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**Internal Policy Note**

# Inflation targeting in the UK: Lessons for the Czech Republic

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***Acknowledgements***

Author would like to thank for useful comments and suggestions to Maxwell Fry, Lavan Mahadeva, Marion Kohler and Gabriel Sterne. Opinions expressed in the paper are those of the author and do not represent views of the Commission or views of the Czech National Bank. Policy note was submitted in December 1998.

# Abstract

The paper tries to derive lessons from the UK experience with inflation targeting (IT) for the Czech monetary policy. Reasons for introducing the IT in both countries have been very similar. After intermediate targets failed, both central banks searched for a new strategy. When implementing the IT scheme, their approaches have been very similar although in some cases different tools have been implemented in order to overcome generally recognized problems. For example, flexibility has been gained by reduction in targeted index in the Czech case while explicit exemptions have been introduced in the UK case. The UK experience with the IT shows that inflation might be reduced towards targeted level faster than expected. Some other policy dilemmas from the UK experience appear relevant for the Czech central bank. For example, due to exchange-rate appreciation, domestically produced inflation might exceed aggregate inflation. The paper also concentrates on role of forecasting in the IT framework.

**Key words**

Inflation targeting, UK, monetary policy, lessons, Czech Republic

# Non-technical summary

In 1998, the Czech National Bank (CNB) introduced inflation targeting (IT). The aim of this paper was to compare the Czech approach to the IT to the one of the UK and to analyse the UK ten-year experience with this strategy in order to derive lessons for the Czech monetary policy for which the IT is a new method of ensuring final objective.

It has been interesting to see that although the two economies are different, main reason for introducing the IT scheme was similar. Intermediate targets failed. Domestic currency recovered from speculative attack. Financial innovations destabilised traditional monetary links. In the Czech case, the strategies based on intermediate targets were more short-lived than in the UK case since some features of transition increased size of various standard shocks. In both cases, there was a need to design a strategy of reaching final objective of monetary policy effectively.

It is worth noting that institutional frameworks differed. In the UK, an introduction of the IT framework has increased independency of the central bank. The central bank has been given operational independence to reach the inflation targets specified by the UK government. The central bank has been also given mechanisms for explaining its policy such as open letter to the Chancellor. In the Czech case, the central bank was independent prior to the introduction of the IT. By announcing inflation targets, the central bank realized higher degree of independence. This move has been balanced by a "voluntary" significant increase in transparency. Hence the outcome has been similar. Both central banks started producing inflation reports and minutes of the meeting.

In order to cope with uncertainty, both central banks introduced two mechanisms although the relative emphasis put on them was different. Firstly, general price index has been reduced for the purposes of target specification. In the Czech case, the reduction was more significant than in the UK case. Secondly, target has been specified in an interval form. In the Czech case, the interval was narrower with respect to the central value. In addition to that, the UK approach also involved a possibility to use mechanism of exemptions. A careful design of these mechanisms suggests that both central banks probably preferred gains credibility to fast anchoring of inflation expectations.

Since both frameworks are similar and the UK experience with the IT scheme is much longer, the review of outcomes and discovered policy dilemmas could suggest what is ahead of the Czech monetary policy. In the UK, the IT was effective in reducing inflation. Inflation reports indicate that the IT was more effective than expected. Inflation converged to medium-term target faster than it was designed by the initial documents. Among policy dilemmas, the problem of sterling appreciation is probably most relevant for the Czech monetary policy. During the analysed period, there was a need for increase in rates due to increasing domestic demand and fast money growth. However, appreciation of domestic currency outweighed domestic inflation pressures. Inflation forecasts signalled that the target would be hit.

One part of the research concentrated on role of forecasting in the IT framework. It was very important for the CNB to extend the knowledge on how to use forecasting under its new strategy. According to the UK experience, two major roles can be distinguished. Internally, forecasting becomes a key activity for both policy discussions as well as decisions. Externally, forecast visualises the decision-making process for general public. It can help explaining two important features of decision-making process: the forward-looking nature and uncertainty.

# 1. Introduction

In 1998, the Czech National Bank (CNB) introduced inflation targeting (IT) as its new monetary strategy. The aim of this paper was to provide background for the Czech policy makers on the UK experience with IT. Two main questions determined the content of research. Are the two strategies similar? What can be ahead of the CNB according to longer UK experience?

Firstly, main reasons for introducing the IT scheme in the UK and Czech Republic were compared. Interestingly, the reasons look very similar although the two economies are at different stages of development. In both case studies, unreliability of intermediate target was important factor during a search for new strategy. Domestic currency was under attack and money aggregates were subject to financial innovations.

Secondly, the announcement of the new framework in these two countries was analysed. On one hand, there is one important difference in institutional framework. Unlike in the UK framework, the CNB has set inflation target itself. On the other hand, there is common feature to work with two time horizons when announcing the first target. This is a consequence of necessity to reduce inflation in both economies although the problem has been more serious in the Czech case.

Thirdly, several important characteristics of implementation of the IT strategy were compared. There is a similar approach to eliminating contra-productive reaction of monetary policy. Some items have been excluded from the general price index in order to prevent these reactions. It is worth noting that while in the UK case monetary strategy defines its key inflation target for long run, in the Czech case it is defined for medium run.

Fourthly, the UK experience with new procedures that have been implemented after the IT framework was introduced was described. Specifically, the role of the MPC was analysed. Also, the newly introduced documents such as inflation reports and minutes of the meeting as well as forecasting activities were described. This summary suggested what potential impact on the Czech monetary policy the IT scheme could have in next few years.

Fifthly, results of targeting inflation in the UK for nearly decade were examined. Within the examined period, inflation was reduced to targeted range faster than expected. The UK the economy was growing at satisfactory growth rates. Some dilemmas of monetary policy are mentioned such as sterling appreciation or slowly accommodating inflation expectations. The review indicated what problems could be faced by the Czech central bank while targeting inflation.

The last part of the paper concentrates on role of forecasting in the IT framework. It was very important for the CNB to extend the knowledge on how to use forecasting under its new strategy. According to the UK experience, two major roles can be distinguished. Internally, forecasting becomes a key activity for both policy discussions as well as decisions. Externally, it visualises the decision-making process for general public. It stresses two important features of decision-making process: the forward-looking nature and uncertainty.

## 2. Main reasons for introducing the IT strategy

The UK and the Czech experience are similar as far as reasons for introducing the IT framework are concerned. Their experience corresponds to the one of other inflation targeters that typically introduced the IT after collapse of the exchange-rate regime or when monetary aggregates failed as intermediate targets[1].

In the UK, monetary targeting was abandoned in 1986 after financial innovations had distorted a link between intermediate target and prices. Then the Deutsche mark was shadowed. Formal exchange-rate target was accepted in 1990. In 1992, the ERM was suspended after a massive attack against pound[2], and an explicit inflation target was introduced in September.

In the Czech case, the experience was quite similar although the alternative strategies were implemented for shorter periods. The Czech monetary policy relied on intermediate targets since beginning of transition towards market economy. In the period of 1993-1995, the koruna was pegged to a basket of currencies. At the same time, money growth was used as complementary target. After an introduction of full convertibility of koruna, the two intermediate targets became incompatible. Hence in 1996, exchange-rate bands were

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[1] See Haldane (1997) for summary of typical reasons of introducing the inflation target.

[2] See Bowen (1995) for description of reasons of why the IT has been introduced in the UK case.

widened and intervention on the foreign exchange market became rare. The target for money growth gained significance. In May 1997, after the exchange-rate turbulence[3], the koruna was let to float. Then the IT framework was introduced in December 1997.

Both the UK as well as the Czech experience suggests that intermediate targets lose their value when they get to contradiction with the ultimate objective of monetary policy. Under some conditions, price stability is ensured although money grows out of target ranges. For example, this was the case of the financial innovations in the UK. In the Czech case, capital inflow attracted by privatisation together with financial innovations brought by transition distorted the link between money and other variables[4].

It also happened that inflation was out of control while the exchange-rate target was met. Specifically, this was the experience of both countries when prices in non-tradable sector grew faster than prices in tradable sector. Also, in both economies, inflation expectations were not in line with long-term goal of monetary policy under fixed-rate regime[5]. To sum up, the IT was evaluated as a strategy superior to monetary framework that relied on intermediate target since it was directly derived from final objective of monetary policy.

# 3. The announcement of the IT framework

In the UK case, the IT framework was adopted by the UK government in October 1992[6]. The government defined the new inflation target in a form of horizontal band (1-4%) for medium-term. The long-term goal has been specified as follows: to keep inflation on 2% or

[3] For more information on the May exchange rate turbulence see Šmídková (1998).

[4] One could argue that for a transitional country the probability of financial innovations is relatively larger than for a developed economy. For example, the opening of capital account and liberalisation of financial markets increased importance of capital flows. The institutional features of financial markets went through profound changes within a relatively short time span. Moreover, the new financial assets, new types of transactions and new market players emerged during transition.

[5] Again, one could argue that economy in transitional is more prone to problem of non-falling inflation under fixed exchange rate. This is due to a necessity to de-regulated prices that were administered under previous regime.

[6] See Bowen (1995) for description of how the IT framework has been implemented in the UK.

less[7]. Both targets were specified in terms of twelve months increase in RPIX. This is the retail price index from which mortgage interest payments are excluded. Given the current inflation rate in 1992, the medium-term target implied objective for monetary policy to bring inflation down. However, significant flexibility was left on the speed of approaching the long-term target.

At the same time, both previously used intermediate targets were officially rejected. There was, however, the underlying perspective of re-entry to the EMU after achieving monetary convergence. It was explained that previously used intermediate targets were not appropriate to steer monetary policy in the correct directions in all circumstances. The previously used intermediate targets were viewed as useful indicators that would be evaluated together with other information in order to produce inflation outlooks.

In the Czech case, the IT framework was implemented in December 1997. It had two important features similar to the ones of the UK framework. Two targets were announced for one-year and three-year horizons. After the Board meeting on December 21, the commitment was declared that net inflation would be 6% ±0.5% by the end of 1998 and 4.5% ±1% by the end of the year 2000. Targets were explicitly specified in terms of net inflation. Net inflation is measure derived from consumer price index by excluding effects of corrections in administered prices and changes in indirect taxes.

Similarly to the UK case, previously used intermediate targets were rejected but their importance as useful indicators was stressed[8]. The IT framework was explained as a new strategy of monetary policy that allowed for policy makers to rely on much broader set of information when producing inflation outlooks. Since the Czech Republic had started negotiating with the EU, the similar underlying perspective of entry to the EMU after achieving monetary convergence was present in the Czech case.

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[7] According to the UK Inflation Reports, the medium-term target was extended to 1-2.5% in June 1995. In May 1997, the long-term target was set to 2.5% since the previous statement gave some ambiguity that there was no floor to targeted rate of inflation. Consequently, the interval target was replaced with a point target.

[8] See Inflation Report, Czech National Bank, April 1998.

What was common to both cases of announcement of the IT framework? First, there was a clear shift in priorities from importing low inflation via fixed exchange rate towards viewing the EMU as a final stage of monetary regime. Second, the IT frameworks in both countries work with two time horizons although horizons are longer in the UK case (medium and long-term) than in the Czech case (short and medium-term). In both cases, inflation targets have been announced for reduced headline inflation index. However, modifications of index have not been the same. They reflected different reasons for excluding some items.

And what were the differences in both approaches to the IT introduction? Interestingly, in the UK case, there was only a very short time period between the two subsequent monetary regimes. It took one month to announce the IT framework after the EMR was left. In the Czech case, there was more time to prepare implementation of the new strategy. It took eight months to announce the targets after the exchange-rate bands were abolished.

The major difference between the two approaches was in their institutional backgrounds. In the UK case, the support of the government given to the IT framework was active[9] from its beginning since it was the government that declared inflation targets. In the Czech case, the central bank itself introduced the IT strategy although the targets were informally consulted with the Ministry of Finance (MF). The government support was not active. On the contrary, in 1998, inflation forecasts of the MF were higher than target of the central bank.

It is worth noting that although in both countries the introduction of the IT was aimed at disinflation, the long-term target was specified only in the UK case. Its value has been derived from domestic fundamentals such as estimates of inflation measurement errors[10]. However, in the Czech case, the terminal point for disinflation path was not announced in 1997. One of the important reasons was that for a small open economy it was relatively more difficult to rely on domestic fundamentals. In some sense, the long-term target is a moving target due to a significant dependence on inflation of major trading partners.

[9] The active and passive support is distinguished in Ben-Bassat (1995). According to this definition, the active support means that implemented fiscal and wage policies support inflation target.

[10] The fact that the IT has been implemented as a framework based on domestic indicators of economic performance is stressed for example in King (1994).

## 4. Defining the inflation objective

The important feature of the IT framework is that it works with an explicit inflation objective. When defining the objective, policy makers are faced with the four problems: (i) which index to choose, (ii) what the speed should be of approaching target, (iii) what the value of target is, and (iv) how wide should the targeted interval be. In the following paragraphs, the UK and the Czech approaches to these four issues are compared[11].

In the UK case, the target is specified in terms of RPIX that excludes interest/mortgage payments from the RPI (retail price index). The interest-rate related items are excluded from the index since they are directly affected with the official rates and would send contradicting signals of increased inflation after rates are raised. The targeted index measured by the institution that is independent from the central bank (Central statistical office).

Internally, the Bank of England uses the RPIY inflation that excludes indirect and local authority taxes as a proxy for underlying inflation as well as several measures of domestically generated inflation (GDI). It follows that although the targeted index (RPIX) is very close to the headline index (RPI), the Bank of England uses narrower measures for the policy purposes. However, the changes in the targeted index have not been considered due to a risk of damaged credibility.

In the Czech case, the target has been defined in term of the net inflation that has been introduced together with the IT framework in order to exclude transitional price shocks such as price corrections (and changes in indirect taxes) from targeted index[12]. The net inflation

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[11] Comparison is based on Inflation Reports of the Bank of England (February 1993-November 1998), and Inflation Reports of the Czech National Bank (April 1998 –November 1998).

[12] The consumer basket was adjusted for items with regulated prices and prices affected by other administrative measures. According to this definition, the net inflation index represents approximately 82% of the consumer price index. The list of items excluded from the consumer basket has been defined as follows: prices regulated by the Ministry of Finance or local authorities (weight in CPI is 7.4%); prices affected by other administrative measures (weight in CPI is 6%); administrative fees (weight in CPI is 4.4%). In addition, the net inflation itself filters out an impact of changes in indirect taxes or subsidies.

index is calculated for the purposes of inflation targeting by the Czech statistical office that is independent from the central bank.

Internally, the Czech National Bank uses other price indices as leading indicators of net inflation. For example, the inflation in tradable and non-tradable sectors is often analysed. The core inflation is used as an indicator of domestically generated inflation. On the contrary to the UK case, the index targeted by the Czech central bank is relatively more distant from the headline index. Hence the need to use narrower measures for the policy purposes is smaller. Instead there is a need to use different sub-indices of the CPI to gain more information.

As far as the speed of approaching the target is concerned, in the UK case, the speed of approaching the long-term target that formally[13] holds for indefinite future was not specified. The medium term horizon was approximated with the end of the Parliament appointed at the time of introducing the IT. In the Czech case, the speed of approaching the medium-term target was defined with the slope of disinflation path implied by the two targets. However, since the long-term objective has not been specified in terms of net inflation[14], the uncertainty about the speed of approaching it was relatively higher than in the UK case.

It has been already mentioned that the level of the target is relatively more easily determined for larger and relatively less open economies because domestic fundamentals provide sufficient information**.** In the UK case, the level of long-term target has been derived from objective of price stability under condition that there are various statistical biases. These imply a need to target a positive inflation rate of order 0.5-1.5%[15]. According to the estimates for the UK economy, there is a product substitution bias of order 0.05-0.1%, outlet substitution bias of order 0.1-0.25%, quality adjustment bias of order 0.2-0.3%, and new-goods bias of order 0.0-0.15%. Moreover, there are studies suggesting that targeting zero inflation would impose constraint on real interest rates.

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[13] The inflation target needs to be confirmed with the each budget.

[14] According to the Bank law, the ultimate goal of monetary policy is currency stability (both external as well as internal).

[15] For a summary of this problem see King (1994) and Haldane (1995). For analysis of different types of measurement bias see Cunningham (1996).

In the Czech case, the value of long-run target has not been specified. Medium-term target is relatively higher (4.5%) than the one in the UK framework (2.5%)[16]. This difference is a consequence of different stages of the disinflation process. Inflation was higher in the Czech case when the IT framework was introduced. The Czech economy started with the net inflation of 7.5% in 1998. The UK inflation (measured by RPIX) was in 3.7% in 1993. This implied that the targeted inflation rate should be reduced by 40% in the Czech case and by 30% in the UK case in medium run. Moreover, the above-mentioned biases and uncertainties are probably much higher in economy in transition. Hence the objective of price stability is consistent with higher rate of measured inflation in the medium term.

According to the theory of inflation targeting, the higher size of shocks that are likely to hit the economy in between the setting of policy and its impact on inflation, the wider the targeted interval should be. An alternative solution to wider band is targeting of a narrower sub-index. In the UK case, targeted price index was relatively broad. The width of the interval was 40% of the target value. In the Czech case, the targeted price index is narrower. The width of the interval was 20% of the target value.

Hence the interval was narrower in the Czech case despite the fact that uncertainty was probably larger in economies in transition. The problem was to some extend reduced by targeting narrower index. Also, there was a recognised trade-off between flexibility and credibility[17]. The wider band would reduce credibility due to a danger of inflation bias towards the upper band. This would be probably more costly for the Czech central bank that faced a problem of unstable inflation expectations due to transitional problems.

Different approach towards dealing with uncertainty was apparent in use of exemptions. In the UK case, the principle of exemptions was explicitly introduced during the initial stage of the IT. The central bank has been given a possibility to explain the short-term deviations

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[16] Due to differences in definition of targeted indices, the Czech target is relatively less ambitious than suggested by the two numbers.

[17] Overview on how to define the width of interval is given in King (1994). The comparison of two strategies -exemptions versus wider bands – is analysed in Haldane (1995). Other studies give different reasons for exemptions or caveats. See Bowen (1995), Ben-Bassat (1995).

from target in the case of large shock by writing a letter to the Chancellor[18]. In the Czech case, in the initial stage of the IT preference was given to narrow targeted index.

## 5. The UK experience with implementing new procedures

The UK experience gives a lot of information on which types of procedures are necessary to implement after the inflation targeting is introduced. In the UK case, the inflation targeting scheme went trough two stages. During the first stage, the Bank of England had neither target nor operational independence. King (1994) describes the original institutional framework as follows. The process of reaching judgement on interest rate policy started with an informal assessment of the economic situation..

The assessment was exchanged between the Treasury and the Bank that acted as advisor in the matter of monetary policy Then there was a joint meeting between senior Bank and Treasury officials. The minutes of the meeting included summary of discussion reported anonymously with the Governor's introduction, the Chancellor's summing-up and decision. The irreversibility of the decision to publish the minutes was underlined by the announcement by the shadow Chancellor that he would continue to publish them.

Irrespectively of the lack of independence of the central bank, there was a visible switch to more forward-looking monetary policy that according to Bowen (1995) did not any more react to the current rate of inflation. Monetary policy started maximising probability, estimated at the time of the policy adjustment, of inflation falling within the target range by the time adjustment has taken effect.

In the second stage, the Bank was given independence by The Bank of England Act from spring 1998. The system started operating de facto when the Chancellor announced the new scheme in his letter to the Governor in May 1997[19]. This change was viewed as the most important one since nationalisation in 1946. It promoted independence of monetary decisions from political cycle. With the independent central bank, there was a need to define

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[18] See Bowen (1995) for explanation of the role of the letters.

[19] See Letter from the Chancellor to the Governor: 6 May 1997 and The Chancellor's Statement on the Bank of England: 20 May 1997.

objectives of monetary policy in a transparent way as well as to define procedures for the case of missing the target[20].

In the remit for monetary policy[21], objectives are defined for the Bank to maintain price stability and subject to that support economic policy of government. It is important to note that price stability is understood as precondition for high and stable levels of growth and employment. The price stability is defined as RPIX inflation rate of 2 and ½ per cent. It is also said that the aim is not to have this inflation rate for several months but to have expectations of inflation settled on this level. The remit will be restated with each budget. Hence inflation target need to be confirmed with each budget although in the initial remit it is stressed that continuity is valued high.

The procedures relevant for the case of missing the target are defined as follows. Thresholds are used of one per cent deviation from the target. It is clearly explained that the target is a point[22]. Mechanism of exemptions is introduced. In the occurrence of external events or temporary difficulties actual inflation will occasionally depart from its target and attempts to keep inflation close to target in these circumstances would cause undesirable volatility in output.

In 1997, the Bank gained new structure[23]. The Bank of England Act provides a statutory basis for the Monetary Policy Committee (MPC) that has been given responsibility for formulating and implementing monetary policy. The MPC consists of nine members:

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[20] See Briault, Haldane, King (1996) for explanation of independence and accountability problem. They state that accountability is important if the bank is independent. It is necessary to have clearly defined contract in order to be accountable. It requires to specify the duty as well as how its fulfilment would be monitored, and which penalty would be imposed for non-compliance. Otherwise, the contract is incomplete. It is argued that independence of central bank imposes constraint on political inference. Accountability imposes constraint on how the bank exercises its independence.

[21] See Remit for the Monetary Policy Committee from June 3, 1998.

[22] Should inflation move away from the target by more than one percentage point, open letter from the Governor to the Chancellor will give reasons and details of policy actions being taken to bring inflation back and the period within which it is expected to return to target.

[23] See Rodgers (1998) for explanation of internal changes within the Bank of England.

Governor, two deputy Governors (monetary policy, financial stability), two Bank executives (appointed by the Bank after consultation with the chancellor who are responsible for monetary analysis and for monetary operations), and four external members (appointed by the chancellor who must be experts in monetary policy and become employees of the Bank). The MPC members are appointed on rolling basis in order to ensure continuity of decisions. Each member has one vote, the Governor has the second casting vote. The Treasury representative may attend the meeting and speak but s/he has no vote.

After the Bank was given independence, monthly frequency of the monetary decisions has been maintained. However, the decision making process has changed. The new internal procedures have been implemented together with the new methodology of assessing economic situation and with the new approach towards the public that has promoted transparency of monetary policy significantly[24].

In the centre of decision making process are quarterly inflation reports[25]. Interestingly, the MPC is responsible under legislation for approving every Inflation report[26]. The MPC is involved in quarterly assessment of economic situation in which the major assumptions are formulated for the official inflation forecast[27]. However, theoretically it is possible in the case of major disagreement for the MPC to have several forecasts, each reflecting the opinion of several MPC members. This situation has not occurred yet since consensus on major trends and risks has been always reached so far.

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[24] According to various speeches published in Quarterly bulletins, this increase in openness was welcomed both by public as well as opposition parties.

[25] They were introduced during the first stage of inflation targeting. The first Inflation report was produced in February 1993. The reports are published quarterly. They are supplemented with Quarterly bulletins that contain description of recent economic developments, research papers of the Bank experts, and speeches by the MPC members.

[26] This holds also with respect towards the general public since each report is signed by the MPC members.

[27] See Budd (1998), Vickers (1998) and also The Governor's Speech on Objectives and Current State of Monetary Policy (1998).

The produced forecast provides a framework for policy discussion as well as for the structure of more detailed economic analysis by sectors or segments of the economy[28]. It serves as a benchmark for "interim" monthly meetings during which the news are distinguished from noise. Then the validity of the previously made assumptions is evaluated. In the case of some major news, quarterly economic outlook is corrected and decision to act is taken. During the monthly assessments, various types of information are used (from the theoretical model frameworks and inflation forecasts to regional information gathered by the twelve regional Agents) in order to make policy decision.

The quarterly assessment of economic situation is provided to public by publishing the Inflation reports. They review a wide range of data and assess inflation prospect over the short to medium term. The Bank's projection for inflation and output for next two years is presented on fan charts. The projections are always based on assumption of unchanged official interest rates. The description of various risks is published, including their asymmetries. By admitting the uncertainty to public, the transparency of decision-making process becomes higher. The Reports also summarise forecasts by other institutions as well that estimates of inflation expectations.

As the second vehicle of transparency, the minutes of the monthly MPC meetings are published two weeks after the meeting takes place[29]. The minutes are structured analogously to the discussion of the MPC. There are regular sections describing recent economic developments, current state of the economy, economic outlook and its risks, forecasts by other institutions, policy implications of the outlook, immediate policy decision, results of the voting with names, and list of members present at the meeting. In addition, some topical issues are covered as well such as fiscal developments, appreciation of sterling and commodity prices.

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[28] The role of forecast is described more in the last section. It is important to note that a focus on inflation forecasting required changes inside the Bank (in the structure of both human capital as well as activities of the Bank´s analysts).

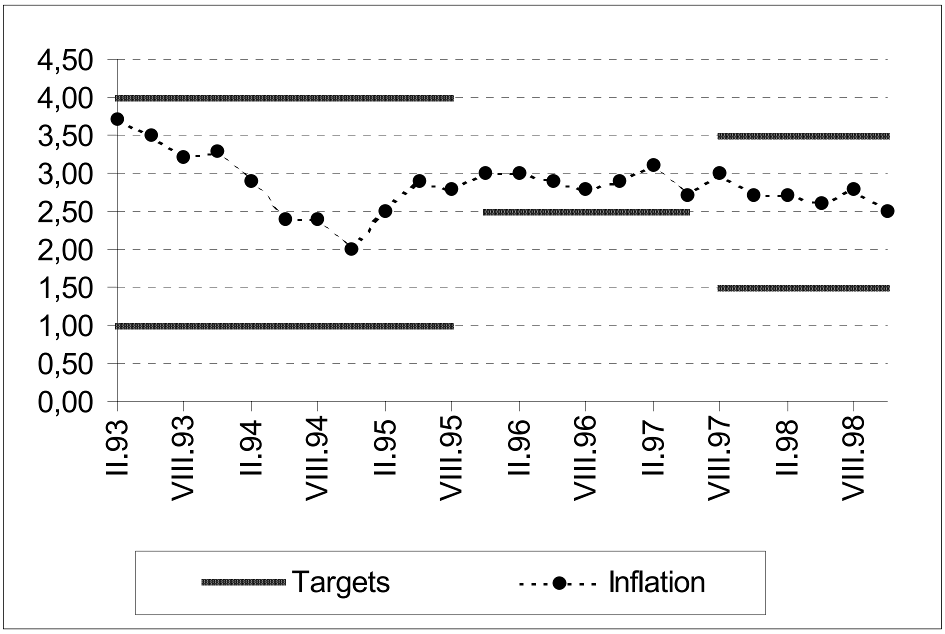
[29] The time lag between the meeting and publishing the minutes shortened significantly when the inflation targeting was introduced. Since 1994, the minutes were published six weeks after the meeting (until 1998). Prior to 1994, the lag was thirty years.

In order to inform public extensively about the view on the economy, the speeches by the MPC members given at various occasions are published in the Quarterly bulletins. Their publications provide further information of views of policy makers on monetary policy as well as more general economic problems. For example, some speeches respond to opponents of the IT framework and explain important parts of the strategy such as the role of the forecast. In addition to this, all issued press notes are included in Inflation reports together with Minutes.

## 6. The UK experience with effectiveness of the IT

The UK experience with the effectiveness of the IT framework is described in Inflation reports. Also, speeches of the MPC members and research papers in Quarterly bulletins give a lot of information[30]. Chart 1 shows the UK inflation record in the period of 1993-1998. Since 1993 inflation remained in a range of 2-3.5%. This record corresponds by historical standards to high degree of price stability. Over the same period, average output growth was around 3%.

**Chart 1. The UK inflation record in 1993-1998**



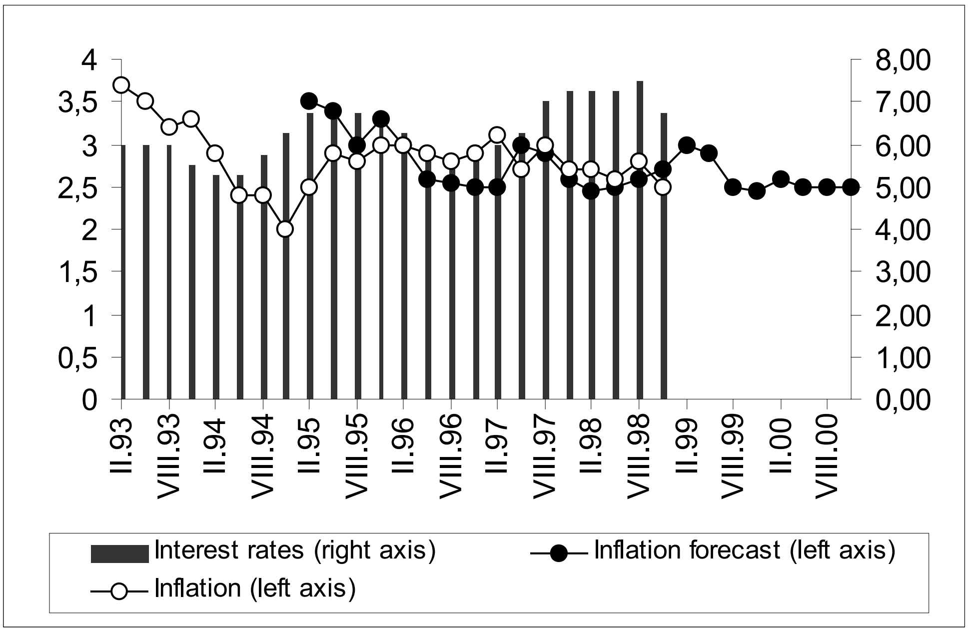

**Source:** Bank of England, Inflation reports.

[30] See for example Vickers (1998).

It is interesting to note that the new strategy was already successful in the first period of the IT scheme. Bowen (1995) reports that lower half of the targeted range was reached quite fast. Inflation converged into targeted range in October 1992. From March 1994 to December 1994 it was within the lower half of the range. It means that inflation was reduced from 4.2% in August 1992 to 2.0% in October 1994[31]. In period of 1995-1998, it fluctuated between 2,5 and 3%.

Chart 2 compares inflation forecasts that were published in Inflation reports to observed values of inflation. Bowen (1995) observes that improvement of forecasting activities was significant and that this activity was given a lot of emphasis during decision-making process. During the initial stage of the IT, the observed inflation tended to be lower than forecasts. However, this mistake was common to all modellers. It was a consequence of to positive supply shock as well as underestimated influence of falling inflation expectations. In the latter stage, expectations, forecasts and actual values of inflation were closely related. Chart 2 also illustrates that the UK monetary policy was forward-looking in this period.

**Chart 2. Interest rates, inflation and forecasts in 1993-1998**




**Source:** Bank of England, Inflation reports.

[31] Since the target was always hit, the facility of open letter was not used in these years.

In Inflation reports[32], several interesting problems are described. First, although inflation targeting was successful in the short-term by bringing the inflation to targeted range, expectations[33] were not in this range. This implied that the process of gaining credibility was longer than initially expected. This uncertainty was costly for example during wage bargaining process.

Second, there was an important dilemma for monetary policy concerning the time pattern of inflation forecast. Forecasted inflation within one-year horizon was close to target. However, there was an indication of inflation wave implying that the target would be missed in two-year horizon. Consequently, interest rates were increased but it was difficult to explain the move towards the general public. To some extent, the difficulty was caused by the fact that  forecast was several times revised downward during the initial stage of the IT.

Third, in 1996, another important dilemma was apparent. On one hand, domestic demand and output grew at above-trend rates, and money grew at double-digit rates. On the other hand, exchange-rate appreciated by 16% in seven months. There was a need for increase in rates but the target was hit due to the first-round effect of sterling appreciation. Even in this case, the IT framework was strictly followed and interest rates were increased in response to domestic demand pressure.

# 7. The role of forecasting inflation in the UK approach

Many researchers including some MPC members stressed the importance of inflation forecasts for the IT framework. Budd (1998) states that inflation forecast is implicit in any monetary policy action or inaction although explicit forecast is not necessary a part of policy-making in general. Under the IT, producing forecast of inflation has internal and external reasons.

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[32] The summary is based on inflation reports, however other authors consider similar issues as important.  See for example Bowen (1995).

[33] Expectations were measured directly as median of 36 private respondent's forecasts as well as indirectly from financial market indicators.

Internally, forecast activities improve quality of monetary decisions. Budd (1998) argues that forecast creates a framework for decisions and gives normal ranges within which the economy will behave taking into account complex interactions in the economy. Moreover, it gives to the MPC members a common language and brings formal and informal methods together.

Similarly, Haldane (1995) views forecasting inflation as a key activity for inflation targeter. The forecast satisfies the requirements on intermediate targets since a change in inflation forecast should be projected into a change in instrument. Hence requirement on both controllability as well as predictability is fulfilled. Haldane (1995) also claims that using forecast of some variable as intermediate target has some costs[34]. On the other hand, these costs should not be attributed to the IT framework because they are implicitly present in other strategies as well.

The methodology of forecast sets the framework for decision-making process. In the UK case, the baseline projection is used as a framework for discussion in order to ensure consistency. The projection specifies important macro-economic relationships as well as major underlying assumptions about exogenous variables. Baseline uncertainties of both equations as well as exogenous variables are derived from historical estimates.

The initial probability distribution can be modified by policy makers with off-model information and expert judgement. These modified distributions produce final outlook. Haldane (1997) argues that probability distributions add value in three respects. The probabilistic nature of forecasting is emphasised. Non-model information enters decision-making process. Asymmetries in the balance of inflation risks are accounted for.

Although the inflation forecast becomes the key activity under the IT scheme, policy makers emphasise that there is a difference between producing a forecast and actual policy reaction. Vickers (1998) shows that policy reaction is not mechanical and cannot be derived from the

[34] According to Haldane (1995), the costs come from both model uncertainties as well as shocks to projections of exogenous variables. Both factors are imposed by forward-looking mode of economic assessment.

forecast since the MPC member use more information than a set of equations and data series included in an underlying model[35].

Similar arguments are given in Inflation reports[36]. It is explained that fan charts are not used as a mechanical determinant of policy decisions. Forecasts are conditioned on the level of interest rates and do not include all information available to policy makers. Hence the projection should not be interpreted as the most likely outcome for inflation. It is stressed that forecasts by the central bank will always differ from forecasts by private sector that often use some policy rule. They will also differ from observed values of inflation that are affected with a sequence of interest rate changes.

Interestingly, as explained in Budd (1998), forecast is produced from available set of model variables under assumptions that are discussed by the MPC. The MPC uses intuition and theoretical understanding to decide which particular model is appropriate for thinking about current circumstances. Also, ad hoc models are developed to explore the implications of particular developments. In this sense, the UK experience is different from the others since the forecast is not a staff forecast. In the UK case, policy-makers are committed to the forecast itself not only to the final decision.

The external role of forecast in the UK case is associated with fan charts. From explanations in various Inflation reports[37], one can conclude that the forecasting exercise has its educational role and promotes transparency of decisions. Specifically, fan charts clearly demonstrate that monetary policy is forward-looking. Each chart also gives an

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[35] Vickers (1998) gives two main reasons for difference between forecast and actual reaction. First, the core model must be manageable. It consists of a small subset of information (150 variables). The chart pack discussed on the pre-MPC briefing consists of 500 charts and tables and 1000 of variables. Information not included in the core model is used in order to create a judgement about quality of simulations. Second, forecast is conditional on constant rate assumption. It would not be possible for the MPC to specify its own reaction function. Budd (1998) adds that loss function is not precisely specified. The target is given but the Chancellor states (in his letter) that if the economy suffers from external events or temporary difficulties, keeping inflation at the target all the time may cause undesirable volatility in output. The interpretation of what is undesirable volatility is subjective to each member of the MPC.

[36] See for example Inflation Report, May 1998 or Inflation Report, May 1994.

[37] See for example the Minutes of the MPC Meeting on 4-5 March 1998.

explicit identification of uncertainties. The forecast helps explaining decisions to the public that can comment on assumptions and outcome of forecasts. This openness gives a benchmark and allows to judge which event can be classified as shock that hit the economy. This makes monetary policy in the UK very accountable.

# 8. Concluding remarks

The comparison of the IT frameworks in the UK and in the Czech Republic shows that there are similarities. Hence it is useful to analyse the UK experience with the IT strategy since it can provide several lessons for the Czech central bank that introduced the IT framework some years later.

Definition of the target itself can offer two tools that might be useful for Czech policy makers. Firstly, a specification of the long-run target helps to settle inflation expectations on a targeted level. In the Czech case, a long-run target derived from either definition of domestic price stability or from the EU definition should be announced explicitly.

Similarly, explicitly specified exemptions would further increase flexibility that is necessary in short-run in the case of large exogenous shocks. Although in the Czech case, reduced price index was used for specification of a target and target takes an interval form, these two mechanisms might not provide enough flexibility because transition and large openness increase potential size of shocks in the Czech economy.

The UK framework puts a lot of emphasis on a balance between transparency, accountability and independence of the central bank. In this respect, the CNB produces a comparable set of documents including minutes of the meeting of the Board. With more research done about the newly introduced framework, it will be possible to include research papers about forecasting and other topics into the Czech inflation reports.

The UK experience shows that inflation might be reduced towards level targeted in long-run faster than expected. One can identify two potential reasons – a positive unexpected price shock and an unexpectedly fast shift in inflation expectations towards low level. Careful explanation of the respective roles of inflation targets for different horizons might help to reduce potential loss of credibility.

Two policy dilemmas from the UK experience appear relevant for the Czech central bank. First, it is important to communicate towards general public that there is a time lag between setting the instrument and a change in inflation. It might happen that an inflation forecast has a shape of a wave. Hence in the period of falling inflation, there is a need for an increase in rates due to expected future acceleration in inflation.

The second dilemma is related to the exchange rate. According to the UK experience, it might happen that a large exchange rate fluctuation makes some sectors to perform differently. As a consequence, domestically produced inflation would be much higher than aggregate measure of inflation that is affected by strong domestic currency. In this situation, the Bank of England reacted to domestic fundamentals.

Forecasting in the IT framework has an additional role. Not only it is used internally, it also might become a tool for communicating several messages towards the general public. It demonstrates reaction function of the central bank. Also, it stresses that decision-making process is forward-looking. The forecast also helps to explain various uncertainties and policy responses towards them.

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