Zdeněk Tůma: Forecasting at central banks

Speech by Mr Zdeněk Tůma, Governor of the Czech National Bank, at the Forecasting Dinner 2004, 20 February 2004.

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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 the Czech National Bank in particular. 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 the turning points and be pro-cyclical rather than stabilising.

Therefore, central banks have always been among the leaders in the macroeconomic forecasting field. The actual way in which forecasts are produced and used at central banks has, however, changed substantially over the past few decades. The changes have reflected developments in both the economic (and econometric) theory and in monetary policy regimes.

First of all, the large-scale models that were used in the 1950s to 1970s were subject to strong criticism. They 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 of 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. As a result, 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 became mature, though, the second generation started to be 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.

Secondly, 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. Under such a system, the role of forecasting is smaller than with the floating exchange rate regime and concentrates on balance of payments analysis and perhaps also monetary analysis. The countries with floating exchange rates, on the other hand, often experimented with money targeting, which pushed monetary analysis to the forefront. 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 around future price developments. This does not necessarily mean, though, that central bankers are obsessed with inflation. In fact, inflation targeting requires assessing all the available information, including real economic developments, monetary analysis and external balance of the economy, in a systematic and complex way. It is hence more demanding from this point of view than the alternative monetary strategies.

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.

After this general introduction, let me now briefly speak about the progress we have so far achieved in forecasting at the Czech National Bank. We now have more than five 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 a year ago, when the CNB settled on a new forecasting process. This integrates expert judgement 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.

Our current quarterly projection model is a small-scale model belonging to the first generation. It is thus fairly simple and arguably misses many important links in the economy. Nevertheless, it is already quite close to the state-of-the-art among the inflation-targeting central banks around the world, and intense work is in progress to build a higher-generation model. 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.

In line with the transparency philosophy of inflation targeting, the Czech National Bank published a book called "The Czech National Bank's Forecasting and Policy Analysis System" last year. This book describes not only the core forecasting model itself, but also the whole process of creating the final integrated forecast. The model has also been published in a professional journal, the Czech Journal of Economics and Finance. To conclude, I would like to emphasise that the development of our forecasting and analysis system has been part of a wider evolutionary process that the Czech inflation targeting regime has gone through. 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. 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. Such a framework allows an independent central bank to commit credibly to its long-term goal of price stability, and at the same time preserves enough discretion for an active anti-cyclical monetary policy that takes into account not only inflation, but also other factors such as variability of output.