The Use of Statistics in the Monetary Policy of the Czech National Bank: The Case of the Country in Transition

Ivan Matalik
Czech National Bank, Monetary and Statistics Section
Na Prikope 28
Prague, 115 03, Czech Republic
ivan.matalik@cnb.cz

Josef Arlt
Czech National Bank, Monetary and Statistics Section
Na Prikope 28
Prague, 115 04, Czech Republic
josef.arlt@cnb.cz

1. Introduction

Timely and accurate statistical information, structured in compliance with economic standards, is a basic prerequisite for successful monetary policy-making by the Czech National Bank. Fulfilling these key conditions in a rapidly changing economic environment is getting ever more difficult. New demands are being placed on central bank monetary policy, especially with regard to flexibility. And this in turn is being reflected in the demands being placed by monetary policy with regard to statistical information. In the case of monetary policy in transition economies, the data collection requirements are furthermore affected by the economic transformation process. The following text concentrates on the evolution of the CNB’s monetary-policy statistical needs during the course of the Czech Republic’s economic transformation. The main focus is on central bank statistics.

2. The General Importance of Statistics for the Monetary Policy-Making of the Central Bank

Statistical information is a vital input into the decision-making of economic agents, financial market participants, the government and, last but by no means least, the central bank. As the “monetary authority”, the central bank has an unusually broad and diverse set of statistical requirements. These requirements primarily reflect the primary objective of the central bank and the means used to achieve that objective.

The general importance of statistics for monetary policy-making lies on two basic levels. The first level is the actual collection and processing of statistical information. Without basic information on monetary and economic developments, it would be very difficult for the central bank to assess economic processes. Central bank monetary policy is founded on a host of theoretical assumptions and models which need to be verified using concrete data. And it is in this area that the second level of importance of statistics lies – the use of a wide range of statistical methods to analyse data.

3. CNB Monetary Policy During the Economic Transformation

The CNB’s monetary policy has undergone sizeable changes over the course of the economic transformation process. In the early 1990s, these changes reflected the specific transformation steps. But as the economic environment was gradually liberalised and the foundations of a market economy were laid, changes at the global economic level started to have an increasing impact.
Throughout the period under review, monetary policy-making in the Czech Republic moved within the following standard general framework.

**Figure 1: General Scheme of Monetary Policy**

Two important periods can be identified with regard to the monetary policy scheme since 1990. Monetary policy in the period 1990–1997\(^1\) was based primarily on the targeting of monetary aggregates (“monetary targeting”). This was founded on the assumption that there is a long-term relationship between inflation, real economic activity and the stock of money in the economy.

**Figure 2: Monetary Policy Scheme in 1990–1997 (Monetary Targeting)**

The loss of the nominal monetary-policy anchor (in the form of the exchange rate) during the currency crisis in May 1997, combined with rising inflation and a related increase in inflation expectations and the need to enhance the overall transparency and consistency of the CNB’s monetary policy, were the key factors underlying the CNB’s decision to switch from monetary targeting to inflation targeting. Inflation targeting thus represents the second important period for monetary policy.

**Figure 3: Monetary Policy Scheme from 1998 to Date (Inflation Targeting)**

4. **The Evolution of the CNB’s Monetary-Policy Statistical Needs During the Transformation**

Right from the start of the economic transformation, CNB monetary policy has always required a basic set of macroeconomic data. The priority level of particular information has been determined by the main changes in the economy. Requirements for the collection of new information have also arisen, as a result, for instance, of the development of the financial market. In this respect we can summarise the evolution of the CNB’s monetary-policy statistical needs during the transformation period into the following basic phases:

a) **The switch from a monetary plan to a monetary survey**
   (1990: response to the need to monitor monetary aggregates and their main counterparts)

b) **The switch from the foreign exchange part of the monetary plan to the balance-of-payments methodology**
   (1990: acquisition of statistical data for compiling and analysing the balance of payments in the new market environment)

\(^1\) The use of the term CNB monetary policy in the text also refers to the period 1990–1992, when the former Czechoslovakia still existed and monetary policy was the responsibility of the State Bank of Czechoslovakia.
c) New data requirements due to the switch from direct to indirect monetary instruments

d) The switch from monitoring of only some financial market segments to global coverage
(1992–1997: the development of the financial markets statistics reflected the development of the
Czech financial market, the monetary policy changeover to interest rate management, and, with
ongoing liberalisation, the need for daily monitoring of developments on foreign markets)

e) From priority of monetary data to priority of data on the real economy
(1998–2000: the switch to inflation targeting increased the importance of analysing inflation and
its underlying factors, which in turn increased the priority of data on the real economy). A need
for new types of data and data quality appeared at that time.

f) From priority of monetary data to priority of data on public budgets
(2000 to date: owing to rising public budget deficits in the Czech Republic since the end of the
1990s, the impact of state fiscal policy on monetary and economic development is rising. This
has given rise to a new priority – data on public budgets. A demand on collecting of public
finance data under GFS methodology has appeared since that time.

g) From priority of data for partial economic analyses to priority of data for macroeconomic
modelling
(2000 to date: new statistical requirements for macroeconomic modelling at the CNB; the
CNB’s medium-run macroeconomic model is vital for inflation forecasting)

The collection of statistical information for monetary policy needs has covered the basic
requirements fairly continuously. If in the early 1990s the focus was on obtaining basic information
from the monetary area and the real economy with monthly/quarterly periodicity, then the situation
now is diametrically opposite. Priority is now being given to the collection of all data on individual
economic sectors. The importance of information from the financial markets has grown
significantly, owing to the current level of liberalisation of the Czech economy and the impact of
global economic changes on it. The need to develop macroeconomic modelling at the central bank
is also generating new statistical requirements. Summing up, we can say that the CNB’s monetary-
policy statistical requirements have converged towards the standard requirements of other central
banks.

5. The Scope and Limits for Using Statistical Information for Economic Analysis

At the start of the 1990s, there arose a need to seek answers to important economic questions by
applying econometric data-analysis methods. The initial considerations regarding the practical use
of statistical and econometric methods date back to the period 1990–1993, when significant
progress was made in this area, most notably from the methodological viewpoint. But a serious
problem arose with regard to the quality and continuity of the data base when in 1993 the Czech and
Slovak Federal Republic was split to form the Czech Republic and Slovakia.

The process of enhancing the data base for analytical activities and the switch to more
sophisticated data analysis in the Czech Republic did not start until 1993. The results of studies,
whatever they are, have had to be put into perspective, owing to the marked instability of the
economic environment and to the shortcomings in the data. The typical dilemma in the mid-1990s
was as follows: whether to perform an analysis despite the instability and data deficiencies, or
whether to not bother trying, for the reasons given above. In the end, analyses were performed in
full knowledge of the data limitations, in some cases more than once in different time periods. In
this connection it is interesting to compare the changes that gradually occurred. One example is the
analysis of money demand, which has been conducted a total of three times. A paper entitled The
Influence of Selected Factors on Money Demand in 1993–1996 (Arlt, Guba and Stiller) was issued
in 1997. This was followed in 2001 by a paper called The Influence of Selected Factors on Money
Demand in 1994–2000 (Arlt, Guba, Radkovský, Sojka and Stiller). And 2003 saw the publication of
a third paper: *A Model of Money Demand in the Czech Republic and its Use for Constructing Forecasts* (Arlt, Guba, Radkovský and Sojka). It is fair to say that the improvements to the database and the use of more refined methods have led to more detailed and credible results and conclusions.

The expanding data base and the lengthening time series have led, since the end of the 1990s, to further significant progress in the area of partial modelling of the Czech economy. The CNB has also started to devote attention to the creation of aggregate macroeconomic models.

The importance of quantitative information on the financial market is currently on the increase. Much of this information is provided in the form of financial time series. These time series are specific, and, compared to other types of economic time series, have certain features that in many situations require novel analytical approaches. Because financial time series are monitored daily or hourly, the analytical problem of data deficiency evaporates. When analysing financial time series, we in the Czech Republic are faced with similar problems as analysts in relatively stable economies.

6. Conclusions

The economic transformation in the Czech Republic has fundamentally affected not only the CNB’s monetary policy-making, but also the collection, processing and analysis of statistical information. The evolution of the CNB’s monetary-policy statistical needs can be broken down into two basic periods. In the first period, i.e. the first half of the 1990s, the focus was on collecting basic data on the monetary area, the real economy, the balance of payments and the government sector. In the second period, i.e. from the mid-1990s up to the present, the role of data on the real economy, the financial markets and the government sector has grown considerably in importance. In addition to the collection of information for monetary policy needs, much progress has been made since the mid-1990s in the use of statistical and econometric methods for analysing data, especially in the form of time series.

The statistics in the Czech Republic at present cover the CNB’s standard monetary-policy requirements and are on a par with those in the developed countries. Henceforth, the developments and trends in the Czech statistics will reflect the standard changes proceeding in the advanced nations.

RÉSUMÉ

Les auteurs du présent texte concentrent leur attention sur l’appréciation de l’importance de la statistique en matière de la politique monétaire de la Banque centrale tchèque (BCT) durant la transformation économique, notamment eu égard aux besoins en statistique qui évoluent et aux possibilités et aux limites posées à l’utilisation des données statistiques dans les analyses monétaires. L’importance de la statistique repose dans la collecte et dans le traitement des données ainsi que dans l’application des méthodes de l’analyse statistique des données. Les exigences en statistique ont été fortement influencées depuis le début des années 90 par le régime de la politique monétaire. Entre 1990 et 1997 il s’agissait du régime à objectif monétaire, alors que depuis 1998 jusqu’à nos jours la politique monétaire est mise en oeuvre dans le régime à objectif d’inflation. En matière des statistiques il y a eu un glissement de la priorité des données monétaires vers la priorité des données de l’économie réelle et des marchés financiers. Un grand pas en avant a été accompli également dans l’utilisation des méthodes statistiques de l’analyse des données. Aujourd’hui la statistique satisfait aux demandes standards de la politique monétaire de la BNT, sa situation est comparable à celle des pays développés et son évolution future reflètera donc les changements standards dus au développement dans lesdits pays.