assumption to an unconditional forecast that includes a reaction function of the central bank.

The established quarterly projection model was a small-scale model belonging to the first generation of such models. It was thus fairly simple and arguably missed many important links in the economy. Nevertheless, it was already quite close to the state-of-the-art among the inflation-targeting central banks around the world, and intense work has been in progress to build a higher-generation model. We are now just about ready to use regularly our newly developed so-called “third generation” general equilibrium model, which is fully based on micro specifications. Of course, expert judgment and short-term analyses still play an important supplementary role in the design of the final forecast. The good standard of our current forecasting know-how is reflected, among other things, in our ability to start providing technical assistance in the forecasting field to some other central banks in transition and emerging market economies.

It is clear that the development of the forecasting system has not always been straightforward and easy. During the first years, many of the details were adjusted in response to the changing needs,

challenging experience and evolving thinking of the central bank. Given the legacy of the communist period and the lack of available data, we were forced to leave out, unfortunately or fortunately, the period of large-scale econometric models. First, there was no experience with that kind of modelling in our communist history. Second, the reliable data series start in 1994, which significantly constrains the proper use of econometric techniques. Therefore, our macro models have relied heavily on calibration. Despite, or maybe because of, the latter, they seem to provide consistent guidelines for policy decision-making.

The entry of the Czech Republic into the European Union in May 2004 has not so far created any serious issue in respect of the practical forecasting of the Czech economy. However, we can identify two issues related to the future development of the forecasting system. The first one relates to the comparability of the CNB's forecast with the rest of the forecasts produced by the ESCB members. As I mentioned earlier, the CNB produces an unconditional forecast that includes a reaction function of the central bank. However, this is not the case with the rest of the ESCB members. Although there is a tendency towards the use of unconditional forecasts and the Bank of England and Sveriges Riksbank have started to use at least the trajectory of the short-term interest rate derived from the money market term structure instead of an assumption of a constant short-term interest rate as a base for their forecasts, conditional forecasting still plays a crucial role among the ESCB members. This, of course, seriously reduces the comparability of the results. Second, the forecasting system and the modelling framework have not yet been adjusted to our expected entry into the ERM II and the euro area. ERM II participation clearly raises the question of consistency between the "low" inflation environment required by the Maastricht inflation criterion and stability of the nominal exchange rate, both in a converging economy. Recent experience among the new EU member countries provides some evidence on the difficulties of fulfilling the Maastricht inflation criterion amid a stable exchange rate. The issue to be solved is to what extent the forecasting system should reflect the dualism of the targets, or whether the policy rule should consider the inflation target only, leaving the exchange rate as a fully endogenous variable. Similarly, the forecasting system will have to be adjusted once the Czech Republic enters the euro area and policy is set by the ECB Governing Council.

It is worth mentioning that the development of our forecasting system has been part of the wider evolutionary process that the Czech inflation targeting regime has gone through. The first years of the new regime were not easy, and included frequent numerical target misses. Nevertheless, the Czech Republic enjoys low inflation, and inflation expectations seem to be firmly anchored at low levels at present. Monetary policy decision-making is rule-based and transparent, thereby enhancing the credibility of the CNB.

Let me conclude with the statement that a "forecast based" monetary policy framework seems to fully allow an independent central bank to commit credibly to its long-term goal of price stability. Therefore, any new developments in economic forecasting are highly appreciated and welcomed by monetary policy practitioners.