A note on central bank transparency and credibility in Poland

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Abstract

This note extends the study by Łyziak et al. (2007), providing up-to-date assessment of central bank transparency in Poland. We highlight the role of inflation projections prepared by the staff of the National Bank of Poland in building transparency of monetary policy. The results suggest that central bank inflation projections, published since 2004, have led to improvements in the predictability of interest rate decisions.

The note updates also previous estimates of the degree of central bank credibility in Poland, using survey-based measures of inflation expectations formed by consumers, enterprises and financial sector analysts. It is confirmed that inflation expectations of enterprises and – especially – of financial sector analysts display a high degree of anchoring at the NBP inflation target, while consumer inflation expectations are driven mainly by developments in subjectively perceived inflation.

"The mystery and mystique has given way to transparency and openness... The communication of policymakers' intentions with a view to enhancing their credibility has come to play a central role in monetary policy". (Mervyn King, 2000[1])

"There may be circumstances in which it is justified to aim off the inflation target for a while in order to moderate the risk of financial crises. (...) I do not see this as inconsistent with inflation targeting because it is the stability of inflation over long periods, not year to year changes, which is crucial to economic success. The key principles underlying flexible inflation targeting are credibility, predictability and transparency of decision-taking, and they will remain the cornerstone of successful monetary policy in the future". (Mervyn King, 2012[2])

Introduction

In the inflation targeting (IT) framework central banks attempt to establish credibility by conducting a transparent policy, therefore the adoption of this framework is typically followed by major improvements in central bank communication with the public and with the market [Mishkin and Schmidt-Hebbel (2001)]. Due to delays in the monetary transmission mechanism – which in the case of Poland are approximately 4-6 quarters [Demchuk et al. (2012)] – central banks with quantitative inflation targets must be able to form views on future macroeconomic performance, especially on inflation prospects. Moreover, they should have good understanding of the monetary transmission mechanism. For these reasons inflation forecasts, capturing not only macroeconomic developments in general, but highlighting the effects of monetary policy, are crucial in the process of building central bank transparency and credibility.[3]

Empirical studies show that transparent policy makes central banks able to reduce uncertainty about future interest rates, anchor inflation expectations, lower inflation variability and sacrifice ratios [e.g. Mishkin and Schmidt-Hebbel (2007), Dincer and Eichengreen (2013)].[4] By publishing detailed macroeconomic forecasts central banks reduce inflation bias and become able to better control inflation [Geraats (2001), Chortareas et al. (2002)]. It is due to the fact that central bank inflation forecasts – even if imprecise – exert influence on private sector expectations [Tarkka and Mayes (1999), Crowe and Meade (2008), Ehrmann et al. (2010)], supporting the process of building central bank credibility. Recent evidence suggests that during the global financial crisis started in 2008 inflation-targeting central banks performed better than the others in managing real interest rates[5] and in terms of inflation volatility, although the assessment of output performance during the crisis does not point any differences between inflation targeters and remaining central banks [Fouejieu (2013)]. The latter observation can be explained with the fact that IT economies are economically and financially more open than the other ones, so they were more exposed to financial crisis disturbances.

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[1] Joint luncheon of the American Economic Association and the American Finance Association, Boston, 7 January 2000.

[2] The Stamp Memorial Lecture, London School of Economics, 9 October 2012.

[3] Inflation forecasts play a very important role in the inflation-targeting framework. See Svensson (2003) for a detailed discussion of the concept of inflation-forecast targeting.

[4] These benefits from inflation targeting seem to be greater in developing economies than in the developed ones [Mishkin and Schmidt-Hebbel (2007)].

[5] Fouejieu (2013) shows that inflation-targeting central banks had more room for monetary policy easing during the crisis, so they reduced their short term interest rates by more than non-targeters.

The aim of this note is to assess transparency and credibility of monetary policy in Poland in 1998/2001-2012. The note updates the results presented in the study Łyziak et al. (2007), in which we evaluated the degree of central bank credibility and transparency during the initial stage of inflation targeting in Poland (1998-2004) and found that inspite of intensified communication of the central bank with the public, the predictability of interest rate decisions had not increased after the adoption of inflation targeting, while the credibility of inflation targets among professional forecasters had been high inspite of inflation target misses. The need to update those findings results particularly from the fact that the major improvements in the communication of the NBP with the public – including the publication of the NBP staff inflation projections (since August 2004) and minutes (since May 2007) – occurred after the end of the sample period analysed in Łyziak et al. (2007).

1 Theoretical remarks on central bank transparency and credibility

Central bank transparency is a multidimensional phenomenon. Following literature, Łyziak et al. (2007) distinguish two aspects of transparent monetary policy. The first one is related to central bank efforts to make the decisions of monetary policy understood by the public. In this view monetary policy is transparent if economic agents are provided with a full access to information necessary to understand goals and decisions of monetary policy-makers. This aspect of central bank transparency can be measured with well-known transparency indices, assessing central bank disclosure practices, such as those of Eijffinger and Geraats (2006) or Mahadeva and Sterne (2000). Publication of central bank forecasts, models and explanations of policy decisions are the most important elements taken into account while calculating transparency indices of this kind.

Explanation of policy is a crucial, but insufficient condition for central bank transparency. Effectiveness of communication is another important aspect to be considered in analysing central bank transparency [Winkler (2002)]. From this point of view, monetary policy is transparent if it is predictable, i.e. if information released by the central bank helps the private sector understand policy objectives and predict central bank decisions.[6]

Better understanding of central bank actions achieved via appropriate communication policy should influence ability of the central bank to manage inflation expectations of the private sector. A central bank that is able to anchor inflation expectations at the level consistent with monetary policy goals is perceived as credible.[7] Therefore existing measures of central bank credibility refer to a gap between inflation expectations of economic agents and the central bank inflation target [e.g. Faust and Svensson (2001); Hutchison and Walsh (1998); Cecchetti and Krause (2002)] or to the weight attached to the inflation target in the formation

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[6]Empirical evidence supports this view. E.g. Fracasso et al. (2003) show that the quality of *Inflation Reports* reduces interest rate surprises.

[7]According to Blinder (2000), *"a central bank is credible if people believe it will do what it says"*. This is in line with the concept of Cukierman and Meltzer (1986), who define credibility as *"the absolute value of the difference between policy-makers' plans and the public's beliefs about those plans"*.

of long-term inflation expectations by economic agents [Bomfim and Rudebusch (2000)].

There are different factors influencing central bank credibility. The most important ones – suggested by Blinder (2000) on the basis of surveys conducted among central bankers and academic economists and confirmed empirically in the cross-country analysis by Mackiewicz-Łyziak (2010) – comprise: a history of achieving central bank goals, central bank independence, a history of fighting inflation, central bank transparency and the fiscal discipline by the government that conditions the effectiveness of monetary policy.

2 Inflation targeting in Poland

Before 1998 the strategy of the National Bank of Poland combined elements of the exchange rate targeting, inflation targeting, and money supply targeting applied to proceed with a gradual disinflation process. The integration with the global economy created problems for such strategy, making it impossible to control both the monetary aggregates and the exchange rate. Therefore in 1998 the Monetary Policy Council (MPC) decided to introduce inflation targeting. Another important reason for adopting inflation targeting in Poland was the need to anchor inflation expectations, perceived as one of the main obstacles for the continuation of the disinflation process.

Over the 15 years of inflation targeting, monetary policy of the National Bank of Poland has been quite successful (Figure 1). The initial stage of this strategy was aimed at completing disinflation in the Polish economy. While adopting inflation targeting the MPC set the medium-term inflation target at a level below 4% at the end of 2003, but there were also short-term targets for the ends of subsequent years announced. Even if the National Bank of Poland faced difficulties in achieving short-term inflation targets and its monetary policy in some periods was too restrictive or too lax [Kokoszczyński et al. (2006)], inflation went down: while at the beginning of 1998 it was about 13%, by the end of 2003 it had fallen to 1.5%. After completing the disinflation process monetary authorities in Poland were confronted with the goal of strengthening price stability and making inflation expectations of economic agents firmly anchored. Since 2004 the central bank has targeted inflation at 2.5% (with a tolerance band of ±1 pp.) and in fact inflation and inflation expectations in the Polish economy stabilized at a relatively low level. The IT framework performed quite well when Poland faced external shocks, including its entry to the European Union (May 2004), oil and food prices shocks (2007-2008), and the sharp phase of the financial crisis (2008-2009).

3 Assessing central bank transparency

Over the last 15 years, the National Bank of Poland has been putting more and more stress on developing effective communication with the public. Transparency indices proposed by Eijffinger and Geraats (2006) (EG) as well as Mahadeva and Sterne (2000) (MS) show that the degree of information openness of the NBP has become relatively high after the Polish central bank started publishing its staff inflation projections with a formal risk assessment (Table 1, Table 2). It took place in August 2004 and coincided with significant changes in the structure of Polish *Inflation Reports*. Previously the public did not have access to inflation

forecasts prepared at the bank and the forward-looking orientation of monetary policy was significantly less pronounced than in other central banks pursuing inflation targeting. Also the quality of information released was insufficient [e.g. Fracasso et al. (2003)].[8] Central bank transparency, as measured with both transparency indices, increased again in 2007, when the NBP started releasing minutes that present the main issues discussed, arguments put forward and the decisions taken at the MPC meetings.[9]

Analysing effectiveness of central bank communication with the public we analyse predictability of short-term interest rates, influenced by the NBP interest rate decisions. Interest rate predictability is measured on the basis of forward rate agreement (FRA) contracts.[10] Alternatively we follow Łyziak et al. (2007) using Reuters survey data on interest rate expectations of financial sector agents[11], but in this case – due to changes in survey questions – we are able to cover a shorter period, i.e. till April 2009.

We can observe that advances in information disclosure practices were accompanied by an increase in the predictability of the NBP interest rate decisions (Table 3, Figure 2). Even if the initial stage of inflation targeting in Poland did not bring improvements in predictability of monetary policy actions [Łyziak et al. (2007)], publishing central bank inflation projections made a substantial difference in this respect. As a result, the mean absolute error (MAE) of interest rate expectations measured on the basis of financial market data declined by 60% with respect to the period before the first publication of inflation projection by the NBP, while the mean absolute percentage error (MAPE) declined by more than 40%. In the case of Reuters survey data the improvement is even stronger in terms of MAE, while similar as far as MAPE is concerned.

Interestingly, the introduction of the MPC minutes in 2007 was not accompanied by a further improvement in the predictability of interest rate decisions and the relative forecast errors (MAPE) even increased. It seems that this result is due to substantial uncertainty concerning the behaviour of short-term interest rates at the beginning of the financial crisis in 2008. However, there is another factor connected with monetary policy that can contribute to explaining this effect, namely some inconsistency of interest rate decisions with the NBP staff inflation projections, as observed since late 2008. To analyse this effect we define a given interest rate decision, i.e. either a change of the NBP reference rate (i) or keeping it constant, as consistent with the NBP inflation forecast (π^f)[12] if the difference between this forecasts and the NBP inflation target (π^{tar}) implies adequate responses of the central bank, i.e.[13]:

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[8]The main weaknesses mentioned included: incompleteness, insufficient information concerning committee discussions about policy and objections that could be raised to decisions, too few arguments for future decisions presented.

[9]In the recent study Dincer and Eichengreen (2013) calculate transparency indices based on the Eijffinger and Geraats (2006) concept for more than 100 economies from 1998 through 2010. Their assessment is based on information on central banks' websites and statues, annual reports and other published documents. The scores for Poland obtained by Dincer and Eichengreen (2013) are lower than EG index calculated in this paper, but in terms of their evolution in time they confirm a positive trend in central bank transparency in Poland in the period under analysis.

[10]We consider FRA 1x2 contracts as a proxy for expected WIBOR 1M in a 1-month horizon.

[11]We use Reuters survey data on WIBOR 3M expectations for the current month.

[12]We take into account a constant forecast horizon of 4 quarters.

[13]This mechanical rule is consistent with the concept of inflation forecast targeting [Svensson (2003)]. In a few cases we made exceptions from it, e.g. if keeping interest rate constant, despite a gap between inflation forecast and target, occurred after a sequence of interest decisions consistent with the sign of this gap.

$$\pi^f_{t+4} \succ \pi^{tar}_{t+4} \Rightarrow i_t \succ i_{t-1} \tag{1}$$

$$\pi^f_{t+4} = \pi^{tar}_{t+4} \Rightarrow i_t = i_{t-1} \tag{2}$$

$$\pi^f_{t+4} \prec \pi^{tar}_{t+4} \Rightarrow i_t \prec i_{t-1} \tag{3}$$

The results of our analysis (Figure 3) indicate that since the beginning of the financial crisis the MPC has paid relatively less attention to central bank inflation forecasts than previously. It can be explained with the fact that financial crisis disturbances led to changes in the monetary policy rule, increasing the weight attached to output stabilization, even though inflation exceeded the target [Demchuk et al. (2012)].

4   Assessing central bank credibility

To assess central bank credibility in Poland we refer to survey-based measures of inflation expectations formed by financial sector analysts, enterprises and consumers. The sample of observations available for all the time series of inflation expectations starts in January 2001.

Inflation expectations of financial sector analysts are based on monthly Reuters surveys, while inflation expectations of Polish enterprises – on the NBP surveys conducted quarterly.[14] We use a new measure of consumer inflation expectations quantified on the basis of the consumer survey conducted every month by the Polish Central Statistical Office (GUS).[15] Quantifying inflation expectations of consumers and enterprises we use the probability method, proposed originally by Carlson and Parkin (1975) and developed by Batchelor and Orr (1988). In the case of consumers we use the subjectively perceived inflation – so-called Consumer Perceived Price Index (CPPI) [Hałka and Łyziak (2013)] – as the scaling factor in the probability method. It exceeds CPI inflation significantly (5.1% vs. 3.1% on average in 2001-2012) due to the fact that in their perception of price developments Polish consumers focus on prices of frequently purchased goods and services[16] and disregard negative price changes of these items.

All the measures of inflation expectations we use are formed in a 12-month horizon. However, in testing central bank credibility, long-term expectations should be considered. To solve this problem we follow the approach proposed by Łyziak (2012), i.e. we use the adjusted measure of the NBP inflation target. It takes into account the medium-term orientation of monetary policy, which implies that if the current rate of inflation – due to some shocks – exceeds the target, economic agents setting their 12-month inflation expectations can be aware that in line with the principles of flexible inflation targeting, the observed gap between inflation and the inflation target will be reduced gradually by the central bank, hence in 12 months inflation can still stay above the target even if the central bank takes actions to bring it back to the target.

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[14] We use the main measure of enterprise inflation expectations proposed in Łyziak (2012).

[15] GUS survey data on consumer opinions on future price developments start in January 2004. To obtain a longer time series of inflation expectations we extrapolate the balance statistic of GUS survey responses that is used in the quantification of inflation expectations, exploiting the relationship between GUS survey data and Ipsos survey data, covering a longer sample period.

[16] It should be noted however that they take into consideration a relatively broad basket of goods and services, including food

In the first step of our analysis we assess deviations of inflation expectations ($\pi^e_{t+n||t}$ denotes inflation expectations for period $t + n$ formed in period t) from the inflation target of the National Bank of Poland (π^{tar}_t). Except calculating standard measures of this kind, i.e. absolute and absolute percentage differences between both variables, we derive credibility indices proposed by Cecchetti and Krause (2002) that punish only for positive deviations of inflation expectations from the central bank target:

$$IC_t = \begin{cases} 1 & if & \pi^e_{t+n||t} \leq \pi^{tar}_{t+n} \\ 1 - \frac{1}{0.2 - \pi^{tar}_{t+n}} \left(\pi^e_{t+n||t} - \pi^{tar}_{t+n} \right) & if & \pi^{tar}_{t+n} < \pi^e_{t+n||t} < 20\% \\ 0 & if & \pi^e_{t+n||t} \geq 20\% \end{cases} \tag{4}$$

We find on this basis that consumer inflation expectations in Poland deviate from the NBP target significantly, while expectations of the remaining groups of economic agents – especially financial sector agents – are close to the target (Figure 4, Table 4, Figure 5).

In the second step we estimate the equation suggested by Bomfim and Rudebusch (2000), in which inflation expectations are a weighted average of the central bank inflation target and current price dynamics (π^0)[17], i.e.:

$$\pi^e_{t+n||t} = \lambda \pi^{tar}_{t+n} + (1 - \lambda) \pi^0_t + \varepsilon_t \tag{5}$$

Estimation results confirm that the inflation target set by the National Bank of Poland has a strong impact on inflation expectations of financial sector analysts and enterprises, while a relatively small impact on consumer inflation expectations (Table 5). The weight of the NBP inflation target in the formation of inflation expectations is only 15% in the case of consumers, whose expectations rely mostly on currently perceived price changes, while in the case of inflation expectations of enterprises and financial sector analysts it amounts to 79% and 93% respectively.

Remarkably, inflation forecasts formed by financial sector analysts are usually closer to the NBP inflation target than to the NBP staff inflation projections (Figure 6). Given that the NBP projections assume constant interest rates it suggests that financial sector analysts observing deviations of the NBP staff forecasts from the target believe that NBP actions will bring future inflation closer to the target than it results from the projection currently available. It confirms a high degree of central bank credibility among financial sector analysts in Poland.[18]

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and non-alcoholic beverages, tobacco, housing and energy carriers, medical products, fuels, communication services, newspapers and articles and products for personal care [see Hałka and Łyziak (2013), for details].

[17]In the case of consumer inflation expectations we use subjectively perceived inflation (CPPI) instead of current CPI inflation.

[18]The results obtained are consistent with the results reported in the literature on the basis of similar survey data [Łyziak (2012)] or on the basis of the NBP Survey of Professional Forecasters that enables analyzing different aspects of central bank credibility with long-term probability inflation forecasts [Kowalczyk et al. (2013)].

5 Conclusions

The results presented in this note suggest that inflation projections published by the National Bank of Poland have played the important role in making interest rate decisions more predictable. In the initial stage of inflation targeting (1998-2004) – inspite of the developments of communication tools used by the Polish central bank – the predictability of monetary policy decisions was limited and even deteriorating [Łyziak et al. (2007)]. Only the publication of inflation forecasts since August 2004 has contributed to improvements in this respect.

The note confirms previous findings concerning central credibility in Poland [i.e. Łyziak (2012)], showing that inflation expectations of financial sector analysts and enterprises display a high degree of anchoring at the NBP inflation target, while consumer inflation expectations are driven mainly by price movements currently perceived.

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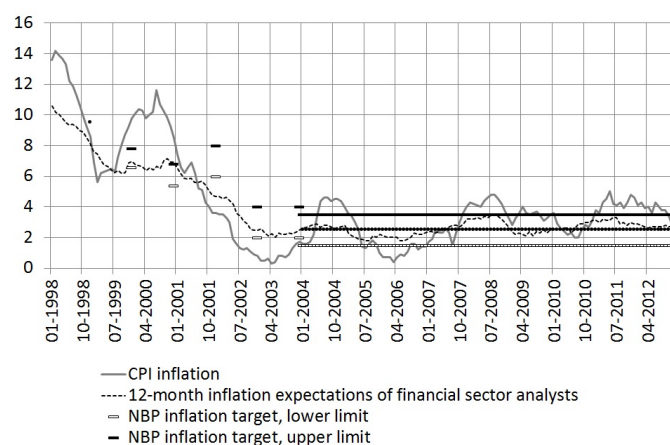
Figures and tables

Figure 1: History of inflation targeting in Poland, 1998-2012

	2000	2005	2010
1. Political	**3**	**3**	**3**
a. Formal objectives	1	1	1
b. Quantitative targets	1	1	1
c. Institutional arrangements	1	1	1
2. Economic	**1**	**3**	**3**
a. Economic data	1	1	1
b. Policy models	0	1	1
c. Central bank forecasts	0	1	1
3. Procedural	**2**	**2**	**3**
a. Explicit strategy	1	1	1
b. Minutes	0	0	1
c. Voting records	1	1	1
4. Policy	**3**	**3**	**3**
a. Prompt announcement	1	1	1
b. Policy explanation	1	1	1
c. Policy inclination	1	1	1
5. Operational	**2**	**2**	**2**
a. Control errors	1	1	1
b. Transmission disturbances	0.5	0.5	0.5
c. Evaluation policy outcome	0.5	0.5	0.5
Total	**11**	**13**	**14**

Source: own calculations.

Table 1: Eijffinger and Geraats (2002) transparency index for Poland in 2000, 2005 and 2010

Questions:	Category of answer:	2000	2005	2010
1. Explanation of policy decisions				
Central bank provides explanation on day policy changes?	Yes	◆	◆	◆
	No			
Explanations provided when policymakers meet and not change policy?	Yes	◆	◆	◆
	Sometimes			
	No			
Policy decisions discussed in standard bulletins and reports?	At least twice a year	◆	◆	◆
	At least annually			
	No			
Minutes of policy meetings published?	Within a month of meeting			◆
	More than a month after			
	No	◆	◆	
Voting patterns published?	Yes	◆	◆	◆
	No			
2. Published forward-looking analyses				
Forward-looking analyses in standard bulletins and reports	More than annually	◆	◆	◆
	At least annually			
	Unspecified			
	Otherwise			
Form of publication	Words, one of numbers and graphs		◆	◆
	One of words, numbers and graphs	◆		
	Unspecified			
	None			
Risks to forecast published?	Words, one of numbers and graphs		◆	◆
	One of words, numbers and graphs			
	Unspecified			
	None	◆		
Discussion of past forecast errors	Yes			
	Sometimes			
	No	◆	◆	◆
3. Assessment and analyses				
Analyses in standard bulletins and reports?	More than annually	◆	◆	◆
	At least annually			
	Otherwise			
Frequency of speeches	At least monthly			
	At least quarterly			
	Less than quarterly / occasional	◆	◆	◆
	Never, almost never			
Working papers and other research publications	More than 10 each year	◆	◆	◆
	More than 5 each year			
	More than 2 each year / occasional			
	Never			

Source: own calculations.

Table 2: Mahadeva and Sterne (2000) transparency index for Poland in 2000, 2005 and 2010

	EG index	MS index	Interest rate forecast errors			
			WIBOR 1M (FRA)		WIBOR 3M (Reuters)	
			MAE (pp.)	MAPE (%)	MAE (pp.)	MAPE (%)
2000:01-2004:08	11 (2000)	66 (2000)	0.24	21.9	0.18	16.2
2004:09-2007:05	13 (2005)	79 (2005)	0.09	12.6	0.05	10.0
2007:05-2012:12	14 (2010)	85 (2010)	0.09	17.5	–	–

Source: own calculations.

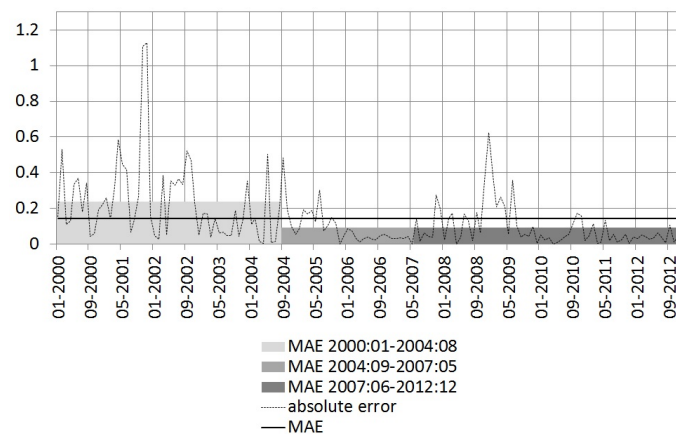Table 3: Transparency indices and measures of interest rate forecast errors

Figure 2: Interest rate forecast errors based on financial market data
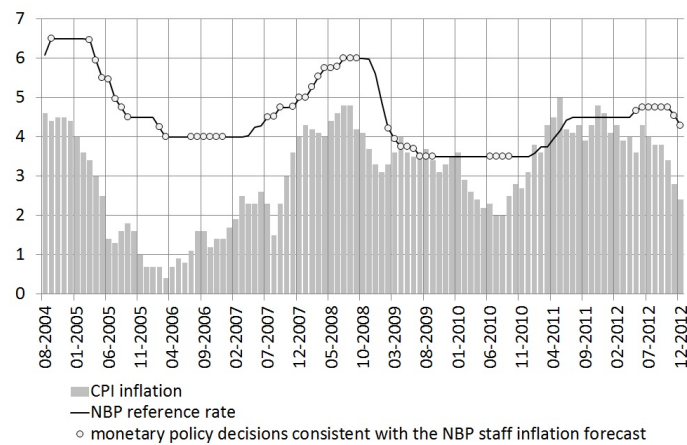

Figure 3: Consistency of monetary policy decisions with the NBP staff inflation forecasts (4-quarter horizon)
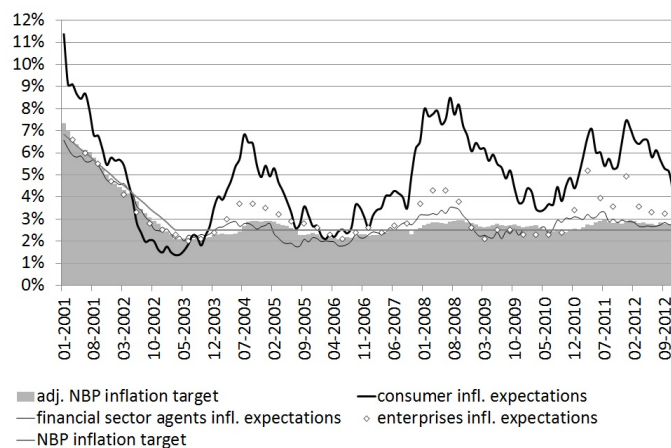
Figure 4: 12-month inflation expectations and the NBP inflation target

		Inflation expectations of		NBP inflation target	
	consumers	enterprises	financial sector analysts	official	adjusted
mean (%)	4.8	3.2	2.9	2.9	2.9
std. dev. (p.p.)	2.0	1.1	1.0	1.0	1.0
mean abs. deviation from the adj. NBP target (p.p)	2.0	0.5	0.3	–	–
mean abs. perc. deviation from the adj. NBP target (%)	72.3	19.7	9.9	–	–
credibility index by Cecchetti and Krause (2002)	0.88	0.98	0.99	–	–

Note: In the case of inflation expectations of consumers and financial sector analysts we use monthly data, while in the case of enterprise inflation expectations – quarterly data.

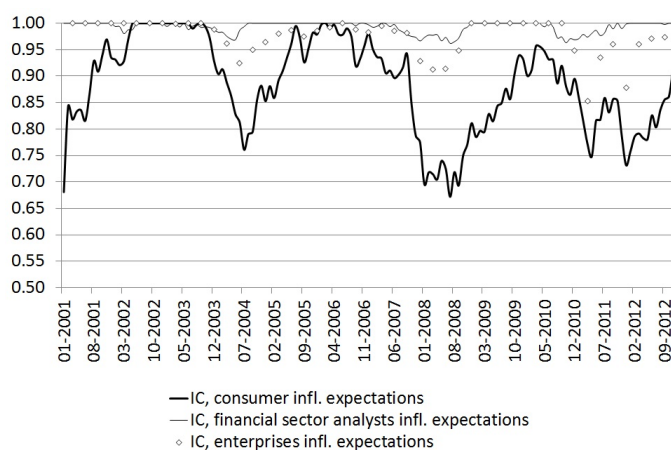Table 4: Inflation expectations and the NBP inflation target

Figure 5: Credibility indices based on Cecchetti and Krause (2002) aproach

	weight of inflation target (λ)	weight of current inflation ($1-\lambda$)	number of observations	adj. R^2
consumers	0.15 (0.05)	0.85	144	0.94
enterprises	0.79 (0.09)	0.21	48	0.62
financial sector analysts	0.93 (0.04)	0.07	142	0.98

Note: In the case of inflation expectations of consumers and financial sector analysts we use monthly data (2001:01-2012:12), while in the case of enterprise inflation expectations – quarterly data (2001Q1-2012Q4). Estimating the equation for consumer inflation expectations we use currently perceived inflation (i.e. the Consumer Perceived Price Index) instead of current inflation. Standard errors in parentheses.

Table 5: Estimation results of the credibility parameter based on Bomfim and Rudebusch (2000) approach
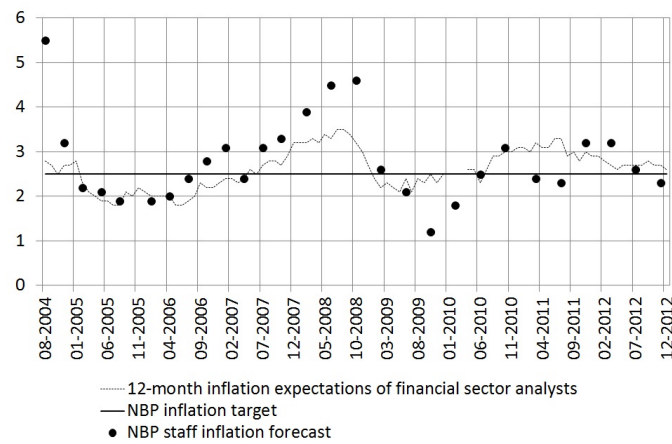

Figure 6: 12-month inflation expectations of financial sector analysts vs. NBP inflation target and NBP staff inflation projections

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