TEN YEARS OF INFLATION TARGETING 1998–2007

January 2008 marked the tenth anniversary of inflation targeting in the Czech Republic. This anniversary provides a good opportunity to look back at the Czech National Bank's experience with this monetary policy regime. The achievement of low and stable inflation and the anchoring of inflation expectations rank among the CNB's greatest monetary policy achievements. These successes outweigh its partial failures in the shape of relatively frequent "undershooting" of its inflation targets. They have also helped to lay the groundwork for the future changeover to the euro. A more detailed description and assessment of the CNB's monetary policy results over the past ten years can be found on the following pages.

The reasons for introducing inflation targeting

The switch to inflation targeting came on the back of a currency turbulence episode which in May 1997 led to the abandoning of the fixed exchange rate and concurrent money targeting, a policy that had been in place for six years. With the ongoing liberalisation of capital flows and the financial market, monetary policy under this former regime had been getting less effective and was not sufficiently able to dampen the growing domestic demand and fulfil its then primary objective – monetary stability. In the small, open Czech economy, an excess of demand over insufficiently flexible domestic supply spilled over into import growth rather than a rise in inflation, although the latter remained relatively high. The resulting external imbalance, coupled with a financial crisis in the emerging markets, triggered a speculative attack on the Czech koruna. The CNB was unable to see off this attack despite raising short-term interest rates sharply and making massive interventions in the foreign exchange market.

In spring 1997, the CNB relaxed the exchange rate regime while maintaining money targeting, but this move did not generate the expected effect. Money targeting (as compared to exchange rate or inflation targeting) was difficult for the public to grasp. This meant that inflation expectations, which had been shaken up by the exchange rate turbulence, were not adequately anchored, fostering a rise in inflation. Money targeting also entailed implementation problems. In the open, transforming Czech economy, the link between the monetary policy instrument – interest rates – and the money supply was unstable and difficult to predict, as was the link between the money supply and inflation. Other money-targeting central banks faced similar problems.

The CNB's deliberations regarding the introduction of a new monetary policy regime were influenced by two facts in particular. A return to the fixed exchange rate would not have been credible given the previous involuntary abandonment of that regime. By contrast, the achievements of the inflation-targeting central banks (inflation targeting had been operated by New Zealand since 1988, Chile since 1990 and Canada since 1991; they were later joined by Israel, the United Kingdom, Sweden, Australia and others) suggested that this relatively new monetary policy regime was viable in the highly liberalised and globalised world economy. These and other deliberations resulted in the CNB deciding in December 1997 to adopt inflation targeting as its monetary policy regime. The first target was set for the end of 1998. This made the CNB the first inflation-targeting central bank in a post-communist country.

Main features of inflation targeting

Inflation targeting is a monetary policy management method which, unlike other regimes, focuses directly on fulfilling the primary objective of price stability without the aid of any intermediate targets in the form of other economic variables. The inflation target is usually set in terms of a clearly declared point value or band for consumer price inflation. The central bank endeavours to achieve inflation close to this target. However, situations can occur where sticking strictly to the inflation target would result in undesired volatility of production, employment or interest rates. In such situations, most central banks, including the CNB, refrain from trying to hit the target at any cost and tolerate temporary non-fulfilment of the inflation target.

The lag between a central bank action and the largest impact of that action on inflation is usually around one to two years. Consequently, monetary policy is focused on hitting the inflation target at this time horizon, so the bank's interest rate decisions are guided by the forecast for the future. However, monetary policy-makers can also take into consideration developments that arise before and after this time horizon.

The forecast is based on a wide range of available indicators of domestic and external developments and on the central bank's best knowledge of the linkages between these indicators. These linkages can include the active effect of monetary policy and are usually expressed by means of an economic model, backed up by expert assessment of economic developments, particularly for the period immediately ahead. From the CNB's point of view, the forecast represents the most likely path of inflation and other key indicators such as production, unemployment, the exchange rate and interest rates. The forecast is the main guide for monetary policy. However, it may be surrounded by upside or downside risks associated with potential non-materialisation of the external and internal assumptions of the forecast. These risks must also be assessed in the decision-making process.

Another important feature of inflation targeting is its emphasis on monetary policy openness. The disclosure of the inflation target itself gives economic agents an important lead in forming their expectations regarding future inflation. If the inflation target is credible and firmly anchors inflation expectations, it is very likely that actual inflation will be close to the inflation target. Only credible and clear monetary policy can in the long run persuade economic agents that they can rely on the inflation target being hit when they are making their decisions. The credibility of the target is therefore an important measure of the success of

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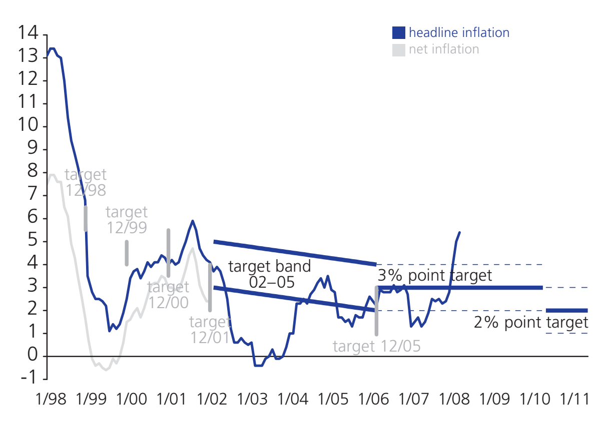
Figure 1
Fulfilment of inflation targets



monetary policy under inflation targeting. An inflation-targeting central bank tends to be highly open to the public and, in addition to the inflation target, discloses its forecast for the future, an analysis of the associated risks, and other analyses and deliberations which affect the bank's decision-making.

A key condition for successful inflation targeting is central bank independence in all its forms. This independence protects the central bank from any political pressures aimed at affecting its decisions. Central bank independence not only relates to the bank's interest rate decisions, but also covers the manner in which its senior officers are elected and dismissed, independence from public budgets, etc. In the case of the CNB, all the main features of inflation targeting described above have been and still are met.

CNB targets

The changeover to the inflation targeting strategy was also reflected in the legislation on the Czech National Bank's mandate. Under the Czech Constitution and the Czech National Bank Act, the CNB's primary objective since 2001 has been to maintain price stability. Without prejudice to this primary objective, the Act also requires the CNB to support the general economic policies of the Government leading to sustainable economic growth. In fulfilling this mission, the CNB – like most central banks with the same mandate, and in accordance with the inflation targeting regime – focuses primarily on consumer price stability. Price stability does not mean literally unchanging prices, but moderate and stable growth in prices. This growth is stipulated in the form of the CNB's inflation target.

The CNB's first inflation targets were set in terms of net inflation. Net inflation is a subset of headline consumer inflation adjusted for administrative measures (regulated prices and the first-round impacts of changes to indirect taxes). This adjusted inflation covered the prices of more than 80% of the consumer basket. Net inflation was targeted mainly because of the uncertainty prevailing at the time about the rate and scale of price deregulation, and partly because of the low ability of monetary policy to affect this part of the consumer basket.

The first targets for annual net inflation were set in December 1997. A short-term net inflation target of 5.5%–6.5% was defined for December 1998 and a medium-term net inflation target of 3.5%–5.5% was specified for December 2000. A short-term target of 4.0%–5.0% for December 1999 was announced in November 1998. In April 1999, a long-term target of 1.0%–3.0% was set for 2005. The last net inflation target, set in April 2000, was 2.0%–4.0% for December 2001.

The experience gained by the CNB, combined with a decrease in the uncertainty about regulated prices going forward and an effort to enhance the transparency and clarity of its inflation targets, led the CNB to abandon net inflation targets. Since April 2001, the CNB has set its targets in the form of headline consumer inflation. The target announced in April 2001 (set for the first and last time by agreement with the Government) took the form of a continuous band falling linearly from 3.0%–5.0% in January 2002 to 2.0%–4.0% in December 2005. In March 2004, it was decided that as from 2006 the inflation target would, by contrast with the previous target band, be a point target of 3% with a tolerance band of ±1 percentage point. The point target was thus contiguous with the centre of the previous target band as of the end of 2005. In March 2007, a new point inflation target of 2% was announced with effect from January 2010. As before, the CNB will try to make sure that actual inflation does not differ from the target by more than one percentage point in either direction.

Fulfilment of targets

A comparison of the targets defined by the CNB with actual inflation reveals that inflation was much more frequently well below the inflation targets than above them (see Figure 1). The largest differences between actual inflation and the CNB's targets are evident in the two disinflationary periods in 1998–1999 and 2002–2003, but even in the other periods inflation tended to be below the relevant inflation target.

Inflation can deviate from the target mainly due to economic shocks. Although such shocks can in some cases be expected, the central bank may decide not to respond to them in order to avoid undesirable volatility in the economy. In such cases, we refer to the application of escape clauses, i.e. exemptions from the obligation to fulfil the inflation target. However, shocks are usually unexpected. If they cause inflation to deviate temporarily from the target, it is the central bank's job to explain this deviation to the public and to ensure that inflation gradually returns to the target. Inflation targets may also be missed due to flaws in the central bank's forecasting system or, in hindsight, inadequate identification of the forecast risks.

Escape clauses may be generally applied when the economy is hit by a major external shock and undesired GDP and employment volatility would occur if the central bank tried to keep inflation on target. If such a shock deflects projected inflation from the target, the central bank does not respond to the first-round impacts of the shock and accepts the temporary deviation of the inflation forecast and subsequently future inflation from the target. The central bank will respond only to the second-round effects of the shock, i.e. it will try to prevent the shock passing through to inflation expectations. Theoretically, there is a whole range of shocks that create room for applying such escape clauses. However, in the past ten years, the CNB has applied these clauses only in connection with changes to indirect taxes. The first time an escape clause was applied for this reason was in April 2003. This and later forecasts expected indirect taxes almost exclusively to rise and therefore to contribute positively to inflation. The "exempting" of price shocks due indirect tax changes meant that the CNB in its forecasts monitored the fulfilment of the inflation target for "monetary policy-relevant inflation", which abstracts from changes to indirect taxes, and allowed headline inflation to rise above the target. The application of escape clauses thus does not explain the average "undershooting" of the CNB's inflation targets. However, it largely explains the first "overshooting" of the inflation target in the CNB's history. This occurred in late 2007/early 2008 and is most likely to continue throughout 2008.

The explanation of the deviations of inflation from the target should therefore be sought in non-fulfilment of the forecasts that the CNB Bank Board uses as the basis for its interest rate decisions. Many of the factors that influence the economy are largely random. The forecasts drawn up by the CNB are therefore associated with a high degree of uncertainty. The purpose of these forecasts is not to estimate the evolution of these random factors precisely, but to determine the position of the economy in the business cycle, to estimate the impacts of shocks that have hit the economy in the past, and to identify the ensuing pressures on monetary policy. Figure 2 compares actual inflation with the forecasts since summer 2002, when the assumption of an active central bank role was incorporated into the forecast and since when it has been possible to compare the forecast with the subsequent outturn. This figure shows that the forecasts in this period on average predicted higher inflation than the outturns. Non-fulfilment of the forecasts thus contributed to the undershooting of the inflation targets.

The non-fulfilment of the forecasts can be partially explained by anti-inflationary shocks in this period – both external (weak external demand) and internal (rapid appreciation of the koruna, overproduction of agricultural commodities, slow deregulation, less easy fiscal policy). However, flaws in the CNB's forecasting system also played a role. The system has evolved over time from simpler methods to more sophisticated ones as the CNB's knowledge of the workings of the Czech economy and its technical resources have improved (see below for more details).

The final reason for missing the targets may be that, in hindsight, the assessment of the risks of the forecast in the monetary policy decision-making process was inadequate. After being presented with the forecast drawn up by the Monetary and Statistics Department, the Bank Board evaluates the risks and uncertainties of the forecast. For example, if it believes that actual inflation will be higher (lower) than predicted in the forecast, it evaluates the forecast risks as being inflationary (anti-inflationary) and adjusts its interest rate decision accordingly. The forecast is rarely fulfilled completely, and likewise the risks identified do not always materialise. The discussion of the risks is especially important for forecasts that already imply an interest rate response. Since summer 2002, when the CNB started to use forecasts compiled in this way, the associated risks have been assessed as being slightly anti-inflationary on average. The slightly anti-inflationary assessment of the forecast risks has resulted in somewhat lower interest rates than recommended by the forecasts. The evaluation of the risks has thus reduced the undershooting of the inflation targets, although definitely not to the full extent.

With the benefit of hindsight, we can thus say that the relatively frequent "undershooting" of the inflation targets over the past ten years has been due to non-fulfilment of the forecasts, owing to a combination of anti-inflationary shocks and imperfections in the forecasting system. Actual inflation was lower than expected by most of the forecasts. The slightly anti-inflationary assessment of the forecast risks by the Bank Board and the corresponding interest rate decisions were not sufficient to fully offset the deviation of actual inflation from the forecasts. As a result, inflation tended to be below the CNB's inflation targets. In other words, fulfilment of the inflation target would have required even lower interest rates than those actually set by the Bank Board based on its assessment of the forecast risks.

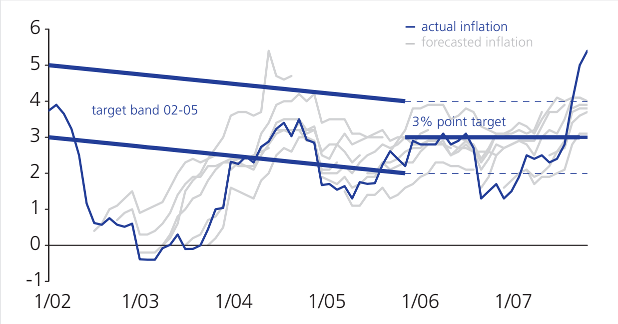
The forecasting and decision-making system and monetary policy communication

The forecast for inflation and other economic variables plays a key role under inflation targeting. The more accurate the forecasts are, the better the central bank can perform its statutory role. For this reason, the CNB puts great emphasis on constantly improving and refining its forecasting system. In its Inflation Reports, the CNB regularly assesses the performance of its forecasts. Based on such assessments, among other things, it then modifies its modelling tools so that they describe the workings of the Czech economy in the best possible way.

In its decision-making in 1998–2002, the CNB – like most central banks at the time – applied a forecasting framework that assumed constant interest rates. Most of the forecasts at the time also assumed stability of another key variable – the exchange rate. The inflation forecasts compiled in this manner did not show the most likely future path, but described the hypothetical situation that might arise if interest rates and the exchange rate remained unchanged throughout the forecast period. If this hypothetical forecast was heading above (below) the CNB's inflation target, it was appropriate to consider raising (lowering) interest rates. The forecast thus signalled the direction, but not the magnitude, of the required change in interest rates. Another weak point of the forecasting system at the time was that it consisted of several mutually independent equations, or small sets of interconnected equations, describing the evolution of key observable variables such as inflation, GDP and unemployment. The equations were specified on the basis of economic intuition and estimated using historical data. However, they lacked a well-defined medium-term deliberation framework in the form of anchoring equilibrium variables, a clearly identified monetary policy transmission mechanism and an active role of the central bank.

Figure 2

Fulfilment of inflation forecasts



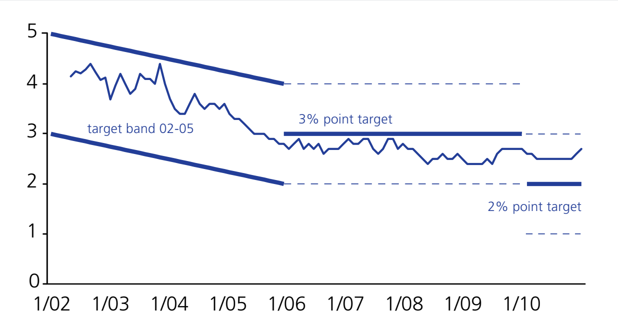
Since summer 2002, the CNB has been using a more sophisticated and internally consistent model called the QPM (Quarterly Projection Model), which abandons the assumption of interest rate and exchange rate stability; the future path of these key variables is forecasted together with the other variables. The model consists of about 20 basic simultaneous equations describing not only observable variables such as inflation, interest rates and the exchange rate, but also unobservable variables such as the output gap. The model is calibrated, which means that the specification of its equations and the coefficient values are set in such a way that the model provides intuitively correct results. The high forward-lookingness of the model, together with the active role of the central bank, ensures that the inflation forecast is close to the inflation target in the medium term. The interest rate rule contained in the model provides the forecast-consistent future interest rate path. This modelling framework indicates not only the desirable direction of interest rate changes, but also the extent of such changes.

The CNB has worked hard in recent years to further improve its forecasting system. Its third-generation ("g3") model will be based more on assumptions of the behaviour of economic agents at the lowest level – households and corporations – and will provide a more detailed picture of the economy, for example in the form of a forecast for the individual components of GDP. Like the QPM model, the g3 model is calibrated and very forward looking. At present, this new modelling framework and forecasting process is being used to compile "shadow" forecasts providing a view of economic developments that is independent of the existing model, and it is gradually being fine-tuned. The CNB plans to use it to create the baseline forecast scenario for the first time during 2008.

Expert judgements of present and future economic developments by CNB economists have played, and still play, an important role in all the modelling frameworks described above. Any model is just a simplified description of the very complicated real world. Every model forecast therefore has to be supplemented with expert knowledge of the specifics of present and future developments.

The economic forecast is the most important, but not the only, component of the CNB's decision-making and monetary-policy process. The other components include the discussion of the forecast risks by the Bank Board, the Board's decision itself, and the communication of that decision to the public. All these elements of the decision-making process have become more systematic and transparent over the years. For example, the creation of the forecast (done by CNB experts in consultation with the Bank Board) is governed by a strict schedule. This starts with a discussion of the model assumptions of the forecast, continues with a discussion of the assumptions regarding the external environment and the starting conditions, proceeds to an expert forecast for the coming quarter, and culminates with the preparation of the final version of the forecast for the next two years or so. The whole forecasting exercise ends with a discussion of the issues that remain open for the next forecast. The Bank Board meeting and the subsequent communication of the forecast and the final decision to the public is similarly formalised.

Figure 3
Anchoring of inflation expectations



Besides the accuracy of the forecasts and the appropriateness of the interest rate settings, the way in which the forecasts and Bank Board decisions based on them are communicated to the public is also important. The CNB has greatly increased its openness in the field of communication over the last ten years. Since the introduction of inflation targeting, the CNB has issued Inflation Reports containing the CNB's current forecasts. The minutes of Bank Board meetings, summing up the main monetary policy arguments and deliberations of the board members, are another significant document. The minutes have also been published since 1998. The CNB's openness has gradually been increasing over time. For example, the ratio of the voting on interest rates has been disclosed in the minutes since mid-2000, press conferences have been held regularly after the Bank Board meetings since 2002, and regular seminars with financial analysts from the private sector have taken place since 2004.

The most recent changes in the communication area include disclosure of the votes cast by the board members by name and publication of the forecast-consistent interest rate path. These changes have made the CNB one of the most open inflation-targeting central banks and have further enhanced the credibility of its monetary policy.

Inflation targeting in the context of the Czech Republic's euro area entry

On joining the European Union, the Czech Republic undertook to adopt the single European currency. The Czech Republic currently has the status of a Member State with a derogation and will introduce the euro when it is ready to make this important step. A formal condition for adopting the euro is fulfilment of the Maastricht convergence criteria, which define maximum admissible values for inflation, interest rates and public budget deficits and debt, and require successful participation in ERM II for at least two years, meaning that the Czech Republic must respect the permissible fluctuation band for exchange rate movements without devaluing its currency's central rate.

Fulfilment of the Maastricht criteria is a necessary condition for euro adoption, but from the perspective of the country entering the euro area it is not a sufficient condition, particularly given the costs and risks associated with giving up its own currency. For this reason, *The Czech Republic's Euro-area Accession Strategy*, a document drawn up by the Government and the Czech National Bank in 2003 and updated in 2007, emphasises that in order to reap the benefits of euro adoption, the Czech economy needs to be ready in other areas as well. They include in particular some necessary degree of economic alignment with the euro area and the ability to withstand economic shocks.

Every autumn, the Ministry of Finance and the Czech National Bank conduct an assessment of the outlook for the fulfilment of the Maastricht criteria and the nation's economic preparedness for adopting the euro in a document entitled *Assessment of the Fulfilment of the Maastricht Convergence Criteria and the Degree of Economic Alignment of the Czech Republic with the Euro Area.* The results of these analyses are vital for assessing whether the Czech economy will be able to operate successfully within the euro area and withstand potential shocks without its own monetary policy. The latest assessment was conducted in December 2007. It concluded that the Czech Republic had not yet made enough progress in laying the groundwork for the euro to enable it to set a target date for entering the euro area.

The Czech Republic's euro area accession strategy assumes that inflation targeting will stay in place until the euro is introduced. With inflation anchored at a low level by the inflation target, the Czech Republic will be able to fulfil the Maastricht criteria on price stability and interest rates. Maintaining a flexible exchange rate will meanwhile allow the domestic price level to converge gradually to the levels common in advanced countries. This convergence via exchange rate appreciation will also be possible during the obligatory two-year stay in ERM II. Last but not least, the fully autonomous monetary policy under inflation targeting allows the CNB to conduct stabilisation policy, fostering smooth convergence of the performance of the Czech economy to that of the current euro area members. The experience of the CNB and other countries aspiring to enter the euro area demonstrates that the intention to retain inflation targeting until euro adoption is correct.

The new inflation target of 2% as from January 2010 is close to the definition of price stability in the euro area. The European Central Bank has defined price stability as inflation below but close to 2%. This new target is very likely to ensure that the Maastricht price stability and interest rate criteria are met, while not endangering the fulfilment of the exchange rate criterion.

Conclusions, or successes and failures

The experience of the Czech Republic and the Czech National Bank with inflation targeting is to some extent unique, since most of the pioneering inflation-targeting countries, with the exception of Chile, introduced this regime in a situation of a stabilised economy with a low rate of inflation. The Czech Republic was the first country from Central and Eastern Europe to adopt inflation targeting in a transition economy with the aim of reducing inflation from high levels and then stabilising it.

Although the CNB has had some partial failures, such as frequent non-fulfilment of its inflation forecasts and subsequently of its inflation targets, its ten-year operation of the inflation targeting regime can be considered a success. Since the early years of this regime, the CNB's forecasting and decision-making process has undergone dynamic development. This development, which is still in progress, is aimed at making the forecasting system more accurate, improving decision-making mechanisms and increasing the openness of communication of the CNB's forecasts and decisions to the public.

The successful conduct of monetary policy under inflation targeting has brought down inflation from high values to the level common in advanced countries and, with the exception of price fluctuations due to administrative interventions by the state and other temporary factors, has maintained inflation at this level. This success is also due to the fact that open and intelligible monetary policy has anchored inflation expectations close to the CNB's inflation targets. This is shown in Figure 3, which compares the inflation expectations of financial markets analysts for three years ahead with the CNB's inflation targets (these expectations have been surveyed since May 1999, so the first three-year horizon for inflation expectations is shown for May 2002).

The CNB is currently one of the most open central banks in the world. The vast majority of the information that enters its decision-making is disclosed with minimal delays. The CNB's efforts have been, and will continue to be, directed at making monetary policy as transparent, comprehensible, predictable, reliable and therefore credible as possible. This policy of openness has helped the CNB to fulfil its statutory mandate – to achieve and maintain price stability – over the past ten years.